A TALE OF TWO KINGDOMS

The Historical Archaeology of Gowa and Tallok, South Sulawesi, Indonesia

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Except where otherwise acknowledged, this thesis is the result of research carried out by myself.



F. David Bulbeck

26 March 1992

ERRATA: A TALE OF TWO KINGDOMS

The following typographical errors have been noted in the thesis and corrected by hand in the library copy to be deposited with the Menzies Library, Australian National University (statement dated 8 October 1992).

p.15 para. 2 line 6:
for 'two-dimensionsal' read 'two-dimensional'

p.23 footnote 5 15th line: for '(9185)' read '(1985)'

p.55 last line: for 'Tonibasara' read 'Tonibosara'

p.105 para. 2 last line: for '(2.6.4)' read '(2.5.4)'

p.111 line 15: for '(3.4. and 3.5).' read '(3.4.2 and 3.5),'

p.113 para. 1 line 2: for 'be' read 'by'

p.113 para. 2 line 7: for 'laterial' read 'lateral'

p.116 line 6: for 'nor' read 'not'

p.117 para. 1 line 5: for 'whos' read 'whose'

p.117 para. 3 line 5: for 'simple' read 'simply'

p.117 para. 4 line 6: for 'borht' read 'both'

p.118 footnote 3 line 8: for 'singed' read 'signed'

p.119 para. 3 line 7:
for 'Tuniapsukruk's' read 'Tunipasukruk's'

p.121 para. 3 line 1: for 'conicdes' read 'coincides'

p.122 para. 1 of text, line 10: for '(3.3.1)' read '(3.2)'

p.122 para. 1 last line: insert 'century' after '16th'

p.122 para. 2 line 2: for 'Firstlym' read 'Firstly'

p.125 footnote 9 lines 5-6: for 'disporves this wild interpretations' read 'disproves this wild interpretation'

p.126 para. 2 line 4: for 'Thius' read 'This'

p.126 para. 2 line 9: for '(11.32.)' read '(11.3.2)'

p.127 line 10: for 'alos' read 'also'

p.127 para. 3 line 8: for 'is is' read 'is'

p.127 para. 3 line 9: for 'bloodsiste' read 'bloodsister'

p.128 Note to Table 4-2 line 10:
for 'around seven km,' read ', around seven km'

p.130 line 10:
for 're-esrtablishment' read 're-establishment'

p.130 para. 2 line 13: insert 'standing' after 'Jalil's)'

p.130 footnote 13 line 6:
for 'cliam on th the' read 'claim on the'

p.133 para. 3 line 3: for '(5.4.3)' read '(5.4.2)'

p.134 line 4: for 'appears' read 'appear'

p.134 para. 2 line 7: for 'abd' read 'and'

p.134 para. 3 line 3: insert 'who' after 'Lengkesek'

p.135 para. 3 line 1: for 'Tumpakrisik' read 'Tumapakrisik'

p.135 para. 3 line 3: for 'kigdom' read 'kingdom'

p.135 para. 4 line 12:
for 'enthousiastic' read 'enthusiastic'

p.136 Table 4-3 notes line 1: for 'detials' read 'details'

p.136 Table 4-4 notes line 1:
for 'Tumenenga' read 'Tumenanga'

p.136 Table 4-4 notes line 5: insert 'them' after 'relate'

p.138 para. 6 line 1: for 'Tonibasara' read 'Tonibosara'

p.141 line 10: for '(Figures 4-7' read '(Figures 4-6'

p.146 line 2: for 'in' read 'In'

p.146 para. 2 line 11: for 'Karrang' read 'Karaeng'

p.146 para. 4 line 2: for 'Luwuwk' read 'Luwuk'

p.149 para. 2 line 8: for 'Bulok' read 'Buluk'

p.150 para. 3 line 5: for 'the are' read 'the area'

p.151 footnote 28 line 3: for 'no' read 'not'

p.152 Table 4-9 notes line 2:
for 'Panikangcinik' read 'Panaikangcinik'

p.156 4.12.2. heading: for 'Gowa's Initial Expansion' read
'Gowa's initial expansion'

p.164 Table 4-17 3rd column heading: for 'Corek' read 'Core'

p.166 Table 4-19: TOTAL for Luwuk row should be 0, and for
Minor Bugis row should be 1 (i.e. transposed)

p.168 para. 4 line 8: for 'sill' read 'still'

p.170 line 8: for 'form' read 'from'

p.171 4.12.5 heading: for 'Royal and Noble Lines' read 'royal and noble lines'

p.172 para. 2 line 2: for 'hold by' read 'held by'

p.178 para. 2 line 4: for 'Aengtua' read 'Aengtoa'

p.183 para. 3 line 5: for 'photographs' read 'photocopies'

p.186 para. 2 line 1: for 'mto' read 'to'

p.189 para. 2 line 8: for 'recover' read 'recovery'

p.193 footnote 12 line 1: for 'oly' read 'only'

p.197 footnote 16 line 17: for 'sites.' read 'sites,'

p.198 line 11: for 'whne' read 'when'

p.219 para. 3 line 9: insert 'preceded' after 'directly'

p.226 para. 3 line 1: for 'concetnrated' read 'concentrated'

p.229 line 3: for 'unlcear' read 'unclear'

p.230 line 7: read the comma as a semi-colon

p.231 line 5: insert 'to show' after 'quartet'

p.236 para. 2 last line: after 'wider' insert 'coeval'

p.236 para. 3 line 14:
for 'the Gowa located' read 'Gowa let it locate'

p.252 last para. line 5: insert 'of' after 'karaengship'

p.253 para. 3 last line:
for '(Table F-4)' read '(Table F-4c)'

p.256 para. 3 line 6: for 'furher' read 'further'

p.256 para. 3 line 9: for 'with side of the river as' read 'side of the river with'

p.257 line 2: for 'Thes' read 'This'

p.262 footnote 5: for 'by previous' read 'previously by'

p.263 footnote 7 line 4; p.264 para. 2 line 4; p.266 line 15; p.267 para. 3 line 4 and p.268 para. 2 last line:
for '(Table F-5' read '(Table F-5a'

p.266 para. 2 line 2: for '8-13' read '8-12'

p.266 para. 2 line 3: for '8-14' read '8-13'

p.268 para. 3 line 5 and footnote 15 line 3; p.269 para. 2 line 3 and para. 4 line 5; p.270 line 2 and para. 3 line 7; p.272 para.2 line 5 and para.3 line 3: for 'F-5' read 'F-5b'

p.270 para. 3 last line: for 'old-stule' read 'old-style'

p.272 para. 3 line 9: for 'an fish' read 'a fish'

p.276 para. 2 line 3: for 'centre fo' read 'centre of'

p.278 para. 2 line 10: for '9-4' read '9-5'

p.280 line 4: for 'area' read 'areas'

p.280 para. 4 line 5: for 'Mappassepek' read 'Mappaseppek'

p.280 para. 4 line 6: for 'Muhiddin' read 'Mahuddin'

p.280 para. 4 line 10: for 'northwest' read 'southwest'

p.282 lines 2 to 3: move 'Buta Didia' from before 'inhabitants' to after 'present-day'

p.284 para. 1 line 4: insert a fullstop after '(UP14)'

p.292 para. 3 line 16: for 'to to' read 'to'

p.308 para. 3 line 10: for 'Borngloe's' read 'Borongloe's'

p.311 footnote 1 last line: for '14-3' read '12-4'

p.317 para. 3 line 2: for 'occuring' read 'occurring'

p.326 lines 6 to 7: for 'of at' read 'of'

p.327 para. 3 last line: for 'back as' read 'back to'

p.329 para. 3 line 8: for '10.5.2' read '10.4.2'

p.338 para. 2 last line: for 'appears' read 'appear'

p.341 footnote 54 last line: for 'emnbankment' read 'embankment'

p.343 footnote 57 line 7:for 'recordedas' read 'recorded as'

p.346 footnote 62 line 6: for 'tosome' read 'to some'

p.357 line 11: for '(11.5) and, apparently, Bayoa (11.6)' read '(11.5.1) and, apparently, Bayoa (11.5.2)'

p.368 line 15: for 'Opu as' read 'Opu was'

p.372 para. 2 line 10 and p.374 para. 2 line 13: for 'Figure 11-10' read 'Figure 11-12'

p.373 para. 3 line 8: for 'Figure 11-10' read 'Figure 11-13'

p.374 line 6: for 'ground is' read 'ground are'

p.374 para. 2 line 9: for 'syncretist' read 'syncretic'

p.378 line 1: for 'Photo 11-23' read 'Photo 11-24'

p.381 line 2: for '(11.4.1)' read '(11.3.1)'

p.381 para. 3 line 1: for '11-19' read '11-21'

p.381 para. 3 line 12: for '(11.4.2)' read '(11.3.2)'

p.382 para. 1 line 15: for '11-16' read '11-18'

p.383 para. 2 line 9: for '2.2 %Modern' read '2.2% Modern'

p.384 footnote 31 line 1: for 'Agap Atas' read 'Agop Atas'

p.387 line 11 and p.391 para. 3 line 6:
for 'Figure 11-1' read 'Figure 11-2'

p.387 para. 2 line 6: for 'Photo 11-40' read 'Photo 11-44'

p.395 para. 3 line 6: for '14.2.4' read '12.2.5'

p.397 line 8: for '11-24' read '11-26'

p.397 footnote 43 line 3: for '11-23' read '11-25'

p.401 line 3: for '(Figure 12-6)' read '(Figure 11-5)'

p.404 para. 2 last line: for '12-2)' read '12-1)'

p.407 Table 12-2 commentary last line:
for 'Table 14-1' read 'Table 12-1'

p.415 para. 4 last line, p.416 para. 2 line 6 and
p.432 line 5: for '(Figure 12-5)' read '(Figure 12-4a)'

p.419 Table 12-4 (v) line 1:
for 'name places' read 'place names'

p.423 Table 12-4h commentary bottom line: for 'Karaengship with that modern' read 'karaengship with that of modern'

p.428 para. 2 line 12: for 'inferr' read 'inferred'

p.437 para. 2 line 7: insert 'and' after 'lines,'

p.453 line 15: for 'endouraged' read 'encouraged'

p.455 para. 3 line 11:
for '3 km and 7.5 km' read '3.6 km and 8 km'

p.461 para. 2 line 8: delete 'are assigned' after 'century'

p.464 para. 1 last line: for '13-11' read '13-12'

p.475 Table 13-11 Suppak row, and p. 476 footnote 44 lines 4 and 6: for 'Mapupu' read 'Mappupu'

p.476 para. 2 lines 9 and 11: for 'Tanamperek's' read 'Tanamparek's'

p.476 footnote 44 last line:for 'Mapupuu's' read 'Mappupu's'

p.477, continuation of footnote 45 line 8: for '(Table 14-9)' read '(Table 13-10)'

p.479 para. 3 line 5 and p.480 para. 2 line 15: for '(Figure 13-12)' read '(Figure 13-13)'

p.498 para. 2 line 4: insert 'fit' after 'goodness of'

p.499 para. 2 line 11: for 'leFt-to-right' read 'left-to-right'

p.500 para. 2 line 10: for 'and by' read 'and'

p.512 para. 1 line 5: for '1988;' read '1988a;'

p.515 last line: for 'propositions' read 'proposition'

p.537 line 9: for 'were exported' read 'was exported'

p.538 para.3 line 3: for 'was probably' read 'were probably'

p.544 para. 1 line 9: for 'miscolorations' read 'miscolourations'

p.549 para. 2 line 5: for 'among the SSPHAP's' read 'among SSPHAP's'

p.558 para. 2 last line: '22' should be in superscript

p.582 para. 3 line 5: for 'Photo 11-24' read 'Photo 11-25'

p.587 para. 2 line 1: for 'difficult to difficult' read 'difficult'

p.587 para. 2 lines 7 to 8: for '(Fraschė, 1976)' read 'Fraschė (1976)'

p.588 para. 3 line 6: for 'were also' read 'was also'

p.596 para. 1 last line and para. 2 line 2: for 'Table B-39' read 'Table B-38'

p.598 para. 2 lines 8 and 9, and p.599 para. 2 line 17 : for 'rs' read 'r_s'

p.600 para. 2 line 11: '38' should be in superscript

p.603 footnote 40 last line: for '1988:231' read '1988b:231'

p.610 line 11: for 'Figure 11-24)' read 'Figure 11-26)'

p.613 para. 2 line 7: for '(5.4.2)' read '(5.3.2)'

p.619 para. 2 line 3: for 'exluding' read 'excluding'

p.627: delete the third paragraph 'In summary ... superior.'

p.632 line 5: for 'depnends' read 'depends'

p.722 para.2 last line: for 'Figure 11-1' read 'Figure 11-2'

p.725 Table E-13 commentary line 1:
for 'followm' read 'follow,'

p.725 para. 2 line 8: for 'smae' read 'same'

p.728 para. 3 line 9: for 'cotnrast' read 'contrast'

p.733 last line: for 'Moerover' read 'Moreover'

p.740 para. 2 line 3: for '(11.1.2)' read '(11.1.1)'

p.741 para. 2 line 10: for 'syncretist' read 'syncretic'

p.751 note 5f line 3: for 'Toabnka' read 'Tobakna'

p.762 note 5b line 3: for 'presumable' read 'presumably'

p.777 note 7g: for 'Rulcha and Tetta Rulcha' read 'Rulcha'

p.793 note 8j: for 'Patta Sakga' read 'Petta Sakga'

p.800 G.3 para. 2 last line: delete the sentence
'However, no attempt will be made to include usewear.'

p.800 after last line printed, insert the missing line:
fine-grained siliceous) would be reliable, and the range of

p.804 G.29.1.1 line and p.806 G.63.1.9 line:
for 'Banded Cher' read 'Banded Chert'

p.804 G.29.20.2 line:
for 'Variegated' read 'Variegated Quartz'

p.805 G.56.14.2 line: for 'Qhite' read 'White'

p.806 G.59.2.36 line: for 'Chi[' read 'Chip'

REFERENCES Agoston entry line 3: for 'Cerlag' read 'Verlag'

REFERENCES Cortesao entry line 1:
for 'Sum Oriental' read 'Suma Oriental'

REFERENCES Kruskal 1964b entry line 1:
for 'optomising' read 'optimising'

REFERENCES Macknight 1975 entry line 3: for 'Monogrpah of
the Malysian' read 'Monograph of the Malaysian'

REFERENCES Pabittei entry: for 'Pabittei,,' read 'Pabbitei,'

REFERENCES Wiesner entry line 3: for 'Koln' read 'Köln'

Figure 4-1 Commentary line 1:
for 'Tonibasara' read 'Tonibosara'

Figure after 12-4, titled 'Standardised Chronological Histograms - Benteng Tallok':
label should be 'Figure 12-4a' rather than 'Figure 12-5'

Figure 12-7b: for 'PANNAMPUK' read 'PANNAMPU'

ACKNOWLEDGMENTS

This thesis would not have been possible without the guidance of my supervisors. Campbell Macknight put me on the trail of the Bugis-Makassar past, and his on-site impressions and general advice are deeply ingrained in the text. Peter Bellwood visited me three times at critical points in my fieldwork programme, steering it towards what I think is a quite polished methodology, as well as advising me during the analysis and thesis-production stages. I would also like to thank my adviser, John Mulvaney, for his interest in the project.

The fieldwork was officially sponsored by Lembaga Ilmu Pengetahuan Indonesia through the National Research Centre for Archaeology (Puslitarkenas), and through Suaka Peninggalan Sejarah dan Purbakala Sulawesi Selatan (Suaka) at the provincial level. As regards Puslitarkenas, I especially thank the then general director R.P. Soejono, Hasan Ambary who was then director of the Department of Islamic Archaeology, Sonny Wibisono who collaborated with me at various stages, as well as Nurhadi and Naniek Hartisingsih for their friendship and colleagueship. I am also grateful to Masdoekhi and Abdul Muttalib M., who headed Suaka at the start and completion of my fieldwork respectively. Other officers of Suaka who played an important rôle in the fieldwork include Bahru Kallupa, Karaeng Demmanari, and the field officers Aziz Allang, Ramli S. and Daeng Kule. In addition to Karaeng Demmanari, the regular fieldwork team included Dubel Driwantoro before he joined Puslitarkenas, Iwan Sumantri of the Department of Archaeology at Hasanuddin University, and Agustiawan, Andi Said Cam and Budianto H. who were then students of archaeology. Occasional fieldwork participants were Khadidjah Th. M., Srimustika, Hani Somba and Hamris. Their efforts ensured the fieldwork was enjoyable and productive.

My sponsoring department, the Department of Prehistory and Anthropology, has provided logistical support throughout my PhD programme. Some staff members provided useful advice in

the early stages and showed flashes of interest in the research at later stages.

Many people helped me on particular points, advice on writing certain sections, and just plain moral support. Among them I should especially mention Mukhlis, Abdul Sobur and Anton Lukas in Ujung Pandang; Ken Heffernan, Dianne Tillotson and Philip Boot who were then or still now students in the Department of Prehistory and Anthropology; Dick Richards and Peter Burns, of the Research Centre for Southeast Asian Ceramics; Leonard Hogan; P.E. de Josselin de Jong; Sander Adelaar, Charles Grimes, Barbara Grimes, Clifford Satther, Gregory Acciaioli, Evelyn Winburn and David Marr of the Research School of Pacific Studies. Most importantly in these regards I acknowledge the support of Ian Caldwell, James Fox and, above all, Anthony Reid.

Just like a baby, a thesis has to be beared. In this respect it is no more my baby than that of my wife Myrian Horna de Bulbeck.

ABSTRACT

The present thesis details the historical archaeology, or more accurately the archaeological history, of the Makassar kingdoms of Gowa and Tallok, South Sulawesi. Close study of the archaeological record provided strong support for the literal truth of the origin stories of these kingdoms as stated in their chronicles. Gowa appears to have originated as a near-coastal, agrarian kingdom in the 13th-14th centuries. A succession dispute in Gowa, possibly as a reflection of crowding in Gowa's heartland, apparently led to the establishment of Tallok on a major inlet at c.1500.

Gowa's subsequent expansion during the 16th century depended on securing the small port-polity of Garassik which later became the major entrepôt in eastern Indonesia, Makassar. Gowa's southward expansion was at the expense of Polombangkeng (the area's largest polity before Gowa's rise). Much of this densely populated land remained under theoretically autonomous rule throughout. The two kingdoms absorbed by Gowa - Tallok and Maros - re-emerged alongside Gowa as powerful kin-based factions in the 17th century confederated state here called "greater Gowa".

Makassar in its heyday harboured up to 100,000 people, while two to three times that number would have inhabited the adjacent coastal plain. The organisation of the Makassar aristocracy into hierarchically ordered "status lineages" underpinned the state's administration of its territories and functional bodies. These circumstances allowed greater Gowa to protect traders who defied the Dutch attempt to monopolise the Moluccan spice trade, and concurrently to consolidate suzerainty throughout the South Sulawesi lowlands. In 1667 the Dutch naval forces combined with greater Gowa's Bugis enemies in their successful occupation of Makassar. Bone, the largest Bugis kingdom, emerged as the apex in the re-ordered local political hierarchy, while the Dutch superintended Makassar's international trade.

In view of Gowa's original status as an agrarian kingdom, and population densities on the Gowa plain which may have reached towards 1000 people per km^2, previous interpretations

of Makassar (Gowa) as a port-polity require modification. Rather, greater Gowa was the most spectacular example of a recurrent theme in Bugis-Makassar early history - expansion by an agrarian power to capture a critical enterpôt. The pattern can be traced back to c.1300 when the Bugis kingdom of West Soppeng ruled the port of Suppak some 50 km away. South Sulawesi's only major kingdom not based on extensive wet rice lands, Luwuk, apparently relied on its inaccessability, and direct support from Javanese traders aligned with Majapahit, for its brief period of prominence during the 15th century.

Moreover, the initial steps towards the development of complex South Sulawesi societies appear to have occurred in the Bugis agrarian heartland, far away from the places cited in contemporary foreign accounts or the peninsula's most spectacular archaeological finds. Hence the perspective from South Sulawesi challenges the reliability of these sources in reconstructing the development of early states in the western archipelago. The current emphasis on long-distance trade and traders' influences needs to be understood in the context of coeval settlement patterns, whose detection should be treated as a top priority of archaeological work in the western archipelago. "Indianisation" as a concept of social change should be reinterpreted as a case of Austronesian transformation.

TABLE OF CONTENTS

VOLUME 1: MAIN TEXT

CHAPTERS, SECTIONS AND SUBSECTIONS	PAGE NO.
ACKNOWLEDGMENTS	i
ABSTRACT	iii
CHAPTER 1. PERSPECTIVES	
1.1 Agenda of the Thesis	1
1.1.1 Naming and inter-referencing conventions	3
1.2 A Perspective from Human Geography	4
1.3 A Perspective from Comparative Linguistics	12
1.4 A General Perspective	16
CHAPTER 2. INTRODUCTION TO MAKASSAR HISTORY	
2.1 The Makassar Historical Tradition	19
2.2 Primary Sources Translated into Indonesian	
2.2.1 The "Sejarah Gowa"	23
2.2.2 The "Sejarah Tallok"	24
2.2.3 The royal diaries	24
2.2.4 Three subsidiary texts	25
2.3 Main Secondary Sources and Other *Lontarak*	25
2.4 External Sources on Bugis-Makassar History	26
2.5 Chronological Framework Provided by the Sources	
2.5.1 General chronological determinants	27
2.5.2 The first, legendary phase of Gowa's history	32
2.5.3 Later phases in Gowa's precolonial history	35
2.5.4 Phases in Gowa's colonial history	36
CHAPTER 3. MAKASSAR ARISTOCRATIC SOCIAL ORGANISATION	
3.1 Traditional Makassar Social Categories	39
3.2 Traditional Makassar Titulation	43
3.3 Analysis of the Makassar Genealogical Records	
3.3.1 Scope of the analysis	46
3.3.2 Methodological procedures	47
3.3.3 Tabulation of the individuals	49
3.4 Statistical Analysis of the Titulatory Data	
3.4.1 Introductory comparisons	49
3.4.2 Case-by-case analysis	93

3.5 Description and History of Non-Territorial Posts
3.5.1 *Tumabicara-butta* or regent 102
3.5.2 *Sabannarak* of harbourmaster 105
3.5.3 *Tumailalang* or ministers of internal affairs 107
3.5.4 *Tumakkajannangngang* (guildmaster) 108

3.6 Resume of the Transmission of Major Makassar Posts 109

CHAPTER 4. LINEAGE GROUPS AND HISTORY

4.1 Status lineages, genealogies and lineage groups 113

4.2 Expansion of the Empire
4.2.1 The victory of Gowa 116
4.2.2 The wider, early 16th century battle front 117
4.2.3 The middle to late 16th century battle front 119
4.2.4 The 17th century empire 120
120

4.3 The Absorption of Garassik
4.3.1 Garassik at c.1500 121
4.3.2 Garassik during the early 16th century 123
4.3.3 Garassik during the mid-16th century 125
4.3.4 Garassik during the mid-17th century 126

4.4 The Marriage of Gowa and Tallok 127

4.5 The Fragmentation of Polombangkeng
4.5.1 Jamarang 132
4.5.2 Mandallek 132
4.5.3 Katingang 133
4.5.4 Bajeng 134
4.5.5 Lengkesek 134
4.5.6 Jipang 134
4.5.7 Sanrabone and general remarks 135

4.6 Sanrabone 138

4.7 Galesong 141

4.8 Marusuk (Maros)
4.8.1 The succession of Maros rulers 146
4.8.2 Lekokbodong 149

4.9 Pattekne 150

4.10 Genealogical Links with Eastern Indonesia 151

4.11 Genealogical Links with the Bugis 154

4.12 Marriage Strategies and Political Change
4.12.1 Methodological points 155
4.12.2 Gowa's initial expansion 156
4.12.3 The golden period of greater Gowa 168
4.12.4 The survivors 170
4.12.5 Specialisation of the royal and noble lines 171

4.13 Aristocratic Organisation and Political Change 172

CHAPTER 5. THE SOUTH SULAWESI PREHISTORICAL AND HISTORICAL ARCHAEOLOGY PROJECT (SSPHAP)

5.1 Introduction to the Gowa Site Survey 175

5.2 Scope of the Gowa Site Survey 177

5.3 Modern Maps and Related Images
5.3.1 Geomorphological aids 179
5.3.2 Available land-use maps 180

5.4 The 1693 Dutch Map
5.4.1 Mode of preparation and accuracy 181
5.4.2 Matching toponyms 182
5.4.3 Drainage patterns 183
5.4.4 Makassar settlement patterns 185
5.4.4 Geopolitical divisions 185

5.5 Implementing the Gowa Survey
5.5.1 The target sites and universal sampling 186
5.5.2 Rationalising methodology to fit the conditions 190

5.6 Converting the Data into a Form for Analysis
5.6.1 Analytical definitions: "Gowa historical sites" 194
5.6.2 Standardised chronological histograms 197
5.6.3 Prehistoric stone artefacts 198

5.7 Reconstructing Makassar Settlement Patterns 199

CHAPTER 6. BENTENG TUA (KALE GOWA)

6.1 The Environment 201

6.2 Recording the Site 203

6.3 Sherdage Densities within Benteng Tua 205

6.4 The Benteng Tua Fortifications 208

6.5 Historical Settlements within Benteng Tua
6.5.1 Mangasa (Bonto Biraeng Barat) 218
6.5.2 Tamalate 220
6.5.3 Kale Gowa 222
6.5.4 Allamoncong, Lonjo Boko, Sulengkaya 223
6.5.5 Datak Toa 223
6.5.6 Bone-Bone, Lakiung, Kaballokang 224
6.5.7 Katangka Toa, Bisei 226

6.6 Settlement Pattern Analysis
6.6.1 Site hierarchies and settlement patterns 226
6.6.2 Application to the present data 229

6.7 An Overview of Benteng Tua 231

CHAPTER 7. THE PERIPHERAL SITES WITHIN THE CENTRE

7.1 Sero-Tombolok (the PKPPSS Group) 239
7.1.1 Sero (Gowa 26) and Makam Boccolaya (Gowa 27) 241
7.1.2 Bukit Bikuling (Gowa 25) 243

7.1.3 Makam Dg Bane, Sampeang and Paccalaya 244
7.1.4 Moncong-Moncong (G91) and Kasomberang (G37) 245
7.1.5 Pao-Pao (Gowa 38 and 39) 247
7.1.6 Bukit Sulenta and Paccinongang 248
7.1.7 Bukit Manggarupi 249

7.2 Sites in the Shadow of Benteng Tua 249
7.2.1 Jipang Bidaraya (UP11) and Makam Jipang (UP12) 250
7.2.2 Karunrung (UP13) 250
7.2.3 Pandang-Pandang (Gowa 66) 251
7.2.4 Bontomanaik 1 (UP 24) 251

7.3 The MCKGBM Group
7.3.1 Kompleks Makam Campagaya (Gowa 8) 252
7.3.2 Kaledu Paya (Gowa 22) 253
7.3.3 Makam Gusung (Gowa 7) 253
7.3.4 Makam Gelarang Mangasa and Bonto Jalling 254
7.3.5 Maccinik Sombala (UP 25) 255
7.3.6 Overview of the MCKGBM group 255

CHAPTER 8. ANAK GOWA ("CHILD OF GOWA")

8.1 The Anak Gowa Cluster 259

8.2 The Anak Gowa Group
8.2.1 Benteng Anak Gowa (Gowa 2) 260
8.2.2 Jingarak (G15) and Bonto Tangnga Utara (G9) 264

8.3 Kanjilo-Tangallak 265

8.4 Tombolok (Gowa 12) 267

8.5 The TMMLGD Group
8.5.1 Makam Manyampang (Gowa 13) 268
8.5.2 The Bontoalak site complex (Gowa 14) 269
8.5.3 Kuburan Islam Takbakka, or Tompok Balang (G75) 270

8.6 The B(2)B Group 271

CHAPTER 9. THE UPPER-MIDDLE JEKNEKBERANG

9.1 Settlement Pattern Analysis 273

9.2 Saumata Lama (Gowa 30) 277

9.3 The Sites to Saumata's South
9.3.1 Beroanging to Bonto Ramba Tua 280
9.3.2 Romang Sappang and Romang Polong 282

9.4 The PKKKP Sites North of Saumata Lama 284

9.5 Marginal Members of the Saumata Cluster
9.5.1 The BKDA sites 287
9.5.2 Bossolok (Gowa 72) and Sabeng (Gowa 45) 289

9.6 Overview of the Saumata Cluster 290

9.7 Borongloe ("Great Garden Area")
9.7.1 A brief history of Borongloe and Bontomanaik 291

9.7.2 Borongloe (Gowa 67) 293
9.7.3 Tamarunang Tua (Gowa 69) 294
9.7.4 Borong (Gowa 76) 295

9.8 The KBSB Group
9.8.1 Kaballokang (G70) and Borong Parang (G82) 296
9.8.2 Songkolo Asli (G83) and Bontona Songkolo (G86) 297
9.8.3 Expansion from Borong Parang and Songkolo 299

9.9 The PDCSS Group
9.9.1 Cellaya, Saukang Borong, Saukang Boe 300
9.9.2 Pekallak Bua (Gowa 16) 304
9.9.3 Dampang (Gowa 77) 305

9.10 A Brief Review of the Middle Jeknekberang Sites 308

CHAPTER 10. THE TALLOK HEADWATERS

10.1 Introduction 311

10.2 The Pattallassang Cluster
10.2.1 The PGST group 316
10.2.2 Pattallassang Tua (Gowa 52) 318
10.2.3 Teamate Asli (Gowa 53) 321
10.2.4 Talla-Talla (Gowa 50) 321

10.3 The PPSTG Group
10.3.1 Tassilli (Gowa 48) and Ganrang Jawa (Gowa 49) 323
10.3.2 Sawagi (Gowa 51) 325
10.3.3 Paccellekang Lama (Gowa 57) 325
10.3.4 Pabundukang Tua 327

10.4 The BLK Group
10.4.1 Lamuru (G46) and Kuburan Tua Lamuru (G47) 328
10.4.2 Bonto Sunggu Asli and Soppeng (Gowa 55) 330

10.5 The KMP and BBPB Groups
10.5.1 Pattiro Tua-Balang Sari (Gowa 63) 331
10.5.2 Moncong-Moncong 335
10.5.3 Bangkala-Palemba Tua (Gowa 42) 336
10.5.4 Biring Balang Tua (Gowa 64) 337
10.5.5 Bado-Bado Tua and Parang Bambe (Gowa 68) 338
10.5.6 Overview of the KMPBBPB sites 338

10.6 The Moncongloe Cluster
10.6.1 Jeknek Madinging and Manggala Tua 338
10.6.2 Patadang, Manyempang, Balang Patti and Embung 340
10.6.3 Moncongloe Lappara (Maros 2) 342

10.7 Sites along the Diccekang Tributary 346

10.8 Overview of the Tallok Headwater Sites 348

CHAPTER 11. GARASSIK (MAKASSAR)

11.1 Physical Setting and Fortifications 351

11.2 Site Clustering Analysis 357

11.3 Benteng Somba Opu
11.3.1 Physical remains and reconstruction 367
11.3.2 Occupation history 371

11.4 Other BBBBKBSPL Sites (Sites near Somba Opu)
11.4.1 Pattung, Lekokbodong, and Bayoa 2 372
11.4.2 Kaccia Lama 373
11.4.3 Bonto Lakja 374

11.5 Garassik Heartland (BGPM Group)
11.5.1 Benteng Garassik (Gowa 5) 378
11.5.2 Bayoa 1 (Ujung Pandang 1) 382
11.5.3 Paknakkukang-Pattukangang (UP2) 386
11.5.4 Mamampang (Ujung Pandang 5) and overview 389

11.6 The GMTB Group 390

11.7 The Aeng Cluster
11.7.1 Barombong (Ujung Pandang 3) 391
11.7.2 Bontoa (UP26) and Ujung Kassik (UP6) 393
11.7.3 Aengtoa, Jonggoa Batu-Batu and Karama 393
11.7.4 Pangkajeknek, Summanak and Pakkala Toa 395
11.7.5 Overview 396

11.8 The Antiquity of "Makassar" 397

CHAPTER 12. BENTENG TALLOK AND UJUNG PANDANG

12.1 Introduction 399

12.2 Benteng Tallok (Ujung Pandang 25)
12.2.1 The story of Tallok's origins 401
12.2.2 The Benteng Tallok survey 402
12.2.3 Tallok's fortifications 403
12.2.4 Tallok's royal cemetery 411
12.2.5 Other historical sites within Tallok 412
12.2.6 Tradewares recorded at Tallok 415

12.3 Historical Toponyms in Ujung Pandang
12.3.1 Identification of the toponyms 417
12.3.2 Settlement pattern analysis 428

12.4 The Origins of Tallok 430

CHAPTER 13. THE WIDE VIEW

13.1 Some Final Data from the Coastal Survey 433

13.2 South Sulawesi Lowland Pre-Islamic Burials
13.2.1 Prehistoric burials from closed sites 443
13.2.2 Immediately pre-Islamic burial grounds 447
13.2.3 Wider patterns in the archipelago 450

13.3 Settlement Pattern Analysis
13.3.1 Main results of the site clustering analysis 453
13.3.2 Population densities 456
13.3.3 Geopolitical transformations 464
13.3.4 Political jurisdiction 467
13.3.5 (Greater) Gowa's rise as a secondary state 469

13.4 A General Bugis-Makassar Perspective
13.4.1 The origins of the Bugis-Makassar kingdoms 473
13.4.2 Luwuk's place in South Sulawesi's early history 479
13.4.3 Implications for early state formation 481

TABLES PAGE NO.

Table 1-1. South Sulawesi Human Geographical Divisions 7
Table 1-2. Modern Indonesian Rural Population Densities 11
Table 2-1. Citations by *Lontarak* Type in Mukhlis (1975) 22
Table 2-2. Reign Lengths of Gowa and Tallok 30
Table 2-3. Gowa and Tallok Male Generation Lengths 31
Table 3-1. Ranking of Offspring by Parents' Status 42
Table 3-2. Names Abbreviated in the Genealogical Tables 50
Table 3-3. Family Relations of Rank 1 Individuals 51
Table 3-4. Family Relations of Rank 2 Individuals 57
Table 3-5. Family Relations of Rank 3 Males 61
Table 3-6. Family Relations of Rank 3 Females 68
Table 3-7. Family Relations of *Kare* Individuals 75
Table 3-8. Family Relations of Male *Daeng* 76
Table 3-9. Family Relations of Female *Daeng* 78
Table 3-10. Family Relations of Female *Lokmok* 82
Table 3-11. Family Relations of Untitled Males 83
Table 3-12. Family Relations of Untitled Females 83
Table 3-13. Rank 3 Men Holding Non-Territorial Posts 87
Table 3-14. Rank 4 Men Holding Non-Territorial Posts 89
Table 3-15. Cross-Tabulation of Titles against Gender 90
Table 3-16. Linkage of Makassar Titles with Toponyms 91
Table 3-17. Spouses Related to a Conjugal Pair 92
Table 3-18. Spouses Related by Step Siblings 92
Table 3-19. Titulation of Males against Family Members 94
Table 3-20. Titulation of Females against Family Members 95

Table 3-21. Chi-square Values for Correlations of Titles 99
Table 3-22. Same-sexed Kin Correlation of Titles 100
Table 3-23. Opposite-sexed Kin Correlation of Titles 100
Table 3-24. Status and Patrilineality of Posts 110
Table 4-1. Sources Used in Figure 4-6 (Garassik) 122
Table 4-2. Sources Used to Prepare Figure 4-8 128
Table 4-3. Sources Used for Figure 4-9 (Polombangkeng) 136
Table 4-4. Sources Used in Figure 4-10 (Sanrabone) 136
Table 4-5. Sources Used in Figure 4-11 (Galesong) 144
Table 4-6. Sources Used in Figure 4-12 (Marusuk) 144
Table 4-7. Sources Used in Figure 4-13 (Lekokbodong) 145
Table 4-8. Sources Used in Figure 4-14 (Pattekne) 145
Table 4-9. Sources Used for Figure 4-15 (E. Indonesia) 152
Table 4-10. Sources Used in Figure 4-16 (the Bugis) 152
Table 4-11. Sources Used to Prepare Figure 4-17 153
Table 4-12. Marriages and Offspring c.1500 to 1593 157
Table 4-13. Marriages and Offspring c.1593 to 1667 158
Table 4-14. Marriages and Offspring 1667 to 1700 160
Table 4-15. 16th Century Marriages and Lineage Groups 162
Table 4-16. Offspring from 16th Century Marriages 163
Table 4-17. Marriages and Lineage Groups c.1593 to 1667 164
Table 4-18. Offspring from Marriages c.1593 to 1667 165
Table 4-19. Post-1667 Marriages between Lineage Groups 166
Table 4-20. Offspring from Post-1667 Marriages 167
Table 5-1. Historical Zones Nearest Neighbour Distances 195
Table 6-1. Benteng Tua Brick Sizes 211
Table 6-2. Student's T-Tests Comparing Brick Sizes 213
Table 6-3. Intersite Distances - Wall Treated as Site 232
Table 6-4. Intersite Distances - Fortress Wall Ignored 234
Table 8-1. Measurements of the Anak Gowa bricks 261

Table 9-1. Upper-Middle Jeknekberang Site Distances 274
Table 9-2. Kassik Tengah's Antiques Assigned to Burials 285
Table 9-3. Human Bone Fragments from Saukang Boe 302
Table 9-4. Artefactual Content of the Dampang Exposures 306
Table 10-1. Tallok Headwater Intersite Distances 314
Table 10-2. Dimensions of Moncongloe Lappara Bricks 344
Table 11-1. Fortification Works at Garassik (Makassar) 356
Table 11-2. Garassik Intersite Distances - Wall Ignored 360
Table 11-3. Garassik Site Distances Inc. Surveyed Wall 362
Table 11-4. Garassik Site Distances Inc. Inferred Wall 364
Table 11-5. North Polombangkeng Intersite Distances 365
Table 11-6. Soil Tests Carried Out at Somba Opu 366
Table 11-7. Observations on the Bonto Lakja Tempayan 376
Table 11-8. Soil Tests Carried Out at Bonto Lakja 377
Table 11-9. Objects from the Bontorea at Zone 34 385
Table 12-1. Brick and Masonry Sizes at Benteng Tallok 405
Table 12-2. Student's T-Tests on Tallok's Smaller Bricks 406
Table 12-3. Results of T-Tests on Tallok's Bricks 407
Table 12-4. Matching pre-1667 and Modern Toponyms 419
Table 12-5. Tallok-UP Site Distances - Wall Ignored 424
Table 12-6. Tallok-UP Site Distances Inc. Surveyed Wall 426
Table 12-7. Tallok-UP Site Distances Inc. Inferred Wall 427
Table 13-1. Bones Found with the Galesong *Duni* 435
Table 13-2. Human Bone Fragments at Talaborong 438
Table 13-3. Prehistoric Burial Sites of South Sulawesi 440
Table 13-4. Bugis and Makassar Secondary Burial Sites 441
Table 13-5. Pre-Islamic Makassar Primary Burial Sites 442
Table 13-6. Nearest Neighbour Analysis Main Survey Area 456
Table 13-7. Population Size in or near Makassar 458

Table 13-8. Population Densities and Distribution 462

Table 13-9. Checklist of (Greater) Gowa's Attributes 470

Table 13-10. Types of *Tomanurung* Events and their Dates 474

Table 13-11. Dates for Early Bugis-Makassar Rulers 475

VOLUME 2: APPENDICES

CHAPTERS, SECTIONS AND SUBSECTIONS PAGE NO.

APPENDIX A. THE SOUTH SULAWESI LANGUAGE GROUP

A.1 Introduction 487

A.2 Scatter Analysis of the Lexicostatistical Data 488

A.3 Hierarchical Seriations and Lexicostatistical Data 490

A.4 The Data from South Sulawesi 493

A.5 Down-the-Line Seriation of the Languages 503

A.6 Other Reviews of the Languages of South Sulawesi 507

A.7 A Tentative Overview 512

APPENDIX B. TRADEWARES DESCRIPTION AND DATING

B.1 Introduction 517

B.2 Background to SSPHAP's Classificatory System 518

B.3 Description of SSPHAP's Tradeware Classes
B.3.1 Introductory points 523
B.3.2 Early whitewares (Chinese) 525
B.3.3 Early monochromes (Chinese) 526
B.3.4 Early Chinese polychromes (four classes) 533
B.3.5 Coarse stonewares 537
B.3.6 Ming celadons (inc. Yuan-like Ming celadons) 544
B.3.7 Qing monochromes 547
B.3.8 Wares blue or white 547
B.3.9 Ming blue-and-white and *Ming merah* (Ming red) 548
B.3.10 Wanli blue-and-white and late Ming BW 558
B.3.11 The Swatow family 559
B.3.12 Qing blue-and-white 572
B.3.13 White Qing or recent 577
B.3.14 The Japanese and European classes 580
B.3.15 Vietnamese ceramics 582
B.3.16 Thai ceramics 587

B.4 Analysis with SSPHAP's Fine Tradeware Classes
B.4.1 Seriating the fine tradeware classes 589
B.4.2 Other seriations involving the fine classes 599
B.4.3 Dating the classes 602

B.4.4 Standardising the tradeware frequencies 609
B.4.5 Issues in interpreting standardised histograms 610

B.5 Analysis with SSPHAP's Broad Tradeware Classes
B.5.1 Erection of broad tradeware classes 613
B.5.2 Dating and standardising the broad classes 623

B.6 A "Historical Site" by Uncollected Tradewares 626

APPENDIX C. GAZETTEER OF SSPHAP'S SITES 631

APPENDIX D. ARTEFACTUAL CONTENTS RECORDED AT SSPHAP'S SITES 654

APPENDIX E. OVERVIEW OF THE BRICK AND MASONRY BLOCK DATA

E.1 Background
E.1.1 Scope of the work 707
E.1.2 Methodological considerations in measuring 707
E.1.3 Benteng Sanrabone 709
E.1.4 Kota Galesong fortifications 712

E.2 Analysis of the Brick Measurements
E.2.1 "Brick standards" and "brick seriation types" 713
E.2.2 Large bricks and smaller fortification bricks 718
E.2.3 Somba Opu and the coastal wall 722
E.2.4 Overall appreciation of the fortification bricks 733

E.3 Masonry Measurements

E.4 An Overview of Greater Gowa's Fortifications 737

APPENDIX F. INVENTORIES OF MARKED GRAVES 741

APPENDIX G. IRON FRAGMENTS, COINS AND STONE ARTEFACTS

G.1 Iron Fragments 799

G.2 Coins 799

G.3 Flaked Stone Artefacts 800

REFERENCES

TABLES

PAGE NO.

Table B-1. Composition of SSPHAP's Early Whitewares 526

Table B-2. Early Whiteware Glaze Characters 527

Table B-3. Early Whiteware Body Characters 528

Table B-4. Composition of SSPHAP's Early Monochromes 529

Table B-5. Early Monochrome Glaze Characters 530

Table B-6. Early Monochrome Body Characters 532

Table B-7. Early Blue-and-White Wares 534

Table B-8. Early Overglaze, Jizhou and Sancai: Bodies 535

Table B-9. Early Overglaze, Jizhou and Sancai: Glazes 536

Table B-10. Composition of SSPHAP's Coarse Stonewares 540

Table B-11. Coarse Stoneware Exterior Glaze Characters 540

Table B-12. Coarse Stoneware Body Characters 541

Table B-13. SSPHAP's Ming (inc. Yuan-like) celadons 544

Table B-14. Composition of SSPHAP's Qing Monochromes 550

Table B-15. Composition of SSPHAP's Bluewares 550

Table B-16. Composition of Ming/Wanli Whitewares 550

Table B-17. SSPHAP's Sample of Qing Monochromes 551

Table B-18. SSPHAP's Sample of Blue or White Wares 552

Table B-19. SSPHAP's Ming BW (inc. Hexagonal) Wares 553

Table B-20. *Ming Merah*, Wanli BW and Late Ming BW Wares 556

Table B-21. Ming Red and Later BW Traits 556

Table B-22. Swatow Body, Glaze and Decorative Types 563

Table B-23. Combinations of Body, Glaze and Decor Types 564

Table B-24. Composition of the Swatow Family Wares 566

Table B-25. Characters of Ming Swatow Wares 566

Table B-26. Swatow and Qing Swatow Traits 569

Table B-27. Composition of SSPHAP's Qing Blue-and-white 574

Table B-28. Qing Blue-and-white Traits 574

Table B-29. Composition of SSPHAP's "Recent" Class 578

Table B-30. SSPHAP's Japanese and European Classes 578

Table B-31. Traits of "Recent", Japanese and European 579

Table B-32. Composition of SSPHAP's Vietnamese Classes 583

Table B-34. Characters of Vietnamese Monochromes 583

Table B-33. Vietnamese Polychrome Traits 585

Table B-35. Composition of SSPHAP's Thai Classes 590

Table B-36. Characters of the Thai Classes 590

Table B-37. Frequencies of Tradewares in SSPHAP's Zones 594

Table B-38. Correlation Coefficients between Tradewares 595
Table B-39. Fine Tradeware Classes Assigned by Periods 608
Table B-40. Standardisation of Pakkala Toa Tradewares 610
Table B-41. Laboratory and Fieldwork Identifications 614
Table B-42. Performance Measures of the Unpooled Classes 620
Table B-43. Performance: Pooled and Unpooled Classes 621
Table B-44. Broad Tradeware Classes Assigned by Periods 625
Table B-45. Probable Type of Laboratory Identification 628
Table E-1. Further Brick Samples Not in Main Text 710
Table E.2 Measurements of All Measured Bricks 713
Table E-3. Size of "Dutch Standard Bricks" 715
Table E-4. Measurements of "Other Bricks" 715
Table E-5. Size of Other Old Style Bricks 717
Table E-6. Size of Fortification Bricks 717
Table E-7. Length and Breadth of Fortification Bricks 719
Table E-8. Length and Thickness of Fortification Bricks 720
Table E-9. Breadth and Thickness of Fortification Bricks 720
Table E-10. Size of Large Fortification Bricks 721
Table E-11. Size of Smaller Fortification Bricks 721
Table E-12. Brick Size Types and Wall Types 722
Table E-13. Size of Somba Opu Intermediate Bricks 725
Table E-14. Size of Garassik Intermediate Bricks 726
Table E-15. Size of Somba Opu Smaller Bricks 726
Table E-16. Size of Garassik Smaller Bricks 726
Table E-17. Bayoa Bricks 727
Table E-18. Size of Paknakkukang Large Bricks 729
Table E-19. Size of Paknakkukang Smaller Bricks 729
Table E-20. Size of Barombong Bricks 730
Table E-21. Size of Pattukangang Bricks 732

Table E-22. Size of Large Fortification Bricks 732

Table E-23. Size of Intermediate Fortification Bricks 732

Table E-24. Size of Smaller Palace Bricks 732

Table E-25. Size of Usual Coastal Wall Bricks 733

Table E-26. Fortification Structures by Brick Type 734

Table E-27. Sizes of Recorded Masonry Blocks 736

Table E-28. Summary of Greater Gowa's Fortifications 738

Table F-1. Gazetted Royal Cemeteries 749

Table F-2. Other Tombs like Those in Royal Cemeteries 751

Table F-3. Other Cemeteries, Benteng Tua 754

Table F-4. Other Cemeteries, Chapter 7 of Main Text 756

Table F-5. Other Cemeteries, Chapter 8 of Main Text 762

Table F-6. Cemeteries, Chapter 9 of Main Text 766

Table F-7. Cemeteries, Chapter 10 of Main Text 776

Table F-8. Cemeteries, Chapter 11 of Main Text 792

Table F-9. Other Cemeteries, Benteng Tallok 797

VOLUME 2: ADDENDA

FIGURES

PHOTOGRAPHS

REFERENCES

CHAPTER 1. PERSPECTIVES

1.1 Agenda of the Thesis

This thesis reports the investigations carried out by the South Sulawesi Prehistorical and Historical Archaeology Project (SSPHAP) on the old Makassar kingdoms of Gowa and Tallok. From the mid-16th century AD, until the late 17th century, Gowa and Tallok lay at the fulcrum of what was, at its peak, the largest indigenous empire ever based in the eastern archipelago. The empire's rise and eclipse were turning points not only in the wedded history of the Bugis and the Makassar, two of the archipelago's most important ethnic groups, but also in the long-term establishment of Netherlands India (today's Indonesia). The story is further of major historiographical interest as a "contact history" where the indigenous voice speaks no less eloquently than the foreign voice. Even more significantly, the empire's history is a case study of the transformations to the Austronesian cultural matrix which accompanied the formation of Indonesia's indigenous states.

It is easier to recognise the importance of this profoundly complex organisation than to know what to call it. The Makassar scribes and Dutch records of the day used the same term, Gowa, both for the highest status lineage within the empire, and for the empire as a collective body. The tradition is followed by many historians, especially those concerned with narrating events (e.g. Andaya, 1981; Patunru, 1983; Sagimun, 1986) and describing internal organisation (Mukhlis, 1975) rather than interpretation. The other main naming convention recognises Gowa and Tallok as kingdoms (and specifically sultanates, following the adoption of Islam in 1605) of comparable status. Following a terminology which can be traced back to Gervaise (1688), these studies refer to the collective entity by the name which foreigners gave to its emporium, i.e. Makassar (Reid, 1981, 1983; Pelras, 1985; Villiers, 1990). Mattulada (1982a) emphasises the polity's dual composition by kingdoms whose geopolitical cores lay

outside the capital city, and so posits both "Gowa-Tallo" and "Makassar" as suitable names.[1]

While concurring with Mattulada's basic analysis I will refer to the collective body as "greater Gowa" for several reasons. The term retains the eponymous status of Gowa, while allowing independent discussion of Gowa as a kin-based faction. It accommodates my recognition of a third powerful family based in Maros. Finally, it allows the city (Photo 1-1) to be called Makassar without falling in the terminological trap of identifying the polity with its emporium.

Historical archaeology, at its most elementary level, encompasses sites for which the written records provide information difficult or impossible to obtain by archaeology alone. These vials of information may include dated associations with events, individuals and institutions, not to mention references to the establishment or abandonment of the sites. On the other hand, archaeology can address questions which the texts may ask but then not answer, e.g. questions or the physical and social landscape, and on protohistorical origins. On top of that, an archaeological perspective asks critical questions of the texts, questions which might otherwise escape notice. Consequently much of my research is devoted to an original analysis of the Makassar texts. By following the profoundly recursive dialogue between the historical and archaeological records, so as to deepen and solidify the foundations of both, this thesis will build a more structured and multi-tiered interpretative framework than has previously been attempted for Gowa and Tallok.

As regards its place within the framework of academic endeavour, this thesis follows the lead of Macknight (1975, 1983) in seeking a refined vision of the Bugis-Makassar historical landscape, and a diachronic (historical) anthropological interpretation of the Bugis-Makassar texts. In this respect it twins with Caldwell's (1988) philological study of the Bugis texts, and further suggests that the time has come to view the general picture in a new way.

[1] Mattulada further frequently uses "Gowa" for the collective body as a literary convenience.

1.1.1 Naming and inter-referencing conventions

As yet there is no generally accepted spelling system available for any South Sulawesi language, and no official system standardising the spelling of all South Sulawesi proper names across government publications. Official spellings do exist for administrative names, and these I can follow for most administrative divisions, as well as for administrative centres down to the *kecamatan* level.[2] In general, however, I follow Kamaruddin et al. (1985-6) in rendering Bugis and Makassar names in the spelling they would have in *Bahasa Indonesia*. Specifically, glottal stops are represented by a "k", and a consonant is doubled if it both ends one syllable and begins the next (a characteristic which I believe is not found in *Bahasa Indonesia*).[3] As an example, I use "Luwuk" when writing the kingdom of Luwuk or the Luwuk coastal plain, to indicate the glottal stop at the end of the word. But note that the *kabupaten* which takes the same name will be written Kabupaten Luwu to follow the official spelling.

As regards minor topographic features such as hills and swamps, I refer to them by the local name (e.g. Balang Sari), but major features such as rivers, mountains and lakes will often be rendered in English (e.g. Jeknekberang River as well as Sungai Jeknekberang). To enhance the flow of the text, the highest level administrative divisions will usually be rendered in English (e.g. South Sulawesi province rather than Propinsi Sulawesi Selatan), while references to lower-level divisions will sometimes treat the Indonesian words *kabupaten* and *kotamadya* (broady equivalent to a county and a

---

[2] I may also use official acronyms where convenient, for instance Figure 1-4 uses "Polmas" (Polewali-Mamasa) and "Sidrap" (Sidenreng-Rappang), and Figure A-2 represents Tana Toraja with "Tator".

[3] One area where I depart from Kamaruddin et al. (1985-6) is in the representation of compound words where the first word ends in "-ng". In Makassar the "-ng" tends to be lost in pronunciation, e.g. Borong + loe is pronounced Borolloe. I retain the "-ng" to emphasise the meaning of the first word, e.g. that Borong + loe, or Borongloe, means either "many gardens" or "great garden", i.e. "great garden area".

municipality respectively), *kecamatan* (district), *desa*, *dusun* and *kampung*, as though they were English words.

This thesis is designed in a report format which tags blocks of related text at the chapter (or appendix), section, and often the subsection level. When referring the reader to another part of the thesis I will simply provide the tag in brackets, e.g. "A.1" means "Appendix A, Section 1", and "1.1.1" means "Chapter 1, Section 1, Subsection 1".

1.2 A Perspective from Human Geography

Sulawesi, the ungainly four-armed island east of Kalimantan, covers 189,216 square kilometres, making it the fourth largest island in Indonesia and eleventh in the world (Webster et al., 1984:A-9). Sulawesi epitomises the complex origins and peculiarly constellated landforms of eastern Indonesia. According to recent evidence, to understand Sulawesi's formation we must first start with a giant archipelago which had separated from the ancient continent of Gondwanaland in the middle Jurassic. The components of this archipelago were the embryonic landmasses of southern Tibet, Burma, Thailand, the Malay peninula, Sumatra, west and east Kalimantan, western Sulawesi, and the half-ellipse of islands from Flores through the Kai islands to Buru. These land fragments arrived at their present position in the early Tertiary period. In the mid-Tertiary period a fragment of continental land detached itself from Cendrawasih (the Irian Jaya peninsula) and drifted towards Kalimantan. The spur of this fragment consisted of Eastern Sulawesi and Banggai-Sula, the two geological provinces which comprise Sulawesi's eastern arms. They collided with western Sulawesi in the mid-Miocene (Audley-Charles, 1987) at the zone of collision called the Palu-Koro fault (see Figure 1-1a). The collision distorted western Sulawesi into its present shape by rotating the northern arm nearly 90 degrees clockwise and the southwest peninsula about 35 degrees anticlockwise (Whitten et al., 1987:2-4).

Sulawesi's complex geological history and its position straddling the equator have created great climatic and ecological diversity. Volcanic chains run along Sulawesi's

northern and southwestern arms, while a third volcanic belt dominates the highlands due north of the southwest peninsula. Eastern Sulawesi on the other hand is devoid of volcanics and instead dominated by uplifted Mesozoic and Tertiary sedimentary rocks, metamorphics, ophiolites and Tertiary acid intrusives (Katili, 1978; see Figure 1-1a). Throughout Sulawesi the topography tends to be rugged, with 83% of the landmass hilly to mountainous, characterised by uplands which are too high and steep to suit agriculture (Whitten et al., 1987:91-94; see Figure 1-1b).

Straddling the equator, Sulawesi is affected by two monsoons. The main northwesterly monsoon generally occurs between November and April, and the less marked, southeasterly monsoon generally blows between April and June (Whitten et al., 1987:21). The main highland belts however tend to trap the moist winds and remain permanently humid, leading to marked seasonality in the lowland areas sheltered from one or the other monsoon, and casting a more or less permanent rainshadow over some areas (Oldeman and Darmiyati, 1977:4-6). These effects can be seen when we consider mean annual rainfall, seasonality, or the agroclimatic zones of Oldeman and Darmiyati (1977). Conditions of more or less permanent humidity, usually associated with higher rainfall, occur in a broad band over much of central Sulawesi, and elsewhere as climatic enclaves such as at the tip of the north arm and on the highest mountains in the southwest peninsula (Figures 1-2a to 1-2c). The driest agroclimatic zone (Zone E) characterises the land from Palu to Gorontalo, the northern half of the central east arm and various enclaves of the southwest peninsula, while a monsoonal climate tends to prevail elsewhere (Figures 1-2a to 1-2c).[4]

[4] Owing to different definitions of "wet" and "dry" months, the north arm of Sulawesi is depicted as mainly "permanently humid" to "slightly seasonal" (Figure 1-2b), yet as beset by the driest agroclimatic zones (Figure 1-2c). In the former case a "wet" month receives at least 100 mm of rain and a "dry" month less than 60 mm of rain; in the latter case, 200 mm of rain and 100 mm of rain respectively. As also suggested by Figure 1-2a, most of Sulawesi's north arm can be characterised as an area of moderate rainfall distributed evenly throughout the year.

The poor geological basis for soils in eastern Sulawesi, and the rugged topography with dauntingly humid conditions over much of central Sulawesi, have led to a schizoid distribution of Sulawesi's population. This can be seen from the population densities by *kecamatan* (district) as taken from recent statistical year books for North Sulawesi (1982), Central Sulawesi (1980), Southeast Sulawesi (1979) and South Sulawesi (1985). The province of North Sulawesi generally supports relatively high population densities with particular concentrations around Gorontalo, Kotamobagu and Manado, and on the volcanic Sangihe island arc. Central Sulawesi, Southeast Sulawesi and the northern rim of South Sulawesi have population densities generally less than 100 persons/km^2, with higher population densities concentrated around the provincial capitals of Palu and Kendari and at a few other coastal locations. In the southwest peninsula and the highlands northwest of Palopo, however, the combination of volcanically-based soils, monsoonal climate, and alluvial belts either within wide open valleys or along the coast, supports population densities usually in excess of 100 persons/km^2 and above 600 persons/km^2 in certain rural Makassar areas (Figure 1-3). As also noted by Jones and Supraptilah (1976:56), 'the hinterland of Ujung Pandang has some of the highest rural population densities of any area [in Indonesia] outside of Java or Bali'. Only North Sulawesi at Sulawesi's other extreme presents any similar expanse of well-established rural communities. From the point of view of human settlement, then, the southwest and north arms of Sulawesi can be thought of like islands, separated from each other by a large expanse of thinly populated land.

The constraints which topography and climate place on population densities can be seen from a more detailed consideration of the province of South Sulawesi. Overall we are dealing with a north-to-south cline, but in a pattern of stepped clining rather than gradual change, as can be illustrated with a broad categorisation of South Sulawesi into human geographical divisions (Table 1-1; Figure 1-4).

The northern third of the province includes some of the wettest, most rugged and most thinly populated land in

TABLE 1-1. A BROAD CATEGORISATION OF SOUTH SULAWESI'S HUMAN GEOGRAPHICAL DIVISIONS

	ALTITUDE (M ASL)	RAINFALL (MM/YEAR)	RAINFALL TYPE	AGRO-CLIMATIC ZONE	POPULATION DENSITIES BY RURAL *KECAMATAN* (PERSONS/KM^2)
Northern Central Highlands	c. 50% > 1500m	1500->3000	Permanently Humid	Mostly B	< 1 - 50
Mandar Coastal Peninsula	0-800 m	1000->3000	Seasonal to Permanently Humid	B - E	10 - 600
Southern Central Highlands	> 150m; c. 30% > 1500m	2000->3000	Slightly Seasonal to Permanently Humid	A - D	10 - 600
Luwuk Coastal Plain	< 150m	2000-3000	Slightly Seasonal to Permanently Humid	B - D	10 - 300
South Sulawesi Peninsula	c. 50% < 150m; rarely > 1500m	1000->3000	Strongly to Slightly Seasonal	B - E	10 - 900+
Selayar Island	0-700m	1000-2000	-	E	50 - 300

N.B. Figures are summarised from the sources used in compiling Figures 1-2a to 1-2c and 1-3.

Sulawesi (Table 1-1). I call it the "Northern Central Highlands" to emphasise the rugged topography, even though strips of low land occur along the thin coastal plain and, to a lesser degree, along the Palu-Koro fault. The geology changes from volcanics and associated uplifted marine sediments in the west, to acidic intrusives and metamorphics northwest of the Gulf of Bone, to ultrabasics in the east (Figure 1-1a). The region is generally inimical to human settlement, and includes several uninhabited expanses of land (Friberg and Laskowske, 1989:Map 1). It further marks the transitional zone between the South Sulawesi and Central Sulawesi groups of languages (Figure 1-5).

The middle third of the province maintains many of the characteristics found further north but with more extensive pockets for human settlement. The western coastal stretch, here called the "Mandar Peninsula Coastline", consists mostly of Tertiary marine sediments lifted up into hills around a few small belts of coastal alluvial plain (see Figure 1-1a). The population tends to be concentrated on the plains, particularly in the south where a drier and more seasonal climate prevails (Figures 1-2 and 1-3). Inland the topography rapidly steepens to a block of mountains, comprised geologically of volcanics, acidic intrusives and uplifted Tertiary marine sediments (Figure 1-1a), which I call the "Southern Central Highlands". Human settlement tends to be concentrated along the broad valley of the Sungai (River) Sakdang (see Figure 1-3). In general the region is well provided with river valleys broader and less altitudinous than those found in the "Northern Central Highlands" (*Operational Navigation Chart*, Sheet M-11), helping to explain the extensive human settlement. Finally, at the head of the Gulf of Bone, we have the "Luwuk Coastal Plain". Climatically these lowlands are poorly suited for cereals, but the adoption of sago as a staple crop on the western sections of the coastal plain (Osozawa, 1986) maintains healthy population densities there. The most important section of the eastern coastal plain lies around Wotu, which is a centre for local trade (Grimes and Grimes, 1987:62-63) as well as an area of mixed agriculture (Tanaka, 1986).

The anticlockwise rotation of the South Sulawesi peninsula since the Miocene is less apparent from topographical maps (e.g. Figure 1-1b) than from Landsat images. The latter clearly show the parallel arcs formed by the cordillera of Tertiary volcanics, some mixed with uplifted marine sediments, between Gunung Barupa in the north and Gunung Lompobattang in the south; the Walanae graben which extends from the Tempe depression along the Walanae river and further southeast to Sinjai; and an eastern cordillera which starts in the south as a volcanic block and tapers to the north as the squat belt of Celebes morasse[5] through which the Cenrana river runs. Extensive coastal plains "trail behind" the rotating landmass at the peninsula's southwest corner and around the mouth of the Cenrana. The third major coastal plain, in the area of Pinrang, appears on Landsat images to be traversed by a thin low ridge which strikes north of Gunung Barupa and separates the mouth of the Sungai Sakdang from the Tempe depression (Photo 1-2).

The Walanae river drains internally towards the Tempe and Sidenreng lakes, whose floors are less than five metres above sea level, and then out to sea via the Sungai Cenrana. During the higher sea levels between 7100 and 2600 BP, the sea closely approached Lake Tempe from the east, probably covering the Cenrana coastal plain. Lake Tempe itself has been a freshwater lake, at least during the last 4400 years for which its pollen record is available (Gremmen, 1990). This observation indicates that the low ridges east and west of the Tempe depression have remained above sea level during the corresponding period.

In broad outline the South Sulawesi peninsula consists of two partially volcanic cordilleras, arc-shaped and parallel, with extensive alluvial belts in the north (including the northern valley between the cordilleras) and along the southwestern coastline (Figure 1-1a). The western cordillera catches the northwesterly monsoon while the less marked, southeasterly monsoon is caught by the eastern cordillera and the Gunung Lompobattang highlands. As a result populations on

[5] Celebes morasse - conglomerate, sandstone, claystone and marl, interbedded with limestone and lignite, late Miocene to Pliocene in age (Sukamto, 1975).

the eastern and especially the western coastal areas can expect seasonal flooding, in the months around May and January respectively, from the combined effects of local precipitation and runoff from the highlands. The low-lying land in Pinrang and Sidrap differs in that, being partially protected from both monsoons, it experiences two wet seasons of low intensity (Oldeman and Darmiyati, 1977). Immediately southeast is a rainshadow region (Figures 1-2a and 1-2c), but here Lake Tempe and the lower reaches of the Walanae valley are annually inundated as a result of internal discharge from the main northwesterly monsoon (personal notes). Nearly half of the South Sulawesi peninsula consists of alluvial lowlands which are regularly indundated once or twice a year, leading to a pattern of single cropping of wet rice over most of the lowlands, and double cropping around Pinrang and Sidrap (Oldeman and Darmiyati, 1977). All in all, the combination of topographical and climatic factors maintains extensive areas of well-populated rural land (Figure 1-3).

The island of Selayar at the far south is, geologically speaking, a continuation of the western cordillera (Sukamto and Supriatna, 1982). A strip of limestone dominates in the northwest, followed by a strip of Celebes morasse and (not shown in Katili's generalised map) a strip of mixed volcanics in the southeast. A relatively dry climate, punctuated by the weaker and less reliable southeasterly monsoon, characterises Selayar as well as the peninsula's southern coastline (Figure 1-2). Selayar's main cash crop, copra, is grown primarily along the western coastal strip. The principal staples are corn and cassava which are cultivated mainly in the hills (Grimes and Grimes, 1987:29; fieldnotes).

To place Sulawesi into the wider Indonesian context, consider Indonesia's population densities by kabupaten (or rural county). Broadly speaking the figures correspond to the distinction made by Geertz (1963) between Inner and Outer Indonesia, as long as Bali and Lombok are grouped alongside Java in "Inner Indonesia". If we exclude Kabupaten Riau which is exceptional for its strong Chinese presence, stimulated by its proximity to Singapore (e.g. Vleming, 1926:239-241), and set the South Sulawesi peninsula aside, we find densities of

TABLE 1-2. MODERN INDONESIAN POPULATION DENSITIES BY *KABUPATEN* (EXCLUDING *KOTAMADYA* OR CITIES)

(Summarised from Figures taken from the 1979-1985 Indonesian Provincial Statistical Year Books)

Kabupaten	Population Density (persons/km^2)
Kabupaten Riau, SUMATRA	625
SUMATRA, other *Kabupaten*	17-250
WESTERN INDONESIA	17-625
JAVA *Kabupaten*	229-1737
BALI *Kabupaten*	237-983
Kabupaten Lombok Barat, Lombok Timur Lombok Tengah (Nusatenggara Barat)	412-466
CENTRAL INDONESIA	229-1737
Kabupaten Sumbawa, Dompu, Bima (Nusatenggara Barat)	38-85
Propinsi Irian Jaya, Maluku, Timor Timur, Nusatenggara Timur	2-165
KALIMANTAN *Kabupaten*	1-140
EASTERN INDONESIA (except Sulawesi)	38-165
Propinsi Sulawesi Utara	41-153
Propinsi Sulawesi Tengah	11-22
Propinsi Sulawesi Tenggara	11-47
Kabupaten Enrekang, Luwu, Tana Toraja, Polmas, Majene, Mamuju	11-132
OTHER PARTS OF SULAWESI	11-153
Kabupaten Selayar	104
Kabupaten Gowa, Sinjai, Bone, Maros, Pangkep, Barru, Soppeng, Wajo, Sidrap, Pinrang	116-214
Kabupaten Bulukumba, Bantaeng, Jeneponto, Takalar	276-340
SOUTH SULAWESI PENINSULA	104-340

1-250 persons/km^2 for "Outer Indonesia" and densities of 229-1,737 persons/km^2 for "Inner Indonesia" (Table 1-2). The population densities in the South Sulawesi peninsula clearly straddle this dichotomy between Outer and Inner Indonesia (Table 1-2). Let us take 250 persons/km^2 as the dividing line. The four *kabupaten* along the peninsula's south coast (Bulukumba, Bantaeng, Jeneponto and Takalar), i.e. the ones physiographically dominated by lowlands inhabited by speakers of Makassar-related languages, then have "Inner Indonesian" densities, whereas the rest of the peninsula has densities in the higher part of the range here assigned to "Outer Indonesia". More to the point, the South Sulawesi peninsula forms a large block of land more or less continuosly settled at densities exceeding 100 persons/km^2, whereas the other seven eastern Indonesian *kabupaten* with comparable densities, in Kalimantan, Flores, Timor, and Sulawesi outside of the southwest peninsula, are enclaves surrounded by more lightly settled land. These comparisons serve to highlight the human geographical distinctiveness of the South Sulawesi peninsula in the eastern Indonesian context.

A fully comparable situation existed in the 1930s. The four South Sulawesi *kabupaten* mentioned above, plus Gowa and Maros, supported population densities in excess of 125 persons/km^2, as was also the case widely (but not universally) in Bali and Java. These predominantly Makassar *kabupaten*, along with the predominantly Bugis *kabupaten* immediately to the north, constituted the largest area continuously populated at densities above 50 persons/km^2 outside of Java-Bali-Lombok (Royal Dutch Geographical Society, 1938: *Blad* 8a to 8d).

1.3 A Perspective from Comparative Linguistics

All the Sulawesi languages are Austronesian. Austronesian languages range from Taiwan through island Southeast Asia and much of the Pacific, with outliers in Vietnam, Madagascar and a few other locations. In eastern Nusatenggara, Maluku and parts of Melanesia, Austronesian and non-Austronesian languages interdigitate, but over most of their range Austronesian is the sole indigenous language group. Bellwood

(1985, 1988a), followed by Spriggs (1989), wraps the archaeological evidence around the broad phylogeny of the Austronesian languages reconstructed through historical linguistics, in what is currently the standard explanation for the dominance of Austronesian languages in island Southeast Asia. In this view the Philippines and Indonesian islands were still quite sparsely populated by hunter-gatherers during the middle Holocene, whereas communities speaking languages ancestral to Austronesian had already acquired cereal cultivation in South China. Daughter communities first colonised Taiwan, then the Philippines and northern Sulawesi, with subsequent movements of Austronesian horticulturalists into eastern, central and western Indonesia. The demographic advantages conferred by a horticultural economy allowed the Austronesian speakers to absorb the non-Austronesian communities in what was probably a drawn-out, complex process.[6]

[6] Meacham (1988) contends that this view lets the linguistic tail wag the archaeological dog, and that if we put the animal on its legs we would place the origins of the Austronesian languages in the Indo-Malaysian archipelago itself. While linguists seem united in rejecting the possibility of an origins south of the Philippines, I would certainly argue that the spread of Austronesian languages should not be coupled with the spread of a physical type, unless it were taken as evidence that the Austronesian languages had indeed originated in the archipelago. Briefly, the Holocene osteological remains do possibly suggest low levels of "Mongoloid" immigration from northeast Asia into Indonesia, but as an ongoing process rather than as any identifiable migration (Bulbeck, 1981; Turner, 1987). Bellwood (1985) places great stress on the biological distinctiveness of the "Negritos" from southeast Asia's "Mongoloid" populations. However, genetic and osteological studies are yet to find evidence linking Negritos with Australoids or Melanesians rather than with non-Negrito East Asians (e.g. Uytterschaut, 1983; Omoto, 1987; Hanihara and Saitou, 1989). Even if the dark skin and woolly hair of the Negritos are to be interpreted as remnant retentions of the early southeast Asian condition, and not as local specialisations or chance outcome resulting from genetic drift, there is no *a priori* reason to date the spread of fairer skin and straight hair to the middle Holocene rather than, say, the late Pleistocene.

In all I am not fully convinced that the earliest unambiguous presence of the "Neolithic" (pottery) in South Sulawesi, which I would date to around 3500 BP (Bulbeck, in prep. a.), necessarily reflects the arrival of Austronesian-speaking "Mongoloids" in South Sulawesi. Untying the knot would suggest that the Mongoloid physical type had

The historical linguistic syntheses (e.g. Blust, 1988) do not deal with the southern and central Sulawesi languages in any detail. However, detailed lexicostatistical surveys are available for two provinces, Central Sulawesi (Barr et al., 1979) and South Sulawesi (Grimes and Grimes, 1987), carried out to delineate the dialect, language and supra-language boundaries. The main patterns of linguistic variation emerging from these studies, alongside Sneddon's (1989) similarly detailed work in North Sulawesi, show most of Sulawesi covered by a Central Sulawesi group (or "stock" in the terminology of Grimes and Grimes [1987]) which gives way to other groups at Sulawesi's four extremities (Figure 1-2d).

This seemingly simple picture, however, conceals a ream of complications. Sulawesi's Bajau languages are either classified with Philippine-related languages (Barr et al., 1979) or regarded as of unknown affiliation (Grimes and Grimes, 1987). Barr et al. (1979) recognise four major subgroups within the Central Sulawesi group, while Grimes and Grimes (1987:55) point out that a linguistic survey of Southeast Sulawesi could conceivably enable a more complex revision of the taxon. The South Sulawesi group (or stock) shows a major cleft between the Makassar-related languages at the far south and the other members (Figure 1-5). The group furthermore includes the genetically related Tamanic languages of interior Kalimantan (Adelaar, in press). Finally, the Muna-Buton stock includes Wotu in the Gulf of Bone, as well as the languages of southern Selayar and adjacent offshore islands.

Some of the linguistic complications reflect the existence of outliers whose affinities diverge from those of geographically proximate languages (Bajau, Tamanic, Wotu). The overall pattern of linguistic differentiation, however, matches our human geographical perspective of Sulawesi. The great linguistic diversity corresponds to Sulawesi's generally low population densities and immense physical barriers to communication, as noted by Whitten et al. (1987:89). In particular, the two areas of substantial

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been locally established earlier, and possibly Austronesian languages too.

population densities, the north arm and the southwest peninsula, appear not only as "human geographical islands" separated by the main body of Sulawesi (Figure 1-3), but also as linguistic islands. Indeed the genetic affinities of the languages on Sulawesi's north arm are with the Philippines (Sneddon, 1989); the wider genetic affinities of the South Sulawesi stock are unknown but need not be with the central Sulawesi stock (Appendix A, section A.5).

The overall congruity between linguistic differentiation and human geographical constraints, complicated somewhat by the long-term historical trajectories of the ethnic groups involved, emerges particularly clearly when South Sulawesi is examined in detail (Appendix A). For instance, a two-dimensionsal scattergram based on the lexicostatistical interrelationships of the 40 languages and dialects compared by Grimes and Grimes (1987) produces a configuration upon which a map of South Sulawesi, albeit a contorted one, can be fitted (Figure A-2). Some of the distortions reflect specific historical-cultural relationships, but most of the distortions reflect a contraction of lexical differentation (compared to geographical distance) in densely populated areas, and on the other side of the coin, exaggerated lexical differentation in lightly populated areas.

South Sulawesi's ubiquitous linguistic chaining, which Grimes and Grimes (1987) found, is an expectable outcome, and contrasts with the surprisingly divergent status of the Makassar languages. Lexicostatistically Makassar diverges further from the other languages belonging to the "South Sulawesi stock" than either Wotu or Laiyolo ("Muna-Buton stock") do, such that a straightforward application of the criteria of Grimes and Grimes would consign Makassar to its own stock (Figure 1-5, larger map). This lexical aberrance cannot be attributed to borrowing from or a substratum presence of any other languages yet compared, either the Central Sulawesi languages (pace Mills, 1975a:513-514), Wotu, Laiyolo (e.g. Figure A-3), or Indonesian (see Figure A-4 and the associated discussion). Moreover, the qualitative linguistic comparisons too identify Makassar as the outlier

among the languages placed in the South Sulawesi group (Mills, 1975a; Sirk, 1989).

On current evidence, the general aberrance of the Makassar languages is best explained by an early divergence from the main line of descent of the South Sulawesi language group. As explained in Appendix A, the "homeland" of the South Sulawesi languages would thus be most parsimoniously located either within the centre-south of the peninsula, where Bugis now prevails, or better yet along the Makassar-dominated south coast. The latter location in particular would match the trend towards lower population densities as we move from the peninsula's south coast to the "Northern Central Highlands", fitting a model of population buildup and colonisation of new territories during a south-to-north expansion of the South Sulawesi languages. If we equate South Sulawesi's colonisation by Austronesian speakers with the arrival of the "Neolithic", then the relevant datum would be the initial appearance of pottery in the Leang-Leang sites in Kabupaten Maros shortly after 3500 BP (Bulbeck, in prep. a). This scenario would allow approximately three thousand years for (i) the northwards expansion of the South Sulawesi languages; (ii) the divergence of the Makassar stem and the expansion of the Makassar languages within an area cut off from developments further north by the highest mountains of the western cordillera (Figure 1-4); and (iii) the time depth of the direct linguistic ancestors of Makassar and Bugis within the general area of their present distribution.[7]

1.4 A General Perspective

While anthropologists have not agreed on any single definition of what constitutes a state (e.g. Fagan, 1989:376-395), by all accounts greater Gowa was a fully-fledged "early state" by around 1600 (13.3.5). Makassar (Photo 1-1) served as the largest emporium in the eastern archipelago for the redistribution of primary products (most

[7] Mills (1975a, 1975b) places the "homeland" of the South Sulawesi languages at the mouth of the Sakdan river, and adumbrates a complex migratory scenario of truly epic proportions. This view is not tenable (A.7).

notably spices) and slaves to the west, as well as the exchange of manufactured items such as Chinese goods, Mexican silver and Indian cloth. Following the initial establishment of a Malay colony in the mid-16th century, Portuguese traders began to frequent the city after 1600, followed by the English in 1613, Danes in 1618, Chinese in 1619, Frenchmen in 1622, and by the 1650s a permanent agent from the south Indian state of Golconda (Reid, 1987). Between the 1630s and 1660s Makassar ranked as one of the world's largest cities with a population of around 100,000 residents (Reid, 1983b). Following the "Islamic wars" in the early 17th century, when greater Gowa forcefully Islamised the Bugis kingdoms south of Luwuk (Pelras, 1985), the entire South Sulawesi peninsula fell under greater Gowa's suzerainty (Andaya, 1981; Reid, 1983a).

Far from monopolising the direct acquisition of eastern Indonesian products, greater Gowa specifically protected those traders who defied the efforts by the Dutch East India Company (VOC) to monopolise the spice trade. The conflict was ultimately resolved in favour of the Dutch, during the 1667 Makassar War, when the Dutch naval commander Cornelis Speelman besieged and occupied Makassar with the aid of greater Gowa's Indonesian enemies (Andaya, 1981). Even after the war had initially sent Makassar into decline (Gervaise, 1688), the entrepôt remained the "capital" of the peninsula in that the political dominance of the respective parties closely corresponded to their share in the entrepôt's operations (Bulbeck, 1990; Noorduyn, 1987a).

In recent history and today, the Bugis have outshone the Makassar in the ability to colonise new lands and economic niches on the basis of complex, long-distance networks (e.g. Lineton, 1975; Acciaoli, 1989). But the ability is also characteristic of the Makassar, as exemplified by the history of the Makassar trepangers in northern Australia (Macknight, 1976). Similarly, a statistical study of cultural repertoire joins the Bugis and Makassar, alongside some western and central Indonesian groups (Javanese, Balinese, Batak), into a "Southeast Asian High Culture Section" (Obayashi, 1987) which includes, *inter alia*, Vietnamese, Sundanese, Acehnese,

Cambodians and Minahasans. Toraja-Sakdan, which has a closer linguistic relationship with Bugis than Makassar does, on the other hand falls into a totally different cluster, the "Southeast Asian Cereal Horticulturalists Subgroup" (Obayashi, 1987). The cultural orientation of Bugis and Makassar towards large-scale societies, especially those of the western archipelago, indicates the openness of the Bugis and Makassar social systems to receive and integrate complex social institutions and advanced technology. Thus, "protohistorical" and historical social developments have brought the Bugis and Makassar into a single *koinè*, and made the South Sulawesi peninsula an outpost of "Inner" Indonesia in eastern Indonesia (1.2).

The development of complex societies in the peninsula, and the establishment of its first state (Gowa) specifically among the Makassar, totally fits the general perspectives developed here. The entire peninsula stands out as an area of unusually dense population by the standards of "Outer Indonesia", and this portrait of the peninsula can be found in the earliest European overviews (Gervaise, 1688; the 1693 map of South Sulawesi [Andaya, 1981: Map 9]; Forrest, 1792:72ff.). While the five million Bugis in South Sulawesi today outnumber the two million speakers of Makassar languages (Mattulada, 1982b), this reflects the much greater area occupied by the Bugis, at population densities below those of the Makassar. The ultimate foundations of greater Gowa would appear to have been built on a local presence of Makassar languages established by 3000 years beforehand. The more immediate foundations can be traced to the rise of South Sulawesi's first historical kingdoms by at least the 13th century AD (13.4).

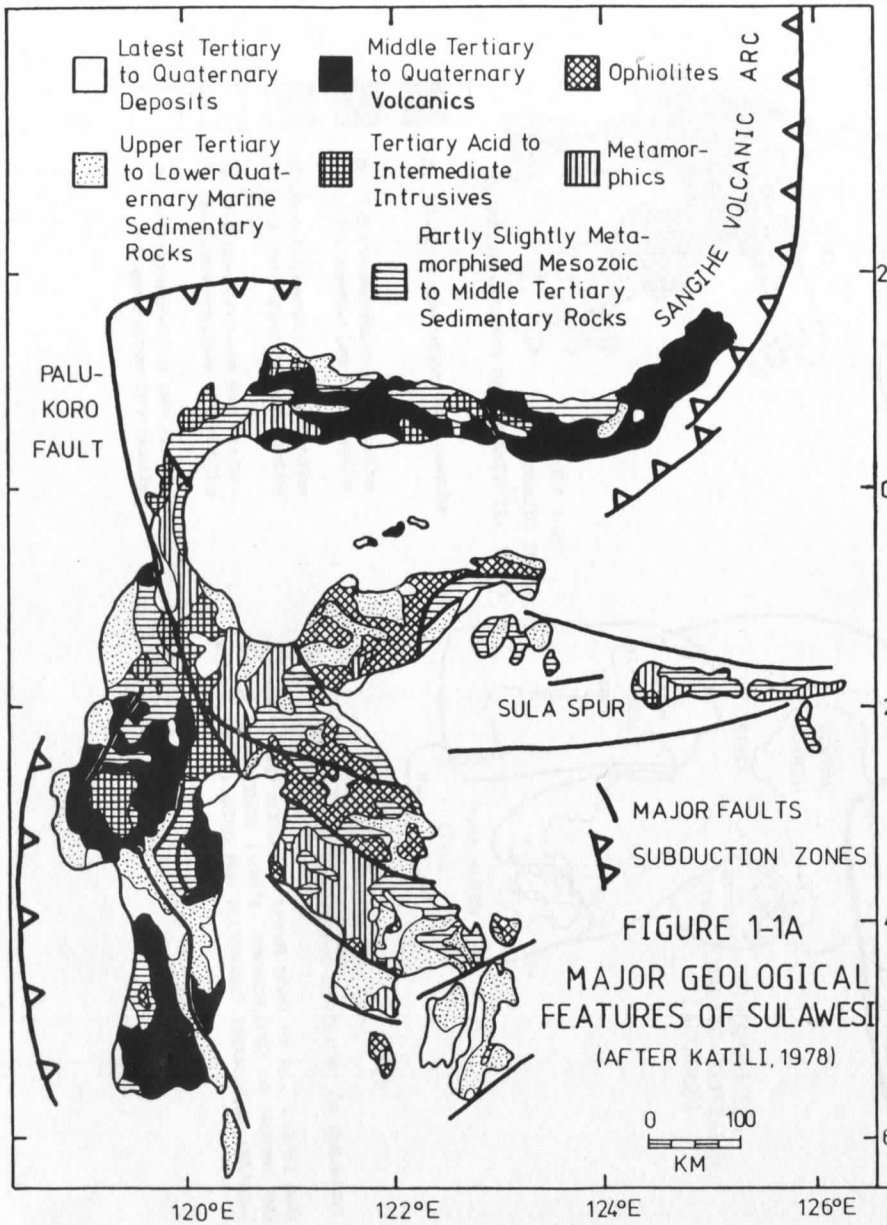


FIGURE 1-1A
MAJOR GEOLOGICAL FEATURES OF SULAWESI
(AFTER KATILI, 1978)

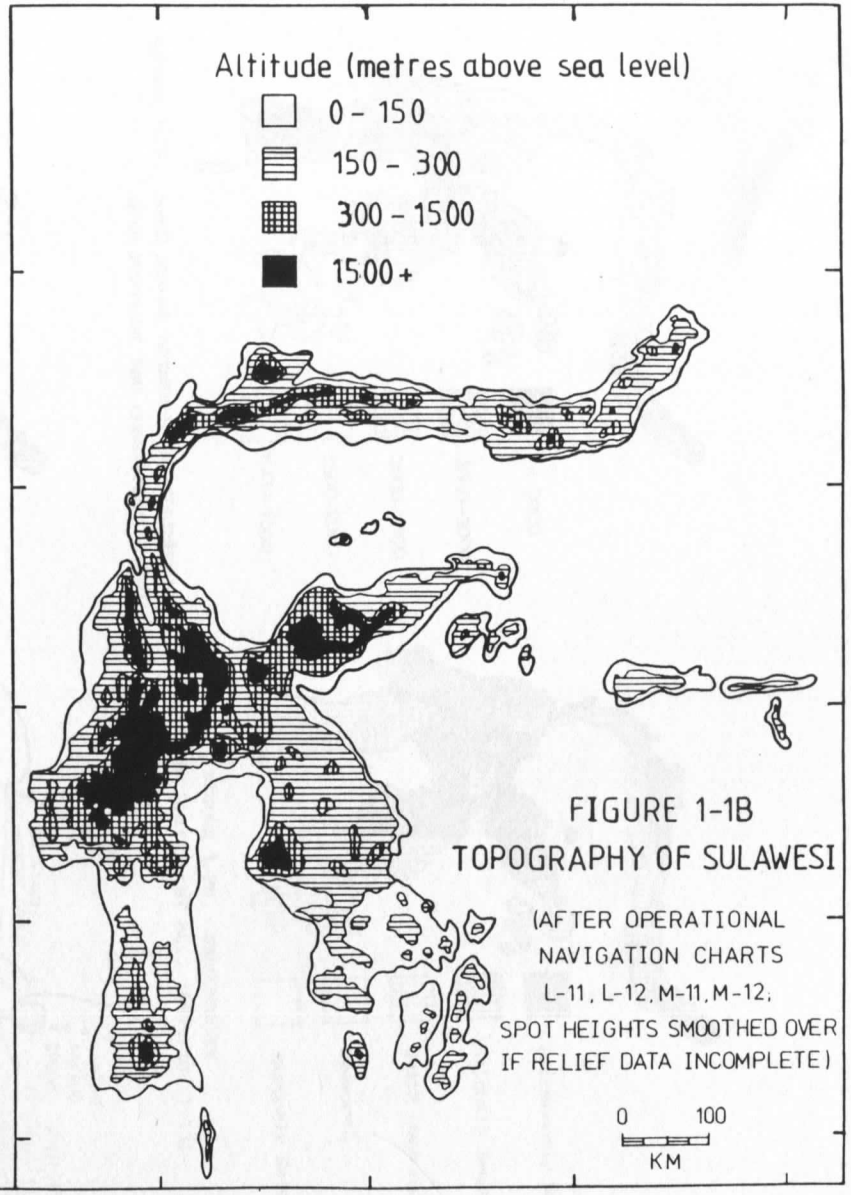


FIGURE 1-1B
TOPOGRAPHY OF SULAWESI
(AFTER OPERATIONAL NAVIGATION CHARTS L-11, L-12, M-11, M-12, SPOT HEIGHTS SMOOTHED OVER IF RELIEF DATA INCOMPLETE)

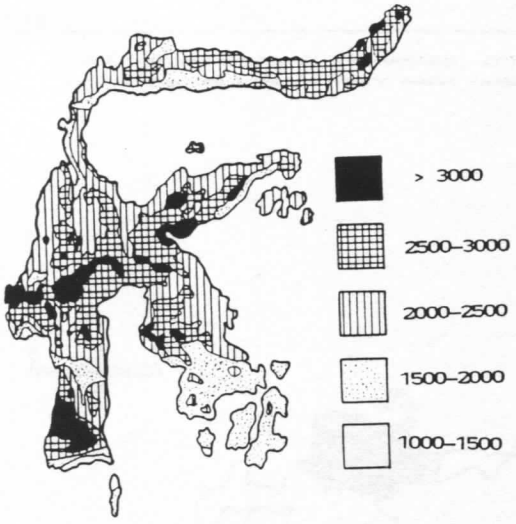


FIGURE 1–2A. MEAN ANNUAL RAINFALL IN MILLIMETRES
(ATER FONTANEL AND CHANTEFORT, 1978)

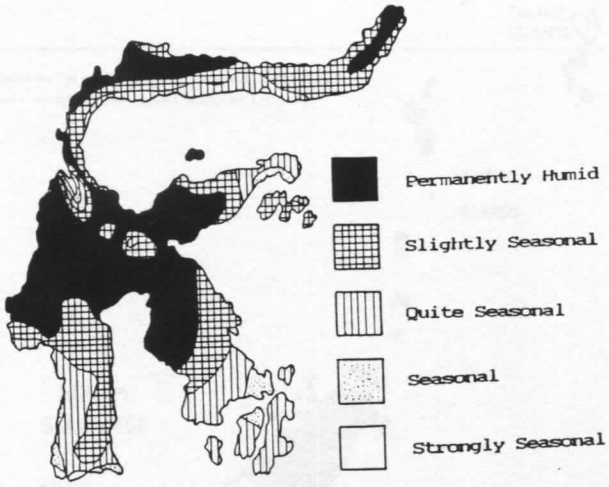


FIGURE 1–2B. SEASONALITY
(AFTER WHITTEN ET AL., 1987:FIG. 1.13)

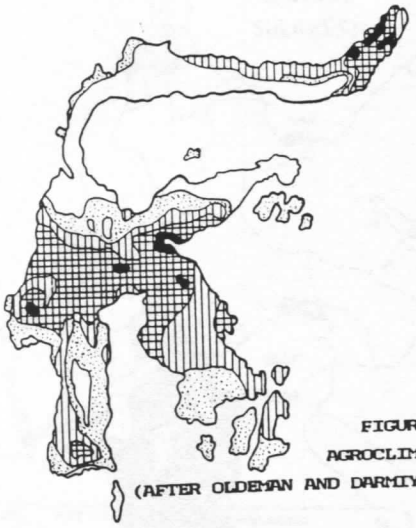


FIGURE 1–2C.
AGROCLIMATIC ZONES
(AFTER OLDEMAN AND DARMIYATI, 1977)

A. 10–12 Consecutive Wet Months

B. 7–9 Consecutive Wet Months
≤ 3 Consecutive Dry Months

C. 5–6 Consecutive Wet Months
≤ 3 Consecutive Dry Months

D. 3–4 Consecutive Wet Months
2–6 Consecutive Dry Months

E. 0–2 Consecutive Wet Months
≤ 6 Consecutive Dry Months

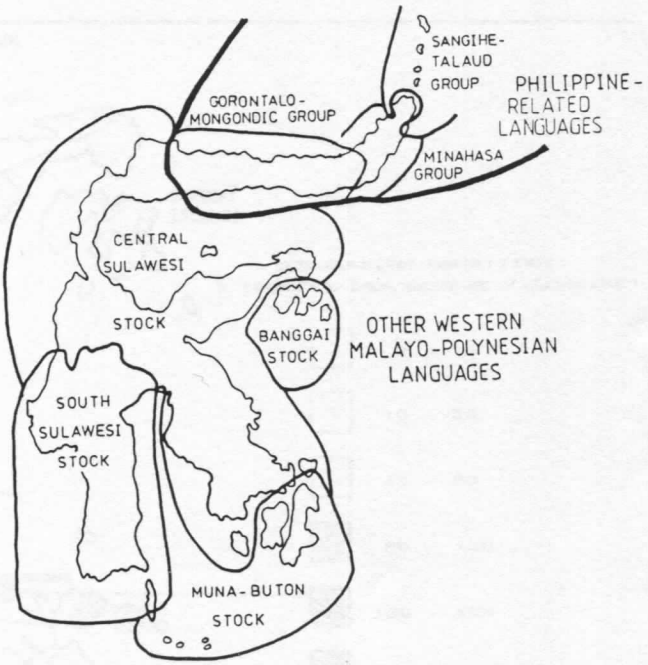
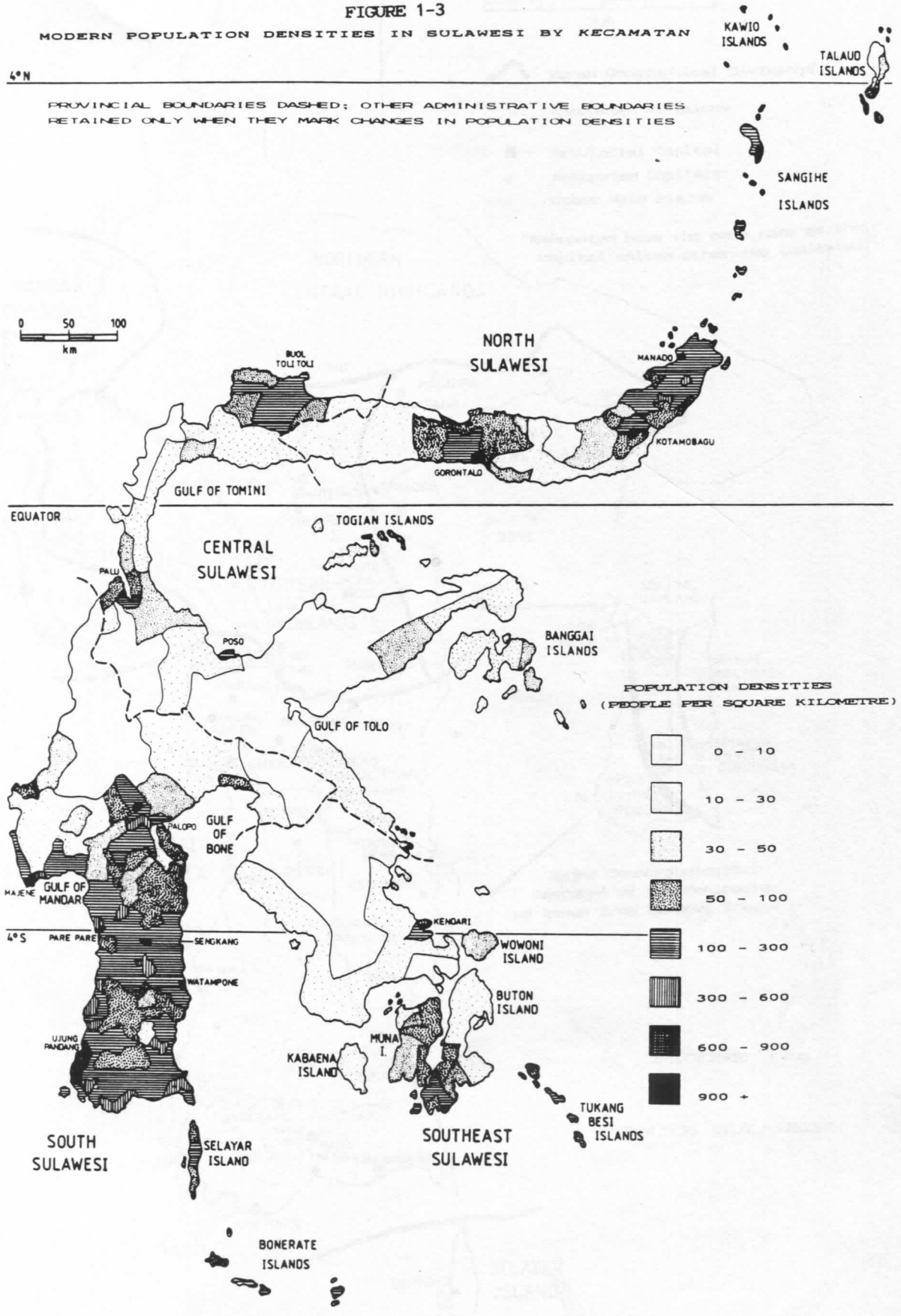


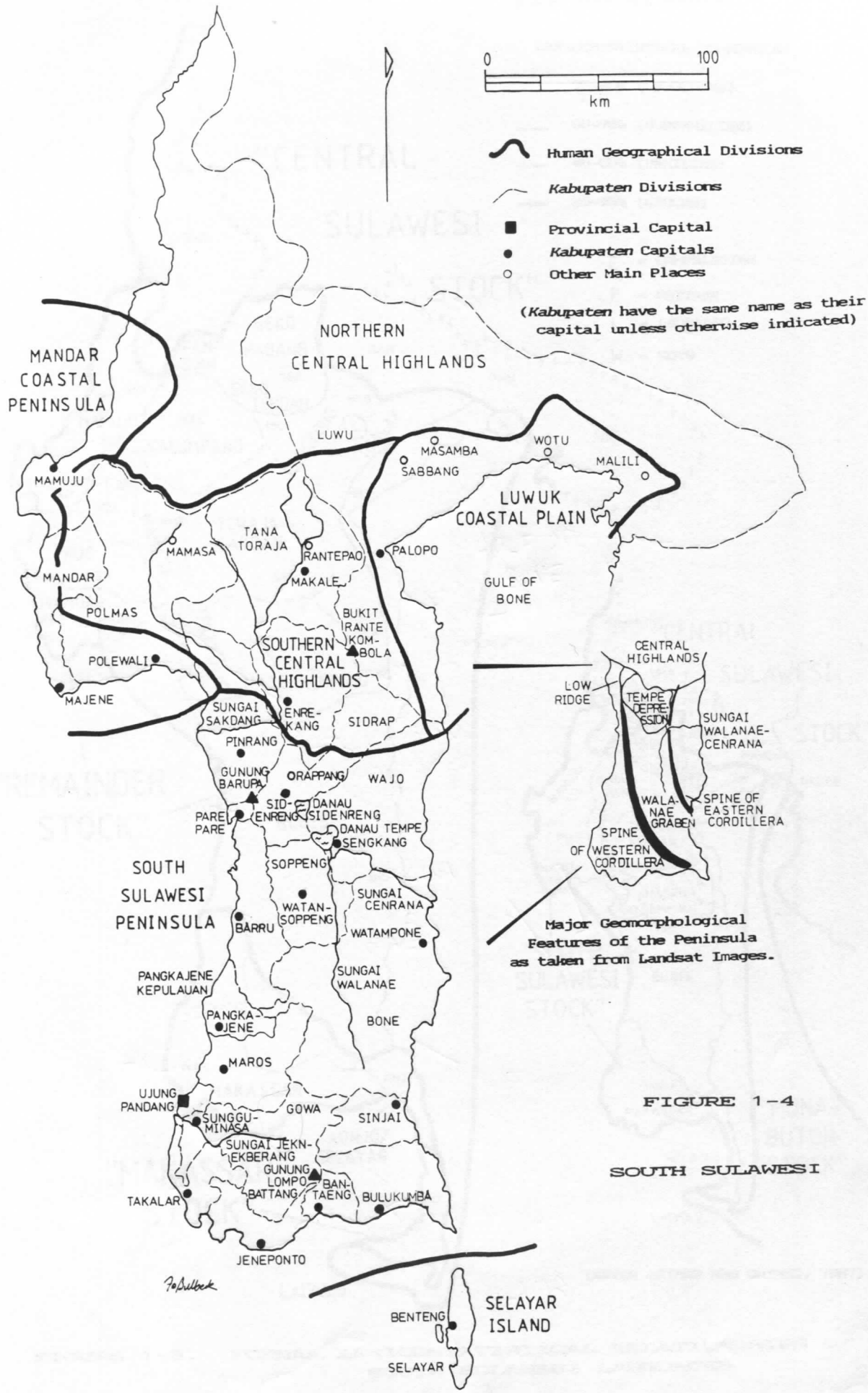
FIGURE 1–2D. MAJOR LINGUISTIC DIVISIONS OF SULAWESI

SALZNER'S MAP MODIFIED AFTER BARR ET AL. (1979) AND GRIMES AND GRIMES (1987). TERMINOLOGY OF GRIMES AND GRIMES (1987) USED FOR SOUTHWEST INDONESIAN GROUPS.

FIGURE 1-3

MODERN POPULATION DENSITIES IN SULAWESI BY KECAMATAN





Major Geomorphological Features of the Peninsula as taken from Landsat Images.

FIGURE 1-4

SOUTH SULAWESI

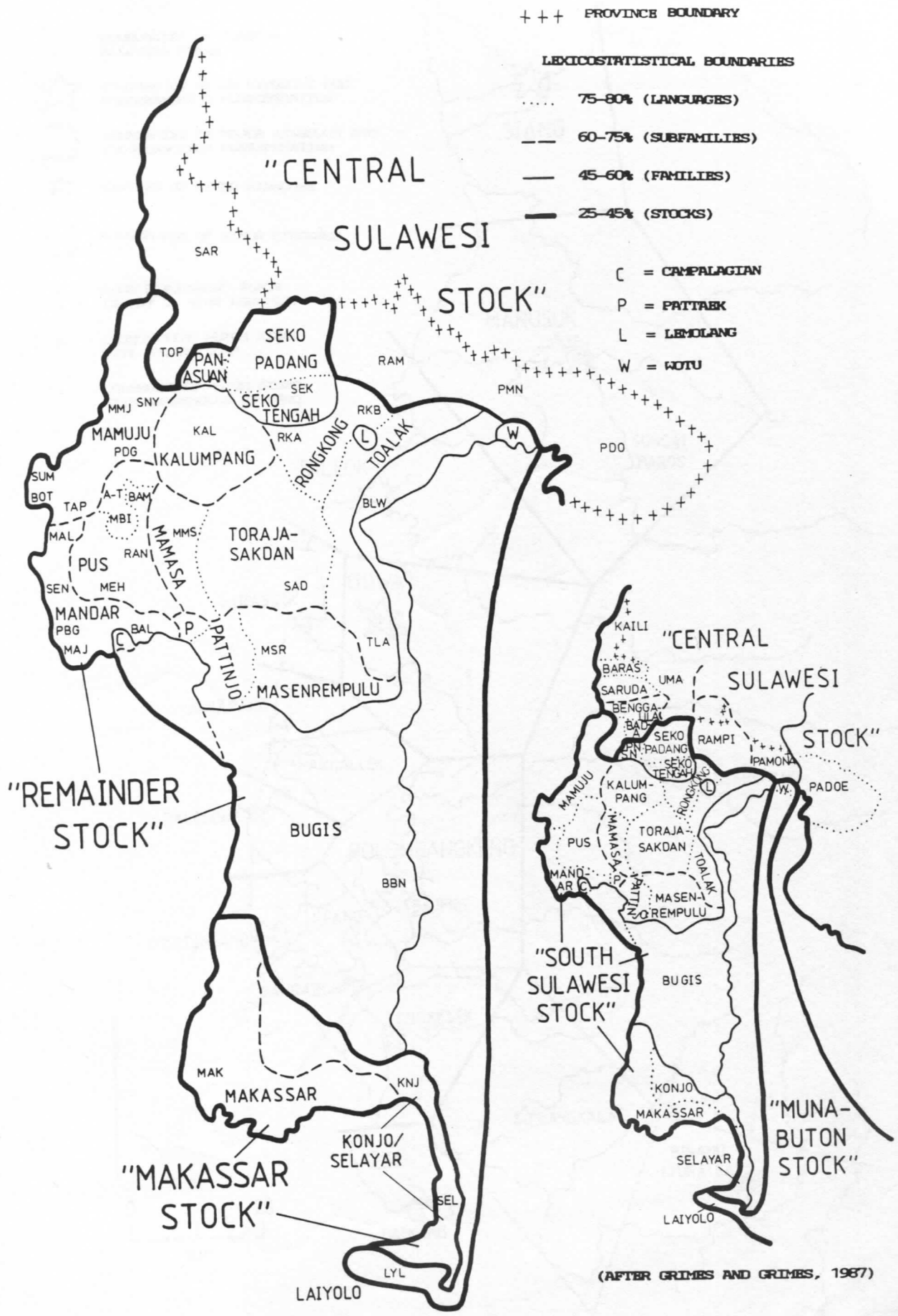


FIGURE 1-5. FORMAL LEXICOSTATISTICAL RELATIONSHIPS OF SOUTH SULAWESI LANGUAGES

Photo 1-1.
Makassar, c.1638. Part of the collection of coloured maps called the *Secret Atlas of the East India Company*, drawn c.1670 from sketches and descriptions brought back by VOC ships, and held by the Österreichische Nationalbibliothek Bild-Archiv und Porträt-Sammlung. Photograph by Anthony Reid.

A. Somba Opu fortress.

B. The royal palace, standing on massive wooden pillars, with a covered entrance stairway.

C. Another palace.

D. The royal storehouses.

E. The royal mosque.

F. The Portuguese quarter.

G. The Gujerati quarter.

H. The Danish factory, previously occupied by the Dutch.

L. The English factory.

M. The great market.

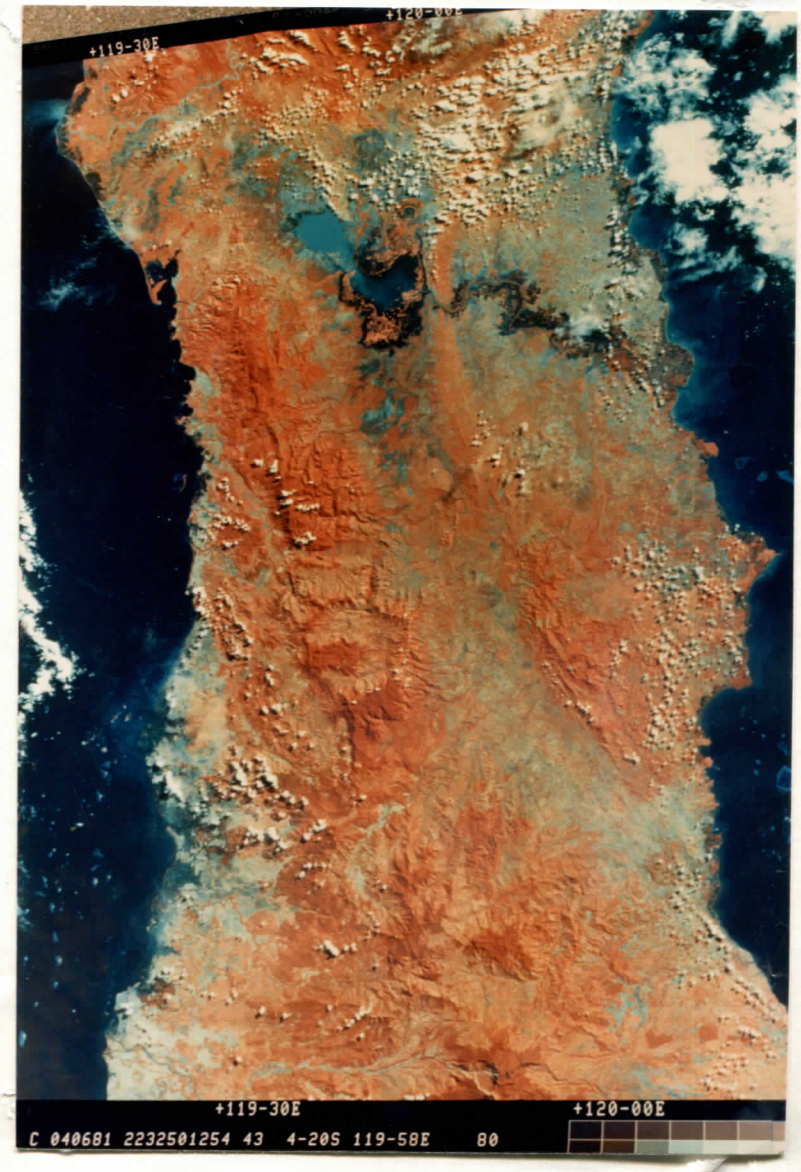
O. The new market.

P. A fine river, navigable by ships (the main Garassik mouth, right of the photograph).

R. A river on the north side of the royal palace with two to four *voeten* (around one metre) of water.

Photo 1-2.
Aussat's Landsat image of the South Sulawesi peninsula (original scale 1:250k). Note the two arched cordilleras of volcanics and uplifted marine sediments, enclosing the Walanae graben which ends in the Tempe depression, while the Sungai Walanae itself continues eastwards as the Sungai Cenrana. The Sungai Jeknekberang appears at bottom-left.


Afbeel dinge vande Planúre Fortificatien, Ende voorder gelegentheden, soo vande Beslooten Plaatsen, Ende
Woningen des Konings van Macasser, als Buyten, ofte voorsteeden daer Annex, alles onder de Navolgende Letteren Ende Caarte gesteelt.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CHAPTER 2. INTRODUCTION TO MAKASSAR HISTORY

The early history of Gowa unfurled within a matrix of analagous social developments affecting South Sulawesi's southwest coastal plain. Figure 2-1 maps the region's major and minor kingdoms, as well as their palace centres, at around 1500 AD. The combined historical and archaeological evidence which allows me to identify these and the other places shown in the map, and to posit a rather different drainage regime from that which applies today, is discussed in the site descriptions (Chapters 6 to 12).[1] The approximate areas ruled by the kingdoms are here reconstructed by the following conventions: drawing straight lines separating adjacent palace centres; tracing hinterland boundaries where the coastal alluvial plain fully gives way to the rugged interior; and leaving the polygons open to the sea when the kingdom in question would appear to have enjoyed coastal access. With this background we can now consider the historical sources.

2.1 The Makassar Historical Tradition

The Bugis and the Makassar have produced the bulk of South Sulawesi's indigenous historical works, although a few Mandar texts in a related script are known (e.g. Muthalib et al., 1985-6). The Dutch linguist Matthes founded the scholarly study of the Bugis and Makassar texts, publishing his results in a suite of major philological and anthropological works (e.g. Matthes, 1860, 1864, 1885). During the present century Dutch scholars have continued to build on Matthes' foundations, joined by Bugis and Makassar scholars since

[1] The coastal plain at the far north and south of Figure 2-1 falls beyond the area I surveyed, so I would not think my reconstruction needs to be very accurate there. For instance the Maros delta has apparently prograded in recent times, and may well have been prograding for centuries, such that Marusuk (Maros) probably used to lie closer to the coast. But I have no precise idea of where the Maros coastline was at c.1500 and so I use its modern coastline. Similarly, I show Laikang, Bangkala and Binamu as independent kingdoms not because I have any discrete evidence relating to the period c.1500, but because they had emerged as important places by the 16th-17th centuries.

Indonesian independence, and most recently by native English speakers (Andaya, 1981; Macknight, 1983; Caldwell, 1988).

The earliest South Sulawesi scripts were derived from the Indic-based scripts which preceded Arabic and Latin orthography in island Southeast Asia. Several lines of evidence suggest that in the eastern islands (South Sulawesi, the Philippines, and possibly Sumbawa) the texts were engraved on strips of palm leaf which were sewn together into a ribbon, and wound around two wooden spools for reading (Macknight, 1986). The Bugis and Makassar texts are called *lontarak* after the type of palm which would have usually supplied the leaves. The name persists even though paper was preferred over palm leaves for some types of texts by at least the 17th century (Cense, 1966).

The *lontarak* have been repeatedly copied, with or without intentional alterations. Hence their use in historiography should be preceded by philological study. Thus Caldwell (1988) groups his Bugis texts into separate traditions which he thinks are descended from distinct ancestors. Taking a group of related texts he then reconstructs the individual successions of copied texts. This allows him to identify the original readings. So when he finds the same information in two separate groups of texts, he can identify cases where the information had been present in the original readings, and treat the others as cases of a scribe having embroidered the text he was copying with information from a different source. Information attributable to two or original readings is more reliable as it enjoys independent testimony.

Caldwell (1988) further notes that the oldest case he can find in which the family relationships of the same person enjoy independent testimony, corresponds chronologically to a tremendous increase in the quantity of genealogical details. The juncture can be identified with the inception of the Bugis *lontarak* tradition. Working back from known dates Caldwell (1988) can thus date the origins of the Bugis literary tradition to around 1400 AD.

This would appear to make the Bugis script over a century older than the Makassar script. The development of Makassar writing is attributed to Daeng ri Pammatek, Gowa's

harbourmaster during the reign of Tumapakrisik Kallona (1511-1547), and the scanty information on an earlier Gowa king is specifically imputed to the lack of *lontarak* (Wolhoff and Abdurrahim, n.d.:12,18). Moreover, none of the Makassar *lontarak* to be discussed here suggests an earlier date.[2]

The breadth of the Bugis-Makassar literary tradition can be appreciated from Mukhlis' (1975) identification of 12 distinct kinds of *lontarak*. However, not all kinds are of importance to Gowa's early history, as can be shown by counting the number of times the references in Mukhlis (1975) involve the various types of *lontarak* (Table 2-1). The preponderance of references to Makassar works reflects Mukhlis' focus on Gowa's pre-1667 administration. But note the key rôle of the *attoriolong* in Mukhlis' reconstruction of Gowa's political history. Indeed three of the 21 *lontarak* he consulted - two closely related Makassar "chronicles", and the oldest Bugis diary composed by Bone's La Tenritatta Sultan Sahaduddin (Cense, 1966:422) - provide 56 of his 105 references.[3]

Fortunately for interested parties with basically no skills in Makassar or Bugis, such as myself, only a small fraction of the texts are of much relevance in reconstructing Gowa's political history. A few have also been made available to a wider public, but my access to the others relies on secondary sources, in particular Mukhlis (1975). Hence the Makassar sources can be discussed under two headings; (i) primary sources translated into Indonesian, and (ii) the citation by secondary sources of information contained in as yet untranslated *lontarak*. In addition there are a few key passages which I cannot ascribe to any specific *lontarak*, possibly because they stem from oral tradition.

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[2] However, it must be remembered that the modern scholarly study of the Makassar works lags behind that of the the Bugis texts.

[3] Respectively code-numbered *Lontarak* Nos 6, 7 and 9 by Mukhlis (1975:15-16).

TABLE 2-1.
NUMBER OF CITATIONS AGAINST *LONTARAK* TYPE IN MUKHLIS (1975)

	Makassar Texts	Bugis Texts	Total
Lontarak attoriolong ("chronicles" and diaries)	50	26	76
Lontarak pau-pau (popular legends)	7	3	10
Lontarak paseng (collections of familial instructions)	6	1	7
Lontarak surek bicara attoriolong (collections of customary law)	0	7	7
Lontarak ulu ada (contracts and treaties)	3	0	3
Lontarak pappangaja (advice from the elderly to future generations)	1	0	1
Lontarak rapang ri laleng panua (collections of local customary law)	0	1	1
Lontarak pau-pau rikadong (epic legends)	0	0	0
Lontarak adek allopi-loping (rules for commerce and sailing)	0	0	0
Lontarak pau kotika (criteria for determining auspicious times to undertake deeds)	0	0	0
Lontarak surek eja (collections of poems and lyric prose)	0	0	0
Lontarak surek bawang (collections of narratives)	0	0	0
Total	67	38	105

N.B. In his explicit argument that the Bugis and Makassar comprise a single *koinè*, Mukhlis does not specify whether the consulted *lontarak* are Bugis or Makassar, but that information can be deduced from Mukhlis' other documentation. I follow Mukhlis in using the Bugis rather than the Makassar words, as is standard practice for cultural terms which apply to both cultures.

2.2 Primary Sources Translated into Indonesian

2.2.1 The "Sejarah Gowa"

The "Gowa chronicle" is the most widely used source on Gowa's early history. Noorduyn (1985) points out that at least ten complete or partial manuscripts of the chronicle are held in public collections. Indeed Matthes (1860, 1883) had access to four manuscripts and published the variant readings as notes to the main reading. The chronicle was finally made more widely available when Wolhoff and Abdurrahim transcribed Matthes' version into Latin script and accompanied the Makassar text with a translation into Indonesian.[4] In addition to pointing out a number of minor areas where Wolhoff and Abdurrahim might have improved their study, Noorduyn (1985) shows that Matthes had unfortunately concentrated on a poor manuscript, and that a proper philological study is needed. While I take on board the specific improvements suggested by Noorduyn (1985) I am otherwise bound by the published Indonesian translation. In this study I will refer to Wolhoff and Abdurrahim's *Sedjarah Goa* with the abbreviation "SG".[5]

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[4] While the publication of Wolhoff and Abdurrahim itself bears no date, Noorduyn (1985:34) infers a date of 1960, and Mukhlis (1975:119) states 1959. Both the transcription and the translation are reproduced *verbatim* by Mukhlis (1975:134-191).

[5] Mukhlis has also had access to several other versions of the same basic material, especially that described by him as *Lontarak* No.6 and *Lontarak* No.7 (Mukhlis, 1975:16). He states that the first 261 paragraphs of his *Lontarak* No.7, that is up to and including the reign of Sultan Hasanuddin, was composed by a Karaeng Kanjilo in 1670. This is the same number of paragraphs and the same time span as found in SG. In 1870, according to Mukhlis, the text was copied and extended to 305 paragraphs by a Karaeng Beroanging. A section, at least, of the original manuscript (1670?, 1870?) was held in 1975 by the descendants of the Gowa royalty, though largely illegible. A copy, however, was kept in the Yayasan Kebudayaan collection (identified by Mukhlis as No.211, which appears to be an error). Unfortunately Noorduyn (9185) gives no details of the version from South Sulawesi available to him in Leiden on microfilm. [Analysis by Campbell Macknight.]

2.2.2 The "Sejarah Tallok"

As pointed out by Noorduyn, the "Sejarah Gowa" was clearly compiled to twin with a chronicle concentrating on the kingdom of Tallok. On several occasions the "Sejarah Gowa" advises the reader of further particulars, to be supplied, which indeed can be found in the chronicle known as the "Sejarah Tallok" (Noorduyn, 1985). Rahim and Ridwan (1975) have published a Latin transcription and Indonesian translation of the Makassar text under the title *Sejarah Kerajaan Tallo' (Suatu Transkripsi Lontara')*. They used a text then held in the provincial government collection but do not comment on the relationship with the version published by Matthes. While I have few details on Rahim and Ridwan's published version of the "Sejarah Tallok" (here called "ST" for short), I imagine that the same sorts of cautions apply as discussed by Noorduyn (1985) with regard to SG.[6]

2.2.3 The royal diaries

The down-to-earth, almost journalistic nature of the Bugis and Makassar chronicles also characterises the diaries (Noorduyn, 1965). Within the Indonesian context, the historical tradition of diaries is apparently unique to South Sulawesi and some areas influenced by the Bugis and Makassar. The diaries were written on European paper in local script with entries dated according to both the Christian and Islamic calendars (Cense, 1966).[7] The oldest initiated diary, that of the Gowa and Tallok kings, was first transcribed into Latin script by Ligtvoet (1880) who followed the entries up to 1751 and added a Dutch translation. Recently an editorial staff headed by Drs Kamaruddin has produced another Latin transcription, along with a translation into Indonesian. Titled *Pengkajian (Transliterasi dan Terjemahan) Lontarak Bilang Raja Gowa dan Tallok (Naskah Makassar)*, the work follows the diary entries up to the end of 1700 (Kamaruddin

[6] Mukhlis (1975) appears not to have used this source.
[7] All these points seem to suggest that European ideas had a profound influence on the formative development of the Makassar historical tradition, even if the Makassar used texts to record traditional concerns rather than to address intellectual issues.

et al., 1985-6). This book ("LB" for short) is the basis for my understanding of the Gowa and Tallok royal diaries, although I will occasionally need to disagree with the book's explanatory notes.[8]

Before 1600 the entries are scarce and dated only by the year. Entries accompany only about half of the years between 1600 and 1630, and then with dates of variable specificity. Only the years from 1631 have numerous entries annually, dated by the day. This coincides with the coming of age of Gowa's Sultan Mohammad Said, born in 1607 (r. 1639-1653), who is described as having been knowledgeable in the Arabic script and masterly in Makassar writing (SG:70). Hence he may have inaugurated or at least consolidated the tradition whereby the Gowa and Tallok royalty kept diaries.

2.2.4 Three subsidiary texts

While I was on fieldwork in Ujung Pandang (as Makassar is called today), Campbell Macknight sent me copies of three short Makassar texts, published by Matthes (1883), to have translated there. On their own the translations are of limited value, but fortunately the two of them used here intersect sufficiently with SG and ST for the main points to become clear. Here I adopt the names for these texts given by the translator, which are *Ini Adat Lama di Sanrabone* ("IALS"), *Ini Adat Lama di Maros* ("IALM"), and the text which I was unable to use, *Ini Adat Lama di Turatea* ("IALT").[9]

2.3 Main Secondary Sources and Other Identifiable *Lontarak*

First published in 1959, and frequently republished since, Patunru's *Sejarah Gowa* is the classic, broad historical outline of Gowa. However, the genre appears to have been initiated by Hamzah Daeng Tompo, a man who had held a high office in the last Gowa government. In 1948 he wrote a

[8] Mukhlis (1975) made only light use of the Gowa and Tallok royal diaries.

[9] Matthes (1883) pp.203-5, pp.205-7 and p.207 for Sanrabone, Maros and Turatea respectively. Ian Caldwell, then in Ujung Pandang on a fieldwork trip, was kind enough to organise the translation of the texts into Indonesian. The translator must have taken the job as a minor commercial contract because the translations stand out as rushed.

manuscript, apparently unpublished, which Mukhlis (1975:64) calls *Sejarah Kerajaan Gowa*. Mukhlis frequently refers to this work, and "*Lontarak* No.8" in Daeng Tompo's possession, under circumstances which touch on Gowa's traditional social organisation, and the status of the polities which fell within Gowa's jurisdiction at various junctures. The comparison implies that Daeng Tompo's version of Gowa's history was distinguished precisely by this emphasis made possible though his direct access to *Lontarak* No.8.

The other source of importance to Mukhlis' reconstruction of Gowa's geopolitical organisation is "*Lontarak* No.6". Mukhlis describes it as a compilation, transcribed together in 1873 on the request of Matthes, of three works originally written between the mid-16th and late 17th centuries. Mukhlis adds that the original manuscript is held by the last Gowa king, but does not comment on whether the work has been published (Mukhlis, 1975:15).

2.4 External Sources on Early Bugis-Makassar History

South Sulawesi's documention by external sources remains sparse until the early 16th century. We have only disconnected fragments of information, such as the citation of a few toponyms in the 14th century Javanese poem *Nagarakertagama*, and Tomé Pires confused account of South Sulawesi, derived from travellers' tales, written in 1511 (Pelras, 1981; Reid, 1983a; 11.8 and 13.4.1 of this thesis).

From 1511 until the end of the 16th century the Portuguese maintained a peripheral interest in South Sulawesi, resulting in sporadic commercial and missionary expeditions and a number of reports, particularly concerning places of successful proselytising. During the mid-16th century, the period of heightened missionary activities, the Portuguese concentrated their attention on the west coast north of Maros (Jacobs, 1966; Pelras, 1977). While much of value can be gleaned from these accounts, notably as developed by Pelras (1977, 1981), the narrow geographical focus of the Portuguese

cautions against extrapolating broader perspectives on South Sulawesi's political and economic situation.[10]

From the early 17th century onwards, after Tallok's Sultan Abdullah had developed Makassar into a major entrepôt, the external sources start to provide a sound coverage of South Sulawesi, including sketches of Makassar. Particularly after the Dutch East India Company (VOC) established a dominant presence in Makassar, their records become very good, and include a detailed map of the peninsula (Andaya,1981:Map 9). I have not consulted the original texts myself but they are comprehensively summarised elsewhere by Boxer (1967), Reid (1981; 1983a) and especially Andaya (1981).

There are also some terminal 17th and 18th century accounts of South Sulawesi, notably by Gervaise (1688) who based his account on reports by Makassar refugees, but also by Valentijn (1724), Forrest (1792) and Stavorinus (1798). While not quite contemporary with the period dealt with here, they can be valuable in either describing the immediate aftermath, or rescuing fresh memories from the subsequent rot of time.

2.5 Chronological Framework Provided by the Sources

2.5.1 General chronological determinants

The primary Makassar sources used here cover the kingdoms of Maros, Gowa, Tallok and Sanrabone; broadly speaking, the

[10] An example can show the dangers of not recognising the limitations of the Portuguese accounts. The primary sources on the voyage of a certain Father Viegas include a reference to his having baptised the prince of a state neighbouring Siang some time between 1545 and 1547. A secondary source written in the early 17th century asserts that Father Viegas had baptised the king of Tallok in 1555 (Pelras, 1977:232). However, Pelras (1977:232-233) argues, given that Viegas had left Sulawesi for good in 1547, the secondary source must have misdated the baptism; therefore Tallok would appear to be the state neighbouring Siang whose king had been baptised between 1545 and 1547. The trouble with Pelras' reasoning is that Siang then lay some 25 kilometres from Tallok, separated by the kingdom of Marusuk (cf. Figure 2-1). Hence the "state neighbouring Siang" mentioned by the primary sources would have been some kingdom other than Tallok, and the secondary source with the erroneous dates appears also to have erred in specifying Tallok.

coastal plain between Maros and Takalar *kabupaten* (Figure 2-1). All four kingdoms are represented by "chronicles" structured according to the royal succession. The short texts, IALS and IALM, provide a thinly annotated genealogy from the kingdom's founder(s) to the last ruler before Gowa's absorption of the throne (Chapter 4). SG and ST are also structured by reign, even if the level of annotation and genealogical detail is far more comprehensive. The diaries (LB) of course observe a calendrical structure, but they too show more concern with traditional familial relationships than the kingdom's other affairs. Hence to bring the sources together the overarching scheme has to take reigns as the fundamental chronological unit, in particular Gowa's reigns which constitute the longest and best dated succession.

As discussed by Noorduyn (1965), SG and ST provide chronological explanations on points such as reign lengths and the elapse between related events, calculated by the Christian rather than the Muslim calendar. But minor inconsistencies can accompany the dates, as for instance in the year of greater Gowa's adoption of Islam, variously cited as 1603, 1605 and 1606. In this case Noorduyn (1965) can point out copying errors by comparing the Christian and the Muslim dates, and hence establish 1605 as the date which the sources had intended. Other inconsistencies have not been resolved along the same lines,[11] and my own interpretation of the chronology is based on finding the greatest harmony in the dates rather than on any philological considerations (Tables 2-2 and 2-3).[12]

[11] Notably, the 43 years length of Alauddin's reign (SG:61) cannot be squared with the other details given on Alauddin.
[12] Note that I date the beginning of Tunipasuluk's reign to 1590, based on the year in which his predecessor Tunijallok died, rather than 1591, which Noorduyn (1965:150) calculates from the statement that Tunipasuluk ruled only two years before his expulsion (in 1593). However, a reign between 1590 and 1593 could easily be estimated as two years, based either on the nearest number of years (late 1590 to early 1593) or on the number of years completed (any interval up to two years 364 days). Backdating Tunipasuluk's inauguration by a year solves a minor inconsistency Noorduyn noted in Tumapakrisik Kallona's inauguration; that it had supposedly occurred by when the Portuguese conquered Melaka (1511), but Noorduyn's own calculations brought it no earlier than 1512.

As regards expanding the reach of the chronological reckonings, scantily dated material is usually fixed in time by dating reigns back from the oldest reliably dated reign, assigning them a period between 25 and 33 years (Caldwell, 1988:165). However, this convention does not help with some of my genealogical sequences as they do not involve reigns. In addition, the average reign lengths of Gowa and Tallok respectively are 18.0 ± 15.2 and 20.25 ± 10.9, or 19.8 ± 13.1 when combined; even though punctuated reigns have been combined into the same reign length, these figures fall below the generally used range. The discrepancy increases with the later Gowa kings between Sultan Ismail and Andi Ijo Muhammad Abdul Kadir (Patunru, 1983:146-7) for whom the average reign length was 14.4 ± 16.4 years.[13]

Now SG, IALM and IALS present the intial reigns as father-to-son inheritances, so reign length here is a special case of male generation length. Here our estimates are 26.4 ± 6.7 and 33.1 ± 11.8 for Gowa and Tallok respectively, or 29.5 ± 10.1 when combined. Cross-cultural population studies also indicate that males tend to have offspring at a median age of around 30 years (see Leslie, 1985:66-7), and 30 years can be used as a rule-of-thumb estimate of generation length in palaeodemographic studies (e.g. Acsadi and Nemeskéri, 1970:236).[14] Male generation lengths also provide tighter estimates than reign lengths, as can be seen from the standard deviations involved and especially the coefficients of variation (i.e. S.D. divided by the average; see Tables 2-2 and 2-3). Hence the use of average male generation length as an estimate of the actual figure is likely to have a smaller error attached, whether one stage or several are

[13] The calculation depends on correcting certain typographical errors in Patunru's dates.
[14] Peter Bellwood points out that 25 years is the figure used for royal male generation lengths in Polynesian genealogies. The difference would lie in the succession of first-born males in the Polynesian case, rather than in the usual succession in Gowa and Tallok of the male born by the king's highest status wife (Chapter 3).

TABLE 2-2.16th-17th CENTURY REIGN LENGTHS OF GOWA AND TALLOK

	Gowa Ruler	Reign	Reign Length	Sources
GIX	Tumapakrisik Kallona	1511-1547	36	SG:19
GX	Tunipalangga	1547-1565	18	SG:23
GXI	Tunibatta (40 days)	1565	0	SG:35
GXII	Tunijallok	1565-1590	25	LB:87;SG:40
GXIII	Tunipasuluk	1590-1593	3	LB:87;SG:54-5
GXIV	Sultan Alauddin	1593-1639	46	SG:56-7;LB:100
GXV	Sultan Mohammad Said	1639-1653	14	LB:100,116
GXVI	Sultan Hasanuddin	1653-1669	16	LB:116,137
GXVII	Sultan Amir Hamzah	1669-1674	5	LB:137,148
GXVIII	Sultan Mohammad Ali	1674-1677	3	LB:149,156
GXIX	Sultan Abdul Jalil	1677-1709	32	LB:156; Ligtvoet p.182

Average (n=11) 18.0 ± 15.2 (Coefficient of variation 0.84)

	Tallok Ruler	Reign	Reign Length	Sources
TIV	Makkoayang	1547-1577	30	ST:10
TV	Karaeng Bainea	1577-1590	13	SG:49
TVI	Tunipasuluk	1590-1593	3	LB:87;SG:54-5
TVII	Sultan Abdullah	1593-1620; 1634-1636	29	LB:87,95,97; ST:24-5
TVIII	Sultan Mudhaffar	1620-1634; 1636-1641	19	LB:117; ST:25-6
TIX	Sultan Mahmud	1641-1654	13	LB:117
TX	Sultan Harrunarasyid	1654-c.1673	19	LB:119,140
TXI	Sultan Abdul Kadir	c.1673-1709	36	LB:140,155; Ligtvoet p.181

Average (n=8) 20.25 ± 10.9 (Coefficient of variation 0.54)

Combined Average (n=18) 19.8 ± 13.1
(Coefficient of variation 0.66)

N.B. Reign lengths are calculated here simply by subtracting the year of installation from the year of dethronal or demise, and need not be accurate to the nearest twelve month period. Tunipasuluk, who ruled both Gowa and Tallok during his brief career, is included in both king lists but only once in the combined count.
The vacillation of the Tallok throne between Abdullah and Mudhaffar is demonstrated by a clear reference to Abdullah's re-installation in 1634 (LB:95). The point lets us come within one year of the otherwise puzzling figures given in ST:24-26: i.e. that Abdullah reigned 30 years; that he stood behind Mudhaffar on the throne for 13 years; that Mudhaffar first ruled Tallok at the age of 25; and that he ruled Tallok for 18 years in all, including his last two years during the reign of Gowa's Mohammad Said (pace Reid, 1981:20).
ST stops at Mudhaffar's death and so to estimate the reign length of Mahmud (better known as Karaeng Pattingalloang) I assume he ruled between Mudhaffar's death and his own.

TABLE 2-3. 16th-17th CENTURY GOWA AND TALLOK RULERS - MALE GENERATION LENGTHS

	Gowa Ruler	Generation Length	Source
GX	Tunipalangga (born 1511); son of GIX	?	SG:23
GXI	Tunibatta (born 1517); son of GIX	?	SG:35
GXII	Tunijallok (born 1545); son of GXI	28	LB:87
GXIII	Tunipasuluk (born 1575); son of GXII	30	SG:54
GXIV	Alauddin (born 1586); son of GXII	41	LB:87
GXV	Mohammad Said (born 1607); son of GXIV	21	LB:88
GXVI	Hasanuddin (born 1631); son of GXV	24	LB:91
GXVII	Amir Hamzah (born 1654); son of GXVI	23	*LB:118-9
GXVIII	Mohammad Ali (born 1654); son of GXVI	23	LB:117
GXIX	Abdul Jalil (born 1652); son of GXVI	21	LB:114

Average (n=8) 26.4 ± 6.7 (Coefficient of variation 0.25)

	Tallok Ruler	Generation Length	Source
TIV	Makkoayang (born 1521)	?	ST:10
TV	Bainea (born c. 1551); daughter of TIV	30	ST:13
TVI	Tunipasuluk (born 1576); son of GXII	30	SG:54
TVII	Abdullah (born 1573); son of TIV	52	LB:87
TVIII	Mudhaffar (born 1593); son of TVII	20	LB:87
TVIII	Mahmud (born 1600); son of TVII	27	LB:87
TX	Harunarrasyid (born 1640); son of TVIII	47	LB:102
TXI	Abdul Kadir (born 1666); son of TX	26	LB:131

Average (n=7) 33.1 ± 11.8 (Coefficient of variation 0.36)

Combined Average (n=14) 29.5 ± 10.1
(Coefficient of variation 0.34)

N.B. Tunipasuluk is included only once in the combined count. Although a female (TV) is included, only her year of birth is considered (as an example of the generation length between her father's year of birth and the year of birth of the father's royal child) and not the ages at which she herself gave birth.

Note that comparing the figures in Tables 2-2 and 2-3 we can also calculate that the average age at which a Gowa or Tallok ruler started to reign was 23.5 ± 11.1 (range 7-48), i.e. around 25 years old.

dated back.[15] Consequently I date my genealogical reconstructions (Chapter 4) by taking the earliest reliable birth date of a figured male and dating back with the rounded-off estimate of 30 ± 10 years per male generation.[16]

Having said that, I can appreciate Caldwell's use of reign lengths. His Bugis genealogies are sometimes funnelled through apical female rulers - which is not true of the Makassar genealogies - and he is dealing with few cases of the sibling successions associated with the short Gowa and Tallok reigns. From the figures Caldwell (1986:165) gives of 12 known Bugis and Makassar pre-Islamic reign lengths, we can calculate an average reign length of 24.75 ± 17.5 (25 ± 17) years, to be used in my reconstruction of general Bugis-Makassar pre-Islamic chronology (13.4.1).[17]

2.5.2 The first, legendary phase of Gowa's history

Gowa's initial phase apparently preceded the development of a Makassar script (2.1), and is consequently associated with pronounced mythical elements and the barest minimum of genealogical details. The compilers of SG and ST make the point themselves by prefacing their narratives with disclaimers and commenting on the lack of genealogical information. SG further relegates Gowa's origin story to a bare outline stripped of all but the essential details. As reported there a heavenly nymph, Gowa's *Tomanurung* or the "one who descended",[18] came to earth and married a shadowy mortal called Karaeng Bayo. Before disappearing she gave birth to a miraculously precocious son, (Tu)Massalangga

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[15] Quite obviously a person's reproductive span is briefer, in the case of males rarely straying beyond the 27 years between the ages of 18 and 45 (see Leslie, 1985:66), than the number of years during which a ruler could reign (0 to 46 years in Table 2-2).

[16] Average female generation length, which is somewhat less than the male, cannot be calculated from the data considered here and is not used in dating the genealogies.

[17] Caldwell also arrives at an average of 24.75 years after rejecting the shortest (Tunibatta's) reign from his sample. However, he has made an arithmetical error and the figure stands correct for his whole sample.

[18] Actually, Tumanurunga in Makassar, but as with other key cultural concepts shared by the Bugis and the Makassar I use the Bugis word.

Barayang, who inherited the government along with the three key items in Gowa's regalia - a gold chain called "Tanisamanga" which the nymph had worn when she descended, and the short swords called "Sudanga" and "Tanruballanga" which had been in the respective possession of Karaeng Bayo and his brother Lakipadada.

Fuller versions of Gowa's *Tomanurung* myth can be traced in some of their details to Mukhlis' (1975:74-6) *Lontarak* Nos 6, 10 and 12. One version states that the nymph descended in response to the prayers of the nine members of an already established confederation of Gowa under strain from attacks by Garassik, Untia and Lambengi. It further emphasises the "social contract" struck between the parties in which the *Tomanurung* and Karaeng Bayo agreed to stay and rule Gowa, according to a set of ethical criteria, in exchange for the fulfilment of their basic requirements (Patunru, 1983:3-6).[19] The myth thus sets out "articles" to the effect that (i) the ruler of Gowa deserves a privileged position in recognition of the ruler's distinct, "white-blooded" origins; (ii) the ruler should not however indulge in unethical privileges; (iii) this form of government should be and is in the better interests of the subjects; and (iv) the interests of the subjects can be represented by a council of nine drawn from the kingdom's territory (see Mukhlis, 1975:78ff.).

Tunatangkalopi, the fifth direct descendent in the Gowa lineage, had an elder son called Batara Gowa and a younger son called Karaengloe ri Sero. The internecine squabble which developed between the brothers resulted in the flight of the younger brother and his inauguration of the Tallok kingdom (12.2.1). The tale thus asserts an ultimately single origin of Gowa and Tallok within a framework where Gowa is the senior kingdom, and Tallok is Gowa's junior brother (Reid, 1983a).

[19] Also commenting on this version of the myth, Reid (1983a:120) notes that the items which the *Tomanurung* and Karaeng Bayo promised not to take from their subject did not include rice, which he uses as evidence to reconstruct a brackish backswamp environment for early Gowa. However, the items in question - fowl, eggs, coconuts and betelnuts - would not seem to cover whatever had been the carbohydrate staple(s).

In addition most copies of the Gowa chronicle start with ten words so puzzling, they have been omitted from published transcriptions, even though philological analysis suggests the words were part of the originally compiled text (Noorduyn, 1985). The words are usually interpreted as a list of the four Gowa kings who either preceded, or were contemporary with, the original nine communities confederated within Gowa (e.g. Patunru, 1983). Noorduyn (1985:8) translates these words as 'Bataru Guru, his brother The One who was killed by Tolali, (and) King Whose House was Full of Slaves, were (all of them) Lord of Katangka'. Noorduyn's reading reduces the number of individuals to three and identifies them not as the kings of Gowa, but of its smaller immediate predecessor which was called Katangka.

Let us estimate the apparent antiquity of these initial events, dating back from Tunijallok's year of birth in 1545.[20] The exercise dates the quarrel between Batara Gowa and Karaeng Loe ri Sero to the late 15th century, the birth of (Tu)Massalanga Barayang at around 1300, and the time of the Katangka lords to the 13th century (Figure 2-2). The probability that Tumassalanga Barayang had been born as late as 1400 is greater than eight one-tailed standard deviations, i.e. negligible.[21] Hence Reid (1983a:117) errs in stating '...we are probably not justified in placing the foundation of the [Gowa] dynasty any earlier than 1400'; of course the early Gowa king list could be inflated, conflated or totally fanciful, but then the origins of Gowa are simply undated. At face value the list suggests a foundation date of the Gowa dynasty at around 1300, which hypothesis can be tested against the archaeological record.

[20] It would also be possible to use the average year of birth of the two Gowa kings in the generation preceding Tunijallok, i.e. Tunipalangga (born 1511) and Tunibatta (born 1517). The resulting figure, 1514, compares very closely with the figure for this generation as dated back from Tunijallok (1515).

[21] It might be thought that the estimated dates at such an early interval need not be very reliable, even assuming a general comparability between the genealogical sample providing the estimates (Table 2-3) and the genealogies being dated. However, as pointed out by Vansina (1985:184), the reliability of the estimates increases rather than decreases the further back we go.

Figure 2-2 also lists the apparently earliest toponyms which, when plotted, would place the early action at Gowa's palace centre (Figure 2-1). The eight identifiable confederates or "founding flags" form a very tight cluster[22] while four other earliest toponyms - Katangka, Tamalate, Bonto Biraeng and Gowa - are virtual synonyms (Chapter 6). The communities which sided respectively with Batara Gowa and Karaengloe ri Sero neatly divide into the Gowa and Tallok "polygons" (see also Figure 12-7). Garassik, Lambengi (/Lembangi?) and Untia, communities which had reportedly attacked the nine founding flags, lie to the immediate south (Figures 2-1 and 3-1). To be sure, the supposedly earliest toponyms undoubtedly carry overtones which are better dated to c.1500 than the 13th-14th centuries,[23] but at the very least they do not point away from "Gowa" shown in Figure 2-1.

2.5.3 Later phases in Gowa's precolonial history

The second and third phases of Gowa's history broadly span the 16th to mid-17th centuries, up to the loss of the entrepôt of Makassar to the Dutch. The earlier of these, more or less the 16th century, is the period when the kingdom of Gowa enjoyed its initial and, indeed, most spectacular expansion. The apparent development of the Makassar script early in the phase produced a quantum augmentation of the available documentary evidence. It can be neatly terminated with the brief interval when a Gowa king, Tunipasuluk ("He who was expelled"), usurped the Tallok throne in 1590.

The third phase coincides with the period when Makassar was a great entrepôt, and when the Gowa royalty became only one of several ruling houses within the larger political entity which I call "greater Gowa". Other salient developments include the adoption of Islam as the state religion and the spread of Gowa's suzerainty throughout the peninsula. The historical documentation is expanded by the

[22] Agangjeknek remains completely unidentified.
[23] For instance, it is generally accepted that the toponym Garassik couples with Gresik, a major port on Java's north coast during the 15th century. Gresik, however, was reportedly not founded before the late 14th century, and by Chinese rather than Makassar immigrants (see 11.5.1).

external sources, which for the first time begin to describe Gowa in any detail, and by the inception of the tradition of royal diaries. The phase can be terminated either with the establishment of the Dutch at Fort Rotterdam (Ujung Pandang) in 1667, or with the succession squabble over the Gowa throne which immediately followed.

2.5.4 Phases in Gowa's colonial history

After the Dutch established themselves in Fort Rotterdam, and resited the more lucrative trade to their doorstep (Bulbeck, 1990), Gowa was unable to dislodge them despite some quite potent campaigns (see Patunru, 1983). Given the unrelenting presence of foreign interlopers at the strategic centre of greater Gowa, Gowa's history between 1667 and Indonesian independence is properly characterised as colonial. In the sense that no local power was ever able to dominate the commercial centre of the region, the same characterisation less strongly applies to the peninsula as a whole.

I recognise a brief fourth phase lasting approximately one generation between 1667 and the start of the 18th century. This takes us to the last titbits of information given by SG and ST, and to the end of LB's diary entries. It also covers the majority of the Dutch records, as painstakingly summarised by Andaya (1981). The phase also takes us to the reign of Sultan Abdul Jalil (1677-1709), the last in the dynasty of Gowa rulers who had inherited the throne in unbroken patrilineal succession from Batara Gowa (Chapter 4).

The present study groups the 18th to 20th centuries into a fifth, broad phase which lies outside my chronological scope. The phase begins with two handovers of the Gowa throne, first to Sultan Ismail, the son of the Bone sultan Alimuddin by his wife, the daughter of Abdul Jalil, and shortly thereafter to the then Tallok ruler, Sultan Sirajuddin (Patunru, 1983). Confusion in the succession to the Gowa throne followed, right up to the mid-19th century, but with a consistent trend whereby the Tallok sultans either acted as the real force behind the Gowa throne or temporarily absorbed it (see Patunru, 1983:76-99). Tallok's domination of the Gowa throne was stabilised with the lengthy reign of Sultan Abdul Kadir

Muhammad Aidid (the grandson of the Tallok-Gowa ruler called I-Mappatunru Karaeng Lembangparang) and with the succession of his direct descendents to the Gowa throne between the late 19th and the mid-20th century (Patunru, 1983:91,97,100-127). The last Gowa ruler, Andi Ijo Daeng Mattawang Karaeng Lalolong Sultan Muhammad Abdul Kadir Aidid, was pensioned off by the Indonesian government on 1 July 1960 (Patunru, 1983:130).

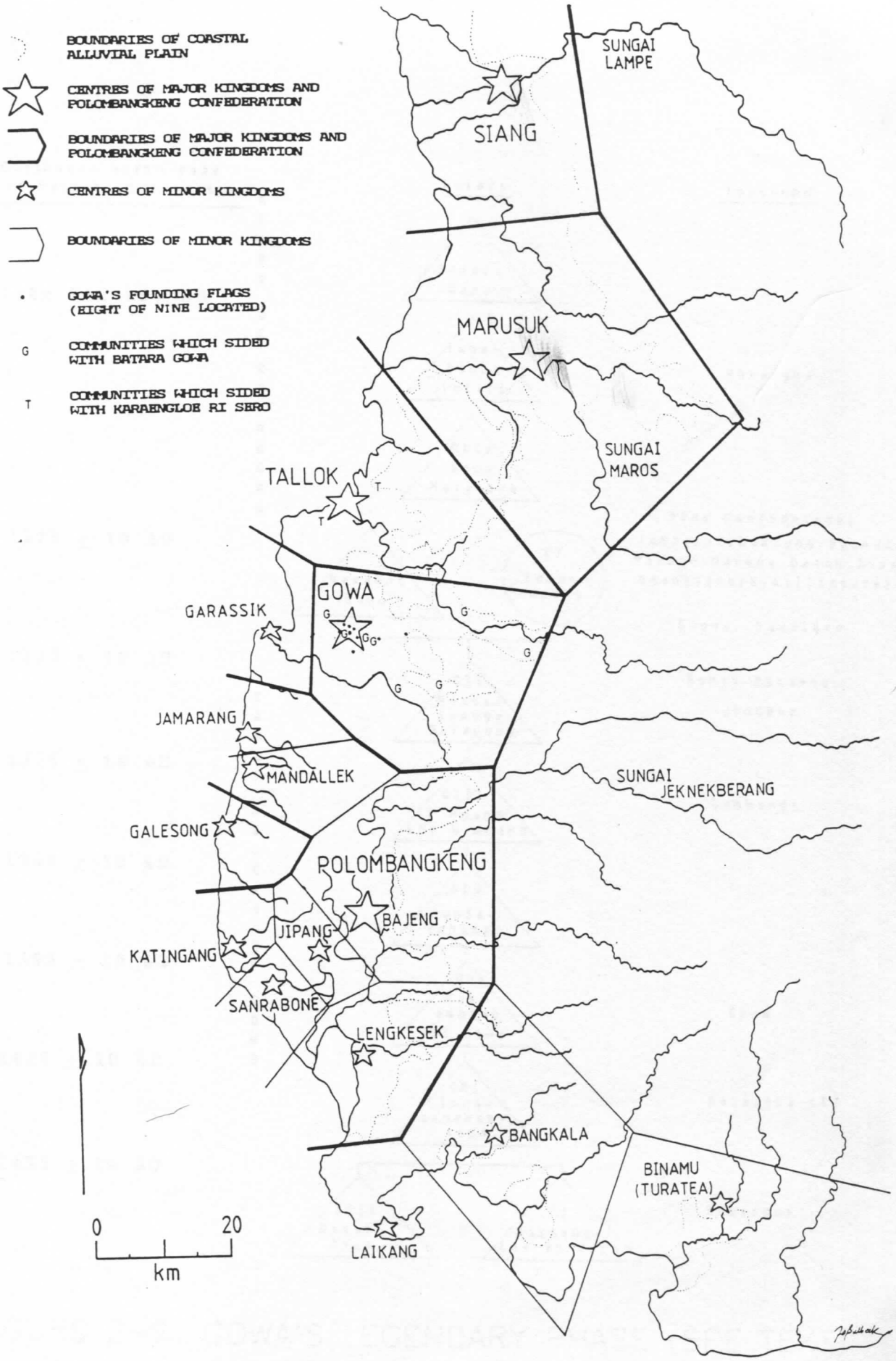

FIGURE 2-1. SUGGESTED GEOPOLITICAL SITUATION C. 1500 AD

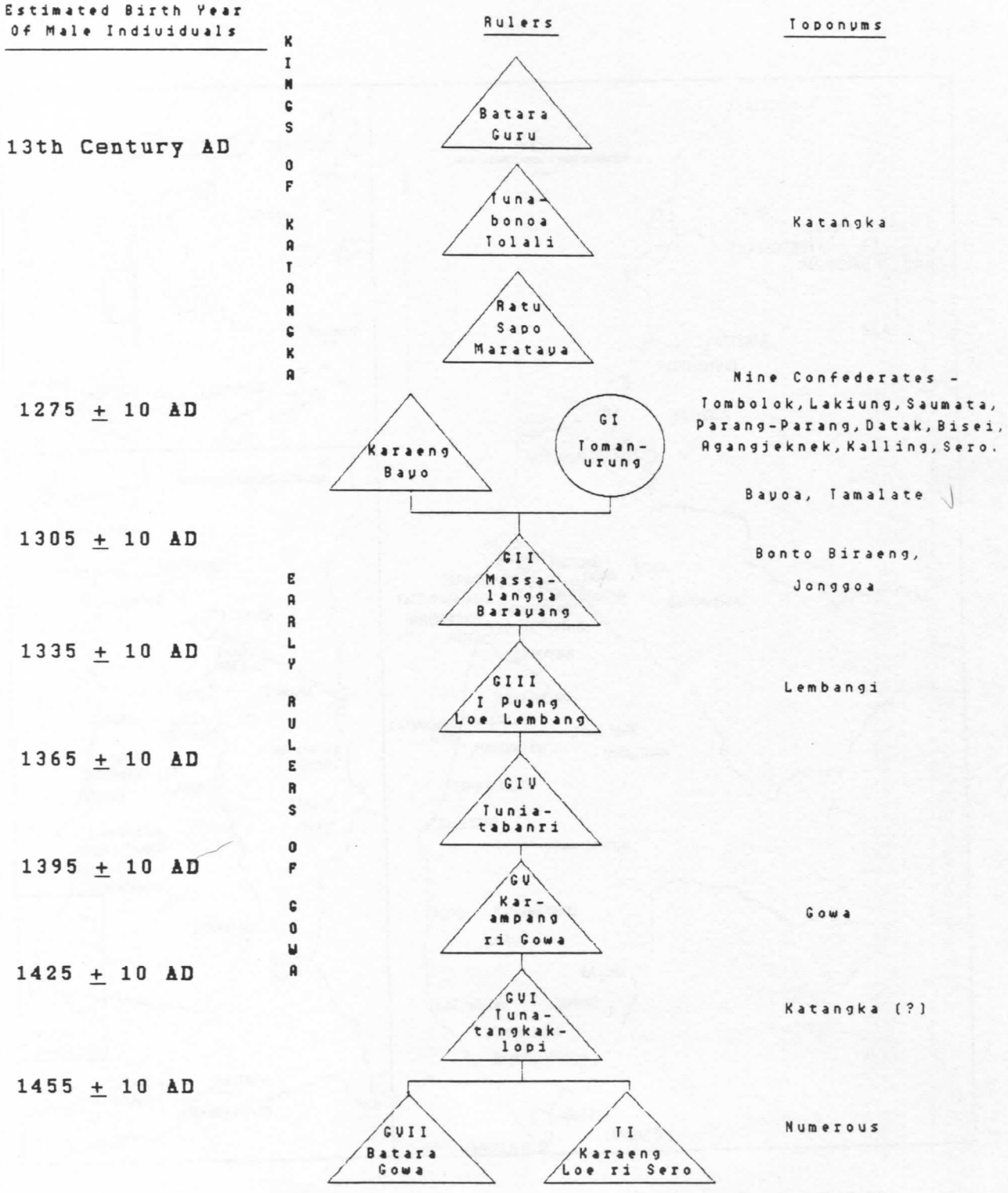

FIGURE 2–2. GOWA'S LEGENDARY PHASE (SEE TEXT)

CHAPTER 3. MAKASSAR ARISTOCRATIC SOCIAL ORGANISATION

One of the most dominant themes found in the Makassar texts involves recording aristocratic genealogical information (2.5.1). The level of detail promotes a reconstruction of the factors which determined access to title, as analysed in this chapter. The ensuing perspectives allow precise study, as undertaken in Chapter 4, of the shifts in political power between the "lineage groups", i.e. the kin-based factions of significance in the Makassar aristocratic world. The results show that the state of greater Gowa was organised along very similar principles to those recognised for the Malay sultanates (Gullick, 1988) and rural Javanese aristocracy (Palmier, 1969).[1]

3.1 Traditional Makassar Social Categories

Classifying the ethnic groups of Netherlands India (Indonesia) into culture areas, ter Haar (1948) recognised a "South Celebes group" from the suite of similar features shared by the area's Islamised cultures - the Bugis, Makassar (including Konjo and Selayar), Mandar, and some smaller groups. Ethnographies dealing with the Bugis and Makassar, the best studied groups, reveal a general social system organised into overlapping sets of bilateral kindreds rather than sharply demarcated descent groups. Individuals can choose their particular affiliation, resulting in the crystallisation of discrete networks of (usually) related individuals. Postmarital residence can be either virilocal or (more usually) uxorilocal, the spouses retain membership within their natal group, and the children enjoy homologous relationships with the families of both parents. While the flexibility allows the ready incorporation of newcomers, the communities maintain their stability through physical and occupational propinquity and some measure of endogamy. An individual's behaviour is also strongly constrained by his or her status which is largely ascriptive, especially for women

[1] Here I wish to preface my analysis with my sincerest thanks to James Fox who appreciated the value of my study, and showed me the right direction to grasp the anthropological significance of the results.

who, in the rôle of (principal) wife, mark the status attained by the more socially mobile men (Chabot, 1950; Millar, 1989; Acciaioli, 1989).

The ascription of status is best described with reference to the pre-20th century situation, since some of the social divisions have been formally abolished even if the effects linger in more conservative areas (Röttger-Rössler, 1989:28 ff.). Mukhlis (1975:27-32), largely following Friedericy (1933), adumbrates the Makassar subdivisions which had existed within the three general classes of aristocrats (I), commoners (II) and slaves (III).

I. *Anakkaraeng* (aristocracy, literally children of *karaeng*), distinguished by their white blood inherited from the *Tomanurung* ("the one(s) who descended"). The *Tomanurung*, who are attributed with having founded most of the Bugis-Makassar kingdoms, are not all portrayed as epiphanies, as they also included nobles originating from earlier established kingdoms (Maeda, 1986). Subdivisions within the *Anakkaraeng* were based on the proportion of white blood as against the red blood of commoners.

1. *Anak tiknok*; individuals with pure *Tomanurung* blood. They were further divided into the *Anak tiknok pattola*, those with a claim to the highest titles, and the *Anak manrapik* who could take up a highest title when no suitable *Anak tiknok pattola* individual was available.

2. *Anak sipuwe*; individuals with mixed *Tomanurung* and commoners' blood. They comprised the *Anak sipuwe manrapik* who could attain high titles if suitable *Anak tiknok* candidates were lacking, and the *Anak sipuwe* individuals born of an *Ata nibuang* slave (see below) by an *Anak tiknok pattola* father.

3. *Anak cerak*; individuals born of an *Ata manak* slave by a father of at least *Anak sipuwe manrapik* rank.

4. *Anakkaraeng sala*. The father had *Anak sipuwe* or *Anak cerak* blood, while the mother had common or slave blood. These formed the majority of the *Anakkaraeng* and also had the most interaction with the populace. They avoided marriages with commoners or slaves as any offspring could no longer claim enough white blood to be distinguished from commoners.

II. *Tumaradeka* (commoners, literally free people), divided into:

1. *Tubajik* or distinguished people, who could point to peripheral family connections with the *Anakkaraeng*. Titles not regularly held by *Anakkaraeng* were usually held among the *Tubajik*.

2. *Tusamarak*, the majority of the commoners, comprising peasants, merchants, sailors and so forth.

III. Ata (slaves). Individuals entered the state of slavery when they had lost their self-respect (*sirik*) and ability to fend for themselves. Slaves who sold themselves, the Ata *niballi* or Ata *sossorang*, retained the chance to buy their freedom back. The Ata *nibuang*, enslaved either as war captives or because of serious transgressions against adat customs, could have their formerly free status restored by the empowered adat council. The third group was the Ata *manak* or bequeathed slaves.

Several points emerge from Mukhlis' summary, as further summarised in Table 3-1. Access to titles depended on nobility of birth, i.e. status was ascribed. This essentially followed bilateral lines, and the ideal marriage involved similarly ranked partners. Nonetheless a patrilateral bias clearly existed, as shown by how the scheme derives the lesser nobility from marriages between a man of higher nobility and a female commoner or slave; the ascription of the father's status to the offspring of *Anakkaraeng* women who married a lower ranked *Anakkaraeng* man; and the specific stricture against women marrying beneath their class (cf. Chabot, 1950:94-95,209ff.; Röttger-Rössler, 1989:42-43).

Two logical corollaries follow. Within the traditionally polygynous Makassar society, higher status men generally had more wives. And as the white blood of the royalty can scarcely be derived from the red blood of commoners, the royalty must be able to trace their origins from outside of the bilateral network - hence the *Tomanurung*. An example from recent history comes from the Konjo living at Kasepekang in the Gowa highlands. In the late 19th century a lowland Gowa aristocrat called Daeng Bunding married into the Kasepekang nobility and was installed as *Karaeng*. Kasepekang's *Karaeng*

TABLE 3-1. THE RANKING OF MAKASSAR OFFSPRING ACCORDING TO PARENTS' STATUS

	MOTHER									
FATHER	Anak tiknok	Anak sipuwe manrapik	Anak sipuwe	Anak cerak	Anak karaeng sala	Tubajik	Tusamarak	Ata sossona	Ata nibuang	Ata manak
I.1 Anak tiknok	Anak tiknok	Anak sipuwe manrapik	Anak sipuwe manrapik	Anak sipuwe manrapik	Anak sipuwe manrapik	Anak sipuwe	Anak sipuwe	Anak sipuwe	ANAK SIPUWE	ANAK CERAK
I.2a Anak sipuwe manrapik	Anak sipuwe manrapik	Anak sipuwe manrapik	Anak sipuwe manrapik	Anak sipuwe manrapik	Anak sipuwe manrapik	Anak sipuwe	Anak sipuwe	Anak sipuwe	ANAK SIPUWE	ANAK CERAK
I.2b Anak sipuwe	x	Anak sipuwe	Anak sipuwe	Anak sipuwe	Anak sipuwe	ANAK KARAENG SALA	ANAK KARAENG SALA	ANAK KARAENG SALA	ANAK KARAENG SALA	ANAK KARAENG SALA
I.3 Anak cerak	x	x	Anak cerak	Anak cerak	Anak cerak	ANAK KARAENG SALA	ANAK KARAENG SALA	ANAK KARAENG SALA	ANAK KARAENG SALA	ANAK KARAENG SALA
I.4 Anak karaeng sala	x	x	X	Anak karaeng sala	Anak karaeng sala	Tubajik	Tubajik	Tubajik	Tubajik	Tubajik
II.1 Tubajik	X	X	X	X	X	Tubajik	Tumar-adeka	Tumar-adeka	Tumar-adeka	Tumar-adeka
II.2 Tusamarak	X	X	X	X	X	Tumar-adeka	Tusa-marak	Tusa-marak	Tusa-marak	Tusa-marak
III Ata	X	X	X	X	X	x	x	Ata	Ata	Ata

Capitalised examples are those specified by Mukhlis; non-capitalised examples are the author's inferences.
Offspring of ideal unions shown underlined; offspring of unions to be avoided shown struck through.
Crosses show disallowed unions; capitalised if specified by Mukhlis, otherwise the author's inferences.

and other prominent aristocrats now trace a real or fictional genealogical relationship to Daeng Bunding through his three official wives (Röttger-Rössler, 1989:38-40).

3.2 Traditional Makassar Titulation

The Makassar texts (2.2) identify individuals' status not in terms of the categories shown in Table 3-1 but rather by title. Mukhlis (1975:41-42) describes the main kinds of names and titles used during the 17th century.

a. *Areng kale* (personal name), the birth name.

b. *Areng padaengang* (*daeng* title), the highest title a commoner could receive (Mukhlis, 1975:37). It can be abbreviated to Dg (Daeng) and Dta (Daenta). The title was sometimes linked with a place name, apparently to identify the person as a prominent member within the community (Table 3-16 below).

c. *Areng pakkaraengang* (Karaeng title, or lordship), which can be abbreviated to Kg (Karaeng) and Kga (Karaenga). The title was usually associated with a place name (Table 3-16) which identified the community whose obligation it was to maintain a fit residence for the Karaeng, and provide manpower and surplus produce (Mukhlis, 1975:42-44,64).

d. *Areng arakna* (Islamic name). Mukhlis uses this category to indicate the title of sultan.[1]

e. *Tumenanga* (posthumous name). Like the Bugis counterpart *Matinroe* (see Tables 3-3 and 3-4) the name usually indicated where the person had died. It provided a means in which prominent, deceased people could be referred to respectfully, and did not necessarily indicate the attainment of a high title (e.g. Dg Mangemba Tumatea ri Bantang in Table 3-8).

Sultans were not the only rulers in South Sulawesi, even after the conversion of the aristocracy to Islam. As I wish to draw parallels between the sultanates and their local counterparts, I here follow standard Indonesian in adapting the word "raja" to refer to all rulers, and also use the term "kingdom" to refer to their domains. I further distinguish

[1] By the late 17th century lesser individuals also sometimes used an Islamic name instead of or in addition to a personal Makassar name.

between the greater rajas, and the petty royalty or lesser rajas (both of whom enjoyed recognition as independent, white-blooded rulers).

Lesser raja titles (see Figure 3-1). Some lesser rajas had distinct titles, e.g. the Bugis *Ratu* who ruled Bulo-Bulo, and the 16th century Makassar entitled *Karaengloe* ("great chief"), *Somba* and *Tumakgauka*. Other lesser rajas belonged to historical successions, e.g. Sanrabone, Maros (2.5.1), Siang (Pelras, 1977), Agongnionjok (Kallupa, 1984), the "Limae Ajattappareng" confederation (Caldwell, 1988), and Laikang (cf. Kamaruddin et al., 1985-6:169; Andaya, 1981:128,137).

Greater raja titles (see Figure 3-1). Luwuk (the first South Sulawesi royal family to embrace Islam), Gowa and Tallok became formal sultanates at the beginning of the 17th century. Gowa's lesser allies, Sanrabone and Bulo-Bulo, did not become sultanates, indicating a distinction between the major and the lesser pro-Gowa royalty. As regards the three major Bugis agrarian kingdoms - Bone, Soppeng and Wajok - they initially eschewed the title of sultan for their ruler, presumably as a reaction to their forced conversion to Islam.[2] But the Bone and Soppeng rulers were undoubtedly great rajas on a par with the sultans, as shown by their triumph in the Makassar War.

Prior to Islamisation, great Makassar rulers were distinguished by a nickname ("Tu-" or person, followed by a passive verbal form) commemorating some highlight of their reign. All of the late 15th to late 16th Gowa rulers received such a nickname (apart from the deified Batara Gowa), as did some Tallok, Maros and Sanrabone rulers (Table 3-3). Analogously the Makassar royal diary (LB) calls Bone's La Tenritatta Sultan Sahaduddin "Tunisombaya". The only other person remembered by a nickname was Tuniawanga ri Kalassakanna, the main wife of Sultan Abdullah, the latter arguably the highest status Makassar man who ever lived.

The greater rajas, then, are the sultans, the rulers of Bone and Soppeng, and the nicknamed individuals. The sultans

[2] Bone's La Tenrirua Sultan Adam (r. 1607-1608) is the exception which proves the rule. He was expelled for his coversion to Islam (see Muttalib, 1980).

considered here also include the 17th century rulers of Bima and Sumbawa (Noorduyn, 1987b; see Figure 3-1).

The Makassar titles were incremental, with duplications of titles as well as higher titles reflecting enhanced status. E.g. Sultan Abdullah's full name was "Palakkaya I Malingkaeng I Daeng Mannyori Karaeng Matoaya Karaeng Kanjilo Karaeng Segeri Sultan Abdullah Awalul Islam Tumenanga ri Agama Tumenanga ri Bonto Biraeng" (ST:14-15; SG:70). To take a Bugis example, Sahaduddin's full name was "La Tenritatta Datu Mario ri Wawo Daeng Serang Arung Palakka Petta Malampéké Gemmekna Tounruk [Tunisombaya] Sultan Sahaduddin Matinroe ri Bontoalak" (Andaya, 1981:43-4).

The records also contain three variants on the *daeng* title. The *kare* title may have been a slightly demoted variant, as it was rarely associated with a place name (3.4.1), while few individuals entitled Kare were also a Karaeng and none was a raja (Tables 3-5 to 3-14). On the other hand, the record that the [additional] *daeng* name of Dg ri Tamacinna was Kare Paeso (SG:50) suggests it may have betokened a slight elevation. The *lokmok* or *lukmuk* title displays idiosyncratic associations. It can occur alone, or in combinations such as I Kare Lukmuk (SG:15), Haji I Kare Lukmuk (LB:154), I Lokmok Manrimisik (SG:39) and I Lukmuk ri Mandallek (Patunru, 1983:24), but my records give only one association with a karaengship (Table 3-6). The title usually involves women of unknown birth who married prominent men (Table 3-10), notably in the case of a slave who took her *lokmok* title after marrying Sultan Mudhaffar (cf. ST:27 and LB:167). While the deeds of male *lokmok* are occasionally mentioned, their family relationships are ignored. The title therefore appears to have marked a common birth barring the holder from higher titulation.[3] Finally, the *gelarang* title referred specifically to district heads who represented the governed populace, notably the nine council members of Gowa's Bate *Salapang* (Mukhlis, 1975:60-2).

[3] Despite its unusual nature, the title was a variant on *daeng*, as shown by the record that a grinder-labourer called I Rasa took I Lokmok Tekne as her *daeng* name when she married Sultan Alauddin (SG:59).

3.3 Analysis of the Makassar Genealogical Records

3.3.1 Scope of the analysis

Rather than slavishly believe the ideology of traditional Makassar ranking, we should be able to reconstruct the social factors determining individuals' access to titles, based on the genealogical records covering approximately 200 years during which the same basic titular system applied. Factors of likely significance include gender and next-of-kin relationship, notably parent-offspring and husband-wife comparisons. As titles were incremental with age, the study should include only individuals who reached maturity, here defined as "marriageable age".[4] The analysis will employ an ordinal model as it alone matches the ranked nature of titles as data (cf. Startup and Whittaker, 1982:4-7). The highest title received by a person, whether in single or multiple expression, is the title used to determine the person's rank. Rarely occurring titles, which most frequently involve cases of people with non-Makassar titles marrying Makassar aristocrats, do not constitute analytically useful categories and so are pooled with the Makassar title which I consider to be of equivalent rank.[5]

I recognise five ranks, based on the system of traditional Makassar titulation (3.2). Rank 1 refers to the greater rajas and Rank 2 refers to the lesser rajas. Rank 3 includes the remainder of the lords, i.e. the various Makassar karaeng and Bugis arung and datu whose constituencies were incorporated within one of the kingdoms, as well as an assortment of titles which appear to be of equivalent rank. Rank 4 people

[4] Some of those included may well have died when still young, particularly well-born people for whom neither a noble title nor a marriage is recorded. However, to avoid biassing the data base in favour of certain expectations, I will assume that people lived into adulthood unless the records show the contrary. Note also that the study will exclude some highly ranked children who had died at a young age - princes who had probably been viewed as likely successors before their death. These include Tunipalangga's son Kg Anak Gowa (SG:31), and Kg Segeri the son of Sultan Abdullah (ST:19-20).

[5] The same problem of ranking non-Makassar against Makassar titles would have occurred when the marriages were arranged, or when deciding the appropriate level of reception for non-Makassar visitors and immigrants.

are the *daeng* and their equivalents, although note that the *kare* and *lukmuk* will often be tabulated separately from the other *Daeng*. Finally, Rank 5 includes those people for whom no evidence of titulation was found.

3.3.2 Methodological Procedures

The major difficulty facing the use of the genealogical information in the Makassar texts is to identify the individuals referred to. Partly this stems from the lack of a gender distinction which Makassar (and the Indonesian translations) makes in pronouns and titles, and the frequent use of context rather than the explicit statement of the verb "to be" and its conjugations. For instance, a passage faithfully translated into Indonesian might read "Dia, anaknya Daeng A,...". The possible translation into English includes all variants on "He/she, the child of/whose child was male/female Daeng A". The multiplicity of names and titles which many of the individuals had, and the tendency for certain titles such as important karaengships to recur, also make it difficult to follow the records. On top of that, individuals could be referred to by any one of their aliases, usually reflecting the point that actions done at different stages in the same person's life cycle could be done, strictly speaking, under different names.[6]

In practice I found I could only resolve the ambiguities by taking on board the most feasible interpretations, based on context, and running them until contradictions demanded a

[6] There is a fine line between producing patent nonsense by using anachronistic names (e.g. Sultan Abdullah was initially as interested in Christianity as in Islam) and relegating oneself to grammatical contortions by demanding strict synchrony (e.g. since even the birth names were bestowed a few days after birth, one would always have to say "the person who was later called..." when referring to a birth). The nicknames and posthumous names provide a means of referring to a whole life cycle, but as it turns out particular titles have become standard fare to fill this rôle (e.g. Arung Palakka, Kg Pattingalloang). This has led to the unfortunate situation where some highest attained titles have, as it were, been blotted out of historians' thinking, and consequently I will use the highest status name when referring to an individual's life cycle (e.g. Sultan Sahaduddin and Sultan Mahmud in the two cases just cited).

rethink. In accordance with the principle of parsimony I have also reduced the number of names to the minimum number of discrete individuals. For instance, when a name occurred I consigned it to the individual or one of the individuals already identified by that name until I found evidence that another was involved. The evidence could be general, as in the case of very common names (e.g. "I Sitti" in Table 3-12) where, indications to the contrary lacking, one must assume different individuals were involved. Usually, however, specific evidence turned up, as with the possible identification (posited by Kamaruddin et al., 1985-6:100,107) of "Daeng Tallara" as the Daeng title of Karaenga ri Tabaringang who first married a Sanrabone raja and then married Karaeng Katinting. Here it can be shown that Daeng Tallara Karaenga ri Tabaringang who married the Sanrabone king was the full sister of Sultan Hasanuddin, the father of Karaeng Katinting - i.e. the identification has her making the unlikely marriage to her brother's son - and that indeed some other Karaenga ri Tabaringa had married Karaeng Katinting (SG:45,49). Nonetheless, I can see that some of my interpretations are conjectural, and these will be signified "(?)" in Tables 3-3 to 3-14 which list the reconstructions.

The tables include 545 individuals of identified name for whom at least one next-of-kin relationship - whether as spouses, full siblings or parent-offspring - could be deduced by following genealogical chains as far as individuals for whom no further data were apparent. The tables allow space for relationships which were not necessarily filled, signified by dashes, or were filled by some individual of unknown name as signified by a quesion mark. An exclamation mark is used for individuals reported to have died before reaching marital age. In addition, the men who held "bureaucratic" or non-territorial posts (3.5), listed in Tables 3-13 and 3-14, include 14 for whom no next-of-kin relationships are known.

As regards cases when the Makassar texts record a relationship of a person who appears in other texts, I have used secondary sources to clarify their standing with the Makassar lines, but I have not tried to follow the

genealogical chains any further. As my period of interest stops at 1700 (2.6.4), I have consulted the later diary entries (Ligtvoet, 1880:231-259) only as far as extracting the most relevant, elucidatory information. The records I have collected could inadequately represent the marriages and titles of people born shortly before 1700, and so I have ignored people born after 1670, apart from prominent, widely documented figures.

3.3.3 Tabulation of the individuals

The great majority of the titles considered here involve topnyms (Figure 3-1). Table 3-2 details my system of abbreviations of the toponyms and non-territoral posts, designed to handle the complexities of the data in diagramatic (Chapter 4) and tabular form. Tables 3-3 to 3-14 identify the individuals by their fullest known name, in the first column. In the other columns the name or abbreviation appears in capital letters whenever a karaengship or more lofty title is involved, otherwise in usual face. Occurrences of the abbreviations are numbered serially according to their apparent chronological order of appearance in the records, or are shown with Roman numerals when the individual belonged to a recorded royal succession.

3.4 Statistical Analysis of the Titulatory Data

3.4.1 Introductory comparisons

Let us exclude the three immature individuals in the tables, and the government officials whose next-of-kin relationships are totally unrecorded. This produces the cross-tabulation of title against gender shown in Table 3-15. The total of 545 individuals, more or less corresponding to the 16th-17th century individuals of genealogical significance to the Makassar aristocracy, is divided evenly between men and women. However, quite obviously the higher the rank, the greater the proportion of males compared to females, with only the *lokmok* and untitled ranks transposed.

TABLE 3-2. NAMES ABBREVIATED IN THE GENEALOGICAL TABLES

Major Kingdoms (those usually headed by a Rank 1 figure)

G	Gowa	T	Tallok	L	Luwuk	B	Bone
S	Soppeng	I	Bima	U	Sumbawa		

Secondary Polities (those headed at some point by a raja)

AG	Agongnionjok	BB	Bulo-Bulo	BJ	Bajeng
BM	Bontomanaik	GR	Garassik	JM	Jamarang
JP	Jipang	KT	Katingang	LK	Laikang
LN	Lengkesek	MD	Mandallek	MR	Maros
MS	Massepek	SD	Sidenreng	SG	Siang
SN	Sanrabone	SP	Suppak	SW	Sawitto

Other Convenient Abbreviations (usually local communities)

AGJ	Agang Jeknek	ALK	Alluk	BAL	Balu Maklonjoka
BAR	Barombong	BER	Beroanging	BILI	Biling Tanggaya
BIS	Bisei	BJN	Bonto Jeknek	BKK	Bonto Keke
BKP	Bonto Kappo	BLB	Balang Bugisika	BLBU	Balang Baru
BLJ	Balang Jawaya	BLK	Balang Kiria	BLL	Ballok
BMB	Bambangang	BMT	Bonto Matekne	BNK	Bangkala
BNP	Bonto Nompo	BNY	Banyuanyarak	BON	Bonto(a)
BONE	Bone	BPJ	Bonto Pakja	BPL	Barang Patola
BPN	Bonto Panno	BPT	Bonto Patongkok	BRBK	Barok Bosok
BRM	Bonto Rambak	BRS	Barassak	BSG	Bonto Sunggu
BTBT	Batu-Batu	BTG	Bantaeng	BTNG	Bonto Tangnga
BTR	Botoroka	BYNG	Bayang	CAM	Campagaya
CEN	Cenrana	DATA	Datak(a)	GLS	Galesong
JAR	Jaranika	KAB	Kaballokang	KAR	Karunrung
KLI	Kalling	KNJ	Kanjilo	KPB	Kampong Beru
KRW	Karuwisi	KSR	Kasuarrang	KTT	Katinting
LAK	Lakiung	LAN	Langelok	LBG	Lambengi
LEK	Lekokbodong	LMB	Lembaya	LMP	Lempangang
LNG	(Bonto) Langkasa	LOT	Lotengang	MAIN	Maingak
MAK	Makeboka	MAM	Mamampang	MAP	Mapekdaka
MBM	Mangara Bombang	MDA	Makdangea	MJN	(Bonto) Majannan
MNG	Mangallekana	MNGI	Mangalliki	MNGP	Mangeppek
MNJ	Manjalling	MNS	Mangkasara	MNY	Manyampak
MRGB	Maraonging (Bugis)	MRGM	Maroanging (Makassar)		
MRU	(Bonto) Marannu	MTN	Mattekne	PAC	Pacellek(ang)
PBN	Pakbineang	PKK	Paknakkukang	PNK	Panaikang
PNKJ	Pangkajeknek	POPO	Popo	PRPR	Parang-Parang
PSI	Passi	PTE	Pattekne	PTG	Pattingalloang
PTK	Pattukangang	PTU	Pattung	PUTE	Batu Pute
RAP	Rappocini	RKNG	Rikong	SAP	Anak Sappuk
SIN	Singarak	SNG	Sanggiringang	SOU	Somba Opu
SPG	Buluk Sipong	SULI	(Bi)Suli	SUM	Summanak
TAB	Tabaringang	TBL	Tompok Balang	TGL	Tangallak
TMC	Tamacina	TMN	Tamananga	TMS	Tamasanga
TNTN	Tana-Tana	TPI	Tapia[e]	TRNG	Tarung
UJG	Ujung	UJL	Ujung Loe	UJT	Ujung Tana

Non-Territorial Titles

TBB=Regent SYB=Harbour Master TUM=Tumailalang TMJ=Guildmaste

Table 3-3. IMMEDIATE FAMILY RELATIONS OF RANK 1 INDIVIDUALS

Individual	Father	Mother	Brothers	Sisters	Spouses
			Males		
Batara Gowa Tuniawanga ri Parallakkenna (GVII)	Tunatangkak-lopi (GVI)	?	TI	-	I Rerasi; ?
Raja Gowa I Pakerek Tau Tunijallok ri Passukik (GVIII)	GVII	?	GR2	BONE1	-
Raja Gowa Dg Matanre Kasiung ri Juru Kg Mangutungi Tumapakrisik Kallona (GIX)	GVII	I Rerasi	-	MAK	KGLOE BAINEA; ?
Raja Gowa I Mario-Gauk I Dg Bonto Kg Lakiung Tunipalangga (bon1/LAK1/GX)	GIX	KGLOE BAINEA	GXI	BONE2; SOU1	SP1; BILI; BAL; ?; ?
Raja Gowa I Taji-Barani Dg Marompa Kg Datak Tunibatta (DATA1/GXI)	GIX	KGLOE BAINEA	GX	BONE2; SOU1	BAL; BPL; mns1; ?; ?; ?
Raja Gowa I Manggorai Dg Mammeta Kg Bonto Langkasa Tunijallok (LNG1/GXII)	GXI	mns1	BIS1; I Dg Biasa	MAP	TV; rap1; BONE3; lek1; ptk2; BLL1; BTBT1; MJN1; LAK2; MDA; I Dg Malele; I Kare Pate; ?; I Sambe; POPO1; data3; a bought wife
Raja Gowa I Tepu Karaeng I Dg Piramba Kg Bonto Langkasa Tunipasuluk (LNG2/GXIII/TV1/MRV)	GXII	TV	GXIV; UJT2; SPG1; I Topali	BB2; TAB1; PAC1	?

TABLE 3-3. IMMEDIATE FAMILY RELATIONS OF RANK 1 INDIVIDUALS (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
I Mangngari I Dg Manrakbia Sultan Alauddin Tumenanga ri Gaukanna (GXIV)	GXII	TV	GXIII; UJT2; SPG1; I Topali	BB2; TAB1; PAC1	BON2; I Uru; I Tekne; ?; I Kare Balluruk; I Tobo; I Dg Mappasang; Dta I Kare Sallang; I Rasa I Lokmok Tekne; I Tadampali; (+ many more)
I Mannuntung I Dg Mattola Kg Ujung Kg Lakiung Sultan Malikussaid Tumenanga ri Papang Batuna (UJG2/LAK4/GXV)	GXIV	BON2	-	-	mns2/ptg5; TGL1; mru2; Ralle Dg Paikak; I Bissu I Kare Jannang; I Lokmok Takontu; I Lokmok Singarak; a bought wife
I Mallombasi I Dg Mattawang Muhammad Bakir Kg Bonto Mangappek Sultan Hasanuddin Tumenanga ri Balang Pangkana (TBB4/MNGP4/GXVI)	GXV	I Lokmok Takontu	-	BJN1	PBN2/RAJA; Dg Sangging; I Dg Talele; I Lokmok Tobo; I Petak Dg Nisali; I Kare Nannang; mru4; ?; I Dg Antu; byng3; I Lokmok Dayang
I Mappasomba I Dg Nguraga Sultan Amir Hamzah Tumamalianga ri Alluk (GXVII)	GXVI	PBN2/RAJA	!	-	main2; mjn4; I Dg Nisimba; I Dg Talarra I Mene
I Mappoasang I Dg Mangewai Kg Bisei Sultan Muhammad Ali Tumenanga ri Jakattara (BIS2/GXVIII)	GXVI	I Petak Dg Nisali	GXIX; AGJ2	LAN1; !	KPB1; lbg2; Dta Dg Talarra I Makku
I Mappadulung Dg Mattimung Kg Campagaya Raja Sanrabone Sultan Abdul Jalil Tumenanga ri Lakiung (CAM4/SNX/GXIX)	GXVI	I Petak Dg Nisali	GXVIII; AGJ2	LAN1; !	BMT2; main2; I Lokmok; Dta Dg Talarra I Makku

TABLE 3-3. IMMEDIATE FAMILY RELATIONS OF RANK 1 INDIVIDUALS (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
Raja Tallok Tunilabu di Suriwa (TII)	TI	?	-	-	KNJ1; Nyai Papete; ?
Raja Tallok I Mangayoang-Berang Kg Passi Tunipasukruk (PSI1/TIII)	TII	Nyai Papete	-	KGLOE BAINEA	MAK; BRS1
Palakkaya I Malingkaeng I Dg Mannyori Kg Matoaya Kg Kanjilo Kg Segeri Sultan Abdullah Awalul Islam Tumenanga ri Agama Tumenanga ri Bonto Biraeng (KNJ3/AG1/TBB2/TVII)	TIV/ TBB1	ptk2	MNJ1	mru1/JP3	KNJ2/TUNI; BTG1; I Bungasak Lokmok Matoa; I Lokmok Pannampu; I Lokmok Paotereke; I Kalla; I Lokmok Maroanging
I Mangnginyarang I Dg Makkiok Kg Kanjilo Sultan Mudhaffar Tumamaliang ri Timorok (KNJ4/TVIII)	TVII/ TBB2	KNJ2/TUNI	TIX; MJN2; LMB1;!; Dg Mangemba	PTK4; !; AGJ1/KRW2	PKK1; LMP1; I Lukmuk; I Takrupa; I Sawerannu; I Lukmuk I Cakdi; kli1; I Bimbampa
Mangagadak Cinna I Dg I Bakle Kg Pattingalloang Sultan Mahmud Tumenanga ri Bonto Biraeng (PTG3/TBB3/TIX)	TVII/ TBB2	KNJ2/TUNI	TVIII; MJN2; LMB1; !; Dg Mangemba	PTK4; !; AGJ1/KRW2	Bissu Cakdi; I Dg Anne
I Mappaoi I Dg Mannyauruk Sultan Harrunarasyid Tuammenang ri Lampana (TX)	TVIII	LMP1	-	-	Dta Dg Talarra I Makku; BMT2; I Lokmok
Mappajanci I Mallawakkang Dg Matinri Kg Kanjilo Sultan Abdul Kadir Tuammenang ri Passiringgana (KNJ5/TXI)	TX	I Lokmok	-	-	BRM1; BB5; PRPR1; Dta Dg Tamemang

TABLE 3-3. IMMEDIATE FAMILY RELATIONS OF RANK 1 INDIVIDUALS (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
I Mappaurrangi Sultan Sirajuddin Tuamenanga ri Passi Tumammalianga ri Tallok (TXII/GXXI)	TXI	PRPR1	-	PBN3	?
La Pareppa Tosappewali Kg Anak Moncong Sultan Ismail Matinroe ri Somba Opu (GXX/BXIX/SXIX)	BXVI/ SXVIII	PTK6	BXVIII/SXX; BXX	CAM6 (!)	?
La Panaungi Topawawoi Kg Bisei Arung Mampu Sultan Abdullah Mansyur (BIS3/BXX)	BXVI/ SXVIII	PTK6	GXX/BXIX/SXIX; BXVIII/SXX	CAM6 (!)	?
La Padangsajati Toaparapu Arung Palakka Kg Katangka Puanna I Mattak Sultan Sulaiman Matinroe ri Boda (BXVIII/SXX)*	BXVI/ SXVIII	PTK6	GXX/BXIX/SXIX; BXX	CAM6 (!)	PUANNA I MATTAK
La Tenritatta Datu Mario ri Wawo Dg Serang Arung Palakka Petta Malampee Gemmekna Tounruk Tunisombaya Sultan Sahaduddin Matinroe ri Bontoalak (BXV)	Not studied		Not studied		BLJ2; LK2; mjn5; I KG LUKMUK I SARAMPA; I Dg Talele
La Patauk Sultan Alimuddin Matinroe ri Nagauleng (BXVI/SXVIII)	"	"	"	"	PTK6

*Here I follow Patunru (1983:155) rather than Muttalib (1981) who specifies We Tenri Tummung Opu Datu Ropo as the mother.

TABLE 3-3. IMMEDIATE FAMILY RELATIONS OF RANK 1 INDIVIDUALS (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
La Tenribali Matinroe ri Datunna (SXV)	Not studied		Not studied		?
Towesa Matinroe ri Salassana (SXVII)	SXV	Not studied	"	"	LAN1
Sultan Ahmad Nazaruddin Matinroe ri Gowa (LXVI)	Not studied		"	"	TMS2
Dg Massuro Sultan Mohammad Muhidin Matinroe ri Tompoktikkak (LXVII/XIX)	LXVI	"	"	"	?
Dg Mattuju (LXVIII)	LXVI	TMS2	"	"	-
Topalaguna Raja Luwuk Matinroe ri Langkanana (LXX)	LXVII/ XIX	Not studied	"	"	ARUNG PATTIRO
Raja Maros I Karaeng I Dg Marewa Tunikakassang (MRIV)	MRIII	?	-	-	SOU1
Raja Sanrabone Tunijallok ri Pakrasana (SNII)	SNI	?	-	-	?
Raja Sanrabone Tonibasara (SNIV)	SNIII	?	-	-	I Ganna Bilang

TABLE 3-3. IMMEDIATE FAMILY RELATIONS OF RANK 1 INDIVIDUALS (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
Sultan Abdul Khair Mantau-Wata-Wadu (I.I)	?	?	Not studied		?
I Ambela Sultan Abdul Khair Sirajuddin Mantau-Uma-Jati (I.II)	I.I	?	"	"	BJN1; Ralle Dg Paikak
Mapparabung Dg Mattalik Kg Panarangang Sultan Nuruddin Abubakar Alisyah Mawaka-Paju (I.III)	I.II	BJN1	"	BMT2; BPJ1; PADUKKA DOMPU; I Cinra	Dta Dg Tamemang
I Alasak Sultan Jamaluddin Mawaka-Romo (I.IV)	I.III	?	Not studied		TNTN1
I Mappatallik Syaad Syah Sultan Hasanuddin Muhammad Syah Mabata boku (I.V)	I.IV	TNTN1	"	"	AGJ3 (in 1702)
Raja Ternate Mandarsyah	Not studied		"	"	I Asseng
Sultan Sumbawa Mas Cinik (U.II)	"	"	"	"	PNK3; BJN1
Datu Lokak Mas Banten Sultan Sumbawa (U.IV)	"	"	"	"	TMS3
Ammasak Mas Madina Sultan Sumbawa (U.V)	U.IV	TMS3	"	"	?
Females					
I Puppusuk I Dg Tojeng Kg Kanjilo Kg ri Naung Tuniawanga ri Kalassakanna (KNJ2/TUNI)	GXII	LAK2	-	!	TVII/TBB2

TABLE 3-4. IMMEDIATE FAMILY RELATIONS OF RANK 2 INDIVIDUALS

Individual	Father	Mother	Brothers	Sisters	Spouses
			Males		
Raja Tallok Kgloe ri Sero (TI)	GVI	?	GVII	-	?
I Makkapatangkang-tana I Dg Padulu Kg Pattingalloang Tumenanga ri Makkoayang Raja Tallok (PTG1/TBB1/TIV)	TIII	BRS1	BKP1; Dg Palenguk	BPL; UJT1	ptk2; SOU1; Dg Tamaga; I Kare Pakrisik
Somba Garassik (GR1)	?	?	-	-	?
Raja Maros Sangajigaddongmo I Dg Masiya Gelarang Pakkareji Kgloe ri Pakerek (MRI)	- Tomanurung -		-	-	?
Raja Maros Kg Loeya (MRII)	MRI	?	TPI1; KG LOEYA RI MARISSI	KG KASSIKEBO	?
Raja Maros I Yakkumabussung I Mappasomba I Dg Uraga Patannanglangkana Tuamenanga ri Bulukduaya (MRIII)	MRII	?	-	BRS1	?
Kg Bulo-Bulo (BB1)	?	?	-	-	BB2
I Masiajeng Ratu Bulo-Bulo (BB3)	BB1	?	-	-	TMS2; Dta I Tanacinik; PNK2
Wennangpute Dg Tatea Ratu Bulo-Bulo (BB4)	BB3	Dta I Tanacinik	-	-	?

TABLE 3-4. IMMEDIATE FAMILY RELATIONS OF RANK 2 INDIVIDUALS (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
Raja Sanrabone Kg Pancabelong (SNI)	?	?	-	-	?
Raja Sanrabone Kg Massewaya (SNIII)	SNII	?	-	-	?
Raja Sanrabone Tumenanga ri Parallekkena (SNV)	SNIV	I Ganna Bilang	-	-	MAP
Raja Sanrabone I Pammusurang Tumenanga ri Campagana (SNVI)	SNV	MAP	BMB1/SNVII?; KSR2	-	TAB1; mr7; I Dg Saraba
Raja Sanrabone I Dg Tunritung I Kg Panrebawa Kg Bambanga (BMB1/SNVII?)	SNV	MAP	SNVI; KSR2	-	?
Raja Sanrabone I Kanre Kg Malolo Tumenanga ri Buttana (SNVIII?)	SNVI	TAB1	TMN1	PKK1; Dta I Tanacinik	?
Raja Sanrabone Kg Banyuanyarak (BNY2/SNVIII?)	TPI2	SNVII?	-	-	?
Raja Sanrabone I Kasim Puanna Jenalak (SNIX)	SNVIII?	?	-	-	-
Raja Sanrabone Bahauddin Kg Mamampang (MAM3/SNXI)	GR4	sin1	-	I Sitti	TNTN1
Raja Sanrabone Sahaduddin Kg Alluk (ALK6/SNXII)	?	?	-	-	?

TABLE 3-4. IMMEDIATE FAMILY RELATIONS OF RANK 2 INDIVIDUALS (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
Borahima [Ibrahim] Dg Matiring Raja Agongnionjok Matinroe ri Buliayana (AG3)	Not studied		Not studied		I Tumbuk
Mappatunru Dg Mattulung Raja Agongnionjok Matinroe ri Segeri (AG4)	AG3	"	"	"	I Dg Nisayu
Qasim Mappajanci Dg Mattajeng I Puanna Teko Raja Agongnionjok Matinroa ri Sumpampoba (AG5)	AG3	I Tumbuk	"	"	LAN1; ?
I Dg Mangemba Raja Siang (SG1)	Not studied		"	"	rkng2
La Tenritippak Toalennae Raja Ujung Puluk Akdatuang Sidenreng (SD1)	"	"	"	"	PBN2/RAJA
Akdatuang ri Massepek (MS1)	"	"	"	"	I Dg Madoko
I Dg I Lagauk Akdatuang ri Massepek (MS2)	MS1	I Dg Madoko	"	"	-
Akdatuang Sawitto Totanre Arung Kaballangang (SW1)	Not studied		"	"	LAN1
Raja Laikang (LK1)	?	?	-	-	?

TABLE 3-4. IMMEDIATE FAMILY RELATIONS OF RANK 2 INDIVIDUALS (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
Tumakgauka Katingang (KT1)	?	?	-	-	?
Kgloe Katingang (KT2)	KT1	?	-	-	?
Kg Jamarang (JM1)	?	?	-	-	?
Tumakgauka Jamarang (JM2)	JM1 (?)	?	-	-	?
Kgloe Bajeng (BJ1)	?	?	-	-	?
Daenna I Pasairi Tumakgauka Bajeng (BJ2)	BJ1	?	I Dg Massaro	-	?
Tumakgauka Mandallek (MD1)	?	?	-	-	?
Kga ri Mandallek (MD2)	MD1 (?)	?	-	-	SOU1
Females					
I Reiaya Kgloe Bainea	TII	Nyai Papete	TIII	-	GIX
Raja Laikang I Dg Marannu (mru6/LK2)	MRU3	?	-	-	BNP1/TMJ5; BXV
I Bate I Dg Tommi Kg Pakbineang Maimunah Raja Perempuan (PBN2/RAJA)	TIX/ TBB3	?	-	-	GXVI; SD1
Raja Sanrabone Kga I Pucu (SNVII?)	SNVI	mr7	-	-	TPI2
Raja Kg Suppak Datu ri Bali (SP1)	?	?	-	-	GX
Raja Tallok I Sambo Dg Ningai Niasseng Kg Pattingalloang Kg Bainea (PTG2/TV)	TIV/ TBB1	SOU1	!	BTBT1	GXII

TABLE 3-5. IMMEDIATE FAMILY RELATIONS OF RANK 3 MALES

Individual	Father	Mother	Brothers	Sisters	Spouses
I Makkarurang I Dg Majulu Kg Agangjeknek (AGJ2)	GXVI	I Petak Dg Nisali	GXVIII; GXIX	LAN1; !	I Dg Anrenne; I Dg (Ta)Lukmuk
I Mappaganti Kg Alluk (ALK1)	PTE3/TUM3b	?	-	-	?
Barombong Kg Alluk (bar2/ALK2)	?	?	-	-	Dta Dg Tuna
I Dg Alluk Kg Manyampak (alk4/MNY1)	?	?	-	-	I Sitti; ALK3
Kg Anak Sappuk (SAP1)	?	?	-	-	?
I Mappatambak Abdul Gaffar Kg Ballok (BLL2)	KTT1	TAB2	-	I Dg Mamo I Nampa	I Amuk; I Malung; BMT1/LAK5
I Mallelei Jaffar I Dg Mangngai Kg Bambangang (BMB2)	GXIV	I Kare Balluruk	-	-	-
Kg Bangkala (BNK1)	?	?	-	-	I Dg Mangamu
Kg Bangkala (BNK2)	BNK1	I Dg Mangamu	-	-	-
Kg Bangkala (BNK3)	?	?	-	-	I Tanik
Kg Barok Bosok (BRBK2)	?	?	-	-	I Mamo; I Dg Tuna I Salmah
Kg Barrung	?	?	-	-	CAM5; BRM1
Kg Batu-Batu (BTBT2)	?	?	-	-	TRNG1
Kg Batu Pute (PUTE1)	PTU2	?	-	-	-
Abdul Karim Kg Batu Pute (PUTE2)	BKK1	sin2	BPT1/TUM7c	-	-
Arung Belo	?	?	-	-	I Rukia Dta Dg Mami

TABLE 3-5. IMMEDIATE FAMILY RELATIONS OF RANK 3 MALES (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
I Mappaseppek Kg Beroanging (BER1)	?	KG KASSIKJALA	-	-	-
Mahuddin Kg Beroanging (BER2)	KG BUNGAYA	SNG1	-	-	I Makminasa Dg Tamemang
Kga ri Betaang	?	?	-	-	?
I Dg Tonji Kg Bisei (BIS1)	GXI	mns1	GXII; I Dg Biasa	MAP	?
Arung Bilusu	?	?	-	-	I Mami
Abdurrahman Kg Bonto Kamase	?	?	-	sin2	Dta Dg Jipaling
Kg Bonto Kappok (BKP1)	TIII	BRS1	TIV/TBB1; Dg Palenguk	BPL; UJT1	?
Kg Bonto Kappung (BKP2)	?	?	-	-	mns4
Kg Bonto Keke (BKK1)	JAR1/TUM6c	BJN1	-	I Tanik	sin2; BON3
Kg Bontomanaik	?	?	-	-	I Rukia Dta Dg Mami
I Pahang I Dg Nampa Kg Bonto Langkasak (LNG3)	TVII/ TBB2	I Lokmok Maroanging	I Dg Tomamo;!;!; KG TAMALAKBA	-	-
Kg Bonto Langkasak (LNG4)	MR6/TUM3a	?	-	-	-
Kg Bonto Langkasak (LNG5)	AGJ2	I Dg Anrenne	-	-	?
I Mappaseppek Kg Bonto Langkasak (LNG6)	LNG5	?	-	-	-
Sulaiman I Dg Sunggu Kg Majannang (MJN2)	TVII/ TBB2	KNJ2/ TUNI	TVIII; TIX; LMB1; I Dg Mangemba;!	PTK4;!; AGJ1/KRW2	I Mene (engaged); mru4

TABLE 3-5. IMMEDIATE FAMILY RELATIONS OF RANK 3 MALES (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
I Tanriwalu I Ata-Tojeng I Kare Tulolo Syaifulmuluk Kg Bonto Majannang (MJN3)	GXV	a bought wife	-	-	MACALLAKA KANUKUNNA; I Cauccung; mru5
I Pakkemba Kg Bonto Marannu (MRU3)	SUM1/ TBB5	Bissu Cakdi	Dg Mammaliang	TMS2	BLJ2
Kg Bonto Tangnga (BTNG1)	?	?	-	-	BB5; byng4; rkng3; I Salmah I Dg Tuna
I Yung Dg Maccinik Kg Moncong (Buluk) Sipong (SPG1)	GXII	TV	GXIII; GXIV; UJT2; I Topali	BB2; TAB1; PAC1	I Tadumai
Salahuddin Kg Bungaya	?	?	-	-	SNG1; I Taniukrungi
Kg Campagaya di Layu (CAM2)	?	?	-	-	?
I Karissa I Dg Manyoko Kg Datak (DATA2)	GXI	?	-	-	?
I Tappu Kg Galesong (GLS1)	GXI	?	-	-	BONE3
I Mannindori I Kare Tojeng Kg Galesong (GLS8)	GXVI	I Lokmok Tobo	I Aduluk Dg Mangalle	rkng2; I Rukia Dta Dg Mami	?

TABLE 3-5. IMMEDIATE FAMILY RELATIONS OF RANK 3 MALES (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
Kg Barataua Kg Garassik (GR2)	GVII	?	GVIII	BONE1	KG MACILLAKA
I Mappataenrek I Dg Mammoke Kg Mamampang Kg Garassik Kg Barombong (MAM1/BAR1/GR3)	TIV/TBB1	Dg Tamaga	I TADA-KARAENG	I Dg Tacao; mr7	KGA I BAKLE
Kg Garassik (GR4)	SPG1	I Tadumai	-	-	LMP1; sin1; OPU PESO
I Mappakonro Kg Jeknekponto	PTE3/TUM3b	?	-	-	?
Kg Jonggoa	GIX	?	-	I Kawateng	?
Mamminawang Dg Mangalliki Kg Kaballokang (mngi2/KAB1)	KAR1/TBB6	?	-	-	LAN1; lbg2; MTN3; I Dg Talebang; KG SURIWAK
Kacili Kalimata	Not studied		-	-	PNK3
Kg Karuwisi (KRW1)	I Kare Leok	I Tonek	-	I Kare Balluruk	-
I Dg Malu Kg Kasuarrang (KSR1)	KG PARIA	?	-	data3	LAK2
Kg Kasuarrang (KSR2)	SNV	MAP	SNVI; BMB1/SNVII?	-	-
Kg Katapang	DATA2	?	-	-	I Dg Kapetta; Sunting
I Mappakngara I Dg Manrururang Kg Katinting (KTT1)	GXIV	I Lokmok Tekne	!	-	TAB2
I Dg Mammuntuli Ahmad Arung Kayu	ARUNG TEKO	I Saenak I Dg Tonji	-	-	?
Kasuiang ri Lampasaile	?	?	-	-	A woman from Surabaya

TABLE 3-5. IMMEDIATE FAMILY RELATIONS OF RANK 3 MALES (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
Kg Lauk	?	?	-	-	CAM5
I Sambalik Kg Lekokbodong (LEK2)	MR6/TUM3a	?	-	-	?
Tatarak Kga ri Lekokbodong Matea ri Kelo (LEK3)	LN1/TUM6a	Dg Naratang	LBG1/TBB7	Sitti Habibah	PADUKKA DOMPU; LAN1; sin2; I Dg Memang I Munak; I Dg Situju; I Mutti
I Dg Matutu Kg Lembaya (LMB1)	TVII/ TBB3	KNJ2/ TUNI	TVIII; TIX; MJN2; Dg Mangemba; !	PTK4; !; AGJ1/KRW1	-
I Taera Kg Lotengang (LOT1)	?	?	-	-	TAB1
Dg Manarai Kg Mamampang (MAM2)	GLS8	?	-	-	-
Kga Manarang	MR6/TUM3a	?	-	-	?
Kga Mandallek (MD4)	?	?	-	-	?
I Tulolo Tajuddin Kg Mandallek (MD5)	KAR1/TBB6	Lokmok Galorang	-	-	Dta Dg Nisali Sitti Sarah; main2; mjn4; Dta I Kare Pate; I Dg Nisayu I Dara; BON3
Ibrahim I Dg Sisila Kg Mandallek (MD6)	MD4	?	-	-	CAM5
I Manrururang I Kare Gappa Kga Mangallik (MNGI2)	GXVI	I Lokmok Dayang	-	-	I Tumbuk; I Tanik; I Sitti; mjn6

TABLE 3-5. IMMEDIATE FAMILY RELATIONS OF RANK 3 MALES (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
Tusamengka I Dg Masiga Kg Manjalling (MNJ1)	TIV/TBB1	ptk2	TVII/TBB2	mru1/JP3	?
I Makkaraeng Kg Manjalling (MNJ2)	KG LAUK	CAM5	-	Aisyah	-
Kg Loeya ri Marissi	MRI	?	TPI1; MRII	KG KASSIKEBO	-
Arung Maroanging (MRGB)	?	?	-	-	I Dg Nisayu
Datu Pabolik	?	?	-	-	BLB1
Mahmud Kg Palemba	?	?	-	-	Dta Dg Talebang;
Kg Jipammana [Datu Pammana]	?	?	-	-	I Dg Manyiwi
Dulang Kg Pammolikang	GR4	?	-	-	I Minnah; I Dg Memang I Munak
Abdulmukmin Kg Pangkajeknek (PNKJ1)	KAB1	LAN1	-	-	sin2; ALK5
Kg Paria	SAP1	?	-	-	?
Kg Pattekne (PTE4)	?	?	-	-	TAB1
I Dg Mangemba Kg Pattekne (PTE5)	?	?	-	-	?
Kga ri Pattunga (PTU1)	?	?	-	-	PAC1
Kga ri Pattunga (PTU2)	?	?	-	-	?
Karaeng from Polombangkeng	?	?	-	-	?
Mappa Arung Tonra Kg Rappocinik (RAP2)	?	?	-	-	I SARAMPA I KG LUKMUK; I Kare Sali

TABLE 3-5. IMMEDIATE FAMILY RELATIONS OF RANK 3 MALES (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
Ratua	?	?	-	-	LAK3
Kga ri Segeri (AG2) (!)	TVII/ TBB2	KNJ3/ TUNI	TVII; TIX; LMB1; MJN2; Dg Mangemba	PTK4; !; AGJ1/KRW2	-
Kga ri Sula (SULI2)	?	?	-	-	?
I Tada-Karaeng	TIV/TBB1	Dg Tamaga	MAM1/ BAR1/GR3	I Dg Tacao; mr7	-
Kg Talesang	?	?	-	-	?
I Atabawang Dg Kalula Kga ri Tamalakba	TVII/TBB2	I Lokmok Maroanging	LNG3; !; !; I Dg Tomamo	-	?
I Pangkak Kg Tamalingu	?	?	-	-	I KG TULOLO
Kg Tamananga (TMN1)	SNVI	TAB1	SNVIII?	PKK1; Dta Dg Tanacinik	-
Pakampi I Dg Mangemba Gelarang Tosawa Arung Tanete Matoa [*Tumailalang toa* of BXV (Andaya, 1981:323)]	?	?	-	-	BRM1
Arung Tanete Malolo [*Tumailalang lolo* of BXV (Andaya, 1981:323)]	?	?	-	-	I Dg Memang I Munak
Kg Tappie (TPI1)	MRI	?	MRII; KG LOEYA RI MARISSI	KG KASSIKEBO	-
Kg Tapia (TPI2)	?	?	-	-	SNVII?

TABLE 3-5. IMMEDIATE FAMILY RELATIONS OF RANK 3 MALES (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
Haji I Dg (Kadi I Kg) Tappak	?	?	-	-	TMS2
Arung Teko	?	?	-	-	I Dg Nisayu; PSI2; LAN1; I Saenak I Dg Tonji
Kg Tomponga	KG BOTOROKA (sex unknown)		MR6/TUM3a	-	-
Kg Tumakdangang	?	?	-	-	I Dg Talarra I Mene; lbg2; I Syafiah
I Andak I Dg Mannyauruk Kga Ujung (UJG1)	GXI	BPL	-	?	I Dg Sanging; ?
Kg (U)jungpandang	?	?	-	-	?
Kg Ujung Tana (UJT2)	GXII	TV	GXIII; GXIV; SPG1; I Topali	BB2; TAB1; PAC1	-

TABLE 3-6. IMMEDIATE FAMILY RELATIONS OF RANK 3 FEMALES

Individual	Father	Mother	Brothers	Sisters	Spouses
I Makkutaknang I Kare Tojeng Kg Karuwisi Kg Agang Jeknek (KRW2/AGJ1)	TVII/ TBB2	KNJ2/ TUNI	TVIII; TIX; LMB1; MJN2; !; Dg Mangemba	PTK4; !	-
Kg Agangjeknek (AGJ3)	KG BARRUNG	BRM1	-	-	I.V (in 1702)
I Kg Alle (ALK3)	?	?	-	-	alk4/MNY1
I Kg Alluk (ALK5)	?	?	-	-	PNKJ1
Kga I Bakle	?	?	-	-	MAM1/BAR1/GR3

TABLE 3-6. IMMEDIATE FAMILY RELATIONS OF RANK 3 FEMALES (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
Kga ri Balang Bugisika (BLB1)	MD2	SOU1	-	-	DATU PABOLIK
I Sikati Kg Balang Jawaya (BLJ1)	GXII	POPO1	-	-	?
I Sikra Kg Balang Jawaya (BLJ2)	CEN2/TUM5a	mngp3	LN1/TUM6a; JAR1/TUM6c	Ralle Dg Paikak	KAR1/TBB6; MRU3; BXV
Kga ri Balang Kiria (BLK1)	?	?	-	-	BSG1/TBB8
Zainab Kg Balang Sari	ARUNG TEKO	I Dg Nisayu	-	-	-
We Dadi Kg Ballok (BLL1)	?	?	-	-	GXII
I Dg Ningai Kg Balua Maklonjoka (BAL)	TIII	MAK	-	KG BISSUA	GX; GXI
I Batu I Kare Niak Kg Bantaeng Bainea (BTG1)	?	?	-	-	TVII/TBB2
Kg Barang Patola (BPL)	TIII	BRS1	TIV; BKP1; Dg Palenguk	UJT1	GXI
I Pasilemba Kg Barassak Tumamaliang ri Tallok (BRS1)	MRII	?	MRIII	-	TIII
I Lingga Kg Bissua Kga Batu-Batu (BTBT1)	TIV/TBB1	SOU1	!	TV	GXII
Kga Bilik Tanggaya (BILI)	KT2	?	-	LAK2	GX
Kga Bissua	TIII	MAK	-	BAL	-

TABLE 3-6. IMMEDIATE FAMILY RELATIONS OF RANK 3 FEMALES (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
Kga Bone (BONE1)	GVII	?	GR2; GVIII	-	-
I Tapacinna Kga Bone (BONE2)	GIX	KGLOE BAINEA	GX	SOU1	?
I Lotong Kg Bone (BONE3)	GX	BAL	!	LAK3; UJL1; I Dg Sanging	GXII; GLS2
I Mainung Dg Maccini Kga Bontoa (BON2)	KSR1	LAK2	-	-	GXIV
Sitti Muthiatullah Kga Bontoa (BON3)	BLL2	BMT1/LAK5	-	-	MD5; BKK1
I Sanik I Dg Nisakking Kg Bonto Jeknek (BJN1)	GXV	I Lokmok Takontu	GXVI	-	I.II; U.II; JAR1/TUM6c
I Manninratu I Dg Niasseng Sitti Syafur Kga Bonto Matekne Kg Lakiung (BMT1/LAK5)	GXV	Ralle Dg Paikak	-	-	BLL2
Sitti Aminah Kg Bonto Matekne (BMT2)	I.II	BJN1	I.III	PADUKKA DOMPU; I Cinra; BPJ1	GXIX; TX
Maemunna Kga Bonto Pakja (BPJ1)	I.II	BJN1	I.III	PADUKKA DOMPU; I Cinra; BMT2	-
Dg Mattekne Kga Bontorambak (BRM1)	KAR1/TBB6	BLJ2	-	-	TXI; KG BARRUNG; ARUNG TANETE MATOA
I Sakbesiang I Kare Lamorrok Kga Bulo-Bulo (BB2)	GXII	TV	GXIII; GXIV; UJT2; SPG1; I Topali	TAB1; PAC1	BB1
Fatimah Kg Buluk-Buluk (BB5)	?	?	-	-	TXI; BTNG1

TABLE 3-6. IMMEDIATE FAMILY RELATIONS OF RANK 3 FEMALES (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
Sitti Fatimah Dta Dg Tokontu Kg Campagaya (CAM5)	GXVI	I Dg Talele	-	-	MD6; LBG1/TBB7; KG LAUK; KG BARRUNG
Sitti Hibatullah Kg Campagaya (CAM6) (!)	BXVII	PTK6	-	-	-
Padukka Dompu	I.II	BJN1	I.III	BMT2; BPJ1; I Cinra	Dta Dg Mattiro; LEK3
I Tanikutaknang I Dg Memang Kga ri Gomba	GXIV	I Kare Sallang	-	-	-
I Dallek I Dg Marannu Kg Jipang (mru1/JP1)	TIV/TBB1	ptk2	TVII/TBB2; MNJ1	-	-
Dg Talele I Sitti Kga Kampong Beru (KPB1)	?	?	-	-	GXVIII
Kga Kanjilo (KNJ1)	?	?	-	-	TII
Macallaka Kanukunna	SXV	?	-	-	MJN3
Kg Kassikebo	MRI	?	MRII; TPI1; KG LOEYA RI MARISSI	-	-
Kga ri Kassikjala	?	?	-	-	?
Kg I Warak Kg Lakiung (LAK2)	KT2	?	-	BILI; ?	GXII; KSR1
I Rante Patola I Bali Kga Lakiung (LAK3)	GX	BAL	!	UJL1; BONE3; I Dg Sanging	RATUA
I Sunggu I Bontomabassang I Dg Talebang I Latifah Kg Langelok (LAN1)	GXVI	I Petak Dg Nisali	GXVIII; GXIX; AGJ2	!	KAB1; LEK3; AG5; SXVI; SW1; ARUNG TEKO

TABLE 3-6. IMMEDIATE FAMILY RELATIONS OF RANK 3 FEMALES (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
I Salebe I Dg Tamaga [Matagang] Kg Lempangang (LMP1)	GXIV	I Laia I Dg Mappasang	-	-	TVIII; GR4
I Kare Pate I Sarampa I Karaeng Lukmuk	?	?	-	-	KAR1/TBB6; BXV; RAP2
Kg Macillaka	?	?	-	-	GR2
Kga Majannang (MJN1)	?	?	-	-	GXII
Kga Makdangea (MDA)	KT2	?	-	-	GXII; mng1/syb2/tum2a
Kg Makeboka (MAK)	GVII	I Rerasi	GIX	-	TIII
I Yakketmabussung I Tamakebok I Dg Matekne Kga Botongang Kg Mapekdaka (mtn1/MAP)	GXI	mns1	BIS1; GXII; I Dg Biasa	-	SNV
Puanna I Mattak	ARUNG TANETE MATOA	BRM1	-	-	BXVIII/SXX
Puanna I Mattak Zainab	BXVIII/SXX	PUANNA I MATTAK	-	-	?
Kg Mattekne (MTN3)	?	?	-	-	KAB1
Aisyah Kg Mawajang	?	KG KASSIKJALA	-	-	?
I Bissu Maliba Kga Pacellek (PAC1)	GXII	TV	GXIII; GXIV; UJT2; SPG1; I Topali	BB2; TAB1	PTU1
Sitti Rahma Maimunah Kg Pakbineang (PBN3)	TXI	PRPR1	GXXI/TXII	-	-
I Jolok Dg Ilalang Kg Paknakkukang (PKK1)	SNVI	TAB1	SNVIII?; TMN1	Dta Dg Tanacinik	TVIII

Table 3-6 Immediate Family Relations of Rank 3 Females (Cont.)

Individual	Father	Mother	Brothers	Sisters	Spouses
Kga Panaikangcinik (PNK2)	?	?	-	-	BB3
I Dg Niak Kga Panaikang (PNK3)	TVIII	I Lokmok I Cakdi	-	-	?; U.II; KACILI KALIMATA
Khadijah Kg Parang-Parang (PRPR1)	GXVIII	KPB1	-	TNTN1	TXI
Puanna Kga ri Pasik (PSI2)	TX	I Lokmok	-	-	JAR1/TUM6c; ARUNG TEKO
Sitti Aisyah Kg Pasik (PSI3)	TXI	?	-	-	-
Kga Pattekne (PTE2)	KGA LOAYA (sex unknown)		-	-	-
Kg Pattinoang	GXII	lek1	-	-	-
Patekketan Arung Pattiro	AG5	?	-	-	LXX
Kga Pattukangang (PTK3)	GXI	?	-	-	?
I Lamattoak I Dg Anrenne Kg Pattukangang (PTK4)	TVII/TBB2	KNJ2/ TUNI	TVIII; TIX; MJN2; !; LMB1; Dg Mangemba	AGJ1/KRW1; !	-
Maryam Kg Pattukangang (PTK6)	GXIX	I Lokmok	-	-	BXVI/SXVIII
I Sinungkuk I Yanna Kga Pattong (PTU3)	?	?	-	-	POPO2/ TMJ4
Opu Peso	?	?	-	-	GR4
I Bungko Kg Popok (POPO1)	KT2	?	-	-	GXII
Kga Popok (POPO3)	GXIV	?	-	-	POPO2/TMJ4
Puanna Kga	?	?	-	-	BSG1/TBB8

Table 3-6 Immediate Family Relations of Rank 3 Females (Cont.)

Individual	Father	Mother	Brothers	Sisters	Spouses
I Rabia I Sungguminasa I Dg Nisanga Kg Sanggiringang (SNG1)	GXV	I Bissu I Kare Jannang	-	-	KGA BUNGAYA; BSG1/TBB8
Kg Suriwak	?	?	-	-	KAB1
I Sapi Kga Somba Opu (SOU1)	GIX	KGLOE BAINEA	GX; GXI	BONE2	MRIV; TIV/TBB1; MD2
I Callanna I Dg Tamakring Kg Tabaringang (TAB1)	GXII	TV	GXIII; GXIV; UJT2; SPG1; I Topali	BB2; PAC1	LOT1; SNVI; PTE4
Dg Talarra Kg Tabaringang (TAB2)	?	?	-	-	KTT1
I Sugi Ratu I Dg Situju Kg Tamamakring	RATUA	LAK3	-	-	?
I Mangurangi Kg Tamasongok (TMS2)	SUM1/ TBB5	Bissu Cakdi	MRU3; Dg Mammaliang	-	LXVI; BB3; KAR1/TBB6; KADI I KG TAPPAK
Kga Tamasanga (TMS3)	TX	BMT2	-	-	U.IV
Fatimah Kg Tana-Tana (TNTN1)	GXVIII	KPB1	-	PRPR1	I.IV; MAM3/SNXI
I Ranga I Dg Manang I Dg Matekne Sitti Maradiah Kg Tangallak (mtn2/TGL1)	TVIII	kli1	-	-	GXV; LN1/TUM6a
I Mate I Dg Nisayu Kg Tarung (TRNG1)	TVIII	I Takrupa	Dg Mannyeppek; Dg Manina; mngp5	!	BTBT2
I Kg Tekne	KG TAMALAKBA	?	-	-	I Dg Patalo
I Kg Tulolo	?	?	-	-	I KG TAMALINGU
I Bayu Kg Ujungloe (UJL1)	GX	BAL	!	LAK3; BONE3; I Dg Sanging	?
Kg Ujung Tana (UJT1)	TIII	BRS1	TIV; BKP1; Dg Palenguk	BPL	-

TABLE 3-7. IMMEDIATE FAMILY RELATIONS OF KARE INDIVIDUALS

Male Individual	Father	Mother	Brother	Sister	Spouses
I Kare Ago I Timorok	?	?	-	-	I Dg Nisayu Andokpoak
I Kare Leok Gelarang Tallok	?	?	-	-	I Tonek
I Kare Mangenjang	?	?	-	-	?
I Kare Parampang Gelarang Dataka	?	?	-	-	?
I Kare Saluk Gelarang Bontomanaik	?	?	-	-	I Dg Paikak
I Kare Tanjak I Manneneki	GXII	A bought wife	-	-	-
Kare Tulolo	?	?	-	-	?
Females					
I Kare Balluruk	I Kare Leok	I Tonek	KRW1	-	GXIV
I Kare Bayang (byng5)	CEN1/TUM4a	?	?	?	-
I Bissu I Kare Jannang	?	?	-	-	GXV
I Bayang Kare Pate (byng2)	A Gowa Gelarang	?	-	-	POPO2/ TMJ4
I Kare Pakrisik	A KARAENG FROM POLOMBANGKENG	?	-	-	TIV/TBB1
I Baine I Kare Mangasa Dta Pattingalloang (mns2/ptg4)	TVII/ TBB2	I Bungasak Lokmok Matoa	POPO2/ TMJ4	mngp3; I Yadaneng; I Dg Rinangke	GXV
I Mina Kare Nannang	?	?	-	-	GXVI
I Kare Pate	I Kare Mangenjang	?	-	-	GXII
Dta I Kare Pate	?	?	-	-	MD5; syb12
I Kare Sali	?	?	-	-	RAP2
I Kare Sallang	?	?	-	-	I Makkaraeng
Dta I Kare Sallang	KG TALESANG	?	-	-	GXIV
I Bissu-tatumigisik I Kare Tonji Dta ri Mangeppek (mngp3)	TVII/ TBB2	I Bungasak Lokmok Matoa	POPO2/ TMJ4	mns2/ptg5; I Yadaneng; I Dg Rinangke	CEN2/ TUM5a

TABLE 3-8. IMMEDIATE FAMILY RELATIONS OF MALE *DAENG*

Individual	Father	Mother	Brother	Sister	Spouses
I Dg Biasa	GXI	mns1	GXII; BIS1	MAP	-
A Central Gowa *Gelarang*	?	?	-	-	?
I Dg Kapette	GX	?	I Dg Talarak	I Masiknai	?
I Dg Makkabang	?	?	-	-	?
I Dg Makruppa	?	?	-	-	Dg Nisayu; I Sitti; Dg Talele
Si Umar I Dg Mabela	POPO2/ TMJ4	byng2	BNP1/TMJ5; Dta Dg Mamaro	mjn5	-
I Dg Malik Sitti	?	?	-	-	I Matti; I
I Dg Mallimpo	?	?	-	-	Dg Nisakking Syafiah
I Dg Malluk	?	?	-	-	I Dodi
I Mamma Dta Dg Mamaro	POPO2/ TMJ4	byng2	BNP1/TMJ5; I Dg Mangemba	mjn5	I Sarah
I Mappoanak Dg Mammaliang	SUM1/ TBB5	Bissu Cakdi	MRU3	TMS2	-
I Dg Manakgalak	BKP2	mns4	-	I Dg Jinne; main2	-
[I Jamali] I Dg Manakgalak	?	?	-	-	I Dg Maeja; main3
I Dg Manangarak	KG UJUNGPANDANG	?	-	-	-
I Mamminawang I Dg Manangkasi	MJN3	I Cauccung	-	-	I Paleng
Dg Mangalle	?	?	-	-	I Ralu
I Aduluk Dg Mangalle Abdul Hamid	GXVI	Lokmok Tobo	GLS9	rkng2; Rukia Dta Dg Mami	-
I Muntuk I Dg Mangappak (mngp5)	TVIII	I Takrupa	Dg Mannyeppek; Dg Manina	!; TRNG1	-
I Qasim Dta Dg Mangemba	LN1/ TUM6a	?	-	-	I Dg Anrenne

TABLE 3-8. IMMEDIATE FAMILY RELATIONS OF MALE *DAENG* (CONT.)

Individual	Father	Mother	Brother	Sister	Spouses
Husain I Mangin-ruru Dg Mangemba Tumatea ri Bantang	TVII/ TBB2	KNJ2/ TUNI	TVIII; MJN2; TIX; !; LMB1	PTK4; !; AGJ1/KRW1	?
Dg Mangika	GXVIII	?	-	-	-
I Sule Dg Manina	TVIII	I Takrupa	Dg Mannyeppek; mngp5	!; TRNG1	?
I Dg Manjarreki	?	I Dg Kalauk	I Dg Mangompok (sex unknown)		I Dg Talebang
I Dg Manyampak Balang Baru (mny2/blbu1)	I Dg Makkabang	?	-	-	-
Maninrori Dg Mannyeppek	TVIII	I Takrupa	Dg Manina; mngp5	!; TRNG1	-
I Jaga I Dg Masekre	?	?	-	-	I Dg Tuna I Salmah
Dta Dg Massuro	?	?	-	-	Dg Jipaling; main3; I Mami; Ancik Ajeng
I Dg Massaro	BJ1	?	BJ2	-	-
Manginara Majduddin Dta Dg Mattiro	KAR1/ TBB6	TMS2	-	Sitti Anisuh	PADUKKA DOMPU
Dta Dg Onjok	?	?	-	-	Dta Dg Naratang
I Yenang Dg Palenguk	TIII	BRS1	TIV; BKP1	BPL; UJT1	?
I Dg Patalo	?	?	-	-	I KG TEKNE
I Yata I Dg Tadung	TVIII	I Bimbampa	-	-	-
I Taniasseng I Dg Talarak	GX	?	I Dg Kapette	I Masiknai	-
Dg Tasangging	?	?	-	-	Dg Naratang; I Dg Niak
Abdul Karim I Mallakkang I Dg Tomamo	TVII/ TBB2	I Lokmok Maraoanging	LNG3; !; KG TAMALAKBA	-	-

TABLE 3-9. IMMEDIATE FAMILY RELATIONS OF FEMALE DAENG

Individual	Father	Mother	Brother	Sister	Spouses
I Dg Anne	?	I Tanikutaknang I Dg Nicokko	-	-	TIX/TBB3
I Dg Anrenne	I Dg Mallakbang (sex unknown)		-	mns4	AGJ2
I Dg Anrenne	?	?	-	-	Qasim Dg Mangemba
I Baji I Dg Antu	Kare Tulolo	?	-	-	GXVI
I Dg ri Bone-Bone (bnbn1)	MR6/ TUM3a	?	-	-	?
I Dg Arenne I Dg Malompoa I Dg ri Datak (data3)	KG PARIA	?	-	-	GXII
I Sikra I Dg Iji	?	?	-	-	syb12
I Dg Jinne	BKP2	mns4	I Dg Manakgalak	main2	JAR1/TUM6c
Sitti Halimah Dta Dg Jipaling	GXVI	?	-	-	Dg Massuro; KG BONTO KAMASE
Dta Dg Kalauk	GXIII	?	-	-	?
I Bissu-Jawa I Dg Kalling (kli1)	BAR1/ GR3	KGA I BAKLE	SUM1/TBB5	-	TVIII
I Dg Kapetta	?	?	-	-	KG KATAPANG
I Dg ri Kassik	?	?	-	-	syb12
I Dg ri Lekokbodong (lek1)	?	?	-	-	GXII
I Dg Madoko	?	I Masiknai	-	-	MS1
I Dg Maeja	?	?	-	-	I Jamali Dg Manakgalak
Dta Dg Maingak (main1)	?	?	-	-	LN1/TUM6a
Dta Dg Maingak (main2)	BKP2	mns4	I Dg Manakgalak	I Dg Jinne	GXVII; GXIX; MD5
I Dg Maingak (main3)	?	?	-	-	Dg Massuro; I Jamali I Dg Manakgalak; I Mappabangka
Dta Dg Majannang (mjn4)	?	?	-	-	GXVII; MD5

TABLE 3-9. IMMEDIATE FAMILY RELATIONS OF FEMALE *DAENG* (CONT.)

Individual	Father	Mother	Brother	Sister	Spouses
I Mina I Dg Majannang (mjn5)	POPO2/ TMJ4	byng2	I Dg Mabela; Dta Dg Mamaro; BNP1/TMJ5	-	BXV
Dta Dg Majannang (mjn6)	?	?	-	-	MNGI1
I Dg Malele	GX	?	-	-	GXII
I Rukia Dta Dg Mami	GXVI	Lokmok Tobo	GLS9; Dg Mangalle	rkng2 KG	ARUNG BELO; BONTOMANAIK
I Nampa I Dg Mamo	KTT1	TAB2	BLL2	-	-
I Dg Mang-kasarak (mns1)	JM2	?	-	-	GXI
I Dg Manassa (mns4)	I Dg Mallakbang (sex unknown)		-	I Dg Anrenne	BKP2
I Dg Mangamu	GX	BILI	-	-	BNK1
I Dg Manyiwi PAMMANA	?	?	-	-	DATU
I Laia I Dg Mappasang	MNJ1	?	-	-	GXIV
I Dg Marannu (mru2)	?	I Ranga	-	-	GXV
Dta Dg Marannu (mru4)	?	?	-	-	MJN2; GXVI
I Pandik I Dg Marannu (mru5)	?	?	-	-	MJN3
I Kuneng Marusuk (mr7)	TIV/ TBB1	Dg Tamaga	I TADA-KG; BAR1/GR3	I Dg Tacao	SNVI
I Bayang Dta Dg Masiang (byng3)	BTBT2	TRNG1	-	I Munak I Dg Memang	GXVI; BNP1/TMJ5
I Linga I Dg Massokna	MR6/ TUM3a	?	-	-	?
I Munak I Dg Memang	BTBT2	TRNG1	-	byng3	LEK3; ARUNG TANETE MALOLO; KG PAMMOLIKANG
Dta Dg Naratang	?	?	-	-	Dg Tasangging; Dta Dg Onjok; LN1/TUM6a
I Dg Niak	?	?	-	-	Dg Tasangging
I Tanikutaknang I Dg Nicokko	MR6/ TUM3a	?	-	-	?

TABLE 3-9. IMMEDIATE FAMILY RELATIONS OF FEMALE *DAENG* (CONT.)

Individual	Father	Mother	Brother	Sister	Spouses
Syafiah I Dg Nisakking	?	?	-	-	Dg Mallimpo; BPT1/TUM7c
I Petak I Dg Nisali	SNVIII?	?	-	-	GXVI
Sitti Sarah Dta Dg Nisali	?	?	-	-	MD5
Andokpoak I Dg Nisayu	?	?	-	-	I Kare Ago I Timorok
I Dg Nisayu	KAR1/TBB6	?	-	-	Dg Makruppa; ARUNG TEKO; AG4; MRGB
I Dara Dg Nisayu	?	?	-	-	MD5
I Dg Nisimba	?	?	-	-	GXVII; syb13
I Dg Paikak	?	?	-	-	I Kare Saluk Gelarang Bontomanaik
Ralle Dg Paikak	CEN2/ TUM5a	mngp3	LN1/TUM6a; JAR1/TUM6c	BLJ2	GXV; I.II
I Tuli I Dg Mene Dg ri Pattukangang (ptk2)	I Kare Saluk Gelarang Bontomanaik	I Dg Paikak	tmc1/ tum2b	-	TIV/TBB1; GXII
I Dg Rappocinik (rap1)	?	?	-	-	GXII
I Syafiah [Sapia] I Dg Rikong (rkng2)	GXVI	Lokmok Tobo	GLS9; I Dg Mangalle	Rukia Dta Dg Mami	SG1
I Dg Rikong (rkng3)	?	?	-	-	BTNG1
Patimah I Dg Rinangke	TVII/ TBB2	I Bungasak Lokmok Matoa	POPO2/ TMJ4	mngp3; mns2/ptg5; I Yadaneng	-
I Dg Sanging	GX	BAL	!	UJL1; LAK3; BONE3	UJG1
I Dg Saraba	?	?	-	-	SNVI
I Mami Syafiah I Makminasa Dg [Ta]Sangging	TIX/ TBB3	?	-	-	GXVI
I Dg Singarak (sin1)	SULI1/ TUM5a	?	-	-	GR4

TABLE 3-9. IMMEDIATE FAMILY RELATIONS OF FEMALE *DAENG* (CONT.)

Individual	Father	Mother	Brother	Sister	Spouses
I Dg Singarak (sin2)	?	?	KG BONTO KAMASE	-	LEK3; BKK1; PNKJ1
I Dg Situju	?	?	-	-	LEK3
I Dg Tacao	TIV/TBB1	Dg Tamaga	I TADA-KG; MAM1/BAR1/GR3	mr7	?
I Dg Takduk	?	?	-	-	?
I Makku Dta Dg Talarra	?	?	-	-	GXVII; GXIX; TX
I Mene I Dg Talarra	LK1	?	-	-	GXVIII; KG TUMAKDANGANG
Dta Dg Talebang	?	?	-	-	KG PALEMBA
I Maluk I Dg Talebang	POPO2/ TMJ4	PTU3	BPN1/ TUM7b	-	KAB1; I Dg Manjarreki
I Dg Talele	?	?	-	-	GXVI
I Dg Talele	?	?	-	-	I Tahirik
I Dg Talele	Dg ri Jonggoa (sex unknown)		-	-	I Dg Makruppa
Sitti Hawa I Dg Talele	CEN2/ TUM5a	?	-	-	BXV
I Sakati I Dg Tamaga	I Kare Parampang Gelarang	Dataka	-	-	TIV/TBB1
Dta Dg Tamemang	?	?	-	-	TXI; I.III
I Makminasa Dg Tamemang	BB4	?	-	-	BER2
Dta Dg Tanacinik	SNVI	TAB1	TMN1; SNVIII?	PKK1	BB3
I Rikong I Dg Tanang (rkng4)	GXIV	I Tekne	-	-	KAR1/TBB6
I Dg Tapallak	?	I Jaga Azizah	-	-	Sayid Zainu
I Saenak I Dg Tonji	?	?	-	-	ARUNG TEKO
Dta Dg Tuna	?	?	-	-	bar2/ALK2
I Salmah I Dg Tuna	?	?	-	-	BRBK2; BTNG1; Jaga Dg Masekre

TABLE 3-10. IMMEDIATE FAMILY RELATIONS OF FEMALE *LOKMOK*

(No such relations for male *Lokmok* appear in the records)

Individual	Father	Mother	Brother	Sister	Spouses
I Lokmok		?	?	-	-	TX
I Lokmok		?	?	-	-	GXIX
I Lokmok		?	?	-	-	JAR1/TUM6c
I Lukmuk		?	?	-	-	TVIII
I Dg (Ta)Lukmuk		?	?	-	-	AGJ2
I Kare Lukmuk		?	?	-	-	KG PALEMBA
I Lukmuk I Cakdi		?	?	-	-	TVIII
I Lokmok Dayang		?	?	-	-	GXVI
Lokmok Galorang		?	?	-	-	KAR1/TBB6
I Lompo-Pare I Lokmok Pare		GXII	?	-	-	?
I [Sabbe] Lokmok Takontu		?	?	-	-	GXV
I Lokmok Tobo		?	?	-	-	GXVI
I Bungasak Lokmok Matoa		?	?	-	-	TVII/TBB2
I Campaga I Lokmok Tekne I Lokmok Paotereke		?	?	-	-	TVII/TBB2
I Laya I Lokmok Malolo I Lokmok Maroanging		?	?	-	-	TVII/TBB2
I Rasa I Lokmok Tekne		?	?	-	-	GXIV
I Rombo I Lokmottommi I Lokmok ri Bokdia I Lokmok Pannampu		?	?	-	-	TVII/TBB2
I Tanik I Lokmok Singarak		?	?	-	-	GXV

TABLE 3-11. IMMEDIATE FAMILY RELATIONS OF UNTITLED MALES

Individual	Father	Mother	Brother	Sister	Spouses
Akduluk	?	?	-	-	I Sitti
I Ali	?	I Tukduk	-	-	I Sitti
I Callok	MRGB	?	-	-	-
Ibrahim	AG3	I Tumbuk	-	-	-
Ibrahim	BB3	PNK2	-	-	-
I Japarak	?	?	-	-	I Sitti
I Makkaraeng	?	?	-	-	Kare Sallang
I Mallombasi	PTE3/TUM3b	?	-	-	?
I Mangambari	?	?	-	-	I Sitti
I Mappabangka	?	?	-	-	I Sitti; main3
I Mappakana	AGJ2	?	-	-	-
I Mappa Sekhek	?	?	-	-	I Sitti
I Opu	?	?	-	-	I Saidah
I Rajalle	?	?	-	-	I Kawateng
Sayid Zainu	?	?	-	-	Dg Tapallak
I Tahirik	?	?	-	-	I Dg Talele
I Timorok	?	?	-	-	I Sitti
I Topali	GXII	TV	GXIII; GXIV; BB2; UJT2; SPG1 TAB1; PAC1		-

TABLE 3-12. IMMEDIATE FAMILY RELATIONS OF UNTITLED FEMALES

Individual	Father	Mother	Brother	Sister	Spouses
Aisyah	KG LAUK	CAM5	MNJ2	-	-
Aisyah	?	I Manna	-	-	-
Ancik Ajeng	?	?	-	-	Dg Massuro
I Amuk	?	?	-	-	BLL2
Sitti Anisuh	KAR1/TBB6	TMS2	Dg Mattiro	-	-

TABLE 3-12. FAMILY RELATIONS OF UNTITLED FEMALES (CONT.)

Individual	Father	Mother	Brother	Sister	Spouses
I Asseng	GXV	I Lokmok Singarak	-	-	RAJA TERNATE
I Bayang (byng1)	CEN1/ TUM4a	?	-	-	-
I Bayang (byng4)	?	?	-	-	BTNG1
I Bimbampa	?	?	-	-	TVIII
Bissu Cakdi	?	?	-	-	SUM1/TBB5; TIX/TBB3
I Cauccung	?	?	-	-	MJN3
I Cinra	I.II	BJN1	I.III	BPJ1; DOMPU;	PADUKKA BMT2 -
I Cocuk	?	?	-	-	syb12
I Dodi	?	?	-	-	I Dg Malluk
Sitti Habibah	LN1/TUM6a	Dg Naratang	LBG1; LEK3	-	-
Halimah	?	I Kammisik	-	-	-
I Ganna Bilang	?	?	-	-	SNIV
I Jaga Azizah	?	?	-	-	?
I Kammisik	?	?	-	-	? (I Ra...)
I Kalla	?	?	-	-	TVII/TBB2
I Kawate	GXII	I Sambe	-	-	-
I Kawateng	GIX	?	KG JONGGOA	-	I Rajalle
I Sitti Lambengi (lbg2)	?	?	-	-	GXVIII; KAB1; KG TUMAKDANGGANG
I Mami	?	?	-	-	Dta Dg Massuro; ARUNG BILUSU
I Malung	?	?	-	-	BLL2
I Mamo	?	?	-	-	BRBK2; JAR1/TUM6c
I Manappaki	SNVII?	?	-	-	-

TABLE 3-12. FAMILY RELATIONS OF UNTITLED FEMALES (CONT.)

Individual	Father	Mother	Brother	Sister	Spouses
I Manna	?	?	-	-	?
I Masiknai	GX	?	I Dg Kapette; I Dg Talarak	-	?
I Matti	?	?	-	-	I Dg Malik
I Puanna Mene (!)	GXIV	I Tobo	-	-	MJN2 (engaged)
I Mina	?	?	-	-	?
I Minnah	?	?	-	-	KG PAMMOLIKANG
I Mutti	?	?	-	-	LEK3
I Nampa Syahribanung	?	I Tija	-	Ummu Kalsun	-
Nurul Mahalli	KAR1/TBB6	rkng4	-	-	-
Nyai Papete RI	KASUIANG LAMPASAILE	A woman from Surabaya	-	-	TII
I Paleng	?	?	-	-	I Mamminawang Dg Manangkasi
I Ralu	LEK2	I Sambalik	-	-	Dg Mangalle
I Ranga	KSR1 (?)	?	-	-	?
I Rerasi	A merchant	?	-	-	GVII
I Rikong (rkng1)	?	I Dg Takduk	-	-	?
I Saidah	?	?	-	-	I Opu
I Sambe	?	?	-	-	GXII
I Sarah	?	?	-	-	Mamma Dg Mamaro
I Sawerannu	?	?	-	-	TVIII
I Sitti	?	?	-	-	Akduluk
I Sitti	?	?	-	-	MNGI1
I Sitti	?	?	-	-	I Mappabangka
I Sitti	?	?	-	-	I Ali
I Sitti	?	?	-	-	alk4/MNY1
I Sitti	?	?	-	-	I Japarak

TABLE 3-12. FAMILY RELATIONS OF UNTITLED FEMALES (CONT.)

Individual	Father	Mother	Brother	Sister	Spouses
I Sitti	GR4	sin1	MAM3/SNXI	-	Mappa Sekhek
I Sitti	?	?	-	-	I Dg Malik
I Sitti	?	?	-	-	I Dg Makruppa
I Sitti	?	?	-	-	I Mangambari
I Sitti	?	?	-	-	I Timorok
Sunting	?	?	-	-	KG KATAPANG
I Sutting	?	?	-	-	JAR1/TUM6c
I Syafiah	?	?	-	-	KG TUMAKDANGANG
I Tadampali	DATU PABOLIK	BLB1	-	-	GXIV
I Tadumai	MAM1/BAR1/GR3	?	-	-	SPG1
I Taikallong	MR6/TUM3a	?	-	-	-
I Takrupa	?	?	-	-	TVIII
I Tanik	JAR1/TUM6c	BJN1	BKK1	-	MNGI1
I Tanik	KGA TAMALAKBA	?	-	-	KAR1/TBB6; BNK3
I Taniukrungi	?	?	-	-	KG BUNGAYA
I Tekne	?	?	-	-	GXIV
I Tija	?	?	-	-	?
I Tobo	GLS2	BONE3	!	!	GXIV
I Tonek	?	?	-	-	I Kare Leok
I Tukduk	?	?	-	-	?
I Tumbuk	?	?	-	-	MNGI1
I Tumbuk	?	?	-	-	AG3
Ummu Kalsun	?	I Tija	-	I Nampa Syahribanung	-
I Uru	?	?	-	-	GXIV
I Yadaneng	TVII/ TBB2	I Bungasak Lokmok Matoa	POPO2/ TMJ4	mngp3; mns2/ptg5; I Dg Rinangke	-

TABLE 3-13. IMMEDIATE FAMILY RELATIONS OF RANK 3 MEN HOLDING NON-TERRITORIAL POSTS

Individual	Father	Mother	Brothers	Sisters	Spouses
Kg Summanak (SUM1/TBB5)	MAM1/BAR1/GR3	TMS1	-	kli1	Bissu Cakdi
Abdul Hamid Kg Karunrung Tuamemang ri Ujung Tana (KAR1/TBB6)	TIX/TBB3	I Dg Anne	!	-	BLJ2; TMS2; I Tanik; rkng4; Lokmok Galorang; I SARAMPA I LOKMOK KARAENG
Ali Kg Lambengi (LBG1/TBB7)	LN1/TUM6a	Dta Dg Naratang	LEK3	Sitti Habibah	CAM5
I Lita Dg Tasangging Muhammad Syafi Kg Bontosunggu Tumenanga ri Taeng (BSG1/TBB8)	TVIII	I Sawerannu	-	-	SNG1; BLK1; PUANNA KGA
Kg Barok Bosok (BRBK1/SYB10)	?	?	-	-	-
Kg Bantaeng (BTG2/SYB11)	?	?	-	-	-
I Yunyik I Dg Mangemba Kg Marusuk (MR6/TUM3a)	KG BOTOROKA (sex unknown)		KG TOMPONGA	-	?
I Tamanggoa I Dg Arenne Kg Pattekne (PTE3/TUM3b)	?	?	-	-	?; ?
I Bonto Kg Cenrana (bon3/CEN1/TUM4a)	MR6/TUM3a	?	-	-	?
I Mamminawang I Dg Mangawing Kg Maroanging (MRGM1/TUM4b)	PTE3/TUM3b	?	-	-	-
I Mallewai I Dg Manassa Kg Cenrana (mns3/CEN2/TUM5a)	?	?	-	-	mngp3

TABLE 3-13. IMMEDIATE FAMILY RELATIONS OF RANK 3 MEN HOLDING NON-TERRITORIAL POSTS (CONT.)

Individual	Father	Mother	Brothers	Sisters	Spouses
I Mangnga Kga Suli (SULI1/TUM5b)	?	?	-	-	?
Mammaliang Dg Pole Kg Lengkesek (LN1/TUM6a)	CEN2/TUM5a	mngp3	JAR1/TUM6c	BLJ2; Ralle Dg Paikak	main1; Dg Naratang; mtn2/TGL1
Kga Bisuli (SULI2/TUM6b)	?	?	-	-	-
Abdul Gafar Kga Jaranika (JAR1/TUM6c)	CEN2/TUM5a	mngp3	LN1/TUM6a	BLJ2; Ralle Dg Paikak	BJN1; PSI2; I Mamo; I Sutting; I Lokmok; I Dg Jinne
Tumailalang Kg Lekokbodong (LEK4/TUM7a?)	I Dg Makruppa	I Dg Nisayu	-	-	-
I Mangemba Dg Mattayang Abdul Gafar Kg Bonto Panno (BPN1/TUM7b)	POPO2/TMJ4	PTU3	-	I Dg Talebang	-
I Barak Kg Bonto Patongkok (BPT1/TUM7c)	BKK1	sin2	PUTE2	-	I Dg Nisakking Syafiah
I Mallawakkang I Dg Sisila Abdul Kadir Kg Popo Matea ri Bima (POPO2/TMJ4)	TVII/TBB2	I Bungasak Lokmok Matoa	-	mns2/ptg5; mngp3; I Dg Rinangke; I Yadanneng	POPO3; byng2; PTU3
I Makdaeng Dg Makbali Kg Bonto Nompo (BNP1/TMJ5)	POPO2/TMJ4	byng2	I Dg Mabela; Dta Dg Mamaro	mjn5	LK2; byng3; ?

TABLE 3-14. IMMEDIATE FAMILY RELATIONS OF RANK 4 MEN HOLDING NON-TERRITORIAL POSTS

Individual	Father	Mother	Brothers	Sisters	Spouses
I Dg Pamattek (syb1/tum1)	?	?	-	-	-
I Dg ri Mangallekana Kare Mangngaweang (mng1/syb2/tum2a)	?	?	-	-	MDA
I Mappaengang I Kare Paeso I Dg ri Tamacinna (tmc1/tum2b)	I Kare Saluk Gelarang Bontomanaik	I Dg Paikak	-	ptk2; ?	-
I Kare Pangngepak (syb3)	?	?	-	-	-
Incek Husen (syb4)	?	?	-	-	-
I Dg Pagak (syb5)	?	?	-	-	-
I Dg Maklakbak (syb6)	?	?	-	-	-
I Dg Rioli (syb)	?	?	-	-	-
I Dg Riboko (syb)	?	?	-	-	-
I Dg Burakne (syb)	?	?	-	-	-
Dg Makkulle Abdul Wahid (syb12)	?	?	-	-	I Cocuk; I Dg Iji I Sikra; Dta I Kare Pate; I Dg Kassik
I Mappakngara I Dg Mallulungang (syb13)	LEK3	PADUKKA DOMPU	-	-	I Dg Nisimba
I Dg ri Sambe (tmj1)	?	?	-	-	-
I Dg Lompo (tmj2)	?	?	-	-	-
I Apung I Dg Ago (tmj3)	?	?	-	-	-

TABLE 3-15. CROSS-TABULATION OF TITLES AGAINST GENDER

	MALES	FEMALES	TOTAL
RANK 1 (GREATER RAJAS)	44	1	45
RANK 2 (LESSER RAJAS)	35	6	41
RANK 3 (KARAENGS)	119	87	206
/KARE	9	13	22
RANK 4 -DAENGS + GELARANGS	39	79	118
\LOKMOK	0	18	18
RANK 5 (UNTITLED, including two "bought wives")	18	77	95
TOTAL	264	281	545

The Makassar titles were frequently associated with place names, many of them within or near SSPHAP's "Gowa" archaeological survey (Chapters 5 to 12). Apparently only one individual occupied any toponymic title at any time, apart from occasional instances of husbands and wives holding the same title (see the genealogical figures in Chapter 4). The frequency with which titles were associated with toponyms is cross-tabulated against both gender and titular rank in Table 3-16, calculated from every title associated with every Makassar within my database (Tables 3-3 to 3-14).[7]

Except for the Gelarang title, which was explicitly associated with a represented community (3.2), the higher titles were not only more frequently associated with males, but also more frequently with a toponym. Analogously, whereas women held lesser titles in association with a toponym more frequently than men did, this relationship was reversed with the Karaengs. Moreover the female lords were systematically associated with smaller karaengships (e.g. places within palace centres such as Lakiung and Bone [6.5]) rather than the main karaengships such as Garassik and Galesong (Chapter 4). On top of that, all the male rajas ruled a kingdom while half of the female rajas were honourary recipients (Table 3-16). These points strongly indicate that the Makassar titulatory system reflected a male-dominated hierarchy in which status was closely linked with extent of territorial control.

[7] e.g. Abdullah (Daeng Mannyori Karaeng Matoaya Karaeng Kanjilo Karaeng Segeri Sultan Tallok) counts as five titles.

TABLE 3-16. PERCENTAGE FREQUENCIES WITH WHICH MAKASSAR TITLES WERE LINKED WITH TOPONYMS

	MALES	FEMALES	BOTH SEXES
Gelarang (6,0,6)	100.0	0.0	100.0
Kare (11,17,28)	0.0	5.9	3.6
Lokmok (0,23,23)	-	26.1	26.1
Daeng (95,106,201)	14.7	22.6	19.9
Karaeng (138,91,229)	86.2	80.2	83.8
Lesser Raja (26,5,31)	100.0	60.0	93.5
Greater Raja (23,1,24)	100.0	0.0	95.8

N.B. The first figure inside the brackets shows the number of male titles, the second figure shows the number of female titles, and the third figure shows the total cases. Note that all but one of the six toponyms associated with a *lokmok* title refers to some wife of a Tallok raja and falls within the area which he ruled.

Tables 3-17 and 3-18 show the marriages between consanguinal relations which can be reconstructed from the genealogical details given in Tables 3-3 to 3-14. 28/55 of the marriages hinged on a male raja marrying a woman descended from one of his royal forefathers. The royal forefather was two generations back on both sides in 13 cases and no more than three generations back on either side in 23 cases. The point not only reflects the trend whereby almost all the rajas belonged to unbroken male royal patrilines (Tables 3-3 and 3-4), it also demonstrates that the royal lines intermarried regularly.

The enormous sweep of consanguinal relationships between wives and their related husbands indicates that the Makassar aristocracy eschewed both prescriptive and preferential marriage. Actually, far more relationships trace their closest common ancestor through step siblings born of a single polygynous man than to a conjugal pair. In addition, the Makassar texts frequently record divorces, to the point where the marital careers of some aristocratic women could be described as serial monogamy. Hence we might expect that the closest common ancestor for some of the related spouses would have been a woman who mothered children to different men. However, I could not find any examples. These observations demonstrate the structural importance of noble and especially royal polygyny to the system.

TABLE 3-17. RELATIONSHIP OF WIFE TO HER RELATED HUSBAND
(WHERE A CONJUGAL PAIR FORMS THE CLOSEST COMMON ANCESTORS)

HUSBAND IS WIFE IS	Raja Raja	Raja Karaeng	Raja Daeng	Raja Untitled	Karaeng Karaeng	Karaeng Daeng	Karaeng Untitled	Sum
FZD & MBD		2						2
FZD	1	2					1	4
MBD		1		1				2
FBD		1	1		2	1		5
FBSD	1							1
FFBD		1						1
FFBSSD		1						1
MFMBSD			1					1
FFFZSDSD			1					1
Sum	2	8	3	1	2	1	1	18

N.B. The "FZD & MBD" relationship involved three common grandparents.

TABLE 3-18. RELATIONSHIP OF WIFE TO HER RELATED HUSBAND
(CLOSEST ANCESTRY TRACED VIA STEP SIBLINGS)

HUSBAND IS WIFE IS	Raja Raja	Raja Karaeng	Karaeng Raja	Raja Daeng	Raja Untitled	Karaeng Karaeng	Karaeng Daeng	Karaeng Untitled	Sum
FFDD & MFSD						1			1
FFDD						1			1
MFSD		1		1		2		1	5
FFSD				1		1		1	3
MFDD				1					1
FFFSD							1		1
FFSDD							1		1
FFSSD	1								1
FFDSD		1				1			2
FFDDD		1							1
FMFSD				1			1		2
FFFSSD						1			1
FFFSDD						1			1
FFFDSD	1			1					2
FFFDDD		1			1				2
FMFSSD						1			1
FMFSDD				1				1	2
FFFSSSD			1						1
FMFSSSD		1							1
MFFDSSD						1			1
FFMFSSSD						2			2
FFMFSSDD				1				1	2
FMFFDSSD						1			1
FMFFDSSSD						1			1
Sum	2	5	1	7	1	14	3	4	37

N.B. "FS" stands for father's son's, i.e. step-brother's, and "FD" stands for father's daughter's, i.e. step-sister's. The "FFDD & MFSD" relationship involved two polygynous grandfathers as the equally closest common ancestors.

3.4.2 Case-by-case analysis

Tables 3-3 to 3-14 were compiled precisely to allow comparisons in titulation across next-of-kin. The raw data are summarised for males and females in Tables 3-19 and 3-20 respectively. These tabulations suggest a positive correlation in the titles held by immediate family members, whether compared between generations or within the same generation, across the sexes or within the same sex, or as consanguinal or affinal relations.[a]

For the results to be analysed statistically, the less frequently occurring titles have to be pooled into statistically usable categories. The "Daeng" variants (*Daeng*, *Gelarang*, *Kare* and *Lokmok*) are pooled with untitled individuals to compensate for the small samples of Rank 4 and Rank 5 males. Similarly, "greater rajas" and "lesser rajas" are pooled to compensate for the small number of female rajas. This leaves three broad classes - rajas (where men greatly predominate), karaengs (where men slightly predominate) and non-lords (where women greatly predominate).

After these pooling decisions, the distributions shown in Tables 3-19 and 3-20 reduce to three-by-three contingency tables where the columns and the rows show the incidences of the same ordinal classes (rajas, karaengs and non-lords) as linked across next-of-kin. From these contingency tables we can derive expected frequencies by the Chi-square procedure, but with expected frequencies less than five in over 20% of the cells as a result of the heavily weighted distribution of titles across the sexes. In this and other respects, the distributions invalidate the application of every standard parametric and non-parametric statistic on at least two formal or procedural counts (cf. Startup and Whittaker, 1982:Chapters 7 to 9). Accordingly I have thought up a technique in which the observed data constrain the "ideal distribution". The technique then quantifies how well the observed data improve on the expected or "null hypothesis"

[a] As in Table 3-15, the *Gelarang* are pooled with the *Daeng* in Tables 3-19 and 3-20.

TABLE 3-19. TITULATION OF MALES AGAINST FAMILY MEMBERS

FATHER IS

	Rank 1	Raja	Karaeng	Kare	Daeng	Untitled	Sum
M Rank 1	30	5	0	0	0	0	35
A Raja	3	16	2	0	0	0	21
N Karaeng	23	7	36	1	1	0	68
Kare	1	0	0	1	0	0	2
I Daeng	12	1	9	0	1	0	23
S Untitled	1	2	3	0	0	0	6
Sum	70	31	50	2	2	0	155

MOTHER IS

	Rank 1	Raja	Karaeng	Kare	Daeng	Lokmok	Untitled	Sum
M Rank 1	2	5	9	0	4	2	2	24
A Raja	0	1	4	0	3	0	2	10
N Karaeng	2	2	12	4	14	7	5	46
Kare	0	0	0	0	1	0	1	2
I Daeng	1	0	3	2	3	2	6	17
S Untitled	0	1	1	0	0	0	2	4
Sum	5	9	29	6	25	11	18	103

BROTHER IS

	Rank 1	Raja	Karaeng	Kare	Daeng	Untitled	Sum
M Rank 1	14	1	13	0	3	2	33
A Raja	1	2	6	0	2	0	11
N Karaeng	13	6	18	0	10	2	49
Kare	0	0	0	0	0	0	0
I Daeng	3	2	10	0	10	0	25
S Untitled	2	0	2	0	0	0	4
Sum	33	11	49	0	25	4	122

SISTER IS

	Rank 1	Raja	Karaeng	Kare	Daeng	Lokmok	Untitled	Sum
M Rank 1	0	1	25	0	0	0	1	27
A Raja	0	0	5	0	1	0	1	7
N Karaeng	0	0	22	3	16	0	6	47
Kare	0	0	0	0	1	0	0	1
I Daeng	0	0	9	0	6	0	3	18
S Untitled	0	0	3	0	0	0	0	3
Sum	0	1	64	3	24	0	11	103

WIFE IS

	Rank 1	Raja	Karaeng	Kare	Daeng	Lokmok	Untitled	Sum
M Rank 1	1	5	39	6	30	14	16	111
A Raja	0	1	10	1	8	0	1	21
N Karaeng	0	2	50	4	45	4	23	128
Kare	0	0	0	0	2	0	1	3
I Daeng	0	0	2	1	16	0	10	29
S Untitled	0	0	0	1	3	0	9	13
Sum	1	8	101	13	104	18	60	305

TABLE 3-20. TITULATION OF FEMALES AGAINST FAMILY MEMBERS

FATHER IS

WOMAN IS	Rank 1	Raja	Karaeng	Kare	Daeng	Untitled	Sum
Rank 1	1	0	0	0	0	0	1
Raja	2	2	1	0	0	0	5
Karaeng	43	11	10	0	0	0	64
Kare	2	0	3	2	1	0	8
Daeng	10	7	17	3	0	0	37
Lokmok	1	0	0	0	0	0	1
Untitled	6	1	14	0	1	0	22
Sum	65	21	45	5	2	0	138

MOTHER IS

WOMAN IS	Rank 1	Raja	Karaeng	Kare	Daeng	Lokmok	Untitled	Sum
Rank 1	0	0	1	0	0	0	0	1
Raja	0	0	1	0	1	0	1	3
Karaeng	2	5	26	3	9	4	3	52
Kare	0	0	0	0	0	2	1	3
Daeng	0	0	8	2	6	3	4	23
Lokmok	0	0	0	0	0	0	0	0
Untitled	0	0	6	0	4	2	5	17
Sum	2	5	42	5	20	11	14	99

BROTHER IS

WOMAN IS	Rank 1	Raja	Karaeng	Kare	Daeng	Untitled	Sum
Rank 1	0	0	0	0	0	0	0
Raja	1	0	0	0	0	0	1
Karaeng	25	5	22	0	9	3	64
Kare	0	0	3	0	0	0	3
Daeng	0	1	16	1	6	0	24
Lokmok	0	0	0	0	0	0	0
Untitled	1	1	6	0	3	0	11
Sum	27	7	47	1	18	3	103

SISTER IS

WOMAN IS	Rank 1	Raja	Karaeng	Kare	Daeng	Lokmok	Untitled	Sum
Rank 1	0	0	0	0	0	0	0	0
Raja	0	0	1	0	0	0	0	1
Karaeng	0	1	30	0	5	0	3	39
Kare	0	0	0	2	2	0	2	6
Daeng	0	0	5	2	10	0	1	18
Lokmok	0	0	0	0	0	0	0	0
Untitled	0	0	3	2	1	0	2	8
Sum	0	1	39	6	18	0	8	72

HUSBAND IS

WOMAN IS	Rank 1	Raja	Karaeng	Kare	Daeng	Untitled	Sum
Rank 1	1	0	0	0	0	0	1
Raja	5	1	2	0	0	0	8
Karaeng	39	10	50	0	2	0	101
Kare	6	1	4	0	1	1	13
Daeng	30	8	45	2	16	3	104
Lokmok	14	0	4	0	0	0	18
Untitled	16	1	23	1	10	9	60
Sum	111	21	128	3	29	13	305

distribution (no association in titles held by next of kin) compared to the ideal distribution (best possible association in titles held by next of kin). I am calling this technique the "Cross-linked Ordinal Test", pending investigations that it has not been previously developed.

Consider the titles of fathers and sons (Figure 3-2). The observed distribution (from Table 3-19) and the derived expected distribution are shown at the top. From the former we deduce that the number of raja sons of raja fathers could not possibly exceed 56 (the total of raja sons), while the number of nonlord sons of nonlord fathers could not possibly exceed four (the number of nonlord fathers). Within these constraints, the best possible (H_1) result is actually a range of distributions which could variably mean (a) the greatest possible number of the same titles held by fathers and sons (H_{1A}), (c) the higher the father's title, the higher the son's (H_{1C}), or (b) some result in between, as epitomised by the intermediate solution (H_{1B}). Thus the observed and expected distributions may differ on two axes; how closely the observed distribution approaches the range of best possible distributions, and to which of the latter does the observed distribution veer (Figure 3-2).

Setting the horizontal axis, the H_{1A} and H_{1C} solutions differ from each other by 54 re-assignments out of the 155 cases or 34.8%, i.e. 17.4% from the intermediate solution. As indicated on the horizontal axis, a wide range of these ideal distributions are equidistant from the expected distribution, involving 40.8 reclassifications or 26.3%. The 26.3% value sets the vertical axis, the dotted area links the expected distribution to the range of closest ideal distributions, and a thick line is drawn to show that the midpoint of this range diverges from the intermediate solution towards the H_{1C} distribution by 6.1%. Considering now the observed distribution, we can show that it differs by six re-assignments (3.9%) from an ideal distribution which diverges towards the H_{1A} distribution by 1.9%. That is, the observed distribution improves over the expected distribution by 22.4% (26.3% minus 3.9%), and veers towards the H_{1A} distribution by 8% (1.9% minus -6.1%) compared with the

midpoint of the expected distribution's range (Figure 2). To express this in English, the titles held by fathers very strongly influenced the titles held by sons, with a clear tendency for fathers and sons to have held the same titles, rather than for the higher titled fathers always to have had the higher titled sons.[9]

In the comparison of fathers' and daughters' titles (Figure 3-3), the expected distribution differs by nine re-assignments (6.5%) from a small range of ideal distributions, which diverges from the intermediate solution slightly towards the H_{1A} solution. The observed distribution differs by two re-assignments (1.4%) from a similarly small range of ideal solutions which strongly veers towards the H_{1C} solution. Thus, while the observed distribution lies very close to the ideal solution, this was largely determined by the structure of the data, and there is only a 5.1% improvement over the expected distribution. What matters is the c.17% divergence of the observed distribution away from the expected distribution towards the H_{1C} distribution. That is, daughters could not expect to attain titles as high as their fathers', given the bias against women in this regard, but the daughters of higher ranking fathers generally attained higher titles than the daughters of lower ranking fathers did.

With mothers' and sons' titles, the ideal distributions closest to the expected and the observed distribution are singular or confined to a miniscule range, as shown by the thick vertical lines in Figure 3-4. Compared to the expected distribution, the observed distribution is 9.3% (24.8% minus 15.5%) closer to an ideal distribution, specifically the one which diverges 6.4% towards the H_{1C} distribution away from the one closest to the expected distribution. That is, mothers' titles had some apparent influence over their sons' titles, specifically in the context of a weak tendency for higher titled sons to have had

[9] In these figures, the "horizontal axes" represent more complex limiting functions than the straight lines here portrayed for our purposes. Also, I show ranges of equally close H_1 distributions as dotted areas to avoid further cluttering the "horizontal axes".

higher titled mothers, rather than a tendency for sons and mothers to have held the same title.

With mothers' and daughters' titles, all female rajas had non-raja mothers, with the result that the H_{1A} and H_{1C} distributions are identical (Figure 3-5). The expected distribution differs by 45 re-assignments or 45.5% from the ideal, whereas the observed distribution differs by 34 re-assignments or 34.3%. The 11.2% difference suggests that mothers' titles had some influence over the daughters' titles.

As regards blood brothers (Figure 3-6) and blood sisters (Figure 3-7), the H_{1A} and H_{1C} distributions are tautologically identical. With the blood brothers, the observed distribution misplaces 76 cases or 62.3% compared to the 79.6 cases or 65.2% misplaced by the expected distribution. This poor result indicates that there were many more men of suitably royal or noble birth than high ranking posts for them to fill. With the blood sisters, the observed distribution misplaces 18 cases (25.0%) compared to the 36.6 cases (50.8%) misplaced by the expected distribution. Here, because women were virtually barred from the highest ranking posts, blood sisters could and did attain very similar titles.

Comparing blood brothers and sisters (Figure 3-8), we have the situation where the H_{1A} and H_{1C} solutions vary by 32 re-assignments or 31%. The expected distribution is equidistant from a wide range of ideal distributions, shown by the dotted area, which indeed contains the range of ideal distributions closest to the observed distribution. However, as shown by the midpoints, the latter is 8.6% closer to the H_{1C} solution. Looking at the vertical distances, we see that the expected distribution misplaces 28.3 cases (27.6%) compared to the 24 cases (23.3%) misplaced by the observed distribution. So while men tended to have a greater spread of titles than their sisters did, nonetheless the higher titled men tended to have the higher titled sisters.

In our last comparison, spouses (Figure 3-9), the difference between the H_{1A} and H_{1C} solutions involves 202 re-assignments or 66.2%. The expected distribution is 36.2

cases (11.9%) from the range of ideal solutions shown as a dotted area with its midpoint only 0.8% removed from the intermediate solution. This intermediate solution scarcely differs from the observed distribution, with differences of only six re-assignments (2.0%) on the vertical axis and three re-assignments (1.0%) on the horizontal axis (Figure 9). While a high correlation between the titles of husbands and wives is dictated by the structure of the data, it is almost perfectly achieved by the observed distribution, in a context which equally emphasises similarity of titles and the tendency for higher ranked women to have married even more highly ranked men.

To estimate levels of probabilistic significance, I pool the categories further into two-by-two contingency tables. However, given the very uneven distribution of titles across the sexes, the pooling procedures for men and women must differ. Specifically, male karaengs and non-lords are pooled into "non-raja" males, while female rajas and karaengs are pooled into female lords (cf. Table 3-15). After this the number of male rajas (79) approximates the number of female lords (94), and the number of male non-rajas (185) approximates the number of female non-lords (187). Levels of probabilistic significance, now calculable by the Chi-square statistic, show that most of the observed correlations have a possibility less than one in 200 of being due to chance. The exceptions concern full brothers, where the observed correlation in titles could well be due to chance, and spouses, where the correlation has a possibility around one in 30 of reflecting chance.

TABLE 3-21. CHI-SQUARE VALUES FOR THE NEXT-OF-KIN CORRELATIONS OF TITLES

FATHERS AND SONS:	Chi-square = 37.7, 1 d.f., $p < 0.001$
FATHERS AND DAUGHTERS:	Chi-square = 29.3, 1 d.f., $p < 0.001$
MOTHERS AND SONS:	Chi-square = 8.3, 1 d.f., $p < 0.005$
MOTHERS AND DAUGHTERS:	Chi-square = 8.8, 1 d.f., $p < 0.005$
BROTHERS AND BROTHERS:	Chi-square = 0.7, 1 d.f., $p > 0.1$
SISTERS AND SISTERS:	Chi-square = 21.9, 1 d.f., $p < 0.001$
BROTHERS AND SISTERS:	Chi-square = 17.4, 1 d.f., $p < 0.001$
HUSBANDS AND WIVES:	Chi-square = 4.1, 1 d.f., $p < 0.05$

Statements of the strength of the relationships can be generated by deriving the Phi-square from the Chi-square statistic (Startup and Whittaker, 1982:Chapter 9). Now, my three-by-three "Cross-linked Ordinal Test" can have values on the vertical axis ranging between 66.6% (perfect association, equally sized samples) and -66.6% (perfect disassociation, equally sized samples). The Phi-square statistic, which is not designed for linked data points, can range between 0 (no association) and 1 (perfect association). However, in the comparisons involving the same-sexed next-of-kin, the two statistics provide similar results, because the structure of the original data (Tables 3-19 and 3-20) predetermines positive but imperfect associations.

TABLE 3-22. SAME-SEXED NEXT-OF-KIN: CORRELATION IN TITLES

	"Cross-linked Ordinal" 3 X 3	Phi-square 2 X 2
SISTERS AND SISTERS	0.26	0.30
FATHERS AND SONS	0.22	0.24
MOTHERS AND DAUGHTERS	0.11	0.09
BROTHERS AND BROTHERS	0.03	0.02

TABLE 3-23. OPPOSITE-SEXED NEXT-OF-KIN: CORRELATION IN TITLES

	"Cross-linked Ordinal" 3 X 3	Phi-square 2 X 2
HUSBANDS AND WIVES	0.12	0.01
MOTHERS AND SONS	0.09	0.08
FATHERS AND DAUGHTERS	0.05	0.21
BROTHERS AND SISTERS	0.04	0.17

But we would not expect congruent results with the opposite-sexed next-of-kin, because the sexes were pooled differently to create the two-by-two contingency tables. Indeed the strengths of the relationships indicated by the two measures are almost perfectly inverted.

A mother's title apparently influenced her offspring's titles, hardly varying regardless of the offspring's sex or the statistical procedure used (Tables 3-22 and 3-23). We might wonder if the result merely reflects the husband's influence on the titles of both his wife and his offspring. However, the correlation still stands in the Phi-square

results where spouses' titles show negligible correlation. The rôle of the mother's status independent of the father's, particularly as regards the daughters with their strongly ascribed status, is suggested by three equations which follow from the Phi-square results:

(i) Phi-square (Sisters) = Phi-square (Father/Offspring) plus Phi-square (Mother/Offspring);

(ii) Phi-square (Brothers/Sisters) = Phi-square (Father/Offspring) minus Phi-square (Mother/Offspring);

(iii) Phi-square (Brothers) = Phi-square (Parent/Offspring) minus Phi-square (Same Parent/Offspring).

An individual's title was influenced by both parents, but statistically speaking the father's title apparently exerted at least twice the influence of the mother's.

Taken together the two-by-two comparisons establish the following social mechanisms.

(1) The strong correlations involving fathers and sons show that a man holding a highest title was usually succeeded by a son. But full brothers attained a wide range of titles, and hence their titles show only weak correlation, because many suitably born men competed for a small number of lofty posts. A son's potential status was largely ascribed by his father's status, and the realisation of that potential was partly influenced by the mother's status, but there was also a strong component of achievement.

(2) The influence of the parents' status on the daughter's was approximately the same as that on the son's, yet contrasting with brothers, sisters showed the strongest correlation in titles. Their realised status was so strongly ascribed by birth only because their range of potential titles was strongly restricted, and in particular demoted with respect to the father's. The systematic demotion is the key to understanding how a main wife's status could mark her husband's (3.1), since it expanded the range of her possible marriages, contrasting with the highest Indian castes where daughters received the same status as the sons and hence often remained unmarried for want of suitable partners (Dumont, 1970). One result from the "Cross-linked Ordinal" comparison, which showed that women tended to marry equally

ranked men as much as they tended to marry higher ranked men (Figure 3-9), reflects the duality of main and lesser wives within a polygynous system.[10]

(3) The last point highlights one window into the system - the opening for women of unstated birth to appear in the records as lesser wives of the rajas. But a consideration of the uneven data on the men shows the back door was open too. As fathers and husbands the rajas figure prominently, the Karaengs less prominently, and non-lords hardly at all, but as sons and brothers these three ranks are similarly represented. The point not only reflects the greater number of wives associated with male status, but also the manner in which sons, regardless of the nobility of their birth, exited the pale of genealogical significance to the degree that they failed to attain a lofty title.

3.5 Description and History of the Non-territorial Posts

The study by Mukhlis (1975) on Gowa's "bureaucracy" describes the non-territorial posts in terms of their function within government. As well as summarising his points, my discussion will establish the succession to these posts which in many ways constitutes a parallel chronology to the reigns, and relate the posts to the status of the occupants and the broader patterns of kin-based relations.

3.5.1 *Tumabicara-butta* or regent

This post is recognised as having been the second highest in Gowa, after the Gowa raja himself, and to have included the rôles of chief adviser to the raja, trustee for the education of his children, and responsibility for security and fortifications (Mukhlis, 1975:82-83). Indeed the long-serving regents arguably all became the real authority behind the Gowa throne (Reid, 1981). It was also the last established non-territorial post. Tumenanga ri Makkoayang inaugurated the

[10] Note that these two tendencies cancelled each other in the Phi-square comparison where different pooling procedures were adopted for men and women, and hence spouses' titles showed negligible correlation in the Phi-square comparison (Table 3-23).

post during the last years of his reign when he served the young ruler of Gowa, Tunijallok (ST:10), i.e. 1565-1577 (see Table 2-2). The regent remained a Tallok man thereafter, except during some brief periods.

First *Tumabicara-butta* (TBB1). Since Tumenanga ri Makkoayang is remembered by a posthumous name rather than a nickname, in contrast to his father and grandfather, I have classified him as a second-ranking ruler (Table 3-3) despite his widely acknowledged noteworthy achievements. Hence the inauguration of the regency might have been associated with some demotion of Tallok's status as an independent kingdom. This was certainly the case after Makkoayang's death when the regency was apparently left vacant until Tunijallok's death in 1590. The regency is not mentioned among the credentials of Kg Bainea, Makkoayang's daughter who ruled Tallok as Tunijallok's wife, nor among the credentials of any of her contemporaries. While we can speculate on her possible rôle as informal adviser to her husband, history has not accorded her a posthumous name let alone a nickname (Table 3-3).[11] Gowa's formal absorption of Tallok, achieved during Tunipasuluk's brief reign (Table 2-2), had apparently been prefigured several decades beforehand.

Second *Tumabicara-butta* (TBB2). Karaeng Kanjilo, or Sultan Abdullah after his adoption of Islam, was reinvested in his father's (Makkoayang's) rôle as regent upon Tunijallok's death, and installed Tunipasuluk on the Gowa throne (ST:15; SG:55). The point implies that the installation of a Gowa raja then required a regent. Subsequently he engaged in a power struggle with Tunipasuluk after the latter had occupied Tallok's throne, which resulted in Tunipasuluk's expulsion in 1593, and the decision by Kg Bainea (Kg Kanjilo's step-sister) to surrender the Tallok throne to Kg Kanjilo.[12] With the approval of Kg Bainea and her other children he then

[11] Her main accomplishments appear to have been restricted to the area of home industries and handicrafts (ST:14).
[12] These actions of his are usually ascribed to "Kg Matoaya", but this was his title only after ascending Tallok's throne (ST:15). Note also that Kg Bainea continued to play a rôle in the proceedings, belying an unreferenced statement by Villiers (1990:149) that she and Tunijallok had died in the same year.

placed Tunipasuluk's seven-year old brother on the Gowa throne (ST:14; SG:56). After that he became the chief architect in upgrading greater Gowa's operations to those of a maritime empire (Reid, 1981:8). Even though he "leased out" the Tallok throne to his son Mudhaffar for 13 years (Table 2-2), he apparently retained the regency through to his death in 1636, underscoring the importance of the post.

Third *Tumabicara-butta* (TBB3). The Gowa regency was then passed to Abdullah's son Kg Pattingalloang, later Sultan Mahmud. Mahmud is quite neglected in the Makassar texts, except as an authoritative informant (e.g. ST:18; S.G.60), and the pivotal rôle of his regency is apparent only from external sources (Reid, 1981:19-26). So significant was the regency that it is easy to overlook Mahmud's sultancy (e.g. Reid, 1981), and (as also noticed by Mattulada [1982a:62]) the evidence lies in a single unelaborated reference (ST:20).

Fourth *Tumabicara-butta* (TBB4). Three apparently related events occurred in 1654. On 21 May Sultan Hasanuddin married Kg Pakbineang (PBN2/RAJA), the daughter of Mahmud. Mahmud died on 15 September, and on 22 October Hasanuddin declared that he would now be the regent (LB:116-117). This appears to be an example of titular usurpation along in-law lines (see Chapter 4 for further examples).

Fifth to seventh *Tumabicara-butta* (TBB5 to TBB7). A Tallok noble called Kg Summanak (SUM1/TBB5 in Table 3-13) had governed Bone in Gowa's name during the various intervals, starting in 1643, when Gowa subjugated Bone (SG:70-73; Figure 4-5). By 1660 Kg Summanak was held responsible for security (see Andaya, 1981:49; LB:123) implying that he had been appointed regent by then. By late 1660 Kg Karunrung (KAR1/TBB6 in Table 3-13), a son of Sultan Mahmud, was regent (Andaya, 1981:51). By 1661 Kg Summanak was regent again and indeed successfully agitated for Kg Karunrung's exile in 1664 (Andaya, 1981:61; LB:128). By 1665 Kg Karunrung appears to have been regent again (Andaya, 1981:65), and so would have had to shoulder the responsibility for greater Gowa's defeat in the 1667 Makassar War. Three days before the "Bungaya Treaty" in November 1667 he was again replaced by Kg Summanak (Andaya, 1981:117) and sent into another period of exile

(LB:132). By 1671 he appears to have replaced Kg Summanak yet again (LB:141), only to relinquish the title in 1676 when Gowa's Sultan Mohammad Ali stripped him of all of his privileges, and replaced him with Kg Lambengi (Andaya, 1981:170).[13] Kg Karunrung's successful alliance with Sahaduddin (BXV) and with Mohammad Ali's substitute, Abdul Jalil, allowed Kg Karunrung to regain the regency in 1677 (Andaya, 1981:193). He finally retired in 1687 according to Patunru (1983:72). While Kg Karunrung was at various times the most influential Makassar person (Andaya, 1981:129,146-147), his career was chequered owing both to Kg Summanak's equivalent standing, and to fallout from having superintended Makassar's ultimately unsuccessful defense.[14]

Eighth *Tumabicara-butta* (TBB8). Following Karunrung's retirement the Gowa regency remained in Tallok's hands with Kg Bontosunggu until the latter's death in 1726 (Patunru, 1983:72,77; see also Andaya, 1982:292). This was also the period when the Gowa throne fell under Tallok's domination (2.6.4).

3.5.2 *Sabannarak* or harbourmaster

The harbourmaster was responsible for maintaining the security of Makassar entrepôt and collecting port duties (Mukhlis, 1975:92-4). It was reportedly Gowa's first non-territorial post, established during Tumapakrisik Kallona's reign before Makassar had its Malay colony. The post appears to have been mainly reserved for ethnic Makassar, contrasting with the usual Indo-Malaysian situation where the harbourmaster was appointed from among the foreign merchants (Miksic, 1979:5-8). The responsibilities of Dg Pamattek, harbourmaster during Tumapakrisik Kallona's reign, apparently included those later associated with the *Tumailalang* (SG:18), the position Dg Pamattek occupied during Tunipalangga's reign when Dg ri Mangallekana became

[13] Kg Lambengi, LBG1/TBB7 in Table 3-13, appears to have been a noble of Maros descent.
[14] Reid (1987) also notes the vacillation of the regency between Hasanuddin, Kg Summanak and Kg Karunrung.

harbourmaster (SG:25). According to Mukhlis (1975:92) both men were *Tubajik*.

I have no information on subsequent harbourmasters until Kare Pangngepak who reportedly remained as harbourmaster going into Alauddin's reign (SG:62). Subsequent harbourmasters on whom the records do not contradict themselves are Incek Husen, harbourmaster at 1611 (LB:88),[15] Dg Pagak who died in 1634 (LB:95), and Dg Maklakbak who died on 9 May 1634 (LB:104). Then between 12 May 1643 and 18 May 1644, reportedly no less than three individuals - Dg Riolo, Dg Riboko and Dg Burakne - were appointed (LB:104-5), followed by Dg Makkulle on 28 April 1661 and Dg Riboko on 6 August 1661 (LB:124-5). Harbourmaster Kg Barok Bosok died on 13 April 1663 (LB:127), followed by harbourmaster Kg Bantaeng who died on 30 September 1665 (LB:130). Harbourmaster Dg Makkulle died on 7 September 1677, but yet took two wives between 1679 and 1683, one of whom he remarried in 1688 (LB:157,161,167-8,173). The editors of LB undoubtedly noted the extraordinary replacement rate and other signs of chronological disorder, and suggest that Gowa had two harbourmasters during the mid-17th century (LB:105). Another interpretation, which would not need to invoke two harbourmasters called Dg Makkulle, is that the individual items compiled in LB have suffered re-arrangement. This would limit the harbourmasters to the smallest possible number (Tables 3-13 and 3-14).

External sources identify Dg Makkulle as the harbourmaster during the years leading up to the Makassar War (Andaya, 1981:64,126). The fact that his marriages were recorded (ST:8; LB:148,161,167-8,173) indicates that he was an individual of some note. The man who succeeded him in 1687, Dg Mallulungang (LB:171), is also a solid individual in terms of his historical documentation. Despite his noble birth, Dg Mallulungang is not recorded by any *karaeng* title, as with most of the other harbourmasters.

These data support the generalisation by Mukhlis (1975:92) that the harbourmasters were generally drawn from the ranks

[15] He may have been the harbourmaster carried off to Banten by the Dutch in 1615 (cf. Reid, 1981:11). His title, at least, appears to be Malay.

of the *Tubajik* and *Tusamarak*. Suitability of candidature depended neither on nobility of birth nor the prior occupancy of the post by an ancestor. The scantiness of information on the harbourmasters during Tunijallok's reign, and the apparent confusion in the 17th century accounts, do not belittle the post. Rather the unmeticulous records match the insignificance of the harbourmasters in the world, all important to the texts, of Makassar aristocratic relations.

3.5.3 *Tumailalang* or ministers of internal affairs

As recounted by Mukhlis (1975:83-5) Gowa had three *Tumailalang*, the *Tumailalang Toa* and his two assistants the *Tumailalang Lolo*. They collectively headed the *Bate Salapang* or council of nine district *Gelarang* heads, mediating between the council and the Gowa raja. However, the post appears to have been elaborated and its status inflated during Gowa's precolonial history, attaining the situation described by Mukhlis only briefly before Gowa's defeat.

Dg Pamattek's career succession from harbourmaster, to become Gowa's first *Tumailalang*, was followed by Dg ri Mangallekana who became one of two *Tumailalang* at the beginning of Tunijallok's reign (SG:50). His co-appointee, Dg ri Tamacinna (SG:50), was presumably also a *Tubajik*.

After Tunijallok defeated Maros, his treaty with the raja allowed the latter's descendants to hold a *Tumailalang* post as long as Tunijallok's descendants occupied the Maros throne (SG:52). The Maros raja did not have any descendants, but when he died the Maros people took Tunipasuluk as their raja anyway (SG:56). At about the same time Dg Mangemba Kg Marusuk, apparently a noble with affiliations in Maros (4.8.1), became a *Tumailalang*. The event marks a substantial upgrading in the post whose appointees thereafter all bore a karaengship (Table 3-13). During Alauddin's reign, Kg Marusuk was succeeded by his son Dg Bonto Kg Cenrana (cf. SG:63-4), who after his death was replaced by Mallewai Dg Manassa Kg Cenrana (SG:64). The synonymous karaengship suggests the

latter was related to the former and, hence, also of noble Maros descent.[16]

During his brief reign Tunipasuluk had also ousted Dg ri Tamacinna and replaced him with Dg Arenne, on whom Tunipasuluk also conferred the title of Kg Pattekne (SG:54). Further appointees to the post during Alauddin's reign were both descendents of Kg Pattekne - his son Kg Maroanging and in 1623 his great grandson Kga Suli. When Kga Suli died in 1652 (LB:114) his replacement was presumably Kga Bisuli, the Gowa *Tumailalang* who was replaced by Kg Bonto Panno during Abdul Jalil's reign (ST:22).

In 1664 Kg Lengkesek inherited the *Tumailalang* position from his recently deceased father, the second Kg Cenrana (LB:128), presumably maintaining it until his own death in 1695 (LB:181). Kg Lengkesek's replacement may have been Tumailalang Kg Lekokbodong, whose birth in 1674 (LB:147) would have made him of a suitable age.

At some stage Abdul Gafar Kg Jaranika was appointed to the third stream of *Tumailalang*, as may be inferred from the record that his grandson, Kg Bonto Patongkok, replaced Kg Jaranika as *Tumailalang* shortly before the latter's death in 1700 (LB:186). Kg Jaranika's appointment probably occurred by the late 1650s given his substantail profile between 1658 and 1695 (LB:120,124,181; Andaya, 1981:138,151,171,184-5,292). Kamaruddin et al. (1985/6:112) suggest that Kg Jaranika was the full brother of Kg Lengkesek, and having not found any contrary evidence I accept the proposition.

3.5.4 *Tumakkajannangngang* (guildmaster or services' guild)

Tunipalangga instituted the *Tumakkajannangngang* service when he appointed an unnamed official. The service then specifically included artisans in iron and gold smithery, the construction of houses, boats, blowpipes and metal weapons, grinding, polishing and ligature (SG:25). At some later date the service was expanded into 20 distinct guilds, each headed by a *Jannang*. The guilds looked after general provisions,

[16] It is easy to confuse these two Kg Cenrana, as done by Kamaruddin et al. (1985-6:90). The parentage of the second Kg Cenrana is not stated (SG:63).

provisions for the palace, iron working, gold working, ligature, entertainment, the construction of wooden houses, thatchwork, brickworks, grinding, general housing, millinery, hydrology, blowpipe manufacture, military weaponry, guardianship of the noble youth, and communications (Mukhlis, 1975:95-6).

At the beginning of his reign Tunijallok appointed Dg ri Sambe to head the service (SG:50). I have no information on subsequent appointments until Dg Lompo, who headed the service between 1637 and 1643 (LB:99,104), followed by Dta Dg Ago between 1643 and 1663 (LB:99,127). The first noble appointee was Abdul Kadir Kg Popok, between 1663 and 1680 (LB:99,161). One of his sons became a *Tumailalang* while another son inherited the *Tumakkajannangngang* post from his father (ST:21-2). During the late 17th century, then, the *Tumakkajannangngang* post may have moved towards tenure by the nobility and lineal inheritance, as had happened earlier with the *Tumailalang* post.

3.6 Resume of the Transmission of Major Makassar Posts

The details of the holders of the non-territorial posts (3.5) and the 16th-17th Makassar royal successions (Tables 3-3 and 3-4), summarised in Figure 4-1, allow us to compare the degree of patrilineal inheritance of a post with the status of the post. Patrilineal inheritance is here defined as unbroken succession, i.e. the occupant was son of a previous occupant, rather than chronologically direct succession, while status of a post is measured by the rank of its recorded occupants. These two factors were very strongly related (Table 3-24).

The emphasis on patrilineal succession of the highest posts has the logical corollary that men of suitable birth, who failed to attain the post, started a new lineage whose male descendants were characterised by effectively lacking any candidature for the post. Hence far from being a principle of inclusive kinship, patrilineal descent was used

TABLE 3-24. STATUS AND PATRILINEALITY OF MALE-DOMINATED POSTS

	TITLE HOLDER IS: Greater Raja (%)	Lesser Raja (%)	Karaeng (%)	Nonlord (%)	% WHO WERE SONS OF TITLE HOLDING FATHER
Gowa Raja (n=15)	100	0	0	0	86.7
Tallok Raja (n=11)	81.8	18.2	0	0	81.8
Maros Raja (n=4)	50.0	50.0	0	0	75.0
Sanrabone Raja (n=9)	27.3	72.7	0	0	88.9 or 55.6 (see Chapter 4)
Regent (n=7)	42.9	0	57.1	0	42.8
Tumailalang (n=14)	0	0	85.7	14.3	26.7
Guildmaster (n=4)	0	0	50.0	50.0	25.0
Harbourmaster (n=12)	0	0	16.7	83.3	0

N.B. These figures ignore inaugural occupants who obviously could not have inherited the post from their father. Statistics for the Makassar thrones count Batara Gowa (GVII) as a "greater raja".

by a higher status lineage specifically to exclude related men whose father belonged to a lesser lineage. The point would appear to run directly counter to the emphasis on bilateral kinship and status ascription usually recorded for the Makassar (3.1 and 3.2). However, a relevant analogy comes from the Kasepekang Konjo whose elite regulate their membership through bilateral descent groups (*pattola*) consisting of the descendants of the ancestral holder of a hereditary title. Theoretically eligible candidates for the title, in practice men, are individuals either belonging to the *pattola* or married to a woman within the *pattola*. However, at any point in time, the core of the *pattola* lodges with the title-holder and his sons (Rössler, 1987:64-66).

Nonetheless the principle of bilateral descent is an equally intrinsic part of the Kasepekang system. It provides

the flexibility to allow occasional lateral movements of titles in response to political machinations and individual aptitudes. The bilateral ideology also encourages potential title holders to strengthen their eligibility by marrying women close to the core, generating the endogamy towards the core which maintains the distinctiveness of the lineage. Marriages between equals belonging to different *pattola* are also sanctioned, reinforcing the social distance between nobles and commoners, and the attachments of the lesser *pattola* to the central *pattola* associated with the highest title of *Karaeng*. Last but not least the bilateral ideology retards the fissioning of descent groups so that the nobility in general, and each *pattola* according to its prestige, hold a central position within the social network (Rössler, 1987:66-67).[17] As noted above (3.4. and 3.5). and to be developed in more detail in Chapter 4, all of these points find their more elaborate counterparts in the 16th-17th Makassar aristocratic genealogies.

[17] This point compares with the "open window" and "back door" of the royal, central genealogical space of the 16th-17th century Makassar aristocrats.

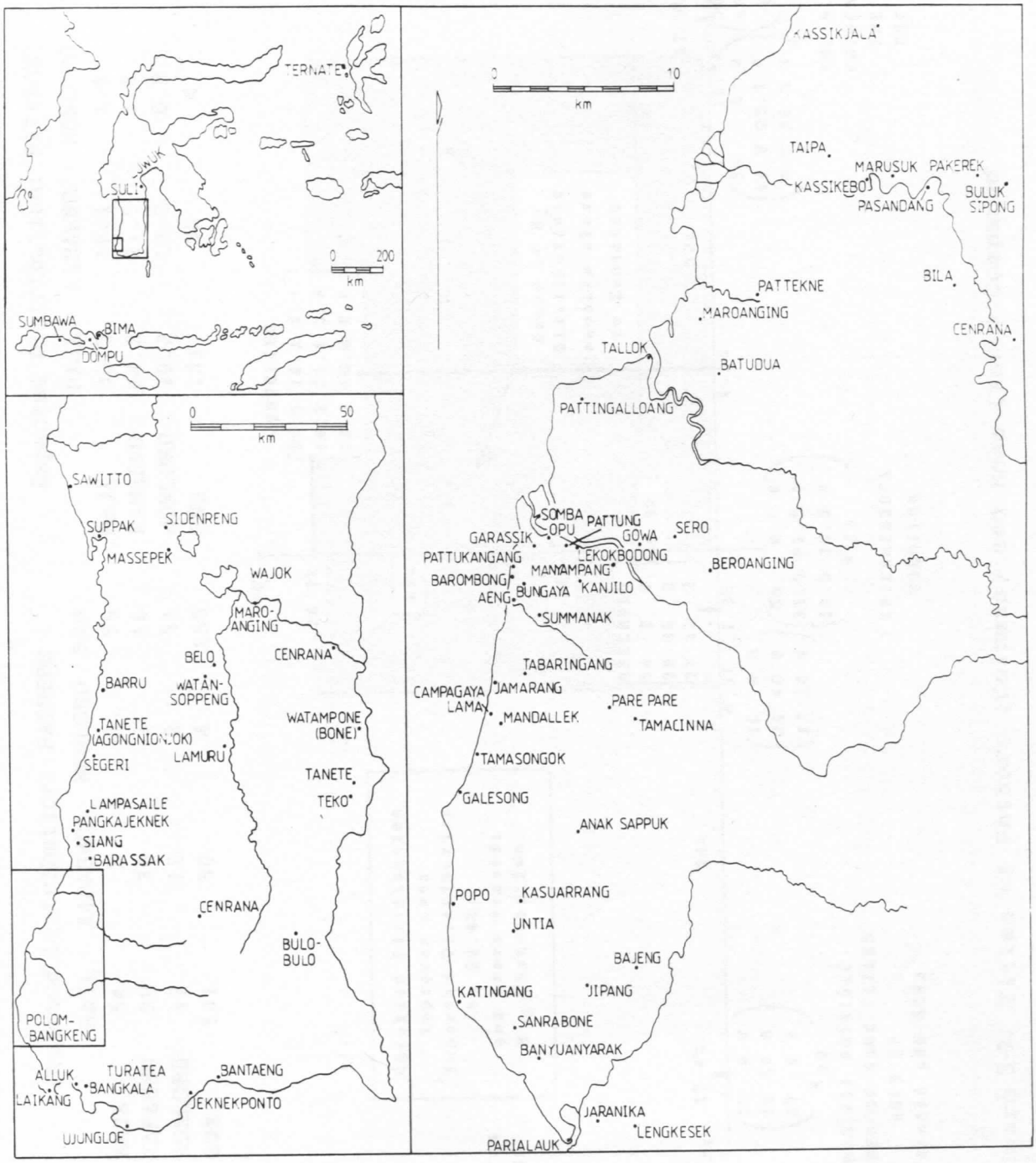

FIGURE 3-1. MAIN PLACES FIGURING IN THE GENEALOGICAL RECORDS

Observed Distribution: FATHERS

SONS		RAJA	KARAENG	NONLORD	SUM
S	RAJA	54	2	0	56
O	KARAENG	30	36	2	68
N	NONLORD	17	12	2	31
S	SUM	101	50	4	155

Expected Distribution: FATHERS

	RAJA	KARAENG	NONLORD	SUM	SONS
RAJA	36.5	18.1	1.4	56	S
KARAENG	44.3	21.9	1.8	68	O
NONLORD	20.2	10.0	0.8	31	N
SUM	101	50	4	155	S

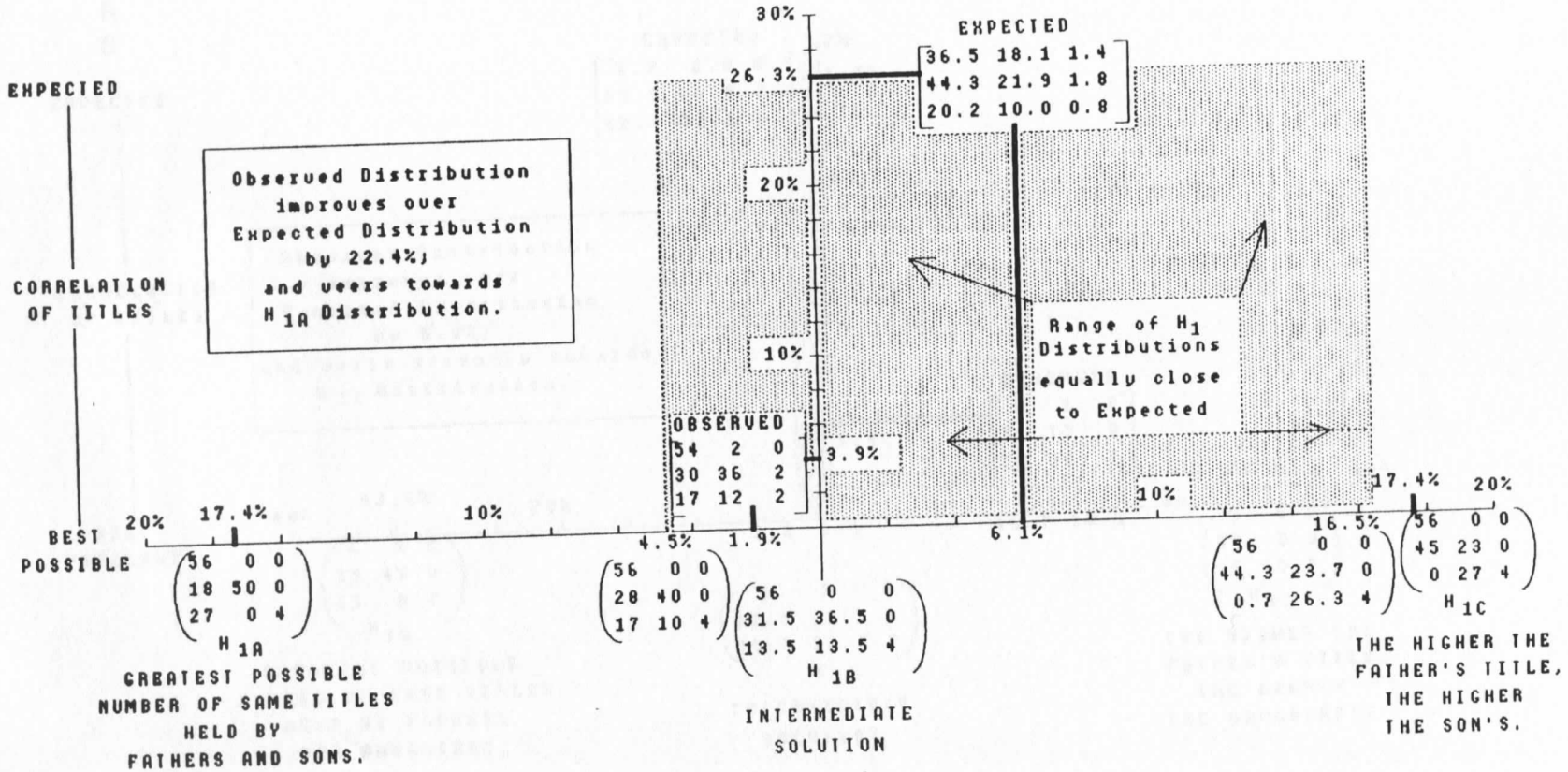

Figure 3-2. Titles of Fathers (Columns) and Sons (Rows) Compared

Observed Distribution: FATHERS

DAUGHTERS	RAJA	KARAENG	NONLORD	SUM
RAJA	5	1	0	6
KARAENG	54	10	0	64
NONLORD	27	34	7	68
SUM	86	45	7	138

Expected Distribution: FATHERS

DAUGHTERS	RAJA	KARAENG	NONLORD	SUM
RAJA	3.7	2.0	0.3	6
KARAENG	39.9	20.9	3.2	64
NONLORD	42.4	22.1	3.5	68
SUM	86	45	7	138

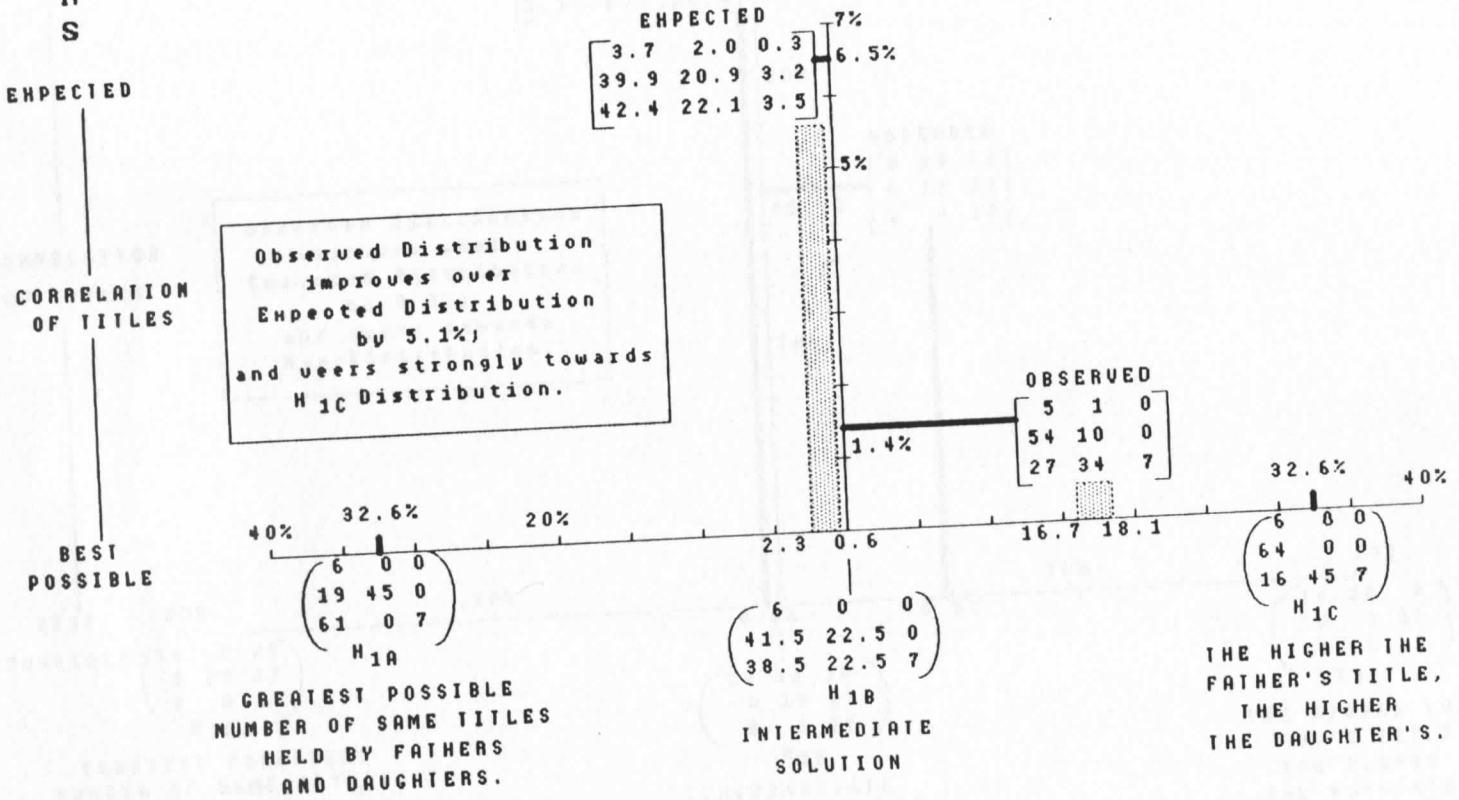

Figure 3-3. Titles of Fathers (Columns) and Daughters (Rows) Compared

Observed Distribution: MOTHERS

SONS	RAJA	KARAENG	NONLORD	SUM
RAJA	8	13	13	34
KARAENG	4	12	30	46
NONLORD	2	4	17	23
SUM	14	29	60	103

Expected Distribution: MOTHERS

SONS	RAJA	KARAENG	NONLORD	SUM
RAJA	4.6	9.6	19.8	34
KARAENG	6.3	12.9	26.8	46
NONLORD	3.1	6.5	13.4	23
SUM	14	29	60	103

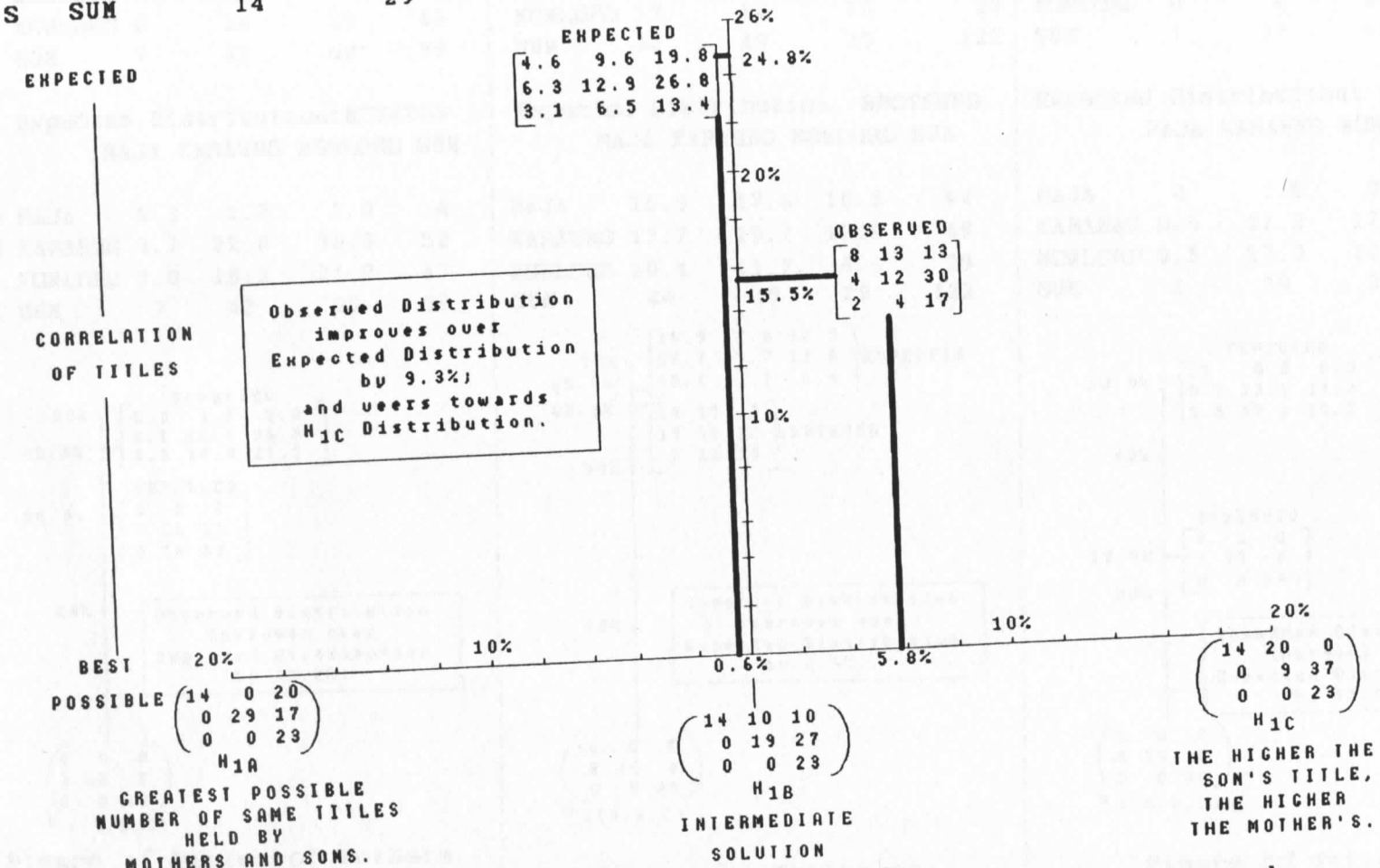

Figure 3-4. Titles of Mothers (Columns) and Sons (Rows) Compared

Observed Distribution: MOTHERS

DAUGHTERS	RAJA	KARAENG	NONLORD	SUM
RAJA	0	2	2	4
KARAENG	7	26	19	52
NONLORD	0	14	29	43
SUM	7	42	50	99

Expected Distribution: MOTHERS

DAUGHTERS	RAJA	KARAENG	NONLORD	SUM
RAJA	0.3	1.7	2.0	4
KARAENG	3.7	22.0	26.3	52
NONLORD	3.0	18.3	21.7	43
SUM	7	42	50	99

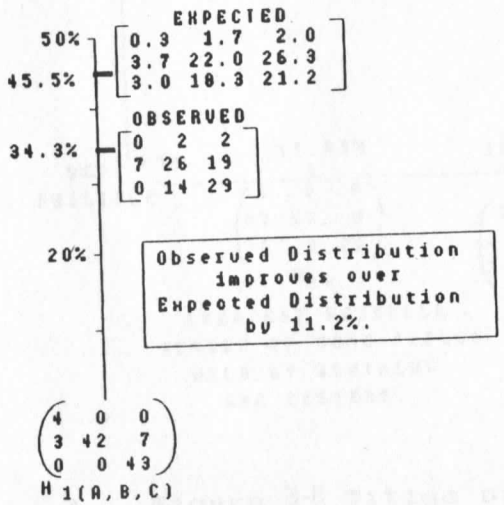

Figure 3-5. Titles of Mothers (Columns) and Daughters (Rows) compared

Observed Distribution: BROTHERS

	RAJA	KARAENG	NONLORD	SUM
RAJA	18	19	7	44
KARAENG	19	18	12	49
NONLORD	7	12	10	29
SUM	44	49	29	122

Expected Distribution: BROTHERS

	RAJA	KARAENG	NONLORD	SUM
RAJA	15.9	17.6	10.5	44
KARAENG	17.7	19.7	11.6	49
NONLORD	10.4	11.7	6.9	29
SUM	44	49	29	122

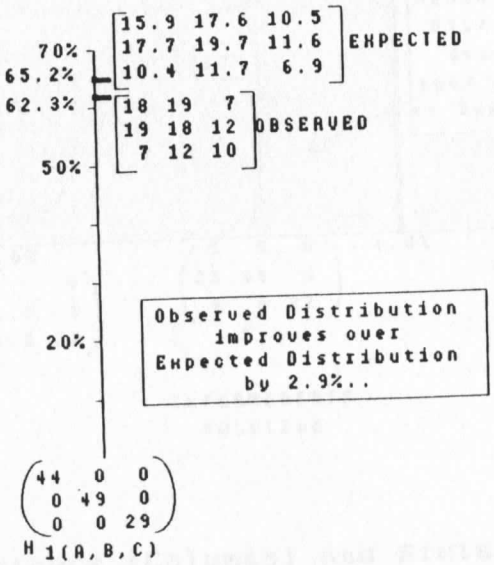

Figure 3-6. Titles of Blood Brothers Compared

Observed Distribution: SISTERS

	RAJA	KARAENG	NONLORD	SUM
RAJA	0	1	0	1
KARAENG	1	30	8	39
NONLORD	0	8	24	32
SUM	1	39	32	72

Expected Distribution: SISTERS

	RAJA	KARAENG	NONLORD	SUM
RAJA	0	0.5	0.5	1
KARAENG	0.5	21.2	17.3	39
NONLORD	0.5	17.3	14.2	32
SUM	1	39	32	72

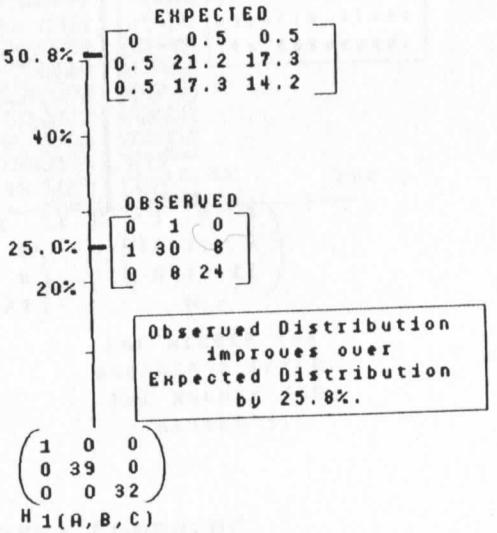

Figure 3-7. Titles of Blood Sisters Compared

Observed Distribution: BROTHERS

SISTERS	RAJA	KARAENG	NONLORD	SUM
RAJA	1	0	0	1
KARAENG	30	22	12	64
NONLORD	3	25	10	38
SUM	34	47	22	103

Expected Distribution: BROTHERS

SISTERS	RAJA	KARAENG	NONLORD	SUM
RAJA	0.3	0.5	0.2	1
KARAENG	21.1	29.2	13.7	64
NONLORD	12.6	17.3	8.1	38
SUM	34	47	22	103

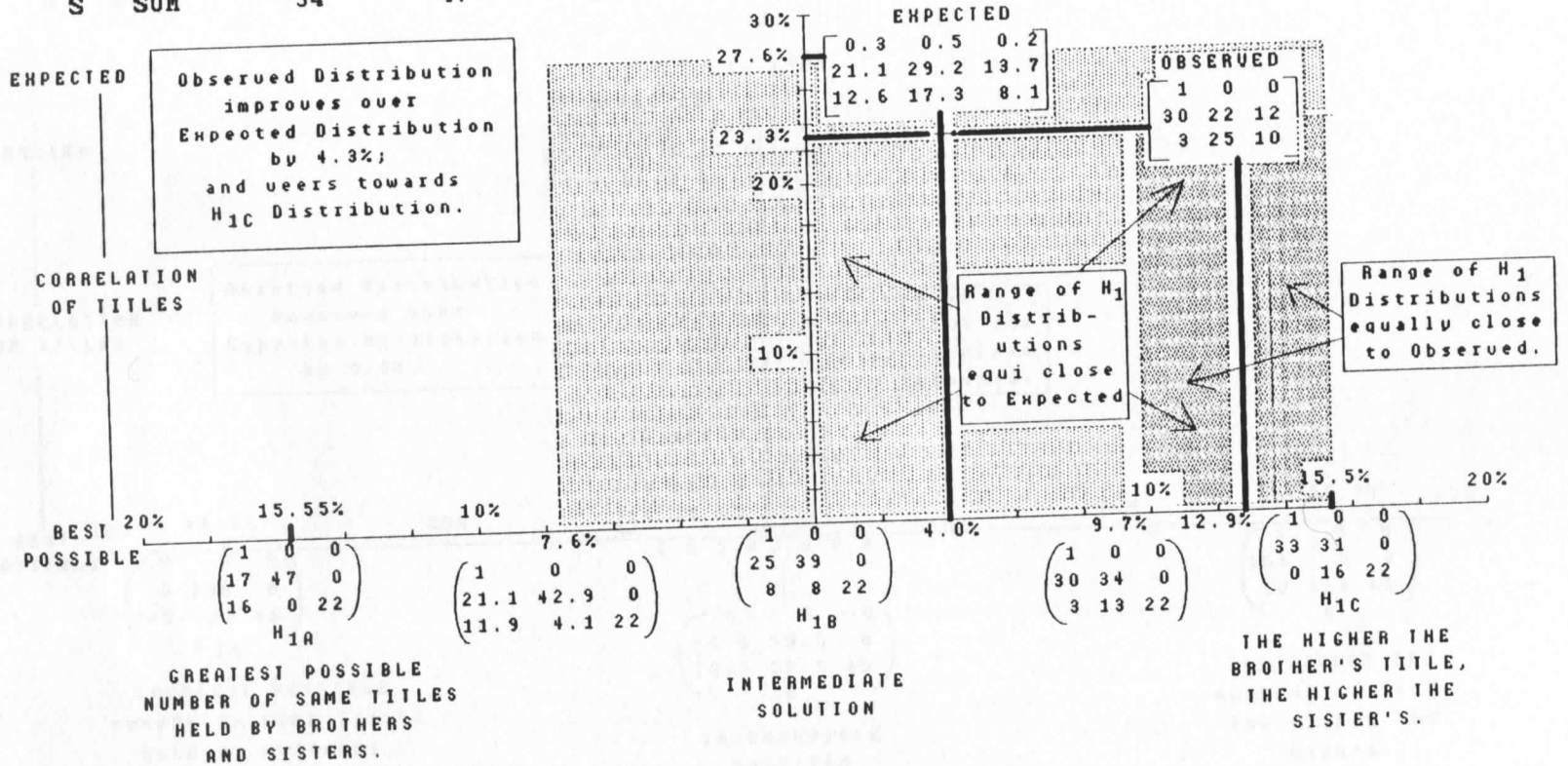

Figure 3-8. Titles of Brothers (Columns) and Sisters (Rows) Compared

Observed Distribution: HUSBANDS

W		RAJA	KARAENG	NONLORD	SUM
I	RAJA	7	2	0	9
V	KARAENG	49	50	2	101
E	NONLORD	76	76	43	195
S	SUM	132	128	45	305

Expected Distribution: HUSBANDS

	RAJA	KARAENG	NONLORD	SUM	W
RAJA	3.9	3.8	1.3	9	I
KARAENG	43.7	42.4	14.9	101	V
NONLORD	84.4	81.8	28.8	195	E
SUM	132	128	45	305	S

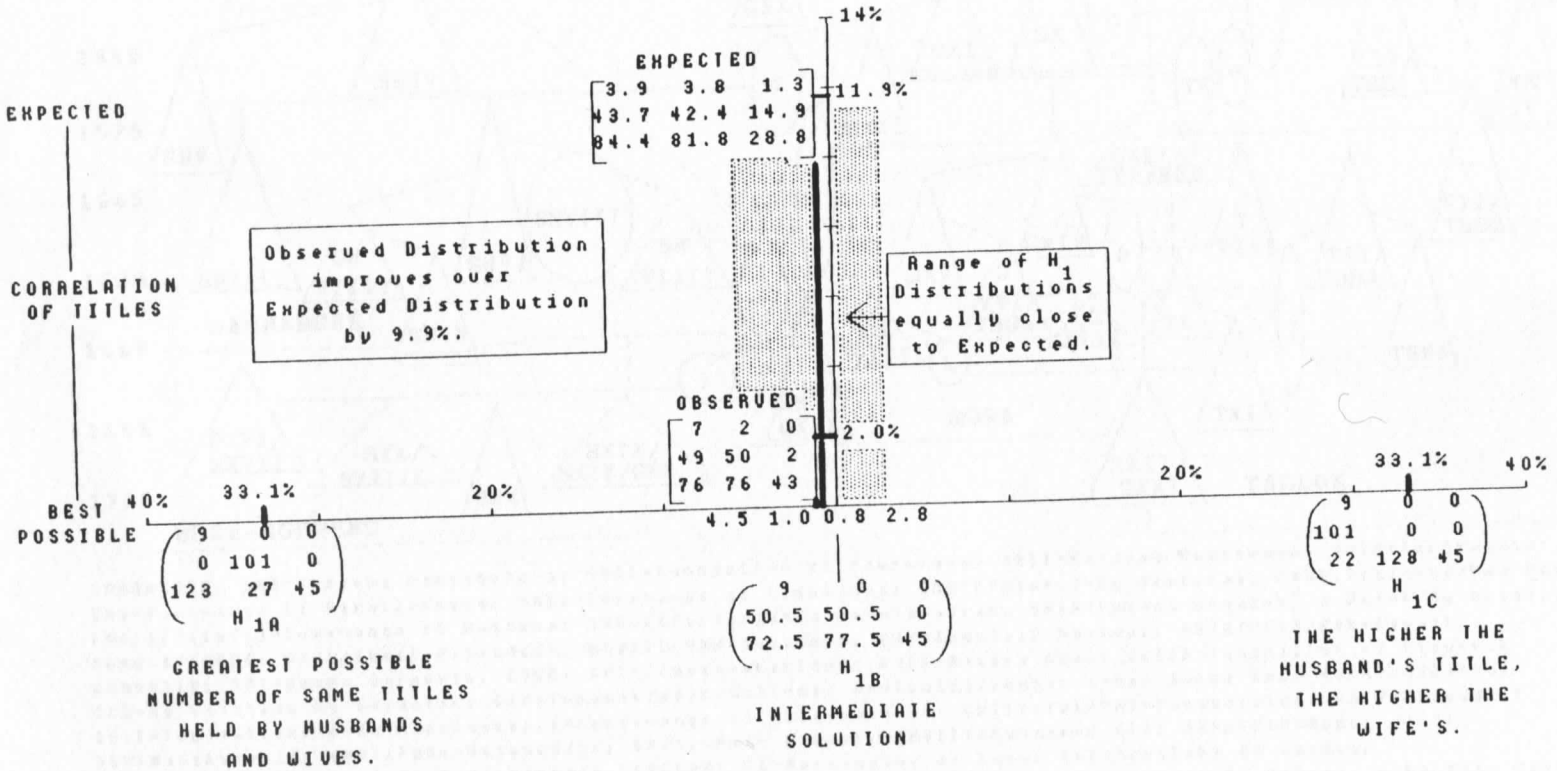

Figure 3-9. Titles of Husbands (Columns) and Wives (Rows) Compared

CHAPTER 4. LINEAGE GROUPS AND HISTORY

4.1 Status Lineages, Genealogies and Lineage Groups

As just explained the social organisation of the Kasepekang Konjo, shown more pronouncedly be the 16th-17th century Makassar, is built around patrilineal aristocratic cores forming the vertical structure within horizontally bilateral kinship space. Gullick (1988:65-75) describes such structures among the 18th-19th century Malay peninsula kingdoms, including Negri Sembilan whose predominantly Minangkabau population otherwise practised matrilineal descent.[1] Gullick describes them as "status lineages" because, unlike the Nuer patrilineal segmentary lineages, they served to mete out status more than to carve society up into descent groups. Palmier (1969) describes the same system among the 20th century Javanese aristocracy, and points out that descendants derive more status from a high title the more recent its tenure by an ancestor.

Fox (1990) notes the existence of superficially different conventions among other Austronesian societies which, however, also allowed the elite to claim a separate origin from commoners, and thus to form socially exclusive descent groups with precedence over restricted resources. The pattern characterises societies which have undergone crowding after an earlier phase of laterial expansion, and reaches its most elaborate expression in "apical demotion systems". In these systems the comparative status of lines and their members is continually reassessed depending on which line, and ultimately which member, holds the most prestigious title. This individual represents the apical point against which other lines (and their members) automatically lose status unless they can curtail their genealogical distance (Fox, 1990).

By applying Fox's model to the South Sulawesi situation we can see why marriages, alongside status, have been the central social preoccupation of the Bugis and Makassar (see especially Millar, 1989). During the 16th and 17th centuries

[1] The same applied in Minangkabau proper (de Josselin de Jong, 1980:10).

a few prominent warlords (e.g. Tunipalangga, Sultan Abdullah, Sultan Sahaduddin) rose and established themselves as the new apical point in their society, leading to a comprehensive reassessment of the respective statuses of their own and other lines. Status was acknowledged through the titles an individual held, while relationships by marriage constituted the link along which a usually patrilineal title could be transmitted. The frequency with which major titles were passed between father- and son-in-law, or grandfather- and grandson-in-law, is shown in Figure 4-1.

Figure 4-1 also provides a comparatively simple example by which to explain the conventions I use in my genealogical diagrams. Time, shown on the vertical scale, is represented in 30-year intervals to reflect average male generation length, and includes a single S.D. error of ten years for the period preceding Tunijallok's birth in 1545 (2.5.1). The symbols for individuals are stretched between upper and lower points which represent dates of birth and death. The acronyms identifying the individuals come from Tables 3-3 to 3-14, including question-marks for people of unrecorded name. Marriages are shown by horizontal lines whose vertical position marks when the marriage occurred. Sometimes the spouses could not be juxtaposed and so the "lines of marriage" cross symbols standing for other individuals, as indicated by the horizontal lines which intrude into a symbol from either side. Individuals resulting from a depicted marriage are joined by a vertical line to the line of marriage. When only one parent is depicted, descent is shown by slanting lines, including slanting bifurcations for full siblings. Dashed lines divide genealogical time-space into the "lineage groups" in which the individuals belong; as the lineage groups are defined on the basis of titles (see below), individuals with more than one of these titles straddle the respective lineage groups.

Further conventions which appear in the subsequent genealogical diagrams (Figures 4-6 to 4-17) are as follows. Although for simplicity's sake, Figure 4-1 does not distinguish between my estimates (which are based on "best-fitting") and recorded dates, the later diagrams use

black dots to identify those years of birth, death and marriage which are precisely known from the texts. Specifically, dots at the top or the bottom of an individual represent stated year of birth and death respectively, while dots at either end of a horizontal "line of marriage" represent a stated year of marriage. Individuals of unknown gender are shown as rectangles. Conjectural genealogical reconstructions are indicated by a question-mark standing outside the symbols. A cross within a symbol indicates that the individual died without leaving any offspring. Long vertical lines of descent (without intervening symbols) are sometimes used to connect a forebear and a distant descendant. Lines of marriage between individuals on opposite sides of the diagram are shown as though the diagram were wrapped around a cylinder, with an arrow from the female partner to the male. Brides of unidentified lineage groups are shown in the lineage group of their huband. Finally, divorces are shown by short paired lines across the line of marriage.

The various lineage groups have been recognised primarily to chart the passage of the major, usually patrilineally inherited titles, so as to demonstrate the relationship between marriage strategies and political change (Tables 4-15 to 4-20). The term "lineage group" embraces variable specificity to reflect the significance of the detail as seen from the position of the Makassar royalty. For instance, since any son of a Gowa or Tallok raja who failed in the succession concurrently lost any direct claim on the title for his sons, he can be considered to have started a new patriline (3.6). Nonetheless the possibility remains that the subsidiary patrilines recognised a common interest, namely the elevation of the royal patriline from which they had sprouted, and hence their origins and inclusive patrilineal relationship is charted by labelling them "Gowa Sub-1", "Gowa Sub-2" etc., according to the order in which they had budded off.

But these fine divisions are unwarranted in the case of lesser Makassar status lineages or non-Makassar status lineages. In the former case, the lower status of the

defining title or titles reduced the emphasis on patrilineal descent, thus approximating the *pattola* described for the Kasepekang Konjo (3.6), and hence the main point of interest was an individual's membership within a bilateral kindred. In the latter case, the fine points of organisation of the Bugis and Nusatenggaran status lineages are nor reconstructible from the Makassar sources, while their frequency of marriages with the Makassar lineages can only be analysed statistically if pooled beforehand into useful categories. These generalisations will become clear during analysis. For the moment it is enough to note that the term "lineage group" is deliberately ambiguous to accommodate status lineages within a descent group, descent groups, and aggregates of descent groups.

Women are assigned to their father's status lineage hence their father's lineage group, even if the mother's status lineage was higher, for two reasons. Firstly, the father's title was the major influence on the offspring's title irrespective of gender, and the systematic demotion observed in the opposite-sex next-of-kin comparisons held true between brothers and sisters (3.4.2). Secondly, the notion that women should marry at their own level or upwards (3.1) implies that the husband enjoyed either equal or greater authority. The latter point does not imply that daughters left their father's status lineage upon marriage; the frequency of divorces, and the occasional instances of women marrying within their own status lineage (see Figures 4-6 to 4-17) imply that many never did. However, the offspring were born within their father's status lineage, either as potential status-achieving members in the case of boys, or as members to be strategically married in the case of girls.

4.2 Expansion of the Empire

A general account of the military conquests of Gowa and Tallok forms an essential context for understanding the marital relations forged during the period.

4.2.1 The victory of Gowa

As pointed out by Pelras (1977), the Makassar texts give an account of the glorious military accomplishments of Tumapakrisik Kallona (r. 1511-1547) which is not corroborated by the Portuguese accounts written in the 1540s. A crucial event in Gowa's early 16th century history, whos date Pelras (1977:254) guessed was around 1530, allows us to fix the earliest possible date for Tumapakrisik Kallona's major campaigns. The relevant passage (SG:20-21) translates as follows.

'These karaengs [of Gowa] were sheltered by three of the kingdom's banners; Kg Lakiung with the kingdom's banner called "Garudaya", and the populace of Mangasa, Tombolok and Saumata went there too, he [Kg Lakiung] himself preceded and defended Barok Bosok, he who opposed the people of West Polombangkeng; the king of Gowa [Tumapakrisik Kallona] himself accompanied the kingdom's banner called "Sulengkaya" to defend Rappocinik, along with the populace of Sudiang, Manuju and Borik Sallo, [whereas] the populace of Tallok along with Dg Massuro [who was a Bajeng, i.e. Polombangkeng prince] were those who opposed the king of Gowa; Kg Datak, alongside the kingdom's banner called "Cakkuridia" defended Tamamangung along with the populace of Pattallassang, Bontomanaik and Paccellekang against the Marusuk people.

After the fighting the people of Tallok, Marusuk and Polombangkeng fled; the people of Polombangkeng returned to Polombangkeng in their prahus; the people of Marusuk fled from Tamamangung to Marusuk; the people of Tallok simple retreated into Tallok.'

SSPHAP's archaeological survey (see Chapter 5) locates the Lakiung and Datak karaengships within Benteng Tua or "Gowa" (Chapter 6), while inspection of the Gowa regal names (Table 3-3) shows that Kg Lakiung and Kg Datak were, respectively, Tunipalangga and Tunibatta before they themselves reigned. As we can assume that borht were adults before leading in the battle field, say 18 years of age or more, the battle can be dated after 1535 (cf. Table 2-3). It should also be dated at least a few years before Tumapakrisik Kallona's demise, unless we are to surmise that the Makassar texts have

fantasised in describing his military accomplishments. This period 1535-1544 would also fall in the reign of Tunipasukruk who, as the texts note, was the Tallok king who once fought Gowa (ST:9; cf. Figure 4-1).

From maps and other sources I have located the nine communities and the battle fronts involved,[2] and laid them over the c.1500 geopolitical map (Figure 2-1) with Garassik expunged (see 4.3). The nine communities which fought with Gowa presumably correspond to Gowa's *Bate Salapang*, or council of nine, at around the time of Gowa's victory.[3] The six which accompanied the king's sons were among those which had sided with Batara Gowa in his succession dispute with Kgloe ri Sero (12.2.1). As regards the three which fought alongside the king, not only did they emanate from outside of Gowa's original "geopolitical polygon", but also two of them fall inside the polygons drawn for Polombangkeng and Maros. The three battle fronts fall along the border between Gowa's and Tallok's polygons (Figure 4-2).

Hence the battle account leads to the interpretation that Polombangkeng and Maros allied with Tallok during an attempt by Tallok to defeat Gowa. The decision of the communities in north Polombangkeng and south Maros to fight alongside Gowa's king suggests that they recognised Gowa's growing prowess, and that this was also the factor which prompted Maros, Tallok and Polombangkeng to band together in an attempt to

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[2] The identification of Barok Bosok with Ujung Tana is explained elsewhere (Bulbeck, 1990), while the other identifications are explained in the archaeological chapters (5 to 12).

[3] Patunru (1983:137) states that, at some stage after 1565 and before 1894, Gowa's *Bate Salapang* comprised Tombolok, Mangasa and Saumata (west Gowa); Pattallassang, Paccellekang and Bontomanaik (central Gowa); and Manuju, Bori Sallok and Sudiang (east Gowa) - i.e. an exact counterpart to the organisation of Gowa's forces in the battle described here. Mukhlis (1975:62) describes this as Gowa's organisation when the 1667 Bungaya Treaty was singed, but his only reference is (an earlier edition) of Patunru, and Patunru as usual does not cite a reference. Since other information available to Mukhlis allows him to present a sequence of the *Bate Salapang* otherwise complete by reign between Tunipalangga and Mohammad Said, Mukhlis has apparently fitted Patunru's statement to fill is his gap on the *Bate Salapang* under Hasanuddin. But clearly the primary sources would date Patunru's list to the latter part of Tumapakrisik Kallona's reign, about two decades before 1565.

stamp out the new menace. Yet their very attempt suggests that Gowa had not quite yet become the region's domineering military power. As a final interpretation, the involvement of Tunipalangga and Tunibatta as commanders suggests that it was their inspiration, more than Tumapakrisik Kallona's, which gave Gowa the vital edge in this and subsequent engagements.

4.2.2 The wider, early 16th century battle front

Figure 4-3 shows those polities I can identify which Tumapakrisik Kallona reportedly defeated, or made vassals, or with whose leaders he devised a treaty (SG:18-22). His depicted victories do not include cases where he defeated a king or its people - as cited specifically for Tallok, Maros, Polombangkeng and Bone - because all of them are represented among the six treaties, and the first three probably refer to Gowa's victory in self-defense (4.2.1). Leaving the details to later sections, we can see that one set of campaigns was restricted to the peninsula's southwest corner, while the wider campaigns were scattered throughout Bugis-Makassar lands.[4]

The reported victories (ST:9-10) of Tallok's king Tunipasukruk, and of Tumenanga ri Makkoayang at the age of 14 (i.e. 1535), are geographically more dispersed, apart from Tunipasukruk's victory over Garassik (Figure 4-3). To explain this strange pattern, I can merely suggest that the only victories attributed to Tallok are those which preceded Tuniapsukruk's treaty with Tumapakrisik Kallona and which fell beyond the range of Gowa's campaigns; that is, some of the other polities might have first been defeated by Tallok and later defeated again by Gowa.

[4] Patunru (1983:map between pp.157 and 158) appears to identify the Parigi defeated by Tumapakrisik Kallona with Parigi in Central Sulawesi, but my identification is more parsimonious. I also see no discord in having Tumapakrisik Kallona defeat such minor polities, close to Gowa, as Lembangang (possibly, however, Lambengi immediately south of Gowa, see Figure 3-1) and Bontomanaik (which could have tried to break away from Gowa at some point during his reign).

4.2.3 The middle to late 16th century battle front

During his 18 years as king of Gowa (1547-1565), Tunipalangga appears to have embarked on a barrage of military campaigns throughout South Sulawesi, with a couple of further excursions to the north (Figure 4-4). In essence, only arch-rival Bone remained undefeated, and Tunipalangga grew mortally sick on the battle field after more than six years of fighting against Bone (SG:23-29). A worse fate met his brother and successor, Tunibatta, who was beheaded warring against the Bone forces after only 40 days as king (SG:33-34).

Tumenanga ri Makkoayang, who ruled Tallok throughout Tunipalangga's reign but had not yet been installed as Gowa's regent (3.5.1), is not attributed any victories during this period. He appears to have profited from Gowa's misfortunes, being appointed regent and receiving Soppeng as a "vassal" immediately after Tunibatta's death, and subsequently achieving a few further military victories as well as renewing the subservient status of the areas defeated by Tunipalangga (ST:10; SG:40). While Makkoayang was still regent Tunijallok, who replaced Tunibatta, also achieved some further victories (SG:53; Figure 4-4).

4.2.3 The 17th century empire

Gowa's campaigns possibly impinged on Ternate's "suzerainty" as soon as Selayar was defeated (cf. Andaya, 1981:30), but it was during the 17th century that greater Gowa's empire grew dramatically at the expense of Ternate's (Figure 4-5). The cluster of early 17th century victories over the Bugis mostly occurred during the Islamic Wars when Abdullah forced the Bugis agrarian kingdoms to adopt Islam (Pelras, 1985). The wider victories during the early 17th century, some of which are attributed both to Abdullah (ST) and to Alauddin (LB), extended to Sumbawa at the south, almost to Ternate at the east, and to Lombok and west Kalimantan in the form of protection pacts (LB:88-90,93-94,99,109,115,123,130; SG:70-73; ST:15-17,26). Further victories along eastern Sulawesi not specified in the Makassar texts (Manado and

Muna) can be deduced from the relevant articles in the Bungaya Treaty requiring Gowa to return these lands to Ternate (Andaya, 1981:306).

Oddly enough, even during this period of empire-building Abdullah took the opportunity to defeat Maros (apparently first defeated by Tunijallok) and to inflict Bulukumba's fourth and fifth defeats. Or rather these are extreme examples of a quite general pattern of multiple conquest. The pattern implies that the victories and "subjugations" were raids more than routs, and presumably had to be followed with reminder visits when the tribute failed to appear. Andaya (1981) poignantly describes the world of shifting alliances in South Sulawesi during the 16th-17th centuries as the various kingdoms re-aligned their allegiances according to their perceptions of where protection lay. As we shall see, the signal of more durable political alliances lay not in treaties but in the recognition of shared interests through strategic marriages.

4.3 The Absorption of Garassik (Makassar)

Garassik conicdes with the area which later became the great entrepôt of Makassar. The geopolitical map (Figure 2-1) suggests that Garassik had been a small and potentially vulnerable kingdom. The available historical records suggest that control of Garassik by a larger kingdom changed several times before finally stabilising with Gowa. The relevant genealogical information, laid out in Figure 4-6, has been prepared from the sources given in Table 4-1.

4.3.1 Garassik at c.1500

The first historical citation of Garassik (SG:14) translates as follows.

'Then Batara Gowa married with a a person from Garassik, who was the child of Somba Garassik; she gave birth to Tunijallok ri Passukik, whose personal name was ... Pakerek Tau; another child called Barataua had the Karaeng title of Karaeng Garassik; another child, a girl, was called Karaenga ri Bone, but her personal name is unknown'.

TABLE 4-1. SOURCES USED IN FIGURE 4-6 (GARASSIK)

SG:14-15, 48-50. ST:6, 12-14, 26, 46-47. LB:89-91, 93, 96, 99, 110-112, 115-116, 121, 125-126, 135, 139, 146, 152-153, 185. Ligtvoet, 1880: 221, 224. Andaya, 1981: 300, 303-304.

N.B. Barataua is elsewhere called Kg Barataua (SG:18). The Indonesian translation of his Garassik karaengship renders 'pakkaraenganna nikana Karaeng Garassi' as 'gelaran rajanya dikatakan Karaeng Garassi' (SG:14), but there is no reason to interpret the Makassar text as portraying his title as royal rather than noble (see main text).

My interpretation of ST:6 (verse 22), whereby Kg Kanjilo was the mother of four unsexed children by Tunilabu ri Suriwa, rather than Kg Panaikang (the last child listed) having been Kg Kanjilo's mother, stems from the lack of any other record identifying the possible existence of a Kg Kanjilo in a mid-16th century context.

The marriage described here appears to have occurred very early (Figure 4-6), given that Tumapakrisik Kallona was born of Batara Gowa's marriage after Kg Garassik's mother had died (SG:15), and that Gowa's eighth and childless raja, Tunijallok ri Passukik (see SG:14-15), preceded Tumapakrisik Kallona on the throne. The title of Barataua Kg Garassik (GR2 in Figure 4-6) specifically lacks the "Somba" prefix suggesting that, in contrast to when his grandfather-in-law ruled Garassik, Garassik now ranked as a local karaengship (3.3.1). Nonetheless the right to authority over Garassik appears to have been transmitted via Somba Garassik's daughter, possibly because Somba Garassik had no suitable heirs to follow him, possibly in response to military pressure from Gowa. Either way Garassik had lost its right to independent rule from Gowa by the initial 16th (Figure 4-7a).

Garassik makes two other appearances in the early records. Firstlym the second Tallok raja, Tunilabu ri Suriwa, married a Karaeng Kanjilo in Garassik (ST:6) at c.1500 (Figure 4-6). Kanjilo falls on the border between Gowa and an independent Garassik (Figure 2-1) and could have marked Garassik's hinterland boundary. Secondly, Tuli Dg Mene Dg ri Pattukangang (ptk2) came from the marriage between Kare Saluk Gelarang Bontomanaik and a niece of Somba Garassik called I Dg Paikak (ST:12-13). Bontomanaik, although a common toponym, nonetheless has two occurrences near Garassik (Figure 6-1).

Pattukangang, which occurs in association with both marriages discussed here, borders Garassik (Figure 3-1).

4.3.2 Garassik during the early 16th century

Tallok's third raja Tunipasukruk is credited with defeating Garassik (ST:9), probably before the battle between 1535 and 1544 in which he fought against Gowa. Hence Tunipasukruk probably defeated Garassik when Barataua Kg Garassik ruled it (Figure 4-6), suggesting that Gowa then lost its newly acquired possession to Tallok (Figure 4-7c).[5]

The first external account of Garassik, which by this stage can be called Makassar entrepôt, is provided by the Portuguese merchant Antonio de Paiva, who had come to Sulawesi in 1544. On hearing that the sandalwood country was in revolt he docked at Suppak and discussed Christian concepts with the Suppak king. Paiva then proceeded to Siang, whose king he already knew, and held further conferences on Christianity. The Suppak king, accompanied by his fleet, then arrived at Siang where he was baptised along with many of his relatives. Later Paiva sailed to "Gowa" where envoys of the Siang raja invited him to baptise their lord. Paiva returned overland to Siang where he baptised the Siang raja and his followers, before returning to Melaka later in the year (Jacobs, 1966:280-282; Pelras, 1977:230-231).

Paiva's passage on "Gowa", given in the Portuguese by Jacobs (1966:294), reads: 'Now that the king of Suppak was baptised, and hearing the message of the Siang king that he had gone to a town called Lomtar,[6] which means palm - well, I had sailed seven *leguas* [38.8 km] towards there to be in danger of being blown into [these coral reefs], and [the king of Suppak] went in his boat along with his [fleet] ahead of us. After he arrived (or, it transpired that) I went to the said port, which is a large town (or city) called Gowa, which

[5] Reid (1983a:135) interprets the passage to mean that Tunipasukruk assisted Gowa's defeat of Garassik, but there is no supporting evidence. Rather, the fact that the Makassar texts ascribe Garassik's conquest individually to Tunipasukruk and to Tumapakrisik Kallona indicates that they were separate events.

[6] Lomtar has not yet been clearly identified.

was originally of [belonged to] a vassal of the king of Siang and which was taken [by the king of Siang].' On Paiva's third day there, two messengers from the Siang raja arrived and beckoned Paiva to return to Siang and baptise their king.

The decision to dock at the Makassar entrepôt appears to have been inspired solely to avert the dangers of shipwreck. Paiva called the harbour Gowa because, presumably, it was then under Gowa's control. There is no hint that Paiva ventured ashore until he returned overland to Siang with what was apparently a well-defended party. We can only speculate on why Paiva did not interact, or did not report his interactions, with anyone other than his Suppak and Siang minders.

The passage translated above has been interpreted to mean that Gowa was formerly a vassal of Siang (Jacobs, 1966:259; Pelras, 1977:245-246; Andaya, 1981:19-20), and even directly mistranslated to that effect (Villiers, 1990:146). But as we can see, Paiva was referring to the harbour area, i.e. Garassik, and that Siang's "vassal" was the polity which had possessed the harbour before Siang itself took it. Actually, Siang's claims to vassals and military victories in this area appear suspicious because they emerge only in the context of Paiva leaving the place as quickly as possible, and certainly too soon for him to have formed his own independent judgments.[7] Indeed Tumapakrisik Kallona may have already inflicted his defeat on Siang before Paiva's visit (cf. Figure 4-3), given that the Siang leaders would hardly have seen it in their interest to bother Paiva with such trifles.

Nonetheless it would be inconsistent to believe only a selection of the indigenous statements (whether reported by Paiva or by the Makassar texts) and to assign the other statements to gamesmanship. Hence we should interpret Paiva's brief remarks in the context of the Makassar texts. In that case Siang's "vassal" can be identified with Tunipasukruk's Tallok, and in "taking" Tallok Siang also took Garassik - a memory that would have lodged firmly in the minds of the Siang rulers even if nothing more than a brief raid had

[7] The Makassar texts also fail to mention any such events, although then again texts describing the glory of Gowa and Tallok would be unlikely to dwell on the sorrier chapters.

occurred (Figure 4-7d).[8] The event can be dated before Paiva's visit in 1544, and probably before the battle between Gowa and Tallok which occurred between 1535 and 1544. Thus Paiva's account supports the view that Gowa's major expansion occurred late, probably after 1544 (Pelras, 1977:254-255; Reid, 1983a:134), but (pace Jacobs, Pelras, Andaya and Villiers) it does not suggest that Siang ever enjoyed a glorious period of suzerainty over the peninsula's west coast. The first half of the 16th century appears to have been a time when the larger west coast kingdoms were of similar strength, temporarily allying with each other or raiding one another, in which context it is totally feasible Siang had briefly taken Garassik before 1544.

4.3.3 Garassik during the mid-16th century

Tumapakrisik Kallona's defeat of Garassik is mentioned twice during the summary of his campaigns (SG:18,22). The latter passage reads that '.... he was also the first to be visited by the Portuguese, in the same year that Garassik was defeated [by him], then Melaka was also defeated by the Portuguese'. The passage might appear to date the first Portuguese visits to 1511 when the Portuguese defeated Melaka, but the interpretation fails for want of evidence that the Portuguese visited South Sulawesi until the 1530s (Pelras, 1977:227-228). Nonetheless the passage could possibly be interpreted to date Tumapakrisik Kallona's victory over Garassik to 1511 (cf. Noorduyn, 1965:149-151). A map of Sulawesi drawn between 1533 and 1543 shows Gowa (Pelras, 1977:229-230), so by this juncture Gowa had probably retaken Garassik and begun to receive Portuguese visitors.[9] Tallok's attack on Gowa between 1535 and 1544 might well have

[8] Witness how Gowa's "vassals", for instance, often seemed to forget their subservience within a short time unless reminded (4.2.4), whereas Gowa not only remembered it but also put it in writing.

[9] The map includes Tallok, Suppak and Bacukiki but fails to include Siang, further belying the notion of Siang's putative golden age. Pelras uses the map to reconstruct an inland sea from the peninsula's northwest coast to Lake Tempe, but palynological work (Gremmen, 1990) disporves this wild interpretations. It is quite clear that the map merely twists the southwest peninsula clockwise from its correct location.

been stimulated by the desire to regain Garassik, as the location of the battle fronts suggests (Figure 4-2). The full interpretation that Tumapakrisik Kallona had defeated Garassik twice, once in 1511 which saw Barataua Kg Garassik put in charge, and a second time between 1533 and 1543 (Figure 4-7), is possibly supported by the double citation of the victory in SG.

The passage which attributes Tunipalangga with building the first brick walls at Gowa and Somba Opu also notes that Tumapakrisik Kallona's walls had only been earthen (SG:26). Thius might possibly suggest that Tumapakrisik Kallona had first built Somba Opu as an earthen fort towards the end of his reign (Figure 4-7f). Supporting evidence comes from the Somba Opu karaengship held by one of his daughters (SOU1 in Figure 4-6). High-fired ceramics recovered at the site also point to major occupation by the early 16th century (11.32.). The suggestion matches Paiva's description. It is not totally impossible that Tumapakrisik Kallona ruled from Somba Opu during his last days, although Mukhlis (1975:57) delays Somba Opu's use as a palace until Tunipalangga's reign.

4.3.4 Garassik during the mid-17th century

The name Garassik disappears from among the recorded karaengships after Barataua Kg Garassik, but resurfaced at c.1600 with Kg Garassik (MAM1/BAR1/GR4 in Figure 4-6), a stepbrother of Abdullah. The compund karaengship of this Tallok noble, which also covered Barombong at Garassik's south and Mamampang (Manyampang) at the east (Figure 3-1), suggests that he exercised authority over the port, especially between 1618 and 1631 when the Gowa royalty returned to the original palace centre (6.4).

Somba Opu, also called Maccinik Dangang ("watch the trade"), was restored as Gowa's palace between 1631 and its destruction in 1669 (LB:92-93,96,98-99,104,112-3,137). The Garassik karaengship also reverted to a Gowa noble, GR4 in Figure 4-6, who may have partly derived his candidature owing to his relationship as grandson-in-law to the old Kg Garassik. After he died at the time of Gowa's defeat, someone else took over Garassik's karaengship, as implied by the

record of the birth of Karaeng Garassik's younger brother in 1687 (LB:172). I have no further information on this Kg Garassik, unless it was a further title of Dg Manarai Kg Mamampang (MAM2), a son of Kg Galesong and grandson of Sultan Hasanuddin (Figure 4-11), who had the people of Garassik entrusted to him in 1691 (LB:175) before his death in 1692 (LB:176). Garassik's implied connection with Galesong is supported by the 1693 Dutch map which shows Galesong re-zoned northwards by the Dutch to include Garassik and Mamampang (Manyampang). The details of MAM2 alos suggest that Garassik and Mamampang were now alternate names for the same area, in which case Bahauddin Kg Mamampang (MAM3/SNXI in Figure 4-6), who also became Sanrabone's raja in the early 18th century (4.6), had probably taken over Garassik-Mamampang on the death of MAM2. That is, after reaching a suitably mature age he inherited the area previously ruled by his father.

Throughout the 17th century the Garassik-Mamampang karaengship remained an important post, reserved for high status individuals either one step removed from the Tallok royalty or two to three steps removed from the Gowa royalty. In line with the status of the post, we have evidence of familial inheritance, to a son and to a grandson-in-law.

4.4 The Marriage Of Gowa and Tallok

The sequence of royal marriages between Gowa and Tallok, shown in Figure 4-8, has been compiled from the sources listed in Table 4-2. It began when Tumapakrisik Kallona's marriage to Tunilabu ri Suriwa's child or children, unspecified in the passage, which resulted in four offspring - Tunipalangga (bon1/LAK1/GX), Tunibatta (DATA1/GXI), Kga ri Bone (BONE2) and Kga ri Somba Opu (SOU1) (SG:16). The only identifiable daughter of Tunilabu ri Suriwa is is Reiaya Kgloe Bainea, the bloodsiste of Tunipasukruk (TIII), both of whom were born of Tunilabu's marriage to the Siang woman Nyai Papete (Figure 4-8). A later passage confirms the identification. Tunijallok (LNG1/GXII), after accompanying his father Tunibatta to the battle where Tunibatta was decapitated, and after the burial of his uncle (Tunipalangga), returned to Gowa to be installed by the Gowa

TABLE 4-2. SOURCES USED TO PREPARE FIGURE 4-8

SG:13, 15-17, 29-32, 34-38, 43, 56, 58, 66-68, 74-5. ST:6-11, 13-14, 19-21, 23, 26-28. LB:87-88, 91-92, 94, 97, 99, 100, 102-103, 105, 107-108, 110, 112, 114, 116-119, 125, 131, 136, 138-139, 142-145, 147-148, 159, 161, 164, 170-175, 178, 183. Ligtvoet, 1880:182, 186, 189, 202, 205, 215, 220-221, 224. Patunru, 1983:18, 155.

N.B. Verses 23 and 24 of ST (p.6) appear to refer to two daughters, one unnamed, by different marriages of Tunilabu ri Suriwa. But they refer to the same marriage, as the wife who was a woman from Siang (verse 23) was also Nyai Papete born of Kasuiang ri Lampasaile (verse 24). The evidence lies in the identification of Kasuiang ri Lampasaile as a Siang noble. "Kasuiang", which means "homage rendered to a sovereign", is in local Bugis etymology the source of the name "Siang" (Pelras, 1977:252). Lampasaile can be located on the map as Saile on the Sungai Lampe around seven km, east of Siang (Dutch 1:50k maps, sheet XXXIII-75A). I infer the man was only a noble and not Siang's ruler as otherwise a direct statement in ST might be expected. I accept that Siang probably existed as a kingdom by the late 15th century, when Kasuiang ri Lampasaile lived, even though there is no direct evidence.

regent, Makkoayang. Tunijallok then buried his ancestor, Kgloe Bainea (SG:40-42). Hence we can infer that Tunibatta and all three siblings cited above were born of Kgloe Bainea's marriage with Tumapakrisik Kallona.

When Tunipalangga (GX) married Kg Balua Maklonjoka (BAL), he married a woman who shared grandparents on both sides and was his *kemanakan* or "niece" on one side, by virtue of the fact that Kg Balua was the daughter of Tunipalangga's aunt (Kg Makeboka, or MAK) by the latter's marriage to Tunipasukruk (SG:29-30). That Tunipalangga and Kg Balua shared grandparents on both sides can be seen by tracing Tunipalangga's grandparents through Tumapakrisik Kallona and through Kgloe Bainea, which gives us three of Kg Balua's grandparents (Figure 4-8). The *kemanakan* relationship would be the distant variety used in Makassar kinship terminology (see Chabot, 1950:28), and requires us to follow Tunipalangga's descent back to the brothers Batara Gowa and Kgloe ri Sero, from which point Tunipalangga was indeed one generation above Kg Balua (Figure 4-3). The chronicle's statement of the couple's relationship therefore confirms the

accuracy of the early genealogical reconstruction in Figure 4-8.[10]

Between about 1535 and 1585, numerous Tallok royal daughters married the Gowa monarch, but only one Gowa princess (SOU1) married Tallok (Figure 4-8). Tunipalangga appears not to have had any sons by his high status marriages, except the short lived Kg Anak Gowa (see also other genealogical diagrams), and this would seem to explain why the Gowa throne passed to Tunibatta's children after the almost simultaneous demise of the two brothers.[11] At this juncture three of Tunipalangga's daughters married Tunibatta's sons (Figure 4-8).

So during this period the Gowa throne acted as the apical point which attracted high status daughters to marry Gowa's monarch, or his brother as a second option, despite the palpable risk that the daughter would transmit access to the title of her status lineage (4.1). When Makkoayang (PTG1/TBB1/TIV) died his only adult descendants were two daughters married to Tunijallok, so the throne had to pass to a wife of Tunijallok unless Tallok were to instal an immature incumbent.[12] The resulting offspring of the woman appointed, Kg Bainea (PTG2/TIV), enjoyed the status of core members within the Tallok royal line despite only having a matrilateral rather than a patrilineal association, because Tallok's status as a lineage had become dependent on Gowa. Consequently the first born son of Tunijallok and Kg Bainea, Tunipasuluk (LNG2/GXIII/TVI/MRV), claimed the Tallok throne while patrilineally inheriting the Gowa throne (Figure 4-8).

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[10] Note that when Tunipalangga died, and his brother Tunibatta married Kg Balua and then almost immediately died (SG:38), the same relationship as stated for Tunipalangga must have held for Tunibatta. It is not mentioned, presumably because the point of interest here was Kg Balua's having been widowed twice in quick succession [SG:38].

[11] The explanation implied by SG would be the same as that given for why Tunibatta succeeded his brother to the throne, i.e. that none of Tunipalangga's children was yet an adult (SG:30), but I find it difficult to believe that all of Tunipalangga's daughters were still juvenile.

[12] Actually one of the two daughters I refer to, Kg Batu-Batu (BTBT1), could have already died before Makkoayang's death, but this does not affect my argument.

A lull followed in Gowa-Tallok royal marriages during the period when Sultan Abdullah (AG1/KNJ3/TBB2/TVII) restored Tallok's independent status (3.5.1). Indeed during his life Gowa princesses were attracted to his sons, as shown by the marriage between POPO3 and POPO2/TMJ4 (Figure 4-8), and a planned alliance between I Mene and MJN2 which failed owing to I Mene's premature death (Figure 4-11). After Abdullah's death there was a second flurry of princess exchange, once again with an emphasis on Tallok princesses marrying into Gowa (Figure 4-8), corresponding to the re-esrtablishment of the Gowa throne as the apical point.

Although Hasanuddin (TBB4/MNGP4/GXVI) had plenty of sons to inherit the Gowa throne patrilineally, the chaos resulting from Gowa's defeat led to Hasanuddin's abdication and a rapid turnover in the succession. Finally, Abdul Jalil (CAM4/SNX/GXIX) embraced the political realities and stabilised the Gowa throne (Bulbeck, 1990), but at the cost of recognising Bone as the new apical point. As far as I can see Abdul Jalil had no sons, and only one daughter (PTK6) who had married Sahaduddin's chosen successor, Sultan Alimuddin (BXVI/SXVII).[13] When Abdul Jalil died in 1709, all of Hasanuddin's other offspring were either dead or very aged (see the various genealogical diagrams). Because Gowa's (Abdul Jalil's) had become dependent on Bone, the offspring of the marriage enjoyed access to Gowa's genealogical core, and Ismail (GXX/BXIX/SXIX) came to rule Gowa as the first of his three royal titles (Figure 4-8).

Gowa's rule by a Bone Bugis affronted Makassar traditon and after two years Ismail was forced to abdicate by Gowa's

[13] Alimuddin also absorbed Soppeng's throne some time after being installed as Bone's sultan and transmitted both thrones to his descendants. Along with their contemporary occupancies of the Gowa and Luwuk thrones, this constituted the single greatest concentration ever of royal Bugis-Makassar titles in a single status lineage. Alimuddin's cliam on th the Soppeng throne stemmed from his relationship as "son" of the Soppeng royal, We Adda, whom Arung Palakka (Sahaduddin) had married before engineering her installation as Soppeng's queen (Bulbeck, 1990). It is truly the great irony of a system so bound up in marriages and filial succession that South Sulawesi's greatest warlord and most decisive apical point, Sahaduddin, was himself childless, and that Alimuddin (his nephew) was only an adopted son.

Bate Salapang (Patunru, 1983:75-76), as was now possible with the approaching death and waning authority of Alimuddin. Ismail's replacement Sirajuddin (TXII/GXXI), who till then had ruled Tallok, naturally constituted a far more palatable ruler on grounds of tradition (Patunru, 1983:76). But in particular Sirajuddin's claims to genealogical precedence were just as strong as Ismail's, owing to his matrilateral descent from Abdul Jalil's brother and predecessor, Muhammad Ali (BIS2/GXVIII in Figure 4-8).

4.5 The Fragmentation of Polombangkeng

Polombangkeng was reportedly ruled by seven kings (Tumakgauka), all of them "brothers" (saudara), headed by Bajeng and otherwise including Mandallek, Jamarang, Jipang, Katingang, Sanrabone and Lengkesek as partners (SG:20). According to stories the founding rulers were seven brothers who descended from heaven at Bantaeng before settling in Takalar area. While all bore the title "Karaengloe" or "great king", Bajeng's ruler, the eldest, held the regalia (Reid, 1983a:124).[14]

Tumapakrisik Kallona successfully attacked or "enslaved" Jipang, Sanrabone and Katingang, and struck a treaty with Bajeng (Figure 4-3). The point suggests that the former three were the "West Polombangkeng" forces which unsuccessfully assaulted Gowa between 1535 and 1544 (Figure 4-2), and that the treaty with Bajeng specifically concerned Gowa's authority over these polities. Tunipalangga for his part then defeated Lengkesek and Bajeng (Figure 4-4). The fate of the Polombangkeng polities is echoed in their marriage relationships with Gowa, as shown in Figures 4-9 and 4-10 compiled from the sources cited in Tables 4-3 and 4-4.

[14] Oral tradition in southern Takalar still recalls this confederation, along with the interesting addition that the name Polombangkeng, which means "cut legs", was bestowed on the region after its leaders had been cast into cauldrons of boiling water after their defeat by Gowa (fieldnotes, 16-6-87).

4.5.1 Jamarang

Jamarang can be identified as the most northerly of Polombangkeng's rulers (Figure 3-1) from the archaeological site which bears the name (Figure 13-1). According to the records Tumapakrisik Kallona once married a Polombangkeng person, the daughter of Kg Jamarang, with three offspring (SG:18; Figure 4-9). The number of offspring suggests the marriage had occurred fairly early in Tumapakrisik Kallona's reign. A later "Karaeng Jamarang" gave his daughter I Dg Mangkasarak (mns1) to Tunibatta, from which union Tunijallok resulted. My chronological reconstruction would tend to identify the latter Kg Jamarang with "Tumakgauka Jamarang", and allow him to have been the son of the first (Figure 4-9). The name Jamarang resurfaces with I Bissu Jamarang, a daughter of Tunijallok who died when still young (Figure 4-9). Her name suggests that Jamarang then lay under Gowa's control; indeed a subservient status had probably existed well beforehand, as suggested by Jamarang's apparent exclusion from the Polombangkeng forces which attacked Gowa. Afterwards Jamarang disappears from the records, implying that this polity which had once married its princesses into Gowa no longer even ranked as a significant karaengship.

4.5.2 Mandallek

Mandallek, identifiable as a large archaeological site (Figure 13-2), couples with Jamarang as a north Polombangkeng polity which did not attack Gowa and which escaped Gowa's wrath. Indeed Tumapakrisik Kallona's daughter, Kga ri Somba Opu (SOU1), married Kga ri Mandallek as the last of her three husbands (SG:17). Given that one of her daughters by a previous marriage, Kg Bainea (PTG2/SOU2/TV), was born at about 1551 (Table 2-3), SOU1 married Kga ri Mandallek in the 1550s or later, and the man concerned might well have been the son of "Tumakgauka Mandallek".

Mandallek subsequently disappears from the records until 1616 when "Lukmuk ri Mandallek" led a fleet of nine boats and defeated Bima (LB:88). His title suggests common origins, although Mandallek could have been his reward for his

successful raid. Just possibly he was the father of Kga ri Mandallek (MD4) who fathered Dg Sisila Kg Mandallek, or MD6 (see LB:121,157). The latter individual had already taken up the Mandallek karaengship by 1673 (LB:144), but his early death in 1679 at the age of 21 (LB:121,159), after apparently having fathered only one son who died as a child (LB:157), prevented any further possibility of the title's patrilineal passage (Figure 4-9). His succesor, who died in 1690 at the age of 37 (LB:175), is identified by the editors of LB with Kg Mandallek Tulolo Tajuddin, the son of Kg Karunrung born in 1653 (LB:116). The dates confirm this identification. I label this individual MD5 because in March 1667, when Dg Sisila (MD6) was still juvenile, the areas of Mandallek as well as Aeng were surrendered to Tulolo Tajuddin (LB:133), possibly as an emergency measure triggered by the Dutch attack then looming (see Andaya, 1981).

Hence rule over Mandallek was passed from father to son on one and possibly two occasions (Figure 4-9).

4.5.3 Katingang

To my knowledge Katingang has not survived as a toponym into the 20th century, and identification of its probable location depends on the 1693 Dutch map (5.4.3). Even though listed among Tumapakrisik Kallona's victories (Figure 4-3), Katingang remained an important karaengship into the late 16th century. Hence the title "Karaengloe" (great karaeng) was bestowed on its ruler (SG:30) who married no less than four of his daughters to Gowa rulers (Figure 4-9). Of these Kga Warak (LAK2), the mother of Tuniawanga ri Kalassakanna (KNJ/TUNI), was a particularly prominent woman, and was used by the compilers of SG as the anchor to locate her sisters. Her father, Kgloe Katingang (KT2), appears to be distinct from the "Tumakgauka Katingang" (KT1) on both chronological (Figure 4-9) and on titular grounds.

Katingang disappears from the records after Kgloe Katingang, either because he had no sons, or because rule over Katingang passed to Gowa through one of the four princesses. The nearby karaengships of Popok and Kasuarrang appear to have been maintained by local lineages for one

generation after Kgloe Katingang, but thereafter the karaengships were held by either Gowa, Tallok or Sanrabone aristocrats (Figures 4-8 to 4-10). Katingang and its area appears to be a clear case where the demise of local autonomy was not the result of military defeat, but of gradual absorption into the surrounding status lineages.

4.5.4 Bajeng

The toponym Bajeng survives as a small kampung (see Figure 3-1), and although I have not surveyed it myself, I have been reliably informed that some antiques have come from there (fieldnotes, 9-4-1987). The story of Polombangkeng's origins points to Bajeng as the apical point which bound the seven status lineages together. Gowa apparently pacified Bajeng first by treaty abd then by force of arms. I have no record of specific marriage relations unless Makkoayang's wife Kare Pakrisik, the child of a "karaeng" from Polombangkeng (ST:12), was a Bajeng princess. All in all, Bajeng's authority seems to have evaporated with the mid-16th century establishment of Gowa as the local apical point.

4.5.5 Lengkesek

After "Tumakgauka Lengkesek", Lengkesek next appears as one of Tunipalangga's conquests, and then in a reference to a man from Lengkesek was the father of one of Sultan Alauddin's wives (SG:58). In the mid-17th century Lengkesek became the karaengship of an important individual of the Lekokbodong (Marusuk) lineage group (LN1/TUM6a), indicating its direct rule from greater Gowa's central court by this time.

4.5.6 Jipang

Although Tumpakrisik Kallona made Jipang a vassal (Figure 4-3), any disruption to home rule appears to have been transient. The Jipang karaengship does not appear among the credentials of any male from the major lineages. Instead we find the title associated with two women, firstly the aunt of Tunijallok's wife Dg ri Rappocinik (SG:43-44), and then with

a daughter of Makkoayang (ST:13). These women may well have held the title by virtue of their marriage to the ruling Kg Jipang. if so, then the latter case indicates that by the late 16th century, Jipang was now a polity of sufficient status to attract a Tallok princess.

Support for this proposition comes from the mention of the death of Kg Jipang on three occasions - 1647, 1648 and 1686 (LB:108,110,171). The recording of the deaths but not the births suggests that greater Gowa watched the affairs of Jipang with interest but abstained from meddling. In summary, Jipang appears to have regained its autonomy as a small and unthreatening karaengship almost immediately after Tumapakrisik Kallona had made Jipang a vassal, an autonomy which Jipang maintained until the end of the 17th century.

4.5.7 Sanrabone and General Remarks

Sanrabone was also reduced to a vassal by Tumpakrisik Kallona (SG:22), but soon became a royal ally of greater Gowa (4.6). The kigdom is readily locatable from the brick fortress (Figure E-3).

The fragmentation of Polombangkeng cannot be directly explained by Gowa's mid-16th century conquests, because generally speaking the harsher Gowa's treatment, the better the polities fared subsequently. To a large degree, geographical proximity to Gowa can account for the order in which the Polombangkeng members disappeared from the records, although one of the closest (Mandallek) may have re-emerged with some degree of local autonomy. The unreciprocated marriages of Jamarang and Katingang princesses into the Gowa royalty appears to have sounded the death knell for these polities, indicating the peril to local autonomy of too enthousiastic a recognition of the highest status lineage. *Mutatis mutandis* Bajeng's irrelevance to the assignments of wider patterns of status appears to have spelled its coeval demise. Nonetheless the 1693 map of Polombangkeng (Figures 5-4 and 5-5) suggests that the area had sufficient population to provide its own power base, and the power vacuum created by the demise of Bajeng appears to have opened the way for Sanrabone.

TABLE 4-3. SOURCES USED FOR FIGURE 4-9 (POLOMBANGKENG)

SG:15-18, 30, 35-6, 42-44, 46, 48-49, 57, 59-60, 68, 77-78. ST:19-23. LB:87-88, 90-92, 97, 100, 107, 112, 116-117, 121-123, 125, 130, 133, 135-9, 141-148, 150, 157, 159, 161, 170, 172, 175. Ligtvoet, 1880: 189, 192, 209.

N.B. Figure 4-9 includes some Tallok genealogical detials slotted into a conveniently unoccupied space. Now ST (p.8) has the extraordinary claim that one of the offspring resulting from the marriage between BRS1 and Tunipasukruk, Kg Bontokappok, was still alive when the Tallok chronicle was compiled, well over a century after Tunipasukruk's death. I tentatively suggest that the chronicle has confused this child of BRS1 and Tunipasukruk with the late 17th century man called Kg Bantokappung, and that this confusion may reflect a line of descent. Even so we would still infer that the former individual was the grandfather of the latter, or even another generation back. My suggestion would allow I Dg Jinne and main2, who entered into several noble marriages in the late 17th century (see also Figure 4-12), to be related back to the Tallok line via the "Tallok Sub-1" lineage. Their mother, mns4, would appear to be the granddaughter of Dg Tacao (Figure 4-7), also of Tallok descent (ST:12); but because the father and even the sex of the intervening individual, I Dg Mallakbang, are unknown (ST:12), this loosely inter-Tallok marriage cannot be included within my model.

Two women called I Tanik lived at the same time, one the daughter of Dg Kalula (LB:92) and the other the daughter of Tumailalang [Jaranika] (LB:147). I ascribe the marriages with Kg Karunrung in 1670 (LB:139) and with Kg Bangkala in 1674 (LB:145) to the former I Tanik, and identify her father with Kg Tamalakba whose Daeng name was Dg Kalula (ST:23). The second I Tanik, who married Kta ri Mangalliki in 1672 and then again in 1674 after a brief divorce (LB:142,145,149-50), is shown in Figure 4-12. Finally, I identify the daughter of POPO2/TMJ4, called Dg Talebang (ST:22), with the woman of the same name who married Kg Kaballokang in 1674 (LB:147).

TABLE 4-4. SOURCES USED TO PREPARE FIGURE 4-10 (SANRABONE)

SG:15-18, 30, 35-6, 42-44, 46, 48-49, 57, 59-60, 68, 77-78. ST:19-23. LB:87-88, 90-92, 97, 100, 107, 112, 116-117, 121-123, 125, 130, 133, 135-9, 141-148, 150, 157, 159, 161, 170, 172, 175. Ligtvoet, 1880: 189, 192, 209.

N.B. A further marriage of Tumenenga ri Campagana (SNVI) was with Dg Saraba, described as a "sibling" of Kg Segeri, who bore him nine offspring (IALS). The titles but not the sex of these offspring are given by IALS, and I have not been able to relate to people in the Gowa-Tallok genealogies, so they are excluded from my genealogical analysis. The Kg Segeri mentioned here does not appear to be Sultan Abdullah or his prematurely deceased son Kg Segeri, and so presumably arose from the local royalty at a time when Segeri was autonomous.

In explaining the origins of Kga ri Bontoa (BON2), the mother of Sultan Mohammad Said, SG (pp.57-58) identifies the mother as Kga Warak (LAK2) and the father as Dg Malu. The latter was the child of a karaeng from Paria, shared grandparents on both sides (*sepupu duakalinya*) with Kga Warak, and had been killed at the time of Tunibatta's ill-fated foray into Bone (1565). The karaengship of Dg Malu (Kasuarrang, or KSR1) is then stated. The marriage between LAK2 and KSR1 must have occurred prior to the marriage between LAK2 and Tunijallok, given no mention of Tunijallok having divorced LAK2; rather, the records indicate that LAK2 died whilst in wedlock with Tunijallok at some point prior to the marriage between Kg Bainea and Tunijallok (SG:42-43). The records are therefore internally consistent in placing the birth of BON2 no later than 1566, even though this gives BON2 an unusually long child-bearing period and life (Figure 4-5).

LAK2 and KSR1 would have shared grandparents on both sides if, firstly, Kg Paria had been the brother of LAK2's mother, and secondly KSR1's mother had been the sister of KT2, as shown in Figure 4-10. Alternatively Kg Paria could have been the brother of KT2, and the mothers of LAK2 and KSR1 could have been sisters, but the lack of details on Kg Paria's origins suggests he should be moved to the furthest possible genealogical peripheries. I have not found a suitable Paria, unless we accept Parialauk or Pare-Pare, but the toponyms Anak Sappuk, Katingang and Kasuarrang all fall close together (Figure 3-1). Anak Sappuk and Paria appear to have been small local polities, even though the karaengship of SAP1 and Kg Paria, as given in the Makassar text, has been interpreted as "raja" in the Indonesian translations (SG:42,58). Note that the genealogical reconstruction given here suggests that data3, a further wife of Tunijallok who is also described as sharing grandparents on both sides with LAK2 (SG:49), would have been the full sister of KSR1 (Figure 4-10).

Dg Marannu (mru2), who married Sultan Mohammad Said with whom she shared a grandparent in common, was the daughter of a Sanrabone woman called I Ranga (SG:68). If mru2 and Sultan Mohammad Said shared either LAK2, PTG2/SOU2/TV or LNG1/GXII as the common grandparent, then this should have surfaced elsewhere in the genealogical information. The lack of information on I Ranga suggests that the common grandparent was KSR1, by his marriage to some woman other than LAK2, as reconstructed here (Figure 4-10).

4.6 Sanrabone

Sanrabone's prominence is indicated by the existence of a brief chronicle of her rulers, "Ini Adat Lama Sanrabone" or IALS (2.2.4), which appears to have been composed in three parts. The first part lists the descent of Sanrabone's rulers prior to and excluding Abdul Jalil's occupancy of the Sanrabone throne. The second and third parts detail the immediate families of the two most prominent of the independent Sanrabone rajas, Tumenanga ri Parallekkena and Tumenanga ri Campagana.

Presumably this text also featured among the uncited books and *lontarak* which Ibrahim (1985:45-52) says he used to write a short history of Sanrabone. Thus assuming Ibrahim's advantage in this matter, I will follow Ibrahim's kinglist as the primary reference, at least up to Tumenanga ri Campagana (SNVI), and cite any variations based on my reading of IALS as subsidiary information.

SNI. Karaeng Pancabelong. According to IALS, Kara Pacabelo, also called Kara Pamatowa, a man who originally hailed from northern Majapahit.

SNII. Karaeng Tunijallok ri Pakrasana. IALS states Tunilonjok Kapparane, who ruled alongside Raja Tunipalangga and was the child of SNI.

SNIII. Karaeng Massewaya. According to IALS, the child of SNII.

SNIV. Karaeng Tonibasara. IALS gives Karaeng Tunibatta, the child of SNIII.

SNV. Tumenanga ri Parallekkena. According to IALS, he was the child of Tunibatta by a Javanese woman, I Ganna Bilang. He descended to earth after his kettle drum had sounded and became wealthy, before being slain alongside Tunibatta and dying in his premises. IALS further states that he married Kg Mapekdaka, Tunijallok's sister, and gives a list of the children which substantially agrees with the list of Kg Mapekdaka's children given elsewhere (SG:36).

This cross-reference allows us to estimate the chronology of the early Sanrabone kings (Figure 4-10) but also highlights the problems in the early kinglist of IALS. It is almost impossible that SNV's great grandfather (Tunijallok ri

Pakrasana) could have reigned at the same time as Gowa's Tunipalangga, the brother of SNV's father-in-law. The recurrence of the nickname Tunibatta is also worrying. Given that SNV had over seven children by the daughter of the Gowa raja Tunibatta (IALS; SG:36), SNV could hardly have died at the same time as Gowa's Tunibatta. If SNV had died at the same time as SNIV, whom IALS calls Tunibatta, then we would have to infer that there was a battle or a palace revolution during which a very old Sanrabone raja (SNIV) and his son were simultaneously slain. Another complicating factor is that, according to my chronological reconstructions, Sanrabone was a vassal of Gowa during the time when Gowa's Tunibatta was an adult, and so Gowa's Tunibatta may well have commanded Sanrabone before succeeding to the Gowa throne. This could explain why SNV is simultaneously described as the son of Tunibatta (read son-in-law) and as a *tomanurung*-like figure who descended, as though he had commenced or restored a dynasty. It is also of concern that three honorific titles associated with the first five Sanrabone kings (Tunijallok, Tunibatta and Tumenanga ri Parallekenna) are also associated with three of the Gowa kings between Batara Gowa and Tunijallok (see Table 3-3).

I suspect that Gowa's mid-16th century lordship over Sanrabone has confused the oral record of Sanrabone's early kings as recorded in the Makassar original to IALS. My preferred solution (Figure 4-10) has taken a conservative course by suggesting that SNIV, who should properly be called Tonibosara, may have died alongside Gowa's Tunibatta.

SNVI. Tumenanga ri Campagana. Clearly the Kg Sanrabone of ST (p.26) and the Kg Sanrabone I Pammusurang of SG (p.45).

SNVII to SNIX. At least three Sanrabone rajas occupied the throne between Tumenanga ri Campagana and Abdul Jalil. A Sanrabone raja, who can be identified with Campagana unless yet another Sanrabone raja is to be added, died on 31 March 1642 (LB:103). The new Sanrabone raja died on 13 July 1642 (LB:103), and a Sanrabone raja then died on 12 November 1647 (LB:109). Then on 23 November 1658 Kasim Puanna Jenalak Raja Sanrabone fled to Tallok in response to rumblings to expel

him (LB:121).[15] After an interregnum lasting a decade, Kg Campagaya (later Abdul Jalil), a son of Gowa's Sultan Hasanuddin, succeeded to the Sanrabone throne at the request of the people (SG:75; LB:135). 1668 was of course a critical juncture - Makassar had been occupied, Hasanuddin was probably on the point of abdication and likely to be succeeded by a stepbrother of Kg Campagaya (Figure 4-1) - so Kg Campagaya's movement to Sanrabone probably represented flight rather than territorial expansion.

Ibrahim's kinglist traces the succession after Campagana through I Pucu (a daughter of Campagana, according to IALS) and Kg Banyuanyarak (I Pucu's son, according to IALS). Elsewhere this Kg Banyuanyarak (BNY2/SNVIII? in Figure 4-10) is referred to in a way which does not clarify whether he was the Sanrabone raja or not (SG:74-75). In favour of Ibrahim's reconstruction, Kg Banyuanyarak was the father-in-law of Abdul Jalil who thus could have gained entry into Sanrabone's genealogical core through his mother.

IALS implies differently. I Pucu and Kg Banyuanyarak are merely placed with Campagana's other children, whereas Kg Bambanga and Tumenanga ri Buttana occur in the section dealing with the kings up to Jenalak's expulsion. A straight interpretation would hold that Kg Bambanga (BMB1/SNVII?) succeeded his brother Campagana, but that he was already an old man and died in the same year as his brother. After Kg Bambanga's death, Campagana's son Tumenanga ri Buttana (SNVIII?) occupied the throne, to be succeeded by Buttana's son, Jenalak (SNIX). In this case, Sanrabone's throne was transmitted patrilineally through to Puanna Jenalak.

However, IALS conceivably might have placed Kg Bambanga and Tumenanga ri Buttana in the first section merely to explain Jenalak's origins, not because they ever ruled Sanrabone. Both kinglists discussed here seem equally possible, and so I include both (Figure 4-10).

Ibrahim (1985:50) states that a sister of Abdul Jalil, I Jata Tojeng Bontomajannang, occupied the Sanrabone throne after Abdul Jalil. However, I-Ata Tojeng Bontomajannang

[15] Puanna Jenalak is ignored by Ibrahim, who possibly follows some oral or other source which wishes to bury the odium surrounding Jenalak's expulsion.

(Islamic name Syaifulmuluk) was a son of Mohammad Said (SG:69) who moreover died in 1669 (LB:105,135). Ibrahim's kinglist then follows with Pakkanna Kg Pangkajeknek, the son of Kg Bontojeknek by the Bima sultan Ambela, but none of the offspring of this marriage corresponds to such a person (Figure 4-15). Abdul Jalil's successor on the Sanrabone throne was apparently Bahauddin Kg Mamampang, by 1717 (see Ligtvoet, 1880:193, 243-4). He may have been entitled to the Sanrabone throne through his marriage to Abdul Jalil's niece, Kg Tana-Tana or TNTN1 (Figures 4-7 and 4-8). The Sanrabone karaengship then passed to Bahauddin's son, Kg Beroanging, in 1731 (Ligtvoet, 1880:213). Hence Jenalak's expulsion apparently provided the occasion for the Gowa aristocracy to absorb the Sanrabone throne. In 1734, however, Sahaduddin Kg Alluk was appointed Sanrabone's raja (Ligtvoet, 1880:216), and as his parentage is unstated I infer that he was a local Sanrabone aristocrat.[16]

4.7 Galesong

Kota (township) Galesong is today a planned town with suburban population densities. It was the scene of one of the key battles of the Makassar War (Andaya, 1981) and has clearly been a population centre under local rulership during the colonial period (Ibrahim, 1985). A polity by the name of Galesong had existed by the 16th century, given the record of its defeat by Tumapakrisik Kallona (SG:22), and the archaeological evidence indicating that Kota Galesong was already a population centre by that date (13.1).

According to Reid (1987:8-9), Galesong has its *Tomanurung* who brought the kingdom's regalia. But according to Ibrahim (1985:122), oral tradition in Galesong recognises a first Galesong karaeng who derived from Gowa, and a period (between 1610 and 1636) when those who held the position of Karaeng Galesong must not now be named. The first reported Karaeng Galesong can be identified from SG, while the reported taboo period, between 1610 and 1636, coincides with the time when

[16] He was also the uncle of the man who compiled the Royal Diary in the late 18th century. This strengthens the case for believing that his parentage would have been noted if he had come from any of the major lines.

Galesong was apparently ruled from Campagaya Lama, five kilometres to the north (Figure 13-3). Galesong was still sited there when it was attacked by the Dutch in 1635, as can be inferred from the associated report that Sultan Alauddin spent the night in Bebak (LB:96), i.e. the kampung which abuts Campagaya Lama (Figure 11-4). The Dutch attack may well have prompted the relocation of Galesong's rulership to its original centre as a more defensible location.

GLS1. Before its defeat and "enslavement" by Gowa (SG:22), Galesong presumably had its rulers notwithstanding the lack of substantiating records. The first known Galesong ruler was Tappu Kg Galesong, the son of Tunibatta by a Galesong woman (SG:38). My chronological reconstruction suggests that this was the Kg Galesong who married Lotong Kga Bone after the latter had been widowed by Tunijallok's death (SG:32).[17] I estimate that I Tappu Kg Galesong lived between about 1550 and 1600, and ruled Galesong during the late 16th century.

GLS2. According to my informant at the archaeological site of Campagaya Lama, Hamzah Koda Dg Bundu, the first three Galesong rulers are buried in the site's Islamic graveyard (Figure 13-3). My reconstruction inserts these individuals between the first and second Galesong rulers as recognised in Kota Galesong folklore. Accordingly, Kg Campaga from Bulukumba, whom Dg Bundu recognises as the first Galesong ruler, is here treated as GLS2. The information given by Dg Bundu, that this individual died in 1613 at the age of 60, fits with the suggestion that he had succeeded Tappu Kg Galesong. The inferred excision of Galesong from Gowa's control at the end of the 16th century can be seen as part of Abdullah's policy of decentralising the power structure of greater Gowa (13.3.3). Accordingly, Kg Campaga's reign at Galesong is here dated between c.1600 and 1613.

GLS3. According to Dg Bundu, Kg Campaga was succeeded by Kg Ganna who ruled in 1614.

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[17] I would be happier with the identification if the textual reference had mentioned a *samposikale* relationship (cf. Figure 4-11), but the lack of that confirming information (SG:32) is insufficient reason to reverse my procedure of reducing the genealogical records to the smallest number of discrete individuals (3.3.2).

GLS4. Dg Bundu told me that Kg Ganna was succeeded by Kg Jare, who ruled from 1614 or 1615 until his death sometime before 1662. A terminal date of 1633 is suggested by the report of the death of Kg Galesong in that year (LB:94). According to Dg Bundu, Kg Jare married a woman called Kirikung ri Biring Bangia.

Kg Campaga, Kg Ganna and Kg Jare are all buried together (Figure 13-3) which implies a family link.[18] Furthermore I was told that Kg Campaga had married a woman from Tallok called Kg Sakking. Now, a son of Tunipasukruk called Yaneng Dg Palenguk had a grandson called Yandulu ri Galesong (ST:8). Fitting the dates (Figure 4-11) suggests that the daughter of Dg Palenguk may have been Kg Sakking and that Yandulu ri Galesong was either Kg Ganna or Kg Jare. Possibly the identification with Kg Ganna is preferable because the lack of the individual's titulation in ST suggests that the individual was not prominent, in accord with his fleeting reign, and because of the tentative identification of Kg Jare with an individual prominent enough to have had his karaengship of Galesong recorded in LB. Interestingly, the identifications discussed here stand out as the only case I found where locally collected traditions appear to complement and extend the genealogical information given in the Makassar texts.

GLS5 and GLS6. These would be the second and third rulers of Galesong as remembered in Kota Galesong. One of them is mentioned in 1636 (LB:97), but I have no other dates on them.

GLS7. Dg Manaba I Patudangi Dg Polo Kg Matinrowa ri Parallakkenna, the fourth ruler as remembered in Kota Galesong, and whose nickname "Tau Battua ri Sapanjang" means the person who enlarged Galesong (Ibrahim, 1985:122). Ibrahim (1985:122) further dates the commencement of his rule to the interval 1656-1662. Hence his immediate successor could well have been "GLS8" who was born in 1655 (Figure 4-11).

GLS8. Mannindori Kare Tojeng Kg Galesong, the son of Sultan Hasanuddin. Although he was reportedly appointed by the Galesong people (SG:76-77), his appointment would have been consistent with greater Gowa's policy of extending

[18] Regrettably I did not think to solicit any genealogies.

direct rule to the south coast (13.3.3). He reigned until his flight from Sulawesi in the early 1670s (Andaya, 1981:212) and died in Banten in 1678 (LB:161).

GLS9. Dg Malewa, the new Kg Galesong in 1677, who assisted Bone's Sahaduddin in his final assault on Benteng Tua (see Andaya, 1981:184) and his assassination of Arung Bakkek in 1681 (Andaya, 1981:237).

TABLE 4-5. SOURCES USED TO PREPARE FIGURE 4-11 (GALESONG)

SG:15-17, 29-30, 32, 34-35, 38, 42, 60, 67, 77-78. ST:6-8, 19-20. LB:87-88, 91, 94, 97, 100, 107, 112, 116-118, 120, 138-139, 144, 147, 161, 167-168, 176, 184. Ligtvoet, 1880:178. Andaya, 1981:184, 222. Ibrahim, 1985:122. Fieldnotes, 26-9-86 (information from Hamzah Koda Dg Bundu).

N.B. For convenience sake, I have used Figure 4-11 to depict some extraneous genealogical information, including a marriage shown between Panneng I Mene, the daughter of Sultan Alauddin by I Tobo, and Kga Majannang (MJN2). Actually they were only engaged before I Mene's death at a young age. The fact that this engagement is mentioned twice (SG:37,60) suggests that it had been planned as an important marriage.

TABLE 4-6. SOURCES USED TO PREPARE FIGURE 4-12 (MARUSUK)

SG:14-15, 17, 44, 47, 50, 56, 59, 61-64, 67-68, 74-75, 77-78. ST:7-8, 12, 21, 23. LB: 87, 90-91, 97, 99-100, 102, 107, 111-112, 114, 116-120, 122-125, 128-130, 136-138, 140, 142-143, 145, 148, 150, 153, 161, 175-176, 181, 183, 186. IALM. Ligtvoet, 1880:182, 189, 209. Patunru, 1983:18.

N.B. The daughter of LEK2 called I Ralu married Dg Mangalle (SG:47), probably the Dg Mangalle of unknown descent who went to fight in Kabaenna (cf. LB:95) rather than the later Dg Mangalle shown in Figure 4-12.

The Indonesian translation of one passage (SG:63) reads '...seorang lagi bernama I Linga...dialah neneknya Karaenga ri Tabaringang (dan) ibu dari I Mappatamba...'. However, since Kg Tabaringang was the mother of I Mappatambak Abdul Gafar Kg Ballok (LB:107), the '(dan)' inserted into the Indonesian translation should be deleted and the passage translate as "'..another [child] was called I Linga....and was the ancestor of Kga ri Tabaringang [who was] the mother of I Mappatamba'. Also, the Indonesian translation of the second karaengship of BMT2/LAK5 wrongly gives it as Kg Laikang rather than Kg Lakiung (SG:68).

The available information on the parentage of I Tanik and BKK1 (LB:142,175) only gives their father as Kg Jaranika (JAR1/TUM6c), and I have inferred that they resulted from his marriage with Kga ri Bontojeknek by consideration of their

probable birth in the early 1660s and the lack of evidence that Kg Jaranika then had any other wife.

TABLE 4-7. SOURCES USED TO PREPARE FIGURE 4-13 (LEKOKBODONG)

SG:61, 63. ST:12-13, 23, 26, 28. LB: 87-92, 96-97, 100, 102-103, 107-108, 110-112, 116-117, 119, 122, 128, 131-132, 136-138, 144-145, 147-149, 153, 155-156, 162, 170, 173, 178, 181-182. Ligtvoet, 1880:181, 191-192, 199, 211. Patunru, 1983:68.

N.B. I identify Rikong Dg Tanang (SG:61) with the Tanang who was Kg Karunrung's first wife (cf. LB:107), labelling her "rkng4".

Dg Makruppa who fathered Tumailalang Lekokbodong (LB:148) is of unknown parentage, but given that his son combines the Lekokbodong toponym with a position in the internal ministry, I suspect Dg Makruppa was a Lekokbodong noble.

Ligtvoet (1880:250) identifies Qasim Puanna Teko, the Agongnionjok raja born in 1649, with Mappajanci Dg Mattajeng Matinroe ri Sumpampoba, the Agongnionjok raja who died in 1716. They could have been two individuals, had Qasim Puanna Teko ruled during the interval between 1676 (cf. LB:148-9) and 1680 (cf. LB:162), but the lack of any evidence to this effect indicates that Ligtvoet's identification is logical. Ligtvoet (1880:241) also recognises two women contemporarily holding the title of Kg Bontorambak. The editors of LB (e.g. pp.154 and 173) collapse these two women into one, but then vaguely follow Ligtvoet by calling her "Karaeng Bontorambak II" (LB:178). There is no evidence of more than one Kg Bontorambak who is here called BRM1 (Figure 4-8).

TABLE 4-8. SOURCES USED TO PREPARE FIGURE 4-14 (PATTEKNE)

SG:14-17, 35-36, 42-43, 45, 54, 62-64. ST:6-7, 11, 13-14, 19-20. LB:87, 89-90, 92-94, 96-97, 106, 109, 112, 114, 117, 125-128, 135, 138, 142, 146, 148, 153, 160-1, 164-165, 167, 170, 175, 181-182, 186. Ligtvoet, 1880:176, 183, 190, 192, 197, 224-225.

N.B. The daughter of SULI1/TUM5b, Dg Singarak (sin1), was apparently the mother of Bahauddin Raja Sanrabone (MAM3/SNXI) by Kg Garassik (GR4). Given that she died in 1673 (LB:148), it was another Dg Singarak who had three high status marriages between 1674 and 1691, one to a man (PNKJ1) who became a *Tumailalang* in the 18th century, and one which produced a son (PUTE2) who enjoyed the same appointment (Ligtvoet, 1880:183,221). This second Dg Singarak (sin2) is of unknown parentage, as is her brother Abdurrahman Kta ri Bonto Kamase.

4.8 Marusuk (Maros)

At the end of the 16th century the kingdom of Maros lost its independence to Gowa. in return the Maros aristocracy apparently received tenure of the *Tumailalang* post in greater Gowa's central court (3.5.3). I call the latter, bilateral kin network "Lekokbodong" after the most frequently recurring karaengship. The associated genealogical details, shown in Figures 4-12 and 4-13, are reconstructed from the sources cited in Tables 4-6 and 4-7.

4.8.1 The succession of Maros rulers

My reading of "Ini Adat Lama di Maros" or IALM (2.2.4) gives the Maros succession as Sangajigaddongmo Kgloe ri Pakerek, Kg Loeya, Patannananglangkana, Tunikakassang, and Tunipasuluk, with the last clearly the Gowa raja who briefly reigned in the early 1590s. IALM unambiguously cites Tunikakassang as the last local Maros raja by stating he protected Tumenanga ri Gaukanna (Sultan Alauddin, born in 1586), but died when the latter was still small. Except for Kg Loeya these rajas also appear in SG, in contexts which match the order given in IALM. However, SG (p.53) adds a further raja by specifying Karrang I Dg Marewa, the son of Tunikakassang by a Bugis woman, as the Maros raja subjugated by Tunijallok.

IALM further states that Pasilemba Kg Barassak Tumamaliang ri Tallok (BRS1), who married the third Tallok raja Tunipasukruk by whom she had numerous children (cf. ST:7-8), was the full sister of Patannnanglangkana. One of the children of this marriage was Tumenanga ri Makkoayang, born in 1521 (Table 2-3), which would imply that BRS1 was born before c.1505 and that Patannanglangkana was born at a similar date. These dates do not resolve the conflict over who was the last Maros raja, and my solution is tentatively offered on the grounds of parsimony, pending philological study.

MRI. IALM seems to say, albeit obscurely, that Tumanurunga ri Pasada and Tumanurunga ri Luwuwk had a boy called Sangajigaddongmo, while Dg Masiya Gelarang Pakkareji Kgloe ri

Pakerek was the first Maros raja. The lack of further information suggests Sangajigaddongmo was the birth name (3.2) of the first Maros raja.[19]

MRII. After Sangajigaddongmo died, the son who succeeded him was Kg Loeya (IALM).[20]

MRIII. I Yakkumabussung I Mappasomba I Dg Uraga Patannanglangkana, son of Kg Loeya and brother of Kg Barassak Tumamaliang ri Tallok (IALM). SG (pp.19-20) specifies Tumenanga ri Bulukduaya as the individual's posthumous title, and identifies him as the Maros raja who joined Polombangkeng in assisting Tallok's assault on Tumapakrisik Kallona, which I date between 1535 and 1544 (4.2.1).[21]

MRIV. Tunikakassang, the son of Patannanglangkana, who became the Maros raja on the latter's death (IALM). According to SG (p.17) "Kg Tunikakassang" was the first husband of Kga ri Somba Opu (SOU1), without issue. I estimate the lady's birth at c.1523, implying that the marriage occurred c.1540[22] and Tunikakassang was born c.1520 or beforehand. From IALM we would infer that this raja had lived for around 70 years, apparently without having produced descendants (3.5.3), and as an old man he had adopted the infant who later became Sultan Alauddin. We would further suggest his lesser names were I Karaeng I Dg Marewa[23] and that the the Gowa chroniclers, noticing the time lapse between Tunikakassang who had married Kga ri Somba Opu and Dg Marewa who was subjugated by Tunijallok, reconstructed a filial relationship.

MRV. Tunipasuluk (GXIII) as stated without elaboration by IALM. While we may wonder how gleefully the Maros people chose Tunipasuluk as their raja (cf. SG:56), the lack of a

[19] The kinglist of Makkulasse (1986:50) also gives Kgloe ri Pakerek as the first Maros raja.
[20] Makkulasse's kinglist provides no equivalent.
[21] SG (pp.18-19) identifies Kgloe ri Pakerek (MRI) as the Maros raja with whom Tumapakrisik Kallona entered into treaty, which if true would tag the treaty to some other event before Tallok's assault on Gowa.
[22] Either after the battle referred to above, or possibly beforehand and indeed prematurely terminated because of that battle.
[23] Makkulasse (1986:50), in his kinglist, identifies the third Maros raja by these names alone.

suitable local candidate agrees with my reconstruction in which the Maros royal line withered away with Tunikakassang.

MR6. I Yunyi I Dg Mangemba Kga ri Marusuk who, during Tunijallok's reign, succeeded I Dg ri Mangallekana as *Tumailalang* on the latter's death (SG:50). He was presumably also the Kga ri Marusuk cited as one of the individuals who did not flee during Tunipasuluk's brief reign (SG:56), and may well have received the Marusuk karaengship as his reward in assisting Tunipasuluk's expulsion. The need Kg Matoaya (Abdullah) apparently felt to defeat Marusuk (Figure 4-5) could have been to stamp out local resistance against Dg Mangemba's appointment.[24]

The statement that Kg Botoroka, a child of Kg Barataua (Kg Garassik, i.e. GR2), had a child called Kg Marusuk (SG:15), fails to match any other information which could allow this Kg Botoraka to be identified with MRIII or MRIV. The only other individual possibly referred to is Dg Mangemba, leading to the genealogical reconstruction given in Figure 4-12. It looks suspicious that the brother of Pakerek Tau (GVIII) could have had four children who included Kg Loaya and Kga ri Taipaya, whilst Kgloe ri Pakerek also had four children who included Kg Loeya and Kg Tappie (Figure 4-12). Furthermore the genealogy which produces Kg Marusuk (MR6/TUM3a) looks "stretched out", and most of the titles involved are Maros toponyms. Possibly the Gowa chroniclers had some awareness of the Marusuk royal genealogy but were confused by the recurrence of the toponym Pakerek or the title of one of GR2's descendents. When the same name is repeated in an oral genealogy, transposition of blocks of names is common, particularly in the middle part of the list (Vansina, 1985:181).[25]

Possibly the most parsimonious resolution would suppose that Kg Garassik's marriage with a Bila (Maros) woman

[24] Makkulasse's kinglist cites him as the fourth Maros raja, but the present reconstruction indicates that he was appointed from the Gowa central court.

[25] When the two genealogies are placed side by side, it even looks as if Batara Gowa had been one of the Maros *Tomanurung* (Figure 4-12). However, this is probably coincidence rather than attempted tampering with the genealogies to derive Maros from Gowa, because none of the sources explicates the point.

produced a noble Gowa-Maros lineage which resided in Maros. When the time came for Maros to provide a *Tunailalang*, and no royal representative was available, Tunijallok honoured a Maros individual, Dg Mangemba, who carried Gowa links. After his later installation as the karaeng of Maros had elapsed, Maros was apparently no longer represented by any single leader.

4.8.2 Lekokbodong

Several commentators, following the Dutch sources, conclude that the productive rice fields of Maros produced little local political power in the 17th century, and amounted to a pawn in the hands of the powerbrokers in Makassar (e.g. Reid, 1981:5-6; Andaya, 1981:193, 248, 156-6). Certainly the Maros lands were treated this way after the Makassar War (see Andaya, 1981), and by the early 17th century one Gowa prince (Kg Bulok Sipong) had his karaengship based in Maros (see Figure 3-1). Against this view Kamaruddin et al. (1985-6:128), following Ligtvoet (1880), include an assortment of important Makassar nobles in what they call 'keturunan raja Maros' (descendants of the Maros raja).

The evidence reviewed proposes an intermediate stance, whereby the generation of a powerful descent group arose from intermarriage between the Gowa and Maros aristocracy. The dual constitution of the descent group is also evident in the recurring karaengships - Lekokbodong in Makassar (11.4.1) and Cenrana in the hills attached to Maros (cf. Andaya, 1981:266). I have already pointed out the unclear genealogical origins of Dg Manassa Kg Cenrana or CEN2/TUM5a (3.5.3) and Dg Mangemba or MR6/TUM3a (4.8.1). The origins of yet another key figure, Abdul Gafar Kg Jaranika (JAR1/TUM6c), are also not spelled out; although as I have not found any contrary indications, I follow the inference of Kamaruddin et al. (1985-6:112) that he was Kg Lengkesek's full brother. The occasionally unclear parentage of key figures suggests that bilateral membership was more important than patrilineal position, while the weakly patrilineal passage of the descent group's *Tumailalang* post (3.5.3) resembles the succession of

the pattola titles among the Kasepekang Konjo (cf. Rössler, 1987; Röttger-Rössler, 1989).

As reviewed here the records would point to Gowa's Kg Garassik (GR2) as the descent group's original apical ancestor, in much the same way as the Gowa noble called Dg Bunding represents the apical point among the Kasepekang Konjo (3.1). However, were it available, a view of the origins of the descent group from Maros rather than Gowa might give a quite different picture. In any case it appears that the Maros nobility exchanged independence, and even direct administration of the Maros lands (13.3.4), for a key rôle in Gowa's organisation during the 17th century.

4.9 Pattekne

The Pattekne karaengship first occurs with the unsexed child of TII and Kga ri Kanjilo (KNJ1), then with the granddaughter of GR2 (Figure 4-14) whose "Gowa Sub-1 lineage" was based in Maros (4.8.1). These two early occurrences identify Pattekne as the are sandwiched between Tallok and Maros (cf. Figure 5-4) which hence fell in the overlap between those kingdoms' spheres of influence. Tallok and Maros could have married a noble daughter into the independent Pattekne nobility or, more probably, rulership over Pattekne first fell to Tallok and then to Maros (see Figure 13-9).

The genealogical details available for Tamanggoa Dg Arenne Kg Pattekne (PTE3/TUM3b) indicate he must have been born by around 1545 (Figure 4-14). Fairly late in his life, he received the Pattekne karaengship from Gowa's Tunipasuluk (r. 1590-1593) who also appointed him as *Tumailalang* (SG:54). He retained these titles until his death during Alauddin's reign, when he was replaced by his youngest son - but the son by his highest status marriage - Kg Maroanging (SG:62-4).[26] This had occurred by the early 17th century, given that Kg Maroanging (MRGM1/TUM4b) defeated Bima and Sumbawa in 1618 before dying in 1623 (LB:89). Maroanging is here synonymous with Pattekne (see Figure 3-1). A great grandson of

[26] Kg Maroanging also inherited the regalia from his father.

PTE3/TUM3b, SULI1/TUM5b, replaced Kg Maroanging as *Tumailalang* on the latter's death (SG:62, 64).

Despite these indications that a Pattekne descent group maintained a high status during the 17th century, the passage of the Pattekne karaengship itself cannot be followed. Three individuals held the title - Kg Pattekne (PTE4) who was the third husband of TAB1 (cf. SG:45) and who defected to Buton in 1644 (LB:106); his replacement Dg Mabela (PTE5) who died in 1663 (LB:106,127); and Fathuddin (PTE6) who was born in 1695 (LB:181). The parentage of these individuals is not given and I can only follow others (e.g. LB:106) in assuming that they had belonged to a Pattekne descent group, along the lines just indicated for Lekokbodong.

4.10 Genealogical Links with Eastern Indonesia

Of the five sultanates established on the island of Sumbawa between the 17th and the 20th centuries, Bima and Sumbawa were the most important (Noorduyn, 1985b). Most of their earliest history comes from the Gowa-Tallok royal diaries (Noorduyn, 1985b). The names and positions in succession of the earliest Bima and Sumbawa sultans, as given by Noorduyn (1985b:123-4), have been followed here (Table 3-3). Both Bima and Sumbawa were repeatedly raided from greater Gowa during the early 17th century (Figure 4-5), but then entered into regular marriages with the various descent groups in greater Gowa from 1646 onwards (Figure 4-15).

Marital ties between greater Gowa and Ternate were far more tenuous, as might be expected from their fierce competition in the spice trade (Andaya, 1981). One apparent link concerns I Asseng, Mohammad Said's child by his house servant called Lokmok Singarak (SG:68-9), who married "Raja Ternate" in 1672 (LB:143).[27] A Maluku noble called Kacili Kalimata, the brother of the Ternate sultan Mandarsyah,[28]

[27] I infer that only one individual called I Asseng is involved, because otherwise it is hard to see why only one wife of any Raja Ternate appears in the Makassar records.
[28] For convenience sake I represent him as the stepbrother of the Ternate king who married I Asseng (Figure 4-15). I have no carried out the necessary background work to know his true relationship with Mandarsyah (Table 3-5).

married a Tallok noble called Kta ri Panaikang. However, the marriage does not imply any alliance with Ternate, for he had fled Ternate after a rebellion there before arriving in Makassar in 1656 (LB:119).

TABLE 4-9. SOURCES USED FOR FIGURE 4-15 (EASTERN INDONESIA)

SG:67-69. ST:19-20, 27. LB:87-88, 90-92, 97-98, 102-103, 108-110, 113-114, 116-120, 127-130, 136, 138, 140, 142-145, 153, 164, 166-174, 176-178, 181-182. Ligtvoet, 1880:182, 203, 212, 221.

N.B. Kta ri Panaikang (PNK3) appears to have been closely contemporary with Kta ri Panikangcinik (PNK2) who was born in 1616 (Ligtvoet, 1880) and died in Bima in 1680 (LB:162). I have followed the editors of LB who state that PNK2 was the sister of the mother of Sultan Abdul Khair Sirajuddin (I.II), and that she first married a Luwuk noble and then a Bulo-Bulo raja (LB:162). Given her date of birth, the Bulo-Bulo raja concerned was probably BB3 (see Figure 4-5).

Kta ri Bontojeknek (BJN1) and I.II had a daughter called Sitti Aminah in 1653 (LB:115) while their daughter Kta ri Bontomatekne died in 1671 at the age of 18 (LB:140). Sitti Aminah would therefore appear to be the birth name of Kta ri Bontomatekne.

Dta Dg Tamemang is described by the editors of LB as a sister of Kg Lengkesek (LB:169), and while the available dates make this suggestion unlikely (Figure 4-10), these individuals might have been related within the Lekokbodong house.

TABLE 4-10. SOURCES USED TO PREPARE FIGURE 4-16 (THE BUGIS)

SG:30, 32, 34, 47-48, 69, 76-77. ST:12, 14, 21-22, 27. LB:87-92, 96-97, 99-100, 102, 104-105, 110, 112, 116-117, 119, 122-123, 128, 131-132, 134-135, 137-139, 145-6, 148, 150-151, 154, 156-158, 163, 165, 167-169, 172, 182-183. Ligtvoet, 1880: 178-179, 189, 197, 199, 203, 211. Andaya, 1981:103, 156, 160, 288, 300, 304. Patunru, 1983:68. Muttalib, 1981:36-38. Caldwell, 1988:126-129.

N.B. Roman numerals tracing the succession of Soppeng rajas are taken from Muttalib (1981). As regards the two Soppeng rajas shown in Figure 4-16 but not in Table 3-3, Puang Lipue is the name used by SG (p.34) to identify La Mataesso (SXI), while his father (SX) is called La De by Caldwell (1988:128-9).

As explained by the editors of LB, Speelman states that the marriage involving Macallaka Kanukunna (in 1666) was to Kg Bonto Marannu (MRU3), but this would appear to be a mistake because the Makassar source specifies MJN3 (LB:131).

The records of Sahaduddin's Makassar wives are interpreted as follows. I identify his wife I Minak, whom he divorced in 1673 (LB:145-6), with Mina I Dg Majannang, the daughter of Kg Popok (ST:22) - whom I also identify with the Dg Majannang who died in 1674 (LB:150). Dta Dg Majannang (mjn4) would appear to be distinct from Sahaduddin's wife called Dg Majannang (mjn5) given the slight difference in Daeng title, and the records that she had married and then separated from Sultan Amir Hamzah (GXVII) in 1671 (LB:140-141) before marrying MD5 in 1672 (LB:143). Also, Sahaduddin had two wives described as the sister of Kg Lengkesek, Kga Balang Jawaya (BLJ2) who was apparently Kg Lengkesek's full sister (LB:112), and Dg Talele who is described both as the 'sister of Karaeng Lengkese' (Andaya, 1981:160) and as the younger sister of BLJ2 (Ligtvoet, 1880:203). Dg Talele may have been the full sister of BLJ2 but all I have inferred is that her father was CEN2/TUM5a.

TABLE 4-11. SOURCES USED TO PREPARE FIGURE 4-17

SG:32-33, 37-38, 59, 67-68, 76, 78. ST:12, 27. LB:87-88, 91, 97-98, 100, 103-106, 108-109, 114, 116, 119-120, 122, 125, 127, 131-2, 135, 138, 140-141, 145, 149-150, 152-3, 155, 160-161, 163, 180-182, 186. Ligtvoet, 1880:197, 205, 214, 221.

N.B. Kg Katapang, the child of Kg Datak (DATA2), served with distinction in the Gowa forces during the middle 17th century (LB:114; Andaya, 1981:48,58,65), but apparently did not marry anybody important.

Muhiddin Kta ri Beroanging (BER2) married Dg Tamemang I Makminasa in 1674 (LB:149) and, according to the editors of LB, had also married the daughter of Ratu Bulo-Bulo Dg Tatea (LB:181). I assume that only one woman is involved.

I have identified Dg Nisayu Kg Tarung, the child of Sultan Mudhaffar (ST:27), with the Kta ri Tarung who married Kga ri Batu-Batu, producing Bayang I Dg Masiang who married Hasanuddin (SG:78). I have further identified the latter woman with the Dta Dg Masiang who was born in 1647, married Hasanuddin in 1661 and then remarried Kta ri Bontonompok in 1671 (LB:108,125,140). I have further assumed that she was the full sister of I Munak, the child of Kg Batu-Batu (LB:152-153), and that this I Munak is the same as the Dg Memang I Munak who had married Kta ri Lekokbodong and, later, Arung Tanete Malolo (LB:145,163).

4.11 Genealogical Links with the Bugis

The Makassar texts give the impression that Gowa and Tallok had tightened their grip over the Bugis areas over time, and brought Bone to the conference table at least twice before finally defeating Bone (Figures 4-3 to 4-5). However, the first interaction between Bone and Gowa was probably as allies, when Bone's raja La Tenrisukkik obtained Gowa's help to retain the Cenrana delta from Luwuk's advances (Andaya, 1981:23; cf. SG:22). The battle can be dated between 1512 and 1525 (13.4.1), i.e. the initial stages of Tumapakrisik Kallona's reign. Gowa's involvement presumes coastal access, i.e. control over Garassik at the time, and so the event would predate the capture of Garassik by Tallok and then Siang (see Figure 4-7).[29]

As indicated in Figure 4-16 (prepared from the sources cited in Table 4-10), few marriages occurred between Gowa or Tallok and the major Bugis nobility during the 16th and early to mid-17th centuries. Indeed two of the 16th century marriages shown - between We Dadi Kg Ballok (BLL1) and Tunipalangga, and between Kga ri Majannang (MJN1) and Tunijallok - involved Bugis woman whose nobility is an unknown quantity. Moreover Tunibatta married Puang Lipue's unnamed sister when, accompanied by his troops, he stopped at Soppeng on his way to the battle field at Bone (SG:34), so it need not reflect Soppeng's choice of marriage strategy.[30] Nonetheless it should be noted that Malikussaid (Sultan Mohammad Said), before he ascended the throne, was betrothed to the Arumpone's daughter, La Palang Matinroe ri Tallok, but she died in 1630 on her way to Gowa before the marriage eventuated (SG:66; LB:91).[31] One can wonder whether realisation of this marriage might not have changed the

[29] The point further undermines the notion of a once-mighty Siang (4.2.3), since Siang rather than her putative "vassal" Gowa should have been engaged in this sort of long-distance adventure. Pelras (1977:252) interprets the records differently and dates the events to the 1530s, but in particular fails to address why Siang was not involved.

[30] Interestingly, though, Puang Lipue became a "vassal" of Tumananga ri Makkoayang in the treaty between the Gowa regent and Bone which followed Tunibatta's decapitation (SG:40).

[31] The Arumpone concerned would have been La Makdaremmeng Matinroe ri Bukaka (see Andaya, 1981:303).

course of South Sulawesi's history. Formally Bone was ruled by greater Gowa for two decades between the 1640s and 1660s (Andaya, 1981), showing that greater Gowa then had the military supremacy to back up its political supremacy within the peninsula, but it could not engineer the marital ties with the major Bugis kingdoms of Bone and Soppeng which were essential for the subjugation of the Bone and Soppeng status lineages (cf. Bulbeck, 1990).

After the Makassar War, however, so many marriages occurred between the greater Gowa and Bugis aristocrats that they cannot all be fitted within a single diagram, and so have been slotted into available spaces in other diagrams. Hence it is more useful to discuss the implications within a general context (4.12.4).

4.12 Marriage Strategies and Political Change

4.12.1 Methodological points

To facilitate the demonstration of a relationship between marriage strategies and political transformations, I have tried to incorporate all relevant information in the genealogical diagrams. Indeed the last, Figure 4-17, based on the sources listed in Table 4-11, has been devised solely to accommodate information which could not be squeezed in elsewhere. Nonetheless some strategic marriages, indicated by an asterisk in Tables 4-12 to 4-14, could not be fitted into any diagram. Possibly the most important concerns Kg Barrung, who can be identified with the ruler of a small coastal Bugis kingdom in the area now called Barru (Figure 3-1), and which recurs as a toponym from 1667 onwards (Andaya, 1981:85-291 pass.)

The number of recorded marriages is large enough to allow statistical demonstration of the rôle of political events, as long as appropriate steps are taken to pool the recorded examples. Chronologically the marriages can be grouped according to the three phases of Gowa's history covered by the records (2.5.3 and 2.5.4). As regards social categories the marriages can be pooled by "lineage group" (4.1). The Makassar royal lines are treated as unpooled entities, but

the subsidiary noble lines (e.g. Gowa Sub-1, Gowa-Sub-2 etc.) are pooled to detect any overarching patterns. As regards the Bugis, the major kingdoms are treated separately from the minor kingdoms (3.2), and further subdivided to distinguish Bone and Soppeng (which spearheaded the successful Bugis assault on Gowa in 1667) from Luwuk, and to distinguish Gowa's staunch ally Bulo-Bulo (see Andaya, 1981) from the other minor Bugis kingdoms.[32] I also pool the Makassar karaengships which fleetingly or irregularly appear in the genealogical records into a "minor Makassar karaengship" category, and analogously pool the Makassar *Gelarang* district heads. The pooling decisions are adumbrated in Tables 4-12 to 4-14 which not only list all the marriages considered, but also count those recorded offspring who apparently survived into adulthood (3.3) as a measure of success of the marriage.

The categories "wife givers" and "wife takers" are inappropriate for the Makassar system (Fox, pers. comm.), but we are nonetheless dealing with groups of related men who perpetuated their status lineage or descent groups by attracting wives from other lineages (4.1). Marriage strategies can therefore be shown by cross-tabulating the father's and husband's lineage groups (Tables 4-15 to 4-20).

4.12.2 Gowa's Initial Expansion

While Gowa's 16th century military campaigns throughout western Sulawesi were spectacular (Figures 4-3 and 4-4), the most solid achievement lay in restructuring the political landscape of South Sulawesi's southwest corner. Polombangkeng, apparently the area's largest polity at the onset of the 16th century, lay in fragments, while at the end of the period Tunipasuluk briefly ruled Gowa, Tallok and Maros - the largest area ever directly ruled by Gowa.

This essentially local focus of political action is clear from the recorded marriages and number of resultant offspring, presented in Tables 4-15 and 4-16 respectively.

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[32] I am not sure where Wajok would fit in this scheme of Bugis kingdoms, but the point is not of conern here as Wajok was not involved in any of the marriages.

TABLE 4-12. MARRIAGES AND OFFSPRING C.1500 TO 1593

1. ? (daughter of GR1) to GVII (Garassik to Gowa): 3 offspring
2. KNJ1 to TII (Garassik to Tallok): 4 offspring
3. Nyai Papete tp TII (Siang [minor Bugis] to Tallok): 2 offspring
4. I Dg Paikak to Gelarang Bontomanaik (Garassik to Gelarang Bontomanaik): 3 offspring
5. ? (daughter of Gelarang Bontomanaik) to Kg Jonggoa (Gelarang Bontomanaik to Gowa Sub-3): 1
6. ptk2 to PTG1/TBB1/TIV (Gelarang Bontomanaik to Tallok): 3 offspring
7. ptk2 to LNG1/GXII (Gelarang Bontomanaik to Gowa): 0 offspring
8. Dg Tamaga to PTG1/TBB1/TIV (Gelarang Dataka to Tallok): 4 offspring
9. ? (family of Gelarang Tombolok) to DATA1/GXI (Gelarang Tombolok to Gowa): 1 offspring
10. Kgloe Bainea to GIX (Tallok to Gowa): 4 offspring
11. MAK to TIII (Gowa to Tallok): 2 offspring
12. BAL to LAK1/GX (Tallok to Gowa): 4 offspring
13. BAL to DATA1/GXI (Tallok to Gowa): 0 offspring
14. BPL to DATA1/GXI (Tallok to Gowa): 2 offspring
15. ? (sister of BPL) to DATA1/GXI (Tallok to Gowa): 1 offspring
16. BTBT1 to LNG1/GXII (Tallok to Gowa): 0 offpsring
17. PTG2/TV to LNG1/GXII (Tallok to Gowa): 8 offspring
18. SOU1 to PTG1/TBB1/TIV (Gowa to Tallok): 2 offspring
19. KNJ2/TUNI to AG1/KNJ3/TBB2/TVII (Gowa to Tallok): 7 offspring
20. A Polombangkeng person to GIX (Polombangkeng to Gowa): 2 offspring
21. mns1 to DATA1/GXI (Jamarang [Polombangkeng] to Gowa): 4 offspring
22. BILI to LAK1/GX (Katingang [Polombangkeng] to Gowa): 1 offspring
23. LAK2 to LNG1/GXII (Katingang [Polombangkeng] to Gowa): 1 offspring
24. MDA to LNG1/GXII (Katingang [Polombangkeng] to Gowa): 0 offspring
25. POPO1 to LNG1/GXII (Katingang [Polombangkeng] to Gowa): 1 offspring
26.* I Kare Pakrisik to PTG1/TBB1/TIV (Polombangkeng to Tallok): 0 offspring
27. data3 to LNG1/GXII (Anak Sappuk [minor Makassar] to Gowa): 0 offspring
28. ? (daughter of KT1) to Kg Paria (Katingang [Polombangkeng] to Anak Sappuk [minor Makassar]): 2
29. LAK2 to KSR1 (Katingang [Polombangkeng] to Anak Sappuk [minor Makassar]): 1 offspring
30. ? (daughter of SAP1) to KT2 (Anak Sappuk [minor Makassar] to Katingang [Polombangkeng]): 3
31. SOU1 to MD2 (Gowa to Mandallek [Polombangkeng]): 1 offspring
32. BLB1 to DATU PABOLIK (Mandallek [Polombangkeng] to Pabolik [Minor Makassar]): 1 offspring
33. MAP to SNV (Gowa to Sanrabone): 9 offspring (or more)
34. BONE3 to LNG1/GXII (Gowa to Gowa): 0 offspring

TABLE 4-12. MARRIAGES AND OFFSPRING C.1500 TO 1593 (CONT.)

35. I Dg Malele to LNG1/GXII (Gowa to Gowa): 0 offspring
36. BONE3 to GLS1 (Gowa to Gowa Sub-2): 1 offspring
37. I Dg Sangging to UJG1 (Gowa to Gowa Sub-4): 1 offspring
38. BRS1 to TIII (Maros to Tallok): 8 offspring
39. SOU1 to MRIV (Gowa to Maros): 0 offspring
40. ? (Sister of LAK2) to PTE3 (Katingang [Polombangkeng] to Pattekne): 1 offspring
41. I Dg Mangamu to BNK1 (Gowa to Bangkalak [minor Makassar]): 1 offspring
42. SP1 to LAK1/GX (Suppak [Minor Bugis] to Gowa): 0 offspring
43. ? (Daughter of La De) to DATA1/GXI (Soppeng to Gowa): 0 offspring
44. BLL1 to LNG1/GXII (Lamuru [Minor Bugis] to Gowa): 0 offspring
45. MJN1 to LNG1/GXII (Soppeng to Gowa): 0 offspring

TABLE 4-13. MARRIAGES AND OFFSPRING C.1593 to 1667

1. I Tobo to GXIV (Gowa Sub-2 to Gowa): 0 offspring
2. LMP1 to GR5 (Gowa to Gowa Sub-5): 0 offspring
3. BMT1/LAK5 to BLL2 (Gowa to Gowa Sub-6): 1 offspring
4. mns2/ptg5 to UJG2/LAK4/GXV (Tallok to Gowa): 0 offspring
5. TGL1 to UJG2/LAK4/GXV (Tallok to Gowa): 0 offspring
6. PBN2/RAJA to TBB4/MNGP4/GXVI (Tallok to Gowa): 1 offspring
7. Dg Sangging to TBB4/MNGP4/GXVI (Tallok to Gowa): 0 offspring
8. LMP1 to KNJ4/TVIII (Gowa to Tallok): 1 offspring
9. I Dg Mappasang to GXIV (Tallok Sub-4 to Gowa): 1 offspring
10. I Tadumai to SPG1 (Tallok Sub-2 to Gowa Sub-5): 2 offspring
11. kli1 to KNJ4/TVIII (Tallok Sub-2 to Tallok): 1 offspring
12. POPO3 to POPO2/TMJ4 (Gowa to Tallok Sub-6): 0 offspring
13. rkng4 to KAR1/TBB5 (Gowa to Tallok Sub-8): 1 offspring
14. SNG1 to BSG1/TBB8 (Gowa to Tallok Sub-9): 0 offspring
15. TMS2 to KAR1/TBB5 (Tallok Sub-2 to Tallok Sub-8): 2 offspring
16. I Kare Balluruk to GXIV (Tallok *Gelarang* to Gowa): 1 offspring
17.* byng2 to POPO2/TMJ4 (Gowa *Gelarang* to Tallok Sub-6): 4 offspring
18. sin1 to GR5 (Pattekne to Gowa Sub-5): 3 offspring
19. TAB1 to PTE4 (Gowa to Pattekne): 0 offspring
20. Ralle Dg Paikak to UJG2/LAK4/GXV (Lekokbodong to Gowa): 1 offspring

TABLE 4-13. MARRIAGES AND OFFSPRING C.1593 to 1667 (CONT.)

21. BJN1 to JAR1/TUM6c (Gowa to Lekokbodong): 2 offspring
22. TAB2 to KTT1 (Lekokbodong to Gowa Sub-6): 2 offspring
23. TGL1 to LN1/TUM6a (Tallok to Lekokbodong): 0 offspring
24. mngp3 to CEN2/TUM5a (Tallok to Lekokbodong): 4 offspring
25. BLJ2 to MRU3 (Lekokbodong to Tallok Sub-2): 0 offspring
26. BLJ2 to KAR1/TBB5 (Lekokbodong to Tallok Sub-8): 1 offspring
27. I Petak Dg Nisali to TBB4/MNGP4/GXVI (Sanrabone to Gowa): 4 offspring
28. I Dg Talele to TBB4/MNGP4/GXVI (Sanrabone to Gowa): 1 offspring
29. TAB1 to SNVI (Gowa to Sanrabone): 4 offspring
30. PKK1 to KNJ4/TVIII (Sanrabone to Tallok): 0 offspring
31. mr7 to SNVI (Tallok to Sanrabone): 1 offspring
32. I Tadampali to GXIV (Pabolik [minor Makassar] to Gowa): 0 offspring
33. BON2 to UJG2/LAK4/GXV (Anak Sappuk [minor Makassar] to Gowa): 1 offspring
34. byng3 to TBB4/MNGP4/GXVI (Batu-Batu [minor Makassar] to Gowa): 0 offspring
35.* PAC1 to PTU1 (Gowa to Pattung [minor Makassar]): 2 offspring
36. SNG1 to KGA BUNGAYA (Gowa to Bungaya [minor Makassar]): 1 offspring
37.* PTU3 to POPO2/TMJ4 (Pattung [minor Makassar] to Tallok Sub-6): 2 offspring
38. TRNG1 to BTBT2 (Tallok to Batu-Batu [minor Makassar]): 2 offspring
39. ? (daughter of PTE3/TUM3b) to PTU2 (Pattekne to Pattung [minor Makassar]): 1 offspring
40. BB2 to BB1 (Gowa to Bulo-Bulo): 0 offspring
41. TMS2 to BB3 (Tallok Sub-2 to Bulo-Bulo): 0 offspring
42. Dg Tanacinik to BB3 (Sanrabone to Bulo-Bulo): 1 offspring
43.* I Dg Saraba to SNVI (Segeri [minor Bugis] to Sanrabone): 9 offspring
44. OPU PESO to GR5 (Luwuk to Gowa Sub-5): 0 offspring
45. TMS2 to LXVI (Tallok Sub-2 to Luwuk): 1 offspring
46. MACALLAKA KANUKUNNA to MJN3 (Soppeng to Gowa Sub-7): 0 offspring
47. BMT2 to CAM4/SNX/GXIX (Bima to Gowa): 0 offspring
48. BJN1 to I.II (Gowa to Bima): 5 offspring
49. BJN1 to U.II (Gowa to Sumbawa): 0 offspring
50. PNK3 to U.II (Tallok to Sumbawa): 0 offspring
51. PADUKKA DOMPU to Dta Dg Mattiro (Bima to Tallok Sub-8): 0 offspring
52. PADUKKA DOMPU to LEK3 (Bima to Lekokbodong): 1 offspring
53. Ralle Dg Paikak to I.II (Lekokbodong to Bima): 0 offspring
54.* PNK2 to BB3 (Bima to Bulo-Bulo): 0 offspring

TABLE 4-14. MARRIAGES AND OFFSPRING 1667 to 1700

1. PRPR1 to KNJ5/TXI (Gowa to Tallok): 2 offspring
2. main2 to GXVII (Tallok Sub-1 to Gowa): 0 offspring
3. main2 to CAM4/SNX/GXIX (Tallok Sub-1 to Gowa): 0 offspring
4. LAN1 to KAB1 (Gowa to Tallok Sub-8): 1 offspring
5. SNG1 remarried to BSG1/TBB8 (Gowa to Tallok Sub-9): 1 offspring
6. BON3 to MD5 (Gowa Sub-6 to Tallok Sub-8): 0 offspring
7. BRM1 to KNJ5/TXI (Tallok Sub-8 to Tallok): 0 offspring
8. LK2 to BNP1/TMJ5 (Tallok Sub-2 to Tallok Sub-6): 0 offspring
9. main2 to MD5 (Tallok Sub-1 to Tallok Sub-8): 0 offspring
10. I Tanik to KAR1/TBB5 (Tallok Sub-7 to Tallok Sub-8): 0 offspring
11. I Dg Talebang to KAB1 (Tallok Sub-6 to Tallok Sub-8): 0 offspring
12. LAN1 to LEK3 (Gowa to Lekokbodong): 0 offspring
13. CAM5 to LBG1/TBB7 (Gowa to Lekokbodong): 0 offspring
14. I Tanik to MNGI1 (Lekokbodong to Gowa Sub-10): 0 offspring
15. BON3 to BKK1 (Gowa Sub-6 to Lekokbodong): 0 offspring
16.* Dta Dg Tamemang to KNJ5/TXI (Lekokbodong to Tallok): 0 offspring
17. PSI2 to JAR1/TUM6c (Tallok to Lekokbodong): 0 offspring
18. I Dg Jinne to JAR1/TUM6c (Tallok Sub-1 to Lekokbodong): 0 offspring
19. I Dg Nisayu to I Dg Makruppa (Tallok Sub-8 to Lekokbodong): 1 offspring
20.* I Dg Talarra I Mene to GXVII (Laikang [minor Makassar] to Gowa): 0 offspring
21. CAM5 to MD6 (Gowa to Mandallek [minor Makassar]): 0 offspring
22. I Rukiah Dta Dg Mami to BMN (Gowa to Bontomanaik [minor Makassar]): 0 offspring
23. I Munak to KG PAMMOLIKANG (Batu-Batu [minor Makassar] to Gowa Sub-5): 0 offspring
24. byng3 to BNP1/TMJ5 (Batu-Batu [minor Makassar] to Tallok Sub-6): 1 offspring
25. I Tanik to BNK3 (Tallok Sub-7 to Bangkalak [minor Makassar]): 0 offspring
26. I Munak to LEK3 (Batu-Batu [minor Makassar] to Lekokbodong): 0 offspring
27. Dg Tamemang to BER2 (Bulo-Bulo to Bungaya [minor Makassar]): 1 offspring

TABLE 4-14. MARRIAGES AND OFFSPRING 1667 to 1700 (CONT.)

28. LAN1 to AG5 (Gowa to Agongnionjok [minor Bugis]): 0 offspring
29. LAN1 to SW1 (Gowa to Sawitto [minor Bugis]): 0 offspring
30.* CAM5 to KG BARRUNG (Gowa to Barru [minor Bugis]): 1 offspring
31. rkng2 to SG1 (Gowa Sub-8 to Siang [minor Bugis]): 0 offspring
32. PBN2/RAJA to SD1 (Tallok to Sidenreng [minor Bugis]): 0 offspring
33. I Dg Nisayu to AG4 (Tallok Sub-8 to Agongnionjok [minor Bugis]): 0 offspring
34.* BRM1 to KG BARRUNG (Tallok Sub-8 to Barru [minor Bugis]): 2 offspring
35.* ARUNG PATTIRO to LXX (Agongnionjok [minor Bugis] to Luwuk): 0 offspring
36. PTK6 to BXVI/SXVIII (Gowa to Bone): 3 offspring
37. LAN1 to SXVII (Gowa to Soppeng): 0 offspring
38. I Rukia Dta Dg Mami to ARUNG BELO (Gowa to Belo [Soppeng]): 0 offspring
39. LAN1 to ARUNG TEKO (Gowa to Teko [Bone]): 0 offspring
40. PSI2 to ARUNG TEKO (Tallok to Teko [Bone]): 1 offspring
41. LK2 to BXV (Tallok Sub-2 to Bone): 0 offspring
42. mjn5 to BXV (Tallok Sub-6 to Bone): 0 offspring
43. I Dg Nisayu to MRGB (Tallok Sub-8 to Maroanging [Bone]): 1 offspring
44. BRM1 to ARUNG TANETE MATOA (Tallok Sub-8 to Tanete [Bone]): 1 offspring
45. I Dg Nisayu to ARUNG TEKO (Tallok Sub-8 to Teko [Bone]): 1 offspring
46. BLJ2 to BXV (Lekokbodong to Bone): 0 offspring
47. I Dg Talele to BXV (Lekokbodong to Bone): 0 offspring
48. I Munak to ARUNG TANETE MALOLO (Batu-Batu [minor Makassar] to Tanete [Bone]): 0 offspring
49.* PUANNA I MATTAK to BXVII/SXX (Tanete [Bone] to Bone): 1 offspring
50. TNTN1 to I.IV (Gowa to Bima): 1 offspring
51. I Asseng to RAJA TERNATE (Gowa to Ternate): 0 offspring
52. BMT2 to TX (Bima to Tallok): 1 offspring
53. TMS3 to U.IV (Tallok to Sumbawa): 1 offspring
54. Dta Dg Tamemang to I.III (Lekokbodong to Bima): 0 offspring

TABLE 4-15. 16TH CENTURY MARRIAGES BETWEEN LINEAGE GROUPS

Father's Lineage Group	Husband's Lineage Group												
	Gowa Core	Gowa Nobles	Tallok Core	Gar-assik	Gowa Gelarang	Polom-bangkeng	Sanra-bone	Minor Makassar	Patt-ekne	Maros	Minor Bugis	Soppeng	TOTAL
Gowa Core	2	2	3	0	0	1	1	1	0	1	0	0	11
Gowa Nobles	0	0	0	0	0	0	0	0	0	0	0	0	0
Tallok Core	7	0	0	0	0	0	0	0	0	0	0	0	7
Garassik	1	0	1	0	1	0	0	0	0	0	0	0	3
Gowa Gelarang	2	1	2	0	0	0	0	0	0	0	0	0	5
Polombangkeng	6	0	1	0	0	0	0	3	1	0	0	0	11
Sanrabone	0	0	0	0	0	0	0	0	0	0	0	0	0
Minor Makassar	1	0	0	0	0	1	0	0	0	0	0	0	2
Pattekne	0	0	0	0	0	0	0	0	0	0	0	0	0
Maros	0	0	1	0	0	0	0	0	0	0	0	0	1
Minor Bugis	2	0	1	0	0	0	0	0	0	0	0	0	3
Bone-Soppeng	2	0	0	0	0	0	0	0	0	0	0	0	2
TOTAL	23	3	9	0	1	2	1	4	1	1	0	0	45

TABLE 4-16. MATURE OFFSPRING RESULTING FROM 16TH CENTURY MARRIAGES

Father's Lineage Group	Husband's Lineage Group: Gowa Core	Gowa Nobles	Tallok Core	Gar-assik	Gowa *Gelarang*	Polom-bangkeng	Sanra-bone	Minor Makassar	Patt-ekne	Maros	Minor Bugis	Soppeng	TOTAL
Gowa Core	0	2	11	0	0	1	9	1	0	0	0	0	24
Gowa Nobles	0	0	0	0	0	0	0	0	0	0	0	0	0
Tallok Core	19	0	0	0	0	0	0	0	0	0	0	0	19
Garassik	3	0	4	0	3	0	0	0	0	0	0	0	10
Gowa *Gelarang*	1	1	7	0	0	0	0	0	0	0	0	0	9
Polombangkeng	9	0	0	0	0	0	0	4	1	0	0	0	14
Sanrabone	0	0	0	0	0	0	0	0	0	0	0	0	0
Minor Makassar	0	0	0	0	0	3	0	0	0	0	0	0	3
Pattekne	0	0	0	0	0	0	0	0	0	0	0	0	0
Maros	0	0	8	0	0	0	0	0	0	0	0	0	8
Minor Bugis	0	0	2	0	0	0	0	0	0	0	0	0	2
Bone-Soppeng	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	32	3	32	0	3	4	9	5	1	0	0	0	89

TABLE 4-17. MARRIAGES BETWEEN LINEAGE GROUPS C.1593 TO 1667

Father's Lineage Group	Husband's Lineage Group: Gowa Core	Gowa Nob.	Tallok Corek	Tallok Nob.	*Gelarang*	Pattekne	Lekokbodong	Sanrabone	Minor Makassar	Bulo-Bulo	Luwuk	Minor Bugis	Soppeng	Eastern Indonesia	TOTAL
Gowa Core	0	2	1	3	0	1	1	1	2	1	0	0	0	2	14
Gowa Nobles	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Tallok Core	4	0	0	0	0	0	2	1	1	0	0	0	0	1	9
Tallok Nobles	1	1	1	1	0	0	0	0	0	1	1	0	0	0	6
Gelarang	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
Pattekne	0	1	0	0	0	0	0	0	1	0	0	0	0	0	2
Lekokbodong	1	1	0	2	0	0	0	0	0	0	0	0	0	1	5
Sanrabone	2	0	1	0	0	0	0	0	0	1	0	0	0	0	4
Minor Makassar	3	0	0	1	0	0	0	0	0	0	0	0	0	0	4
Bulo-Bulo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minor Bugis	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Luwuk	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Bone-Soppeng	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Eastern Indo.	1	0	0	1	0	0	1	0	0	1	0	0	0	0	4
TOTAL	14	7	3	9	0	1	4	3	4	4	1	0	0	4	54

TABLE 4-18. MATURE OFFSPRING RESULTING FROM MARRIAGES C.1593 TO 1667

Father's Lineage Group	Husband's Lineage Group: Gowa Core	Gowa Nob.	Tallok Core	Tallok Nob.	Gel-arang	Patt-ekne	Lekok-bodong	Sanra-bone	Minor Makassar	Bulo-Bulo	Luwuk	Minor Bugis	Bone-Soppeng	Eastern Indonesia	TOTAL
Gowa Core	0	1	1	1	0	0	2	4	3	0	0	0	0	5	17
Gowa Nobles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tallok Core	1	0	0	0	0	0	4	1	2	0	0	0	0	0	8
Tallok Nobles	1	2	1	2	0	0	0	0	0	0	1	0	0	0	7
Gelarang	1	0	0	4	0	0	0	0	0	0	0	0	0	0	5
Pattekne	0	3	0	0	0	0	0	0	1	0	0	0	0	0	4
Lekokbodong	1	2	0	1	0	0	0	0	0	0	0	0	0	0	4
Sanrabone	5	0	0	0	0	0	0	0	0	1	0	0	0	0	6
Minor Makassar	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3
Bulo-Bulo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minor Bugis	0	0	0	0	0	0	0	9	0	0	0	0	0	0	9
Luwuk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bone-Soppeng	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eastern Indo.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
TOTAL	10	8	2	10	0	0	7	14	6	1	1	0	0	5	64

TABLE 4-19. POST-1667 MARRIAGES BETWEEN LINEAGE GROUPS

Father's Lineage Group	Husband's Lineage Group: Gowa Core	Gowa Nobles	Tallok Core	Tallok Nobles	Lekok-bodong	Minor Makassar	Bulo-Bulo	Luwuk	Minor Bugis	Bone-Soppeng	Eastern Indonesia	TOTAL
Gowa Core	0	0	1	2	2	2	0	0	3	4	2	16
Gowa Nobles	0	0	0	1	1	0	0	0	1	0	0	3
Tallok Core	0	0	0	0	1	0	0	0	1	1	1	4
Tallok Nobles	2	0	1	4	2	1	0	0	2	5	0	17
Lekokbodong	0	1	1	0	0	0	0	0	0	2	1	5
Minor Makassar	1	1	0	1	1	0	0	0	0	1	0	5
Bulo-Bulo	0	0	0	0	0	1	0	0	0	0	0	1
Luwuk	0	0	0	0	0	0	0	0	0	0	0	1
Minor Bugis	0	0	0	0	0	0	0	1	0	0	0	0
Bone-Soppeng	0	0	0	0	0	0	0	0	0	1	0	1
Eastern Indonesia	0	0	1	0	0	0	0	0	0	0	0	1
TOTAL	3	2	4	8	7	4	0	1	7	14	4	54

TABLE 4-20. MATURE OFFSPRING RESULTING FROM POST-1667 MARRIAGES

Wife's Lineage Group	Husband's Lineage Group: Gowa Core	Gowa Nobles	Tallok Core	Tallok Nobles	Lekok-bodong	Minor Makassar	Bulo-Bulo	Luwuk	Minor Bugis	Bone-Soppeng	Eastern Indonesia	TOTAL
Gowa Core	0	0	2	2	0	0	0	0	1	3	1	9
Gowa Nobles	0	0	0	0	0	0	0	0	0	0	0	0
Tallok Core	0	0	0	0	0	0	0	0	0	1	1	2
Tallok Nobles	0	0	0	0	1	0	0	0	2	3	0	6
Lekokbodong	0	0	0	0	0	0	0	0	0	0	0	0
Minor Makassar	0	0	0	1	0	0	0	0	0	0	0	1
Bulo-Bulo	0	0	0	0	0	1	0	0	0	0	0	1
Luwuk	0	0	0	0	0	0	0	0	0	0	0	0
Minor Bugis	0	0	0	0	0	0	0	0	0	0	0	0
Bone-Soppeng	0	0	0	0	0	0	0	0	0	1	0	1
Eastern Indo.	0	0	1	0	0	0	0	0	0	0	0	1
TOTAL	0	0	3	3	1	1	0	0	3	8	2	21

Almost all the marriages involved local Makassar polities. Even the Gowa *Gelarang* played a quite prominent rôle, and enjoyed enough status that their *Gelarang* district was recorded. True, four women from Bugis kingdoms of the west coast and the Walanae graben married into the royal Gowa core, but no offspring resulted, and only two of the Bugis brides were apparently royal. The sole procreative marriage involved Siang, the closest Bugis kingdom, into the Tallok royal core (see also Table 4-12).

Eight brides from other lineage groups married into the Tallok royalty. However, the dominant theme was marriage into the Gowa royalty, accounting for over half of the recorded marriages. Tallok and Polombangkeng provided most of Gowa's royal brides who additionally bore four of the six Gowa kings (GVII to GXII) of the period.

Gowa's weakly reciprocated absorption of brides from other lineage groups reflects her establishment as the new Makassar apical point. By the same token, lineage groups which failed to attract recorded wives soon disappeared from the records, as comparison between Table 4-15 and the subsequent tables shows. Examples include Garassik, an early source of brides, as well as Polombangkeng, more specifically Jamarang and Katingang. The fate of these polities contrasts with that of Sanrabone and Pattekne which attracted wives from other lineage groups and then persisted as independent lineage groups into the 17th century.

4.12.3 The golden period of greater Gowa

Table 4-17 and 4-18 give the marriages between lineage groups and resultant offspring in the "golden period" between Tunipasuluk's expulsion and the Makassar War (cf. Figure 4-5). Greater Gowa's wide sphere of political influence matches the geographical extent of lineage groups involved. Included are Gowa's Nusatenggaran allies Bima and Sumbawa, and Gowa's Bugis allies on the east coast, Bulo-Bulo and Luwuk. Greater Gowa's *Gelarang* sill figure, but in a much reduced rôle, and we no longer learn precisely which *Gelarang* districts were involved (Table 4-13).

The Bulo-Bulo core recieved daughters from other lineage groups during the period, which might identify it as a high status lineage. However, Bulo-Bulo's absorption by Bone immediately after the Makassar War (see Andaya, 1981:Map 9) highlights its vulnerability, suggesting that Gowa and its allies bolstered Bulo-Bulo's status as part of a policy of preventing Bone's expansion southwards.[33]

Greater Gowa's decentralised power structure is clearly reflected in the marriage patterns. The Gowa, Tallok and Lekokbodong nobilities now took a prominent part, while the frequency of daughter exchanges between the Gowa royalty and other lineage groups was reciprocal overall. Indeed the Tallok royalty provided rather than attracted wives; and by the end of the period the sultans of Gowa and Tallok both had mothers whose common origin is revealed by the *lokmok* title (Table 3-3).[34]

Sanrabone was the only royal core to lose its throne during the period. Sanrabone had attracted wives during the long and successful reigns of SNV and SNVI, but then provided wives leading up to and during the period of chaotic succession which followed (4.6). The change is not apparent from the figures in Table 4-17 which are aggregated to reflect the political situation in greater Gowa rather than in Sanrabone. The Gowa prince (later Sultan Abdul Jalil) who absorbed Sanrabone's throne was either the matrilateral grandson or matrilateral great grandson of a Sanrabone raja (depending on how we intepret Sanrabone's mid-17th century succession). He could claim Sanrabone's throne based on his descent from a woman either right within or one step removed from the royal Sanrabone core (Figure 4-10).

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[33] The argument does not work for Wajok, greater Gowa's other main Bugis ally of the period, for reasons which would presumably become clear from a detailed analysis of Wajok's marriage strategies during the period.

[34] Sultan Hasanuddin is one of Indonesia's "national heroes", so his lack of a high status mother disturbs Indonesian historians (e.g. Patunru, 1983:35). However, his succession to Gowa's throne was almost automatic as he was the only mature Gowa incumbent male at the time of his father's death (e.g. Figure 4-16). Similarly, after Sultan Mahmud's death in 1654 the choice of a (male) Tallok sultan was restricted to Kg Karunrung and Harrunarasyid (TX).

4.12.4 The survivors

Tables 4-19 and 4-20 show the last marriages between lineage groups and resultant offspring which I recorded. The very low number of offspring (21) compared to the number of marriages (54) may partly reflect my reduced attention to the 18th century records, but it does accord with the high rate of marriages ending in divorce (30/54) during the period. Overall the approximate number of offspring per recorded marriage appears to have declined form two during the 16th century, to one in the early to mid-17th century, and one third in the 17th century.

After the Makassar War, greater Gowa virtually ceased to attract women from outside status lineages and instead provided wives. Bulo-Bulo, which was immediately absorbed by Bone after the Makassar War, falls in the same pattern. The Bugis kingdoms which greater Gowa had previously dominated, a few of whom had provided greater Gowa with wives, now took up greater Gowa's daughters. In accordance with Sahaduddin's pre-eminence, Bone (including her main *Arung*) was dominant, but Soppeng, Siang, Agongnionjok (Segeri), Sawitto and Sidenreng also drew wives from greater Gowa (Table 4-14). So did the eastern Indonesian sultanates, now including Ternate. Greater Gowa's marriage strategies appear to have steered a course between securing protection through marriage into the military pre-eminence of Bone, and maintaining a wide suite of other aristocratic marriages as a buffer against absorption by Bone.[35]

Marriage patterns within greater Gowa reflect the reorganisation of its internal power structure. The Gowa royalty and nobility provided wives, and the few wives they attracted from other lineage groups produced no offspring.

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[35] Hence while Andaya (1981:302) correctly identifies Sahaduddin as South Sulawesi's new apical point, by stating that he '.... established in effect a single royal family linked by blood to his successor [Sultan Alimuddin]', greater Gowa's marriage strategies were vastly more complex than this. It is another marvellous irony of Sahaduddin's legacy that Soppeng, Bone's great ally, remained in Bone's clutches for a full generation after Sahaduddin's death, whereas Bone's control over the other Bugis-Makassar kingdoms was ephemeral.

Tallok and especially Lekokbodong attracted wives, even if not many offspring apparently resulted. The Tallok nobility was especially active in marriage exchanges, identifying it as Gowa's "power broker", a rôle centred on Kg Karunrung who became the single most powerful Makassar man. Thus after the Tallok sultan Harrunarasyid fled in the wake of Gowa's final military debâcle in 1667, Kg Karunrung managed to keep the royal Tallok patriline unbroken by installing the boy sultan Abdul Kadir (Abdaya, 1981; Patunru, 1983).

4.12.5 Specialisation of the Royal and Noble Lines

Greater Gowa's various lineage groups embraced different administrative specialisations, as schematically summarised in Figure 4-18 from an overview of the major titles held.

In the late 16th century the Gowa royalty effectively absorbed the post of regent (3.5.1) and occupied the Tallok and Maros thrones. In the late 17th century the Gowa royal core occupied the Sanrabone throne (4.6) and also briefly absorbed the regency (3.5.1).

Members of the Gowa nobility held the karaengships of Garassik and Galesong both in the 16th century and at the time of the Makassar War. Gowa nobles also held Mamampang (Garassik) twice in the late 17th century and the Sanrabone throne in the early 18th century (4.3; 4.6; 4.7). No Gowa noble ever held a non-territorial post.

The Tallok ruler was also the regent once in the 16th century and twice in the period 1593-1667. A Tallok ruler briefly ruled Segeri at c.1600 (ST:15) and a Tallok sultan occupied Gowa's throne in the early 18th century.

Three Tallok nobles were regents in the 17th century, two held the post of *Tumakkajannangngang*, one held the post of *Tumailalang* very late in the century, while one held the Garassik karaengship in the early 17th century.

Lekokbodong held the Maros karaengship early in the 17th century, in reflection of the origins of the lineage group, but no other major karaengships. However, seven of Gowa's 17th century *Tumailalang* have been assigned to Lekokbodong, and after the Makassar War Lekokbodong individuals also held the posts of the regency (very briefly) and harbourmaster.

These examples show that territorial control was primarily vested in Gowa, whereas the noble administrative posts were mostly held by Tallok and Lekokbodong. The Makassar War and its aftermath grieviously diminished the area under greater Gowa's jurisdiction (Andaya, 1981), but without simplifying greater Gowa's administration. Consequently Gowa had become largely redundant to the survival of an organisation whose survival now lay in its capacity to resist the new territorial overlords, Bone and the VOC.

4.13 Makassar Aristocratic Organisation and Political Change

The analysis of Makassar titulation (Chapter 3), when placed alongside the prevailing patterns of how titles were hold by, or transmitted across lineage groups, allows the following overview of the constants in the political landscape and the legitimisation of political change.

The key institutions were the bilateral descent groups composed of descendants of the inaugurators of hereditary titles. The most powerful of these were associated with a royal title closely guarded by a patrilineal core. Royal polygyny at the centre generated a bank of potential princes who ensured uninterrupted patrilineal passage of the title. *Ipso facto* it also generated unsuccessful candidates who, along with their patrilineal descendents, maintained a recognised place within the bilateral descent group if they achieved a karaengship. The more powerful the patrilineal royalty, the larger its following of attached noble patrilines. In short, securing the patrilineal succession stimulated political expansion, to such a degree that the power of any monarch was closely related to his number of wives.

Royal polygyny also generated a bank of princesses who tended to marry other royal lines and entrench the royalty's genealogical distinctiveness. Yet because these daughters' status was systematically downgraded, they could also marry nobles either attached to some royal patriline or descended from local status lineages. This did not create any dangers for the royal patriline as long as it kept its position of

power. The offspring from these marriages were simply not admitted into the royal core.

If the system excluded by patrilineal descent towards the centre, it also included by bilateral descent towards the peripheries. Men from a higher status lineage could attach themselves to a wife from a lower status lineage, and the offspring could then belong to the wife's group.[36] This privilege allowed the powerful lineages to dump their superfluous proportion of well-born men towards the margins. The men then held exalted positions within their group which enjoyed greater prestige because of its attachment towards the centre. The privilege also allowed a powerful royal patriline to absorb territorial titles previously belonging to autonomous patrilines. The powerful royal retained his membership within his natal group while his wife, as the princess from the weaker line, transmitted the right of office to her husband through marriage, or to their sons through bilateral descent.[37]

In a very practical sense the king was the husband of his realm (cf. Joordaan and Josselin de Jong, 1985). The legitimacy of his control derived from his marriages, or those of his direct ancestors, to princesses within the cores of the subjugated domains. So during 1500-1593 the Gowa royalty attracted status wives from those areas which Gowa came to rule. The territorial ambitions of the Gowa royalty, and its ability to draw status wives, were then contained until the mid-17th century when Gowa legitimately absorbed Sanrabone. With the loss of Gowa's subjugated lands after 1667, Gowa now became "wife" to the two powerful royal lineages in Makassar, Bone-Soppeng[38] and Tallok.

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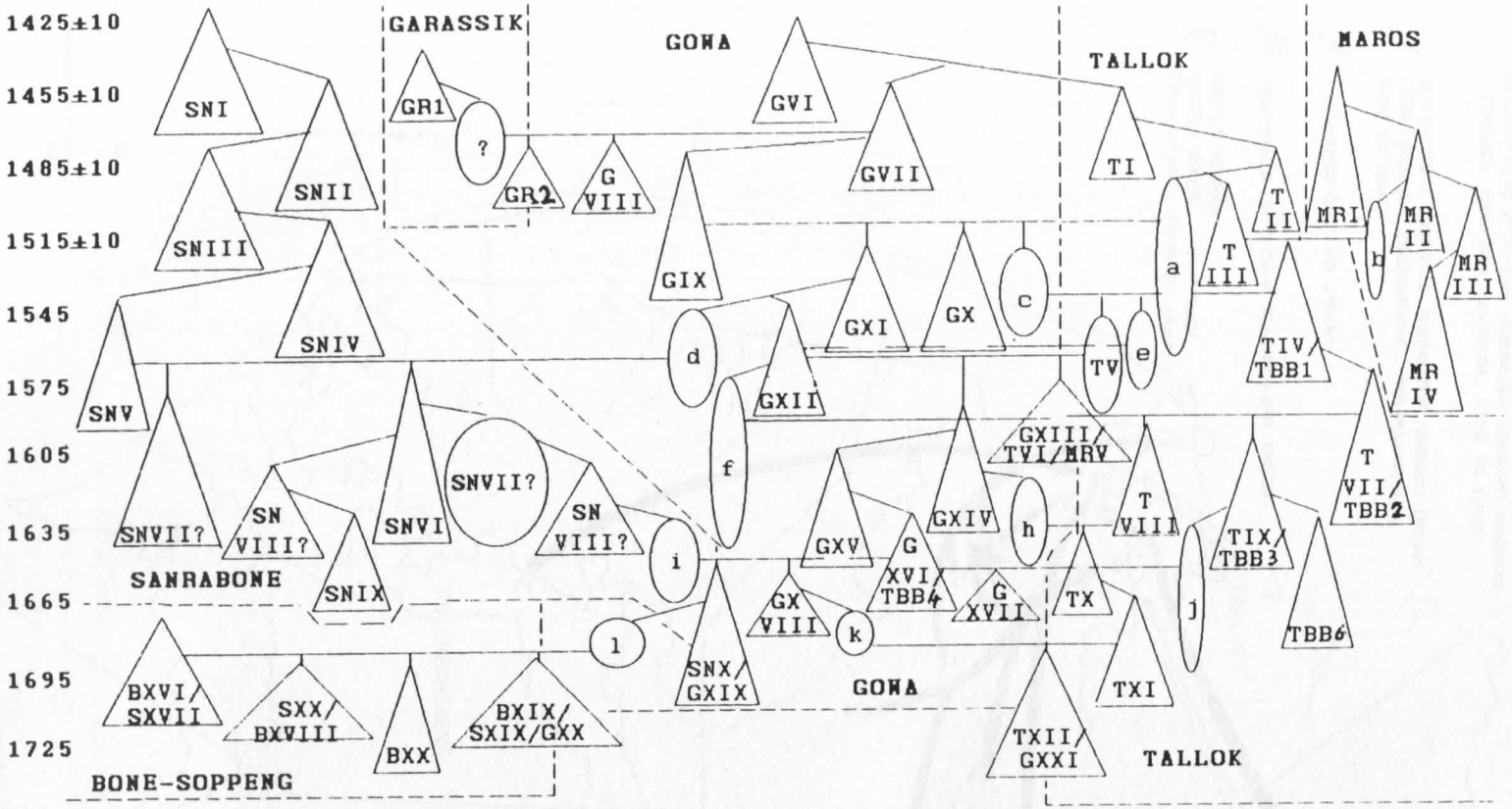
[36] Hence the indigenous view which derives the nobility from the marriage between commoners and descendants of the *Tomanurung*.

[37] The Kasepekang Konjo do not permit men this right of affiliation or membership within two cores (Rössler, 1987:65), but the Gowa royalty did not observe this nicety during their territorial expansion.

[38] It is worthwhile pointing out that by this juncture Bone-Soppeng was largely based in Makassar. Sahaduddin's main palace centre was Bonto Alak, a short distance from the Dutch in Fort Rotterdam; Alimuddin frequently consulted with the Dutch during his reign over Bone; and one of his sons was briefly Gowa's sultan.

Although Abdul Jalil's death eclipsed the Gowa patriline, the rulership of Gowa remained the most prestigious title, and was finally absorbed by Tallok as the most powerful Makassar line. Tallok's Sirajuddin was preferred over Bone's Ismail owing to the depth of Sirajuddin's bilateral ties with the Gowa nobility, and his relationship one way or another to very many Makassar nobles. Sirajuddin's ascendancy, which bequeathed a disputed succession until his direct descendants finally monopolised the Gowa rulership late in the 19th century (2.5.4), is not conventionally registered as a dynastic change (e.g. Patunru, 1983). In the sense that the disputed succession involved closely related Makassar lineages, and that Tallok's origins are ultimately one with Gowa's (Figure 2-2), there was no dynastic change. Thus the principle of bilateral membership not only allowed the legitimate passage of authority between peer patrilines, it also tended to ensure continuity of social organisation by resisting unrelated factions.



SANRABONE: SNI=Karaeng Pancabelong; SNII=Tunijallok ri Pakrasana; SNII=Karaeng Massewaya; SNIV=Tonibasara; SNV=Tumenanga ri Parallekkena; SNVI=Tumenanga ri Campagana; SNVII?(left)=Kg Bambanga; SNVII?(right)=Kga Pucu; SNVIII?(left)=Tumenanga ri Buttana; SNVIII?(right)=Kg Banyuanyarak; SNIX=Puanna Jenalak; i=Petak Dg Nisali; BONE-SOPPENG: BXVI/SXVII=Alimuddin; BXVIII/SXX=Sulaiman; BXX=Abdullah Mansyur; BXIX/SXIX/GXX=Ismail; GARASSIK: GR1=Somba Garassik. GOWA: GVI=Tunatangkaklopi; GVII=Batara Gowa; GVIII=Tunijallok ri Pasukkik; GR2=Kg Barataua Kg Garassik; GIX=Tumapakrisik Kallona; GX=Tunipalangga; c=Kga Somba Opu; GXI=Tunibatta; GXII=Tunijallok; d=Kg Mapekdaka; f=Tuniawanga ri Kalassakanna; GXIII/TVI/MRV=Tunipasuluk; GXIV=Alauddin; GXV=Malikussaid; GXVI/TBB4=Hasanuddin; GXVII=Amir Hamzah; GXVIII=Muhammad Ali; SNX/GXIX=Abdul Jalil; k=Kg Parang-Parang; l=Kg Pattukangang. TALLOK: TI=Karaengloe di Sero; TII=Tunilabu di Suriwa; TIII=Tunipasukruk; a=Karaengloe Bainea; TIV/TBB1=Tumenanga ri Makkoayang; TV=Karaeng Bainea; e=Kg Batu-Batu; TVII/TBB2=Abdullah; TVIII=Mudhaffar; TIX/TBB3=Mahmud; TBB6=Kg Karunrung; j=Raja Perempuan; TX=Harrunarasyid; TXI=Abdul Kadir; TXII/GXXI=Sirajuddin. MAROS: MRI=Karaengloe ri Pakerek; MRII=Karaeng Loeya; MRIII=Tuamenanga ri Bulukduaya; b=Tumamaliang ri Tallok; MRIV=Tunikakassang.

FIGURE 4-1. SKELETAL GENEALOGICAL OUTLINE OF ROYAL MAKASSAR HISTORY

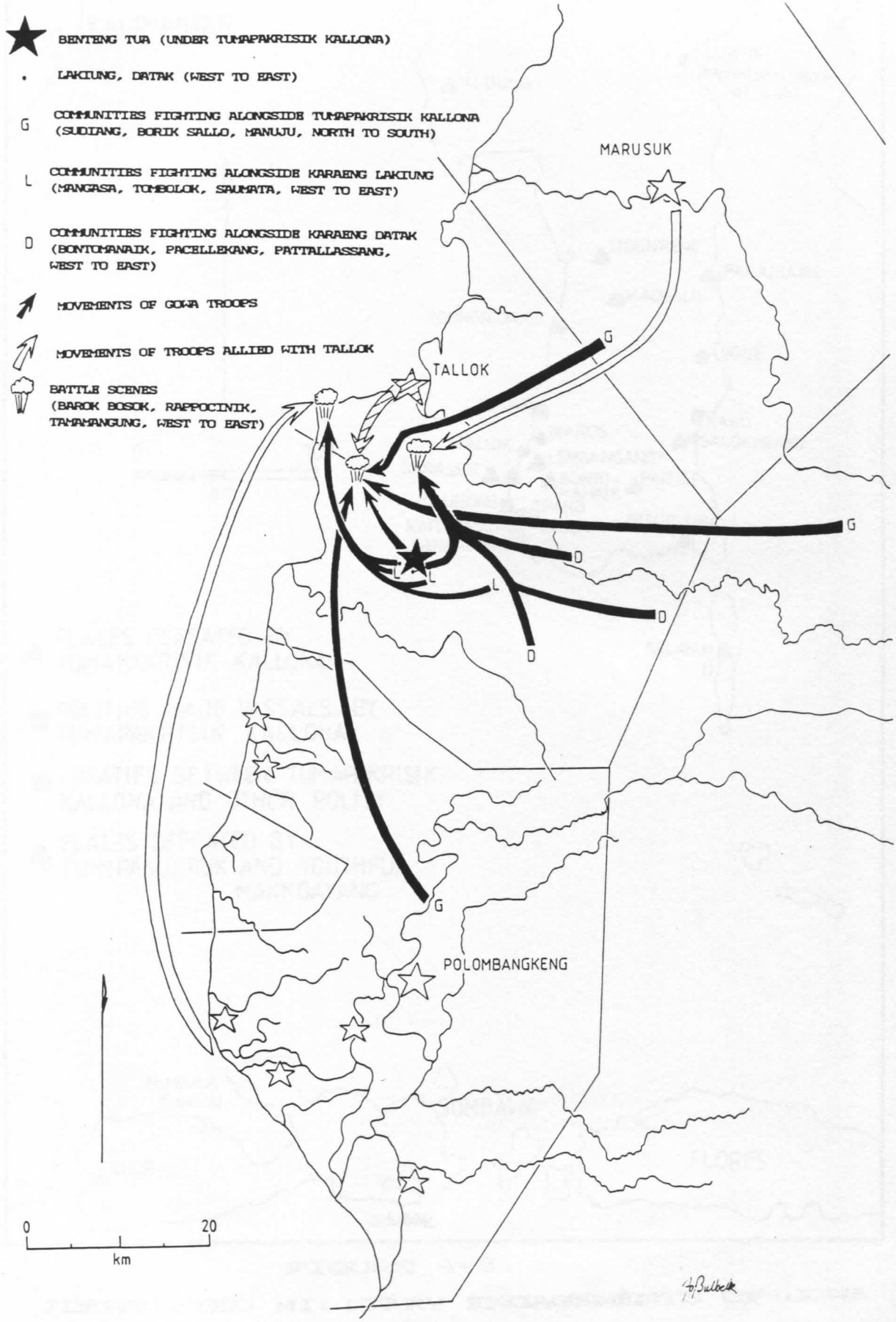


FIGURE 4-2 . THE VICTORY OF GOWA (BETWEEN 1535 AND 1544)

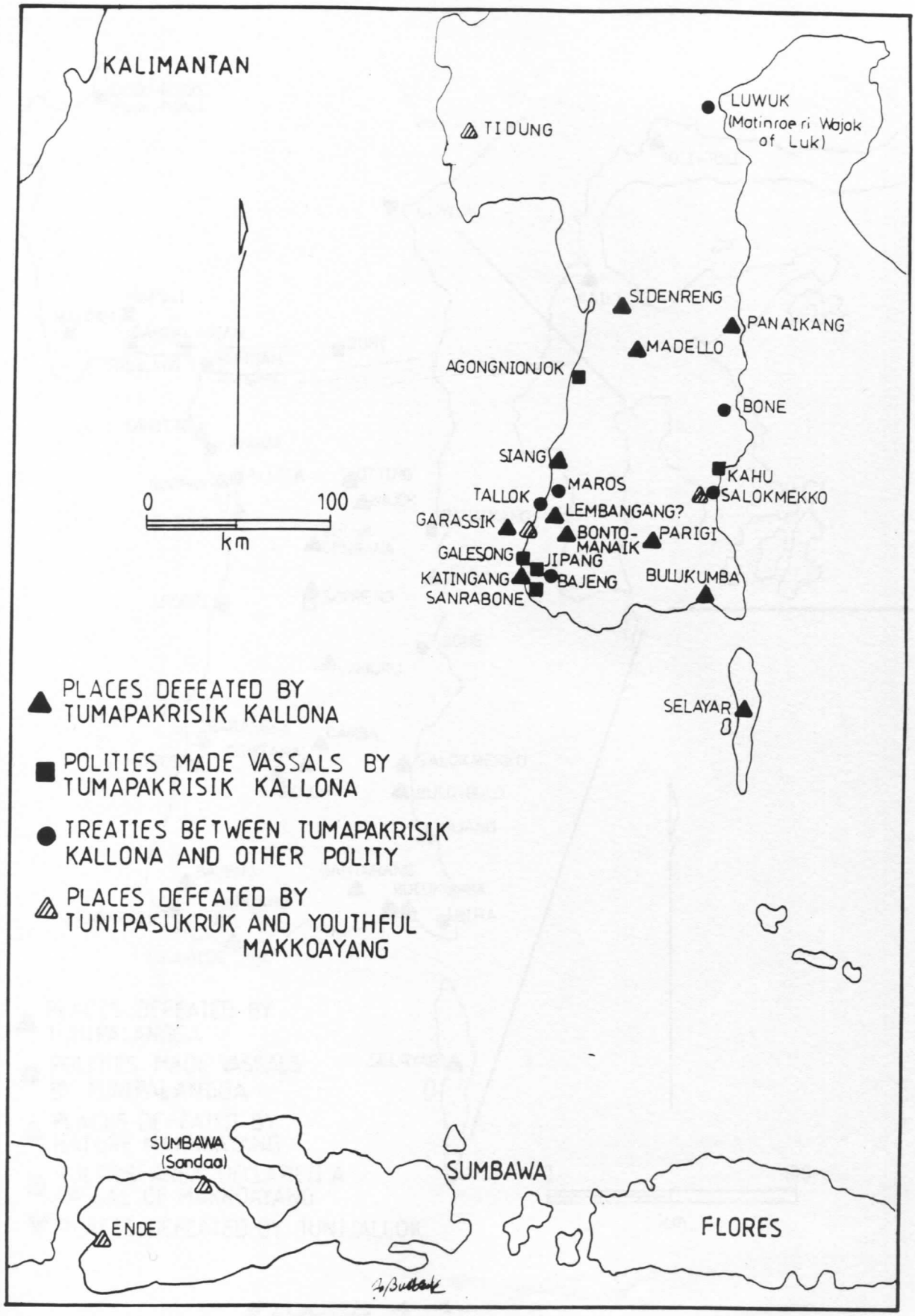


FIGURE 4-3.

IDENTIFIED MILITARY ENGAGEMENTS OF GOWA AND TALLOK IN THE EARLY 16TH CENTURY

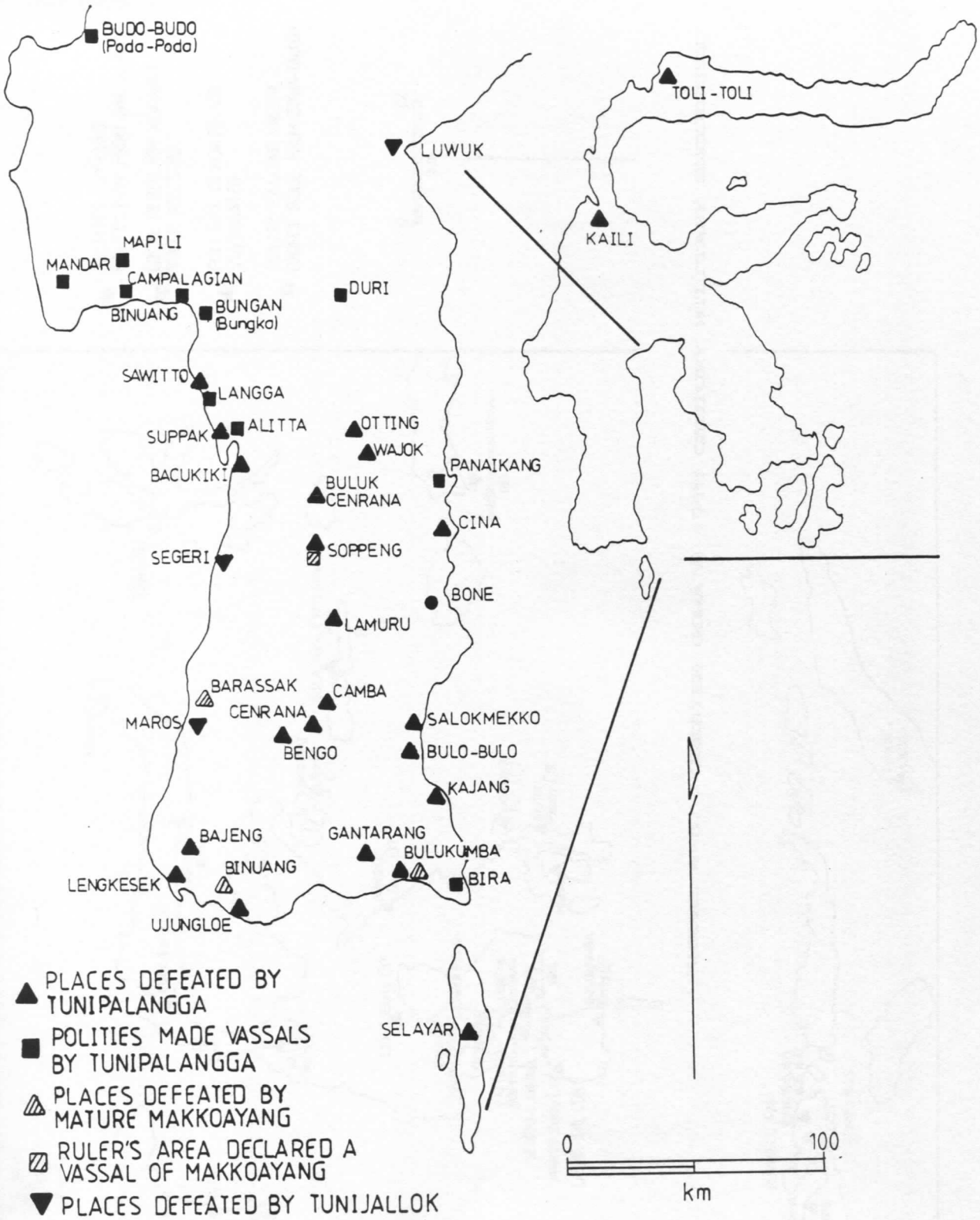


FIGURE 4-4.

IDENTIFIED MILITARY ENGAGEMENTS OF MID-LATE 16TH CENTURY (REIGNS OF TUNIPALANGGA AND TUNIJALLOK)

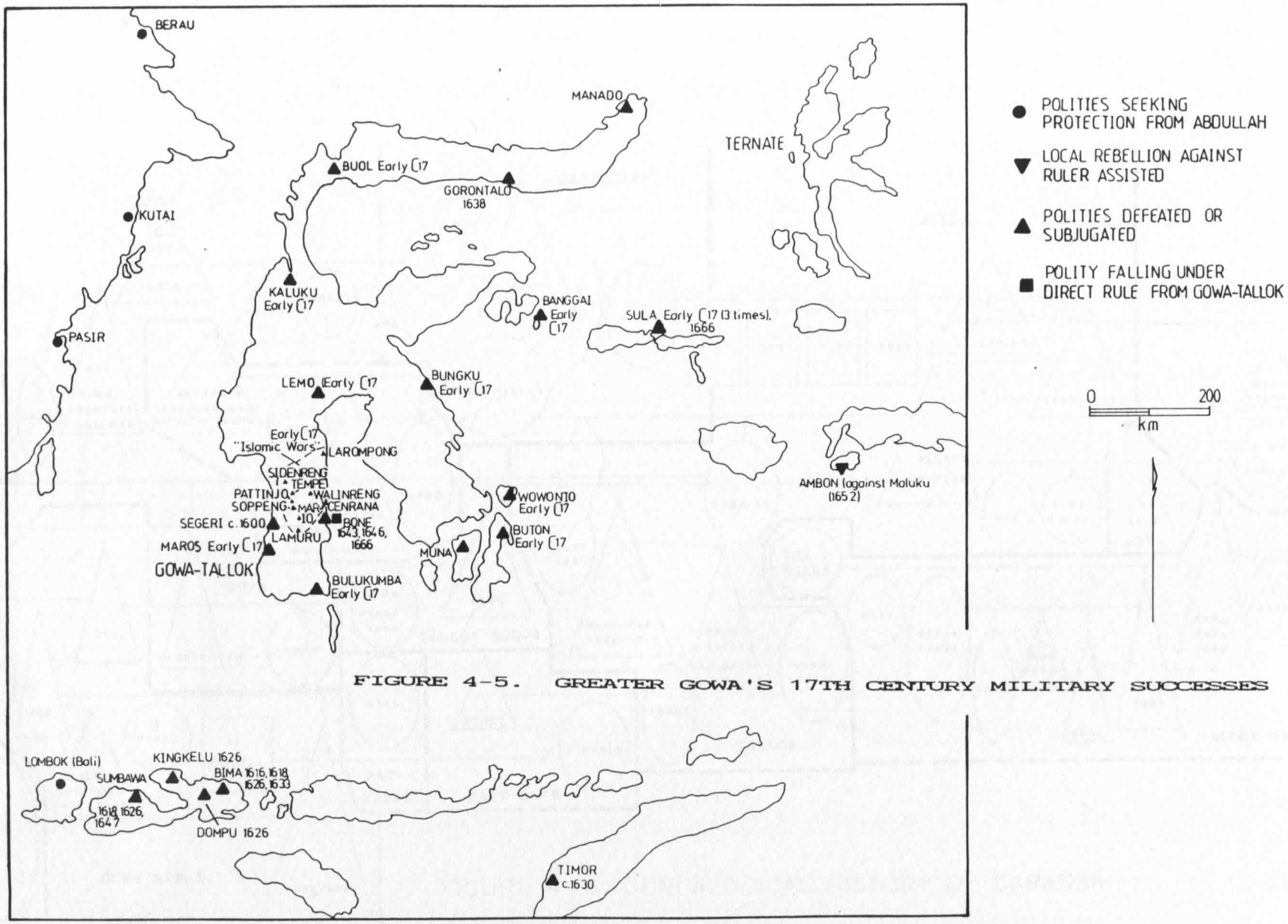


FIGURE 4-5. GREATER GOWA'S 17TH CENTURY MILITARY SUCCESSES

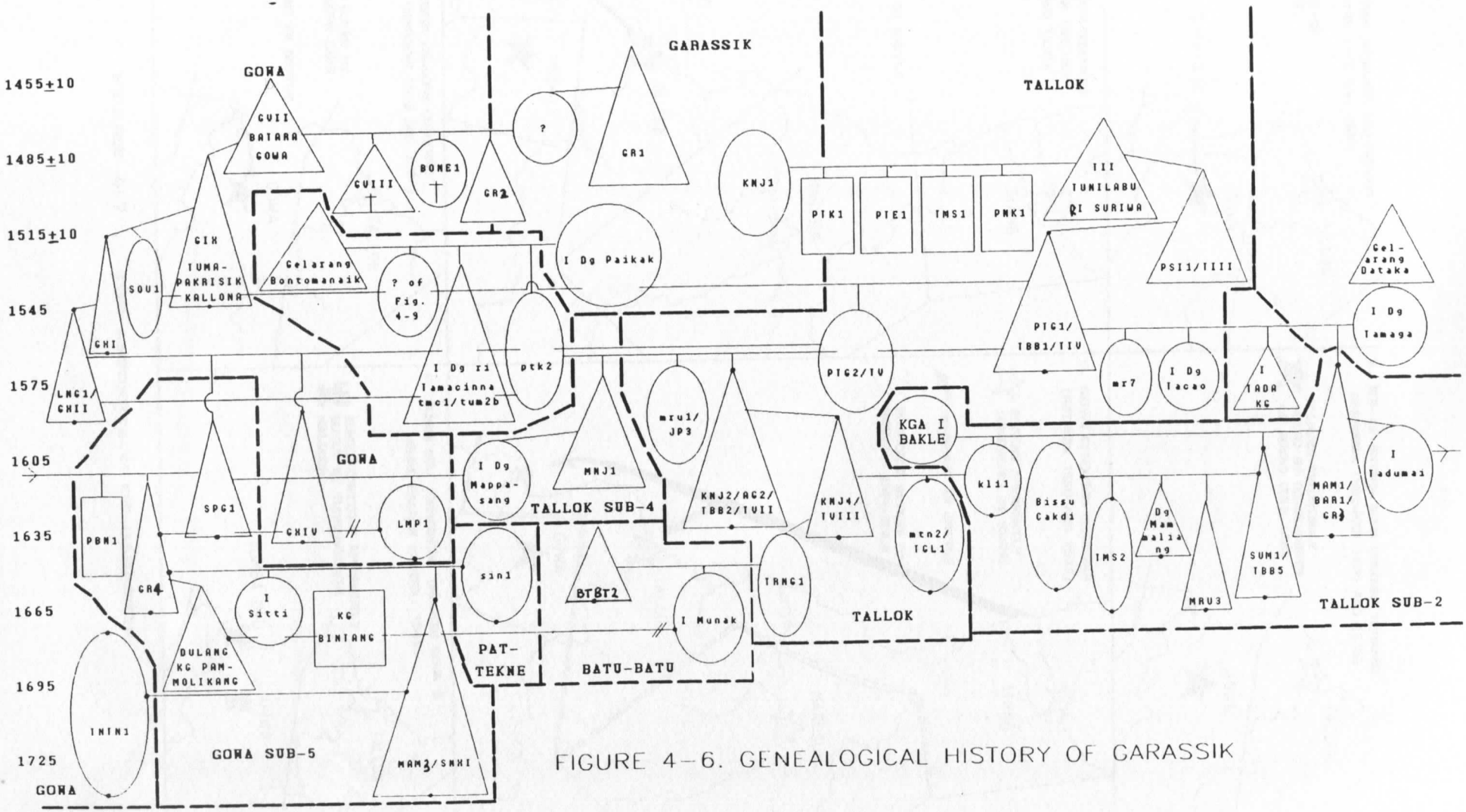


FIGURE 4-6. GENEALOGICAL HISTORY OF GARASSIK

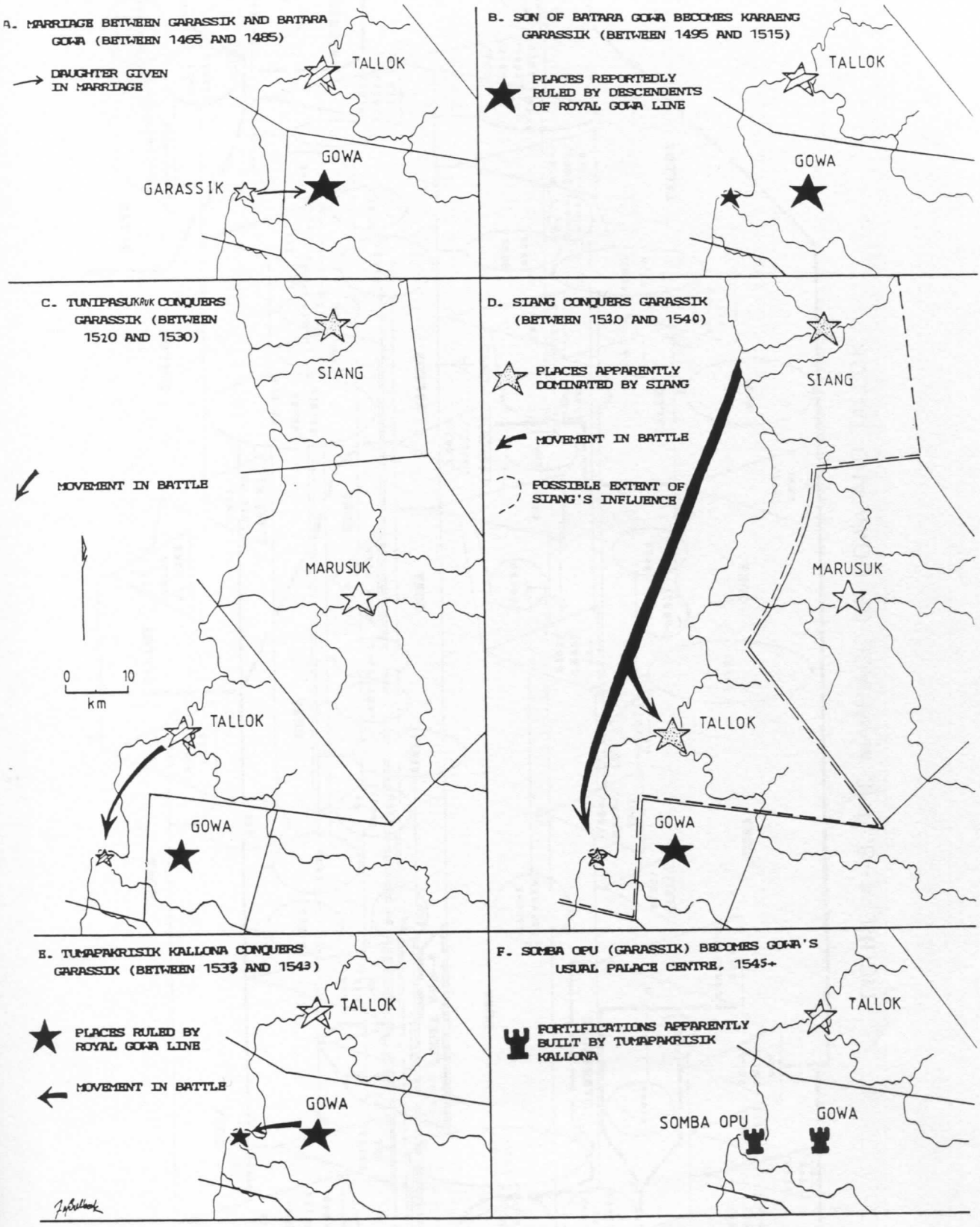


FIGURE 4-7 . THE ABSORPTION OF GARASSIK

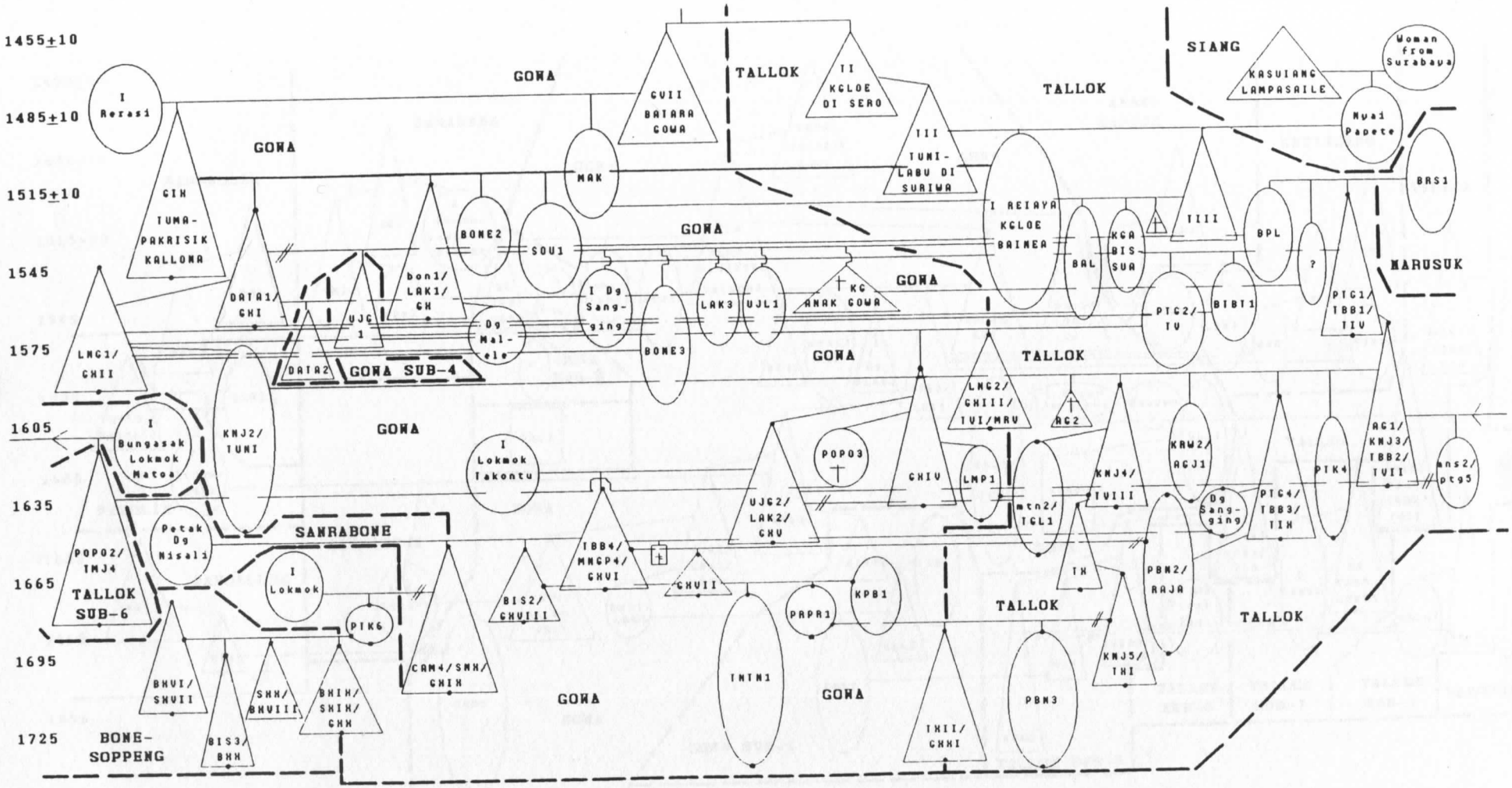


FIGURE 4-8. THE MARRIAGE OF GOWA AND TALLOK

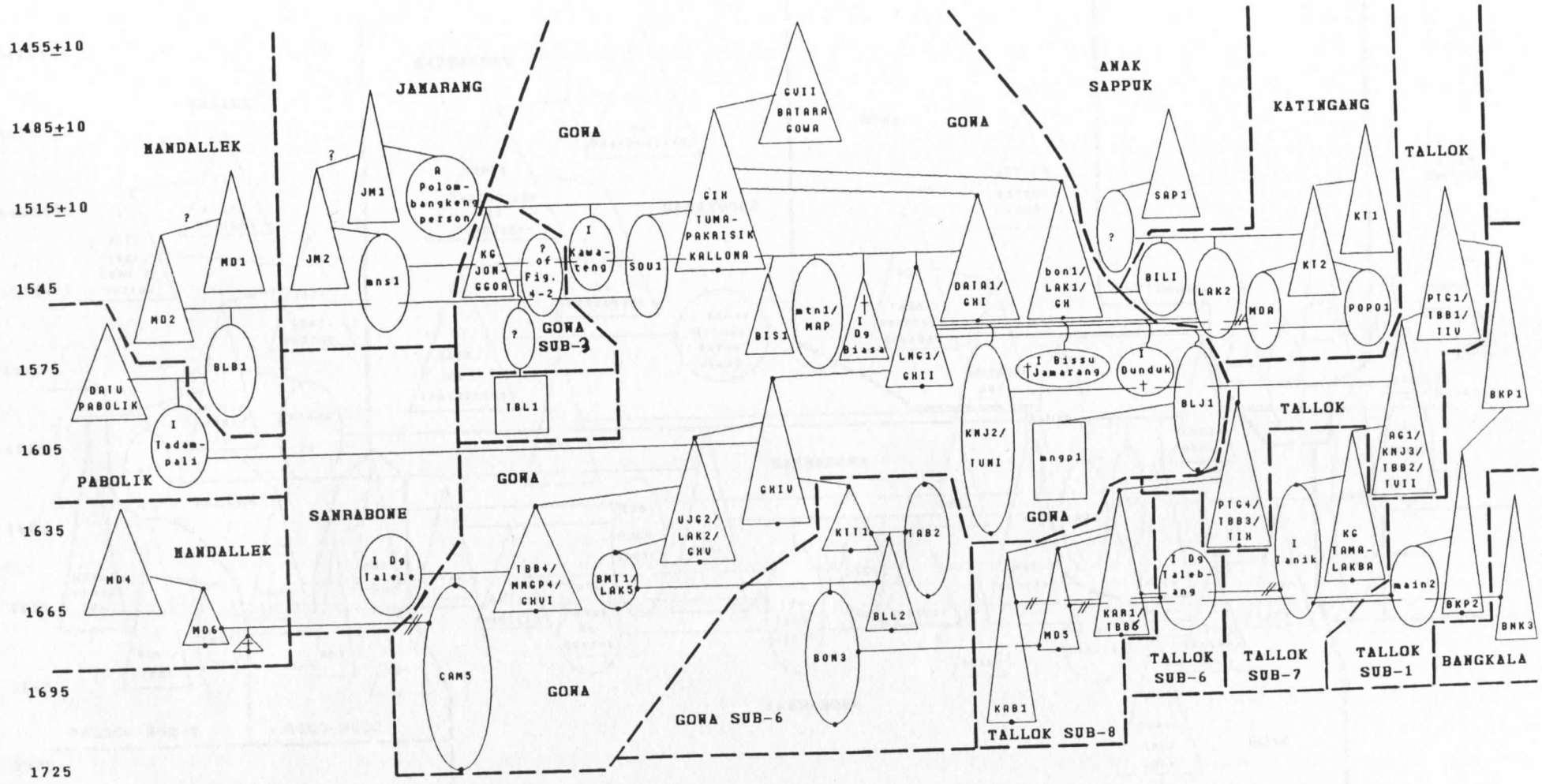


FIGURE 4–9. THE FRAGMENTATION OF POLOMBANGKENG

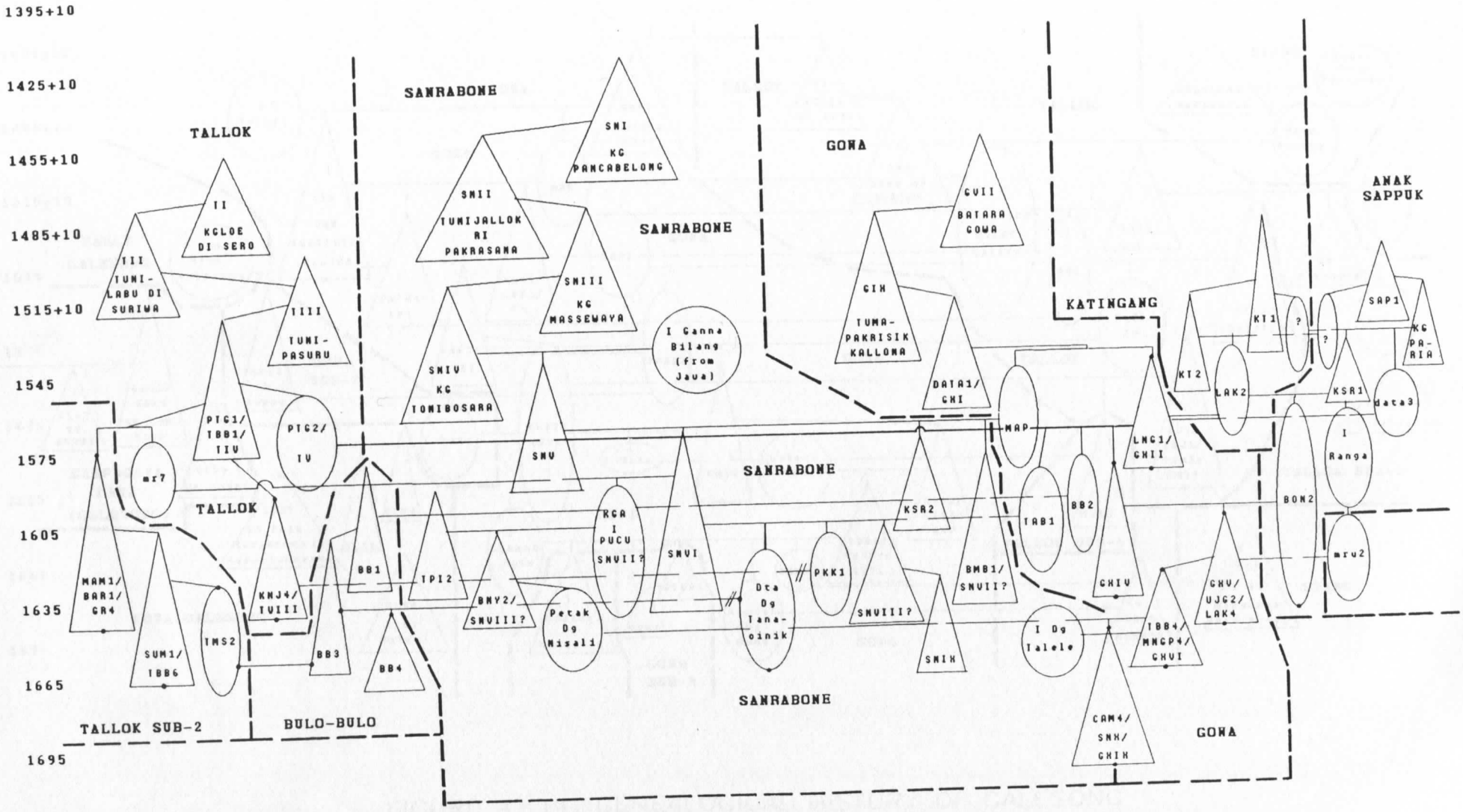


FIGURE 4–10 GENEALOGICAL HISTORY OF SANRABONE AND BULO–BULO

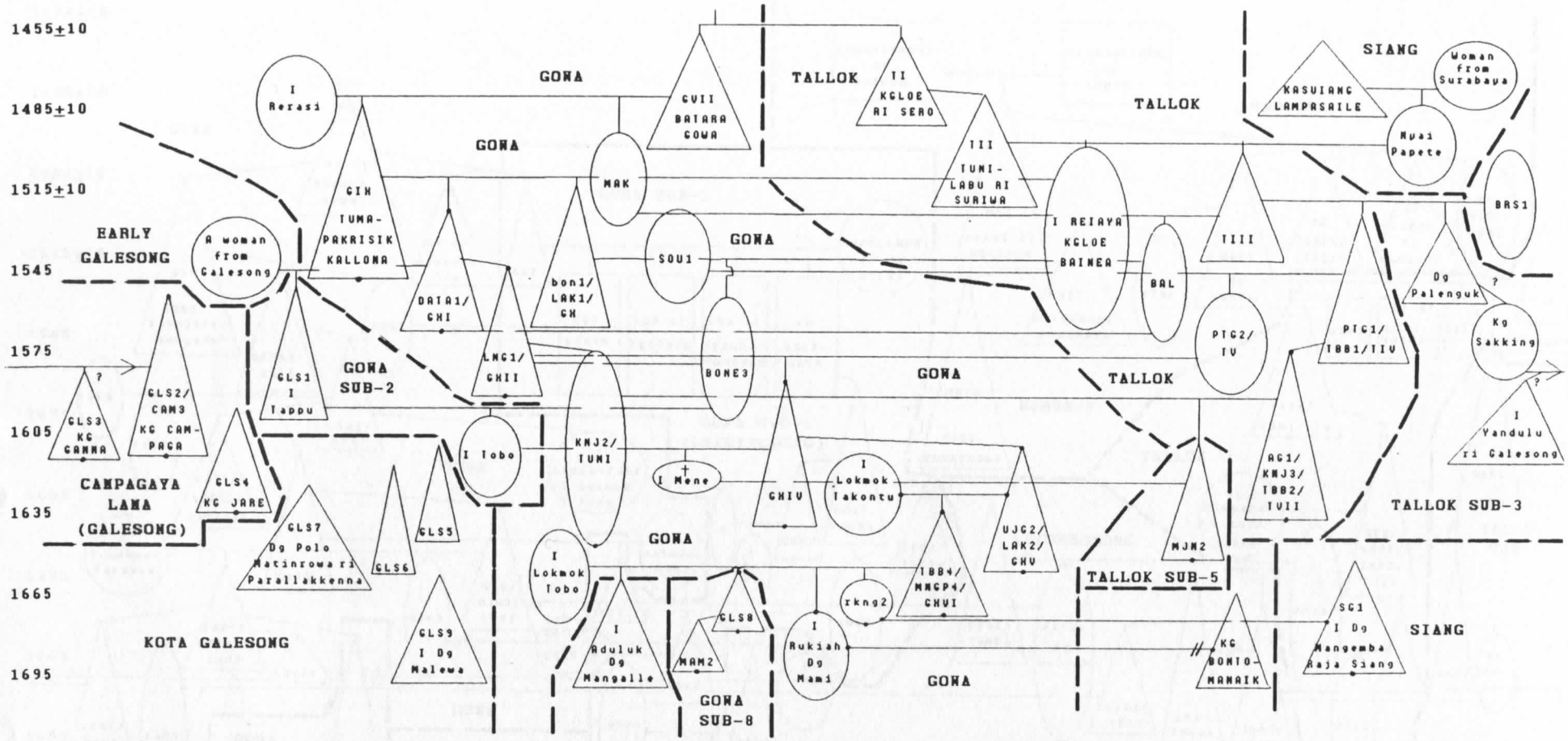


FIGURE 4-11. GENEALOGICAL HISTORY OF GALESONG

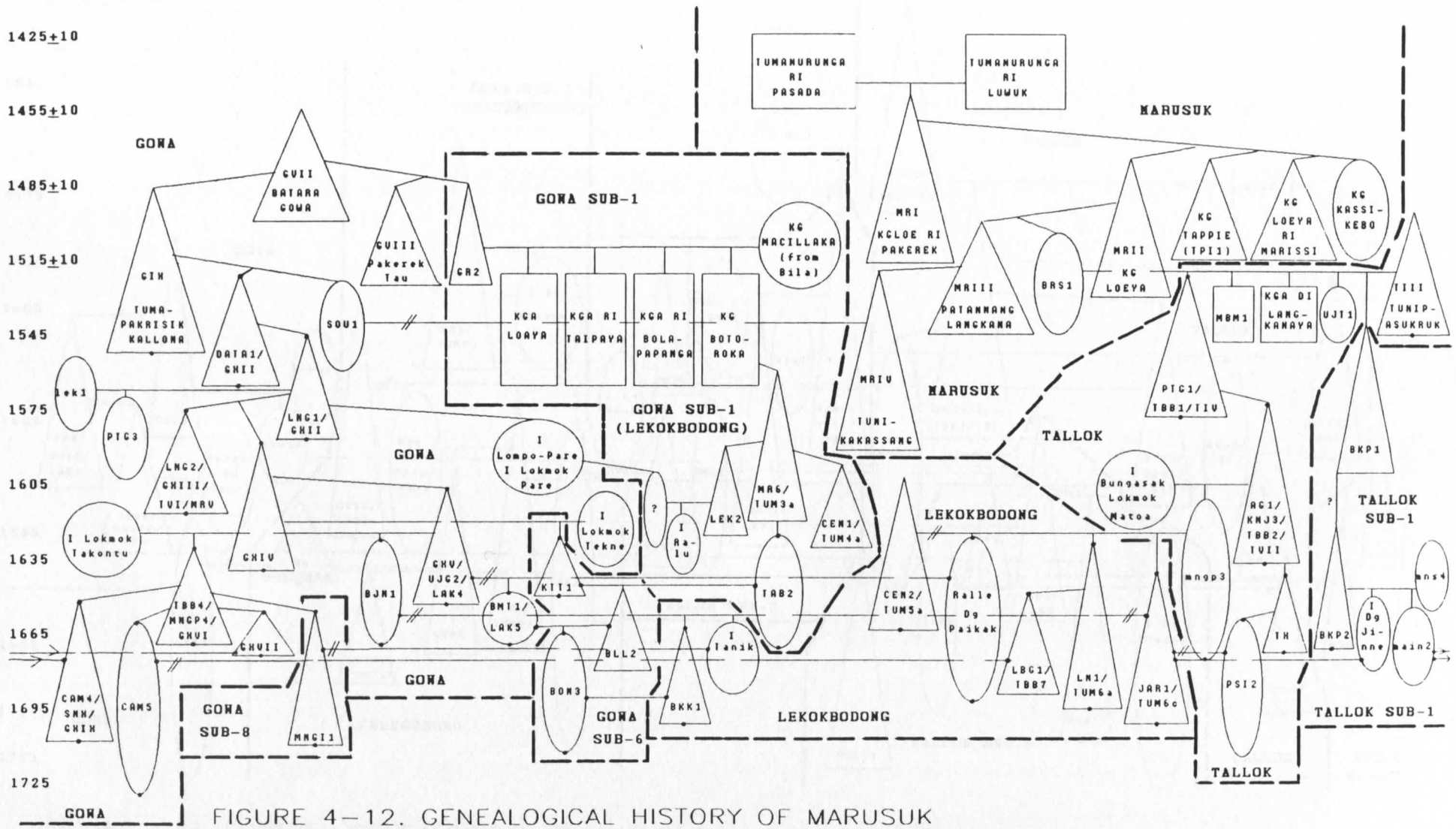


FIGURE 4–12. GENEALOGICAL HISTORY OF MARUSUK

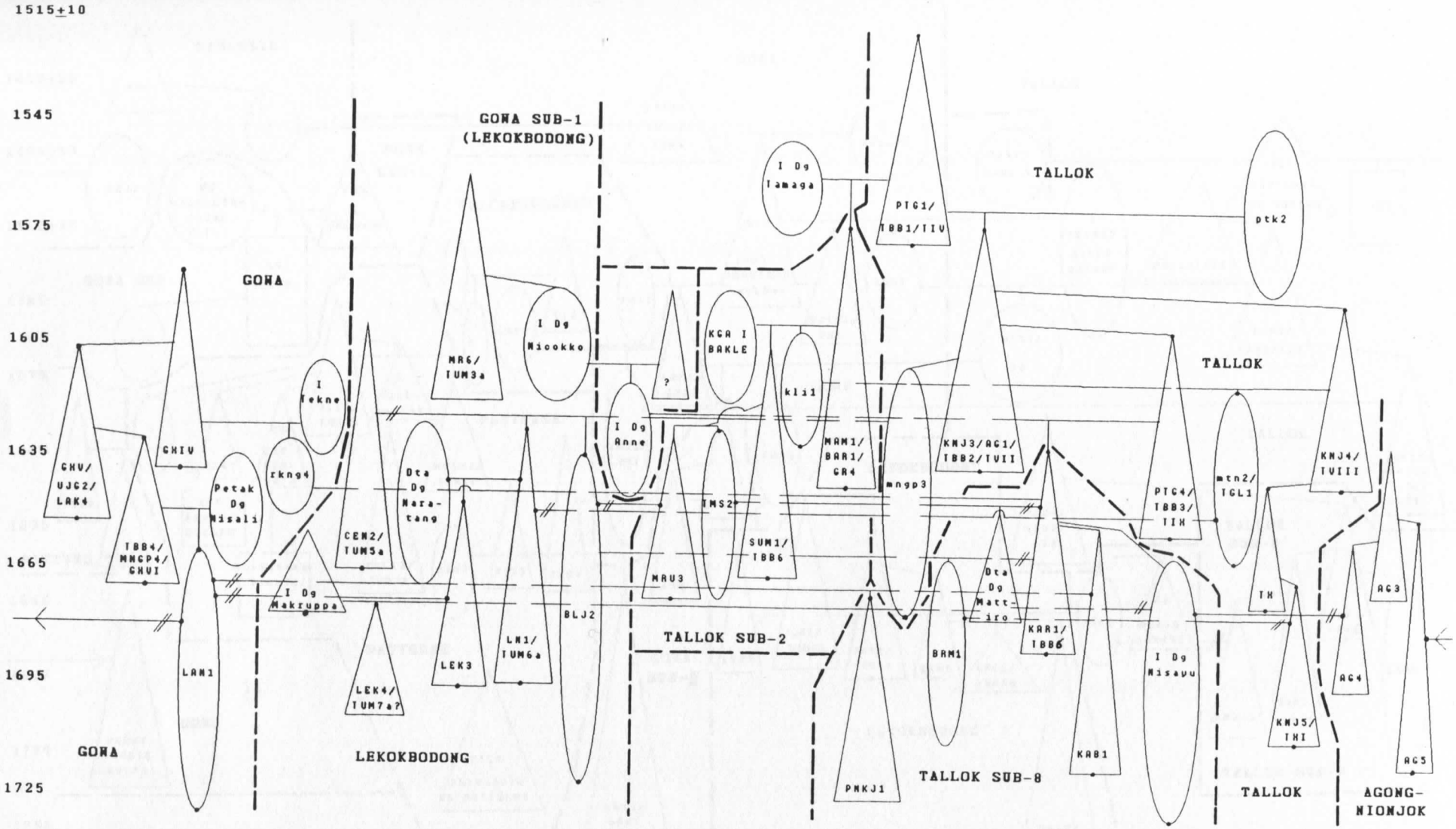


FIGURE 4–13. FURTHER GENEALOGICAL DETAILS FOR LEKOKBODONG (MARUSUK)

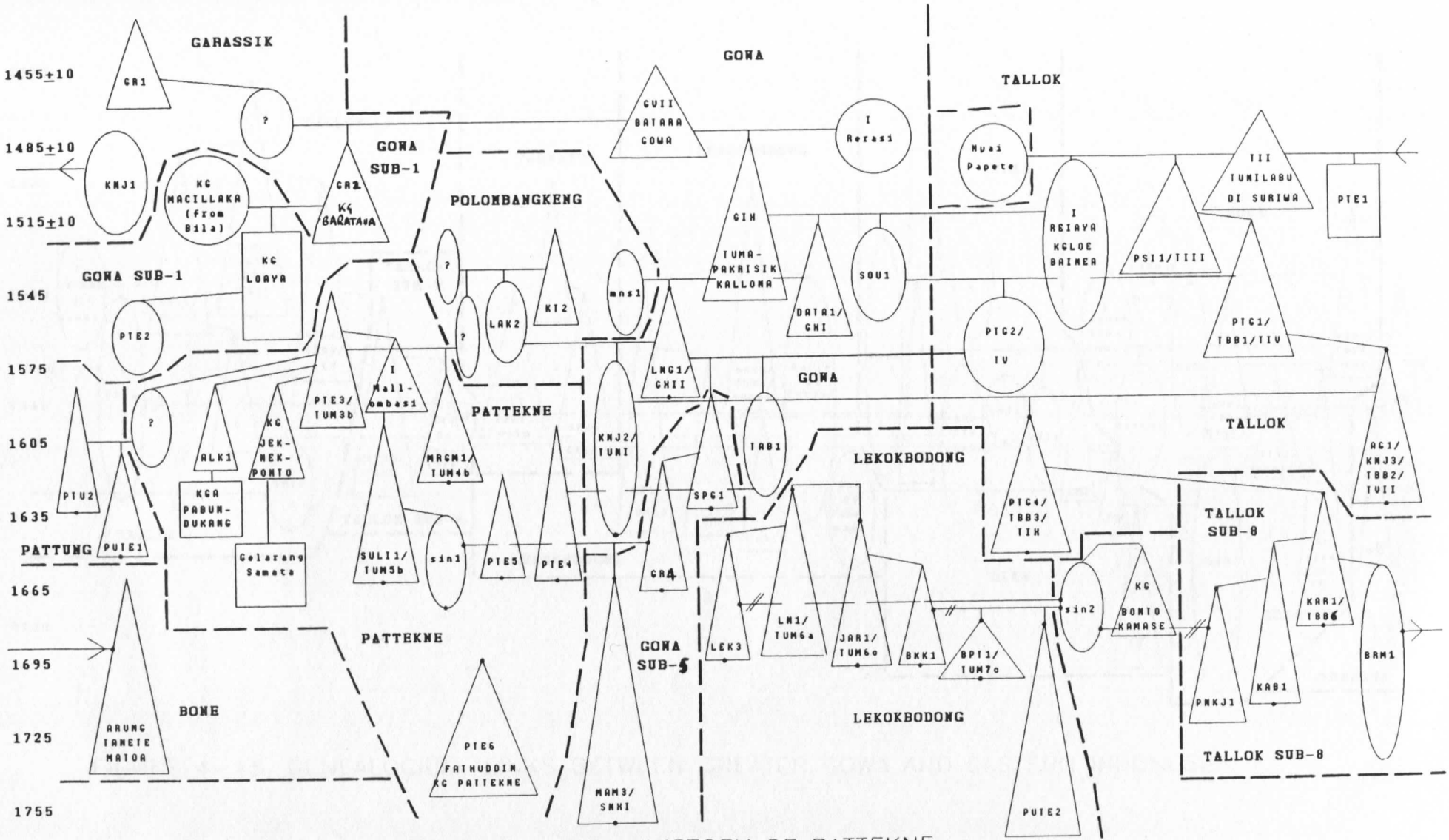


FIGURE 4–14. GENEALOGICAL HISTORY OF PATTEKNE

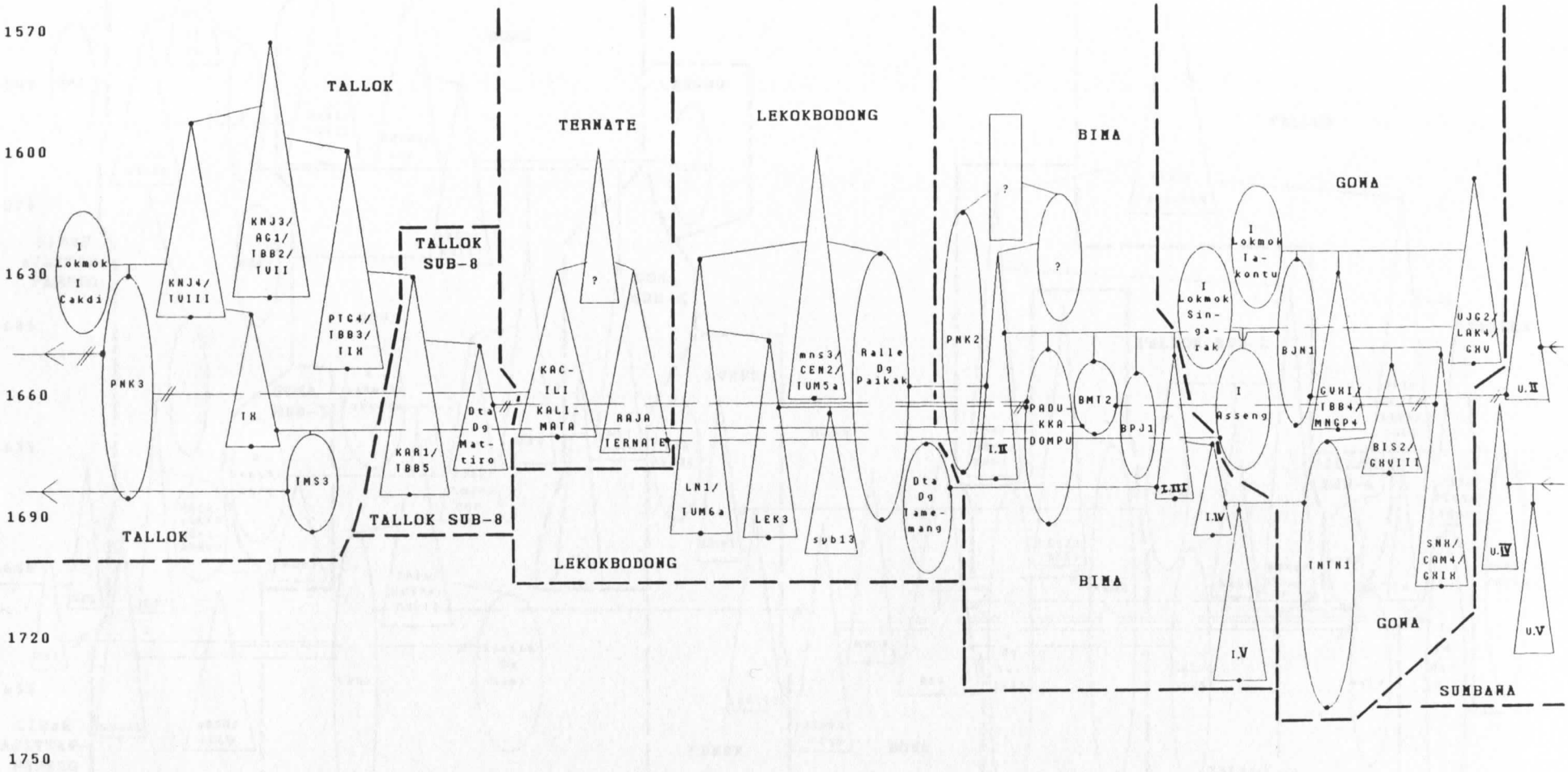


FIGURE 4-15. GENEALOGICAL LINKS BETWEEN GREATER GOWA AND EASTERN INDONESIA

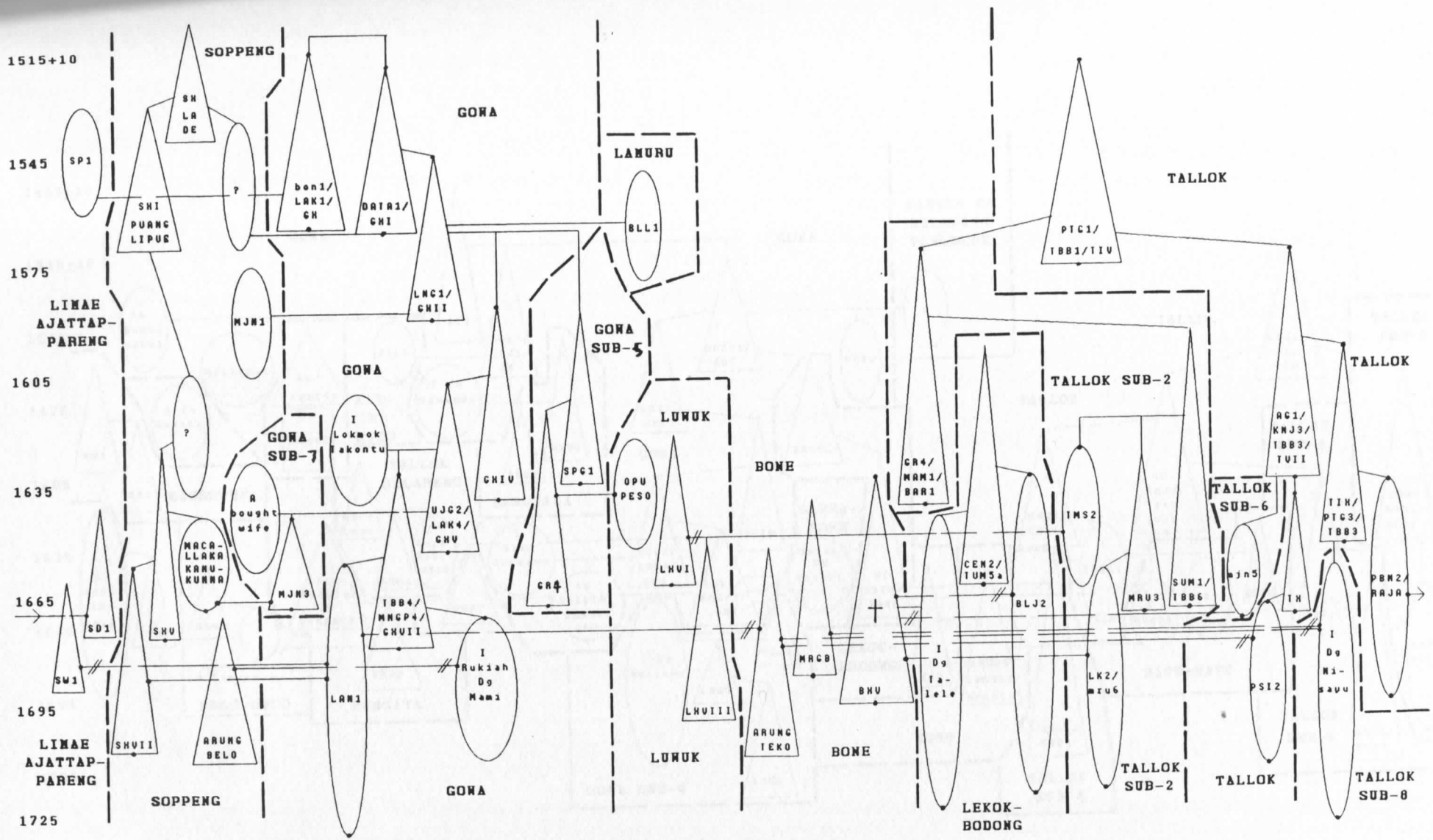


FIGURE 4–16. GENEALOGICAL LINKS BETWEEN GREATER GOWA AND THE BUGIS KINGDOMS

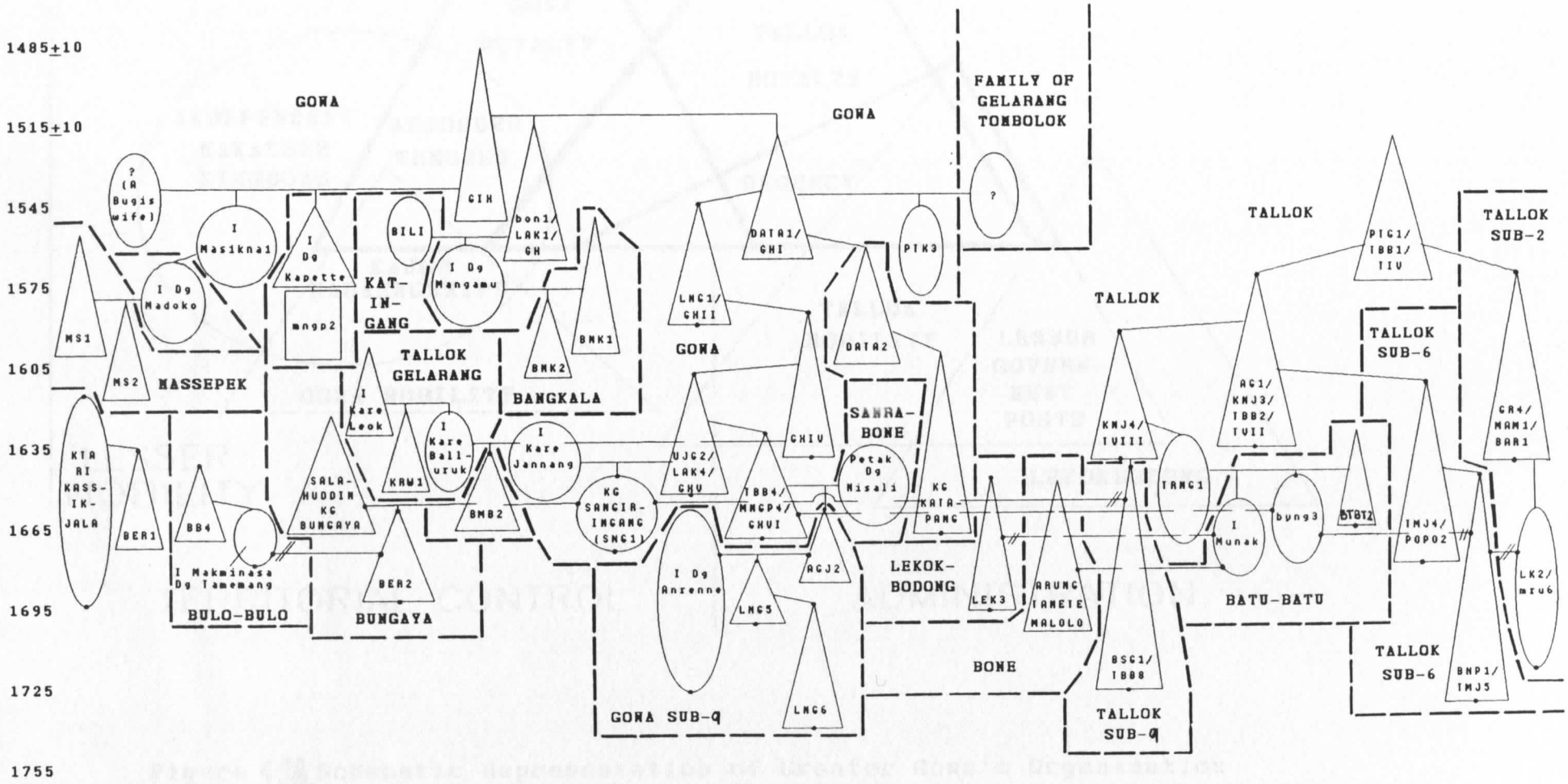


FIGURE 4–17. SOME FINAL GENEALOGICAL INFORMATION

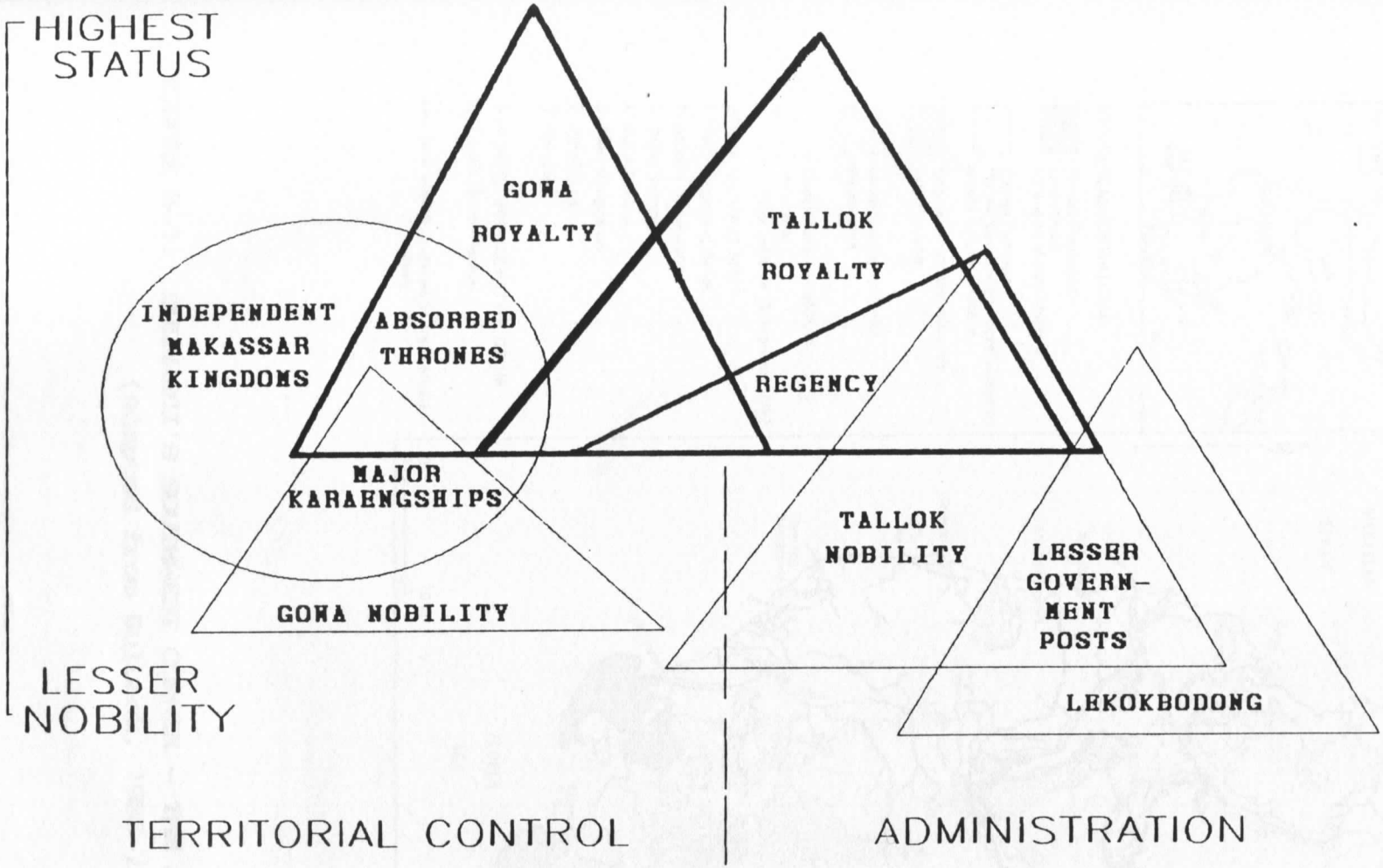


Figure 4-18. Schematic Representation of Greater Gowa's Organisation

CHAPTER 5. THE SOUTH SULAWESI PREHISTORICAL AND HISTORICAL ARCHAEOLOGY PROJECT (SSPHAP)

5.1 Introduction to the Gowa Site Survey

As outlined in my research proposal to the Indonesian government (Bulbeck, 1985), the South Sulawesi Prehistorical and Historical Archaeology Project (SSPHAP) was originally formulated as a broad treatment of Bugis-Makassar pre-Islamic archaeology with attention to be focussed on some main historical areas. During a preliminary fieldtrip I had spent a month, partly in the company of my supervisor, Campbell Macknight, looking for suitable areas. I visited Bugis territory as far north as Kabupaten Luwu. Also Drs Masdoekhi, head of Suaka Peninggalan Sejarah dan Purbakala Sulawesi Selatan (Suaka), treated me to a tour of the historical ceremonial sites which Suaka has restored and keeps maintained in the southern peninsula. After taking up my research visa in April 1986, I spent the first three months studying South Sulawesi archaeological materials held in museums in Jakarta and Ujung Pandang, as well as accompanying archaeologists from Indonesia's National Research Centre for Archaeology (Puslitarkenas) and Suaka on field trips to Selayar and the adjacent mainland.

These preliminary activities gave me an essential background with respect to appreciating the landscape of the South Sulawesi lowlands and the range of archaeological resources which could be expected. But as one most useful outcome, I realised that the sheer archaeological riches of the South Sulawesi lowlands precluded any attempt to add substantially to the available database over too large an area. Far more value could be expected from intensive study within a small areas, even though this entailed reliance on the literature, or rather the lack of it over most of the area, as regards a general archaeological perspective on the Bugis and Makassar.

In the end only one short survey was undertaken, a survey of the key historical sites associated with the Bugis kingdom of Soppeng (Kallupa et al., 1989). The project was prompted by the availability of Ian Caldwell who was then in South

Sulawesi on fieldwork, and tied in with a grant from the Myer Foundation earmarked to support some discrete sub-project complementing the main body of my fieldwork research.

The grant from the Myer Foundation also funded what was originally planned as a sub-project mapping greater Gowa's fortifications, co-directed by Sonny Wibisono of Puslitarkenas. The translation of his methodology for Selayar to the fortifications sub-project constituted the springboard for my own fieldwork procedures (5.5) when the sub-project grew into an intensive archaeological survey of Gowa.

The "Gowa survey" covered the months between August 1986 and January 1987 plus some final surveys in June 1987. The intervening months embraced the height of the monsoon, followed by the lead-up period to the Indonesian General Elections (March to May 1987) during which time foreign researchers were barred from conducting fieldwork beyond provincial capitals. During these months I also applied for a six-month extension beyond the original expiry date of my research visa in April, to carry me beyond the General Elections, but instead received three sequential, month-long extensions. Combined with a three-month extension which was finally approved in June, the six months I had requested were indeed granted. But by June the uncertainties of my status had worn down my endurance, particularly owing to the disruption of some further funding which I had been expecting. In addition SSPHAP's fieldwork could now be wrapped up after completion of the main outstanding survey of Tallok (12.2), because the months in waiting had been spent documenting the archaeological remains collected during survey.[1]

Cultural resource surveys such as SSPHAP have a responsibility to report all finds, but in this case it must be balanced against producing a thesis argument and fitting inside a thesis framework. Hence I do not have the

[1] Both the Gowa survey and the documentation of the curated materials involved an enthusiastic team whose regular participants included Karaeng Demmanari of Suaka; Iwan Sumantri of Universitas Hasanuddin; Agustiawan, A. Said Cam and Budianto H. (students of archaeology within Sumantri's department); and Dubel Driwantoro before he joined Puslitarkenas.

opportunity here to cover all of the sites, and will report the remainder separately (Bulbeck, in prep. b). Here my site reports concentrate on detailing the archaeological basis of Gowa and Tallok. In addition, high-fired ceramics (or tradewares) are so critical to my site interpretations and general chronological scheme that I have placed enormous emphasis on their study (Appendix B). SSPHAP's large body of data on bricks (Appendix E) and Islamic grave styles (Appendix F), and small collection of human bone, are also described in detail. Stone artefacts (which are a valuable source of information on the landscape) and metal artefacts are, however, described only as unanalysed, individual finds (Appendix G). In particular local earthenwares receive very scant attention, not because they lack importance, but because they encompass issues of chronological, technological and spatial variability which cannot be addressed here.

5.2 Scope of the Gowa Site Survey

To take best advantage of the rich textual evidence, the objectives of the site survey, and the land surface finally covered, were geared towards answering specific questions raised by the Makassar texts.

One of the main objectives was to locate the historical toponyms. Many of the *Gelarang* communities, karaengships and even the smaller polities discussed in Chapter 4 had not been clearly located before SSPHAP's survey, which obviously would have debilitated the basis for historical interpretation. Moreover, SSPHAP was specifically geared towards locating toponyms associated with the origins of Gowa and Tallok (Figure 2-2). Any community or polity explains its origins largely as a function of how it perceives its legitimacy (e.g. Vansina, 1985). The archaeological record has the capacity to distinguish between historical memories (including those netted by the texts from preliterate historical memories) and subsequently elaborated origin myth. The exercise is important not only to identify apparently reliable history, but also to know which events, though dressed up as legend, are not amenable to allegorical interpretation.

As no intensive survey within the subdiscipline of historical archaeology had been carried out in Indonesia, let alone South Sulawesi, before SSPHAP's survey, I had little idea of the precise scale of archaeological evidence which could be expected, or the inferences on social organisation and settlement patterns which might result. However, I was aware that anthropological archaeology (e.g. Flannery, 1976a; Gibbon, 1984) operates on a systematic documentation of the sites at as fine a grain as possible, which limits the amount of terrain which can be reasonably covered.[2] In particular, to avoid "boundary effect" problems (Hodder and Orton, 1976), I adopted the policies of continuous survey between the loci of crucial historical interest, and bracketing these loci within "buffer zones" apparently devoid of historically crucial sites. In the end substantial progress was made in the archaeological dcoumentation of three critical themes in historical reconstruction.

Fortifications. The fortifications sub-project determined the extent of the survey along the coast. Makassar entrepôt was guarded by a continuous line of fortifications between the inlets at Tallok and Aengtua (see Figure 5-1). Further south Galesong was also reportedly fortified (Andaya, 1981:88), and southwards again lies Sanrabone fortress (Ibrahim, 1985). Ideally SSPHAP would have surveyed the entire coast from Tallok to Sanrabone. However, the land between Tallok and the mouth of the Jeknekberang is now fully urbanised and any surface archaeological remains have probably been destroyed. Also, time ran out before the coastal survey could be extended south of Galesong to connect with the Sanrabone survey. Filling this gap, as well as recording oral reports of early burial grounds within Ujung Pandang's urban areas, were among the projects I had hoped to do after the General Elections.

Early Gowa toponyms. The centre and north of the intensively surveyed area (Figure 5-1) include sites which match most of Gowa's early toponyms, including those of

[2] Although I surveyed a more extensive area than I can report here, this does not mean that the ensuing perspectives from a wider survey would not have refined the level of my interpretations.

Gowa's "legendary phase" (2.5.2). Extension of the survey to Bontomanaik (see Figure 5-2), which circumstantial evidence identifies as an important toponym (9.7), was another of the projects in my application for an extended research visa.

Changes in the behaviour of the Jeknekberang River. During his second supervisory visit, Peter Bellwood pointed out that the Jeknekberang River had stolen the Gumanti headwaters, and recommended survey along the Jekenekberang to investigate the issue (see Figure 5-1). This survey should have been complemented by a transect along the Gumanti, which again was listed in my application for an extended research visa.

5.3 Modern Maps and Related Images

5.3.1 Geomorphological aids

To recover and interpret larger types of sites such as settlements and agricultural fields, archaeologists now regularly use aerial photography, including false-image photography (e.g. Lyons and Avery, 1977; Dunnell, 1980; Parry, 1977, 1982, 1987; Brookes and Johannes, 1991). These resources are available in scales up to 1:20k for some parts of South Sulawesi, but only in scales of 1:50k and smaller for the Gowa survey area (Moss and Raimadoya, 1985). I purchased 1:250k Landsat images covering most of South Sulawesi, and I also photocopied the relevant 1:50k black-and-white air photographs made by the FAO in 1976 and held at the Bogor Centre for Soil Research. At these scales the images are more useful in geomorphological interpretation than in archaeological survey.

The 1:250k scale of the geological map of Selayar and the southern peninsula mainland (Sukamto and Supriatna, 1982) is too small to display every minor surface geological feature, and I have some additional observations to note when relating the site clusters to local geomorphology (Chapters 6 to 12). Reproducing the geological map for Sulawesi's southwest corner does however illustrate the broad geological basis underlying my main survey area (Figures 5-1 and 5-2). The Camba Formation, comprising Miocene volcanics mixed with uplifted marine sedimentary rocks, either underlies the study

area or crops out as low rises in the west to high peaks in the east. An extensive coastal plain, deposited by the Jeknekberang River and its ancestors, stretches from the Tallok inlet in the north, to where the coastal plain abuts an outcrop of early to middle Miocene Tonasa Formation limestones in the peninsula's southwest corner (Sobur, 1984/85). The Baturape-Cindako Volcanics were deposited by a lava flow from a volcano which had erupted in the late Pliocene near the Jeknekberang's headwaters. The major outcrop of these volcanic deposits on the southwestern coastal plain closely follows the course of the Jeknekberang River, suggesting to me that both features follow a minor geological fault, and that the Baturape-Cindako Volcanics may even have flowed down the valley of the Jeknekberang's late Pliocene ancestor. Tectonic activity continued during the Pleistocene with the formation of the Lompobattang volcano (Figure 1-4). The southwest peninsula has been tectonically stable during the Holocene (Sukamto and Supriatna, 1982).

The southwestern coastal plain owes its complex if gentle relief to factors such as local ponding effects created by the outcrops, the etching of deeper river valleys during periods of low sea levels (10.1), and remnant floodplain features deposited by the Jeknekberang's Pleistocene and Holocene ancestors (Sobur, 1984/85; 11.1). SSPHAP'S "toponymic sites" (Figure 5-2) occurred most frequently atop modern levees, former levees and other raised alluvial remnants within the coastal plain, or along the Camba Formation and Baturape-Cindako outcrops where they border alluvial plain (Chapters 6 to 11).

5.3.2 Available land-use maps

The most useful land-use maps result from the surveys which the Netherlands Indies *Topografische Dienst* carried out between 1914 and 1931 and published between 1921 and 1933. The service surveyed the whole peninsula using a 1:50k grid, in some places further divided into 1:25k quadrants. The 1:50k maps were reproduced in English by the U.S. Army during World War 2. These maps are remarkably detailed in their topographic and land-use information, as well as toponymic

information such as the names of the settlements and Dutch administrative divisions. Figure 5-3 shows the 1910s land-use patterns for my intensively surveyed area.

In 1969, before the various aerial photography projects were undertaken in South Sulawesi (see Moss and Raimadoya, 1985), the Indonesian Department of Internal Affairs prepared 1:50k land-use maps of South Sulawesi.[3] They retain the grid system used for the Dutch maps and bear a remarkable resemblance overall, suggesting that the 1969 maps do little more than edit the Dutch maps with the help of some cursory fieldwork. Among the main observable changes, the Indonesian cartographers had plotted the new administrative boundaries, annotated the rice fields according to whether the harvest occurred once or twice annually, removed most of the toponymic information, and indicated some enlargements to the area under settlement, particularly along main roads. Accordingly, during SSPHAP's fieldwork we used both sets of maps and annotated them according to the often quite different geographical situation we observed, to produce a best approximation to the landscape we were surveying.

Comparison of early 20th century land use with the geological map demonstrates the geomorphological basis of the Makassar land-use patterns within the study area (Figures 5-2 and 5-3). Apart from the Tallok inlet, there is a general shift from wet rice land, studded with settlements and gardens on raised surfaces, within the coastal alluvial plain, to a pattern of much sparser population supported by mixed gardens or dryland farming in the outcrops and foothills. We can also observe an apparent tendency for SSPHAP's sites to fall either within or next to the 1914 settlements (Figure 5-3).

5.4 The 1693 Dutch Map

5.4.1 Mode of preparation and accuracy

SSPHAP's archaeological survey has the unusual advantage of a

[3] At the time of my fieldwork these were distributed by the Indonesian Department of Agriculture.

detailed map depicting the settlement system under study. In 1693, spurred by the complaints of Gowa and Tallok concerning the loss of their former lands, the Dutch East Indies Company (VOC) in Fort Rotterdam drafted a map of the South Sulawesi peninsula. Batavia had ordered that the map show the lands occupied by the Makassar people, the lands now belonging to the VOC, and the lands formerly owned by the Tallok sultan (Abdul Kadir) and his forefathers (Andaya, 1981:264-5).

Fort Rotterdam produced a map whose remarkable detail extends to many places where surely no European had set foot. The Dutch, who were the unrivalled cartographers of the period (Reid, 1981:22), could have used their own observations to draft a skeleton map showing the coastline and coastal rivers, some or all of the mountain chains, and the settlements near Fort Rotterdam. Further details could have been supplied by Bugis and Makassar informants. Indeed there were probably Bugis and Makassar parties competent to assist the Dutch throughout the exercise, since a local interest in cartography extends back to at least the 1640s when Sultan Mahmud had acquired an enviable collection of globes and atlases (Reid, 1981:21-22). Confirming the latter suggestion, the map's depiction of the peninsula's southwest corner would appear remarkably accurate.

5.4.2 Matching toponyms

I found I could match over 150 of the 1693 with the modern toponyms, particularly in the area between the Bonelengga and Cikkoang rivers which I know reasonably well (Figures 5-5 and 5-6).[4] A small percentage of these matches may be spurious, owing to the somewhat variable legibility of my photographs of the 1693 map, and the point that certain Makassar place names appearing on the 1693 map (e.g. Bontomanaik, Bonto Tangngna) recur widely in the modern landscape. Nonetheless the correspondence is close enough to suggest that the 1693 map can be used to confirm the identification of particular historical toponyms with particular sites.[5] Indeed the 1693

[4] For the sake of simplicity, I show the Dutch 1693 toponyms by their modern equivalent spellings.
[5] Or to identify old administrative districts, as with Manuju (see Figure 4-2).

map locates quite a few important historical toponyms which have only survived in some other form, such as the 1693 kampung called Bori Sallo whose name is now restricted to a mountain, or toponyms which appear to have disappeared altogether such as Katingang, Batu-Batu and Mangallekana.

5.4.3 Drainage patterns

Figure 5-4 compares the modern drainage systems with those on the equivalent section of the 1693 map. The complex anabranches of the 1693 rivers may look improbable, but the modern rivers exhibit the same pattern where they meander through coastal alluvial plain. The 1693 river systems are matched in sequential position and approximate form by the modern Labakkang, Sangkarak, Maros, Bonelengga, Tallok, Jeknekberang, Sanrabone, Cikkoang and Alluk rivers.

Given the general agreement, where the 1693 map does sharply diverge may accurately reflect the old situation. Note how the main river on the 1693 map bifurcates into the Garassik and Sanrabone rivers, and the latter then anastomoses with the Cikkoang. Today the Gumanti River, i.e. the upper Sanrabone River (Figure 5-1), originates within the coastal alluvial plain where the Jeknekberang[6] bends sharply northwestwards, cutting through Baturape-Cindako volcanics.

The Gumanti (Sanrabone) had clearly once taken a far greater discharge. Numerous remnant river channels issue from the Gumanti (Figures 5-1 and 5-4), e.g. the one which today loops from the Gumanti River towards Parappa and Mangindara, but which was apparently a river in 1693 (Figures 5-5 and 5-6). The 1693 drainage system fits the late 17th century description of Polombangkeng as a fertile and populous area (Andaya, 1981:194,264), whereas today the corresponding area of Takalar is known for its aridity, overpopulation, and inability to produce its own rice requirements. Thick deposits of river gravels underlie the Sub-BPT Gowa station on the banks of the Gumanti (Brian Warren, pers. comm.).

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[6] According to my co-worker Iwan Sumantri, the river's modern name means "knife river", from the Makassar "berang" which is probably cognate with Indonesian "parang".

The matter has been confirmed through a visit by Peter Bellwood and myself to the point of bifurcation which, as shown by the 1693 as well as the modern map (Figures 5-5 and 5-6), was immediately downstream from Lassang. At this point, called Bissua, the Jeknekberang makes a V-shaped valley approximately ten metres deep where it has cut into the soft volcanic rock (see Figure 5-2). A stone-and-cement lock in the bank, reportedly built by the Indonesian government in 1971 when it contemplated an irrigation project here, marks the point where the present valley intersects with the former valley. The old valley, depicted as an intermittent on the Dutch land-use maps, reportedly still receives some discharge from the Jeknekberang during extreme floods. It is surfaced with sands which occasionally break apart to reveal a substratum of gravels, both remnants of the much greater discharge which had once prevailed. It cuts southwest across the landscape of alluvial deposits before becoming the Sungai Gumanti at "Sub-BPT Gowa" (Figure 5-2).

According to local reports, the remnant channel was the original river which flowed down to Sanrabone, and both the remnant and modern channels were active "during the time of the Gowa kingdom". The latter report would indicate the approximate date of headwater capture rather than a phase of two equally active main channels, because the situation would have been unstable and hence short lived. The discharge of the Jeknekberang in the vicinity of Bissua exceeds 100 cubic metres per second during the monsoon peak (Sobur 1984-5:15), and the prevailing land surface slopes approximately six metres per kilometre downstream from Bissua. So taken at face value, the 1693 map implies that the nick point of the river called the Garassik had cut back through the soft Baturape-Cindako volcanics, and articulated with the main river draining the Gowa highlands no earlier than the late 17th century. However, this could have occurred considerably earlier, as the 1693 map could depict what was already a memory. Hence the evidence reviewed here indicates that either (i) the Garassik had stolen the Gumanti headwaters before 1693, or (ii) it was then in the process of doing it.

5.4.4 Makassar settlement patterns

The 1693 map depicts high densities of settlements along the coastal alluvial plain and the valleys immediately east, and lighter densities in the mountain chains and "Turatea" (Figures 5-5 and 5-6). This apparent emphasis on settling the coastal plain accords with the modern population densities and the available data on Makassar historical archaeology (13.3.2). Furthermore Gowa, Tallok and hinterland Galesong appear to have been less densely settled than Siang, Maros or Polombangkeng in 1693 (Figure 5-5). Unfortunately, SSPHAP's survey was not extensive enough to test this important suggestion.

If we compare the 1693 Garassik River with its modern counterpart, the only notable differences are that Palangga appears on opposite sides of the river, the Jeknekberang shows a straighter course than that of the Garassik, and the modern Jeknekberang delta has prograded considerably from the 1693 position. True, the order of the toponyms along the river is not totally consistent between the two maps, but the discrepancies do not evince any particular pattern. The few disagreements between the 1693 course of the Garassik River and the Jeknekberang's course through the coastal plain could be due to minor errors in the 1693 map, minor settlement relocations, or localised lability in the river's course.

5.4.5 Geopolitical divisions

Although the 1693 map divides the southwestern coastal plain into administrative areas (Figure 5-4), it would be rash to assume that these prevailed at any time preceding the Makassar War. When Gowa signed the Bungaya Treaty, Gowa ceded the lands which the VOC had conquered during the war, from Bulo-Bulo to Turatea and on to Bungaya (Andaya, 1981:306). As it turned out Bulo-Bulo and Lamatti, Gowa's one-time allies to the immediate south of Bone, had been handed over to Bone by 1693 (Andaya, 1981:Map 9) - presumably because they were the direct conquests of the VOC's Bugis allies (Andaya, 1981:85-86) or because of their proximity to Bone. As regards the coastal stretch which the VOC retained, its partitioning

into Bulukumba, Turatea, Polombangkeng and Galesong (Andaya, 1981:Map 9) would reflect how the Dutch wished to administer their acquisitions. Fortunately, the changing geopolitical boundaries of Gowa and its neighbours prior to the Makassar War can be reconstructed in considerable detail (13.3.3).

5.5 Implementing the Gowa Survey

5.5.1 The target sites and universal sampling

On advice from my Puslitarkenas sponsors I undertook mto record only surface phenomena, including those on vertical exposures, without recourse to excavation (Bulbeck, 1985). This was a fortunate eventuality, because the reconstruction of a former, dense settlement pattern over a large area would impose an impossible workload if the exercise were to be based on excavations (e.g. Snodgrass and Cherry, 1988).[7]

Accepting that the phenomena available to SSPHAP's database consist in some sense of "surface archaeological sites", we then face the issue of which universe, if any, they represent. The issue of representativeness is not just a statistician's pedantry. Ignoring it can in extreme cases lead to the spurious assumption that the cited examples are rare and special, as in the inferences on the Bugis past which Pelras (1977) draws from two undated, poorly described, possible archaeological sites. The more common fallacy, however, is a tacit assumption that the studied cases are representative of the phenomenon under review. Such an assumption can lead to gross self-deception unless an unbiased sample has been obtained (see Flannery, 1976a; Cherry et al., 1978).

When the research questions focus on the relationships between the studied phenomena and discrete environmental variables, then reliable answers can be efficiently achieved through discontinuous survey, employing stratified random sampling or some other probabilistic technique (e.g. Haggett et al., 1977). However, I am interested in the sites' wider

[7] In addition, negotiations to excavate in Indonesian require considerable prior organisation and expense, especially when managed by foriegners.

spatial interrelationships, and these can be seriously distorted by the bounded survey units which discontinuous survey imposes. The wider spatial patterns may be larger than the survey units, or dissected by the survey boundaries, or misrepresented owing to the lack of a still wider surveyed context (Hodder and Orton, 1976).

Furthermore, the decision to sample probabilistically necessarily means that examples known by other means cannot be formally included in the analysis. Let us consider the classical case in this line of argument, the so-called "Teotihuacán problem". Based on the results of the exhaustive archaeological survey of the Valley of Mexico, Mayer-Oakes and Nash (1964, 1965) simulated a series of probabilistic surveys which all managed to "miss" the major site of Teotihuacán. Of course, any archaeologist working in the Valley of Mexico could hardly fail to be aware of Teotihuacán (Flannery, 1976b:159). But this does not address the problem of how to include Teotihuacán, or any other capital city of a multi-tier settlement hierarchy, inside the context of a partial survey. Inclusion exaggerates the rôle or the frequency of the outsized site or sites; exclusion leaves the settlement system uncapped.

The methodological problems discussed above can be formally addressed only through universal sampling which is both continuous and representative. To be sure, I could have defined my universe of relevant sites as the fortifications and the historical toponyms - the sites whose recovery essentially determined the thrust of the survey. But this approach would have left the sites devoid of any wider context, and would not have remotely approached a settlement pattern study. On the other hand, an attempted universal recovery of the former settlements would have faced insurmountable obstacles. Among them can be cited (i) the logistic difficulties of surveying the luxuriantly vegetated and periodically inundated land-use zones which constitute so much of the survey area (Figure 5-3); (ii) the extremely poor understanding of the spatial and chronological variation of Makassar earthenwares; (iii) the impractically small area which could have been surveyed within the available time

frame, especially given the above-mentioned obstacles; (iv) the theoretical difficulty that the recorded "sites" may more closely reflect patterns of modern exposures rather than the locations of former settlements; (v) the distinct possibility of a dispersed rural settlement system such as prevailed in the 1910s (Figure 5-3), in which case the target sites could have reached down to individual houses; and (vi) the methodological difficulty of integrating sites observed from surface remnants with the many sites readily locatable by another means altogether.

Here I refer to Makassar cemeteries characterised by east-west oriented skeletons buried with gravegoods, a tradition which was only gradually phased out after greater Gowa's adoption of Islam in 1605. These sites have been systematically looted since the 1930s (Hadimuljono and Macknight, 1983) and so the vast majority must have been discovered by now. Looting has been recently outlawed (even if hardly stopped everywhere). Nonetheless information on looted sites is obtainable from those who have been active in the trade or from the general inhabitants at the sites. Looting of course constitutes a regrettable loss of cultural resources, but the amount of formal archaeological work required to reduplicate such a body of sites defies contemplation.

However, SSPHAP's main period of historical interest continues to the Dutch colonisation of Makassar rather than greater Gowa's adoption of Islam, and so suitably-dated Islamic burials (i.e. those of the 17th century as an operational definition) are as relevant as pre-Islamic burials. In Indonesia, Islamic burials should be oriented north-south with the corpse's position ideally marked by a permanent structure. In practice the markers can disintegrate or be restored according to later tastes, so that even if the 17th century Makassar styles had differed uncompromisingly from later styles, many cases would be unrecognisable (see Appendix F). Hence circumstantial evidence (such as proximity to pre-Islamic cemeteries) was just as important as grave styles in deciding whether or not an Islamic graveyard could be dated to the 17th century (Chapters 6 to 12).

Islamic cemeteries also served as a crucial introductory stage in SSPHAP's general survey procedure. Upon entering a new area, we drove along the motorable roads and interviewed bystanders every hundred metres or so on the whereabouts of Islamic cemeteries. The approximate antiquity of the cemetery could be gauged from visual inspection, and the venue promoted further enquiries about the past. The question "Have antiques been found here?" - a tactless enquiry up front - came within the general ambit of our interest in the local community roots. If indeed looting was reported, we asked where and what had been found. The procedure worked smoothly owing to the enthusiasm of the local Makassar for displaying their past.

On the face of it, SSPHAP's target sites were found through three distinct means: (i) local renown, identifying the main fortifications and toponymic sites;[8] (ii) inspection of the various maps dated between 1693 and 1982, in tandem with a review of previous fieldwork results (e.g. Nurhadi et al., 1980; Kallupa, 1985; Ibrahim, 1985); and (iii) the intensive survey of 17th century and earlier burial places. However, distinct avenues to site recover do not necessarily imply distinct types of sites. The fortifications were always associated with early burial grounds, and the identification of particular toponyms with particular locales depended on appropriate archaeological evidence such as suitably dated burials. In addition, as regards the sites which came to our attention on the basis of their early burials, we supplemented the mortuary evidence with the traces of directly associated domestic debris or other old remains (5.5.2). Therefore, SSPHAP's target sites can be defined as "surface archaeological remains found either within 17th century and earlier burial grounds, or within the directly associated area". These were the subject of a continuous and exhaustive survey within the intensively surveyed area, such that I believe a claimed recovery rate close to 100% is not unreasonable.[9]

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[8] Which, analogously with the "Teotihuacán case", I could not have missed had I tried.

[9] This claim of course excludes those target sites which geomorphological events have left too mauled or deeply buried

SSPHAP's survey methodology departed from textbook methodologies (e.g. Redman, 1974; Dancey, 1981) by its strong reliance on informants' reports, as widely adopted by archaeological surveys in the humid tropics. Notwithstanding the point that few local informants are also trained archaeologists, they enjoy a familiarity with their landscape, notably its historical dimensions (e.g. old place names, areas where antiques have been found), far beyond the reach of conventional archaeological survey. Where I gladly owe a debt to the established literature is its emphasis on systematic survey, as long as "system" is interpreted as a consistent, well-informed technique rather than a robotic approach to survey (cf. Ammerman, 1981:81-82).

5.5.2 Rationalising survey methodology to fit the conditions

The textbooks correctly point out that when the surface remains at a site are only partly recorded, intuitive choice by the recorders of where to survey may well lead to biased documentation. To avoid this problem, probabilistic sampling is usually recommended via transects or quadrants (e.g. Redman, 1974; Dancey, 1981). Applying this technique assumes (i) the site boundaries are already known, (ii) variability in the degree of surface exposure is either insignificant or can at least be accounted for, and (iii) the same is true for other potential biases affecting artefact recovery, such as how recently the fields had been tilled. Unfortunately none of these conditions applies to the South Sulawesi sites which I surveyed. Typically the sites were a complex maze of houses, gardens, groves, dry and inundated fields, roads and graveyards - these and the other land-use zones all presenting widely different degrees of disturbance and surface exposure. Occasionally we knew where a "site" ended when a ploughed field or other well-exposed surface was devoid of archaeological remains, but more usually the survey

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for recovery by any practical survey technique. In addition the "Gowa historical sites" finally accepted for study include a small number where evidence of occupation by the 17th century, not necessarily associated with burials, was recorded (Appendix C).

had to be stopped where the archaeologically productive area "disappeared" into unsurveyable surfaces.

To survey these sorts of sites probabilistically, firstly an attempt would have had to be made to determine the site's limits. This would have allowed simple random or systematic sampling, but the exercise might have selected only areas of nil or poor visibility, in which case there would have been no effective survey at all. Hence it would have been necessary to employ stratified random sampling tailored to cover the potential effects of land-use variability on the recordable archaeological remains, i.e. to map every land-use zone in the site, work out a suitably stratified sampling procedure from the data, and then peg out the survey units in a subsequent visit to the site. I experimented with this sort of approach at one of the first sites surveyed (11.5), and it took two people pegging out the units just to stay ahead of one person recording the surface remains.

The survey of a complex settlement system can ill afford such gross inefficiencies and SSPHAP had to adopt pragmatic measures. As a first step the sites' maze of land-use zones were treated not as impediments to survey but as the survey units themselves, a procedure also adopted by Bintliff and Snodgrass (1988a:60-63) in their survey of the Bronze Age to Roman city of Askra, central Greece. As survey units the land-use zones presented a key advantage; usually the degree of surface exposure and ground disturbance was comparatively homogeneous within any zone. Hence the site recorders detailing the artefactual content in the land-use zones could also estimate the percentage of surface exposure and note any other factors likely to affect the recordable presence of artefacts. In practice we found that the plane-table mappers could generally stay just ahead of the artefact recorders, allowing a dialogue on the nature of the remains turning up and how the survey should proceed.

SSPHAP's second step, commensurate with the theme of relating the sites to Makassar history, was to employ the social foci of the site as the spine of the survey. The foci included Islamic graveyards, places where antiques had reportedly been found, and the *saukang* where the local

community spirit supposedly resides. Prior to any mapping the survey team would traverse the general area of the site in the company of our Makassar informants so as to plan a general survey strategy. Then the main features and intervening land-use zones were mapped in such a way that our transects between the focal points incorporated those land-use zones with the best available surface exposure. Finally, further transects of better exposed land-use zones were mapped as far as the site's circumscribing boundaries - natural barriers such as rivers, unsurveyable terrain such as forest or inundated fields, or zones which proved to be archaeologically sterile.

SSPHAP's emphasis on the social foci could be described as "purposive" but not as "hunch sampling" (cf. Flannery, 1976c). Rather it amounted to systematic sampling because the same range of foci was sought at every site. As regards the choice of transects along zones providing useful exposure, this was premised on the logical redefinition of "survey" as the act of seeing the ground and not just walking over it.[10]

5.5.3 Recording the surface remains

During the survey "sites" were operationally defined as occurrences or concentrations of surveyed zones. The sites were enumerated serially by kabupaten, the zones by site, and the curated artefacts by zone. To take Benteng Tua ("Old Fortress") as an example (Figure 6-2a), a *kabupaten* boundary runs through the fort just east of the Syech Yusuf Complex and then eastwards along the main east-west road. Accordingly I identify the areas south of this border as "Gowa 1" (the first site listed for Kabupaten Gowa) and the other areas as "Ujung Pandang 10" (the tenth site listed for Kotamadya Ujung

[10] To be sure, the question remains unanswered of how representative SSPHAP's records are of the surface archaeological remains that would have been recorded in the absence of hindrances to visibility. But tackling that question would amount to a large and very expensive project, involving not only complex, stratified random sampling (based *inter alia* on modern land-use features), but also the removal of any hindrances to visibility (e.g. vegetation, asphalted surfaces and structures) in the probabilistically selected survey units.

Pandang). All curated artefacts could be individually labelled in a way that shows where they had been found, e.g. G.1.4.1 reads "the first artefact curated from zone 4 of Benteng Tua (within Kabupaten Gowa)", while U.10.133.10 reads "the tenth artefact curated from zone 133 of Benteng Tua (within Kotamadya Ujung Pandang)".

Only a small percentage of the recorded artefacts were collected. They included tradeware sherds which appeared to be particularly early, rare or diagnostic (B.5.1), stone artefacts, decorated earthenware sherds and metal remains.[11] As a standard procedure the fieldworker traversed the zone and counted the plain earthenware sherdage while assembling the tradeware sherds and other archaeological debris. The artefact recorder then classified the tradewares and other remains, labelled any artefacts to be collected, and returned the other temporarily assembled artefacts to the zone. SSPHAP's tradeware classifications and other raw data are given in Appendix D.

Sherds of local Makassar pottery were not considered a useful chronological indicator because their chronological and spatial variation is poorly understood. In contrast the tradeware sherds were readily identifiable, certainly as an assemblage even if some of the sherds were misclassified, and common enough to form the basis for dating the sites. During the Gowa and Soppeng surveys approximately 7000 tradeware pieces were either collected or photographed, and 42,980 pieces were identified overall.[12] Other main phenomena relevant to interpreting the sites included descriptions of the *saukang* and Islamic graveyards, evidence of looting (e.g. the number of remnant looter's holes), and traces of fortification. In addition, the soil was tested at sites where a geomorphological perspective seemed important.[13]

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[11] Occasionally, complete tradeware assemblages were curated to check the reliability of the identifications made in the field.

[12] The age range spans the 11th to 20th centuries, but oly those at least as old as the 17th century represent the development and efflorescence of Gowa.

[13] Soil colours were recorded using the Munsell (1975) charts, and are reported in terms of the Munsell soil clour categories. Unless otherwise stated only moist soil samples were tested.

5.6 Converting the Data into a Form for Analysis

5.6.1 Analytical definitions of "Gowa historical sites"

The conceptual definition of a "Gowa historical site" hinges on evidence of 17th century or earlier burials, but includes directly associated archaeological remains of the same time frame (5.5.1). Tradewares were not only the most abundant of the datable, directly associated remains, but also a primary source of confirmation of the suspected age of any burials. Hence site recording tended to focus on tradeware remains, and the analytical definition of "historical sites" depends more on tradewares than any other source of evidence.

Tradeware identifications made in the field are used for those tradewares which were not collected or photographed; otherwise, identifications subsequently made in the laboratory can be used (B.1). Statistical study of the identifications demonstrates four broad groups - "early", "Ming", "Qing" and "recent" groups - of which the first two are directly relevant to greater Gowa's history. When study under laboratory conditions identified a "Swatow" or earlier piece, then we had located a "historical site" (B.4). The matter is not quite as simple with pieces identified only in the field, however, because, certain of the field identifications did not prove to be particularly reliable. When field identifications had to be relied on, the "Swatow or earlier" hallmark is modified to the extent of excluding "Transitional BW" and "Ming red" pieces (B.6).

Area-sites. As well as the "fieldwork sites" (5.5.3), used to report the raw data (Appendix D), I recognise some other definitions of "site" and "sites" to accommodate interpretation. During analysis it became clear that the fieldwork sites did not all stack up against a single historical site. Some included extraneous information while others confounded two or more historical sites. But as long as a fieldwork site was recorded as two or more zones, then the zones form the fundamental unit of analysis. So we can directly translate the definition of "historical site" to identify "historical zones" - whether from their tradeware

contents, apparently 17th century or earlier burials, fortifications or other phenomena of a comparable vintage.

If the sites are to be subjected to spatial analysis, then the logical definition of a site would be packages of historical zones. Accordingly I define a Gowa historical "area-site" as a continuous or virtually continuous expanse of historical zones, where "virtually continuous" means that the zones are separated by 100 metres or less. To arrive at that criterion I considered all the truly continuous areas, whether isolated zones or truly continuous clumps of zones, and measured the distance between every example and its nearest neighbour within every fieldwork site. Grouping these distances by ten-metre intervals shows a gradual decline in the number of cases up to the 91-100 metre interval, and considerably fewer cases per interval thereafter (Table 5-1).

TABLE 5-1. NEAREST NEIGHBOUR DISTANCES BETWEEN "HISTORICAL ZONES" (ISOLATED OR CONTINUOUS GROUPS) IN THE FIELDWORK SITES

Distance Interval	Number of Cases	
1-10 metres	34	
11-20 metres	37	
21-30 metres	30	
31-40 metres	20	
41-50 metres	15	
51-60 metres	13	
61-70 metres	16	
71-80 metres	11	
81-90 metres	12	
91-100 metres	11	
----------	----------	Cut-off point
101-110 metres	2	
111-120 metres	3	
121-130 metres	2	
131-140 metres	3	
141-150 metres	5	
151-160 metres	1	
161-170 metres	2	
171-180 metres	4	
181-190 metres	1	
191-200 metres	2	
201-210 metres	0	
211-220 metres	1	
221-230 metres	2	
231-240 metres	0	
241-250 metres	2	
251-300 metres	1	
300-350 metres	1	
350-400 metres	1	

Point-sites. However, not all historical sites were mapped into zones, as with locations which had yielded antiques but which are now completely asphalted over (preventing any useful mapping or sherd collecting).[14] Further, some other historical sites cover an insignificant area or no definable area at all. In such cases the site is best represented by a point and can be called a historical "point-site".

Toponymic sites. There is yet an added complication. The largest area-sites sometimes included more than one distinct historical community as deducible from the combined archaeological and historical evidence. For instance, the virtually continuous area-site within the western wall of Benteng Tua (Figure 6-1) incorporates four Gowa historical toponyms, each associated with at least one old burial ground (Kaballokang, Lakiung, Mangasa and Bone-Bone). If sites are ever to be used to represent the distribution of former settlements (e.g. Figures 5-2 and 5-3), then even the densely packed communities need to be depicted separately. *Mutatis mutandis*, there are also cases of spatially distinct sites which need not represent more than one community, e.g. a looted area with 16th century ceramics 110 metres from an old Islamic graveyard (no recorded sherdage between them, and both covered by the same place name). To reflect SSPHAP's emphasis on using historical toponyms to pinpoint former communities, a Gowa toponymic site is defined as the coincidence of a kampung-like place name (preferably but not necessarily recorded before 1667) with evidence of 17th century or earlier remains. The advantage of having these intersecting definitions of "historical area-sites", "historical point-sites" and "historical sites" will become clear in the site descriptions.[15]

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[14] This example graphically illustrates the difficulties that can confront the attempt to locate sites by surface inspection alone (cf. 5.5.1). While my reduction of what could have been a large site to a single point is scarcely adequate, it can be qualitatively better than not having been able to note the site's former existence at all.

[15] Normally a historical site is identical with a point-site or an area-site, but a historical site can include two or more point- or area-sites, and an area-site can include two or more historical sites. These sorts of mental gymnastics are regrettable, but necessary for the present study where the settlement patterns clearly varied from very dense to

These definitions of Gowa historical sites, point-sites and area-sites differ from the definition, used during fieldwork, whereby a site was any occurrence of surveyed zones regardless of their content. Nonetheless the system used during fieldwork remains as the means of identifying and provenancing the recorded artefacts and features. Accordingly, Appendix C cross-tabulates the historical sites, historical area-/point-sites, and fieldwork sites.[16]

5.6.2 Standardised chronological histograms

The tradewares are useful not only to identify historical sites but also to date the history of tradeware-related activities. A bare summary of my much larger discussion (Appendix B) is provided here to prepare the reader for my "standardised chronological histograms", also called "tradeware profiles", when they appear in the site descriptions.

The frequencies of tradewares dated to particular 50- or 100-year intervals vary wildly, and so the site descriptions dispense with raw frequencies and instead calibrate the frequencies against the quantity of total tradewares recorded for the various intervals. As the data stand, two systems of tradeware classification should be recognised, and these are called the "fine" classes which number 31 in total, and the

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quite sparse, and where other than strictly archaeological criteria are employed in detecting the sites.

[16] The sites as labelled in Appendix C have already been briefly communicated in monthly reports to my Indonesian sponsors up to and including Gowa 89, Ujung Pandang 24, Takalar 28 and Maros 6. Ujung Pandang 25 and Takalar 30 were recorded during my last fieldwork days. With all these, the enumeration system by *kabupaten* follows the order in which I commenced work on them. (Benteng Tua is an oddity; I had labelled it Gowa 1 when working on prior collections before my own survey, but by the time I surveyed the site and realised that it crossed into Ujung Pandang, Ujung Pandang 1 to 9 had been pre-empted by other sites.) In contrast Gowa 90 to 93, Ujung Pandang 26 and Takalar 31 to 33, represent records of artefacts or notebook descriptions of cemeteries which I now accept as sites, and so their enumeration does not reflect their date of recording. Note that the sequences include some fieldwork sites which would not appear to be either historical or prehistoric sites. including Maros 1 which has been reported to my Indonesian sponsors but will not figure at all in this thesis.

"broad" classes whose number is reduced to 17. They produce quite different tradeware profiles; in particular, standardisation by 50-year intervals is carried out only with the fine classes. In the chapters describing the sites, the tradeware counts from all of the individual sites, and the site clusters too, are represented by standardised chronological histograms based on both the fine and the broad classes. The choice between them depends on the sample size of tradewares available; fine classes provide a more precise and reliable interpretation when large tradeware samples have been recorded, but the broad classes are safer whne interpreting the small sites.

5.6.3 Prehistoric stone artefacts

1811 flaked stone artefacts and seven polished stone artefacts[17] were recorded and collected during the Gowa survey (Appendix G; Bulbeck, in prep. b). The majority were found during the surveys of the historical sites, but we also occasionally came upon purely prehistoric sites which we recorded using the modern land-use zones (5.5.2). As regards flaked stone artefacts, this thesis will follow the definitions of the New South Wales National Parks and Wildlife Service (NPWS) whereby a "prehistoric site" consists of two or more artefacts all found within 50 metres of each other, and an "isolated prehistoric find" is any artefact more than 50 metres from any other (see Appendix C). The ground stone artefacts will all be treated as isolated finds because of their rarity and because they would seem to belong to a later period than at least some of the flaked stone artefacts (e.g. Bellwood, 1985). Stone artefacts will be mentioned during the main site description (Chapters 6 to 11), not least because of their possible implications for geomorphological reconstruction.

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[17] The word "polished" is used here in its technological sense, whereas a tool polished through use will be designated as "use-polished".

5.7 Reconstructing Historical Makassar Settlement Patterns

Virtually all the historical sites recorded during the Gowa survey included 17th century or earlier burial grounds.[18] This presents a logical problem for settlement pattern analysis in that settlements refer to the abodes of the (formerly) living rather than the resting places of the dead. While SSPHAP's fieldwork procedures make this dilemma explicit, it would have lain inherent in any survey of Gowa's historical archaeology. A survey aimed at living sites would have encountered the chronic intrusion of burial zones, and the difficulties in identifying debris of a domestic origin as opposed to debris derived from looted or otherwise disturbed graves.

This last point indicates that not too strict a dichotomy should be entertained between living and burial sites. In today's well-populated areas, kampungs tend to include or at least abut the community's burial ground, and the archaeological evidence suggests the same was true during earlier times (e.g. Chapter 6). This pattern of coincidence may reflect both the scarcity of ground raised above the periodically inundated surfaces, and the importance of the ancestors' presence as testimony to the land-holding rights of the descendants (cf. Bloch, 1975). In less densely populated areas, the burial grounds still apparently acted as the social foci of the settlement system, but less intense pressure on land allowed more scope for burial grounds to be sited away from the main settled areas (e.g. Chapter 8). Nonetheless the presence of a burial ground indicates the existence of a coeval community within reasonable proximity.

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[18] Twelve (area- or point-) historical sites are accepted on the criterion of suitably dated tradeware sherdage rather than the probable presence of suitably dated burials (Appendix C). Arguments justifying the acceptance of these non-target sites include: (i) the often uncertain distinction between sherdage derived from gravegoods rather than left as occupation debris; (ii) the point that some of these sties, e.g. Borong (Gowa 76), are quite important within their local context; and (iii) the association of most of these sites with sparser populations, such that they would actually be analogous to "surface archaeological remains found within the directly associated area of suitably dated burials grounds" within the densely populated areas.

In general, based on a comparison with the current use of burial areas which I observed, Gowa's historical sites would appear to correspond to a simplified rendition of greater Gowa's settlement hierarchy, shorn of its ephemeral settlements (13.3.1).

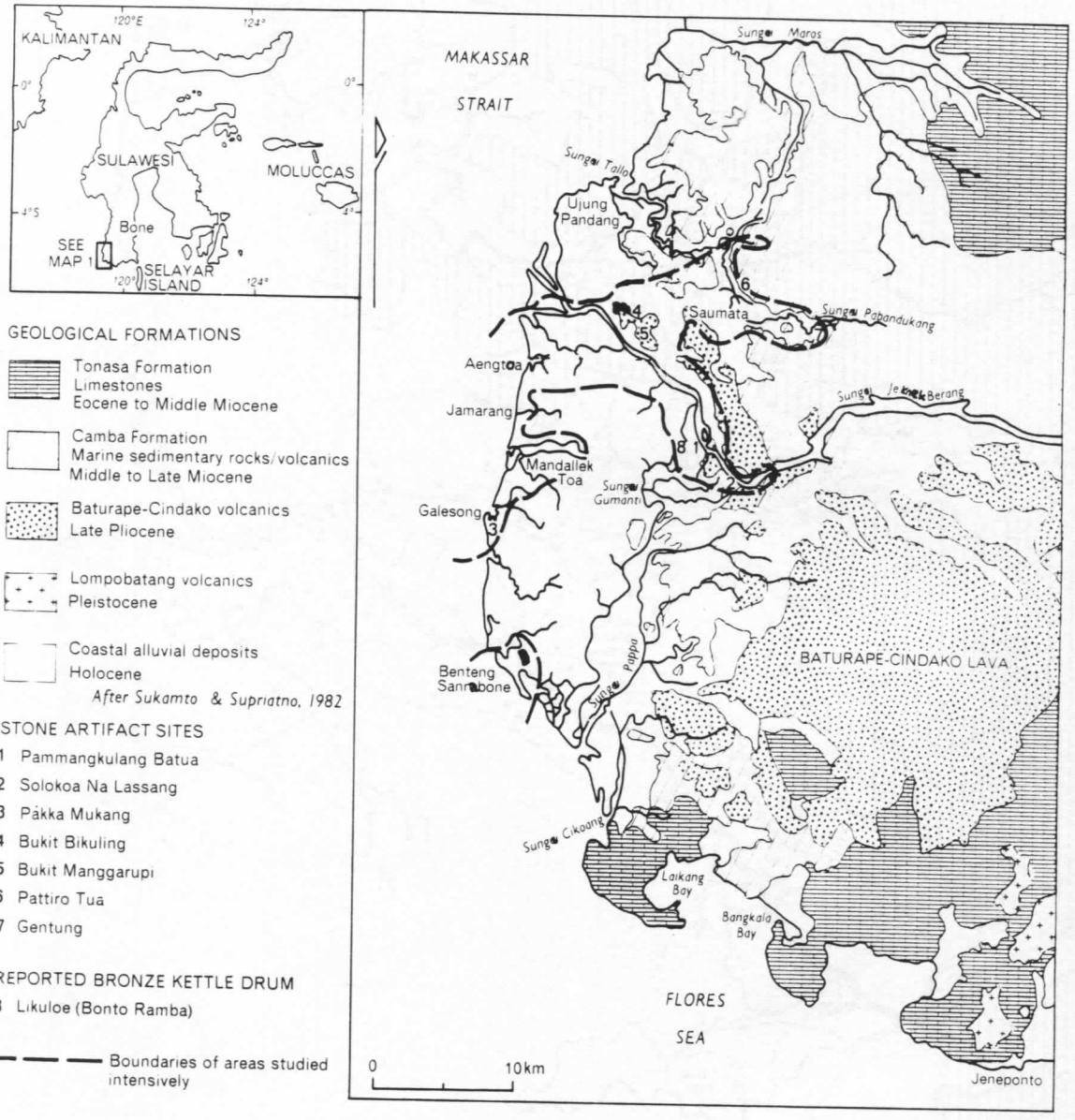


FIGURE 5-1. SULAWESI'S SOUTHWEST CORNER - THE STUDY REGION. (Adapted from Bulbeck, 1986-7:47).

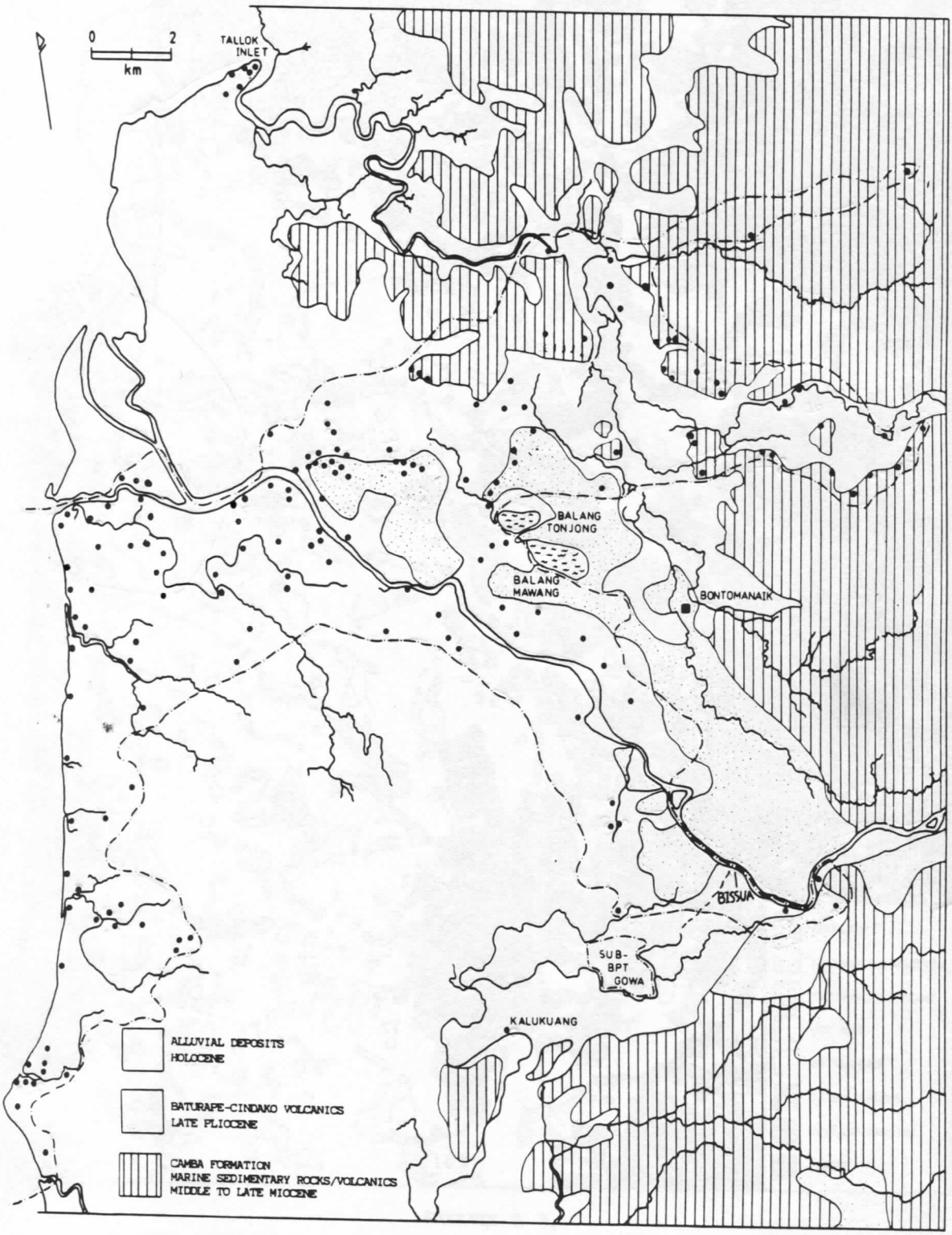


FIGURE 5-2.

SITES WITHIN THE INTENSIVELY SURVEYED AREA (DOT-DASHED) COMPARED AGAINST SUPERFICIAL GEOLOGY

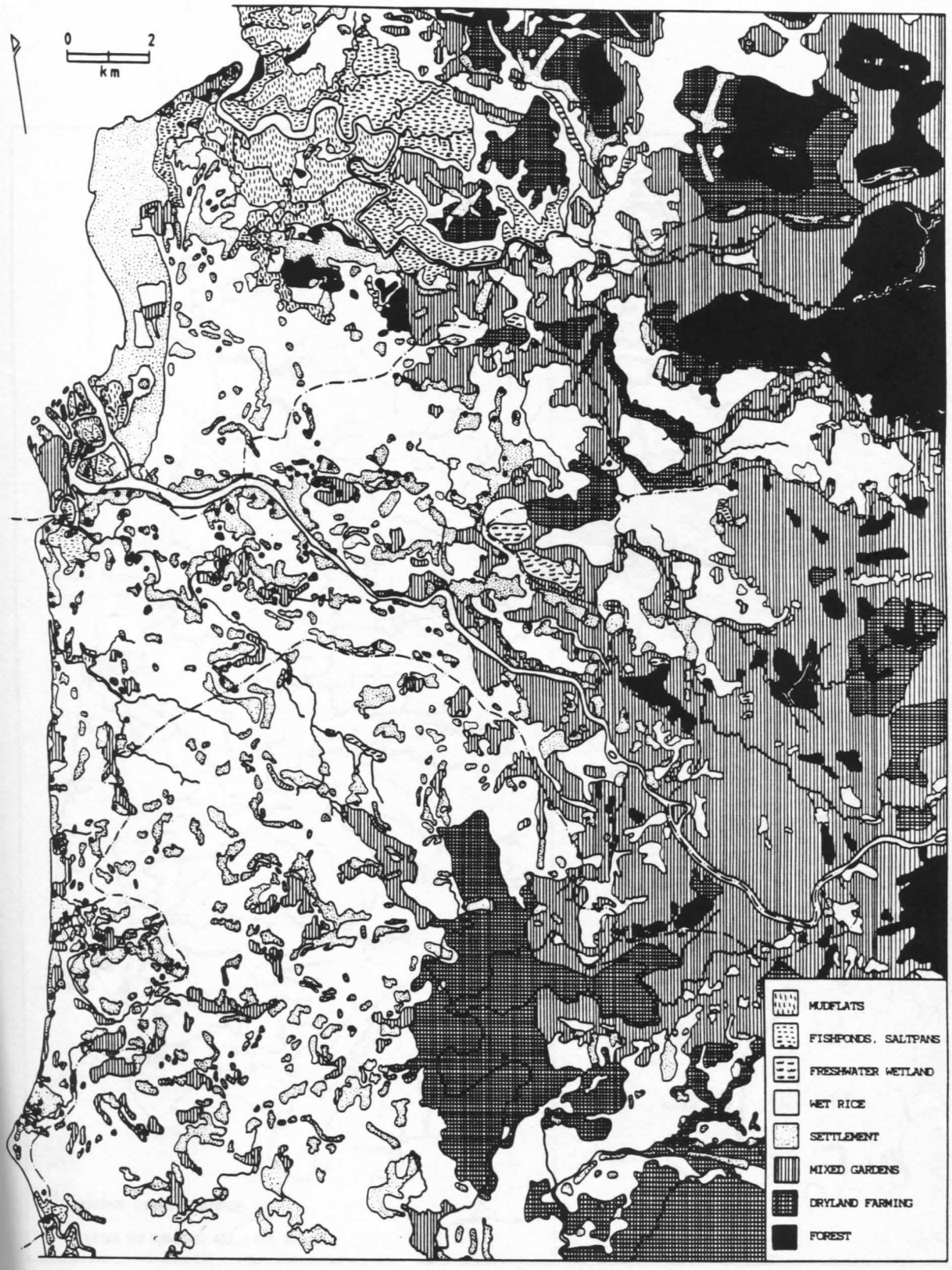


FIGURE 5-3.

SITES WITHIN THE INTENSIVELY SURVEYED AREA (DOT-DASHED)
COMPARED AGAINST 1914 LANDUSE PATTERNS

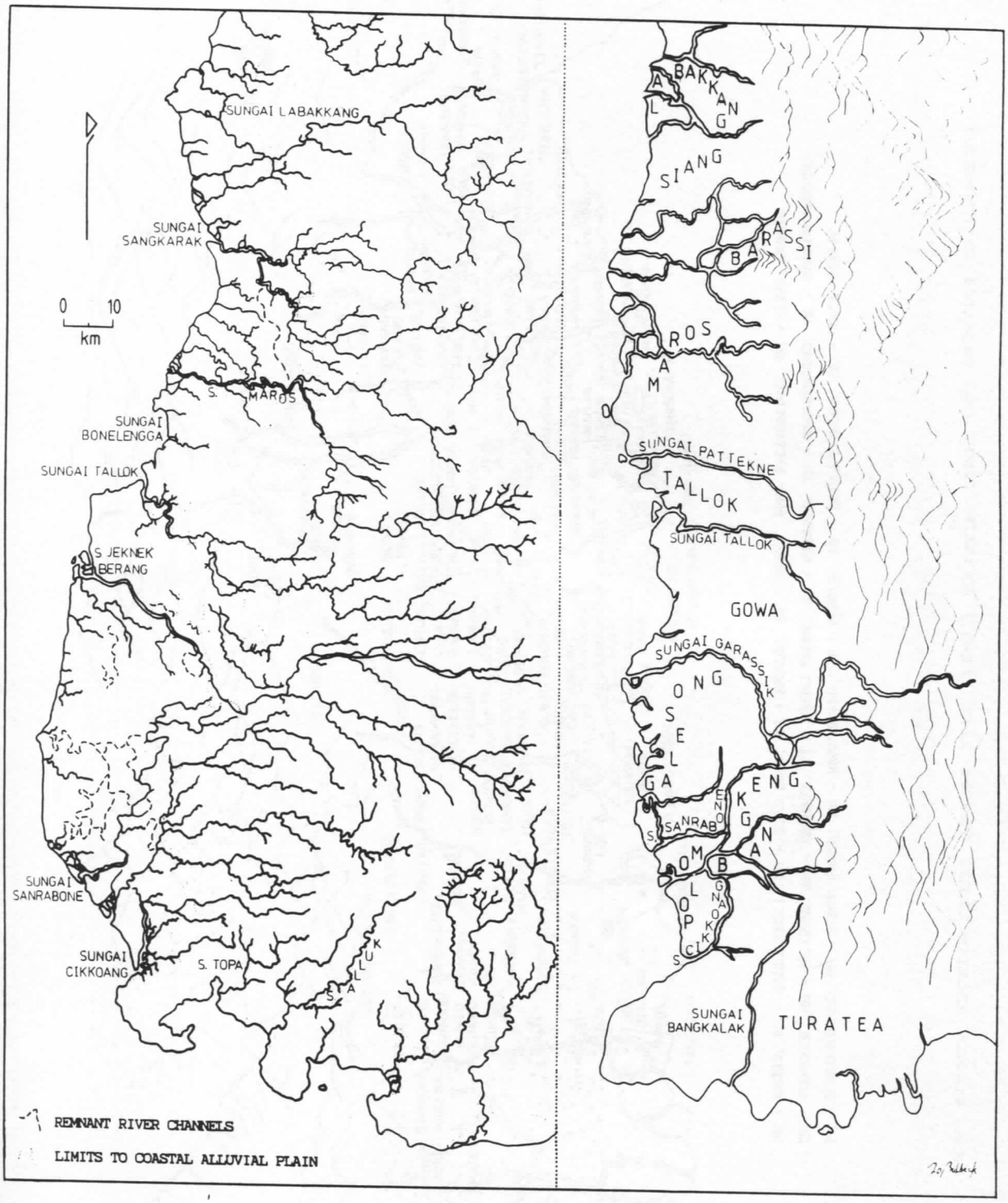
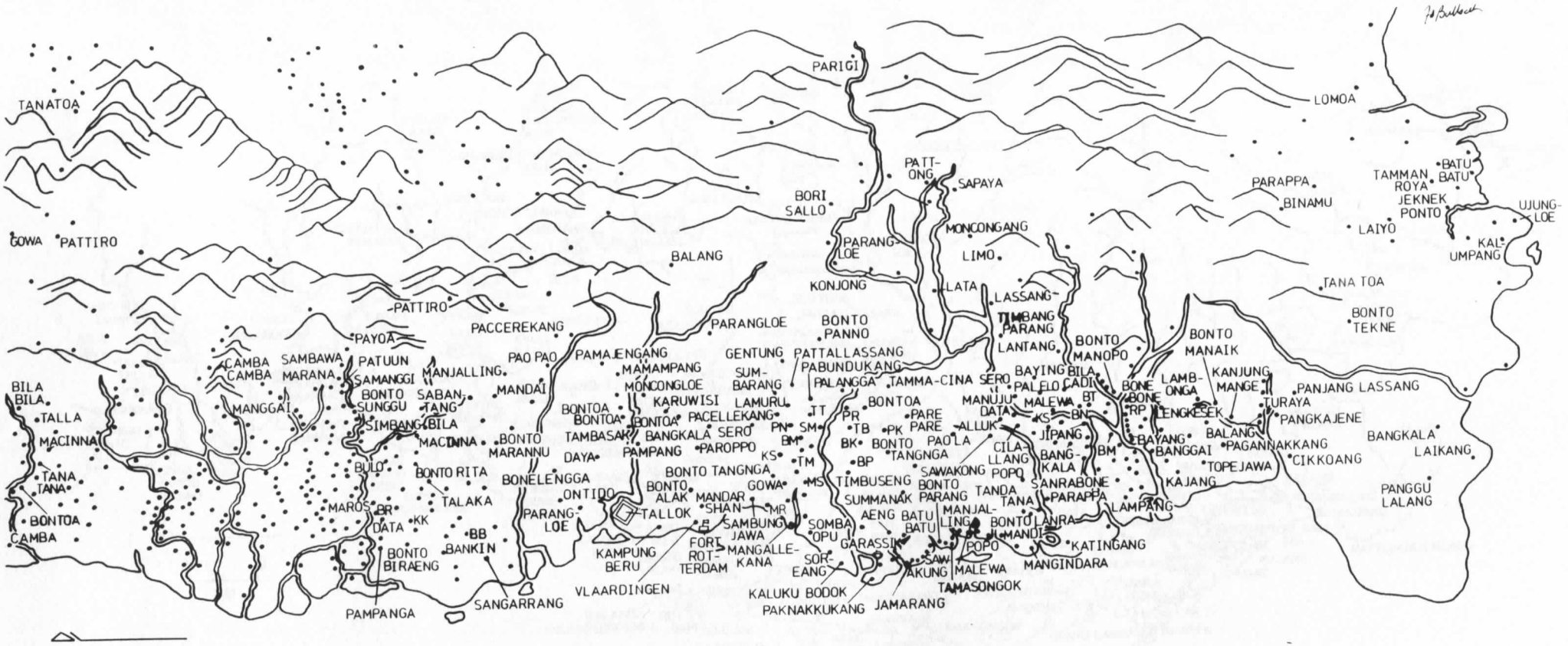


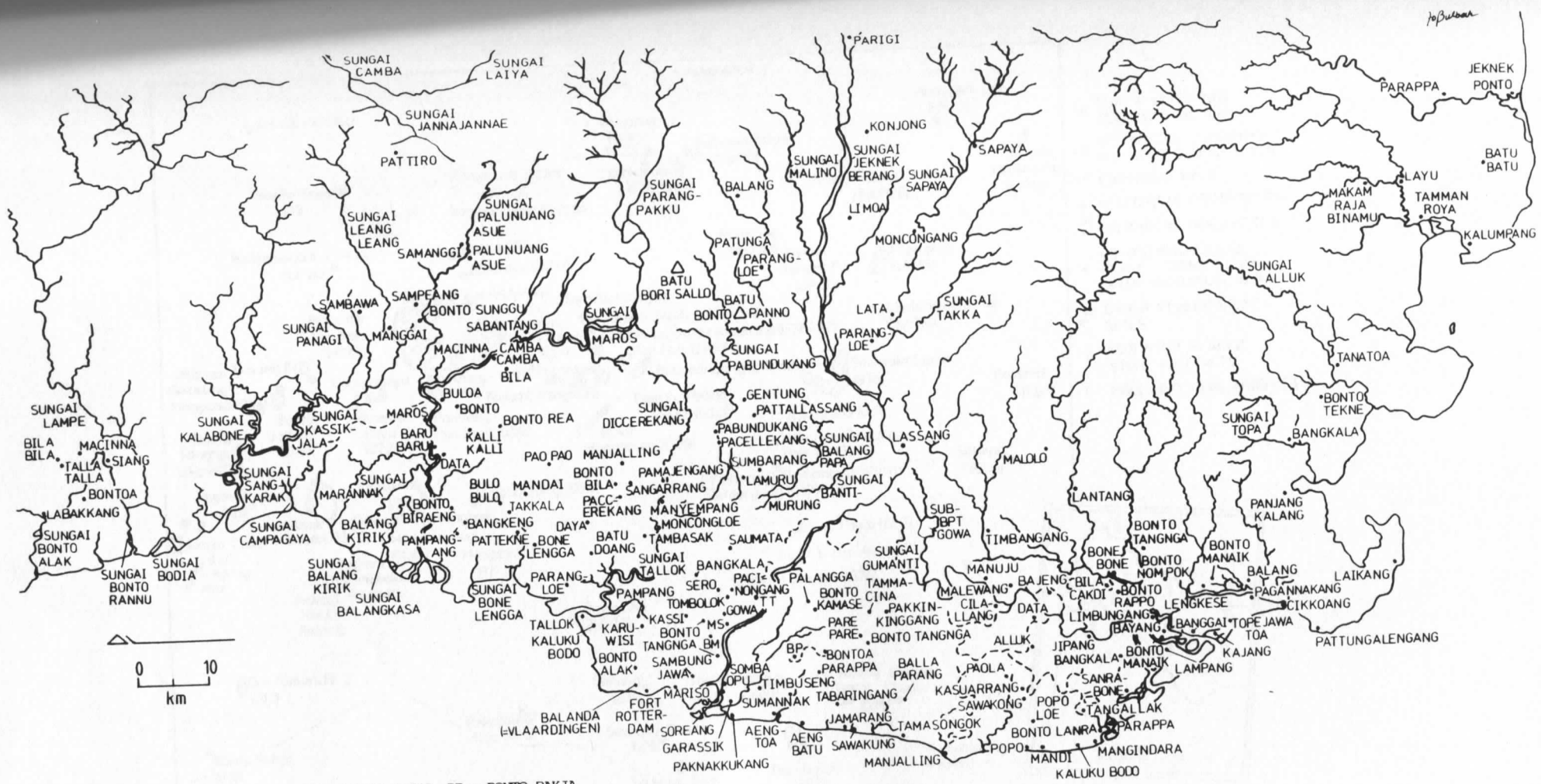
FIGURE 5-4.

DRAINAGE PATTERNS OF THE EQUIVALENT SECTIONS OF THE MODERN (LEFT) AND 1693 DUTCH MAPS OF SOUTH SULAWESI



BR = BARRO, KK = KALLI KALLI, BB = BULO BULO; MR = MARISO, KS = KASSI, PN = PACINONGANG, BM = BONTO MANAIK,
TM = TOMBOLOK, MS = MANGASA, SM = SAUMATA, TT = TAENG TAENG; PR = PARAPPA, TB = TABARINGANG, PK = PAKKINKINGGANG,
BK = BONTO KAMASE, BP = BONTO PAKJA; KS = KASUARRANG, BN = BONTOA, BT = BONTO TANGNGA, BM = BONTO MANAIK

FIGURE 5-5. TOPONYMS EXTRACTED FROM THE 1693 DUTCH MAP OF SOUTH SULAWESI



BM = BONTO MANAIK; MS = MANGASA; TT = TAENG TAENG; BP = BONTO PAKJA

FIGURE 5-6. MODERN TOPONYMS MATCHING THOSE EXTRACTED FROM THE 1693 DUTCH MAP

CHAPTER 6. BENTENG TUA (KALE GOWA)[1]

6.1 The Environment

Benteng Tua ("Old Fortress") lies around eight kilometres from the Jeknekberang mouth (Figure 6-1). It falls mostly within Kecamatan Somba Opu, Kabupaten Gowa, although the northeastern section is included within Kotamadya Ujung Pandang (Figure 6-2a). Suburban housing generally characterises the site as well the land fringing the northern bank of the Jeknekberang as far as the Gowa Kabupaten capital of Sungguminasa. Not far to the north and west of Benteng Tua, SSPHAP's surveyed area ceases along a line marking the approximate onset of comprehensive medium density housing, where site survey did not appear promising (Figure 6-1). Before this recent urban creep, the land immediately northwest of Benteng Tua, and elsewhere in the vicinity, consisted of broad expanses of wet rice fields studded or ringed by settlements on the raised surfaces, as shown by both the 1914 land-use map (Figure 5-3) and the nearly identical 1969 land-use map (Figure 6-2b).

The feature which Sukamto and Supriatna (1982) show as a single outcrop of Baturape-Cindako volcanics extending westwards to Benteng Tua (Figure 5-2) actually breaks into disconnected puddles and strands near the site (Figure 6-2a). The westernmost feature ends with Bonto Biraeng, a two-headed hill enclosed by Benteng Tua. It is also the hill closest to the coast within the whole southwestern coastal plain.

I made three tests of the low-lying soils north of the Baturape-Cindako volcanics (locations shown in Figure 6-3). Tests 1 and 2 identified the soil as clay with some silt, and slightly acidic with a pH of 6, while the northernmost, soil test 3 (Figure 6-3), identified a clayey silt with a virtually neutral pH of $6^{3}/_{4}$.

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[1] Kale Gowa ("Body of Gowa") is the name generally used by western scholars for this site (e.g. Reid, 1983a), whereas "Benteng Tua" is the name generally used in Indonesian reports (e.g. Rahim, 1975; Nurhadi et al., 1980). The latter name is preferable in the present context to distinguish the former fort from the kampung of Kale Gowa contained inside.

During the survey Peter Bellwood and myself inspected a report of shells turning up at two wells at Bone-Bone (Photo 6-1), almost at the centre of the walled area, where the Baturape-Cindako outcrop peters out at the coastal alluvial plane (Figure 6-3). By the time of our visit the wells were largely full, so we had to collect shells around the wells' rims as our sample, while our interpretation of the stratigraphy rests on informants' reports. These reports indicated that the top six metres of the soil profiles inside the wells consist of clays and silts, followed by 1$^{1}/_{2}$ metres of silts and black sand mixed with some shell fragments, and black estuarine mud and concentrated shell fragments between 7$^{1}/_{2}$ metres depth and the lowest, dry-season water table at nine metres depth. Following Heffernan's identikit (see Heffernan, 1980) and descriptions by Allan (1950) and Hinton (1972), I identified the collected shell species as *Strombus canarium*, *S. dentatus* (Photo 6-4), *Asaphis deflorata*, *Polymesoda* sp., *Batissa* sp., *Navicula subnavicularis*, *Anadara thackwayi*, *Anadara* cf. *cinneata*, and several Narissidae species. All of these shellfish pertain specifically to sandy intertidal or mudflat environments (Allan, 1950:16; Hinton, 1972:7; Heffernan, 1980:38-40), except for *Strombus dentatus* which Hinton (1972:117) describes as a rare species found in shallow water up to 30 metres depth. The sample returned an uncorrected radiocarbon date of 5800 $\pm$ 90 BP (ANU-5925). The date needs to be corrected to account for the difference in radiocarbon levels between the atmosphere (on which laboratory standards are based) and the estuarine environment where the shellfish lived. In this instance the "model ocean marine mixed layer" correction is appropriate (see Stuiver et al., 1986), leading to a corrected age estimate of 4290 $\pm$ 100 BP. This age corresponds almost perfectly with the height of the mid-Holocene transgression reconstructed for Sulawesi's southwest peninsula (Whitten et al., 1987:20).

At the height of the mid-Holocene transgression, then, the low-lying land (eight metres or less above present sea level) which dissects and surrounds Benteng Tua was apparently

estuarine, with a beach at Bone-Bone.[2] Bukit Bikuling, a nearby hillock of Baturape-Cindako volcanics (7.1.2; Figure 6-2a), contains Maros points and other microliths (small flaked stone artefacts) associated with the "Toalean" hunter-gatherer industry which lasted from around 8000 BP to around 3500 BP (Glover, 1976; Chapman, 1986). If Bukit Bikuling is a late Toalean site then it would indicate use of what would have been an island in the estuary. By the same token the edge-ground hatchet and flaked stone artefacts found on the low-lying land within Benteng Tua would date to the last 4000 years and are probably post-Toalean (Figure 6-4a; Appendix G).

The retreat of the seas after the mid-Holocene transgression would have established fresh wetlands, seasonally inundated with each monsoon, which Higham (1989:70) recognises as an ideal environment for wetland cereals such as rice. Moreover, within the historical past the headwaters of the Garassik River apparently cut back until finally capturing the headwaters of the Gumanti River (5.4.3). By at least the 17th century the full list of Benteng Tua's advantages included defensibility of a raised location, access to the coast by foot and watercraft, access to river water on a year-round basis, and an abundant rice crop nurtured by the enhanced seasonal inundation.

6.2 Recording the Site

Benteng Tua was by far SSPHAP's largest and most complex fieldwork site,[3] and so provides a comprehensive example of SSPHAP's site-recording methodology (see 5.5.2). Our initial goal, to follow the surrounding brick wall, was hindered by the razing of much of the original wall. Where the wall outline was not obvious we mapped the land-use zones along the suspected wall line, noted the presence of brick rubble, and recorded locations with exposed *in situ* bricks (Figure 6-3; Photos 6-2 to 6-6). At one point we lost the thread of

[2] Note that *bone* is "Old Bugis" for sand (Macknight, 1983:105).
[3] Nine days of fieldwork between 12 October 1986 and 1 February 1987 were spent recording the site.

the wall and surveyed zones 33 to 36 outside the old fortress. Knowing of royal graveyards and other keramat (mystically powerful) places within the fortress (Nurhadi et al., 1980), we ran transects to them from convenient places along the wall line. By zone 122 these social foci and the wall outlines had been mapped, after which we surveyed a further 60 zones to plug remaining gaps in the site's documentation (Figure 6-3). A further two "zones" were posited to accommodate artefact collections of approximate provenance,[4] giving a grand total of 184 zones. In all, Benteng Tua's recorded artefacts included 10,773 earthenware sherds and 7502 tradeware pieces, eight flaked stone artefacts, one ground-edge hatchet, one iron fragment and one coin (6.2; Appendix D).

From our survey the modern (1986) land use inside and abutting Benteng Tua can be reconstructed. The highly variegated patterns extend from wet-rice fields and brush, to housing complexes containing the densest housing at any site which SSPHAP's "Gowa survey" mapped (Figure 6-6b). Also we mapped around 3.8 km of former brick wall enclosing an area of 840,000m^2. In SSPHAP's survey methodology, not only were the survey zones mapped but also the site recorders estimated the percentage of each zone which appeared as an exposed surface (5.5.2). Therefore the surveyed area can be expressed either as the mapped surveyed surface or as the exposed surface. The 200,734m^2 of mapped zones included 141,880m^2 inside the walls, 37,515m^2 along the walls, and 21,339m^2 outside the walls, while the 142,134m^2 of exposed surface included 101,627m^2 inside the walls, 23,037m^2 along the walls, and 17,470m^2 outside the walls. The surveyed areas of the fortress can be calculated either as 141,800 plus 37,515m^2, or as 101,627 plus 23,037m^2, divided by the 840,000m^2 of fortress, i.e. 21.3% and 14.8% of the total respectively. These estimates bracket the 15%-20% range which Ammerman et al. (1978) found to be a fully adequate sample

[4] One was a collection given to us by the Kaballokang inhabitants, labelled "zone 133" (Photo 6-22 to 6-24), and the other was a collection made by Suaka within Tamalate in 1979 (labelled "zone 0"). These "zones" are included in the tradeware seriation (B.4).

after applying a variety of simulated sampling strategies to a completely excavated Masai settlement.

6.3 Sherdage Densities Within Benteng Tua

To examine chronological changes in the settlement patterns within Benteng Tua, the tradeware pieces are divided into the four clusters - "Early", "Ming", "Qing", and "Recent" - generated by the seriations (B.4). The "early" pieces are too few to warrant making estimates of densities and so I merely present their frequencies in the zones where they were found (Figure 6-4a). The densities of the other tradeware pieces, expressed as pieces/100 m^2, are calculated from dividing the number of pieces (Ming or Qing or recent) within a zone by the exposed land surface within the zone.

This figure is here used to represent density of occupation, although I acknowledge the difficulties. Firstly, factors other than the percentage of the surface which is exposed would affect the relationship between surface and subsurface sherdage contents (B.4.1), but I have no clear control over them and so I have to ignore the complication. Secondly, individual vessels rather than sherds are the preferable unit for the archaeologist using ceramic remains (Skibo et al., 1988), and while my analysis always treats cases of conjoinable sherds as a single piece, many of my zones may well be represented by two or more sherds treated as separate pieces because the sherds were not matched up. Thirdly, sherds can move owing to gravity and slopewash processes, although at least some of these effects can be accounted for by taking the appropriate observations in the field. Fourthly, Bintliff and Snodgrass (1988b) note that off-site sherdage not representative of occupation can occur as "haloes" surrounding the old settlement or as widespread "carpets" over the fields. It largely reflects the practice in which farmers systematically collected animal and human excrement, together with household rubbish, to be spread across the cultivated landscape as fertiliser. However, this practice may not have been followed at Benteng Tua, as indicated by the agricultural land-use zones within or abutting the former fortress walls (zones 62, 83, 85, 111,

119, 158, 171, 176) which contained no surface artefactual content or at most a very light presence of earthenwares. The insignificance of off-site sherdage densities in South Sulawesi, as also clear at Benteng Sanrabone (Bulbeck, in prep. b) and other SSPHAP sites, would agree with South Sulawesi's status as an area of generally high rainfall, given the strong negative relationship between average rainfall and off-site sherdage densities (Bintliff and Snodgrass, 1988b).

If we are to compare trends over time, the same density gradients should be used for the Ming, Qing and recent categories. Hence to see the overall distribution, I plotted all the Ming, Qing or recent densities from all 182 mapped zones onto a histogram with 0.1 gradients. The 0.1 gradients were joined into 0.2 gradients, then 0.3 and 0.4 gradients, to even out stochastic irregularities in the distribution. The value of "0" (no pieces) stood out, after which steps in the distribution of the densities appeared at 1.2, 3, 9 and 25. Thus I accepted the density classes 0, 0.01-1.2, 1.21-3, 3.01-9, 9.01-25, and 25+, and mapped the density classes on the site zones for the Ming, Qing and recent pieces. To extrapolate from these depictions to the whole site, the simplest procedure which gives a unique solution is to draw Thiessian polygons around the surveyed zones, i.e. to draw lines through all the points which are equidistant between adjacent surveyed zones, and assume that the best estimate of the tradeware density within the Thiessian polygon is the tradeware density of the surveyed zone contained therein. Inadequately surveyed areas where the edges of the Thiessian polygons extend well beyond any surveyed zone are shown with question-marks (Figures 6-4b to 6-5b).

The potential usefulness of tradeware densities in registering occupation can be checked by comparing the "recent" densities (Figure 6-5b) against the 20th century maps (Figure 6-6). The overall shape of settlement suggested by the tradewares certainly appears correct. It extends to details such as continuous settlement along the former western wall, a large settled area in the northeast, and a largely unsettled area in the north-central part of the site.

There are of course some discrepancies, which can be attributed to several factors. The recent sherdage not only averages out 20th century occupation but should also reflect 19th century occupation (B.4). For instance, while the reconstruction of the now-deserted "Palantikang" kampung, which is picked up even better by the Qing sherdage, can be considered a success, the technique only partly registered the 20th century desertion of the area between Palantikang and Gowa-Gowa (cf. Figures 6-5 and 6-6a). Also, the recent sherdage registers the dense housing complexes (developed since the late 1970s) with varying degrees of strength. A second factor is that a few areas were poorly surveyed. One such area is the land between the Gowa-Gowa and Bone-Bone kampungs, shown as vacant on the 1914-1916 map, and probably also unoccupied in 1986 as we found no roads leading up to it. But my extrapolated Thiessian polygons lead me to reconstruct quite dense settlement because the closest surveyed areas were quite densely settled.

Some of the settlement names recorded by the Dutch (Figure 6-6a) differ from SSPHAP's (Figure 6-6b). "Latebung" would appear be a corruption of "Lakiung". "Palantikang" (installation place) is an unusual name for a small kampung, and may have derived from its propinquity to the *Batu Pelantikan*, or installation stone of the Gowa kings, now stationed just outside the Sultan Hasanuddin Complex. Gowa-Gowa looks like the old name for Kale Gowa. I am yet to find evidence that the name "Kale Gowa" has any antiquity, and I suspect it might be a hybridisation between "Kalling" (cf. Figure 2-2) and "Gowa". The name Bonto Biraeng may still be applied to the area I recorded as kampung Mangasa. The toponym "Katangka" appears to have moved across the road into what is now Kotamadya Ujung Pandang, possibly related to the construction of high-status housing there (fieldnotes) and the military housing complex immediately behind. This change appears to relate to three others. (i) The old Katangka kampung area is now part of Bone-Bone. (ii) The area of Biseya (Bisei) has been whittled back. (iii) The name "Katangka Toa", claimed by the inhabitants living at the fort's northern bastion, would reflect their willingness to

acknowledge the Katangka label, but specifically in the context of their status as the area's original inhabitants before the housing developments.

Considering the three phases of reconstructed settlement patterns - 15th-17th centuries, 17th-19th centuries and 19th-20th centuries - we see that the middle phase looks generally intermediate between the other two, and conforms to the general pattern of increasing tradeware densities with time. The exception is Bonto Biraeng Timur where the tradeware densities appear to have decreased slightly over time (cf. Figures 6-4b and 6-5). The Ming phase, i.e. the general period when the site operated as a fort, can be characterised by a concentration of tradewares on Bonto Biraeng Timur, and two smaller concentrations of tradewares in the central east and central west parts of the fort (Figure 6-4b).

6.4 The Benteng Tua Fortifications

SG (p.26) states that Tunipalangga (r. 1547-1565) built the brick walls around Gowa (Benteng Tua) as well as Somba Opu, and that the walls built by Tumapakrisik Kallona (r. 1511-1547) had only been earthen. Tumapakrisik Kallona and his predecessors apparently ruled from Benteng Tua, whereas Tunipalangga apparently ruled from Somba Opu (Mukhlis, 1975:56-57). Benteng Tua apparently became Gowa's primary palace centre again in 1618 when Tamalate (Benteng Tua) was built (LB:89). Commencement of the new walls had probably begun by 1615 when the Englishman Cockayne recorded that 'all the whole land is making of bricks for two castles this summer to be finished' (Reid, 1981:11).[5] Although the palace at Somba Opu was rebuilt in 1631 (LB:92), the Tamalate palace remained in use until 1639 (LB:100) before finally being demolished in 1647 (LB:109). Under pressure from the Dutch, Gowa demolished the walls of Gowa (Benteng Tua) in 1670 (LB:138). According to Andaya (1981:174), by 1676 Gowa's

[5] The small discrepancy of three years could reflect a lengthy period before Benteng Tua was actually finished, or a slightly rubber chronology in the Royal Diary.

walls had been rebuilt by simply replacing the bricks[6] loosely on each other, but they were then destroyed as prescribed by an interim treaty between Gowa and Bone's Sultan Sahaduddin. However, the walls must have been still up or back up by 1677 when Sultan Sahaduddin captured Benteng Tua's walls (Andaya, 1981:184; Bulbeck, 1990). In 1694 Gowa's sultan, Abdul Jalil, relocated his palace to Datak within Gowa, i.e. Benteng Tua (LB:180). So Benteng Tua served as Gowa's fortified palace on four occasions: during (and preceding) Tumapakrisik Kallona's reign, i.e. up to 1547; 1618-1631, with secondary use until 1639; 1670-1677; and for an unknown period from 1694 onwards.

Benteng Tua's several phases as Gowa's palace suggest that the fortification remains might well evince restorations and extensions. Indeed, SSPHAP's team observed two types of wall construction based on our detailed observations at 36 stations (Figures 6-3 and 6-7). One type had a central wall made of large bricks flanked by side walls of smaller bricks, with earth packed between the brick walls. It stretched from the Kaballokang-Lakiung gate to the gate between Lakiung and Mangasa, and then from the gate between Mangasa and Kale Gowa to a point halfway along the southern wall. The most illustrative section is reproduced in Figure 6-8 (station XXXII) and the best standing profile is shown in Photo 6-5 (station XVIII). Elsewhere we recorded double walls of smaller bricks separated by earth, as illustrated at stations XXXI (Photo 6-3) and XVI (Photo 6-6).[7]

All the fort's brick walls were apparently built using clay as mortar in the "one-on-two" method which involves laying each brick transversely across two bricks in the course below. Whether the brick walls had foundations is unclear. Although the central wall extended two metres below the former ground surface at station XVIII (Photo 6-4) and 70 cm below the present ground surface to basal silt at station V, these ground surfaces might possibly be raised above their levels when the bricks had been laid. The extant wall can

[6] *Batu merah*, wrongly understood as "red stones" by Andaya.
[7] All the originals of Benteng Tua's wall sections were drawn by Iwan Sumantri. See Appendix E for definitions of "large" and "smaller" bricks.

stand as high as three or four metres above the prevailing ground surface in Mangasa, and a similar height above the external ground surface along much of the northern wall.

The brick measurements taken at the various stations can be pooled into larger samples representing the various segments of fortress wall (Figure 6-7). The figures not only illustrate the larger size of the central-wall bricks compared to other bricks, but also suggest size variation within either the large or the smaller bricks at different places along the fortress. Table 6-1 gives the full data summarised in Figure 6-7, while Table 6-2 investigates the statistical significance of the brick size differences based on one-tailed Student's t-tests.

Consider first the t-test values involving bricks used in the different types of walls (Table 6-2). The systematically larger size of the central-wall bricks stands beyond doubt; in every comparison the possibility that their larger size could be due to chance is much less than one in two thousand.

In contrast the side-wall bricks and double-wall bricks are very similar when considered as total samples. Whatever size differences are involved could be due to chance at either the five or ten percent confidence intervals. But the similarity does not cover comparisons made between the various wall segments. Whether we compare the side-wall bricks in different segments, the double-wall bricks in different segments, or the side-wall bricks in one segment with the double-wall bricks in another segment, statistically significant metrical differences emerge, occasionally at the confidence interval of one in two thousand (Table 6-2).

Further, the metrical variation appears to be clearly directional. Start at the Mangasa double wall and follow the double-wall and side-wall bricks around the fortress in a clockwise direction. Average brick length consistently decreases over the four wall segments involved, average breadth consistently decreases over the five wall segments involved, while average thickness remains stable or decreases over four of the five segments (Figure 6-7). Considering only those 24 cases (length, breadth or thickness) for which a t-test has been calculated, and using the five percent

TABLE 6-1. BENTENG TUA BRICK SIZES BY WALL SEGMENT AND WALL TYPE

	LENGTHS			BREADTHS			THICKNESSES		
Central-Wall Bricks									
WALL SEGMENT	n	$\bar{x}$ SD	Range	n	$\bar{x}$ SD	Range	n	$\bar{x}$ SD	Range
Kaballokang-Lakiung Gate	22	40.5±3.2	(35-49)	24	21.1±1.6	(18-24)	29	6.9±0.7	(6-8.5)
Lakiung	37	40.6±2.1	(35-44)	50	20.2±1.6	(16.5-23	54	7.0±0.9	(4.5-9)
Kale Gowa	27	42.7±2.1	(37-45)	35	21.1±1.0	(19.5-23)	39	7.0±0.9	(5-9)
Total	86	41.2±2.6	(35-49)	109	20.7±1.5	(16.5-24)	122	7.0±0.9	(4.5-9)
Side-Wall Bricks									
WALL SEGMENT	n	$\bar{x}$ SD	Range	n	$\bar{x}$ SD	Range	n	$\bar{x}$ SD	Range
Kaballokang-Lakiung Gate	19	23.8±3.5	(19-29.5)	36	13.0±2.1	(7.5-16.5)	38	3.6±0.5	(3-4.5)
Lakiung		---		13	14.5±1.9	(11-17)	37	3.9±0.7	(3-5.5)
Kale Gowa	2	20.5	(19,22)	3	11.7	(10-14)	3	4.0	(3-6)
Total	21	23.5±3.4	(19-29.5)	52	13.3±2.1	(7.5-17)	78	3.8±0.6	(3-5.5)
Double-Wall Bricks									
WALL SEGMENT	n	$\bar{x}$ SD	Range	n	$\bar{x}$ SD	Range	n	$\bar{x}$ SD	Range
Mangasa	18	25.0±3.0	(19-29)	64	14.9±1.9	(10-19.5)	72	3.9±0.6	(2.5-5.5)
Kale Gowa	14	21.1±2.2	(17-26)	38	12.5±1.2	(10-16)	47	3.4±0.4	(2.5-4.5)
Katangka Toa	30	22.45±1.1	(20-24)	30	13.0±0.8	(11-14)	30	3.6±0.3	(3-4.5)
Total	62	22.9±2.5	(17-29)	132	13.8±1.9	(10-19.5)	149	3.7±0.6	(2.5-5.5)
Bungung Bissua (Bissu's Well)									
	n	$\bar{x}$ SD	Range	n	$\bar{x}$ SD	Range	n	$\bar{x}$ SD	Range
Large Bricks	1	38		2	20.0	(18,22)	1	5	
Smaller Bricks	6	23.3±3.1	(19-27)	15	12.9±1.6	(9-16)	19	3.2±0.5	(2.5-4)
Hasanuddin Complex (Graveyard Wall?)									
	n	$\bar{x}$ SD	Range	n	$\bar{x}$ SD	Range	n	$\bar{x}$ SD	Range
Smaller Bricks	1	18		14	12.0±1.0	(11-14)	15	3.7±0.5	(3-4.5)

TABLE 6-2. ONE-TAILED STUDENT'S T-TESTS COMPARING THE BRICK SAMPLES FROM BENTENG TUA (NEGATIVE VALUES SHOW THAT THE MEASUREMENT IS SMALLER FOR THE COLUMN SAMPLE)

TOTALS

LENGTH	Central	Side	Double
Central	--	25.60***	41.29***
Side	-25.60***	--	0.83#
Double	-41.29***	-0.83#	--

BREADTH	Central	Side	Double
Central	--	24.95***	30.82***
Side	-24.95***	--	-1.53##
Double	-30.82***	1.53##	--

THICKNESS	Central	Side	Double
Central	--	27.59***	60.06***
Side	-27.59***	--	1.19#
Double	-60.06***	-1.19#	--

BRICK LENGTHS

SEGMENTS	CENTRAL			SIDE		DOUBLE		
CENTRAL	K-L Gate	Lakiung	Kale Gowa	K-L Gate	Lakiung	Mangasa	Kale Gowa	Katangka
K-L Gate	--	-0.14#	-2.79*	15.50***	--	15.19***	19.37***	27.88***
Lakiung	0.14#	--	-3.77**	21.68***	--	21.54***	25.16***	41.16***
Kale Gowa	2.79*	3.77**	--	22.15***	--	22.46***	29.81***	44.53***
SIDE								
K-L Gate	-15.50***	-21.68***	-22.15***	--	--	-1.09#	2.48###	1.86###
DOUBLE								
Mangasa	-15.19***	-21.54***	-22.46***	1.09#	--	--	4.00**	4.03**
Kale Gowa	-19.37***	-25.16***	-29.81***	-2.48###	--	-4.00**	--	-2.83*
Katangka	-27.88***	-41.16***	-44.53***	-1.86###	--	-4.03**	2.83*	--

BRICK BREADTHS

SEGMENTS	CENTRAL			SIDE		DOUBLE		
CENTRAL	K-L Gate	Lakiung	Kale Gowa	K-L Gate	Lakiung	Mangasa	Kale Gowa	Katangka
K-L Gate	--	2.17###	0.00#	31.91***	10.55***	12.57***	24.08***	24.24***
Lakiung	-2.17###	--	-2.76*	17.52***	9.97***	14.04***	25.93***	21.80***
Kale Gowa	0.00#	2.76*	--	19.31***	14.62***	15.60***	31.92***	33.56***
SIDE								
K-L Gate	-31.91***	-17.52***	-19.31***	--	-3.13*	-4.77**	1.76###	0.00#
Lakiung	-10.55***	-9.97***	-14.62***	3.13*	--	-0.61#	4.32*	3.56*
DOUBLE								
Mangasa	-12.57***	-14.04***	-15.06***	4.77**	0.61#	--	6.20**	4.59**
Kale Gowa	-24.08***	-25.93***	-31.92***	-0.61#	--	-6.20**	--	-1.97###
Katangka	-24.24***	-21.80***	-33.56***	0.00#	3.56*	-4.59**	1.97###	--

TABLE 6-2. ONE-TAILED STUDENT'S T-TESTS COMPARING THE BRICK SAMPLES FROM BENTENG TUA (CONT.)

SEGMENTS	BRICK THICKNESSES								
	CENTRAL			SIDE		DOUBLE			
CENTRAL	K-L Gate	Lakiung	Kale Gowa	K-L Gate	Lakiung	Mangasa	Kale Gowa	Katangka
K-L Gate	--	-2.24###	-0.50#	22.68***	17.28***	21.65***	27.97***	23.47***
Lakiung	2.24###	--	0.00#	21.12***	17.71***	23.27***	25.42***	19.91***
Kale Gowa	0.50#	0.00#	--	20.43***	16.68***	21.66***	24.80***	19.72***
SIDE								
K-L Gate	-22.68***	-21.12***	-20.43***	--	-2.14###	-2.62*	2.04###	0.00#
Lakiung	-17.28***	-17.71***	-16.68***	2.14###	--	0.00#	4.14**	2.18###
DOUBLE								
Mangasa	-21.65***	-23.27***	-21.66***	2.62*	0.00#	--	5.03*	2.60*
Kale Gowa	-27.97***	-25.42***	-24.80***	-2.04###	-4.14**	-5.03*	--	-2.38###
Katangka	-23.47***	-19.91***	-19.72***	0.00#	-2.18###	-2.60*	2.38###	--

INSIDE STRUCTURES cf. FORTRESS SMALL BRICKS - LENGTHS

	SIDE - Kaballokang-Lakiung Gate	DOUBLE - Mangasa	Kale Gowa	Katangka
Bissu's Well (small bricks)	-0.31#	-1.18#	1.77###	1.21#

INSIDE STRUCTURES cf. FORTRESS SMALL BRICKS - BREADTHS

	Hasanuddin Complex	SIDE - K-L Gate	Lakiung	DOUBLE - Mangasa	Kale Gowa	Katangka
Bissu's Well	1.89###	-0.22#	-2.43###	-3.32*	1.06#	-0.24#
Hasanuddin Complex	--	-1.81###	-4.25**	-4.84**	-1.41##	-3.59**

INSIDE STRUCTURES cf. FORTRESS SMALL BRICKS - THICKNESSES

	Hasanuddin Complex	SIDE - K-L Gate	Lakiung	DOUBLE - Mangasa	Kale Gowa	Katangka
Bissu's Well	-2.59###	-2.44###	-3.86**	-4.26**	-1.20#	-3.09*
Hasanuddin Complex	--	0.58#	-1.32##	-1.32#	2.10###	0.69#

p >0.1; ## 0.1> p >0.05; ### 0.05> p >0.005; * 0.005> p >0.0005; ** p < 0.0005; *** p << 0.0005.

N.B. Student's t-tests for small samples (Startup and Whittaker, 1982:106-107) used throughout. However, when the sample size amounts to only a few measurements or less, I have not calculated the standard deviations (Table 6-1) nor the Student's t-test values. T-tests based on means and S.D.'s to three decimal places, not the single decimal place shown in Table 6-1.

probability level, we find that the decrease in brick size is statistically significant in 19 cases (Table 6-2). Clearly, size of the smaller bricks systematically decreases from Mangasa in a clockwise direction right round to Kale Gowa.

Although the Kale Gowa smaller bricks appear to be the smallest fortress bricks, the Kale Gowa central-wall bricks appear to be the largest. Starting at the Kale Gowa central wall and moving clockwise to the central wall at the Kaballokang-Lakiung gate, we have nine comparisons. Six suggest decreasing brick size, two are neutral, and one (brick breadths at Lakiung cf. the Kaballokang-Lakiung gate) is discordant (Figure 6-7). Five of the comparisons involve differences which are statistically significant at the five percent confidence interval, of which four conform to the trend. So while the central-wall bricks show less metrical variation than the smaller bricks do, nonetheless their size appears to decrease from Kale Gowa in a clockwise direction to the Kaballokang-Lakiung gate.

Where we have a triple brick-wall, made up of a central wall flanked by two side walls, the central wall obviously must have preceded the side walls. Theoretically the elapsed time could have involved days or decades. However, evidence from the other fortifications suggests that Benteng Tua's central brick walls considerably predated the walls made with smaller bricks, within the context of generally decreasing brick size over time (E.4). Therefore, decrease in brick size during the execution of the same building programme could well explain why Benteng Tua's central wall bricks, and especially its walls of smaller bricks, demonstrate decreasing size in a clockwise direction.

Hence I hypothesise that Benteng Tua's brick walls were constructed as follows. The first stage was construction of the central wall, beginning at Kale Gowa, bypassing Mangasa, and then continuing along the Lakiung section as far as the Kaballokang-Lakiung gate. The second stage involved construction of two parallel walls of smaller bricks, beginning with Mangasa, then continuing along Lakiung and around the fortress in a clockwise direction until the Kale Gowa section was finished. Where a central wall had

previously been constructed, a triple brick-wall now resulted (cf. Figure 6-10c).

This scenario appears less strange in the light of two considerations. The two-headed hill of Bonto Biraeng occupies the fortress's southern border and, secondly, the brick wall was replacing an earlier earthen wall. Consequently in the first stage, the central brick wall added extra defense along the western sections of the earthen wall which did not enjoy the natural protection of Bonto Biraeng's slopes (cf. Figure 6-10). In the second construction stage, the encirclement of Bonto Biraeng by brick wall would have been completed.

A subsidiary issue involves the brickworks at the Hasanuddin Complex (Figure 6-7)[8] and the Bissu's Well (Figure 6-9). The latter brickworks clearly date to when Benteng Tua functioned as a fortress, not only because there are a few large bricks,[9] but also because the smaller bricks strongly show the thin shape which is particularly characteristic of Gowa fortification bricks (E.2.2). Their lengths and breadths suggest contemporaneity with the side walls at the Kaballokang-Lakiung gate, whereas the thicknesses indicate that they were the last made bricks (Table 6-1). The brick fragments at Hasanuddin Complex are slightly thick in relation to their other measurements, although well within the range for the Gowa fortification smaller bricks (Table E-7). They are probably best compared with the Katangka Toa sample, despite the anomalously short length of the only specimen whose length could be measured (Figure 6-7; Table 6-2). Probably the safest scenario, then, would date both the Bissu's Well and the structure at Hasanuddin's Complex to the middle period of construction of Benteng Tua's walls of smaller bricks.[10]

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[8] Now represented only by scattered fragments from the original structure(s).

[9] These few large bricks were probably spare bricks left after the halted construction of the central wall.

[10] The patches of brick rubble running downhill from both of these internal structures (Figure 6-7) might possibly suggest that Benteng Tua's walls had struck uphill in this locations, either as internal wall-lines or as indentations within the external wall. However, the fragments are so pulverised and the patches so light that the brick fragments could have washed downslope from the internal structures.

Figure 6-10 compares the three main possible scenarios for the construction of Benteng Tua's walls, and summarises the evidence on Gowa's coeval palaces (see 6.5). In scenario A, Tumapakrisik Kallona's earthen walls served only to contain a comparatively small area of low-lying land north of Bonto Biraeng, and to block off access from the south to the low connecting ridge between Bonto Biraeng's two hills. Tunipalangga merely replaced the western sections of Tumapakrisik Kallona's earthen walls with a central brick wall. The expansion of Benteng Tua to the dimensions recorded archaeologically only occurred when Sultan Alauddin re-established the Gowa palace at Bonto Biraeng by 1618.

Scenario B differs by hypothesising that Tumapakrisik Kallona's earthen walls ran the full gamut of Benteng Tua as we recorded it. It agrees with scenario A by suggesting that Tunipalangga replaced only a part of his predecessor's earthen walls, and that the the full encirclement of Bonto Biraeng by brick wall occurred only during Alauddin's reign.

Scenario C shows the situation if Tunipalangga had built all of Benteng Tua's 3.8 km of brick walls. This scenario appears weak as it is contradicted by the evidence that the central wall and the walls of smaller bricks belong to distinct stages within Gowa's overall history of fortifications. Indeed Tunipalangga apparently reigned from Somba Opu, which would have given him good reason to abandon the Benteng Tua brickworks.[11]

One possible way to distinguish between these scenarios comes from the standardised chronological histograms based on fine tradeware classes. These show the percentages of the total Gowa survey tradewares, per 50- or 100-year period, represented by the tradewares within a particular group of zones (5.6.2; B.4).[12]

Scenario A refers to the middle group of standardised chronological histograms (Figure 6-11) whereby "suspected

[11] Note that scenario C spells out the construction sequence for the walls of smaller bricks which is applicable to scenarios A and B, except that it would have occurred during Alauddin's reign.

[12] We can use the fine rather than the broad tradeware classes because large samples of tradewares are involved (Appendix B).

early defended area" refers to the zones either within Tumapakrisik Kallona's walls (as hypothesised in the scenario) or located on Bonto Biraeng; "along early wall (?)" refers to the zones we recorded along these hypothesised walls; and "suspected early undefended area" refers to the zones northeast of Bonto Biraeng Barat. The "suspected early defended area" shows a flat profile from 1400 AD to 1800 AD, apart from a small bump between 1650 and 1750 AD. The "early wall (?)" shows virtually no sherdage dated to between 1500 and 1650 AD. The "suspected early undefended area" shows a clear drop in 16th century sherdage and a return to strong sherdage frequencies from the early 17th century onwards. These data support the hypothesis that the walls shown in the top two drawings of Scenario A in Figure 6-10 stood throughout the 16th century, and that the occupation at the site was focussed either within these walls or on Bonto Biraeng. With the expansion of the brick walls during Alauddin's later reign, the area northeast of Bonto Biraeng then became attractive for occupation.

Scenarios B and C refer to the left-hand group of histograms in Figure 6-11, where "fortress wall" refers to the wall as we mapped it. The zones along the wall and outside the wall show drops in 16th century compared to 15th century sherdage, to a degree greater than that shown by the zones within the fortress. However, the support is weaker than it is for scenario A.

Scenario A may also be the most parsimonious reconstruction in that it involves the smallest amount of fortifications. It also agrees with the hints that Gowa was a weakened polity, under attack from its neighbours including Tallok, during most of Tumapakrisik Kallona's reign (4.2.1 and 4.3.2). When Tumapakrisik Kallona built his walls around Gowa, this may have been less a sign of strength than the obligatory establishment of a spatially circumscribed citadel protecting Gowa from local enemies. All in all, I prefer scenario A as the summary of Gowa's fortifications at Benteng Tua, although scenario B is also attractive (Figure 6-10).[13]

[13] Mention should be made of a small iron cannonball collected by Suaka from Tamalate, or more precisely the area around 100 metres south of the Hasanuddin Complex, and held

6.5 Historical Settlements Within Benteng Tua

We have already noted the movement of kampung names around Benteng Tua during the present century, including renamings of already settled areas (Figure 6-6). This suggests that care should be taken in identifying the precise locations of Ming-period communities within the old fort. Nonetheless the archaeological data suggest foci of earlier occupation, based on the apparent concentrations of precolonial tradewares (Figure 6-4), centres of community ritual life such as pre-Islamic and early Islamic burial places, and other *keramat* remains (Figure 6-12). These foci require labels for the purposes of discussion, even if the antiquity of the label cannot be taken for granted. In describing these community foci we will also refer to the evidence from the tradeware profiles, i.e. the standardised chronological histograms, using those based on fine tradeware classes when large samples are available, and those based on the broad classes otherwise (Figures 6-13 and 6-14).[14]

6.5.1 Mangasa (Bonto Biraeng Barat)

I use Mangasa to label the hillock of Bonto Biraeng Barat after its main modern kampung, and I include the part of kampung Kale Gowa on the hillock's east slope (Figure 6-12).[15] Using the name does not preclude the possibility that historical "Mangasa", associated with a *Gelarang* post

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at Suaka's museum. The cannonball could have been fired into Benteng Tua during battle, e.g. when Sultan Sahaduddin captured the fortress in 1777, or it could have been stored as part of Gowa's arsenal. Regrettably I did not document this surface find apart from noting its existence.

[14] Note that the "Ming" tradeware densities in Figure 6-12 have been grouped differently than in Figure 6-4b, so as to reflect the groups of densities which appear sensitive specifically for the "Ming" pieces. Also, the tradeware profiles in Figures 6-13 and 6-14 are calculated from the pieces recorded in the zones shown in the respective site areas in Figure 6-12, except for the Benteng Tua totals which include post-Ming pieces from non-site zones, and so slightly exceed the added-up totals from the site areas.

[15] Rahim (1975:2) identifies this area as Bonto-Biraeng, but this label is open to confusion because Bonto Biraeng extends right along the fort's south border (Figure 6-4a).

which was important by the mid-16th century and remained so until the mid-17th century (ST:10 [SG:39]; LB:118,137,158; Andaya, 1981:61,137,151), might have been located elsewhere, either on occasions or throughout the period. The 1693 map shows Mangasa a fair distance from Gowa (Figure 5-5), possibly corresponding to where Mangasa now occurs as a local administrative name within Kecamatan Tamalate (Kotamadya), or even to a location directly south of the present-day Jeknekberang (7.3.7).

Due north of the minor bastion at the fort's southwest corner (Photo 6-2) lies the Lakiung-Mangasa gate. At zone 13 just within the line of the former wall is a venerated grave ascribed to "Kale (Kare?) Kundrulu". Marked by three stones at the north and two at the south (Photo 6-7), it represents an old style of Islamic grave. Further, the grave's auspicious position at the former gate could reflect Kale Kundrulu's nobility. "Kundrulu" evokes a 1677 reference which suggests that the "Karunrung gate" then stood at the end of Benteng Tua opposite from Bisei (Bulbeck, 1990). Nonetheless this Karunrung gate is probably better identified with the Lakiung-Kaballokang gate (6.5.6).

Even though zones 16 and 19 coincide with the course of the former wall, we were told during the survey that they had yielded antiques. The tradeware pieces which we recorded in zone 19 contain several 13th-14th century pieces, suggesting zone 19 represents a burial area before Benteng Tua's walls were built. Early tradeware pieces occurred right around Mangasa (Figure 6-4a), and show a strongly accentuated presence when compared against "Ming" pieces (Figure 6-13). So the three "Kings of Katangka", who may have directly Gowa's origins during the 13th century (2.5.2), were possibly based at "Mangasa" (or Katangka as it would have been called if my speculation is correct).

Mangasa is crowned by the "Arung Palakka Complex" where Sultan Sahaduddin (Arung Palakka, who died in 1696), and his main wife Dg Talele (died 1725), lie within a modified *kobang* tomb (Photo 6-10). Behind it are three tombs with the multi-tiered slab roofs characteristic of Gowa's royal cemetery (6.5.2). One has the odd name Jerak Buajaya

("Crocodile's Grave"). The other two are associated with "Petta Belo"[16] and with Sultan Ismail, Sahaduddin's grandson (by adoption) who ruled Gowa between 1709 and 1711 (Nurhadi et al., 1980:7; Patunru, 1983; Chapter 4).

The oldest dated graves in the cemetery are the domed *kobang* tombs of two 17th century Gowa regents at the rear. One is on all accounts associated with Tallok's Sultan Mahmud (Kg Pattingalloang) who died in 1654. Its counterpart is best ascribed to Mahmud's father Sultan Abdullah, although Abdullah's father Tumenananga ri Makkoayang (died 1577), and Mahmud's son Kg Karunrung (died 1685), are also possible.[17]

6.5.2 Tamalate

The name Tamalate ("never withers") is generally restricted to the immediate environs of the Sultan Hasanuddin Complex at the top of Bonto Biraeng Timur (e.g. Rahim, 1975), but for my purposes it can include much of the hillock (Figure 6-12). Like Mangasa it contains a notable presence of 13th-14th century pieces (Figure 6-4a). It also has two geologically

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[16] Presumably the Arung Belo from Soppeng who was occasionally mentioned in the late 17th and early 18th century Makassar texts.

[17] The relevant points are as follows. The second tomb is ascribed to the Tallok raja "Karaeng Matoaya", while the tomb of "Sultan Abdullah" is provenanced to Tamalate (Rahim, 1975:4-5; Nurhadi et al., 1980:7-8; Patunru, 1983:59). But Kg Matoaya and Sultan Abdullah are two names of the same person (ST:14ff.). Now, given that Matoaya's father Makkoayang reportedly died at Tamalate (ST:10) he may well have been buried at Benteng Tua, and the names Matoaya and Makkoayang could have become confused at some point. I prefer the solution in which Makkoayang was buried at Tamalate, because this would place his tomb next to another tomb commemorating a pre-Islamic royal, i.e. Tunibatta's (6.5.2), and also locate the tombs of Abdullah and Mahmud, father and son, both in the Arung Palakka complex.

I also suggested that Mangasa's second *kobang* could house Kg Karunrung's burial. As reviewed in the text, we have the faint suggestion that Bonto Biraeng Barat was called Karunrung during the late 17th century. This could even identify "Kale Kundrulu" with Kg Karunrung, although a *kobang* is more fitting for a person of Kg Karunrung's historical stature. Moreover, his burial at Mangasa would have legitimised Sahaduddin's subsequent burial there, given the strong relationship of convenience which grew between them (see Andaya, 1981), and he would have been buried next to his father Mahmud. By the same arguments, however, Kg Karunrung could also be identified with "Jerak Buajaya".

interesting *keramat* features of volcanic stone, the outcrop called Mappapundung (Photo 6-11), and the bare surface of zone 44 whose sculptured relief includes the "Tomanurung's well" (Photos 6-8 and 6-12). A masoned menhir now lain on its side just northwest of the Sultan Hasanuddin complex (Photo 6-9) was originally close to zone 44 (see Figure 6-3).

The Sultan Hasanuddin Complex includes the multi-tiered slab-roofed tombs (Photo 6-13) of all the Gowa kings who died during the 17th century.[18] Though not of unusual shape, the grandeur of these royal tombs is unique to South Sulawesi, suggesting they may have been adapted from the house-like, pre-Islamic royal wooden tombs (Reid and Reid, 1988:59). The two other main tombs, near the entrance to the complex, appear to be Islamic interpretations of pre-Islamic burials. The slab-roofed tomb usually ascribed to Tallok's Sultan Abdullah is better associated with his father Makkoayang,[19] while the *kobang* tomb (Photo 6-14) is associated with Gowa's Tunibatta who had been beheaded in the 1565 war against Bone. The latter actually shelters two marked graves, and circumstantial evidence suggests that Tunibatta's companion is his mother Karaengloe Bainea.[20]

Tamalate shows a strong peak of early 16th century tradewares (Figure 6-13) which, along with the evidence of *keramat* locations, suggests it had sited Gowa's palace during Tumapakrisik Kallona's reign (1511-1547). This palace may have been sited near the apex of Bonto Biraeng Timur, and hence the source of much of the sherdage found on the hill's lower slopes (Figure 6-12; Photo 6-19). In support of this suggestion, the menhir behind the Hasanuddin Complex

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[18] Rahim (1975:6) and Patunru (1983:159) characterise one of the tombs as unidentified, but here I follow Nurhadi et al. (1980:8) in associating this tomb with Amir Hamzah.

[19] See footnote 17.

[20] Both graves as marked follow a parallel north-south axis enclosing stones at head and foot. Tunibatta's grave, at least, should follow the east-west orientation typical of immediately pre-Islamic Makassar burials (13.2.2), but the anomaly can be resolved by suggesting that the markers cut perpendicularly across two parallel, east-west oriented graves. My reason for tentatively identifying Tunibatta's companion with his mother Kgloe Bainea is the historical reference that Tunibatta's son Tunijallok buried her immediately upon the burial of Tunibatta (SG:42).

supposedly marks the former location of a *bissu*'s well called Bungung Barania (Rahim, 1975:8; Nurhadi et al., 1980:7). This would match up with the Bissu's Well at the other suspected palace location, Kale Gowa (6.5.3).[21] Possibly the burial of Tunibatta permanently changed the status of Tamalate from palace to ceremonial centre, a place where deceased Gowa kings were buried, and incumbent Gowa kings inaugurated in the presence of their ancestors at the *Batu Pelantikan* just outside the graveyard. In this interpretation, the brick structure at the Hasanuddin Complex (6.4) would have been built to mark off the royal cemetery.

6.5.3 Kale Gowa

The name "Kale Gowa" is here used for the area centred around the Bissu's Well and the *Batu Tomanurung* or Tomanurung's stones. The latter consist of three flat stones under a shelter (Photo 6-16) which may have been buried together to symbolise a pact (cf. Kallupa et al., 1989:46). The Bissu's Well (Figure 6-9) fills up naturally during the wet season, but during the dry season any water inside it must be carried up. As also noted by Nurhadi et al. (1980:9), a dense accumulation of "Ming" tradewares occurs around the well's rim in zones 107 and 108 (Appendix D; Figure 6-12). Even though SSPHAP collected all the tradeware sherds here, three months later 638 tradeware sherds (and 226 earthenware sherds) were again to be counted in zone 107. Hence sherds washed out from the bamboo grove due north of the well would appear to assemble in a lag deposit at the well's perimeter.

Given the lack of evidence of pre-Islamic burials here, the sheer quantity of tradeware sherds suggests a former palace centre. Such a palace was probably coeval with the construction of the Bissu's Well, which I would date to Alauddin's reign (Figure 6-10). Further, an early 17th century date is close to the peak in Kale Gowa's tradeware profile (Figure 6-13). Hence the "Tamalate palace" which

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[21] These *bissu* were transvestite priests once attached to the Bugis-Makassar courts.

stood between 1618 and c.1640 (6.4) was probably built at Kale Gowa (Figure 6-12).[22]

6.5.4 Allamoncong, Lonjo Boko, Sulengkaya

According to local information, Allamoncong was an old kampung name in use prior to the development of the Pandang-Pandang housing complex (Figure 6-12). Antiques were reportedly recovered across the road from a small old graveyard designated as "Makam [Grave(s) of] Karaeng Allamoncong". Its main feature is a line of seven restored, marked Islamic graves, four of them sheltered under a modern tomb (Table F-3).

Lonjo Boko is a small area where antiques were found just outside the old fortress walls (Figure 6-12). It would appear to represent a small community which lived in the shadow of the fort.[23] Sulengkaya is a semi-detached hillock which produced quite a strong presence of Ming and earlier tradewares (Figures 6-13). I name the hilltop after the Sulengkaya Islamic cemetery whose oldest marked graves could date back to the 17th century. The name occurs in the Makassar records as the war standard carried by Tumapakrisik Kallona (SG:20) in Gowa's battle against Tallok, Maros and Polombangkeng (4.2.1).

6.5.5 Datak Toa

According to the informants who claimed to live in Katangka Toa themselves, the original name for the Katangka Complex was Datak Toa (see Figure 6-12). Their report was the only indication I recovered of a potentially suitable location for the important early Gowa toponym Datak. Specifically, Datak was one of the original "nine confederates" (Figure 2-2); "Dato" was one of the *Bate Salapang* during the reigns of Tunipalangga and Tunijallok (Mukhlis, 1975:61-62); and Datak

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[22] Note that, despite the extrapolated tradeware densities (Figure 6-4b), I suspect the area between Kale Gowa and Mangasa was unoccupied during the 15th-17th centuries. Also the two areas of graves in zone 108 (Figure 6-3) are modern and unassociated with the site's former use.

[23] The associated Islamic graveyard (Figure 6-3) is modern.

was the karaengship of Tunibatta and one of his sons (Figure 4-8). Moreover, there is strong evidence that Abdul Jalil built his 1694 Datak palace (LB:180) in the area now called the Katangka Comples.

Firstly, while local tradition claims that the Katangka mosque (Photo 6-17) dates back to greater Gowa's adoption of Islam in 1605, it lacks support. Rather, parts of the present building could date back to the 18th century or maybe earlier (Reid and Reid, 1988:58), as also suggested by information given to Nurhadi et al. (1980:8) that the mosque was first restored in 1818.

Secondly, the Bungung Lompoa ("great well") tucked behind the Katangka complex (Photo 6-12) supports the identification of Datak Toa as a palace, as it repeats the previously noted association of a major well with a Gowa palace. The well has masonry walls inside its cement enclosure, and as yet no evidence dates any extant Makassar masonry earlier than the 17th century.[24]

Thirdly, the mosque is backed by the *kobang* tombs of 18th to 19th century Gowa aristocrats (Reid and Reid, 1988:58). This suggests a parallel with Tamalate whereby the area became a designated, elite burial area (Photo 6-20) after its abandonment as a palace.[25] Finally, the tradeware profile of Datak Toa shows a distinct, late 17th to 18th century accentuation (Figure 6-13).

6.5.6 Bone-Bone, Lakiung, Kaballokang

The location of Bone-Bone, inside Benteng Tua, supports its identification with the Bone karaengship held by three early 16th century daughters of Gowa kings (Figures 4-8 and 4-9). Further, it has no Islamic burial ground but two areas are scarred with looter's holes, indicative of pre-Islamic

[24] Figure 6-12 shows the well as part of Tamalate, but this is because much of the sherdage around the well is likely to have originated from Tamalate, rather than because I interpret the well as coeval with the Tamalate palace.
[25] Reid and Reid (1988:58-9) date the origins of the *kobang* tombs to the 18th century, largely by reference to the Katangka Complex. However, Mahmud's *kobang* tomb suggests a 17th century origin for the *kobang* style, and that it only gradually replaced the multi-tiered, slabbed roof tombs.

burials. Against this, Bone-Bone has an only weak presence of 16th century tradewares (Figure 6-13).

There are also two looted areas in Lakiung (Figures 6-3 and 6-12), as well as Makam Tompo Bataya whose Islamic grave markers, oriented between 330° and 10° from north, appear to date back to the 17th century (Table F-3). The same may apply to the oldest graves in the Syech Yusuf complex, even though the *kobang* tombs of Syech Yusuf and his wife (Photo 6-22) date to 1705 (Reid and Reid, 1988:58). They are the most revered of all Makassar tombs, presumably in recognition of Syech Yusuf's career as a major Islamic teacher who also staunchly opposed the Dutch in Java (Reid and Reid, 1988:57-58; see also Andaya, 1981:276-278).[26] There is no evidence to suggest that the toponym Lakiung, which recurs in 16th and 17th century contexts (Chapter 3), did not refer to present-day Lakiung.[27]

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[26] Reid and Reid (1988:58) relate the story that Syech Yusuf's wife was a Gowa sultan's daughter called Sitti Habibah Dg Misanga, but I have not found any textual support. LB pays Syech Yusuf quite some attention, mentioning his birth in 1626, his request to become a *haji* in 1644, his exile to the Cape of Good Hope in 1694 and his death in 1699 (LB:90,106,180,184). A further reference cites the death of Syech Yusuf's mother in 1666 (LB:132).

A statement by Abdul Jalil in 1691 to the VOC Resident, de Haas, might lie behind the story cited by Reid and Reid. Abdul Jalil explained that he, Mohammad Ali and Syech Yusuf were brothers because Syech Yusuf's mother had been married to the old ruler of Gowa, and that both Syech Yusuf and his father were Tallok *Gelarang* (Andaya, 1981:277). Cense (1950) interpreted Abdul Jalil's report to mean that the mother of Abdul Jalil and Mohammad Ali (Petak Dg Nisali) was also the mother of Syech Yusuf, but found this hard to believe as the latter two were born more than 25 years after Syech Yusuf's birth. The point suggests that Syech Yusuf's mother had married not Hasanuddin (i.e. the father of Abdul Jalil) but Hasanuddin's father Mohammad Said. Indeed, one of Mohammad Said's wives was called Lokmok Singarak (Table 3-3) which ties in with the story that Syech Yusuf's mother was called Sitti Aminah Dg Singara (Kallupa, 1985:63). Moreover, the location of her grave near Benteng Tallok (12.3.2) accords with Syech Yusuf's reported Tallok origins. Abdul Jalil presumably meant he was Syech Yusuf's brother as an inclusive kinship category.

[27] Reid (1983a:130-131) relates the name Lakiung to the *lakkian* house-like structures where the Sakdan-Toraja keep the corpse during a death feast, although Noorduyn (1985) disputes the suggestion on linguistic grounds.

Kaballokang is unusual in that its tradeware profile does not have the late 17th to 18th century surge shown by the other low-lying areas in Benteng Tua (Figure 6-13). The small Islamic graveyard includes two apparently 17th century markers (Photo 6-26; Table F-3). Antique hauls were recovered immediately to the east (Photo 6-22 to 6-24) and, reportedly, further east again (Figure 6-12). The toponym evokes Kg Kaballokang, a son of Kg Karunrung (Table 3-6). Given also the existence of *kampung* Karunrung only a kilometre from the fort's north wall (7.2.2), the "Karunrung gate", which a 1677 reference implictly places at the end of Benteng Tua opposite from the Bisei gate (Andaya, 1981:184; Bulbeck, 1990:93), is best identified with my Kaballokang-Lakiung gate.

6.5.7 Katangka Toa, Bisei

The area here called Katangka Toa is notable both as an enclave of precolonial tradeware sherdage (Photo 6-21) and as the area of Benteng Tua's only large bastion (Photo 6-27; Figure 6-12). The antiques reportedly recovered from here would be unrelated to the tiny modern graveyard which serves the present inhabitants living atop the bastion. "Katangka", which is possibly the oldest Gowa toponym (Figure 2-2), need not have referred to my Katangka Toa site (6.5.1).

Bisei corresponds to an area of quite concetnrated precolonial tradewares directly within the fort's east gate (Figure 6-12). Reportedly there used to be an extensive Islamic cemetery, including an area of east-west oriented grave markers which, along with zone 182, had been looted around 30 years ago. Although housing developments have razed most of the cemetery, scattered old marked graves have survived in the house yards and garden areas.

6.6 Settlement Pattern Analysis

6.6.1 Site hierarchies and settlement patterns

Figure 6-1 shows the fieldwork-site names of the historical area-sites and point-sites (see 5.5.4) used here and in the present settlement pattern analysis to be detailed in Chapter

9.[28] In settlement hierarchy studies, the intersite distances are frequently measured between the sites represented as dimensionless points. This simplification need not distort the results if the sites are widely spaced (e.g. Hodder and Hassall, 1971; Hammond, 1974) or small (e.g. Gibbon, 1984:226-7). However, when the analysis deals with closely packed sites of various sizes, significant distortions could follow. For instance, if Benteng Tua were represented by a point in the middle of the fortress, no independent site outside the walls could possibly be closer than 300 metres.[29] Or if we construe c.1920 Makassar (Ujung Pandang) as a point, then the majority of the kampungs situated right next to the city's continuously settled area would be construed as kilometres away (see Figure 5-3).

The gravity model attempts to overcome this problem by weighting the site's importance, in effect representing the site as a body with its mass centred in the site's centre. The site's importance would reflect its population (Hodder and Orton, 1976:187-191), specifically the amount of human interaction occurring at the site (Gibbon, 1984:242-244). But neither variable is directly estimable for SSPHAP's sites. There is also the theoretical objection that a site's population or its activity may have been unevenly distributed, and centred away from the site's geographical centre.[30]

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[28] Note that the point-sites have been complemented by two further sources - modern toponyms matching historical toponyms but which were not recorded by SSPHAP as sites (T), and a Suaka historical site (S) at Antang (Kallupa, 1985:132-133) which would have fulfilled SSPHAP's criteria but which falls outside the surveyed area. The criteria for accepting a historical site merely on the basis of a toponym are detailed elsewhere (12.3). Suffice it here to say that a historical site associated with the late 17th century toponym of Mangallik (Table 3-5) appears to have been missed by SSPHAP's survey because small changes in the course of the Jeknekberang (Figure 6-2) could have resulted in the destruction or the burial of the relevant archaeological remains. The settlement pattern analysis should not ignore these data despite their poorer documentation.

[29] i.e. 200 metres to the wall, plus 100 metres to fall beyond the "virtually continuous area" (see 5.5.3).

[30] Possibly, the number of tradeware pieces dated to a particular period could be used as a proxy for population or human interaction. Indeed the estimates of surface exposure could be used to fix the centre of distribution of the

The simplest way to account for the variation in the sites' shape and area is to define intersite distance as the least straight-line, "non-site distance" between any point on one historical area-site and any point on the other.[31] I say "non-site distance" because I also mean that if a third site intervenes between the two sites being compared, then the distance involved in crossing the intervening site is excluded from the intersite distance.[32]

Accepting this definition of intersite distance brings us to the issue of how best to cluster the intersite distances. The nearest neighbour method clusters on the basis of the smallest distance between any two Operational Taxonomic Units (OTUs) whether they are single or have already joined some cluster (Kronenfeld, 1985). This technique is widely used in spatial archaeology (e.g. Hodder and Orton, 1976:43 ff.; Stark and Young, 1981) and indeed underlies my procedure for clustering surveyed zones into area-sites (5.6.1). However, it is inappropriate for clustering across SSPHAP's sites because (i) it integrates only a fraction of the available

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recorded tradewares. However, the exercise is inappropriate here because the recognition of a historical point- or area-site accepts other evidence in addition to the presence of appropriately dated tradewares. I have not had the opportunity to apply a gravity model to SSPHAP's recorded distribution of tradewares (13.3.2).

[31] For point-sites, of course, site area is nil and the site is represented by only one point.

[32] If I were using a gravity model, I could point out that this definition would be a very precise interpretation of one of the model's underlying assumptions, i.e. that '...people are more likely to travel to the nearer of two equally attractive locations when they are at unequal distances' (Gibbon, 1984:242). If a site is attractive then that should apply to all of it, not just its centre, and furthermore to any site which needs to be traversed in moving between two other sites. Still it is probably best to avoid a travel model, firstly because the exercise should then use travel-time space rather than geographic space (Gorenflo and Gale, 1990), and secondly because SSPHAP's sites constitute an inextricable mixture of burial grounds and former living sites, i.e. places which would attract travellers under widely different circumstances (5.6). I accept that my technique lacks any overt behavioural foundation, but this no reason why I should not treat my sites like "black boxes", and hence treat intersite distance as the smallest "white (non-site) distance" separating any two "black boxes".

information on intersite distances;[33] and (ii) SSPHAP's sites along border areas between site clusters stand out as peripheral phenomena of unlcear wider affinities, rather than as the centralising foci which they would become in nearest neighbour analysis (e.g. 9.5).

In the extreme alternative, the furthest neighbour method, after two or more OTUs have clustered, the cluster's distance from any other compared item is defined as the maximum distance between it and any member of the cluster (Kronenfeld, 1985). SSPHAP's site clusters would therefore be drawn away from each other towards those outlying sites furthest away from other clusters. These outliers appear no more suitable as centralising foci than SSPHAP's sites in border areas. Moreover the technique makes very partial use of the available information, exaggerating the scope for possibly unrepresentative intersite distances.

The method which overcomes these objections is average linkage, i.e. the consecutive joining of OTUs or clustered OTUs depending on which average OTU distance is the smallest (see Sneath and Sokal, 1975; Kronenfeld, 1985). In effect a new OTU-centre, which need not coincide with any previously recognised OTU, is plotted after every joining event. The technique assigns equal weight to and uses all of the intersite distances. It establishes sequences of clustering events so that we can distinguish minor site centres from higher-level site centres. Further the technique can test whether SSPHAP's largest sites are really central places, because the largest sites will coincide with the highest level site centres only if these largest sites are surrounded by a swarm of smaller sites.

6.6.2 Application to the present data

Four hierarchical clustering exercises are carried out to accommodate two crossing considerations (Figure 6-15).

[33] For instance, a cluster of sites (A) could on average be closest to a cluster to the west (B), but minimum linkage would make them join a cluster to the east (C) if the easternmost member of A and the westernmost member of C happened to show the smallest intersite distance at that stage in the clustering procedure.

Firstly, Benteng Tua (and Benteng Anak Gowa) could be taken as single sites essentially defined by their former encircling walls. Alternatively, we can ignore the walls and treat the enclosed area-sites on the same footing as SSPHAP's non-fortified sites. In that case Benteng Tua would be represented by four site areas: Bisei; Katangka; Kaballokang/Lakiung/Mangasa/Bone-Bone (KLMB), Kale Gowa/Tamalate/Datak/Sulengkaya/Allamoncong/Lonjo Boko (KTDSAL).[34]

Secondly the Jeknekberang, whose modern course appears to have closely followed the 1693 Sungai Garassik (5.4.2), could arguably be considered a barrier to the exercise of clustering sites. A travel model would certainly acknowledge that crossing a major river entails a cost. The present approach is also free to adopt the option that site clusters should not cross major geographical barriers.

The half-matrices of original intersite distances are given in Tables 6-3 and 6-4, using the area-site and point-site names listed in Appendix C. I measured intersite distances from whichever of my maps has the largest scale, including SSPHAP's site maps (e.g. Figure 6-3), and took them to the nearest five metres.[35] Crossings over the Jeknekberang are shown in brackets. Table 6-3 considers the case where the forts are considered as single sites, and Table 6-4 considers the case where fortress wall is ignored. The site goups are labelled by the first letters of the site names. For instance "BBJKKP" stands for "Benteng Tua/Bidaraya/Jipang/Karunrung

[34] Note that the two approaches both account for the mass of the site in the forts as a positive factor. Treating Benteng Tua as a single site greatly reduces the non-site distance between sites opposing each other across the fort, because no non-site distance is involved in crossing the fort. Thus the intersite distance between Bidaraya and Pandang-Pandang (see Figure 6-1) is reduced by the approximately 400 metres between the fort's northern and southern walls. On the other side of the coin, treating Benteng Tua as its four enclosed area-sites means intersite distances across the fort usually entail some enclosed non-site distance enclosed within the fort, but because Benteng Tua is now construed as four area-sites rather than one area-site, as a collective entity it will enjoy four times the weight in the average-linkage clustering.

[35] Most of the intersite distances would have nothing like that degree of accuracy, but there is no point in rounding off just for the sake of it.

Selatan/Karunrung Utara/Pandang-Pandang" (Analysis 6-1), while "BJKKKKBKP" stands for "Bidaraya/Jipang/Karunrung Selatan/Karunrung Utara/KLMB/KTDSAL/Bisei/Katangka Toa/Pandang-Pandang" (Analysis 6-3). Tables 6-3 and 6-4 also include enough intersite distances involving the BKDA quartet that it would not join the Benteng Tua cluster under any circumstances; likewise for the PDCSS group with respect to the Anak Gowa cluster. On the other hand the BB and PMPKPPSS groups join the Benteng Tua cluster, and the KKKKK group joins the Anak Gowa cluster, under all circumstances, as demonstrated in due course (12.3.2, 9.1 and 11.2 respectively).[36]

Regardless of the conditions applied, Benteng Tua stands out as the centre of a cluster which takes in a swarm of smaller, surrounding sites (Figure 6-15). The cluster centre moreover consistently coincides with Bonto Biraeng Timur, i.e. the general area of the fort's three historical palace centres (Figure 6-12), although it might be reading the analysis too closely to attach much significance to this particular result. There is however no doubt that Benteng Tua was a central historical site, based on the criteria by which SSPHAP recognises historical sites.

6.7 An Overview of Benteng Tua

My review of the historical and archaeological data strongly supports the traditional belief (e.g. Mukhlis, 1975; Mattulada, 1982a:19; Patunru, 1983) that the Gowa dynasty originated within the area of Benteng Tua. Backdating the Gowa kinglist dated the origins of the Gowa dynasty to around 1300 AD. The dynasty was apparently preceded by three kings of Katangka (Noorduyn, 1985) who would have lived during the 13th century AD (Figure 2-2). These dates agree with the strong presence of 13th to 14th century tradewares at Benteng Tua. The concordance gives some support to accepting Gowa's

[36] The affinities of the B(2)B group are unclear. By average-linkage clustering, its local centre lies between 2.6 and 2.8 km from the centre of the Anak Gowa cluster. But since the land to the south was not surveyed, the B(2)B group might well cluster with sites to the south rather than towards Anak Gowa.

TABLE 6-3. LOWER-MIDDLE JEKNEKBERANG INTERSITE DISTANCES IN METRES - FORTRESS WALL TREATED AS SITE

	B	B	J	K	K	P	M	K	C	G	B	M	B	B	P	K	P	P	S	S	T	M	D
Benteng Tua																							
Bidaraya	350																						
Jipang	575	205																					
Karunrung Sel.	1035	650	445																				
Karunrung Utara	1325	990	690	240																			
Pandang-Pandang	535	1010	1210	1675	1965																		
Maccinik Somba.	650	1605	1595	1915	2150	1440																	
Kaledu Paya	(600)	(1265)	(1525)	(2335)	(2670)	(710)	(870)																
Campagaya	(630)	(1310)	(1595)	(2370)	(2610)	(880)	(715)	155															
Gusung	(975)	(1755)	(2055)	(2435)	(2640)	(1340)	(615)	570	445														
Bonto Jalling	(1500)	(2245)	(2600)	(2910)	(3120)	(1760)	(1010)	840	910	460													
Makam Mangasa	(1800)	(2645)	(2855)	(3160)	(3350)	(2050)	(1210)	1165	1150	760	240												
Bontomanaik 1	995	1585	1420	1635	1750	2120	720	(1625)	(1470)	(1245)	(1545)	(1660)											
Bonto Kapette	1915	2405	2205	2170	2185	3075	1645	(2705)	(2365)	(1960)	(2255)	(2220)	1005										
Paccalaya	750	1580	1865	2280	2475	1570	1605	(2150)	(2310)	(2700)	(3200)	(3440)	1810	3040									
Kasomberang	1220	1970	2225	2570	2755	2005	2055	(2660)	(2710)	(2780)	(3760)	(4030)	2340	3770	510								
Paccinongang	1580	2280	2530	2830	2985	2450	2325	(3090)	(3215)	(3625)	(4075)	(4410)	2905	4630	810	130							
Pao-Pao	1405	2080	2335	2620	2785	2325	2160	(2955)	(3060)	(3450)	(3960)	(4205)	2455	4475	690	110	120						
Sampeang	1015	1675	1920	2235	2415	2090	1700	(2655)	(2765)	(2275)	(2840)	(3150)	2670	4075	410	180	285	115					
Sero	850	1390	1615	1865	2050	2110	1570	(2180)	(1640)	(1920)	(2360)	(2660)	2930	3805	615	455	560	395	130				
Tompok Balang	1550	1940	2220	2730	3000	1210	2590	(1720)	(2000)	(2380)	(2650)	(2990)	3275	4255	1725	1910	2330	2260	2240	2380			
Mangallik	(2150)	(2530)	(2825)	(3330)	(3530)	(1730)	(3195)	2420	2140	2825	3060	3370	(3785)	(4700)	(2310)	(2475)	(2770)	(2740)	(2755)	(2950)	(570)		
Dampang	(1420)	(1920)	(2155)	(2615)	(2920)	(940)	(2210)	1215	1555	1895	2035	2365	(2925)	(3865)	(2045)	(2375)	(2785)	(2720)	(2600)	(2695)	(615)	900	
Labengnge	(1650)	(2105)	(2310)	(2845)	(3070)	(1125)	(2330)	1310	1615	1955	2090	2400	(3050)	(3980)	(2250)	(2545)	(2935)	(2900)	(2860)	(3005)	(775)	840	220
Gotong	(1695)	(2155)	(2350)	(2885)	(3155)	(1175)	(2310)	1300	1610	1935	2030	2345	(3060)	(3980)	(2340)	(2675)	(3035)	(3000)	(2990)	(3125)	(880)	925	315
Manyampang	(2010)	(2440)	(2680)	(3155)	(3410)	(1510)	(2730)	1695	2020	2365	2510	2320	(3470)	(4355)	(2465)	(2730)	(3110)	(3050)	(2990)	(3125)	(910)	560	575
Makam Takbakka	(2475)	(3040)	(3160)	(3640)	(3920)	(2010)	(2990)	1875	2195	2355	1910	2130	(3625)	(4405)	(3305)	(3665)	(4050)	(3980)	(3860)	(3990)	(1725)	1515	1275
Tombolok	(2605)	(3160)	(3290)	(3760)	(4120)	(2150)	(3090)	2000	2300	2450	2010	2320	(3735)	(4505)	(3420)	(3745)	(4140)	(4070)	(3950)	(4090)	(1785)	1555	1375
M.Kocci Borong	(2710)	(3185)	(3350)	(3810)	(4160)	(2275)	(2700)	2105	2410	2525	2000	2560	(3345)	(4170)	(3540)	(3875)	(4255)	(4195)	(4090)	(4215)	(1935)	1665	1520
Bonto Tangnga	(2160)	(2965)	(3240)	(3760)	(3990)	(2190)	(1860)	1350	1510	1250	815	760	(2410)	(3030)	(3730)	(4300)	(4700)	(4530)	(4305)	(4060)	(2795)	2670	2170
Jingarak	(2385)	(2995)	(3355)	(4125)	(4340)	(2215)	(2300)	1630	1780	1620	1340	1355	(2915)	(3610)	(3800)	(4180)	(4550)	(4420)	(4325)	(4340)	(2280)	2720	1690
Anak Gowa	(1585)	(1960)	(2260)	(2990)	(3210)	(1295)	(1750)	830	1105	1135	1090	1290	(2450)	(3305)	(2815)	(3250)	(3670)	(3565)	(3360)	(3385)	(1590)	1735	1010
Kanjilo T-L	(2970)	(3685)	(3870)	(4695)	(4870)	(2835)	(2780)	2205	2375	2125	1710	1700	(3365)	(3795)	(4260)	(4750)	(5150)	(4985)	(4900)	(4910)	(3005)	3160	2230
Kanjilo B-L	(3050)	(3845)	(4210)	(4750)	(4910)	(2935)	(2910)	2290	2435	2165	1850	1780	(3375)	(3775)	(4610)	(5050)	(5415)	(5245)	(5110)	(5220)	(3240)	3345	2370
Kanjilo Barat	(3220)	(3955)	(4250)	(4920)	(5085)	(3095)	(3045)	2460	2605	2335	1980	1915	(3400)	(3930)	(4555)	(5440)	(5290)	(5200)	(5065)	(5200)	(3450)	3345	2580
Kanjilo T-D	(3265)	(3940)	(4400)	(5050)	(5240)	(2900)	(3170)	2510	2705	2500	2100	2060	(3745)	(4225)	(4220)	(4780)	(5170)	(5000)	(4880)	(5060)	(3285)	3200	2600
Kanjung Maek	(3475)	(4065)	(4430)	(5275)	(5480)	(3060)	(3260)	2715	2925	2745	2140	2170	(3990)	(4460)	(4450)	(5010)	(5500)	(5155)	(5085)	(5085)	(3435)	3260	2850
Bontomanaik 2	(3990)	(4540)	(4440)	(4960)	(5410)	(3625)	(4215)	2980	3130	3545	3320	3360	(4840)	(5375)	(4950)	(5240)	(5640)	(5565)	(5495)	(5615)	(3365)	3015	2940
Bonto Pakja	(4955)	(5400)	(5310)	(5985)	(6370)	(4570)	(5090)	3845	4025	4510	4150	4160	(5790)	(6300)	(5860)	(6160)	(6520)	(6450)	(6400)	(6545)	(4255)	3825	3875
Dampang Bira	2550	2455	2470	2185	2210	3235	4040	(3340)	(3195)	(4270)	-	-	3900	4285	2655	2460	2225	2245	2100	1740	4355	(4915)	(4590)
Bangkala/Ende	2705	2700	2730	2475	2500	3470	4310	(3535)	(3410)	(3920)	-	-	4160	4560	2675	2360	2050	2055	2050	1795	4385	(4495)	(4730)

TABLE 6-3. LOWER-MIDDLE JEKNEKBERANG INTERSITE DISTANCES IN METRES (CONT.)

	B	B	J	K	K	P	M	K	C	G	B	M	B	B	P	K	P	P	S	S	T	M	D
Kubur. Bangkala	2920	2950	2995	2720	2740	3725	4540	(3830)	(3620)	(4070)	-	-	4450	4790	2905	2620	2310	2300	2290	2005	4625	(5170)	(4890)
Antang	3900	3725	3730	3405	3255	4625	5305	(4840)	(4415)	(5670)	-	-	4925	5300	4215	3985	3695	3725	3625	3290	5885	(6420)	(6125)
Pekallak Bua	-	-	-	-	-	-	(4920)	3820	4135	4460	4635	4900	-	-	-	-	-	-	-	-	(2400)	1835	2665
Dampang	-	-	-	-	-	-	(4400)	3465	3760	4120	4400	4700	-	-	-	-	-	-	-	-	(1780)	1460	2295
Cellaya	-	-	-	-	-	-	(5560)	4615	4855	5250	5560	5855	-	-	-	-	-	-	-	-	(2910)	2570	3410
Saukang Borong	-	-	-	-	-	-	(6155)	5195	5455	5830	6110	6400	-	-	-	-	-	-	-	-	(3515)	3110	4000
Saukang Boe	-	-	-	-	-	-	(6455)	5490	5780	6165	6420	6705	-	-	-	-	-	-	-	-	(3835)	3455	4290

Labengnge	L	G	M	M	T	M	B	J	A	K	K	K	K	K	B(2)	B	D	B	K	A	P	D	C	S	S
Gotong	120																								
Manyampang	405	425																							
Makam Takbakka	1085	980	880																						
Tombolok	1185	1050	900	115																					
M. Kocci Borong	1300	1195	1020	255	150																				
Bonto Tangnga	1855	1690	2050	2040	2080	1920																			
Jingarak	1550	1450	2060	1435	1495	1505	590																		
Anak Gowa	865	780	1120	770	835	810	860	630																	
Kanjilo T-L	2300	2325	2485	1755	1760	1695	900	545	1200																
Kanjilo B-L	2435	2475	2670	1925	1940	1870	1020	820	1360	158															
Kanjilo Barat	2675	2500	2695	1915	1925	1845	1160	780	1490	151	126														
Kanjilo T-D	2560	2420	2520	1700	1700	1595	1300	865	1400	324	520	183													
Kanjung Maek	2700	2570	2620	1785	1765	1675	1365	930	1600	584	494	290	145												
Bontomanaik 2	2750	2550	2435	1680	1575	1455	2560	2010	2115	1735	1890	1630	1355	1200											
Bonto Pakja	3650	3560	3310	2620	2500	2375	3350	2965	3075	2580	2670	2410	2135	1940	730										
Dampang Bira	(4780)	(4915)	(5065)	(5820)	(6080)	(6190)	-	-	-	-	-	-	-	-	-	-									
Bangkala/Ende	(4890)	(5040)	(5125)	(5900)	(6210)	(6340)	-	-	-	-	-	-	-	-	-	-	175								
Kub. Bangkala	(5115)	(5260)	(5370)	(6150)	(6365)	(6530)	-	-	-	-	-	-	-	-	-	-	280	150							
Antang	(6315)	(6425)	(6550)	(7370)	(7670)	(7810)	-	-	-	-	-	-	-	-	-	-	1280	1415	1225						
Pekallak Bua	2555	2555	2040	2740	2735	2820	4410	3935	3110	4200	4360	4285	4050	4020	3170	3610	-	-	-	-					
Dampang	2295	2360	1920	2500	2480	2530	4390	4070	3110	4450	4645	4645	4425	4475	3920	4550	-	-	-	-	1140				
Cellaya	3410	3475	2985	3985	3975	3795	5510	5080	4175	5440	5640	5615	5370	5410	4690	5165	-	-	-	-	1340	855			
Saukang Borong	3970	4020	3510	4165	4155	4200	6010	5545	4675	5870	6080	6015	5775	5425	4920	5300	-	-	-	-	1535	1475	645		
Saukang Boe	4250	4305	3800	4430	4420	4480	6300	5835	4980	6150	6350	6280	6060	6035	5150	5475	-	-	-	-	1780	1790	945	345	

Analysis 6-1 main clustering events. MCKGBM joins BB at 1785m; BBJKKP joins MCKGBMBB at 1929m; BBJKKPMCKGBMBB joins PKPPSS at 2539m (BKDA is 2759m from PKPPSS and >3647m from MCKGBMBBBBJKKP). TMMLGD joins MTM at 1330m; AJB joins KKKKK at 1116m; these join at 2154.5m (PDCSS is 4078m from TMMLGDMTMAJBKKKKK and 4595m from B(2)B).

Analysis 6-2 main clustering events. BBJKK joins MBB at 1745m; PT joins PKPPSS at 2117m; these join at 2266m (BKDA is 3496m from BJBKKMBB and 3065m from PTPKPPTS). AJB joins KKKKK at 1116m; these join CKGBM at 1884m; MMLGD joins MTM at 1233m; all join at 2096m (PDCSS is 4002m from MMLGDMTMCKGBMAJBKKKKK and 4595m from B(2)B).

TABLE 6-4. LOWER-MIDDLE JEKNEKBERANG INTERSITE DISTANCES IN METRES - FORTRESS WALL IGNORED

KLMB	K	K	B	K	B	J	P	K	K	M	K	C	G	B	M	B	B	P	K	P	P	S	S	T	M
KTDSAL	105																								
Bisei	291	108																							
Katangka	234	177	269																						
Bidaraya	380	470	560	350																					
Jipang	575	775	785	515	205																				
Pandang-Pandang	535	705	825	925	1760	1755																			
Karunrung Sel.	1050	1255	1290	1035	650	445	2075																		
Karunrung Utara	1350	1460	1560	1325	990	690	2335	240																	
Maccinik Somba.	650	760	925	900	1605	1595	1440	1915	2150																
Kaledu Paya	(600)	(960)	(1070)	(1205)	(1365)	(1525)	(710)	(2335)	(2670)	(870)															
Campagaya	(630)	(890)	(1010)	(1160)	(1435)	(1595)	(880)	(2370)	(2610)	(715)	155														
Gusung	(975)	(1230)	(1375)	(1575)	(1755)	(2055)	(1340)	(2435)	(2640)	(615)	570	445													
Bonto Jalling	(1500)	(1710)	(1790)	(1760)	(2245)	(2600)	(1760)	(2910)	(3120)	(1010)	840	910	460												
Makam Mangasa	(1800)	(2010)	(1975)	(2070)	(2645)	(2855)	(2050)	(3160)	(3350)	(1210)	1165	1150	760	240											
Bontomanaik 1	995	1195	1280	1600	1585	1420	2120	1635	1750	720	(1625)	(1470)	(1245)	(1545)	(1660)										
Bonto Kapette	1915	2130	2490	2475	2405	2205	3075	2170	2185	1645	(2705)	(2365)	(1960)	(2255)	(2220)	1005									
Paccalaya	940	850	750	940	1580	1865	1570	2280	2475	1785	(2150)	(2310)	(2700)	(3200)	(3440)	2090	3300								
Kasomberang	1560	1340	1220	1425	1970	2225	2005	2570	2755	2260	(2660)	(2710)	(2780)	(3760)	(4030)	2610	3925	510							
Paccinongang	1825	1705	1580	1810	2280	2530	2450	2830	2985	2525	(3090)	(3215)	(3625)	(4075)	(4410)	3345	4630	810	130						
Pao-Pao	1760	1540	1405	1615	2080	2335	2325	2620	2785	2575	(2955)	(3060)	(3450)	(3960)	(4205)	2770	4475	690	110	120					
Sampeang	1315	1165	1015	1350	1675	1920	2090	2235	2415	2015	(2655)	(2765)	(2625)	(3235)	(3530)	3010	4075	410	180	285	115				
Sero	1255	910	850	1105	1390	1615	2110	1865	2050	2540	(2575)	(1960)	(2330)	(2880)	(3100)	2930	3805	615	455	560	395	130			
Tompok Balang	1610	1550	1840	1635	2120	2420	1210	2960	3210	2590	(1720)	(2000)	(2380)	(2650)	(2990)	3275	4255	1725	1910	2330	2260	2240	2380		
Mangallik	(2255)	(2150)	(2500)	(2360)	(2710)	(3035)	(1730)	(3540)	(3720)	(3195)	2420	2140	2825	3060	3370	(3785)	(4700)	(2310)	(2475)	(2770)	(2740)	(2755)	(2950)	(570)	
Dampang	(1420)	(1590)	(1685)	(1710)	(2420)	(2665)	(940)	(3025)	(3385)	(2210)	1215	1555	1895	2035	2365	(2925)	(3865)	(2045)	(2375)	(2785)	(2720)	(2600)	(2695)	(615)	900
Labengnge	(1650)	(1810)	(1995)	(2065)	(2635)	(2905)	(1125)	(3230)	(3580)	(2330)	1310	1615	1955	2090	2400	(3050)	(3980)	(2250)	(2545)	(2935)	(2900)	(2860)	(3005)	(775)	840
Gotong	(1695)	(1890)	(1995)	(2065)	(2915)	(2805)	(1175)	(3250)	(3420)	(2310)	1300	1610	1935	2030	2345	(3060)	(3980)	(2340)	(2675)	(3035)	(3000)	(2990)	(3125)	(880)	925
Manyampang	(2010)	(2105)	(2480)	(2285)	(2910)	(3425)	(1510)	(3710)	(3975)	(2730)	1695	2020	2365	2510	2320	(3470)	(4355)	(2465)	(2730)	(3110)	(3050)	(2990)	(3125)	(910)	560
Makam Takbakka	(2475)	(2765)	(3010)	(2950)	(3780)	(3265)	(2010)	(3740)	(4030)	(2990)	1875	2195	2355	2285	2480	(3625)	(4405)	(3305)	(3665)	(4050)	(3980)	(3860)	(3990)	(1725)	1515
Tombolok	(2605)	(2960)	(3155)	(3115)	(3930)	(3370)	(2150)	(3860)	(4235)	(3090)	2000	2300	2450	2350	2685	(3735)	(4505)	(3420)	(3745)	(4140)	(4070)	(3950)	(4090)	(1785)	1555
M.Kocci Borong	(2710)	(2980)	(3165)	(3200)	(4010)	(3480)	(2275)	(3900)	(4260)	(3090)	2105	2410	2525	2225	2560	(3755)	(4615)	(3540)	(3875)	(4255)	(4195)	(4090)	(4215)	(1935)	1665
Bonto Tangnga	(2160)	(2350)	(2660)	(2610)	(2965)	(3240)	(2190)	(3760)	(3990)	(1860)	1350	1510	1250	815	760	(2410)	(3030)	(3730)	(4300)	(4700)	(4530)	(4305)	(4060)	(2795)	2670
Jingarak	(2385)	(2850)	(3120)	(2840)	(2995)	(3355)	(2215)	(4125)	(4340)	(2300)	1630	1780	1620	1340	1355	(2915)	(3610)	(3800)	(4180)	(4550)	(4420)	(4325)	(4340)	(2620)	2720
AnakGowa Utara	(1585)	(2030)	(2270)	(2320)	(2045)	(2360)	(1360)	(2990)	(3210)	(1750)	830	1105	1135	1090	1290	(2450)	(3305)	(2815)	(3250)	(3670)	(3565)	(3360)	(3385)	(1600)	1810
AnakGowa Sel.	(1890)	(2320)	(2520)	(2715)	(2300)	(2710)	(1605)	(3330)	(3550)	(2060)	1010	1240	1320	1320	1500	(2590)	(3450)	(3150)	(3675)	(4030)	(3880)	(3745)	(3780)	(1750)	1940
Kanjilo T-L	(2970)	(3260)	(3500)	(3390)	(3685)	(3870)	(2835)	(4695)	(4870)	(2780)	2205	2375	2125	1710	1700	(3365)	(3795)	(4260)	(4750)	(5150)	(4985)	(4900)	(4910)	(3140)	3160
Kanjilo B-L	(3050)	(3425)	(3570)	(3630)	(3915)	(4210)	(2935)	(4750)	(4910)	(2910)	2290	2435	2165	1850	1780	(3375)	(3775)	(4610)	(5050)	(5415)	(5245)	(5110)	(5220)	(3400)	3345
Kanjilo Barat	(3220)	(3510)	(3745)	(3710)	(4040)	(4250)	(3095)	(4920)	(5085)	(3045)	2460	2605	2335	1980	1915	(3400)	(3930)	(4555)	(5440)	(5290)	(5200)	(5065)	(5200)	(3450)	3345
Kanjilo T-D	(3265)	(3700)	(4010)	(3715)	(4045)	(4400)	(2900)	(5050)	(5240)	(3170)	2510	2705	2500	2100	2060	(3745)	(4225)	(4480)	(5100)	(5455)	(5310)	(5150)	(5060)	(3285)	3200
Kanjung Maek	(3475)	(3875)	(4150)	(3850)	(4190)	(4430)	(3260)	(5275)	(5480)	(3260)	2715	2925	2745	2140	2170	(3990)	(4460)	(4700)	(5310)	(5750)	(5470)	(5370)	(5380)	(3435)	3260
Bontomanaik 2	(3990)	(4450)	(4570)	(4625)	(4610)	(4865)	(3625)	(5310)	(5750)	(4215)	3140	3325	3545	3320	3360	(4840)	(5375)	(4950)	(5240)	(5640)	(5565)	(5495)	(5615)	(3365)	3015
Bonto Pakja	(4955)	(5310)	(5470)	(5700)	(5500)	(5730)	(4570)	(6185)	(6580)	(5090)	4005	4220	4510	4150	4160	(5790)	(6300)	(5860)	(6160)	(6520)	(6450)	(6400)	(6545)	(4255)	3825
Dampang Bira	2815	2745	2550	2550	2455	2470	3465	2185	2210	4040	(3740)	(3600)	(4270)	-	-	3900	4285	2655	2460	2225	2245	2100	1740	4355	(4915)

TABLE 6-4. LOWER-MIDDLE JEKNEKBERANG INTERSITE DISTANCES IN METRES (CONT.)

	K	K	B	K	B	J	P	K	K	M	K	C	G	B	M	B	B	P	K	P	P	S	S	T	M
Bangkala/Ende	3060	2960	2705	2750	2700	2730	3580	2475	2500	4310	(3935)	(3800)	(4195)	-	-	4160	4560	2675	2360	2050	2055	2050	1795	4385	(4495)
Kubur. Bangkala	3290	3160	2920	3010	2950	2995	3835	2720	2740	4540	(4425)	(4020)	(4385)	-	-	4450	4790	2905	2620	2310	2300	2290	2005	4625	(5170)
Antang	4115	4095	3900	3900	3725	3730	5025	3405	3255	5305	(5195)	(4825)	(5670)	-	-	4925	5300	4215	3985	3695	3725	3625	3290	5885	(6420)
Pekallak Bua	-	-	-	-	-	-	(4920)	3820	4135	4460	4635	4900	-	-	-	-	-	-	-	-	-	-	-	(2400)	1835
Dampang	-	-	-	-	-	-	(4400)	3465	3760	4120	4400	4700	-	-	-	-	-	-	-	-	-	-	-	(1780)	1460
Cellaya	-	-	-	-	-	-	(5560)	4615	4855	5250	5560	5855	-	-	-	-	-	-	-	-	-	-	-	(2910)	2570
Saukang Borong	-	-	-	-	-	-	(6155)	5195	5455	5830	6110	6400	-	-	-	-	-	-	-	-	-	-	-	(3515)	3110
Saukang Boe	-	-	-	-	-	-	(6455)	5490	5780	6165	6420	6705	-	-	-	-	-	-	-	-	-	-	-	(3835)	3455

	D	L	G	M	M	T	M	B	J	A	A	K	K	K	K	K	B(2)	B	D	B	K	A	P	D	C	S
Dampang																										
Labengnge	220																									
Gotong	315	120																								
Manyampang	575	405	425																							
Makam Takbakka	1275	1085	980	880																						
Tombolok	1555	1375	1050	900	115																					
M. Kocci Borong	1665	1520	1300	1020	255	150																				
Bonto Tangnga	2170	1855	1690	2320	2040	2080	1920																			
Jingarak	2035	1750	1650	2060	1435	1495	1505	590																		
AnakGowa Utara	1010	905	800	1210	1140	1210	1150	860	670																	
AnakGowa Sel.n	1210	1060	970	1300	870	965	890	970	630	220																
Kanjilo T-L	2520	2400	2325	2485	1755	1760	1695	900	545	1210	1200															
Kanjilo B-L	2665	2550	2475	2670	1925	1940	1870	1020	820	1500	1360	158														
Kanjilo Barat	2800	2675	2500	2695	1915	1925	1845	1160	780	1510	1490	151	126													
Kanjilo T-D	2690	2560	2420	2520	1700	1700	1595	1300	865	1495	1400	324	520	183												
Kanjung Maek	2850	2700	2570	2620	1785	1765	1675	1365	930	1705	1600	584	494	290	145											
Bontomanaik 2	2940	2750	2550	2435	1680	1575	1455	2560	2010	2270	2115	1735	1890	1630	1355	1200										
Bonto Pakja	3875	3650	3560	3310	2620	2500	2375	3350	2965	3120	3075	2580	2670	2410	2135	1940	730									
Dampang Bira	(4590)	(4780)	(4915)	(5065)	(5820)	(6080)	(6190)	-	-	-	-	-	-	-	-	-	-	-								
Bangkala/Ende	(4730)	(4890)	(5040)	(5125)	(5900)	(6210)	(6340)	-	-	-	-	-	-	-	-	-	-	-	175							
Kub. Bangkala	(4890)	(5115)	(5260)	(5370)	(6150)	(6365)	(6530)	-	-	-	-	-	-	-	-	-	-	-	280	150						
Antang	(6125)	(6315)	(6425)	(6550)	(7370)	(7670)	(7810)	-	-	-	-	-	-	-	-	-	-	-	1280	1415	1225					
Pekallak Bua	2665	2555	2555	2040	2740	2735	2820	4410	3935	3090	3250	4200	4360	4285	4050	4020	3170	3610	-	-	-	-				
Dampang	2295	2295	2360	1920	2500	2480	2530	4390	4070	3130	3160	4450	4645	4645	4425	4475	3920	4550	-	-	-	-	1140			
Cellaya	3410	3410	3475	2985	3985	3975	3795	5510	5080	4300	4340	5440	5640	5615	5370	5410	4690	5165	-	-	-	-	1340	855		
Saukang Borong	4000	3970	4020	3510	4165	4155	4200	6010	5545	4790	4810	5870	6080	6015	5775	5425	4920	5300	-	-	-	-	1535	1475	645	
Saukang Boe	4290	4250	4305	3800	4430	4420	4480	6300	5835	5095	5145	6150	6350	6280	6060	6035	5150	5475	-	-	-	-	1780	1790	945	345

Analysis 6-3 main clustering events. BJKKKKBKP joins MCKGBM at 1665m; these join BB at 1868m; these join at 2318m (BKDA is 2759m from PKPPSS and >3647m from MCKGBMBJKKKKBKPBB). TMMLGD joins MTM at 1330m; AAJB joins KKKKK at 1217m; these join at 2097m (PDCSS is 4085.5m from TMMLGDMTMAAJBKKKKK and 4595m from B(2)B).

Analysis 6-4 main clustering events. BJKKMKKBK joins PKPPSS at 1735m; these join PT at 1899m; these join BB at 2542m (BKDA is 2759m from PKPPSS and >3647m from BJKKMKKBK).
AAJB joins KKKKK at 1217m; these join CKGBM at 1817m; MMLGD joins MTM at 1233m; all join at 2074m (PDCSS is 4376m from MMLGDMTMCKGBMAAJBKKKKK and 4595m from B(2)B).

early kinglist as a true account of a father-to-son succession spanning the 14th and 15th centuries.

On the other hand, it would be unwise to infer that early Gowa enjoyed anything like the grandeur of Gowa during the 16th-17th centuries. As a polity it may have amounted to little more than a congregation of communities attracted by the defensibility of Bonto Biraeng (Figure 6-4a). Location strongly suggests an economy based on a wetland carbohydrate staple, probably rice. Early Benteng Tua (before it had walls) also appears to have been a "complex burial ground", possibly invoking the complex burial grounds to the east (Chapters 9 and 10) as an ethnohistorical analogy of early Gowa's status as a lineage. Further inferences should wait till we have reviewed the other sites. Interestingly, though, the site's flat tradeware profile between the 13th and 16th centuries (Figure 6-13) suggests that Gowa was in some sense representative of wider developments in the region.

It has been said that, after Gowa chose Somba Opu as a coastal palace during the reign of Tunipalangga (1547-1565), Somba Opu retained that status until its destruction in 1669, whereas Benteng Tua became a religious centre reserved for inaugurations and royal burials (Mukhlis, 1975; Reid, 1983a:141). This characterisation was apparently true of Tamalate but not of the fortress as a whole. As also noted by Mattulada (1982a:19), Gowa's palace centre returned to Benteng Tua during much of Alauddin's reign (1618-1631) - corresponding to a period when the Gowa royalty was the weaker partner compared to Tallok (13.3.3). Analogously, the Gowa royalty retreated to Benteng Tua after 1669 when Gowa's very existence was threatened. Even during periods when the strength of the Gowa located its palace at Somba Opu, Benteng Tua toponyms (Lakiung, Datak, and possibly Mangasa) recur in the Makassar texts. Benteng Tua's share of the Gowa tradeware pieces continues unabated through to the 18th century (Figures 6-13), and Benteng Tua was clearly a central historical site (Figure 6-15). In total these points demonstrate that Benteng Tua remained a densely populated area and the heartland of the Gowa dynasty.

Confirming the evidence that Abdul Jalil resited Gowa's palace centre to Datak Toa, indeed in the heart of Benteng Tua, at the end of the 17th century, the most prominent bulge in Benteng Tua's tradeware histogram spans the late 17th to 18th centuries (Figure 6-13). This result reflects the high proportion of Qing BW and "Qing Swatow" pieces recorded at Benteng Tua compared to most other sites. Hence it could partly reflect SSPHAP's emphasis on surveying zones under occupation, rather than associated with burials.

But if so, then the steep drop in Benteng Tua's 19th century tradewares, which essentially reflects a low share of European pieces, strongly implies the site was then partly abandoned. Gowa negotiated comparatively peaceful terms with the Dutch based in Fort Rotterdam no earlier than the 19th century (Patunru, 1983). Certainly this situation would have finally made Benteng Tua's walls redundant, and may lie at the basis of Benteng Tua's reputation as a predominantly sacral centre.

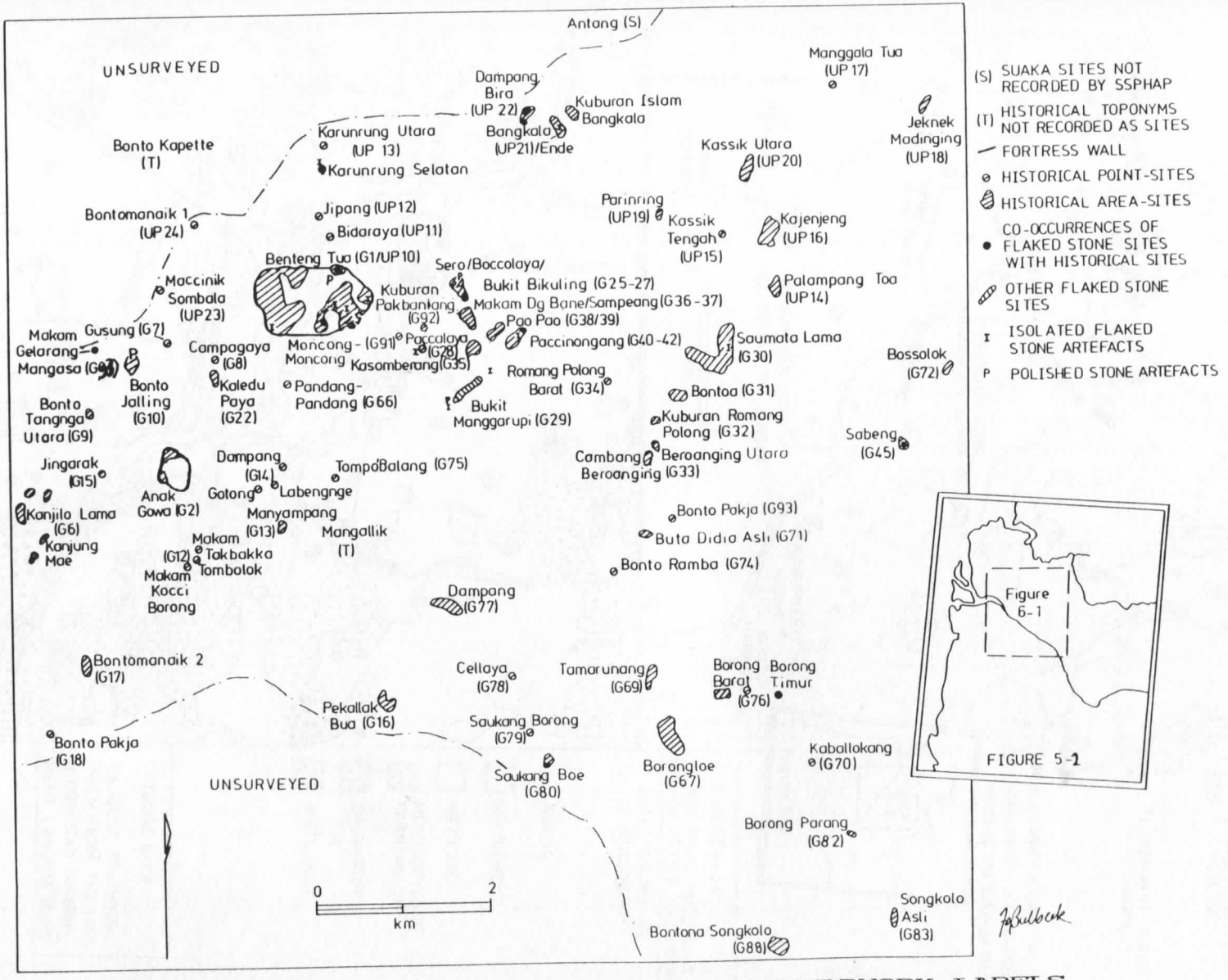


FIGURE 6-1. SITES AS IDENTIFIED WITH FIELDWORK LABELS ALONG THE MIDDLE JEKNEKBERANG

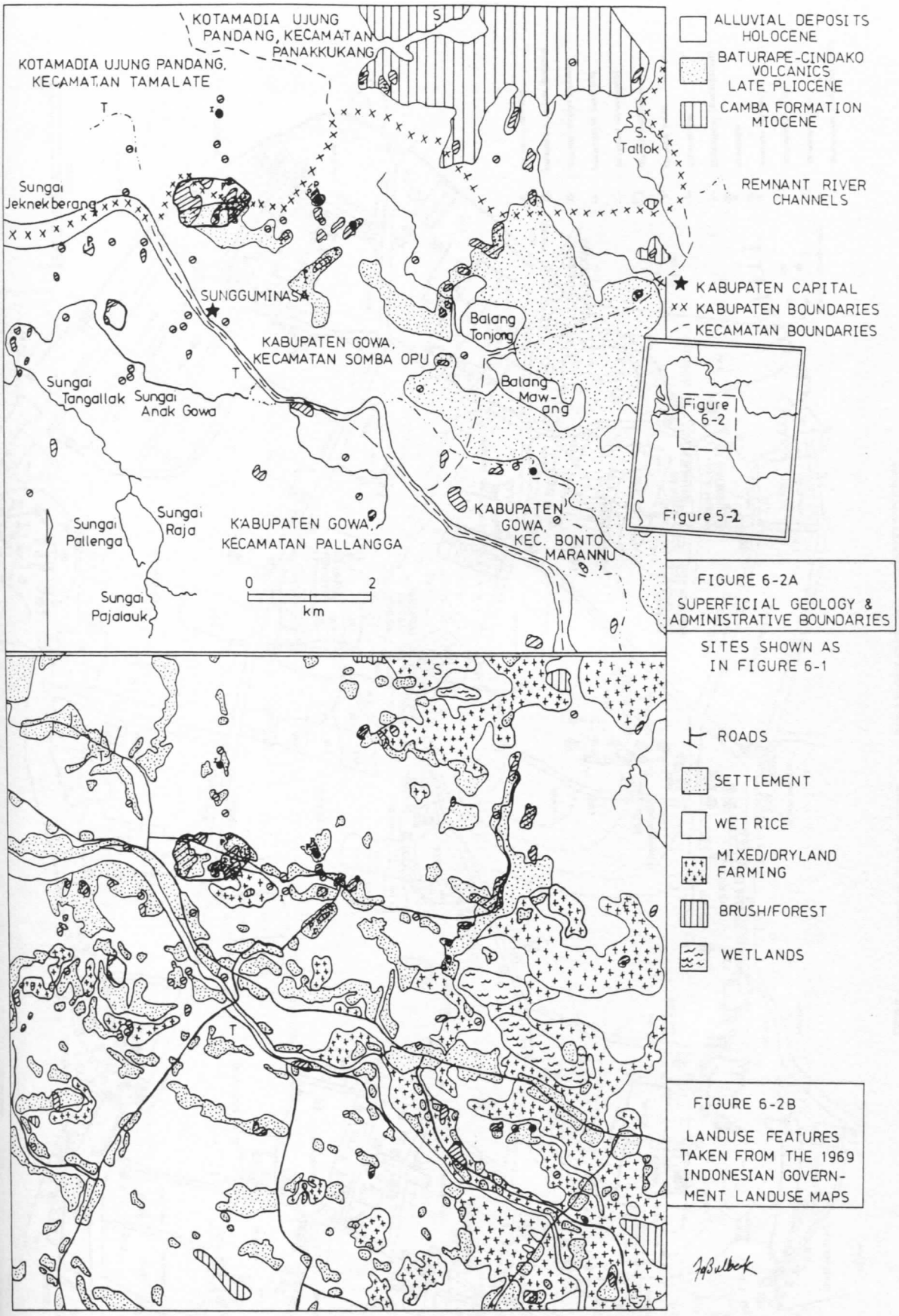


FIGURE 6-2A
SUPERFICIAL GEOLOGY & ADMINISTRATIVE BOUNDARIES

SITES SHOWN AS IN FIGURE 6-1

FIGURE 6-2B
LANDUSE FEATURES TAKEN FROM THE 1969 INDONESIAN GOVERNMENT LANDUSE MAPS

FIGURE 6-2. SITES ALONG THE MIDDLE JEKNEKBERANG IN RELATION TO TOPOGRAPHIC FEATURES

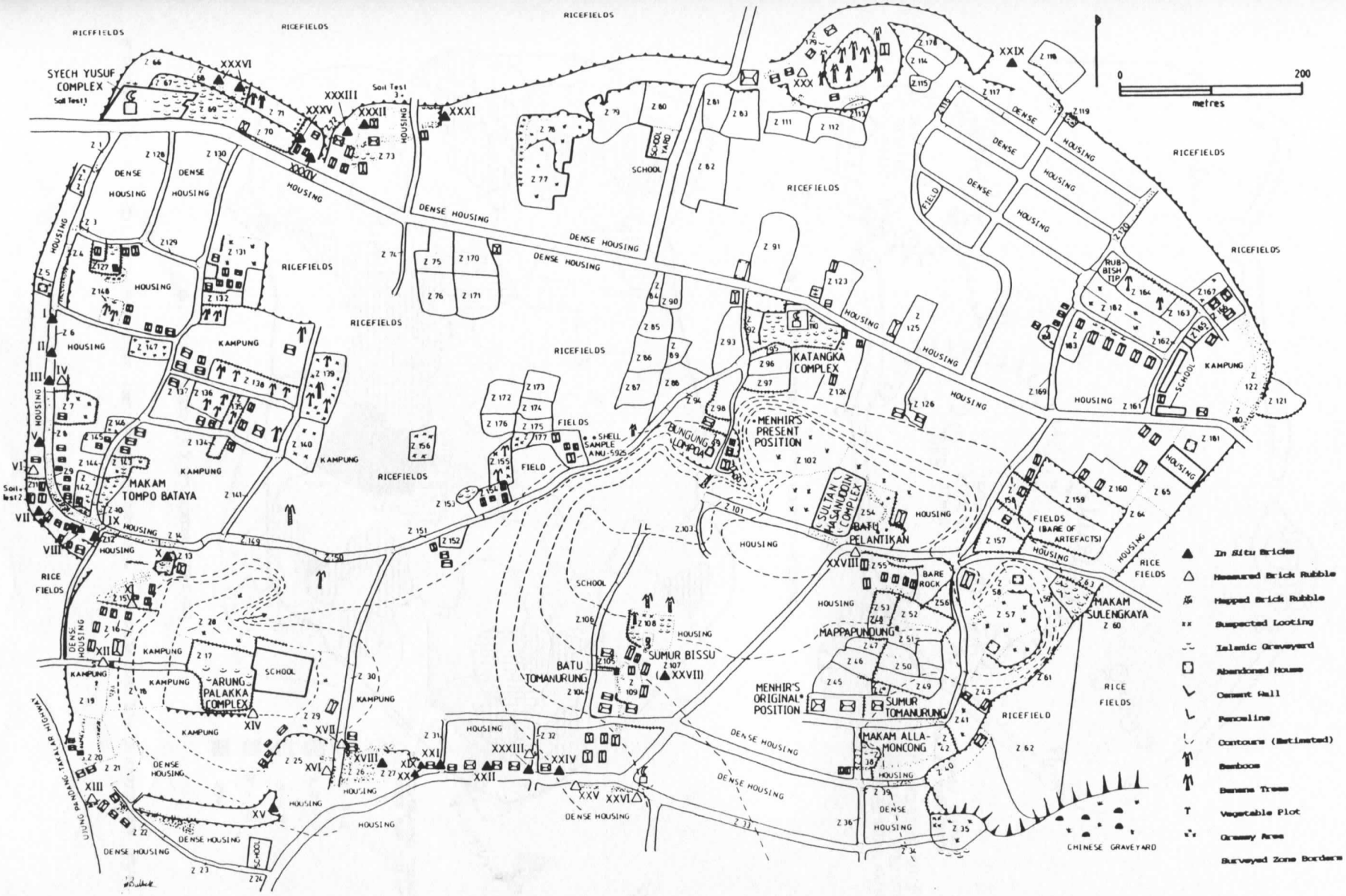
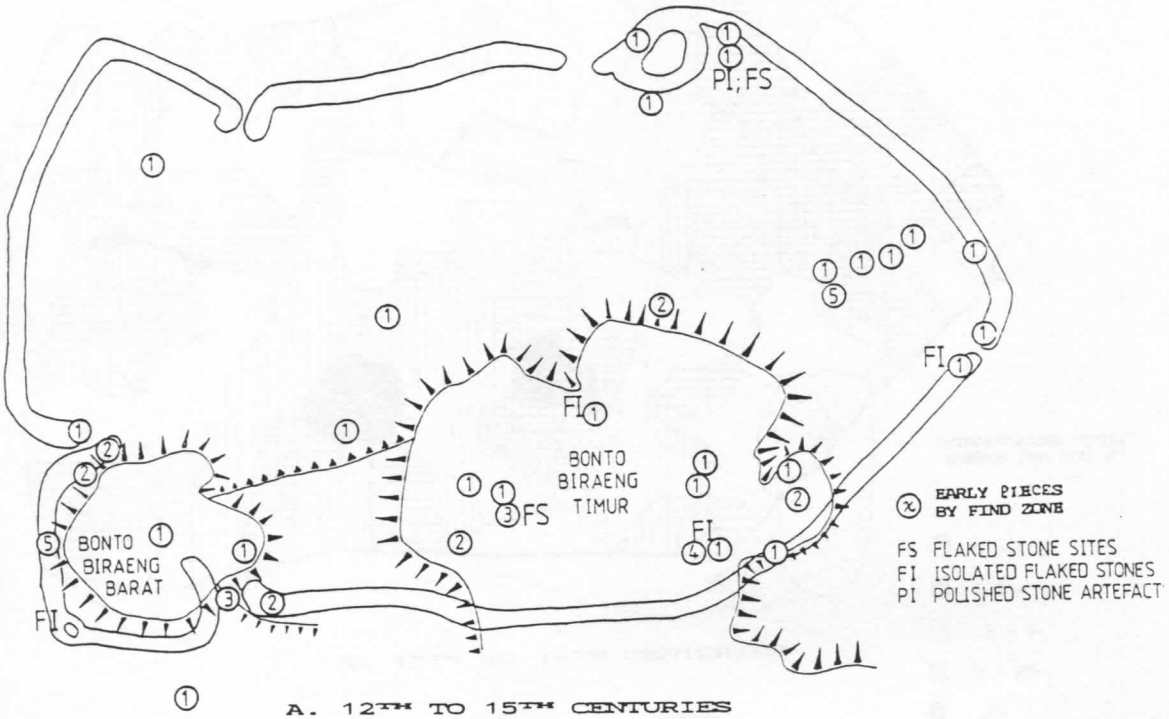
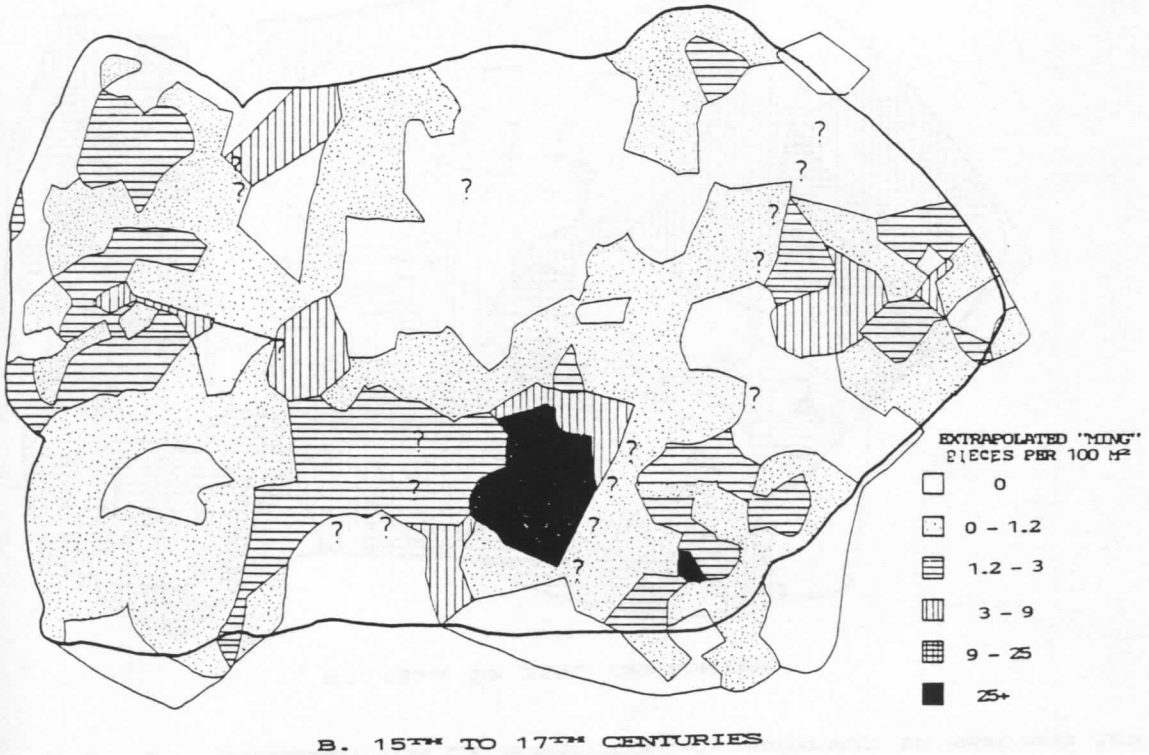


FIGURE 6-3. BENTENG KALE GOWA - ARCHAEOLOGICAL DOCUMENTATION



A. 12TH TO 15TH CENTURIES



B. 15TH TO 17TH CENTURIES

FIGURE 6-4. DISTRIBUTION OF PRECOLONIAL SHERDAGE IN BENTENG TUA

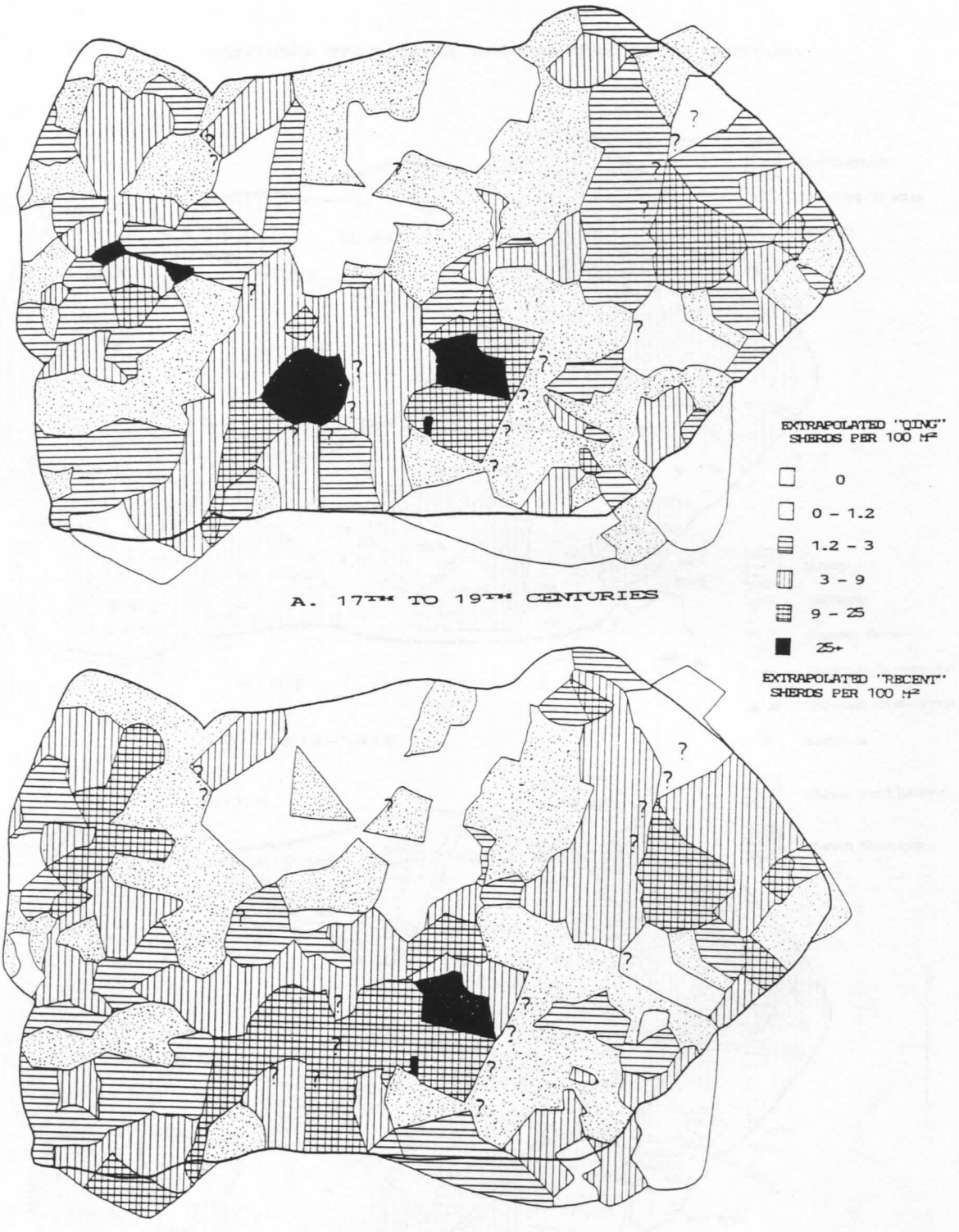
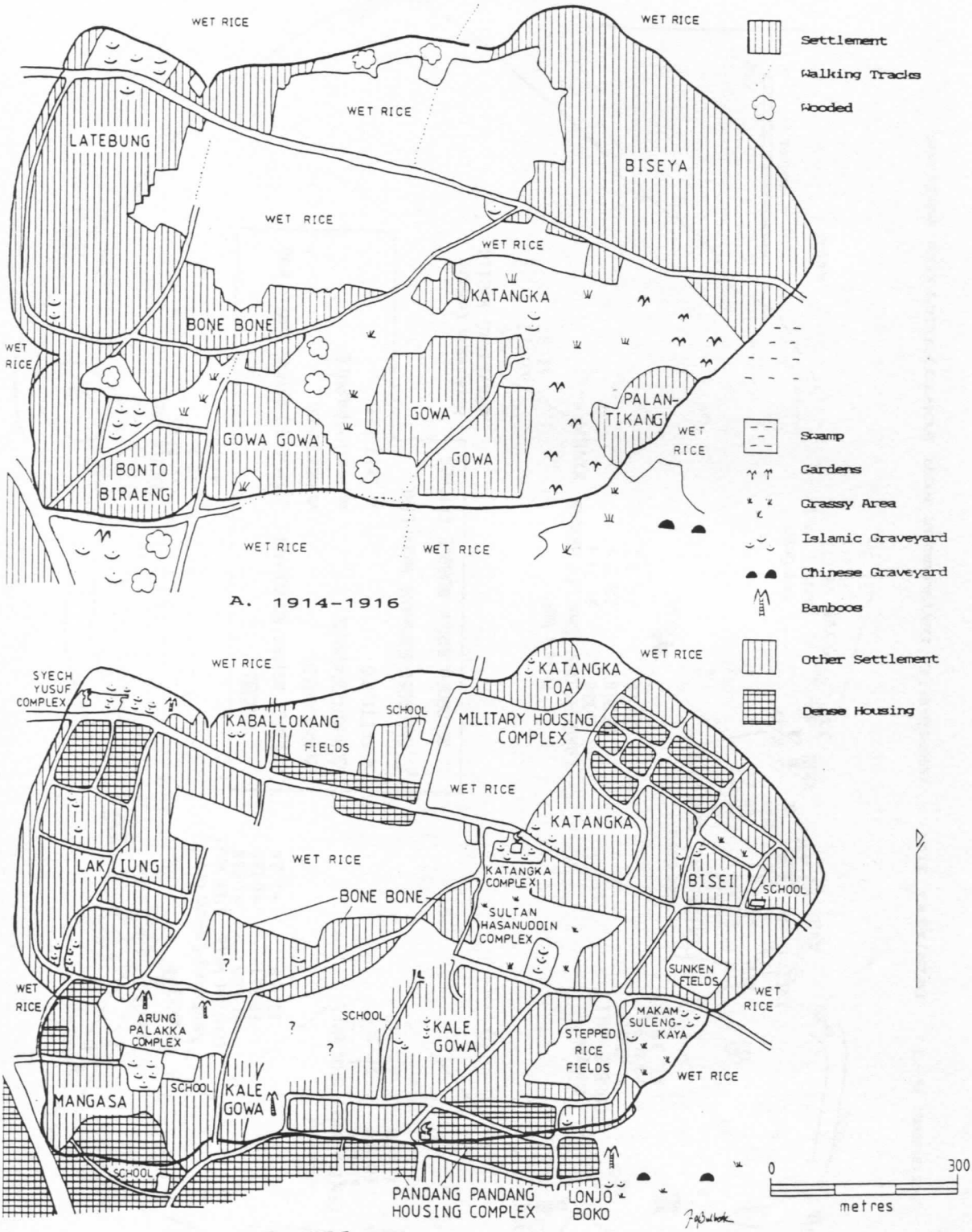


FIGURE 6-5. DISTRIBUTION OF POSTCOLONIAL SHERDAGE IN BENTENG TUA

FIGURE 6-6. BENTENG KALE GOWA DURING THE 20TH CENTURY



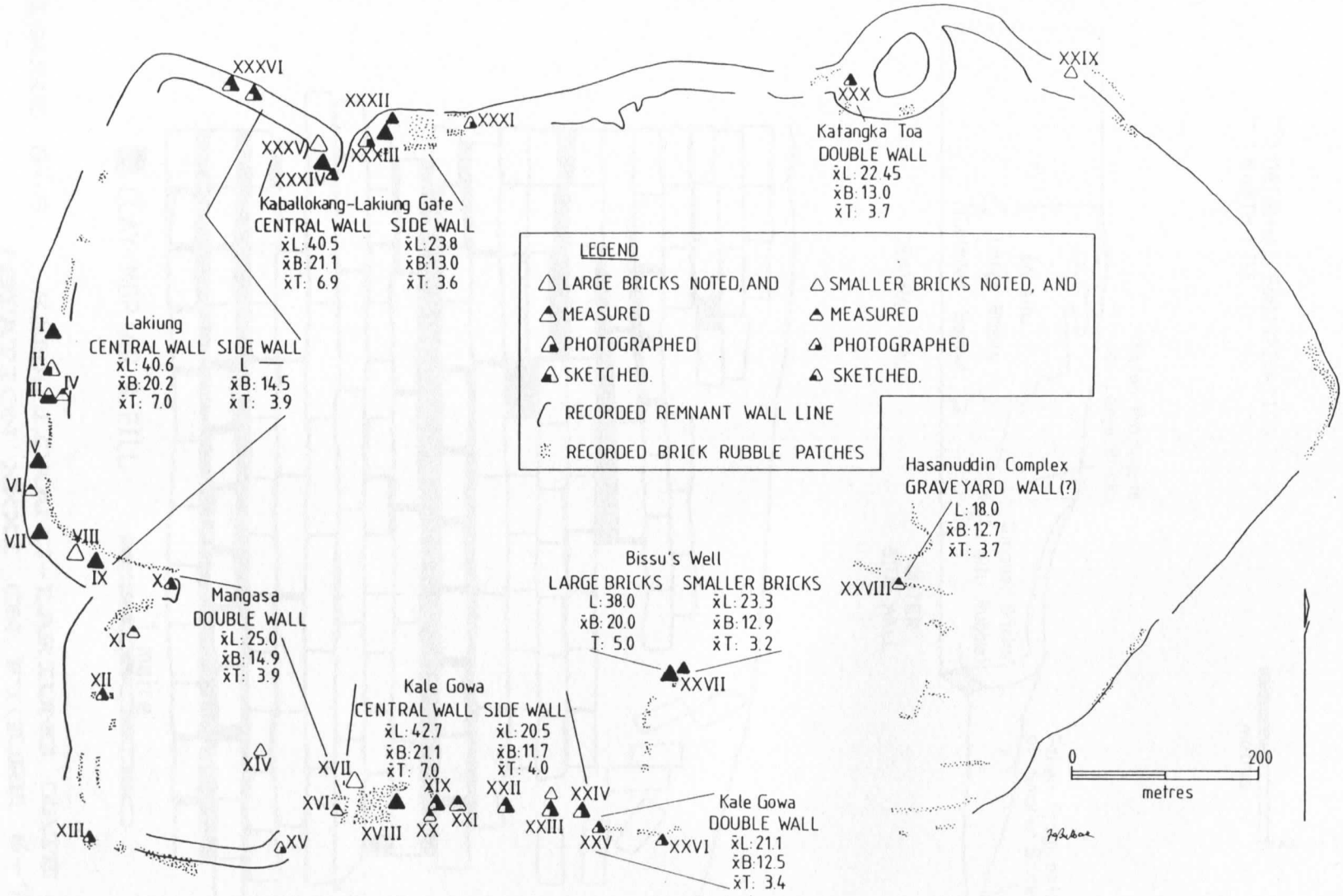


FIGURE 6-7. BENTENG TUA - SSPHAP'S DATABASE FOR FORTIFICATION BRICKS

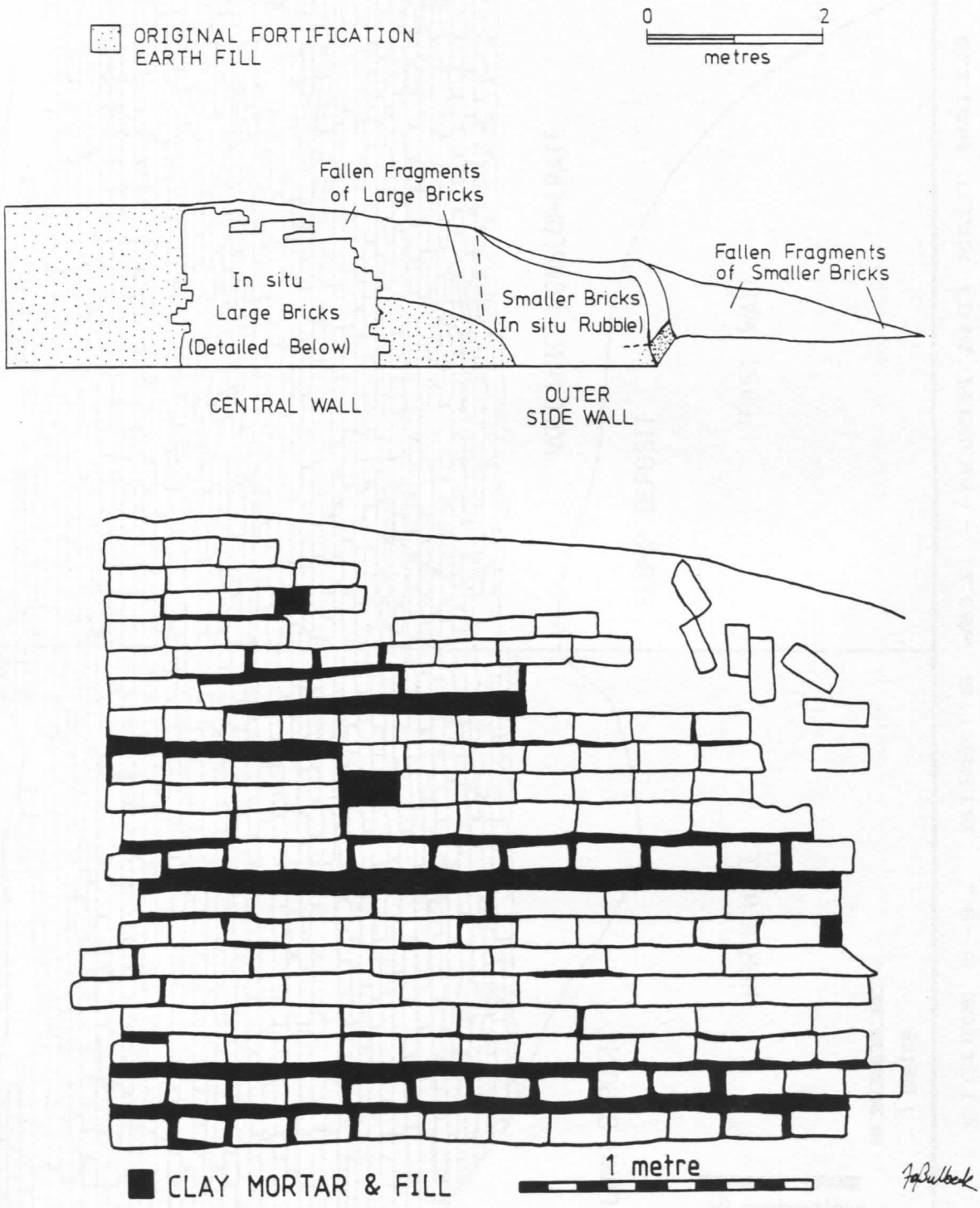


FIGURE 6-8. KABALLOKANG-LAKIUNG GATE SECTION (STATION XXXI ON FIGURE 6-7)

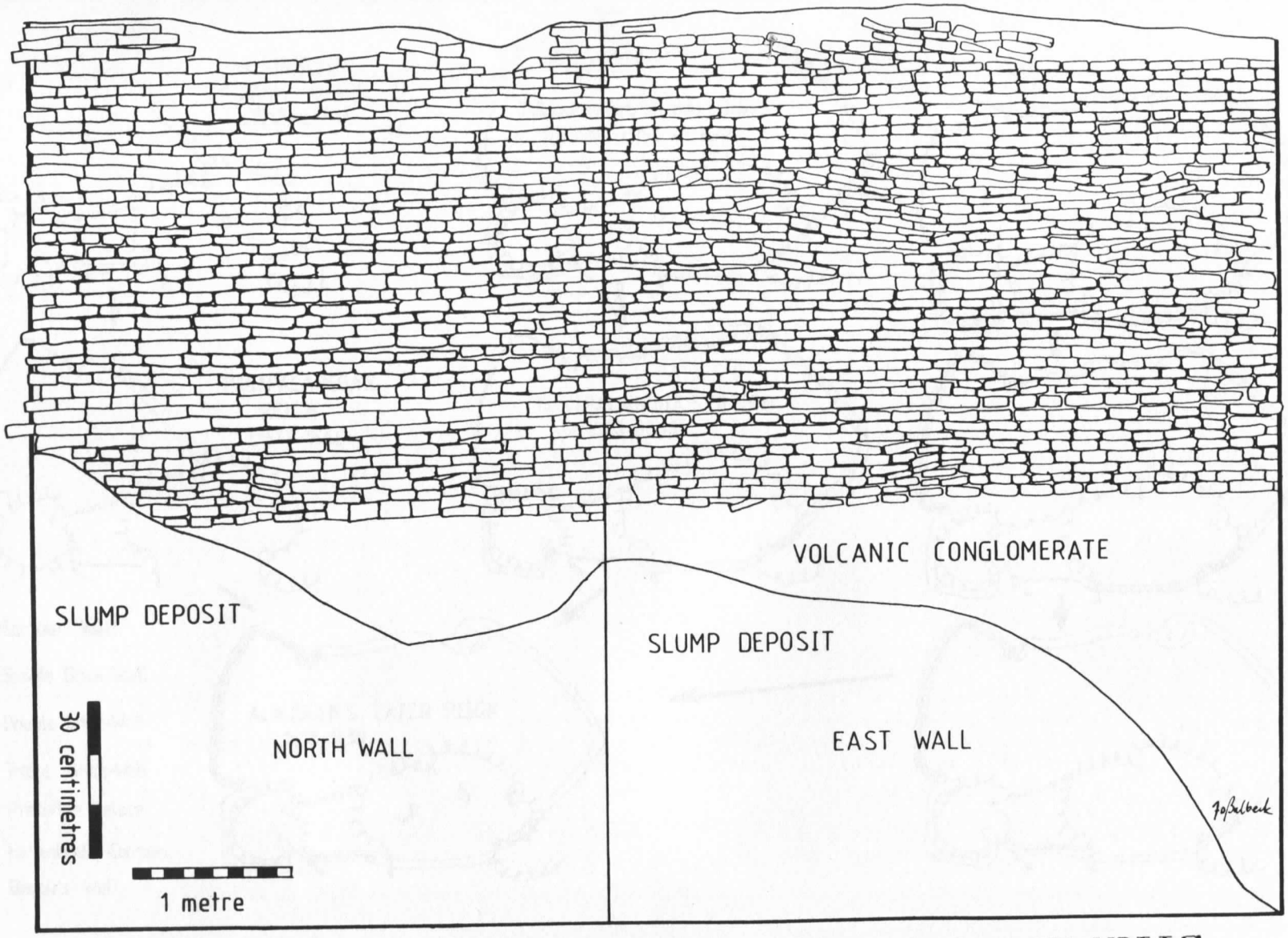


FIGURE 6-9. BISSU'S WELL - NORTH AND EAST WALLS

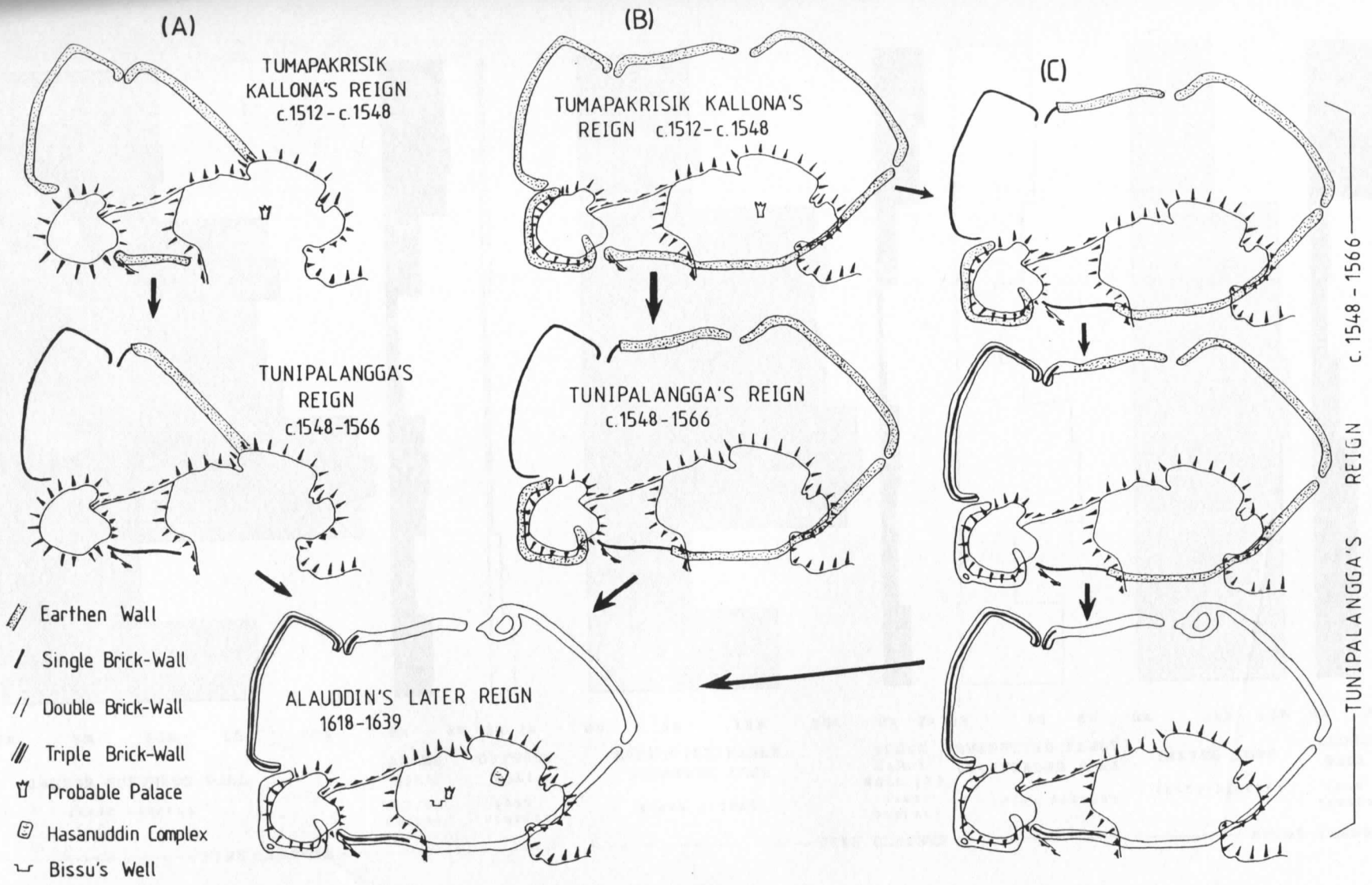


FIGURE 6-10. THREE POSSIBLE CONSTRUCTION HISTORIES OF BENTENG TUA

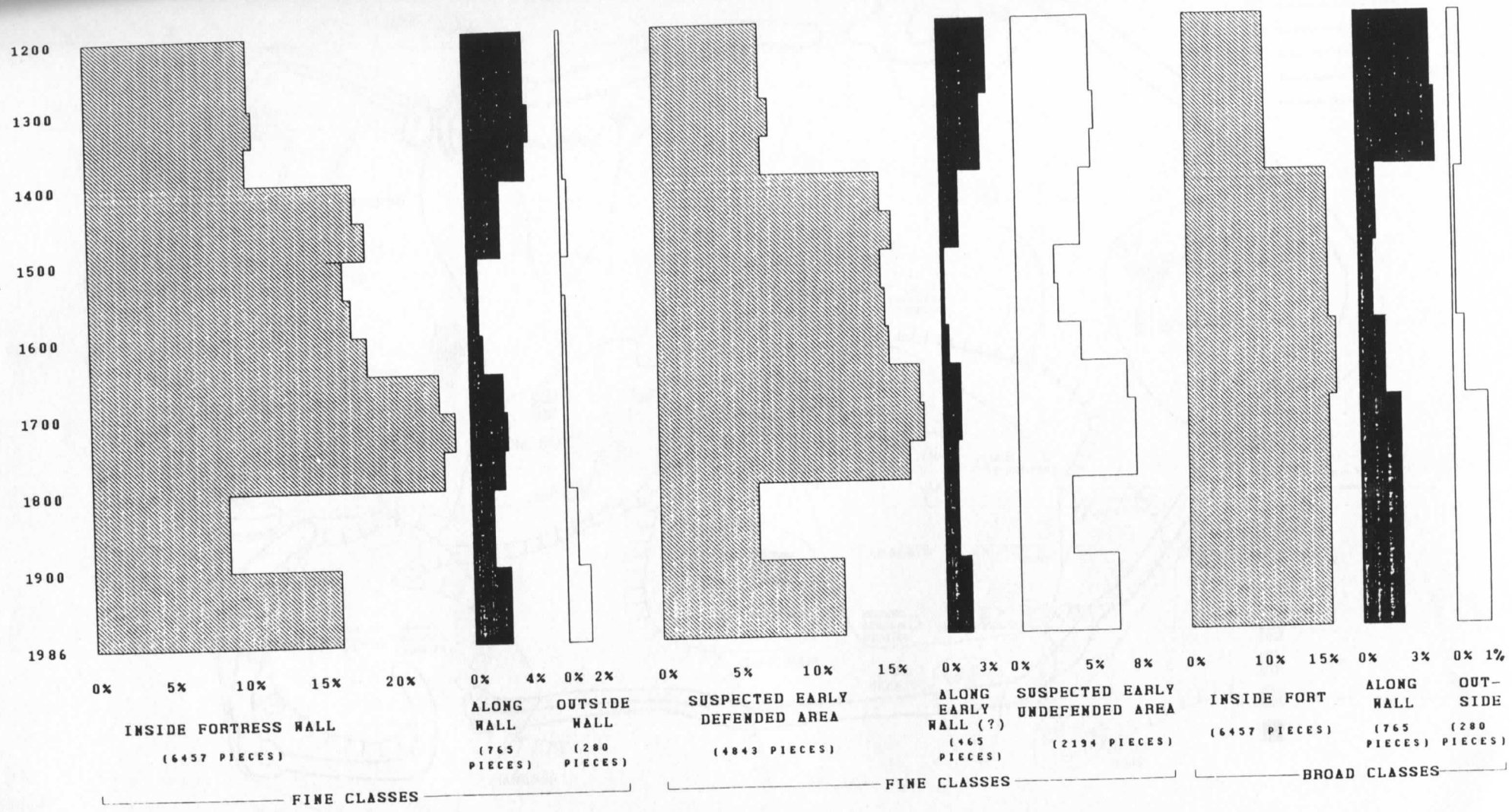


FIGURE 6–11. STANDARDISED CHRONOLOGICAL HISTOGRAMS – DATING BENTENG TUA

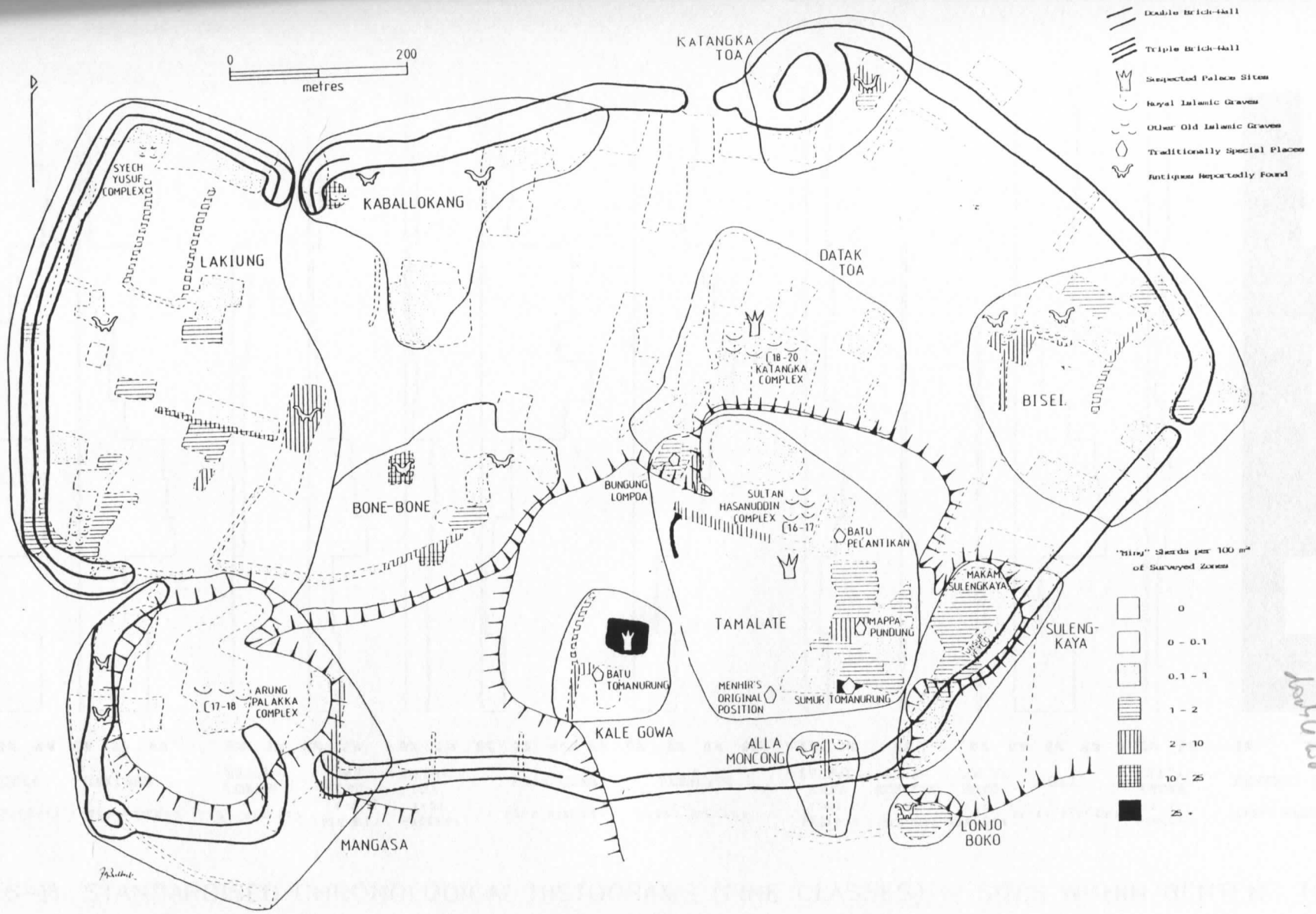


FIGURE 6-12. RECONSTRUCTION OF BENTENG KALE GOWA DURING THE MING PERIOD - FORTRESS WALLS AND SITE AREAS

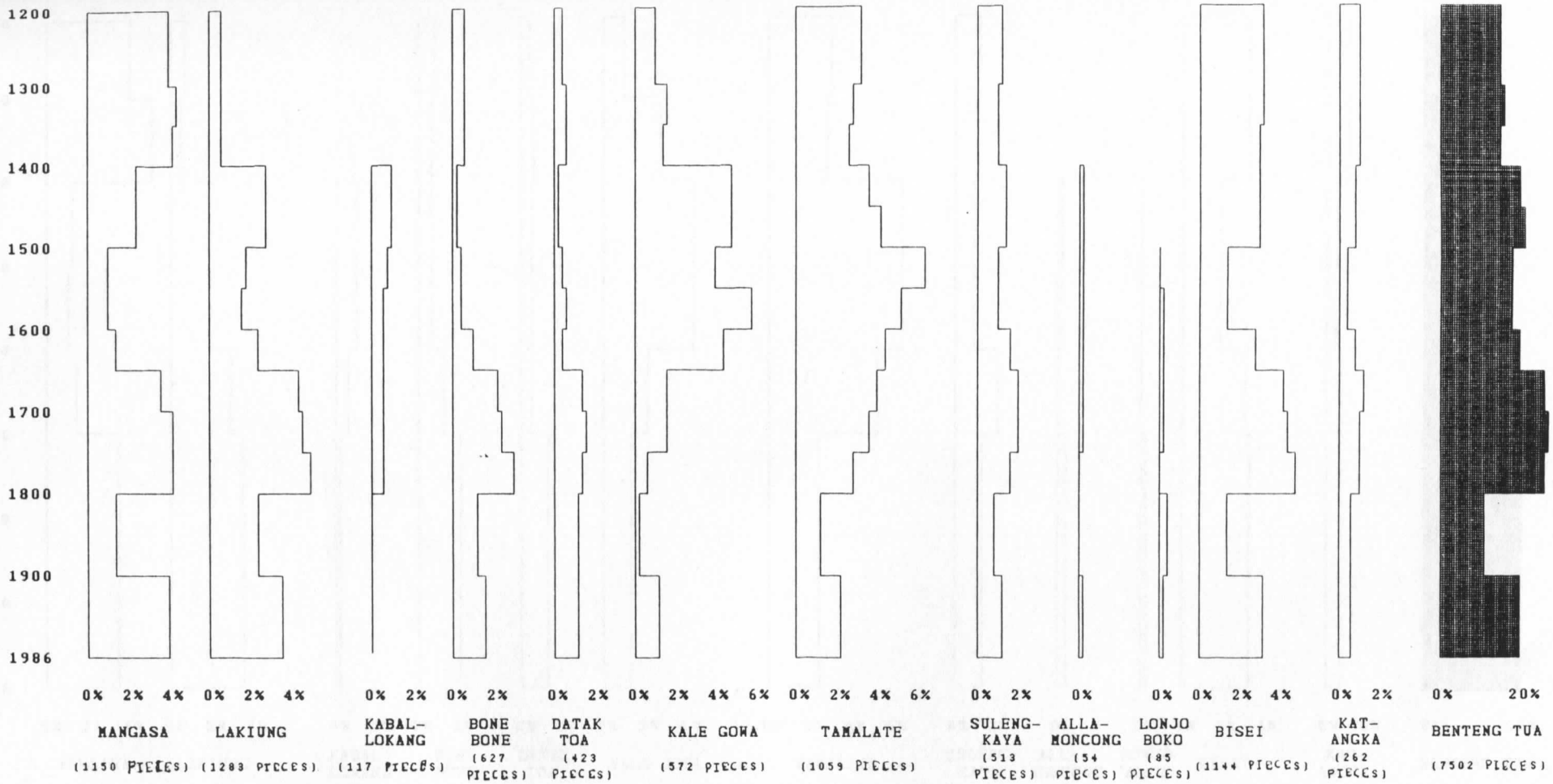


FIGURE 6–13. STANDARDISED CHRONOLOGICAL HISTOGRAMS (FINE CLASSES) – SITES WITHIN BENTENG TUA

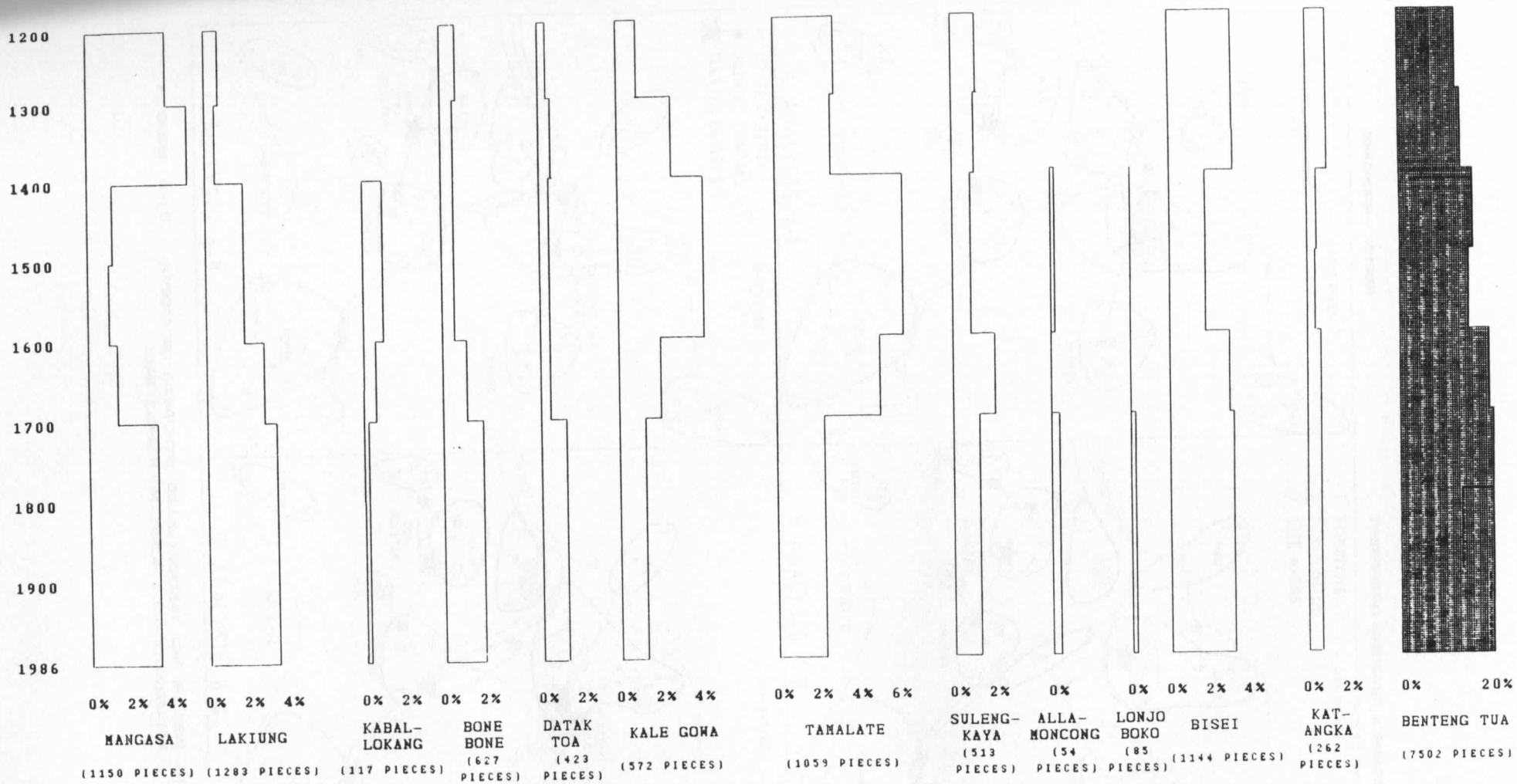


FIGURE 6–14. STANDARDISED CHRONOLOGICAL HISTOGRAMS (BROAD CLASSES) – SITES WITHIN BENTENG TUA

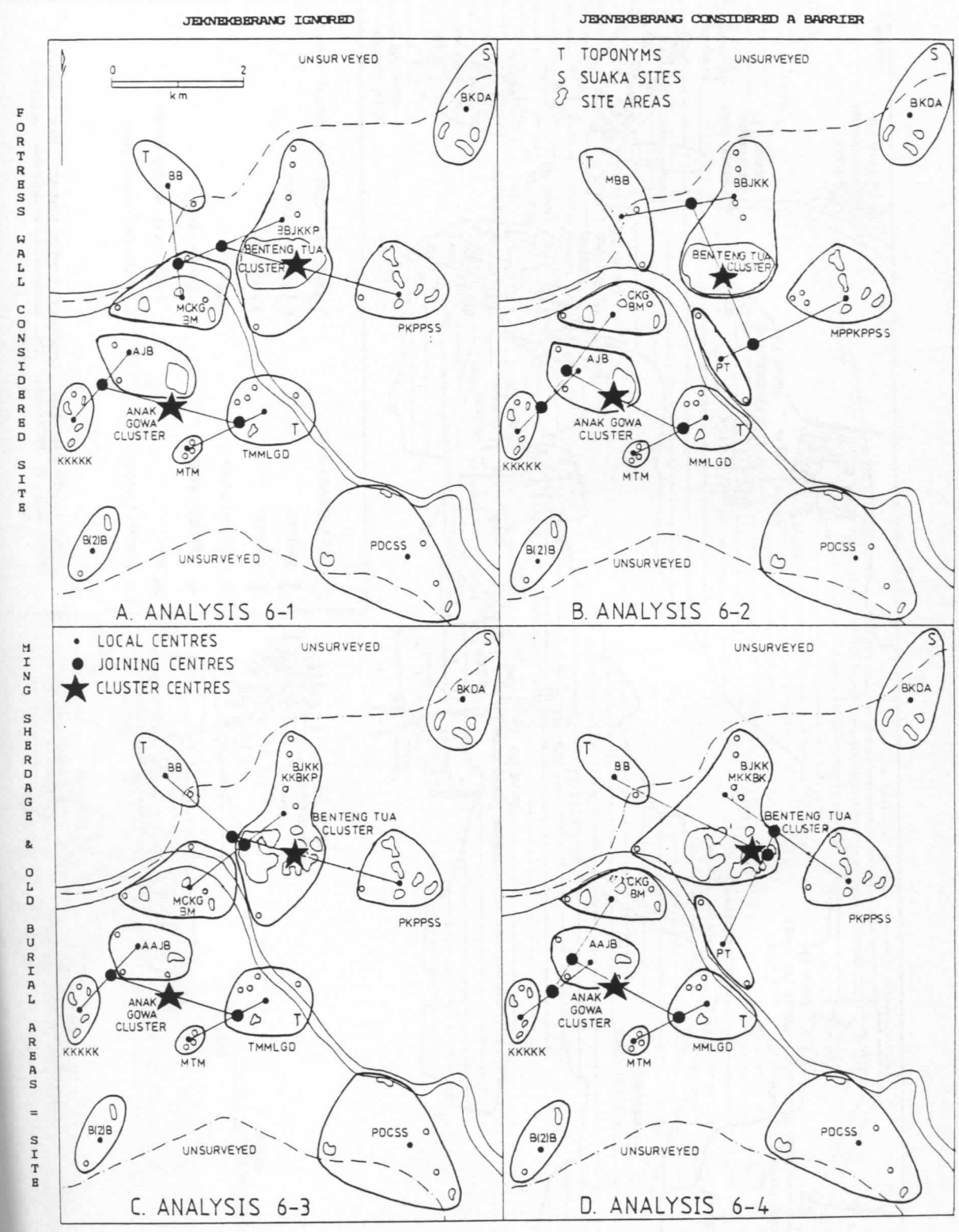


FIGURE 6-15. AVERAGE LINKAGE CLUSTERING OF SITES ALONG THE LOWER-MIDDLE JEKNEKBERANG

Photo 6-1.
One of the two wells at Bone-Bone from which a sample of estuarine shells, Sample Number Gowa 1-8, was obtained, returning a radiocarbon date of 5800 ± 90 BP (ANU-5925) which corrects to around 4300 BP.

Photo 6-2.
Station XIII of Mangasa's double brick-wall, part of a localised, curved protuberance in the outer wall which appears to represent a small bastion. Also the findspot of the blade core specimen G-1-21-1.

Photo 6-3.
Station XXXI in Kaballokang, showing double brick-wall in contrast to the triple brick-wall at Station XXXII. Most of the baulk is earth, and the ranging pole shows the location of the inner brick wall.







Photo 6-4.
Some of the seashells collected from the well at Bone-Bone and submitted for radiocarbon dating.
I identified the lighter stromb as *Strombus canarium* and the darker stromb as possibly *Strombus dentatus*.

Photo 6-5.
Station XVIII immediately east of the Mangasa-Kale Gowa gate, the best standing profile of central brick-wall. The height of the unrazed baulk, two metres, reflects the depth of the surrounding excavated area, as shown by the large tree which took root on the outside remnants of the former central wall.

Photo 6-6.
Station XVI immediately west of the Mangasa-Kale Gowa gate, showing inner and outer walls of smaller bricks separated by less than a metre of earth fill. Away from the Mangasa segment the inner and outer walls were further apart, especially where central brick-wall intervened.


13 14 15 16 17 18





Photo 6-7.
Makam Kale Kundrulu, just inside the Lakiung-Mangasa gate. Three headstones (one obscured from view) and two footstones in an old cement *nisan*-box. The platform bricks, attributed by the Mangasa inhabitants to the first Dutch brickworks in Makassar, have the dimensions of modern bricks (E.1.1). Associated with five other marked graves, two ascribed to Kale Kundrulu's descendants, all on top of the collapsed wall rubble and so dating to the 18th century or later.

The platform and *nisan*-box would be renovations while the head and footstones could date back to the 17th century. Not impossibly the grave of the regent Kg Karunrung (1631-1685).

Photo 6-8.
Zone 44, Tamalate. The "Tomanurung's well" is the hole at front-left, and behind it is the channel shown in Photo 6-12.

Photo 6-9.
The masoned menhir of soft volcanic stone, around two metres long, now lain on its side just northwest of the Sultan Hasanuddin complex. It is meant to mark the former location of a well called Bungung Barania ("Well of the Brave").





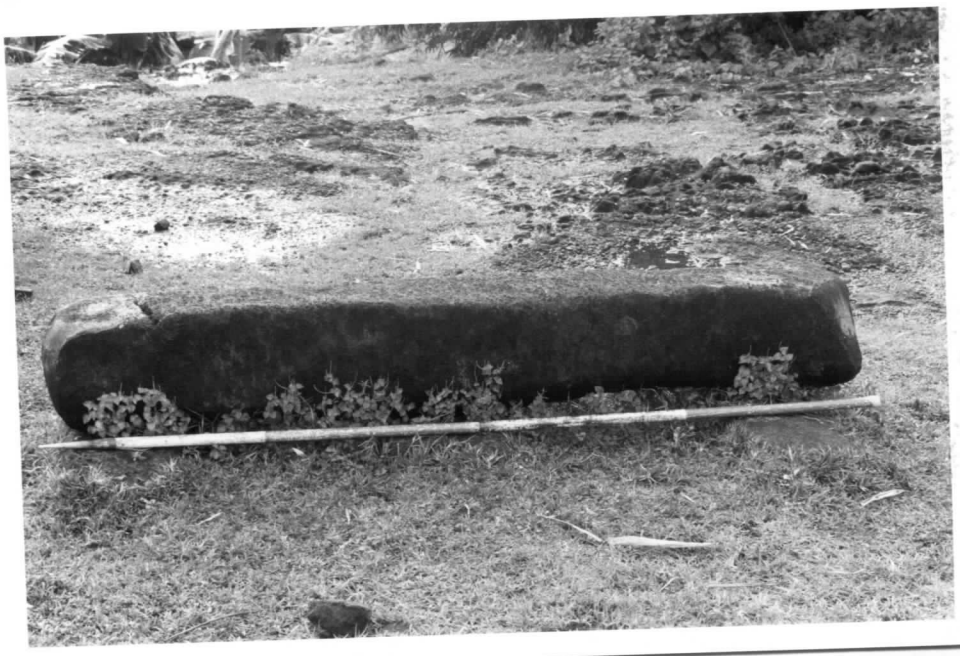


Photo 6-10.
The *kobang* tomb of Sultan Sahaduddin (Arung Palakka) and his main wife Daeng Talele. The style is unusual for the height of the walls beyond the junction with the cupola's base. One of the tombs restored by the Dutch Oudheidkundige Dienst (1949). Arung Palakka complex, Mangasa; Suaka Site No. 24. The top of another *kobang* tomb, here tentatively ascribed to Sultan Abdullah, can be seen at rear right.

Photo 6-11.
The outcrop of volcanic stone reportedly called Mappapundung, among the stepped sawah fields on the southwestern slope below the Sultan Hasanuddin complex, Tamalate.

Photo 6-12.
Zone 44 in Tamalate in the early wet season, showing the peculiar channel within this exposure of soft volcanic rock.







Photo 6-13.
Kompleks Makam Sultan Hasanuddin, Suaka Site No. 253, showing the 17th century royal tombs of Sultan Malikussaid (left) and Sultan Hasanuddin (right). The family, which includes descendants from Hasanuddin, has come to his tomb carry out a hair-cutting ceremony on the baby carried by the woman with a scarf on her head.

Photo 6-14.
The *kobang* tomb of Tunibatta who had been beheaded in 1566, Sultan Hasanuddin complex, Tamalate.
The white plastered surface on the masonry was present after the tomb had been restored by the Dutch Oudheidkundige Dienst and would even appear to have been part of the restoration (see Oudheidkundige Dienst, 1949:7, Figure 6).

Photo 6-15.
The two masonry markers inside Tunibatta's *kobang*, of which that on the right is supposed to mark Tunibatta's grave. The north-south orientation of the marker to a pre-Islamic grave might represent post-Islamic interpretation. The original graves might have been oriented east-west between what now appear as the two headstones and the two footstones. (Note the cement-plastered surface inside the tomb too.)







Photo 6-16.
The *Batu Tomanurung* or "Tomanurung's stones", inside the small shed which shelters them (Kale Gowa). Note the evidence of devotions.

Photo 6-17.
The Katangka mosque at Datak Toa in the centre of Benteng Tua. Supposedly the earliest Makassar mosque, the present study would support a date of first construction in the terminal 17th or the 18th century.

Photo 6-18.
Bungung Lompoa or the "Great Well" behind the Katangka complex, Suaka Site No. 22. Note the masoned walls inside the cement enclosure which may have been inspired by the masonry walls built at Fort Rotterdam by the Dutch.







Photo 6-19.
Top-left corner: G.1.53.8, sherd from a Jizhou tempayan with painted iron decorations beneath the glaze, Tamalate.

(Also on top row: S.10.18.19 and S.10.5.2 (right): early monochrome sherds from Tinco Tua, Soppeng.)

(Bottom row: G.54.1.2A (left) and G.54.1.2B: two sherds from a plate with remnant overglaze decorations, here dated to the 13th-14th centuries, Palacini Tua, near Pattallassang.)

Photo 6-20.
Kompleks Makam Katangka, Suaka Site No. 19, showing the *kobang* tombs to the west of Katangka mosque, Datak Toa. Note the *famille rose* jar (*balubu*), dating to China's Qing Dynasty, on top of the right tomb.

Photo 6-21.
Broken plate with classically Swatow BW decorations, "Phoenix Standing in a Garden 1" (Harrisson, 1979:64), donated to SSPHAP by a resident of Katangka Toa.


6.I.53.8





Photos 6-22 to 6-24.
Tradeware pieces as reconstructible from sherds donated to SSPHAP by the inhabitants at Kaballokang.
Top: G.1.133.1, a 16th century Ming BW plate.
Middle: G.1.133.2-4, "Ming Swatow" BW plates.
Bottom: G.1.133.5-10, "Ming Swatow" BW bowls.

Q88-MEI'87 6B



Q88-MEI'87 6B





Photo 6-25.
Kompleks Makam Lakiung (Syech Yusuf Complex), Suaka Site No. 17, showing the *kobang* tombs of Syech Yusuf and his wife Daeng Misanga photographed from the northeast. Note the stoneware jar which crowns Syech Yusuf's tomb.

Photo 6-26.
The undecorated example of the pair of slabbed masonry grave markers (oriented 20° from north) in the small graveyard at Kaballokang. Here dated as probably 17th century.

Photo 6-27.
The outer ring of the bastion at Katangka Toa, with its form reflected by the curved shape of the garden plot.







CHAPTER 7. THE PERIPHERAL SITES WITHIN GOWA'S CENTRE

This chapter deals with the sites along the middle-lower Jeknekberang which were joined by their spatial relationships into a cluster centred at Benteng Tua. The exercise produced two types of site arrays, depending on whether the Jeknekberang was accepted or disregarded as a potential barrier. In the latter case the MCKGBM group, which is mainly south of the river, clustered across the river to join the Benteng Tua cluster (Figures 6-15a and 6-15c). I accept the implied connection. The MCKGBM sites contain one of the main concentrations of Islamic graves acribed to 17th century Makassar personages cited in the texts, outside of the Benteng Tua and Tallok palace centres. They share this distinction with the PKPPSS sites which also belong to the Benteng Tua cluster. Minor sites also to be considered here are the BB pair, and the five sites (BJKKP) metaphorically within the shadow of Benteng Tua (Figures 6-15).

In total the Benteng Tua cluster, the centre of Gowa's power, corresponds to the area where disconnected hillocks of Baturape-Cindako volcanics fully give way to coastal alluvial plain (Figure 6-2a). The area may have also been a focus of prehistoric occupation following the retreat of the higher mid-Holocene sea-levels. Not only has it produced five of the seven polished stone artefacts recorded during SSPHAP's survey, but also Suaka's museum collections include the Maccinik Sombala polished adze recently found in the area (Appendix G).

7.1 Sero-Tombolok (the PKPPSS Group)

The 20th century maps show a large kampung area immediately east of Benteng Tua. The area contains an abundance of historical sites (Figure 6-2b), not only places where antiques have been found, especially during the main looting spree which occurred over 20 years ago, but also early Islamic graveyards. SSPHAP's survey recorded 14 fieldwork sites (Figure 7-1) which boil down to the six "PKPPSS" area-sites shown in Figure 6-15, the Moncong-Moncong exposure which is not quite acceptable as a Gowa historical site

(7.1.4), and Bukit Manggarupi which is a prehistoric site (7.1.7). The single area-site at the north (Gowa 25 to 27) is covered by the label Sero, while the five area-sites at the south (Gowa 28 and 35 to 42) can be covered by the label Tombolok. Even though the name Tombolok does not specifcally feature in any fieldwork site name, it is the main kampung and incorporates Makam Paccalaya and Makam Daeng Bane, which also means that the six area-sites represent five toponymic sites.[1]

Sero-Tombolok contains a pronounced density of sites regardless of how they are categorised, suggesting a suburban population density during Gowa's precolonial period. The surveyed zones covered 87,086m² representing 55,387m² of exposed surface. The recorded sherdage included 4780 earthenwares and 2191 tradeware pieces. All these figures are approximately one third of the corresponding figures at Benteng Tua, indicating comparable densities of recorded surface artefacts at Sero-Tombolok and at Benteng Tua.

We can facilitate the interpretation of the Sero-Tombolok sites by showing the densities of "early", "Ming", "Qing BW" and "recent" tradeware pieces. The exact procedure differs from the counterpart exercise at Benteng Tua (6.3) in two main respects.[2] The densities of "early" pieces are incorporated because they differ less markedly from the densities of "Ming" pieces than was the case at Benteng Tua. And the steps in the resulting distribution of the Sero-Tombolok tradeware densities suggest the classes 0, 0.01-0.4, 0.41-1.2, 1.21-3.8, 3.81-10 and 10+ pieces/100 m².

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[1] See 5.5.3 and 5.6 for a discussion of fieldwork sites, area-sites and toponymic sites.

[2] The following minor differences also apply. There is no merit in extrapolating the density classes beyond the surveyed zones, as was carried out at Benteng Tua where an attempt was made to sample the total area involved, because the Sero-Tombolok survey was heavily focused on old burial areas (Figures 7-2 and 7-3). Analogously the tradeware profiles (Figures 7-4 and Figure 7-5) combine zones which represent concentrations of recorded tradeware pieces, and not necessarily how the zones would be distributed among the historical toponym sites (cf. Appendix C). Note also that the total Sero-Tombolok tradeware pieces slightly exceed the added totals from the individual histograms because they include the pieces from Bukit Manggarupi which was only a prehistoric site.

The toponym Sero is associated with Karaengloe ri Sero who reportedly founded the Tallok dynasty at the end of the 15th century (12.4). According to the story Kgloe ri Sero had contested the Gowa throne with his brother Batara Gowa. The latter's eventual success was assisted by the defection of five of Sero's one-time *Gelarang* (ST:5), three of which - Tombolok, Paccinongang and Pao-Pao - are associated with the sites due south of Sero (Figure 7-1). Subsequently Tombolok became one of Gowa's two main *Gelarang* titles (e.g. Mukhlis, 1975:61-62; LB:137; Andaya, 1981:61), a distinction shared with Mangasa (6.5.1). On the other hand Paccinongang and Pao-Pao, like Sero itself, are scarcely mentioned by the Makassar historical texts in 16th or 17th century contexts. Hence we may infer that the Tombolok *Gelarang* represented the communities in the densely settled area shown in Figure 7-1.

7.1.1 Sero (Gowa 26) and Makam Boccolaya (Gowa 27)

According to ST (p.6), Karaengloe ri Sero's corpse was returned to Sero for burial at a date which would correspond to around 1500 (Figure 4-8). In Sero he is commemorated by a sheltered cement grave marker enclosing a single, large round stone (Photo 7-1). The north-south orientation of the grave marker is inconsistent with the usual east-to-west orientation which characterised most immediately pre-Islamic Makassar burials (13.1). However, this does not rule out a possible association of the stone with Kgloe ri Sero's burial, because a single stone in itself gives no clues as to orientation, and the grave marker could represent post-Islamic interpretation. In any case, the commemoration of Kgloe ri Sero's burial here certainly confirms his association with the site.[3]

Slightly to the north is another cement shelter protecting "Makam Gampang Sero", actually two Islamic graves with carved wooden *nisan* (shaped markers) at north and south enclosed in cement markers (Photo 7-2). The general Sero cemetery

[3] Our local informants themselves were not fully certain that Kgloe ri Sero was indeed buried beneath this stone. This could be because they also would have expected an east-west orientation of the marker, or because they were aware of yet further associations ascribed to the stone.

includes 214 graves marked in Islamic styles covering all ages (Table F-4a). We counted 59 remnant looters' holes around the graveyard's borders. However, we learned that the main area of antique looting was to the north, in zones 5 and 7 (Figure 7-1). Both zones contained a smattering of "early" tradeware pieces, and zone 5 had one of the highest densities of "Ming" pieces in Sero-Tombolok (Figure 7-2), pointing to the area's use for pre-Islamic burials between the 13th-14th and 16th-17th centuries. Zone 5 also contained one of the two polished stone artefact types recorded at Sero but nowhere else during SSPHAP's survey - a disc with a hole, possibly an ear pendant or other ornament (Photo 7-4).

The western zones, 8 to 12, also produced "Ming" sherdage, possibly associated with occupation given the scarce evidence of looting. Among the debris were two non-joining fragments from the rim of a stone box. One fragment shows regular indentations along one side and a transverse break along the other as though it had been knapped to make a stone point (Photos 7-5 and 7-6). This observation would suggest a date for the stone box before the 2nd millennium A.D. when iron became generally available (Chapman, 1986).

50 metres south of the Sero graveyard lies Makam Boccolaya, a small graveyard with 24 cement and 59 stone markers (Photo 7-3; Table F-4a). The markers made of masonry or arranged stones look old and may date back to the 17th-18th centuries. A Ming BW sherd was found immediately to the south.

Compared to the Gowa survey as a whole, the recorded presence of possibly 15th century (Photo 7-7) and earlier tradeware pieces at Sero is strong. The tradeware profile then drops markedly over the period between the 16th and 18th centuries (Figure 7-4). Apparently the area had been abandoned to fields and graveyards during much of the 17th and 18th centuries, as was indeed the case by the time of our 1986 survey. The apparent resurgence in 19th to 20th century pieces (Figures 7-3b and 7-4) agrees with the 20th century land-use maps which depict the site as kampung (Figure 7-1).

7.1.2 Bukit Bikuling (Gowa 25)

This hillock of Baturape-Cindako volcanics, around 100 metres along its flattish top (Figure 7-6), stands approximately ten metres above the surrounding sawah. Zones 1 to 4 at the east contained a surface scatter of 113 flaked stone artefacts which included middle Holocene, "Toalean" types such as backed blades and Maros points (Appendix G). Zones 2 and 3 also contain a small, abandoned graveyard with 29 marked graves. The markers are low, stone structures (Photo 7-10) except for a stepped sepulchre[4] made of bricks (Photo 7-11). The bricks had a strong red colour, like that found with the fortification bricks (E.2.1), and the largest measured specimen (45 cm long by 7 cm thick) could have been brought in from Benteng Tua. Even though the other 11 measured bricks averaged 26.0 cm long, 19.4 cm broad and 6.1 cm thick, making them broader and especially thicker than the (small) fortress bricks (Table 6-1), a 17th century date for the sepulchre is suggested by the old-style stone markers of the cemetery's other Islamic graves. Looting was evinced by 24 looter's holes, 17 concentrated in Zone 4, as well as the four Ming BW pieces (Photo 7-8) and a Vietnamese monochrome (Photo 7-9) kept in the house on Bukit Bikuling. Zone 5 at the west, though bare of any sherdage, abutted a boulder which was reportedly the installation stone (*Batu Pelantikan*) of the Sero rulers (Photo 7-12).

Tradeware sherdage was recorded only in Zone 4, producing a strong density of "early" pieces and the highest density recorded in Sero-Tombolok of "Ming" pieces, but no colonial sherdage whatsoever (Figures 7-2 and 7-3). Given also the rarity of earthenwares (28 sherds) and the old-looking Islamic graveyard, Bukit Bikuling appears to have been a designated burial area, possibly between the 13th-14th and 17th-18th centuries. The hillock's reported installation stone at a burial site matches the pattern at Tamalate (6.5.2), albeit on a less exalted scale. As at Sero, Bukit

[4] In this study, a sepulchre is defined as an above-ground structure enclosing the corpse as suggested by the structure's size and the position of the *nisan* or other grave marker. Earth-filled sepulchres would thus be interments above the prevailing ground surface.

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Bikuling exhibited a relative abundance of 14th and 15th century tradewares, in comparison to the recorded Gowa tradewares as a whole (Figure 7-4).

7.1.3 Makam Dg Bane (G36), Sampeang (G37), Paccalaya (G28)

Within the kampung area of Tombolok is a small, modern Islamic graveyard ascribed to "Daeng Bane" and his extended family. Near it is another small graveyard, Makam Nakku Dekda (Figure 7-1) whose markers generally appear considerably older, old enough to suggest chronological continuity with the pre-Islamic burials around Makam Dg Bane (Table F-4a). Celadons, blue-and-white wares and gold were reportedly looted between the "Daeng Bane" graveyard and the sawah. In this area we recorded one "early" piece and a light presence of "Ming" pieces (Figure 7-2). We were also shown a variety of Ming-period tradewares recovered from the looting (Photos 7-13 to 7-15), plus two fine local earthenwares (Photo 7-16) which match earthenwares professionally excavated in association with 15th-16th century burials at Sompu, Takalar (Tjandrasasmita, 1970:Photo 11). The looting may also have recovered the early monochrome and Ming BW plates which decorate an Islamic grave at Makam Sampeang (Photos 7-17 and 7-18).

Makam Sampeang includes 118 marked graves, including two venerated graves under a shelter (Table F-4a). As indicated by the enclosing cement restorations, they are oriented due east-west with a single stone or multiple stones at head and foot (Photo 7-19). The combination of an Islamic marker with a non-Islamic, east-west burial orientation could reflect one of two courses of events. Either these were pre-Islamic burials whose markers have undergone several stages of restoration after an Islamic fashion, but without altering the original orientation, or the interred individuals died during a syncretist phase when the local, early Islamic tradition of placing stones at head and foot was combined with the pre-Islamic burial orientation.[5]

[5] A third possibility, that these were originally two parallel, north-south burials whose head and foot stones were later interpreted as belonging to parallel east-west burials,

Despite the vague reports of antiques found at the site, we recovered no traces of precolonial sherdage (Figure 7-2) or looting. However, a householder living between Makam Dg Bane and Makam Sampeang showed us his sherd collection (G.37.0) which included 46 "Ming" tradeware pieces (Figure 7-2b). This collection, and the one from Makam Dg Bane, had a comparatively strong presence of 15th and 15th-16th century pieces, whereas 16th to early 17th century pieces were depressed by the general standards of the Gowa survey (Figure 7-4). The strong presence of "Qing BW" and especially European sherdage presumably reflects the encroachment of settlement in colonial times.

The tradeware profile from Sampeang-Tombolok, and especially the unpretentious graveyards, hardly support the notion that Tombolok seated a major *Gelarang* title during the 16th and 17th centuries. However, some support comes from Bukit Bonto Masila, a hillock of Baturape-Cindako volcanics just within modern Tombolok and locally identified as Tombolok Tua ("Old Tombolok"). The cemetery on top is named Kompleks Makam Paccalaya after a tomb similar to the royal Tamalate tombs (6.5.2), its less impressive masonry notwithstanding, and hence probably dating to the 17th century (Photo 7-20). The individual buried inside was reportedly a "senator", which could mean the *Gelarang* Tombolok. The even more impressive tomb beside it, called Makam Bottoa, has a mosque-like shape which might suggest a 19th-20th century date. One of the two people buried inside was reportedly a soothsayer of Gowa's court. 44 other old to modern marked graves were present (Table F-2). We recorded a small quantity of terminal Ming or later tradewares and a retouched stone flake.

7.1.4 Moncong-Moncong (Gowa 91) and Kasomberang (Gowa 37)

On the next hillock to the west we recorded a small sample of tradewares which had eroded from a road cutting (G.91.1). I

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goes against the grain of increasing understanding of Islamic practices which can be assumed to have been the prevailing course of tradition. Information to help identify the buried individuals was not collected.

call the road-embankment assemblage Moncong-Moncong ("hills") after the kampung due south on slightly lower ground. It is very similar to the Makam Paccalaya sample and the two are combined in the chronological histograms (Figure 7-5).[6] The ridge, which continues to Benteng Tua, is called Tinggi Maek. It includes "Makam Tinggi Maek", named after a Makassar noble who died in the early 18th century, and who is buried along with his descendants in the cemetery (Daeng Kule, pers. comm.). The (estimated) 100-150 marked graves, which include two *kobang* tombs (Photo 7-21), can all be dated to the 18th century and later.[7]

Our survey of Kasomberang (Figure 7-1) recorded a saukang (residence of the community spirit) next to the Islamic cemetery. The latter has 99 marked graves which are generally oriented around 330° from north and range from old to modern (Table F-4a). 100 metres to the northeast stands a tomb locally identified with "Sitti Maemunah" (Photo 7-22). She would be the daughter of Sultan Abdul Kadir called Sitti Rahma Maimunah Kg Pakbineang (LB:173) who died in 1742 (Ligtvoet, 1880:224). Apart from having a true arch rather than a corbel arch at the entrance, the tomb is similar to the one at Makam Paccalaya. West of her tomb are the scars from 94 looter's holes, presumably the area of Kasomberang's reported antique haul, even though the miserably exposed

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[6] The Moncong-Moncong assemblage included a single piece identified in the field as "Transitional BW". My figures indicate that the piece would have had a c.60% chance of retaining a "Ming" classification had it been collected (Table B-45). This constitutes adequate grounds to treat it as a "Ming" piece as done in Figure 7-2b. But the balance of probabilities is not strong enough to accept the Moncong-Moncong exposure as a historical site, especially as no other 17th century remains were found in the immediate vicinity. I should add that at one stage I had accepted Moncong-Moncong, and Kuburan Islam Pakbiniang to the immediate north, as historical sites, and their inclusion had only a cosmetic effect on the site-clustering patterns shown in Figure 6-15.

[7] Although Makam Tinggi Maek is quite an important site for Gowa's colonial history, it is excluded from SSPHAP's sample of historical sites since there is no reason to suspect that its origins preceded the 18th century. Nonetheless it further illustrates the pattern in which sites near Benteng Tua have tombs like those found at Benteng Tua.

surface revealed no sherdage. However, we recorded a few "Ming" pieces nearby (Figures 7-2b and 7-5).

Pakbineang was also the karaengship of two other 17th century nobles, including a child of the Gowa noble Kg Moncong Sipong (SG:47). 20th century Pakbaniang has an Islamic cemetery (Figure 7-1) which is described in my notes as containing maybe 150-200 marked graves, some looking as old as the 18th century. Inhabitants near the cemetery specifically denied that any looting had occurred at Pakbiniang. Together these points indicate that historical Pakbineang had been situated at 20th century Kasomberang.

7.1.5 Pao-Pao (Gowa 38 and 39)

Kuburan Islam Pao-Pao appeared to have two clusters of marked graves, 67 at the north and 85 at the east, including a number of stone markers which could be old indeed (Table F-4b). My direct question on why there were two clusters of graves elicited the response that they represent two "families". The northern cluster included a sheltered, north-south oriented grave with standing stones at head and foot (Photo 7-23). It serves the dual rôle of Pao-Pao's *saukang*, and the commemorated burial place of Pao-Pao's *nenek moyang* (ultimate ancestor). Across the road is an overgrown graveyard, again reported to represent a "family". Only one of the 55 markers was not made of stone. Two of the stone arrangements are oriented east-west (Photo 7-24; Table F-4b).

Antiques were reportedly recovered immediately north and especially south of the Islamic graveyards. In the latter locality (Gowa 39) the inhabitants complained about being prohibited from recovering the further antiques which they knew were still buried there. Gowa 39 produced a few "early" pieces and, along with some of the Gowa 38 zones, a blanket of "Ming" pieces (Figure 7-2). The tradeware profile indicates a comparatively strong presence of 14th-15th century pieces, a dip corresponding to the period 1500-1650, then a strong resurgence of colonial-period pieces (Figure 7-4). Pao-Pao can be identified with "Pao", one of the 14 Gowa districts recognised during Hasanuddin's reign, but not

admitted to the *Bate Salapang* or body of nine *Gelarang* district heads (Mukhlis, 1975:62).

7.1.6 Bukit Sulenta (Gowa 40) and Paccinongang (Gowa 41-42)

As with the two hillocks of Baturape-Cindako volcanics previously described, Bukit Sulenta (Figure 7-7) contains a 17th-18th century graveyard where locally prominent people were buried. Called Makam Takbakka ("Graves of the Brave"), it contains an interesting array of stone or brick markers (Photos 7-25 and 7-26), or wooden markers in the case of Tu Baranae who reportedly sailed to Mecca (Table F-4b). We were told that unsuccessful looting attempts had been made at the site; nonetheless we collected three "early" pieces in Zone 4. A small number of finely flaked stone artefacts were also collected (Appendix G). A light smattering of "colonial" tradewares (Figure 7-3) agrees with the 20th century land-use maps which show the hillock as kampung.

The reported antique haul occurred south of Bukit Sulenta over a substantial area within present-day Paccinongang (Gowa 41). We recorded a low density of "Ming" pieces (Figure 7-2) and two remnant marked graves of cement slabs oriented 345° from north and due north.[8] Directly across the road lies Kuburan Islam Paccinongang with a *saukang* and 592 marked graves (Table F-4b). The graves are generally oriented between 315° and 350° from north, but include two east-west oriented cement markers with the remarkable lengths of 3.5m and 2.8m. The latter reportedly marks the grave of Kare Manajai (Photo 7-27) who is possibly Sultan Alauddin's son "Manjagai Dg Palipung", who died in 1639 at the age of ten (SG:59; LB:101). In any case, the cemetery has apparently remained in continual use from the 17th to the 20th centuries, indicating chronological continuity with the pre-Islamic burials in Gowa 41.

The standardised chronological histograms for Paccinongang (i.e. Gowa 40 and 41) indicate a comparative deficiency of "Ming" tradewares. The sample therefore differs slightly from the general Sero-Tombolok pattern with its specific emphasis

[8] A flaked stone core was also collected at the site.

on late 14th and 15th century pieces. Even though the Sero-Tombolok tradeware pieces constitute a fairly small sample, less than 6% of the Gowa total, the comparative scarcity of 16th to early 17th century pieces characterised five of the seven sherd-bearing foci and so appears to be a valid result. The strong presence of 19th-20th century sherdage reflects the incorporation of the sites within the settled area shown on the land-use maps (Figure 7-4).

7.1.7 Bukit Manggarupi

This strand of Baturape-Cindako volcanics (Photo 7-28) is so elongated that our survey is most conveniently shown by breaking it in the middle (Figure 7-8). A soil test in the sawah between Bukit Manggarupi and Kasomberang (Figure 7-1) registered a gritty silt with an acidic pH of 6. While the whole ridge is depicted under vegetation by the 1922 land-use map, and under settlement by the 1969 land-use map (Figure 6-2b), our survey recorded kampungs at the north and the south, separated by fields and an area where road metal has been quarried and baked. The hill contained a variety of stone artefacts, including a fragment from a polished stone tool, but no definite "Toalean types" (Appendix G).[9] Other archaeological debris included a modern iron spike and a smattering of earthenware and post-"Ming" tradeware sherdage. For present purposes it is what the site lacks - precolonial tradewares or evidence of old burials - which is important, since it confirms the validity of Sero-Tombolok as a distinct cluster of historical sites.

7.2 Sites in the Shadow of Benteng Tua

All the sites very close to Benteng Tua were either small or in a woeful state for recording. This observation extends to Maccinik Sombala, which will however be described as part of its MCKGBM group, and Bontomanaik 1 which might as well be described here (see Figure 6-1). The recorded sherdage was

[9] These recorded artefacts have not been confused with road metal by-products, because their main concentration lay in the fields, and none lay in a zone clearly associated with the road-metal works (Figure 7-8).

comparatively depauperate in Ming-period tradewares and rich in 19th-20th century tradewares. The pattern was consistent and so appears reliable despite the small quantity of pieces involved (Figure 7-9).

7.2.1 Jipang Bidaraya (UP11) and Makam Jipang (UP12)

Bidaraya, the closest site to Benteng Tua, falls within an area of dense suburban housing. It had been a raised dryland field (ladang) within wet rice (sawah) when its antiques were looted. These reportedly consisted of a range of Ming tradewares, including a Ming celadon plate we were shown (Photo 7-29), and some gold. We recorded the scars of 33 looter's holes, and collected two "Ming" pieces including a whiteware which I date to the 14th-15th centuries (Figure 7-9).

Kompleks Makam Jipang includes three negelected cement structures, presumably tombs whose roofs of perishable materials have collapsed (Photo 7-31), among its 63 marked graves. The oldest markers, which are overgrown with vegetation, might date back to early Islamic times (Table F-4c), possibly indicating chronological continuity with the Bidaraya pre-Islamic site. No antiques have been found in Jipang, although we did record a Swatow sherd (Figure 7-9). Jipang's former *saukang* is now destroyed.

7.2.2 Karunrung (UP13)

The kampungs of Karunrung and Jipang sit along a north-south running strip of land, presumably a remnant alluvial feature, raised above the wet-season flood levels. Two localities bearing antiques were reported in Karunrung. We were shown a *Qingbai* whiteware, a seashell, and a range of Ming-period vessels (Photos 7-34 to 7-36) from the northern locality where the sherdage collected by a villager included six joining fragments from a Vietnamese monochrome (Bulbeck, in press:Figure 5g). The southern locality (Karunrung Selatan) is close to two cemeteries with 47 and 61 markers, old and new at both yards (Table F-4c). The sheltered grave protects " Sanro Karunrung" who was reportedly a female soothsayer

(Photo 7-32). Karunrung also contained a saukang and four flaked stone artefacts (Figure 7-10).

The tradeware pieces we recorded (Figure 7-9), along with the antiques we were shown, indicate continuity of a small community from the 13th-14th centuries to the present. The community could have been the karaengship of Kg Karunrung, some contradictory evidence from "Mangasa" notwithstanding (6.5.1), particularly as Karunrung is a rare toponym.

7.2.3 Pandang-Pandang (Gowa 66)

Between Benteng Tua and Sungguminasa, within kampung Pandang-Pandang, is an area which reportedly produced a large haul of antiques, consisting of blue-and-white wares, Sawankhalok and a few whitewares. A former *kepala desa* of Pandang-Pandang, who had participated at a time when looting was still legal, showed us a Swatow jarlet (*buli-buli*) from the diggings. We recorded 93 pieces of late 16th century and more recent antiquity (Figure 7-9). Pandang-Pandang is possibly identifiable with the Parang-Parang cited as one of Gowa's nine founding flags or "confederates" (see Figure 2-2).

7.2.4 Bontomanaik 1 (UP 24)

The site had contained a large Islamic cemetery, of which only a lone, sheltered marker has survived the onslaught of medium density housing (Photo 7-33). The buried man was reportedly a Makassar hero who had lived at the same time as Sultan Hasanuddin. The locals reported that many blue-and-white and celadon vessels, as well as iron objects (including krisses) and some gold, had been dug up. The housing developments had occurred decades ago, precluding any useful sherd-gathering exercise. The site is possibly identifiable with "Bontomanaik Barat" cited as one of the *Gelarang* who sided with Batara Gowa in his succession dispute with Kgloe ri Sero (SG:14).[10]

The area around Bontomanaik 1 is now well built-up. However, along with Bonto Kapette (the historical toponym)

[10] See 9.7.1 for a different interpretation.

and some of the adjacent kampungs, it used to outline what appears to be a cut-off meander of an ancestor of the Garassik/Jeknekberang (Figure 6-2b).

7.3 The MCKGBM Group

The sites labelled Gowa 7, 8, 10 and 92, which comprise the majority of the MCKGBM sites, were recorded by SSPHAP's team on 21 August 1986. We were guided by Aziz Allang, Suaka's field officer based at Taeng (who later accompanied us to further sites nearby). The survey occurred during the formative phase of the Gowa survey when my command of Indonesian was not always reliable, and when I still envisaged a pre-Islamic chronological focus and so did not take much notice of early Islamic graves. The information I have leaves unanswered several questions which could well have been resolved through discussions with Aziz Allang, had I been better prepared at the time, but which must remain as question-marks in this thesis.

7.3.1 Kompleks Makam Campagaya (Gowa 8)

This small cemetery, containing 21 "old" and 12 "new" grave markers, is named after the five-metre high, brick *kobang* tomb of Makam Karaeng Campagaya (Photo 7-30). The dome and the ledge beneath it consist of specially shaped bricks whose upper surface is, respectively, arc-shaped or oblique. The measured specimens had the same length (25.75 cm) and basal breadth (22 cm), but the arched bricks had a smaller maximum thickness (6 cm) than the oblique-topped bricks did (8 cm). The bricks used in building the vertical sides averaged 22.9 cm long, 12.3 cm wide and 3.7 cm thick, i.e. very similar to the smaller bricks at Benteng Tua (Table 6-1).

My notes cite Aziz Allang saying that Kg Campagaya died in 1618. Campagaya recurs as a high status karaengship, yet primarily in association with people who died in the very late 17th or early 18th century. For instance it was the karaengship Abdul Jalil before he became Sanrabone's raja, and the karaengship of one of his stepsisters (Chapter 3). The size similarity between some of the tomb's bricks and the

smaller Benteng Tua bricks supports a 17th century date for the tomb. Additional evidence that the graveyard, at least, originated by the 17th century comes from the other old markers, especially the renovated "Makam Karaengta Cenra Pole" (Photo 7-37; Table F-2).

7.3.2 Kaledu Paya (Gowa 22)

Kaledu Paya lies across the road from Makam Campagaya on the outskirts of Taeng. A bamboo grove with the scars of 55 looter's holes had yielded gold, earthenware kendis, Sawankhalok, celadons and blue-and-white. Also the villagers found a polished hatchet in the fields to the immediate south (Aziz Allang, pers. comm.). We surveyed the fields, kampung and road around the bamboo grove, recording Late Ming and later tradeware pieces (Figure 7-11). The dense leaf litter in the bamboo grove prevented us from seeing any artefactual debris in the zone where the best evidence of pre-Islamic tradewares might otherwise have been expected.

7.3.3 Makam Gusung (Gowa 7)

Two major Islamic graveyards occur in Gusung whose old name was reportedly Gantarang (Aziz Allang, pers. comm.), a rare toponym which was briefly one of the Bate Salapang during the mid-17th century (Mukhlis, 1975:62). Makam Karaengta Bungaya is maintained in superb condition by Suaka, including the costly restoration of the two markers associated with Kg Bungaya (Photo 7-38). My notes record his year of death as 1635, which is close to the year of death, 1640, of a Kg Bungaya for whom I have no other clear data (LB:102). On the other hand, the records also identify a mid-17th century man (Figure 4-17) and an individual born in 1680 (LB:162) as "Kg Bungaya". The graveyard also includes the marked graves of "Kg Gantarang" (possibly Gelarang Gantarang) and Kg Bontojai (Table F-4), neither of whom I have found in the texts.

Around 50 metres to the west a bamboo grove encompasses Makam Karaengta Tompok Balang, an abandoned graveyard with 22 "old" marked graves, one of old bricks (Photo 7-39). The soil here contrasts slightly with the yellowish red river silts

noted at Makam Kgta Bungaya by containing a larger sand content. The Tompok Balang karaengship recurs in late 16th to 17th century contexts, including an unsexed individual three generations down from Tumapakrisik Kallona (Figure 4-4); a grandson of Kg Mapekdaka by Sanrabone's raja Tumenanga ri Parallekkena (SG:36), possibly the same Kg Tompok Balang who died in 1660 defending Paknakkukang against the Dutch (LB:123); and the Kg Tompok Balang who accompanied Sultan Sahaduddin in his 1673 battle against Mandar (LB:146). My notes record Aziz Allang giving 1610 as the year of burial of "Kg Tompok Balang" at Gusung, which might favour an identification with Tumapakrisik Kallona's great grandchild. We counted eight possible looter's holes within the precincts of this clearly early Islamic graveyard, and were told of a couple of antiques having been recovered around 17 years ago.

7.3.4 Makam Gelarang Mangasa (G93) and Bonto Jalling (G10)

Kompleks Makam Karaengta Mangesuk II, named after its main and reportedly its oldest burial, occurs within Kerassak kampung. Kgta Mangesuk's marker is a stepped masonry sepulchre of the same design as the brick sepulchre on Bukit Bikuling (Table F-4c). According to Aziz Allang he died in 1678, which in this case coincides with the recorded year of death of Kare Ruppa Gelarang Mangasa (LB:158). The identification is supported by my observations at Bonto Jalling (7.3.5). My notes also mention an estimated 50-100 marked graves, some looking very old, and that no antiques have been found.

Bonto Jalling Lama ("Old Bonto Jalling") reportedly produced a large haul of antiques including celadons, Swatow and blue-and-white wares, iron krisses and gold. We counted 600 looter's holes over an area 60 metres by 90 metres within a bamboo grove. No sherdage was seen, largely because of the atrocious surface exposure. Reportedly the looting intruded into the Islamic graveyard, so the villagers used part of the proceeds to re-establish the grave markers south of the diggings (Photo 7-40). My notes estimate 180-200 markers and record that one marker bore a dedication to "Karaengta Mangngesa I", giving his year of death as 1611 (Table F-4c).

The available Makassar texts cannot identify this individual, but Mangasa remained one of the *Bate Salapang* throughout the 16th and 17th centuries (Mukhlis, 1975:61-62).[11]

A short distance west of the looter's holes was a sunken field with 171 old-looking earthenware sherds and a polished hatchet (Photo 7-41). Although the hatchet (Appendix G) was half-buried in the soil it need not have been an *in situ* find. I date the four tradeware pieces from the field to the 14th-15th centuries and the 18th century (Figure 7-11). The one-metre high sides of the field showed a yellowish brown (10YR 5/4) silty sand at the bottom, capped with a pale brown (10YR 6/3) sandy silt. The change from coarser to finer sediments would be consistent with the formation of the southern levee of the Jeknekberang (/Garassik) on which Bonto Jalling and the four previously described sites occur.

7.3.5 Maccinik Sombala (UP 25)

Maccinik Sombala lies on the north bank of the Jeknekberang where an active meander has cut northwards during the 20th century (Figure 6-2). We were told that the encroachment had washed away the kampung, including its Islamic cemetery and the spot where people had looted krisses and other antiques (Photo 7-42). We recorded a small sample of Swatow and later pieces (Figure 7-11), confirming the indications that Maccinik Sombala had been settled by the 17th century. The name means "watch for the sails", suggesting that it had been a watch for vessels sailing up the Sungai Garassik towards Benteng Tua.[12]

7.3.6 Overview of the MCKGBM group

The tradewares recorded at the MCKGBM sites may well fail to include a single 16th century piece (Figure 7-11). Indeed, the total tradeware profile of the sites clustered around

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[11] Apart from Kare Ruppa just mentioned, the only other recorded year of death I know of a Gelarang Mangasa was Kare Naba, who died in 1655 (LB:118).

[12] In addition, a bank erosion flooded at the time of our survey (February 1987) was pointed out as an area containing brick and ceramic fragments.

Benteng Tua is stamped by a comparative dearth of 16th to early 17th century pieces. Thus, the apparent 16th century hiatus in the MCKGBM tradewares may only reflect the wider context of the sites and their small tradeware samples (Figure 7-11).

Arguably, then, tradeware-related activities plunged during the 16th and early 17th centuries in the areas surrounding Benteng Tua. This might suggest the villagers were drawn elsewhere, both to Benteng Tua (Chapter 6) and Makassar entrepôt (Chapter 11). Security might have been a major concern during the early 16th century, an occasionally perilous time when Tumapakrisik Kallona built the kingdom's first fortress walls (4.3). But this would not explain the continuity of the pattern into the early 17th century. Rather, then, the efflorescence of Gowa's power might have provided opportunities in the palace centres unmatched in the countryside. Indeed we could further argue that the apparent change in the areas surrounding Benteng Tua might merely be an artefact of the period's real change - the transition towards centralised power and wealth at Benteng Tua and Makassar.

The MCKGBM sites could have shared a unity of setting with the other sites described in this chapter. According to the VOC map, the Sungai Garassik meandered southwards more or less where the 20th century Jeknekberang meanders northwards, suggesting that the Garassik then ran south of the MCKGBM sites. Appealingly, the proposition would furher locate key burial places - those of the two "Gelarang Mangasa", and of the several karaengs near present-day Taeng - on the same with side of the river as Benteng Tua. Modern Taeng could even be identified with the late 17th century toponym Taeng-Taeng, although here we should add that modern Taeng-Taeng occurs north of the Jeknekberang (Figures 5-5 and 5-6).

However, the distribution of the MCKGBM sites suggests a different scenario. They sort into polished stone tools and pre-Islamic burial grounds at the south (Kaledu Paya and Bonto Jalling), burial grounds which may be no older than the 17th century to the immediate north (Campagaya, Gusung,

Kerassak), and further north a now destroyed burial ground (Maccinik Sombala). Thes pattern implies that the meander now at Maccinik Sombala has been slowly looping northwards since immediately pre-Islamic times, hence the north-bound chronology of intact sites as the inhabitants colonised the meander's growing south levee. Hence also the dearth of 16th century tradewares, since the MCKGBM sites would occupy a landform largely created during or since the 16th century. The burials of several eminent 17th century Makassar near Taeng could be related to the area's strategic importance directly across the Sungai Garassik from Benteng Tua and the "watch for sailing ships", precisely where the river most closely approached the fort.

I prefer the latter scenario with its emphasis on the archaeology than the former scenario with its emphasis on the 1693 map. More importantly, both scenarios carry the same general implications when we consider also the recovery (reported or otherwise) of polished stone tools at Maccinik Sombala, Kaledu Paya and Bonto Jalling. As the landform deposited in historical times can be restricted to the band between these findspots, the Garassik probably ran south of the MCKGBM sites until at least the 16th century.

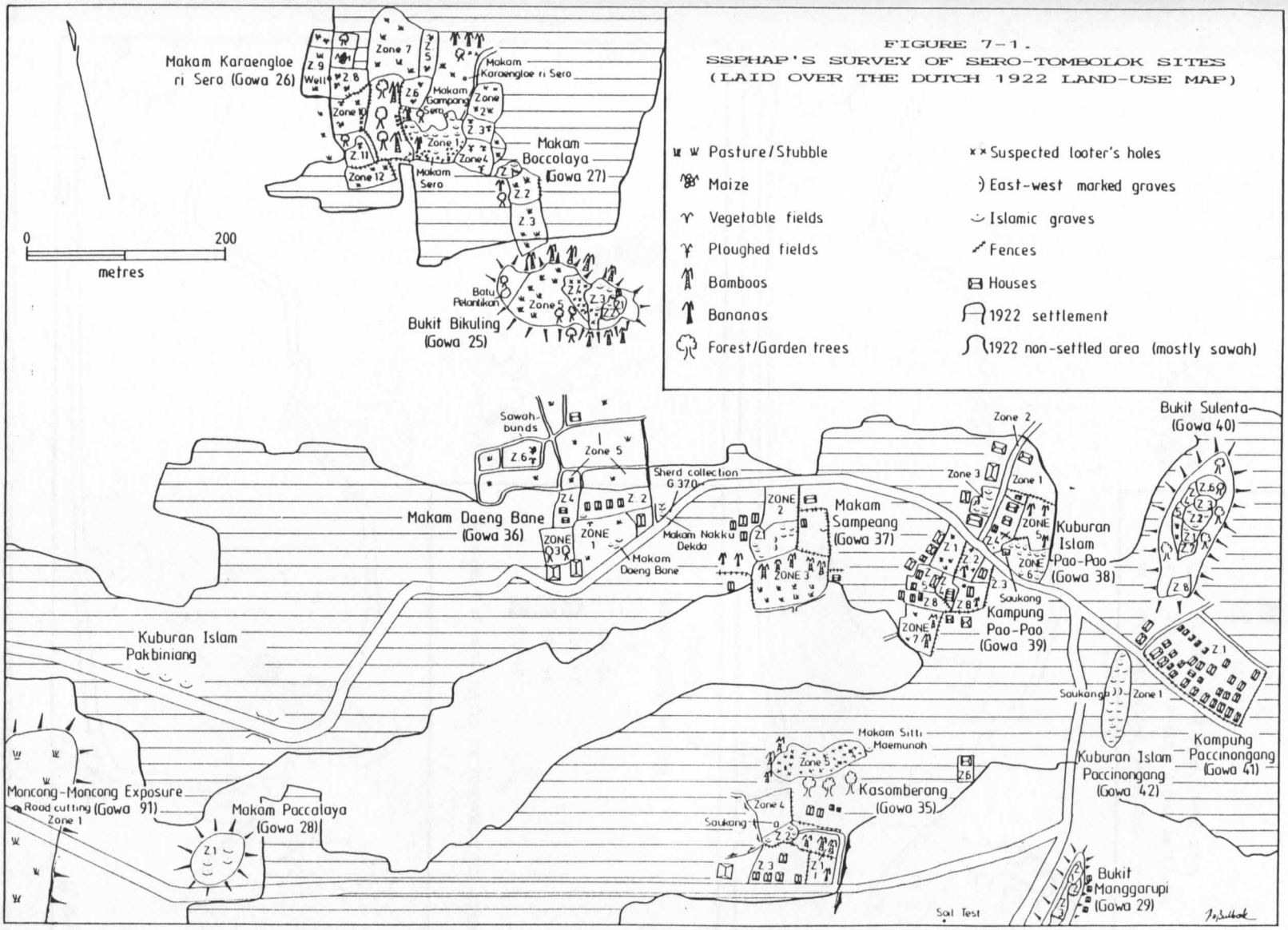


FIGURE 7-1.
SSPHAP'S SURVEY OF SERO-TOMBOLOK SITES
(LAID OVER THE DUTCH 1922 LAND-USE MAP)
Pasture/Stubble
Maize
Vegetable fields
Ploughed fields
Bamboos
Bananas
Forest/Garden trees
Suspected looter's holes
East-west marked graves
Islamic graves
Fences
Houses
1922 settlement
1922 non-settled area (mostly sawah)
0
200
metres
Makam Karaengloe ri Sero (Gowa 26)
Makam Boccolaya (Gowa 27)
Bukit Bikuling (Gowa 25)
Batu Pelantikan
Makam Gampang Sero
Makam Sero
Sawah-bunds
Sherd collection G 370
Makam Daeng Bane (Gowa 36)
Makam Nakku Dekda
Makam Sampeang (Gowa 37)
Kuburan Islam Pao-Pao (Gowa 38)
Bukit Sulenta (Gowa 40)
Saukang
Kampung Pao-Pao (Gowa 39)
Kuburan Islam Pakbiniang
Makam Sitti Maemunah
Kasomberang (Gowa 35)
Kuburan Islam Paccinongang (Gowa 42)
Kampung Paccinongang (Gowa 41)
Moncong-Moncong Exposure
Road cutting (Gowa 91)
Makam Paccalaya (Gowa 28)
Bukit Manggarupi (Gowa 29)
Soil Test

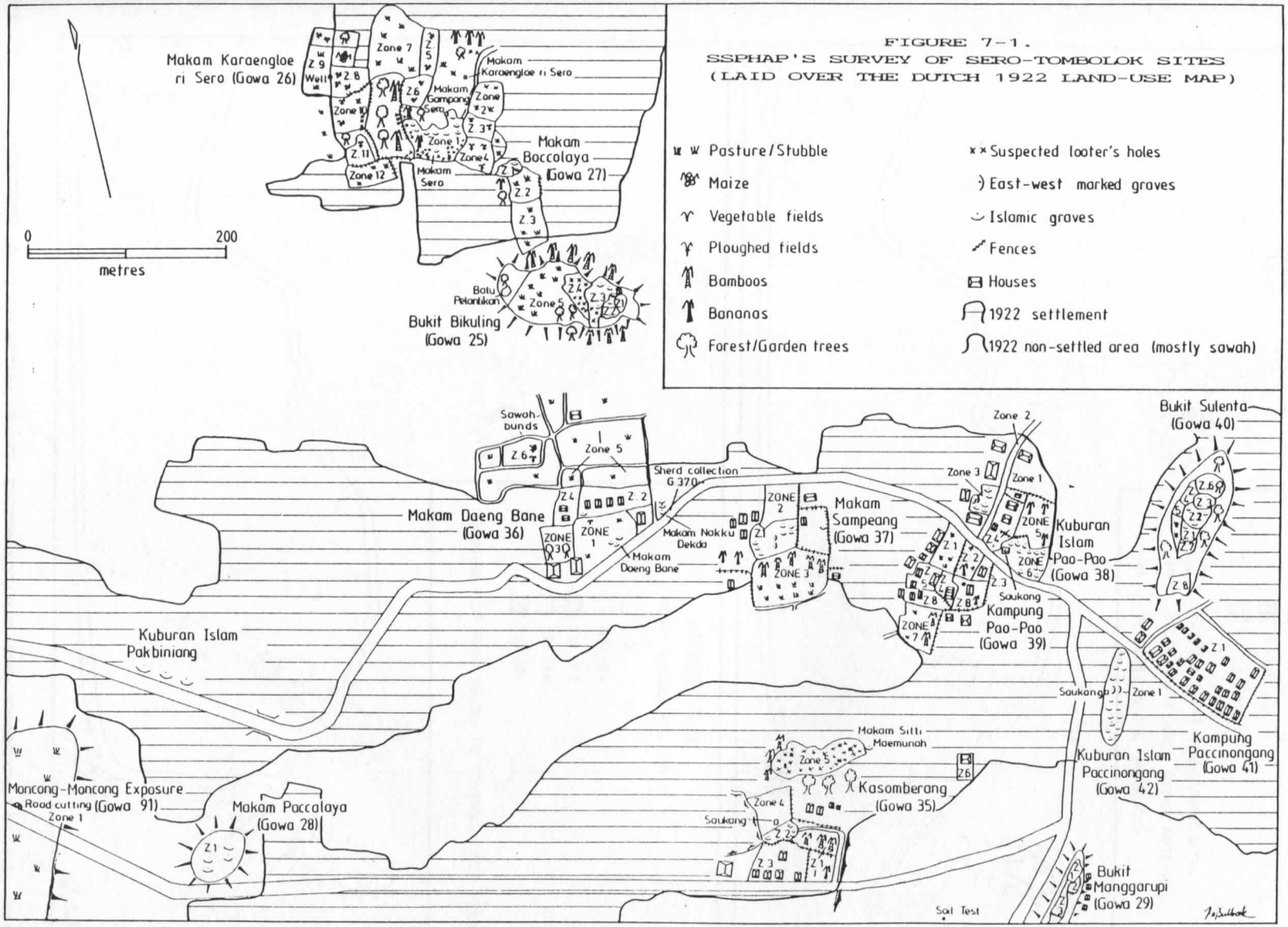


FIGURE 7-1.
SSPHAP'S SURVEY OF SERO-TOMBOLOK SITES
(LAID OVER THE DUTCH 1922 LAND-USE MAP)

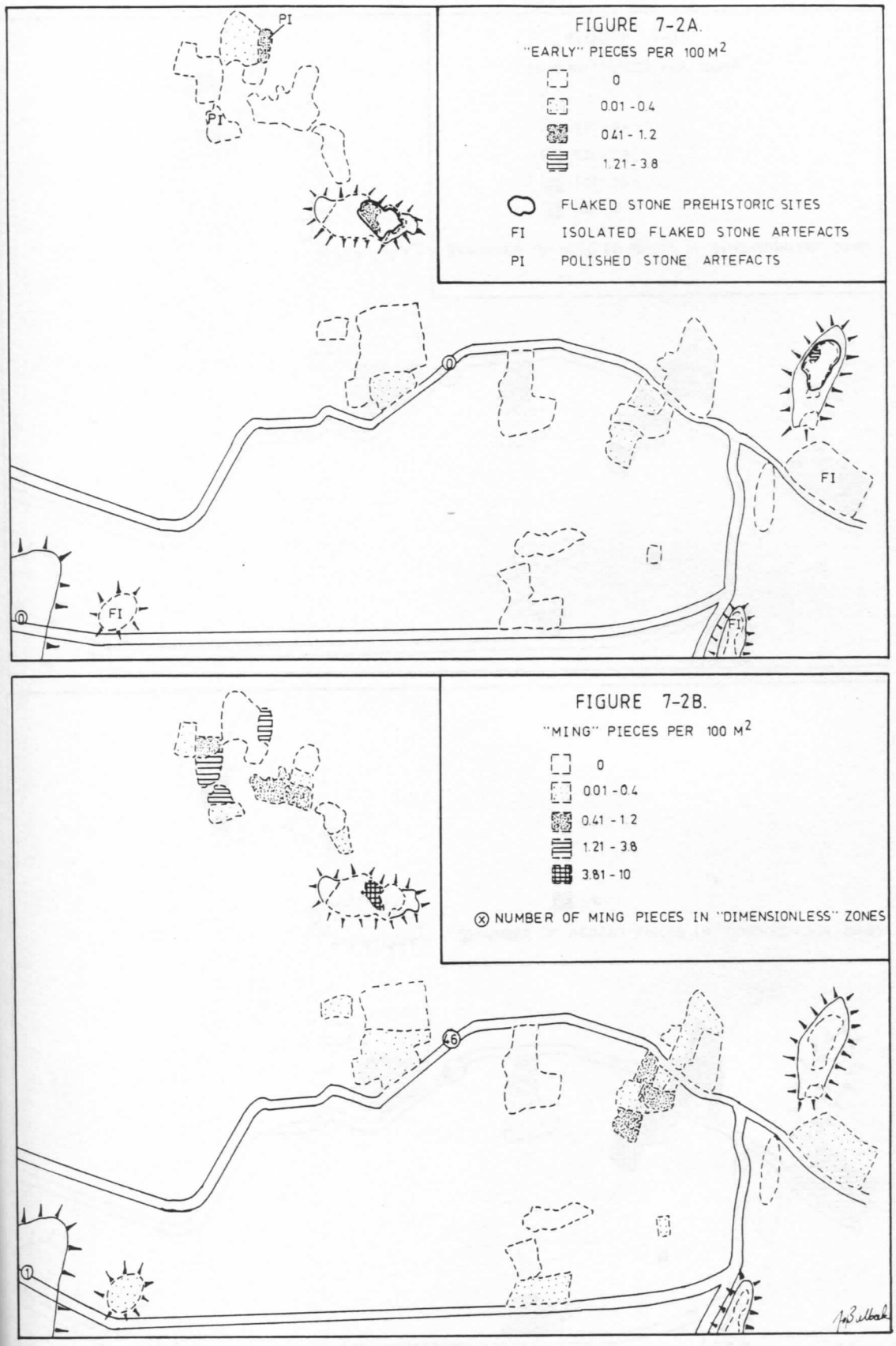
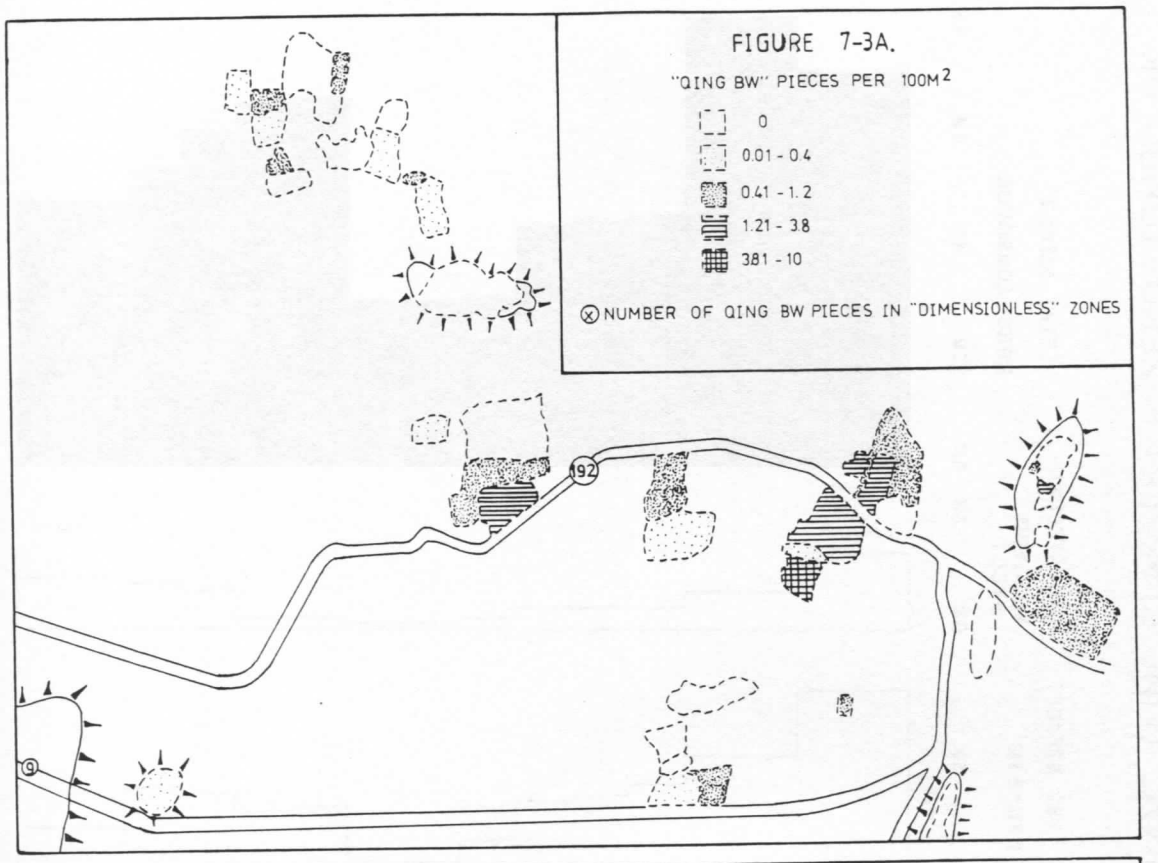


FIGURE 7-2. STONE ARTEFACTS AND DENSITIES OF PRECOLONIAL SHERDAGE IN THE SERO-TOMBOLOK SURVEYED ZONES



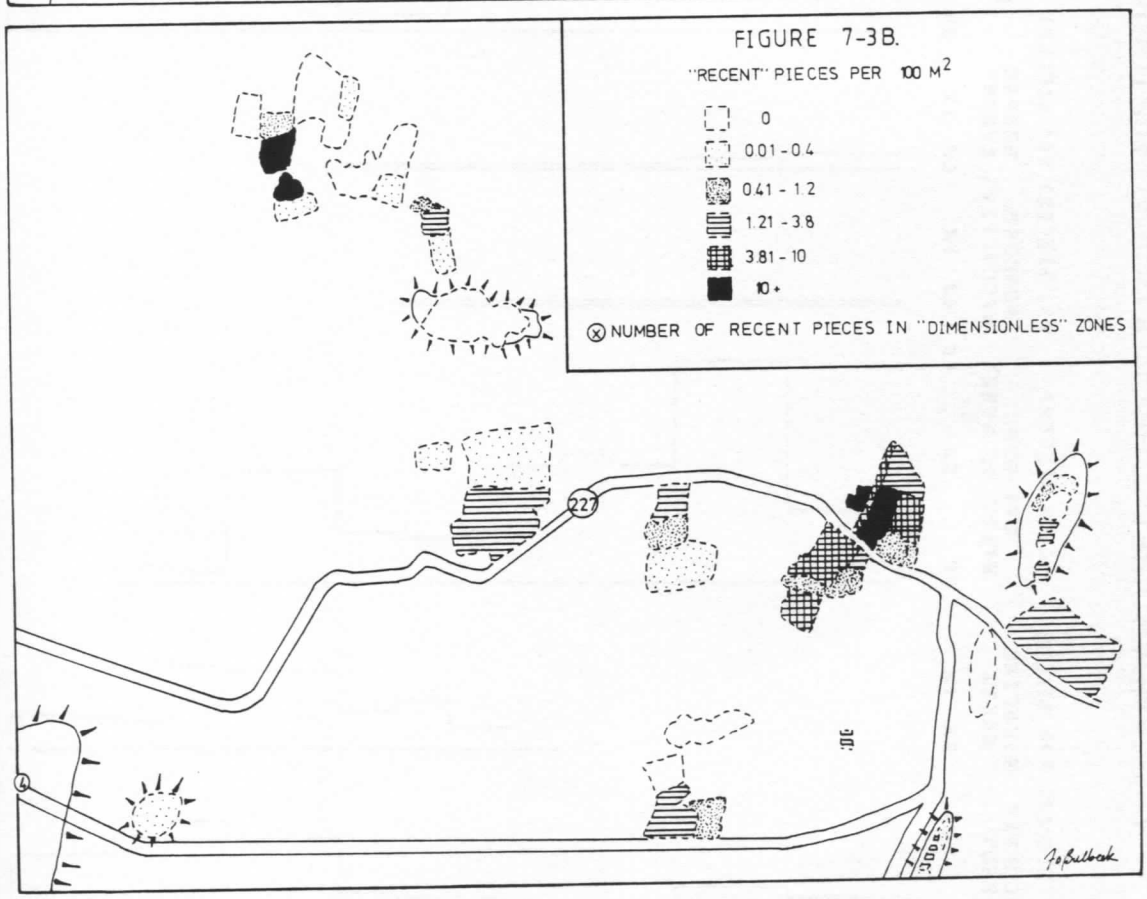


FIGURE 7-3.
DENSITIES OF COLONIAL SHERDAGE IN THE SERO-TOMBOLOK SURVEYED ZONE

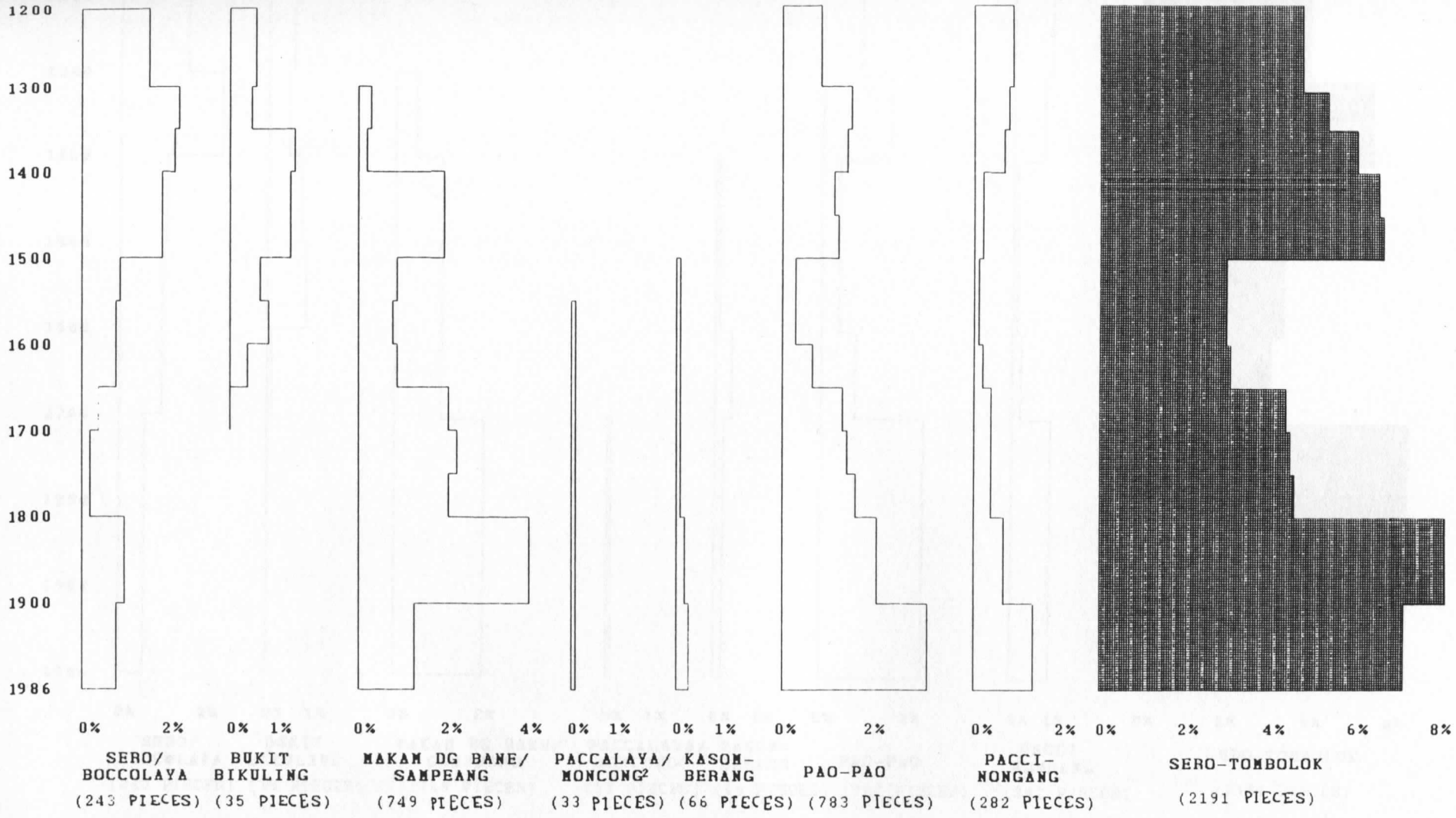


FIGURE 7-4. STANDARDISED CHRONOLOGICAL HISTOGRAMS (FINE CLASSES) – SERO-TOMBOLOK

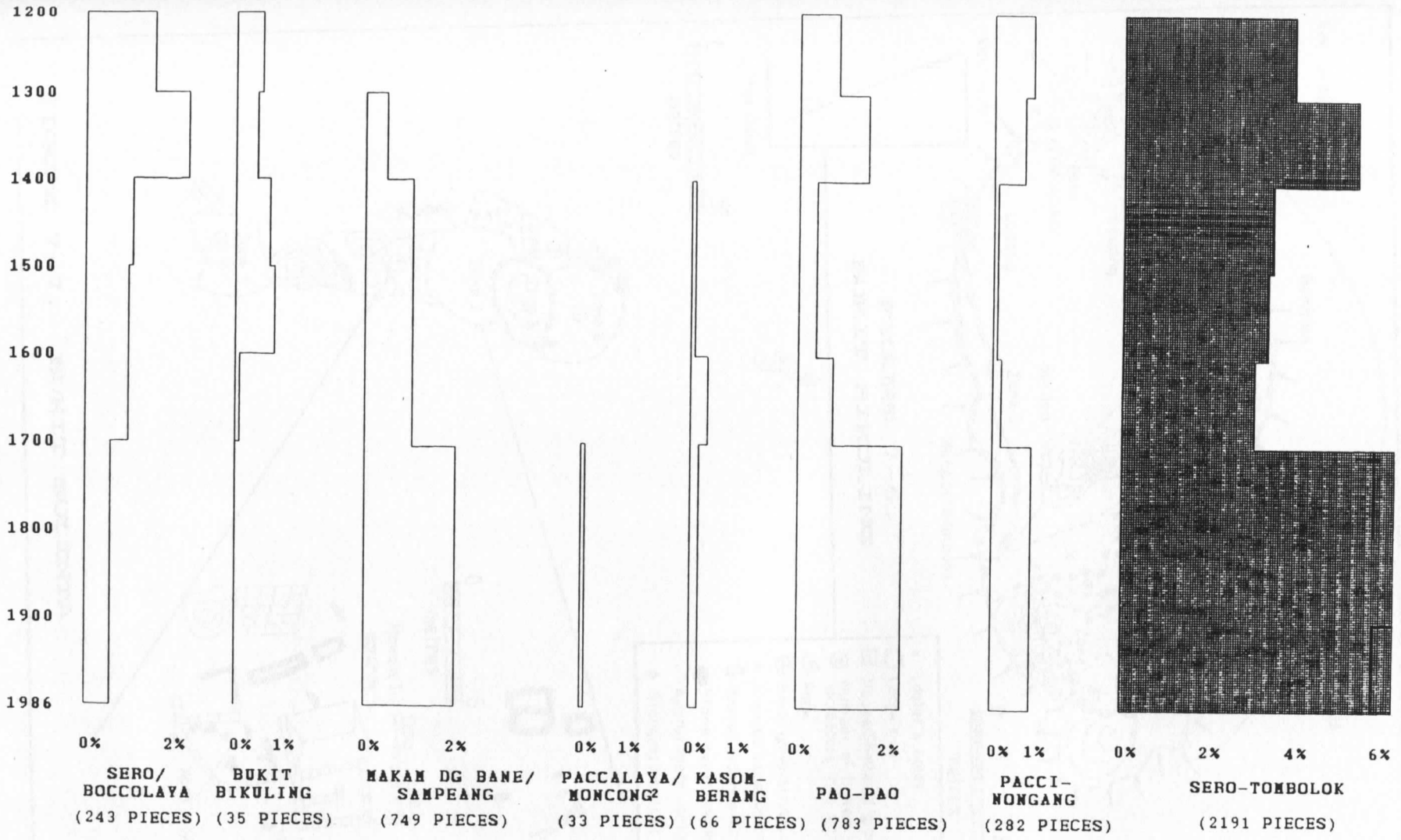


FIGURE 7-5. STANDARDISED CHRONOLOGICAL HISTOGRAMS (BROAD CLASSES) - SERO-TOMBOLOK

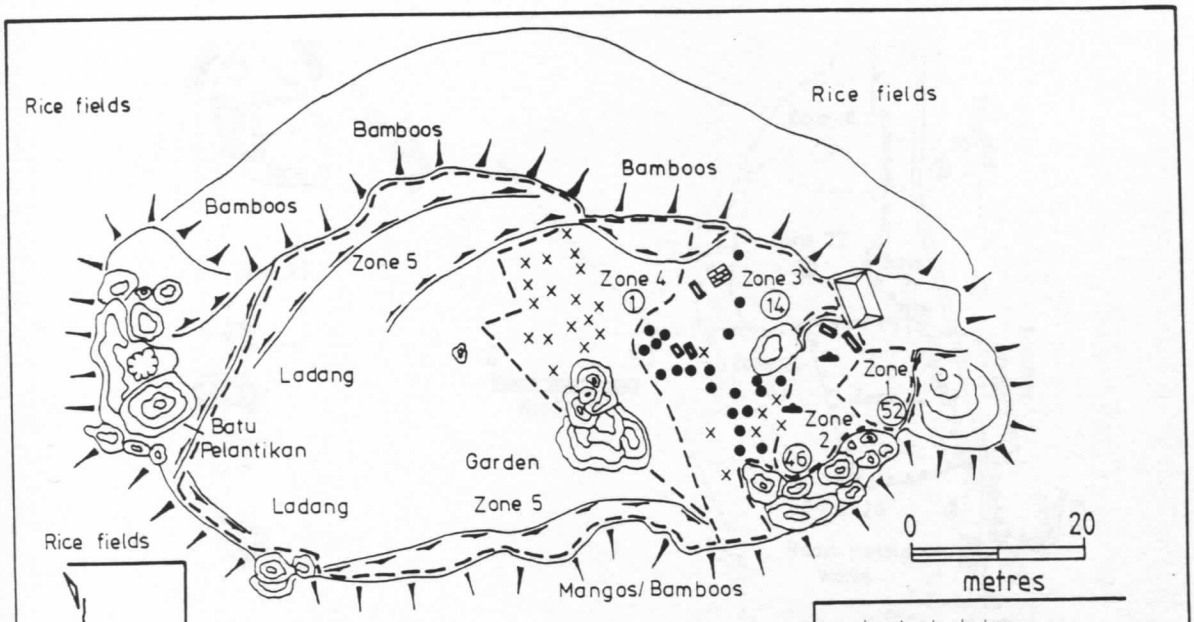


FIGURE 7-6.
BUKIT BIKULING

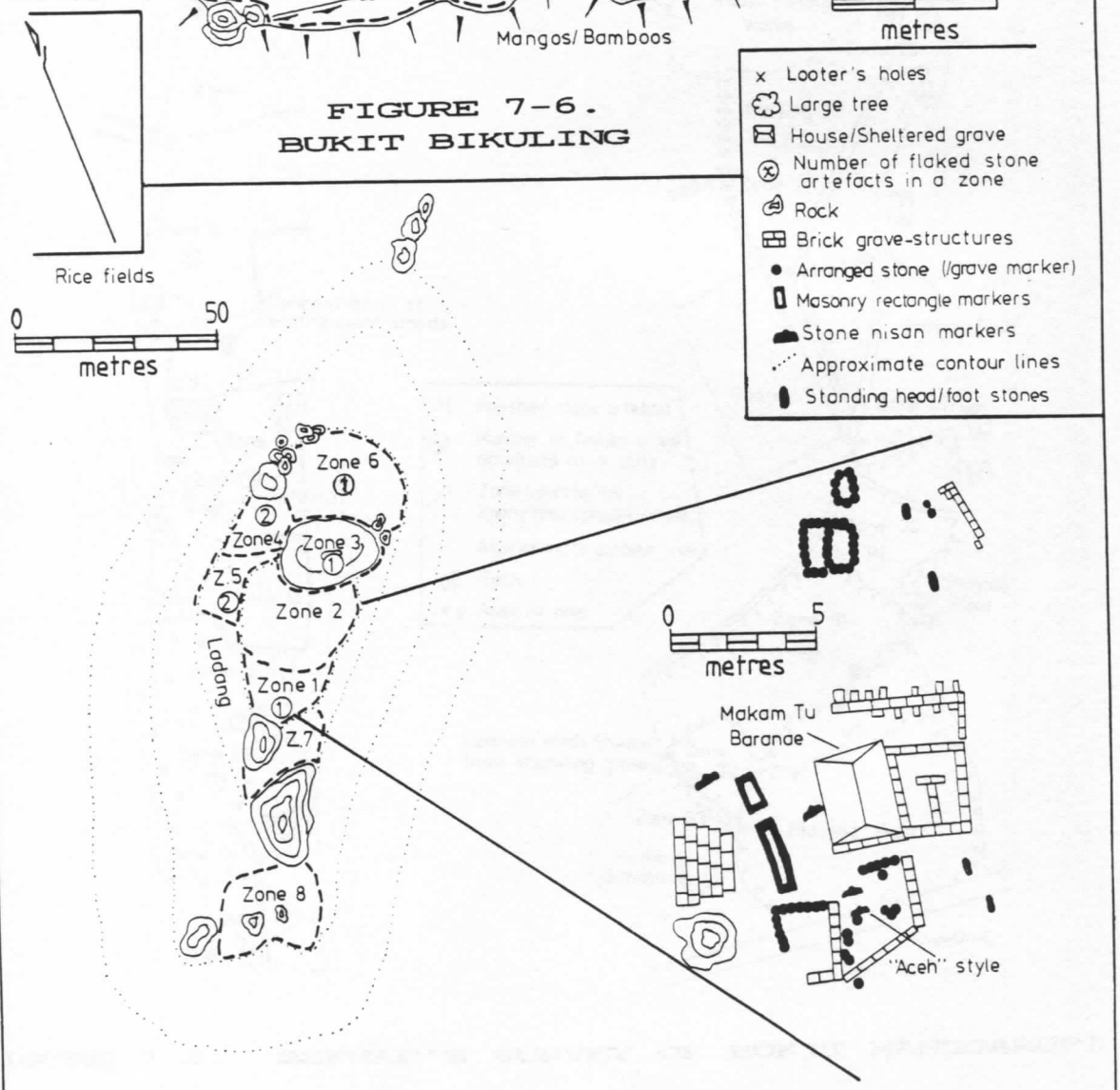


FIGURE 7-7. BUKIT SULENTA

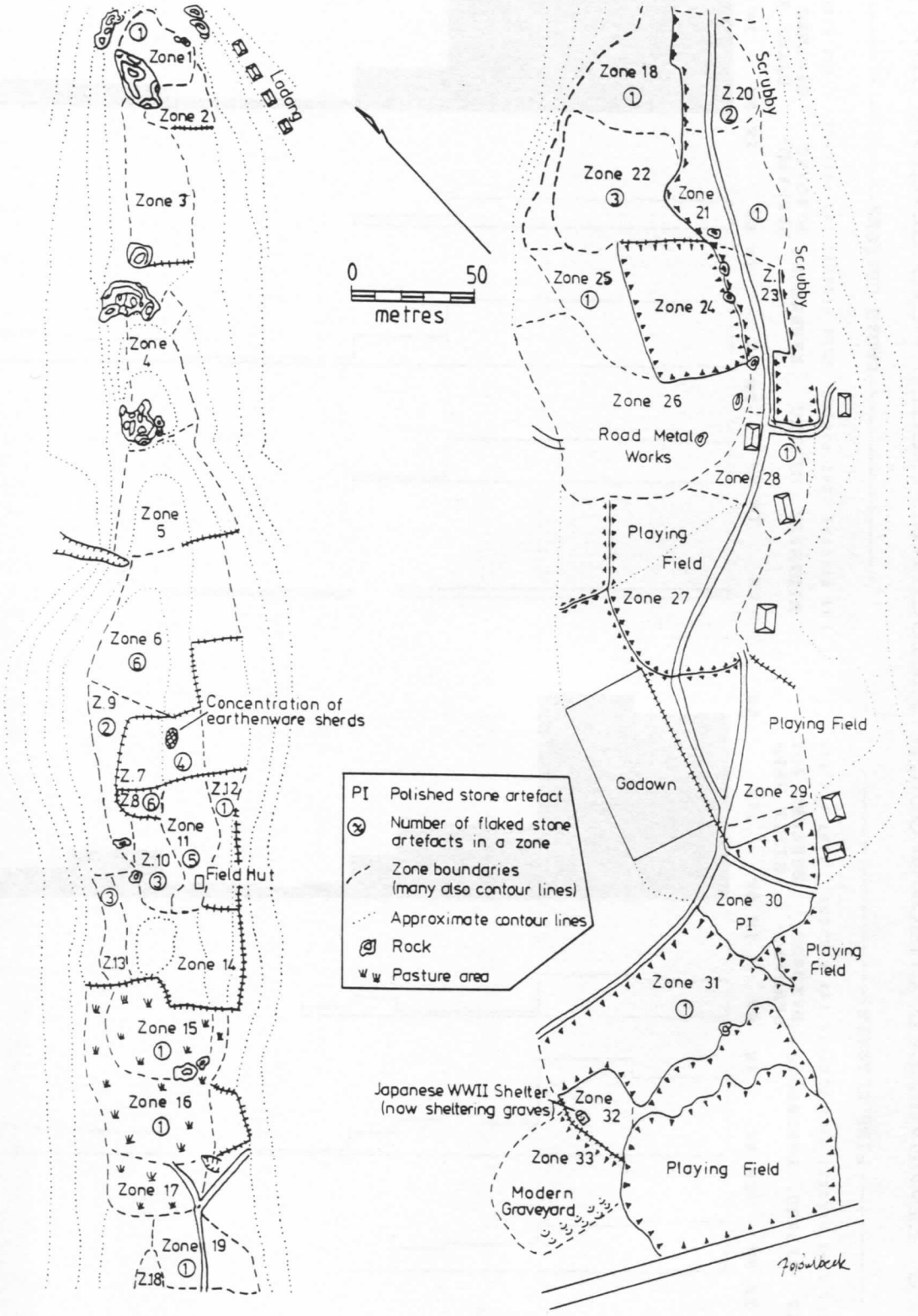


FIGURE 7-8. SSPHAP'S SURVEY OF BUKIT MANGGARUPI

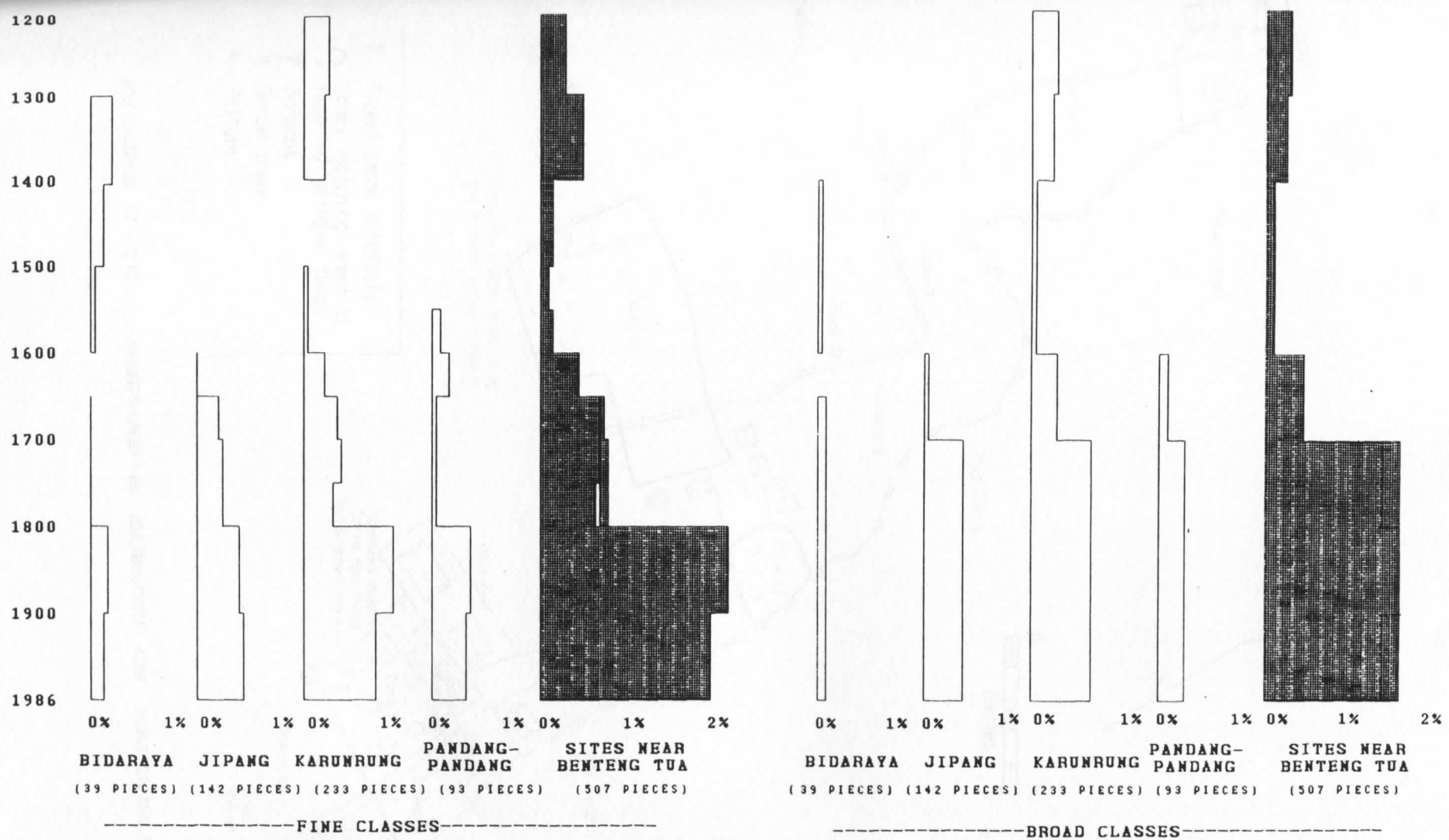


FIGURE 7–9. STANDARDISED CHRONOLOGICAL HISTOGRAMS – SITES NEAR BENTENG TUA

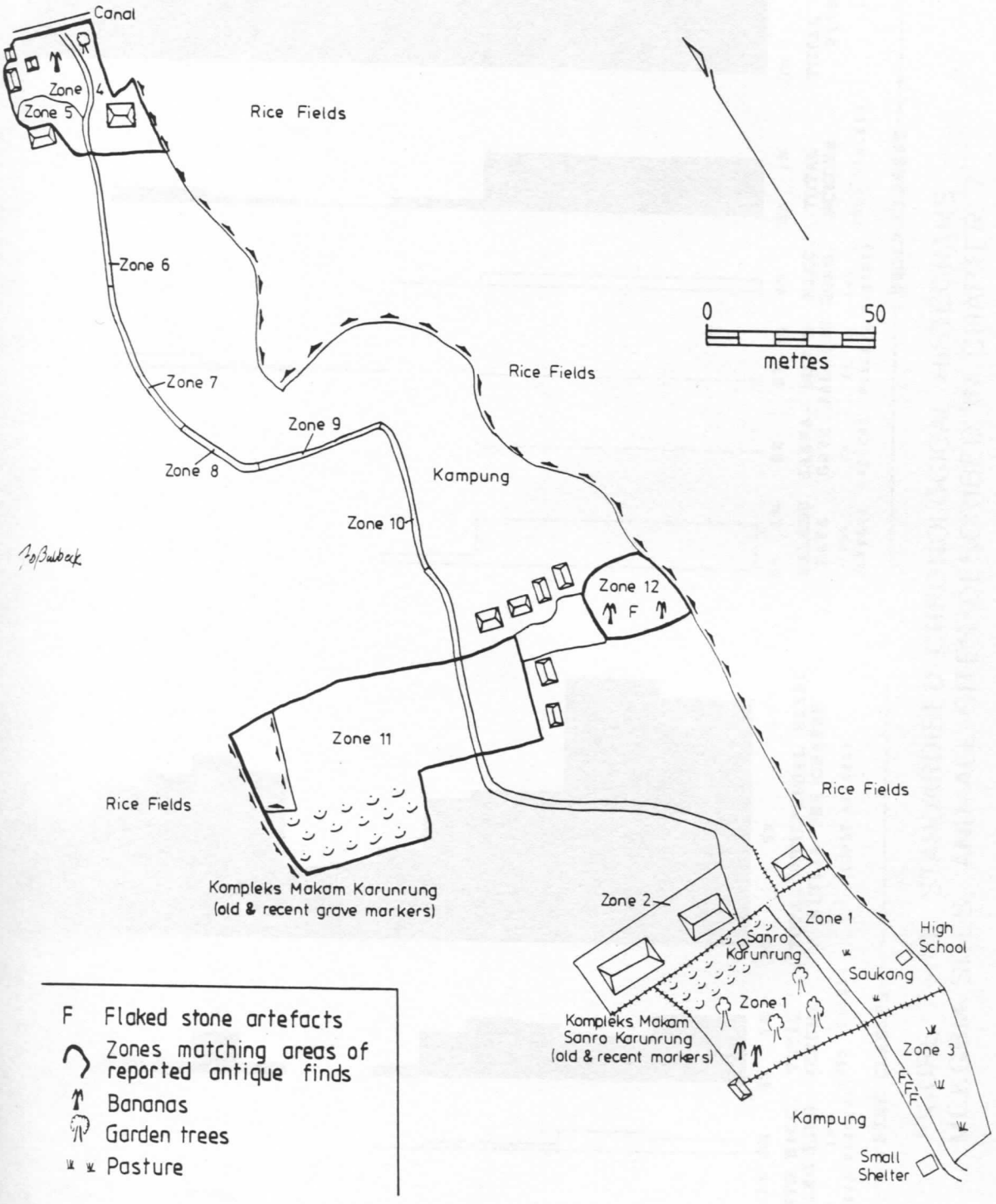


FIGURE 7-10. SSPHAP'S SURVEY OF KARUNRUNG

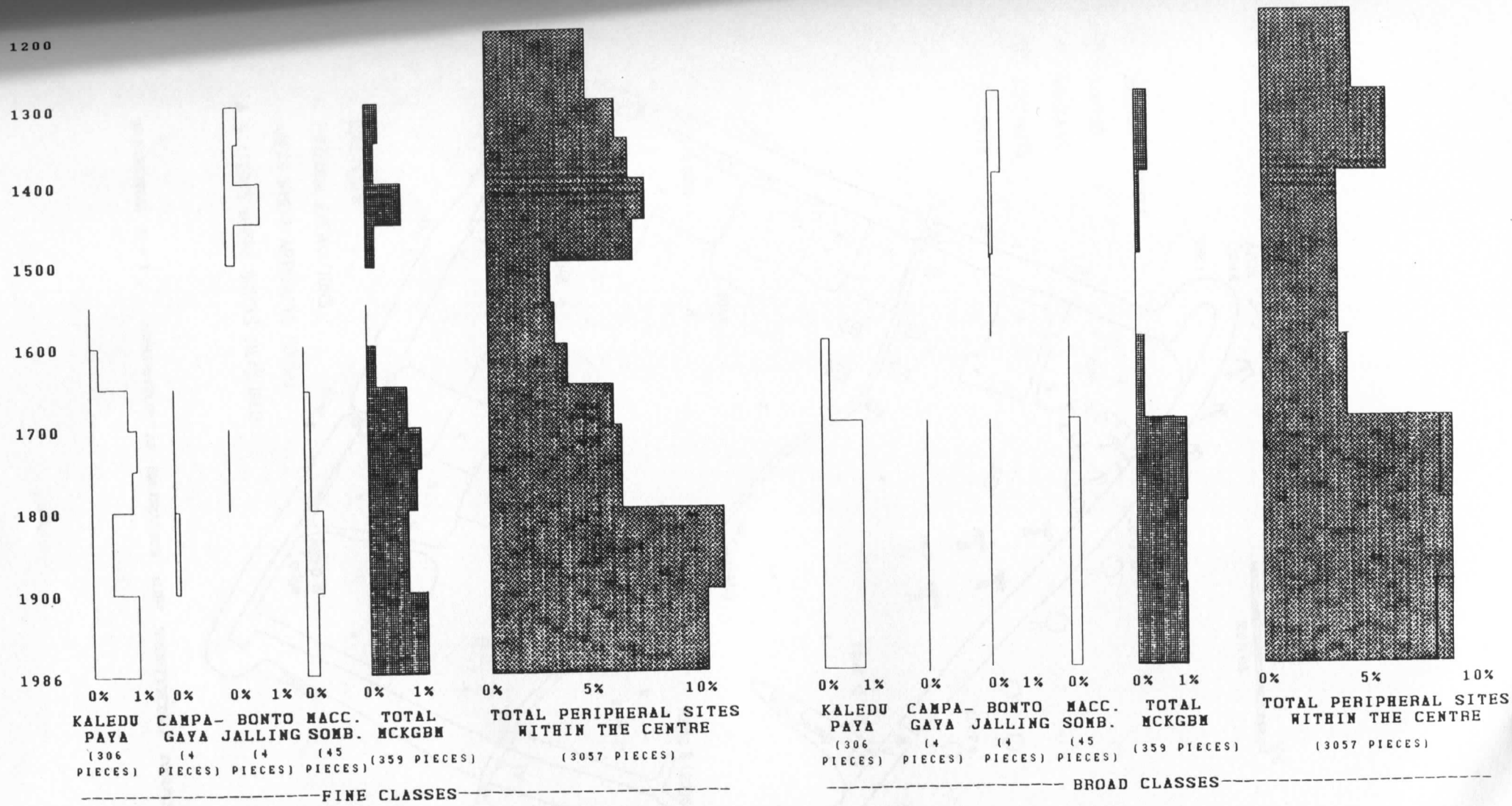


FIGURE 7-11. STANDARDISED CHRONOLOGICAL HISTOGRAMS - MCKGBM SITES, AND ALL SITES DESCRIBED IN CHAPTER 7

Photo 7-1.
Makam Karaengloe ri Sero.
A cement box marker with simple *nisan* enclosing a single large stone at the north. The north-south orientation of the marker would appear to represent Islamic interpretation of an originally pre-Islamic feature.

Photo 7-2.
Makam Gampang Sero, immediately south of Makam Kgloe ri Sero.

Photo 7-3.
Makam Boccolaya, Sero.
In the foreground, arranged rectangles of stones marking graves, disturbed by tree roots. Left rear, some of the old cement-box grave markers with simple paired *nisan*.



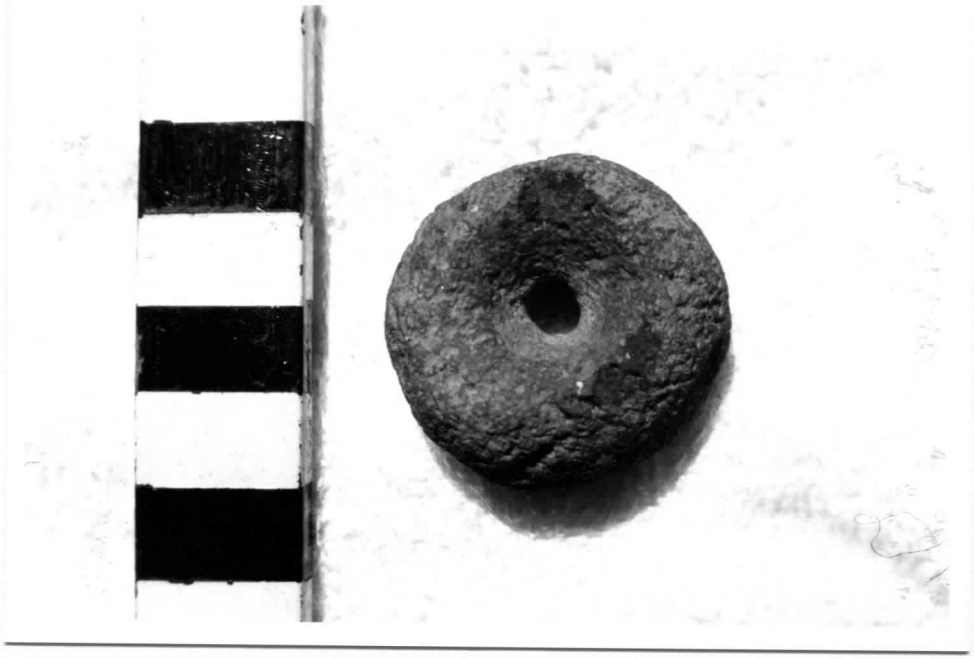


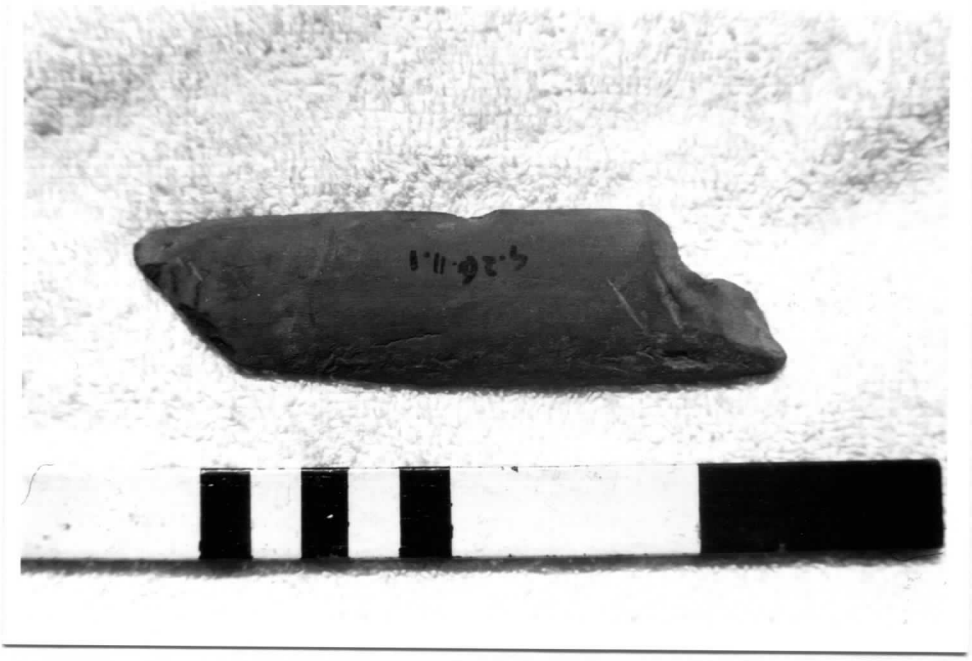


Photo 7-4.
Disc with a hole, made of soft volcanic stone (G.26.5.1). Maximum diameter 37mm, minimum diameter 36mm, thickness 22mm. Diameter of the perforation 6mm (maximum) and 5mm (mimimum). Found at Sero's area of 13th-16th century burials.

Photo 7-5.
Fragment from the rim of a box made of soft volcanic stone (G.26.11.1A). It had probably snapped off the junction with the body, so the rim would have been everted, 17.5 mm thick at its base, and had a chord width of 37 mm.

Photo 7-6.
Another rim fragment from the same box (G.26.11.1B). The regularity of the notches suggests secondary reshaping into a stone point.





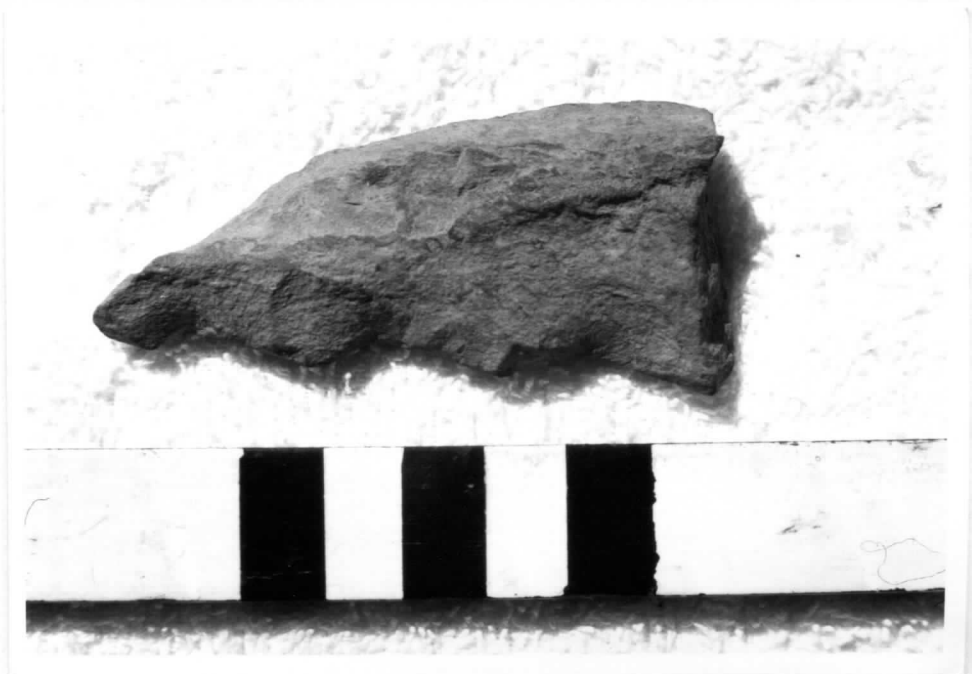


Photo 7-7.
Two sherds from Sukothai wares decorated with iron under the glaze, G.26.5.15 and G.26.8.7, from Makam Karaenglo ri Sero.

Photos 7-8 and 7-9.
The tradewares kept in the house on Bukit Bikuling, reportedly from the hill's informal excavations.
Top: four 16th century Chinese blue-and-white vessels.
Bottom: the Vietnamese monochrome bowl.


G.26.5.15





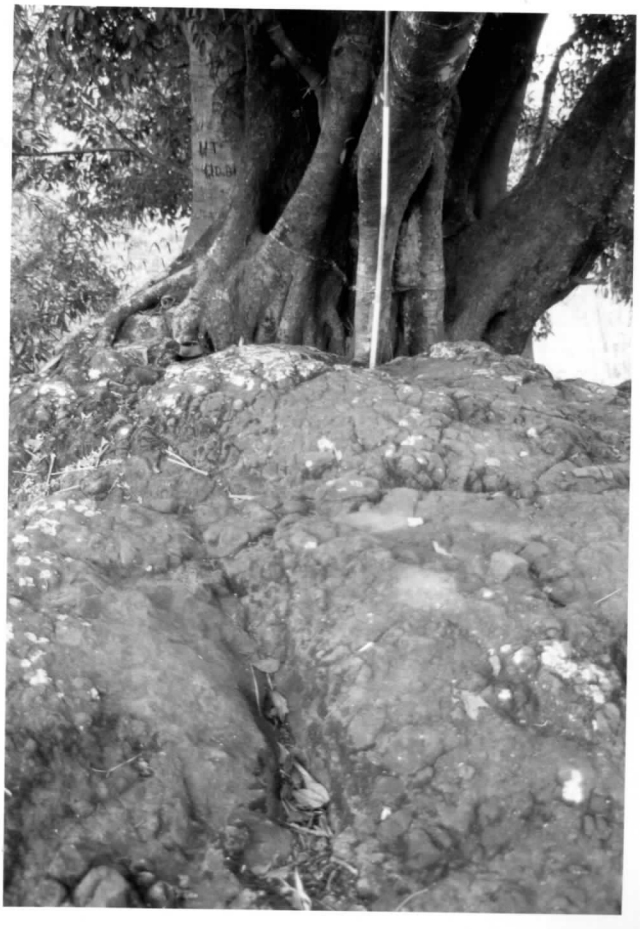
Photo 7-10.
Bukit Bikuling's abandoned Islamic graveyard, showing some of the disturbed marked graves: an old masonry box with simple *nisan* and a rectangular stone arrangement. The ranging pole marks a looter's hole.

Photo 7-11.
The stepped sepulchre of old red bricks at Bukit Bikuling, enclosing masonry *nisan* with a handle-like shape at north and a tablet-like shape at south.

Photo 7-12.
The reported *Batu Pelantikan* or installation stone of the Sero rulers at Bukit Bikuling.







Photos 7-13 to 7-15.
The Ming period tradewares reportedly
recovered from the looting around Makam Daeng Bane
and kept in the house immediately to the east.
Top: four "Ming Swatow" blue-and-white bowls.
Middle: a probably Vietnamese jarlet, and a Wanli BW plate.
Bottom: a whiteware plate, possibly a Ming Dehua product.





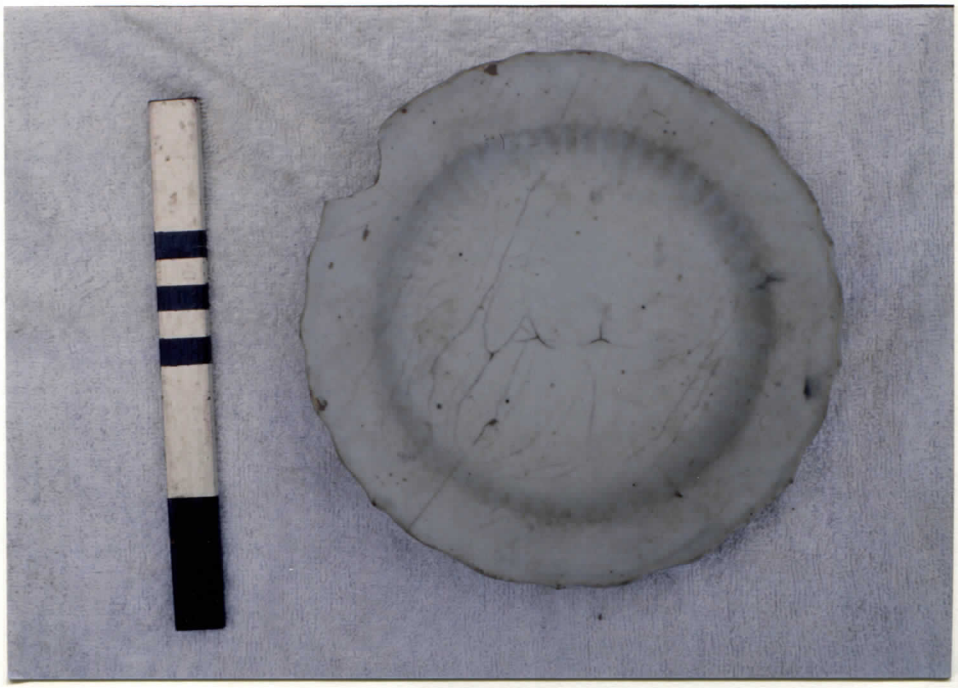


Photo 7-16.
The two fine Makassar earthenwares kept in the house immediately east of the looted area around Makam Daeng Bane. Campbell Macknight proposes the name "cogwheel pots" for the type of ware shown on the left.

Photos 7-17 and 7-18.
The grave marker at the north of Makam Sampeang decorated with tradewares probably from the looting at Makam Dg Bane.
Top: an "early monochrome" plate.
Bottom: a Ming blue-and-white plate. Its centre, showing a chrysanthemum spray around a rock, is a standardised decoration. An identical ware was dated to the late 15th-16th centuries at an exhibition in London (Sorsby, 1974:67). It may be an even earlier ware if Macintosh (1977:128) is correct that chrysanthemums were not used as a major element in blue-and-white decorations after the early 15th century.







Photo 7-19.
Makam Sampeang. The two marked graves oriented due east-west and enclosed in a shelter.

Photo 7-20.
Kompleks Makam Paccalaya on Bukit Bonto Masila, Suaka Site No. 20. Makam Paccalaya is the tomb of masoned stones which is similar in shape to the royal 17th century tombs at Tamalate. One wall of the mosque-shaped tomb called Makam Bottoa can be seen at right.

Photo 7-21.
Kompleks Makam Tinggi Maek, Suaka Site No. 18. The graves are reported to date from the early 18th century until the graveyard's closure in 1973-4. This *kobang* tomb is ascribed to Syech Abdul Wahid. Note the stoneware jar on top.







Photo 7-22.
Makam Sitti Maimunah (Karaeng Pakbineang, 1689-1742), Kasomberang. A similar construction to the masonry tomb at Kompleks Makam Paccalaya except for the use of a true arch rather than a corbel arch at the tomb's entrance.

Photo 7-23.
The *saukang* at Kuburan Islam Pao-Pao, also the reported burial place of the Pao-Pao *nenek moyang*. Rectangular stone arrangement enclosing double standing stones at north and south, orientation 30° from magnetic north.

Photo 7-24.
One of the two east-west grave markers (oriented 80° from magnetic north) in the small graveyard in Zone 3 across the earth-and-cobble road from Kuburan Islam Pao-Pao.







Photo 7-25.
Makam Takbakka, Bukit Sulenta. Two of the old marked graves: rectangular arranged of cobbles and bricks (front) and a masonry slab-sided marker (rear).

Photo 7-26.
Makam Takbakka, Bukit Sulenta. These *nisan* belonging to the Aceh style, according to my co-workers, are classified in SSPHAP's system as handle-like *nisan*. The shelter of Makam Tu Baranae can be seen at rear.

Photo 7-27.
Kuburan Islam Paccinongang. The east-west, marked grave ascribed to Kare Manajai, oriented 80° from magnetic north.







Photo 7-28.
The northern half of Bukit Manggarupi. At right is the highest part of the hill, also the main concentration of flaked stone artefacts.

Photo 7-29.
The Ming celadon plate reportedly recovered from the looting at Bidaraya. Note the moulded floral design in the centre and the moulded fluting of the cavetto.

Photo 7-30.
The brick *kobang* tomb of Karaeng Campagaya. Probably early 18th century construction.



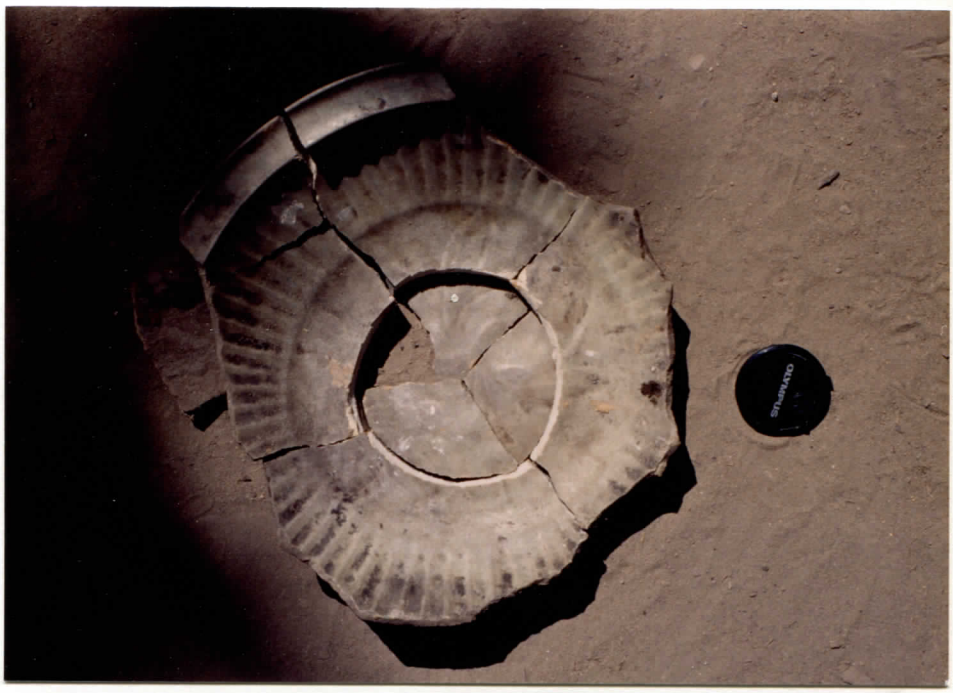

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Photo 7-31.
Makam Jipang, showing one of the apparent tombs of old cement with a collapsed roof.

Photo 7-32.
The grave of Sanro Karunrung, reportedly a female soothsayer.

Photo 7-33.
Bontomanaik 1. A sheltered marked grave, around two metres long, reportedly of a hero contemporary with Sultan Hasanuddin. The only visible remains of a formerly substantial cemetery.

Photos 7-34 to 7-36.
Gravegoods reportedly recovered from the north of Karunrung.
Top: a seashell, and the base of a Qingbai covered bowl
which has lost its lid (possibly Zone 4).
Middle: a miniature Sawankhalok covered bowl
and a Ming whiteware bowl (possibly Zone 4).
Bottom: a Wanli BW cup (possibly Zone 4)
and a possibly Vietnamese brownware cup (reportedly Zone 5).


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Photo 7-37.
The marked grave of "Karaengta Cenra Pole", Kompleks Makam Campagaya. The cement case marker, interpreted as a renovation, encloses upright stones at head and foot, and is protected by a simple wooden shelter with a tin roof. Orientation 35° from magnetic north.

Photo 7-38.
Kompleks Makam Karaengta Bungaya, Suaka Site No. 255. Finely carved wooden box markers with crenulated *nisan* enclosing finely carved sceptre-like *nisan*, presumably adopted from the original masonry. Set on a modern cement stage encasing the presumable original sepulchres and protected by an iron picket shelter.

Photo 7-39.
Kompleks Makam Karaengta Tompok Balang. A looter's hole has exposed these bricks used to make a grave marker.







Photo 7-40.
Bonto Jalling Lama, showing the restored Islamic graveyard.

Photo 7-41.
Bonto Jalling Lama, with the ranging pole showing the findspot of the polished hatchet in the southeast corner of a sunken field.

Photo 7-42.
Maccinik Sombala old kampung area now washed away by an active meander of the Jeknekberang. Note the width of the river in the wet season.







CHAPTER 8. ANAK GOWA ("CHILD OF GOWA")

8.1 The Anak Gowa Cluster

The Anak Gowa sites adhere closely to the Sungai Anak Gowa, especially in spatial analyses 6-1 and 6-3 where sites were allowed to cluster across the Jeknekberang.[1] Benteng (Fortress) Anak Gowa stands out as the key site from its position at the centre of the cluster (Figure 6-15). Compared to the Gowa heartland, population densities along the Anak Gowa apparently remained low, as indicated not only by the lower density of "site" (Figure 6-15c) but also by the type of site - burial areas comparatively free of traces of occupation such as post-Ming tradewares (Figures 8-3 and 8-4) and earthenware sherdage (Appendix D).

The modern Anak Gowa originates within coastal alluvial plain, but it is linked to the Jeknekberang by two remnant channel features (Figure 6-2a). This strongly suggests that some ancestor of the Sungai Garassik (Jeknekberang) had once followed a course along the Anak Gowa before debouching. Because the Anak Gowa shows no signs of ever having been a major river, any such situation would have prevailed before the Garassik had stolen the Gumanti headwaters, i.e. before 1693 (5.4.3). More precisely, it would have prevailed during the 16th century according to my interpretation of the MCKGBM sites (7.3.6) and according to my interpretation of Benteng Anak Gowa (8.2.1).

The very sharp drop in the cluster's share of 16th century tradeware pieces compared to its share of earlier pieces (Figure 8-3) might suggest that the lower Garassik no longer followed the Anak Gowa by the 16th century, if we accept the argument that lower levels of local fresh water discharge would have resulted in decreased local prosperity and hence relatively fewer tradewares. However, the comparative lack of 16th and 17th century pieces can probably be more directly attributed to the rise of powerful palace centres elsewhere

[1] Even Bonto Tangnga Utara, the northernmost site in the cluster in these analyses, flanks the Anak Gowa in the sense that it is enclosed within a relic meander west of Benteng Anak Gowa (Figure 6-2a; Photo 8-9).

(cf. 7.3.6). In particular it seems that the communities along the Anak Gowa were usually within Tallok's sphere but otherwise within Gowa's, whereas previously they would have been on a more even footing with their neighbours.

8.2 The Anak Gowa Group

8.2.1 Benteng Anak Gowa (Gowa 2)

Benteng Anak Gowa is the smallest Gowa brick fort, with approximately 1.4 km of wall enclosing an area of 0.15 km². Notwithstanding the loss of the western corner and some internal slumping near the eastern corner (Figure 8-1), the walls show generally excellent preservation (Photo 8-1), with the internal ledges and leading ramps preserved to a degree not observed at the other forts. The ledges are generally about one metre high, although the eastern ledge drops to half that height at the corner. They afford a view over the wall and a guarded vantage from which assaults could be repelled, and access to two of the three extant bastions. Stations II to V mark the fort's original entrances. Station I is probably a recent breach made for their convenience by the present inhabitants inside the fortress.[2]

A cleaned view of station I revealed a central brick line, which served as the wall's spine, flanked by clay packed to the level of the bricks. The heaped silt and silty clay on top indicates a parapet, which would have been originally thicker and possibly rectangular in cross-section before it slumped.[3] The brick spine had apparently been laid on a clay basis rather than in a foundation trench, and measures only 1.25 metres in height. The brick spine also accounts for only three metres of the walls' total thickness of ten metres, and even then consists largely of packed interstitial clay (Figure 8-2; Photo 8-2).

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[2] This kampung is not shown on the Dutch land-use maps and so would postdate the early 20th century.

[3] Its variable preservation around the fort may account for some of the variation in wall height from three metres at Station I, to 2.5 metres at Station III, to as low as one metre at zone 5.

The sloping surface to the top of the extant wall is gentler from the inside than from the outside. If we assume that the oblique faces reflect slumping of the parapet, we would reconstruct an internal clay ledge around 1.5 metres above the inside ground surface, and an external clay ledge almost twice that height above the outside ground surface (Figure 8-2). Interpretation of the external ledge is not fully clear, but if the fort had been built before muskets became an integral part of local warfare, and if the ledge had supported bamboos or other protective vegetation, it might have allowed defenders to confront combatants directly from a raised vantage.

The wall stands higher above the external than the internal ground level around the whole fort, suggesting that the silt and clay used in the walls had been mainly quarried immediately outside the wall. Both types of earth are locally present. My soil test in a fresh looter's hole identified the top 50 cm as compact silty clay, and the bottom metre as a loose and moist, clayey silt.[4]

The construction of a single, central line of bricks at Anak Gowa recalls Benteng Tua's central brick-walls prior to the addition of lateral brick-walls (Figure 6-10). Brick measurements clinch the comparison by showing that the Anak Gowa bricks are not only as large as the Benteng Tua central-wall bricks but indeed slightly larger at a high

TABLE 8-1. MEASUREMENTS OF THE ANAK GOWA BRICKS

Station	Length		Breadth		Thickness	
	n	$\bar{x}$ SD	n	$\bar{x}$ SD	n	$\bar{x}$ SD
I	(4)	44.75 ± 0.8	(10)	21.0 ± 0.9	(15)	8.4 ± 0.7
II	(1)	47	(9)	22.6 ± 0.65	(10)	8.25 ± 0.4
III		-	(6)	19.7 ± 1.1	(6)	6.7 ± 0.2
IV	(4)	42.75 ± 1.9	(6)	21.7 ± 1.7	(10)	6.75 ± 0.4
V		-	(9)	24.0 ± 0.8	(9)	8.0 ± 0.0
Total	(9)	44.1 ± 1.95	(40)	21.9 ± 1.8	(50)	7.75 ± 0.9
Ranges		(41-47)		(18-26)		(6-9.5)

$t = 3.3$ ($p<0.001$) $t = 4.2$ ($p<0.0005$) $t = 5.0$ ($p<0.0005$)
(One-tailed Student's t-tests comparing the total Anak Gowa sample with Benteng Tua's total central-wall brick sample.)

[4] The soil was slightly acidic, with a pH of 6, at both horizons.

level of statistical significance (Tables 6-1 and 8-1). The Anak Gowa bricks are the largest recorded at any Gowa forition, which may well imply that Anak Gowa was the first Gowa fortress supplied with brick walls (E.4).

The date and even the rationale for the construction of Benteng Anak Gowa have been an enigma as it is the only fort for which no clear historical records are known, and the available surface sherdage (Figure 8-1) indicates remarkably little occupation, ever.[5] To explain the fort's construction, Sagimun (1985:282) identifies Anak Gowa as the Gowa palace occupied after Somba Opu's destruction in 1669. However, Sagimun's inference runs contra the barren sherdage contents in Anak Gowa, and the compelling evidence for Gowa's return to Benteng Tua (6.4). A different hypothesis proposed to me by Campbell Macknight would date the constuction of Anak Gowa to one of the skirmishes after the Dutch had established themselves in Makassar, say in the late 18th century when Gowa came close to retaking Fort Rotterdam. But records of such a recent construction should have survived, at least as oral history. Moreover there is good reason to believe that Benteng Tua, which was more suitably sited for an assault on the Dutch, was still operational (6.7). These scenarios which interpret the construction of Benteng Anak Gowa as having occurred comparatively recently also fail to accommodate the archaeological parallels with Benteng Tua's oldest brick walls (6.4). The implied association with Tunipalangga is further strengthened by the single citation of Anak Gowa I know of in the texts: Tariawang Karaeng ri Anak Gowa, Tunipalangga's only identified son, who reportedly died at the age of ten in the mid-16th century (SG:31-32; Figure 4-8).[6]

Although evidence of occupation at Benteng Tua is negligible, the present owner of the fortress precincts explained to us that a large haul of "Ming" wares had been

[5] As also noted by previous Nurhadi et al. (1980:9).
[6] The external ledge around the fortress, if my interpretation is correct, would also support an association with Tunipalangga. The Makassar texts imply that bullets, and hence muskets, were not a usual part of local warfare before Tunipalangga's reign (SG:26,28).

looted.[7] SSPHAP's survey recovered a quite unusual sample of tradewares (Photos 8-3 to 8-6). When standardised they indicate a dip between 1500 and 1650 if we use the fine classes (Figure 8-3), and a dip between 1600 and 1700 if we use the broad classes (Figure 8-4).[8] The latter might be preferable because the sample is small (5.6.2). In either case, use of the site appears to have stopped when Tunipalangga built the fortress for Kg Anak Gowa as a prince's palace - a scaled-down version of Benteng Tua - as the name "child of Gowa" rather suggests. Tunipalangga might have commenced building in anticipation of his son's incumbency when his son was still alive. Yet again, if Kg Anak Gowa had already died or was near death, Tunipalangga might have built the fort as a mausoleum to assuage his grief. If Karaeng Anak Gowa had been buried here, it presumably would have occurred at the centre of the fort where a *saukang* now stands (Photo 8-7).

However, interpreting the fort solely as a prince's palace might not fully explain its central position within the Anak Gowa site cluster (Figure 6-15). The fort's apparently strategic siting, when set against the lack of evidence for its use, suggests it had been built as a defensive retreat for the surrounding communities.[9] Such an interpretation would accord with a mid-16th century construction date, because by then Polombangkeng (Bajeng) to Gowa's immediate south constituted a palpable if dwindling threat (4.5). As well as sheltering the communities along the Sungai Anak Gowa in the eventuality of an overland attack from the south, the fort would have been strategically located to prevent a deeper offensive towards Benteng Tua, especially if the lower Sungai Garassik had then followed the course of the Anak Gowa. This line of interpretation adequately explains the Anak Gowa "enigma", even if the fort

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[7] Presumably this had occurred near the fort's eastern bastion where there are some remnant holes and a graveyard with old cement markers enclosing stones at head and foot (Table F-5).

[8] Nurhadi et al. (1980:13) also report having collected four "Ming" pieces at Benteng Anak Gowa.

[9] I am grateful to Ken Heffernan for pointing out this interpretation.

could also have served a complementary purpose as Karaeng Anak Gowa's mausoleum.[10]

8.2.2 Jingarak (Gowa 15) and Bonto Tangnga Utara (Gowa 9)

Makam Jingarak occurs on a raised surface among fields within a general environment of river-clay soils (Photo 8-8). It consists of one modern and 15 "old" marked graves (Table F-5), including one with the same combination of masonry nisan observed within the brick sepulchre at Bukit Bikuling (7.1.2). The reported looting of antiques in the two fields to the south was confirmed by our recovery of a few terminal Ming pieces (Figures 8-4). The main use of this small burial area could have originated as late as the 17th century if we allow for an elapse between greater Gowa's official adoption of Islam and the diffusion of correct Islamic burial rites to the countryside.[11]

Bonto Tangnga Utara, whose surface consists of a sandy silt, has the shape of an island. Apparently, its northern perimeter defines an old meander of the Anak Gowa (Photo 8-9) while its southern border marks a former chute cutoff. The site holds a single house next to a recent wooden grave marker; six looter's holes around a stone-marked, raised earthen feature whose north-south orientation suggests an early Islamic grave (Table F-5a); and 60 metres from the latter, an overgrown thicket with 40 looter's holes. Reportedly the diggings occurred around 1940 and uncovered human skeletons; celadon, white, and blue-and-white ceramics;

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[10] This general scenario can also accommodate the absence of a historical reference to the fort's construction. Firstly, the compilers of the Gowa and Tallok chronicles were writing at a time when Gowa's south had been pacified for over a century, and so could have easily overlooked or disregarded an early defensive structure. Secondly, given that Kg Anak Gowa's death marked the extinction of Tunipalangga's direct line, further references to him might have been felt unnecessary, or even an embarrassment if the fort's mausoleum associations carried the implications of inappropriate extravagance.

[11] In this scenario, the single sherd which we identified as an "early whiteware" (13th-14th centuries) remains of unclear interpretation or possibly represents a faulty identification.

and iron weapons. The only tradeware piece we recorded was European.

Like Makam Jingarak, and indeed like Benteng Anak Gowa, Bonto Tangnga Utara suggests a precolonial pattern of small to medium-sized burial areas serving a dispersed population whose traces of occupation, such as earthenware sherdage, are all but absent from the graveyard environs. This pattern reinforces the other evidence that Benteng Anak Gowa, in stark contrast to Benteng Tua, had no ongoing administrative function.

8.3 Kanjilo-Tangallak (Gowa 6)

To the immediate west of the Anak Gowa group, at the junction of the Anak Gowa and Tangallak rivers, lies the KKKKK group (Figure 6-15). It is associated with the historical toponyms Kanjilo and Tangallak. Kanjilo makes an early 16th century appearance in the records as the karaengship of the woman who married Tunilabu ri Suriwa, Tallok's second raja, in Garassik (ST:6; Figure 4-6). At this time Tallok controlled Garassik and, as the circumstances of the marriage suggest, Kanjilo too (13.3.3). There are no references to Kanjilo in the mid-16th century, i.e. the interval of Anak Gowa's brief appearance in the texts. In the late 16th century Kanjilo was the karaengship of Tunijallok's daughter, Tuniawanga ri Kalassakana. Very late in the century she married Kg Kanjilo, as the teenage Abdullah was named before ascending the Tallok throne (SG:43; ST:14-15). I interpret the couple's joint karaengship over Kanjilo as marking the transfer of authority over Kanjilo from Gowa to Tallok. Subsequently, Kanjilo was Mudhaffar's karaengship before he ascended the Tallok throne (ST:20), while Tangallak was the karaengship of Mudhaffar's daughter Sitti Maradiah who lived between 1615 and 1661 (ST:26; LB:88,125). Later in the 17th century Tallok's Abdul Kadir (born 1666) received Kanjilo as his karaengship (cf. Patunru, 1983:155). Thus Kanjilo was essentially a Tallok karaengship, except during Gowa's main period of territorial expansion during the middle to late 16th century (13.3.3).

Our enquiries about antiques in Kanjilo elicited the tart response that Kanjilo was famous for its antiques. Five

discrete areas of successful looting were pointed out, two associated with present-day Kanjilo at the north, and the southern three (including the area specifically named Kanjung Maek) associated with present-day Tangallak. All are slightly elevated areas of silty clay, apparently deposited as the levees of the small rivers which pass them. They sit on a wider topography of bunded rice fields, also of mixed silts and clays, with a neutral pH of 7 at the locality which was tested (Photo 8-14; Figure 8-5). Remnant looter's holes were counted at Kanjilo Lama Timur Laut (53), Barat (15) and Timur Daya (47). Continuity of the burial grounds into Islamic times is indicated by old graveyards at Kanjilo Lama Barat and Timur Daya. The latter (Figure 8-5 inset; Photo 8-20) had 26 graves marked with masonry, arranged stones, arranged or mortared brick, and cement (Table F-5). In subsequent times the centre for burials moved to the large but essentially modern cemetery approximately 200 metres southwest of Kanjung Maek, near the modern administrative cemetery at Tangallak.

We were shown a range of Ming tradewares (Photos 8-10 to 8-13), and three fine Makassar earthenwares of the same forms as those at Makam Daeng Bane (cf. Photos 8-14 and 7-16), all reportedly from Kanjilo Lama Barat.[12] The looting at Kanjilo Timur Daya reportedly recovered blue-and-white wares most commonly, but also lots of celadons, Sawankhalok and "redwares" (overglaze enamelled wares). The indication of tradewares older than the 16th century certainly characterised SSPHAP's surface sherdage which included a distinct presence of "early" pieces at three of the looted areas (Figure 8-6). Indeed, by the general standards of the Gowa survey, the frequencies of 15th and especially 13th-14th century pieces were high compared to the presence of 16th-17th century pieces (Figures 8-3 and 8-4).[13]

[12] A broken example of one of these fine Makassar earthenwares, the type which resembles a plain dish, was donated to SSPHAP by the inhabitants at Kanjilo Timur Laut.

[13] This interpretation need not conflict with the Ming antiquity of the tradewares kept in a villager's house. These collections in people's houses tend to be of dubitable representativeness, given that they generally consisted of the pieces which had been passed over by antique dealers.

Some light use of the area for occupation, particularly at the margins, is indicated by the modest occurrences of "Qing BW" and "recent" tradeware pieces (Figure 8-7) and a generally light scatter of earthenware sherds. In the same vein, the surface of the spoil heap from a well in zone 22 (Photo 8-19) had 138 earthenware sherds and a pig's tooth, the latter presumably representing the pre-Islamic diet. Overall, however, Kanjilo's standardised chronological histogram is a good example of the profile to be expected from an area largely reserved for burials from the 13th-14th centuries until Islamic times (Figure 8-3).

8.4 Tombolok (Gowa 12)

On the southern bank of the Sungai Anak Gowa lie the sites given the fieldwork names "Makam Takbakka", "Tombolok Selatan" and "Makam Kocci Borong", together forming the MTM grouping (Figures 6-1, 6-2 and 6-15). Although they occur in today's Tombolok dusun, they fell within the Sanrangang desa when their antiques were looted some decades ago (A. Rasyid S., pers. comm.).

Makam Takbakka, also called Makam Karaengta Jawa, occurs in a grove of bamboos and garden trees associated with today's *kampung* Tombolok. 12 markers of wood or crudely hewn stone (Table F-5) accompany an impressive brick sepulchre with stone *nisan* at head and foot (Photo 8-28; Figure 8-8). Neither of the cemetery's alternative names necessarily carries specific significance. Makam Takbakka recurs as a name for old, revered graves while "Jawa", which reportedly identifies the person's origins, is associated with two nearby graves which almost certainly belong to 17th century Makassar nobles (8.5). However, it is possible that "Jawa" could be a corruption of "Balang Jawaya", in which case the sepulchre could mark the burial of one of three Makassar noble women who died in the 17th or the early 18th century.[14] Ten remnant looter's holes testify to looting which

[14] These are Tunijallok's daughter, Sikati Kg Balang Jawaya, who lived c.1575-1627 (SG:44; LB:90; Figure 4-9); Kg Balang Jawaya who died in 1637 (LB:98); and Kg Lengkesek's sister Sikra Kg Balang Jawaya who lived 1634-1721 (LB:96; Ligtvoet, 1880:199; Figure 4-13).

reportedly recovered some Sawankhalok, celadon and a very few blue-and-white wares. A *Qingbai* base found at the site (Photo 8-15) confirms the implied earliness of the tradewares. The area appears to have been used for burials from the 13th-14th to the 20th centuries, but intermittently and with no evidence that it reflects a continuous social entity.

"Tombolok Selatan" and Makam Kocci Borong are associated with today's *kampung* Kanarea, called Parang Bone on the Dutch 1922 land-use map. The former site consists of 142 looter's holes in a bamboo grove where, reportedly, lots of blue-and-white but also some brownwares were found. We recorded a "Ming Swatow" BW piece and some brownware jar pieces, but otherwise early monochrome and whiteware pieces, and a Vietnamese sherd with iron under the glaze (Photos 8-16 to 8-18). Although the sample is small, its dominance by "early" rather than "Ming" pieces is unusual, and teams up with Makam Takbakka in suggesting a pronounced emphasis on pre-Ming rather than Ming-period burials (Figure 8-4). Finally, Kocci Borong is a good example of an Islamic cemetery whose (estimated) 200 markers appear to span the Islamic period (Table F-5; Photo 8-21).

8.5 The TMMLGD Group

8.5.1 Makam Manyampang (Gowa 13)

This attractive Islamic cemetery sits on brown silty clays approximately 50 cm above the surrounding fields. The principal grave, ascribed to "Karaengta Barombeng from Jawa", consists of two restored sepulchres under a shelter (Table F-5; Photo 8-22). The burial of "Kg Barombeng" at Manyampang allows his identification with Sultan Abdullah's stepbrother, Mappataenrek Kg Mamampang Kg Garassik Kg Barombong, who lived 1572-1642 (ST:12; LB:87,104).[15] Given his karaengships and

[15] Unfortunately, I had no inkling of this apparent association when I recorded the site and did not document the grave in any detail (see Table F-5). However, the status of the burial is confirmed by the wooden sculpture of a water buffalo's head at the shelter entrance (Photo 8-22) as also observed at the shelter for Makam Tu Baranae, Bukit Sulenta (7.1.6).

Tallok's contemporary purchase over Kanjilo, the lower Sungai Garassik apparently marked the territorial divide between Gowa and Tallok during much of the period when Abdullah effectively ruled greater Gowa (13.3.3).

The 63 other marked graves at the cemetery sport a variety of stone, brick and cement markers, some including *nisan* of baked clay (Table F-5; Photo 8-23). We counted seven looter's holes, hardly enough to demonstrate successful looting of gravegoods in the absence of pre-Qing tradeware sherdage (Figure 8-3) or reports of systematic looting. Hence the cemetery might have been inaugurated with the burial of Abdullah's stepbrother.

8.5.2 The Bontoalak site complex (Gowa 14)

Three sites were recorded in *desa* Bontoalak: Makam Tua Lambengnge in *kampung* Bontoalak (G.14.1); and in *kampung* Lambengnge (*sic*), Makam Karaeng Dampang (G.14.2) and Gotong (G.14.3). The very light presence of sherdage on these sites included tradewares of only Qing antiquity, as with the other sites in the TMMLGD group (Figure 8-4). The small number of reported antiques need not be associated with burials any older than the terminal 16th or initial 17th century.

The first site reportedly yielded some antiques, but its principal feature is a modern tomb on a platform laid with three courses of old bricks (Photo 8-25). The cement restoration inside, which encloses upright stones at north and south (Table F-5), reportedly marks the burial of the *nenek moyang* (ultimate ancestor) of Bontoalak kampung.[16]

The similar modern tomb at Makam Karaeng Dampang shelters fine masonry *nisan* (Photo 8-24) which parallel some of the examples within the royal tombs at the Sultan Hasanuddin complex (Table F-1). The buried individual, reported to be Lambengnge's *nenek moyang* and a "Gowa karaeng", can probably be identified with Karaeng Lambengi, the son of Karaeng Lengkesek who was briefly Gowa's regent in the late 1670s (3.5.1; LB:111,148,155,156). The identification further suggests that "Lambengi", which reportedly had attacked Gowa

[16] His name is no longer remembered, according to our informants.

in olden days (2.5.2), can be located in the general area of the site. A few modern graves occur nearby (Table F-5).

Gotong is a raised area of garden trees with two squarish earthen features associated with large stones. One of these had reportedly yielded a Ming whiteware, and both could have been earthen sepulchres by analogy with the similar feature at Bonto Tangnga Utara (8.2.2). Further evidence of terminal pre-Islamic or early Islamic burials was provided by two large looter's holes.

8.5.3 Kuburan Islam Takbakka, or Tompok Balang (Gowa 75)

On the banks of the Jeknekberang behind the Sungguminasa police station lies an interesting graveyard of 17th century origins. No antiques have been looted here or found during the housing developments which occurred two decades ago. But the north area of 37 marked graves includes three box-style markers oriented 70° to 80° from north (Photo 8-26; Table F-5). The south area, reportedly a family graveyard, has 20 old to modern marked graves (Table F-2) including two which are sheltered and venerated. One, a masonry tomb ascribed to "Karaeng Tompok Balang Malissu Jawa" (Photo 8-29), is a partly collapsed version of the Makam Paccalaya tomb (Photo 7-20). The other is reportedly the grave of Kg Tompok Balang's wife, "Minasa Daeng Sunggu". It features a standing stone within a masonry case and elaborate stone arrangement (Photo 8-27). Both graves were joined by a platform made of old, red bricks which measured 27.7 ± 0.7 by 15.8 ± 0.7 by 5.2 ± 0.5 cm, based on 15 specimens. While they fall within the size and shape range of the bricks used in Gowa's coastal walls (E.2.4), their dimensions are far more typical of the old-stule bricks from unfortified sites (Table E-5).[17]

My notes on the two late 17th century men entitled Kg Tompok Balang (7.3.3) do not record their spouses, but it seems that neither could have married a recorded woman with a name like Minasa Dg Sunggu. The recorded marriages of Sungguminasa Kta ri Sanggiringang (1645-1675), a daughter of

[17] The platform could of course postdate the graves by centuries.

Gowa's Sultan Mohammad Said,[18] are to Kg Bontosunggu and Kg Bungaya (LB:106,119,120,141,150; Figure 4-17). And Hasanuddin's daughter Sunggu Bontomabassang Kg Langelok (1656-1730) did not include a Kg Tompok Balang among her six recorded husbands (Table 3-6).

Further elaborating these complexities, the Sungguminasa locals on site and elsewhere informed us that Sungguminasa ("elated") used to be called Tompok Balang ("high place in the swamp"). The name change implies a switch from a low-lying setting to the well-raised aspect of the Jeknekberang's levees. Hence it could well be related to when the lower Sungai Garassik sought out a new channel past the site, an event which apparently predated 1693 (8.1), and could now be dated to at least the mid-17th century given the use of the name "Sungguminasa" for Kta ri Sanggiringang. This could hold true even if local tradition has spuriously identified Sungguminasa's name change with the names of the two 17th century Makassar nobles buried at the site.[19]

8.6 The B(2)B Group

Bontomanaik 2, as it is identified on the Dutch 1925 1:50k land-use map, and Bonto Pakja occur in an area of sinuous kampungs which follow old river levees (Figure 6-2b, lower left corner). A silty soil prevailed at Bontomanaik 2 (Gowa 17) and a sandy soil at Bonto Pakja (Gowa 18), while the

[18] Her 'Makassar' name is given as "I Sunggumina" in the Makassar text and its direct translation into Indonesian (SG:68), but this should have been "I Sungguminasa", as indicated in the notes to the translation (SG:88) and also noticed by Noorduyn (1985:34).

[19] At least four possible solutions can be suggested which fairly closely parallel the local notions of these two graves. They could belong to I Sungguminasa and Kg Tompok Balang who were not spouses. They could belong to I Sungguminasa and one of her husbands: either Kg Bungaya, whose title might have become confused with Kg Tompok Balang given that these titles are coupled at Gusung (7.3.3); or Kg Bontosunggu (1643-1726), even though he is reportedly buried at Tallok (Chapter 14). Finally, they could belong to I Sunggu Bontomabassung and her husband Dg Mangalliki Kg Kaballokang (c.1652-1717), the last solution also incorporating the nearby historical toponym of Mangallik, although here it can be pointed out that Kg Kaballokang appears to have been associated with Kaballokang in Benteng Tua (6.5.6).

remnant river channel and surrounding flats contain seasonally inundated rice fields. Lack of survey to the south precludes the possibility of knowing where the spatial affinities of the B(2)B grouping lie (6.6.2).

Bontomanaik 2 has 16 looter's holes over an area 40 metres by 20 metres within a bamboo grove. Reportedly only a few antiques were recovered. 15 metres to the south lie four old marked graves, two of brick and two of masonry, one of the latter under a shelter (Table F-5). The name of the person in the sheltered grave is not remembered but, as with three other venerated graves to the immediate north, he or she reportedly hailed from Java.[20] 15 metres further south where the road passes we recorded one white and five blue-and-white pieces of Ming antiquity. The site seems to represent a 16th-17th century burial area of a community whose members were subsequently buried in the nearby Biring Balang Islamic cemetery.

Bonto Pakja has a similar Islamic cemetery with markers apparently dating from c.1800 onwards, and across the road, a group of five graves marked with pebbles (Table F-5). Presumably there had been older markers which have not survived, except possibly as restorations of modern appearance, because this site can be identified with the Bonto Pakja shown in the Dutch 1693 map (cf. Figures 5-5 and 5-6). Two localities near the five pebble-graves reportedly yielded antiques; an fish pond which produced a ceramic figure with a celadon glaze, and a banana grove where some blue-and-white wares and gold had been found. Confirming the latter indication of a small 16th-century burial ground, we recorded a "Ming Swatow" surface sherd and were shown a "Ming Swatow" plate with red overglaze decorations (Photo 8-30).

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[20] i.e. "Karaengta Jawa" (8.4), "Karaeng Barombeng" (8.5.1) and Karaeng Tompok Balang (8.5.3).

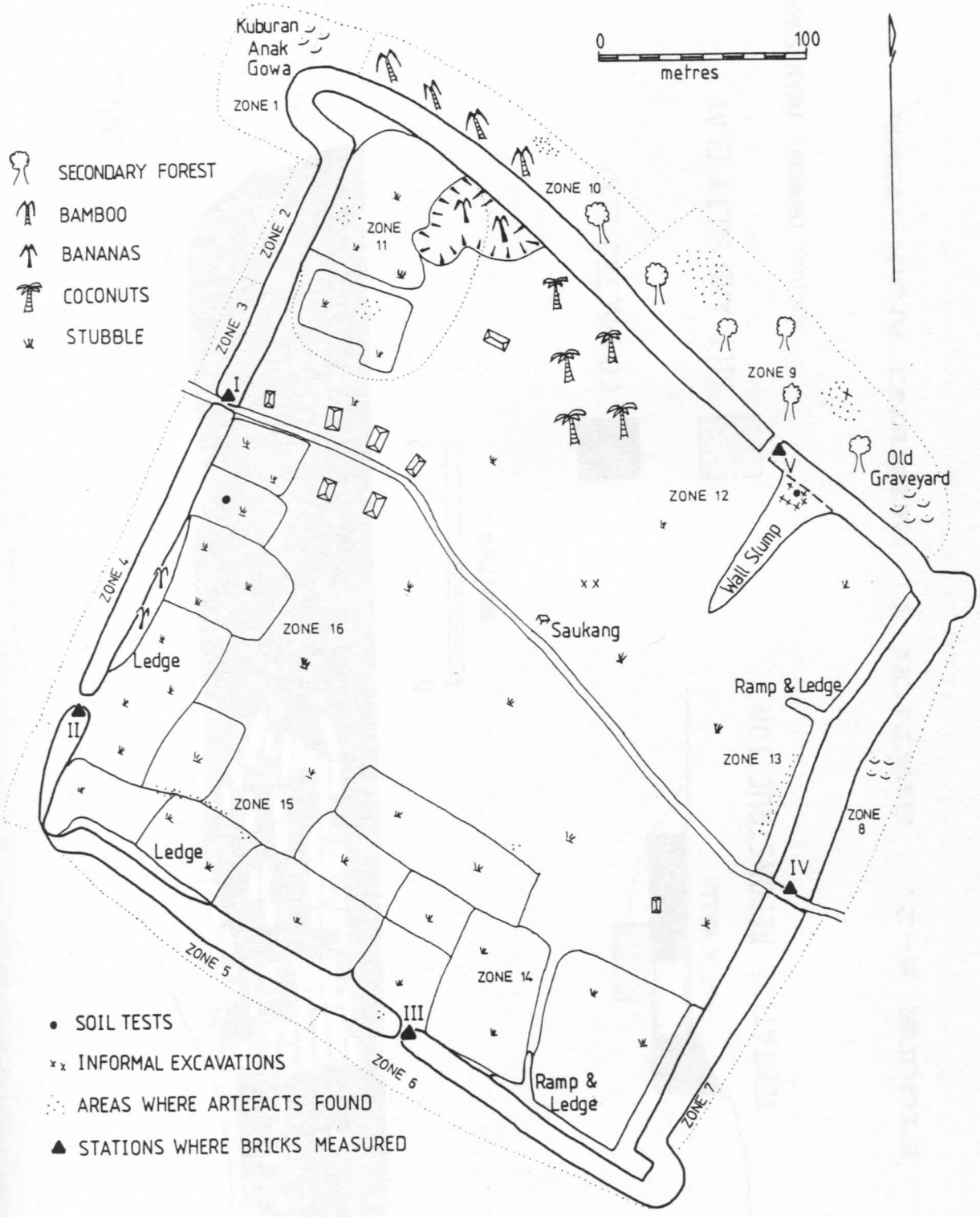


FIGURE 8-1. SSPHAP'S SURVEY OF BENTENG ANAK GOWA

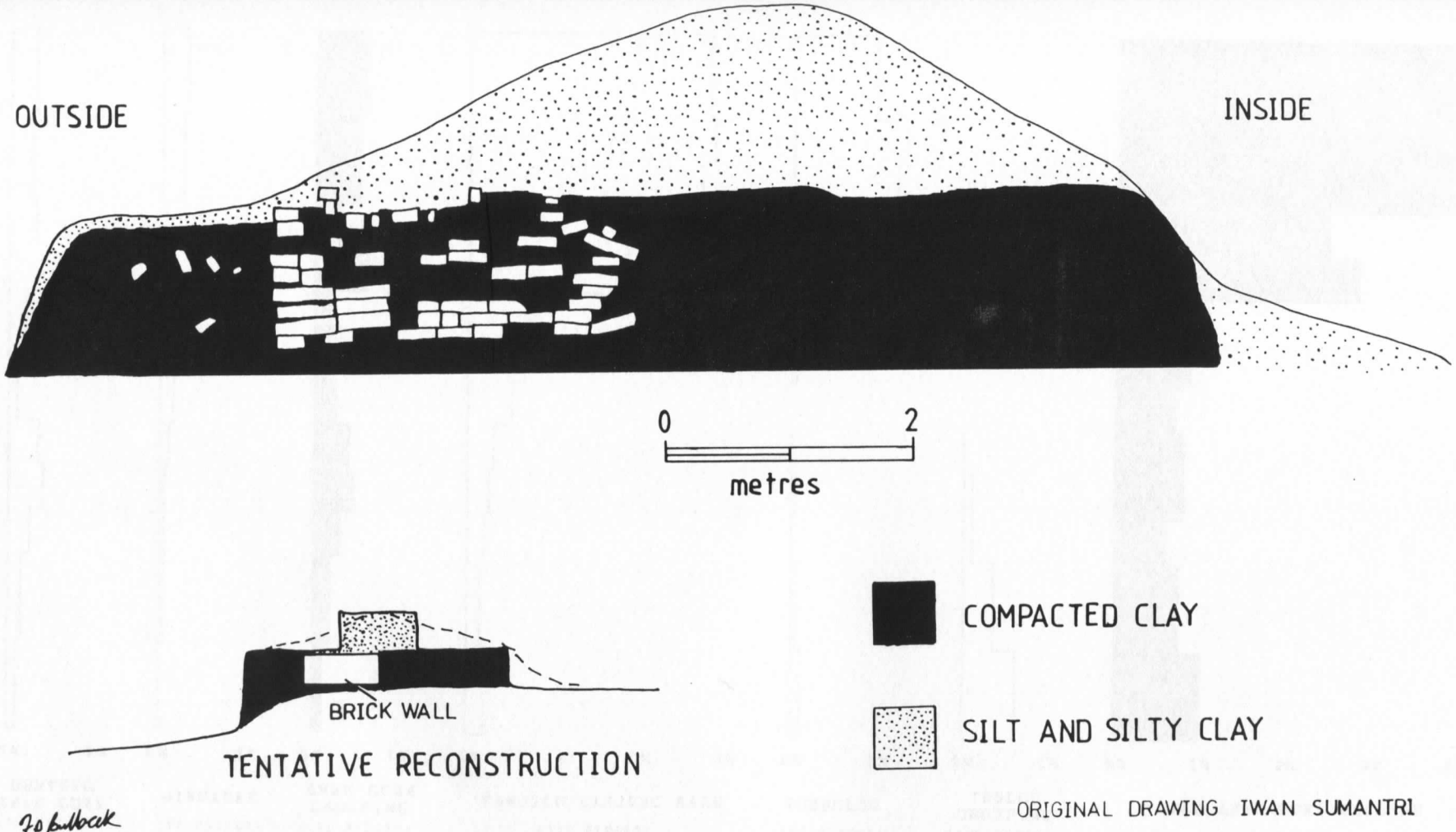


FIGURE 8-2. STATION I, BENTENG ANAK GOWA

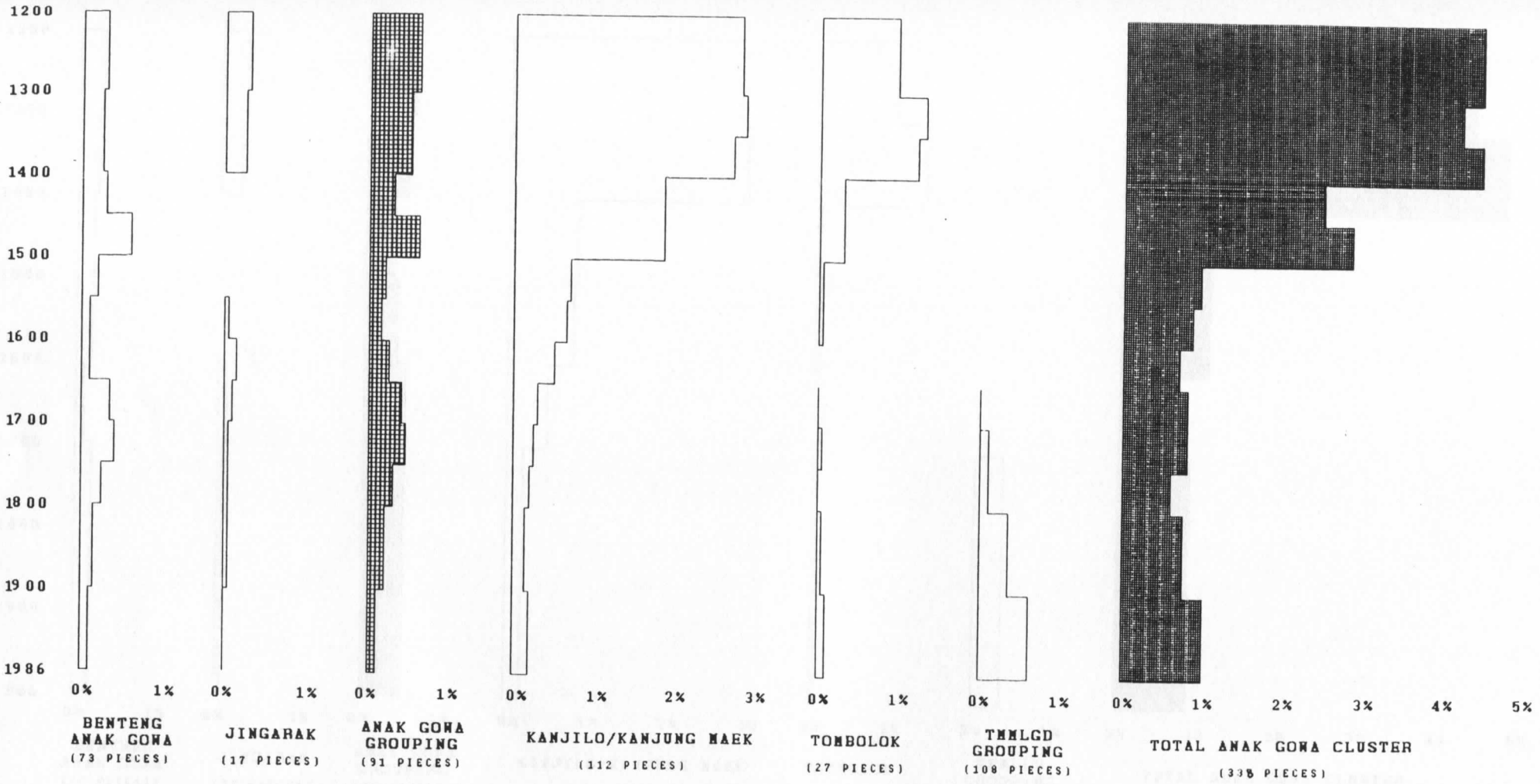


FIGURE 8–3. STANDARDISED CHRONOLOGICAL HISTOGRAMS (FINE CLASSES) – ANAK GOWA CLUSTER

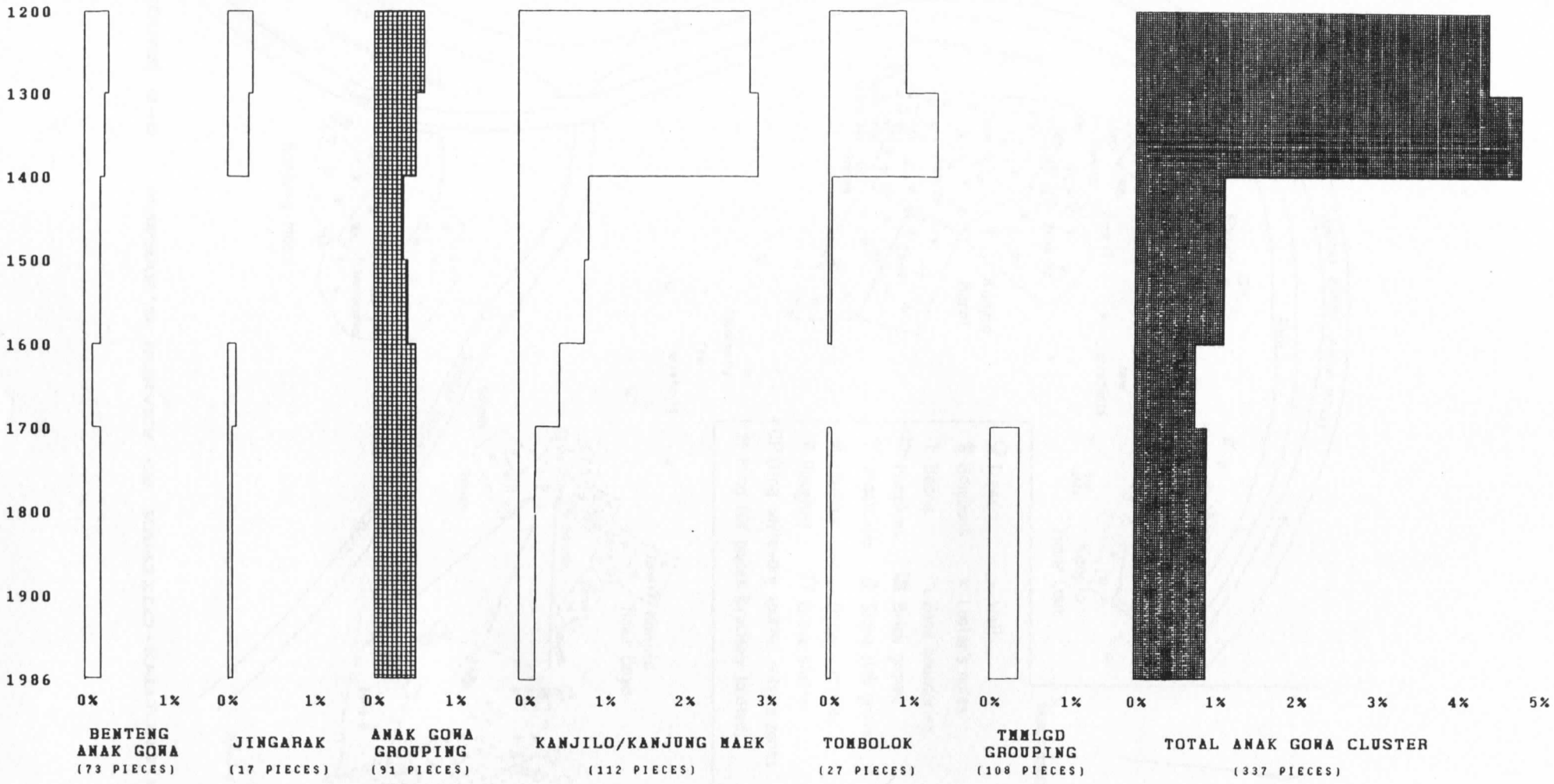


FIGURE 8–4. STANDARDISED CHRONOLOGICAL HISTOGRAMS (BROAD CLASSES) – ANAK GOWA CLUSTER

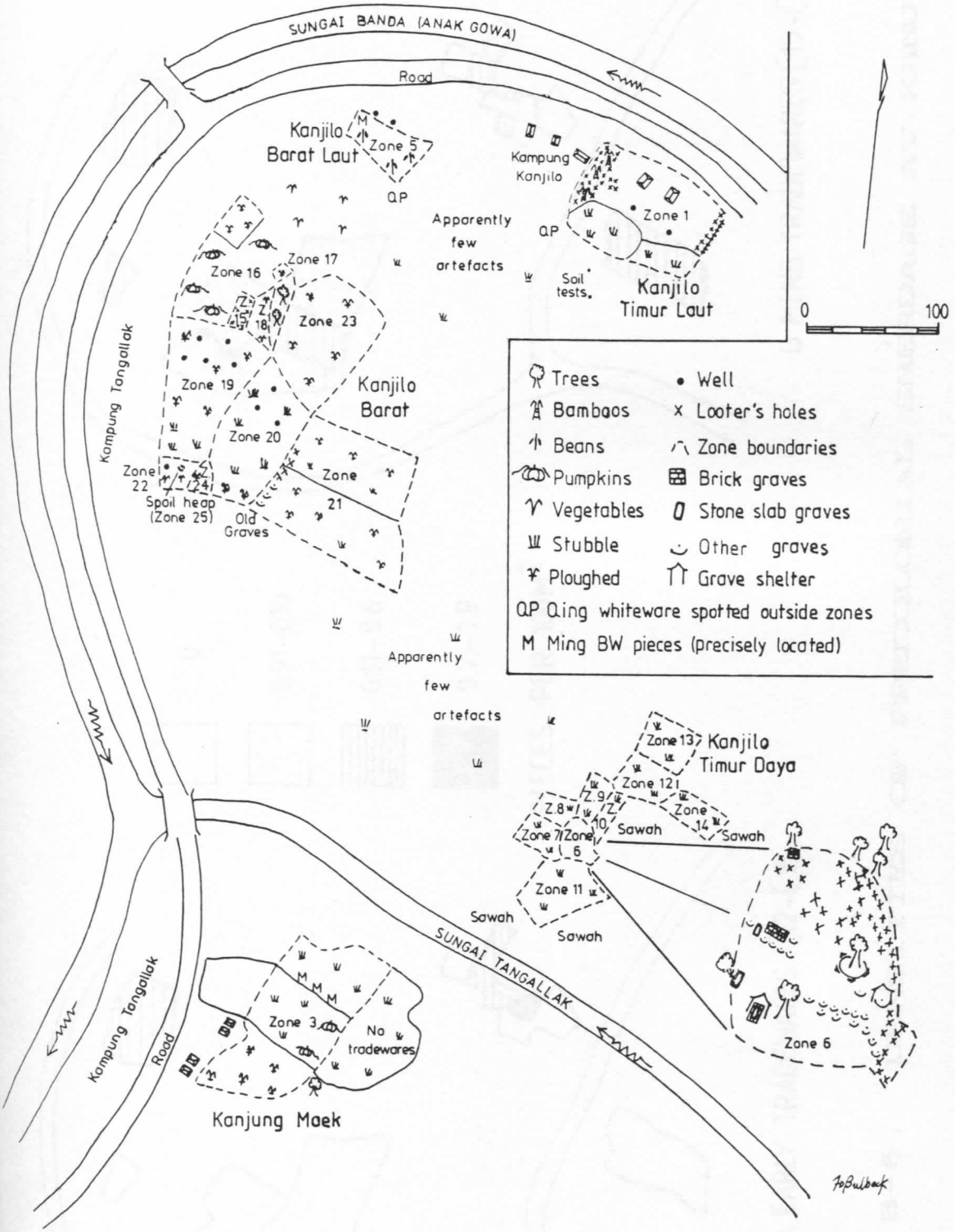


FIGURE 8-5. SSPHAP'S SURVEY OF KANJILO-KANJUNG MAEK

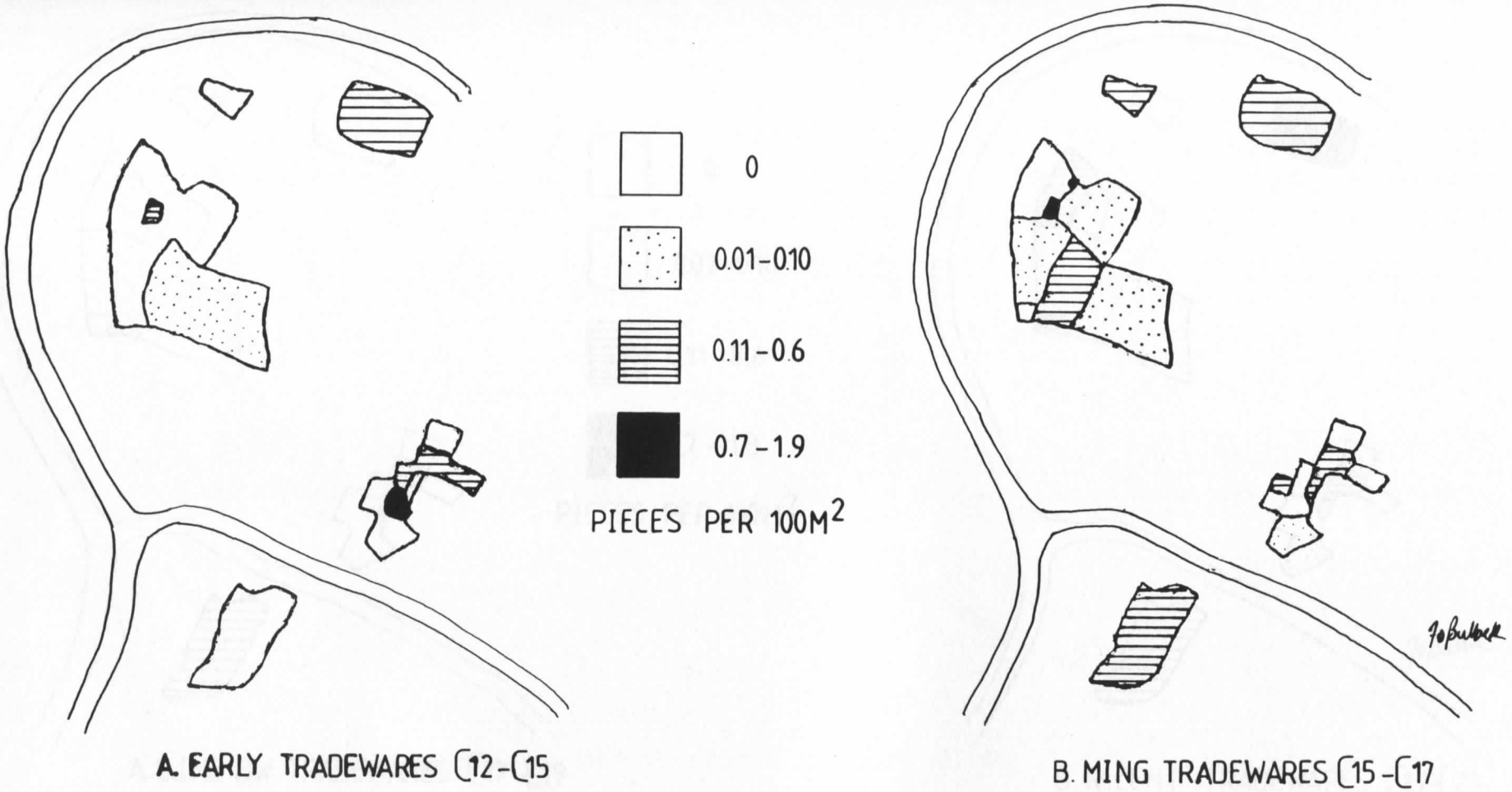


FIGURE 8-6. DENSITIES OF PRECOLONIAL SHERDAGE AT KANJILO LAMA

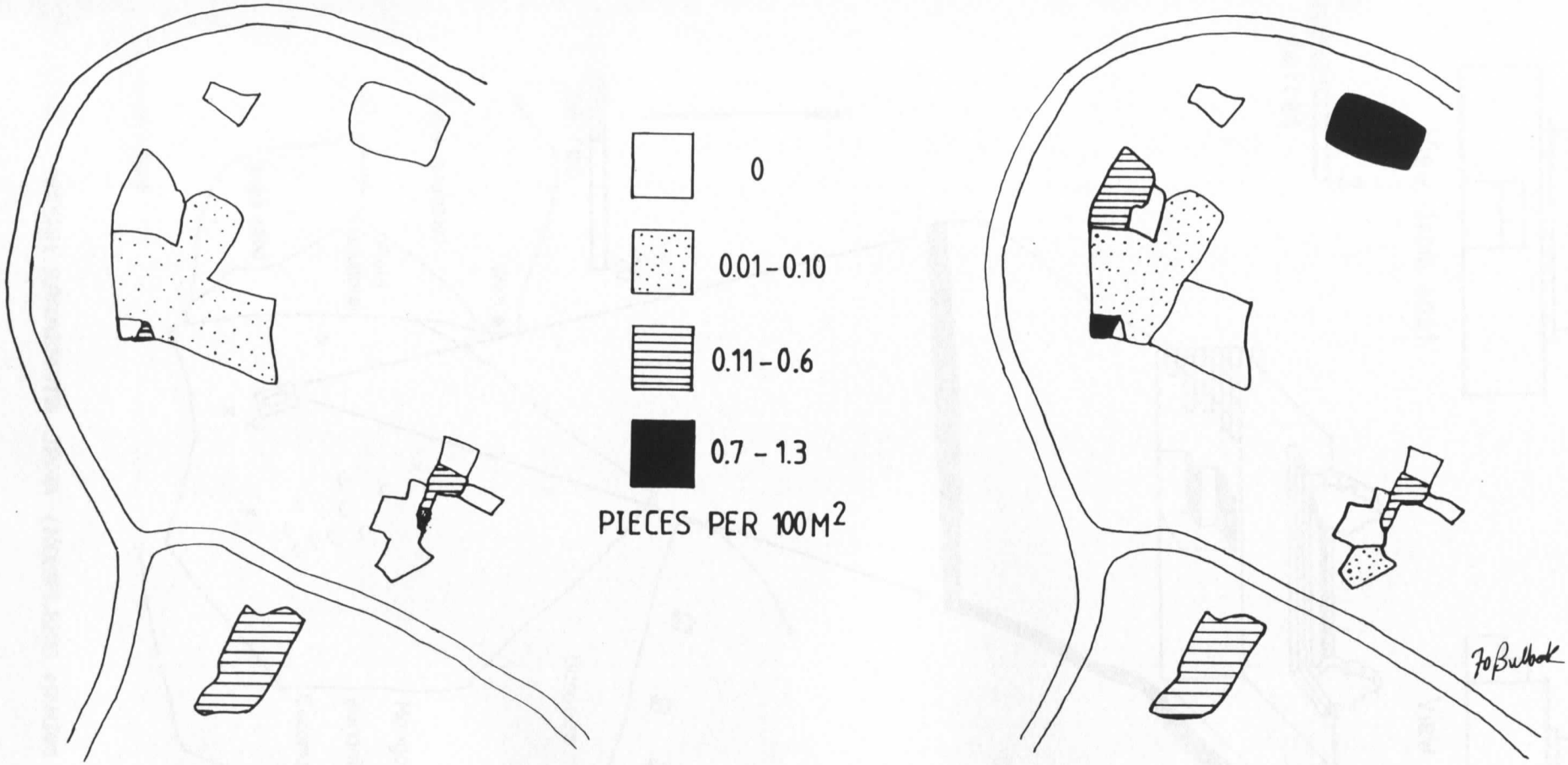


FIGURE 8-7. DENSITIES OF COLONIAL SHERDAGE AT KANJILO LAMA

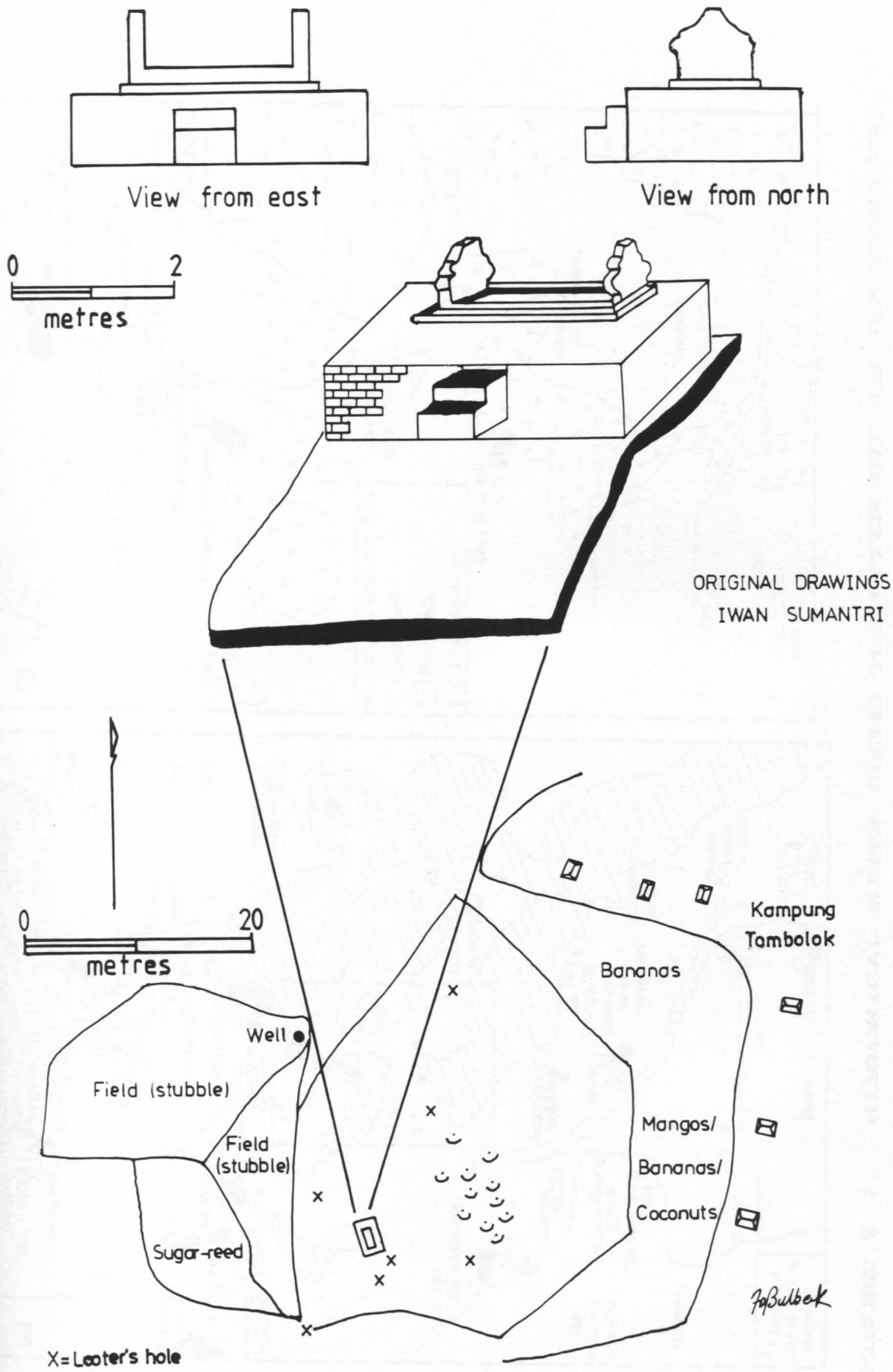


FIGURE 8-8. MAKAM KARAENGTA JAWA (KOMPLEKS MAKAM TAKBAKKA)

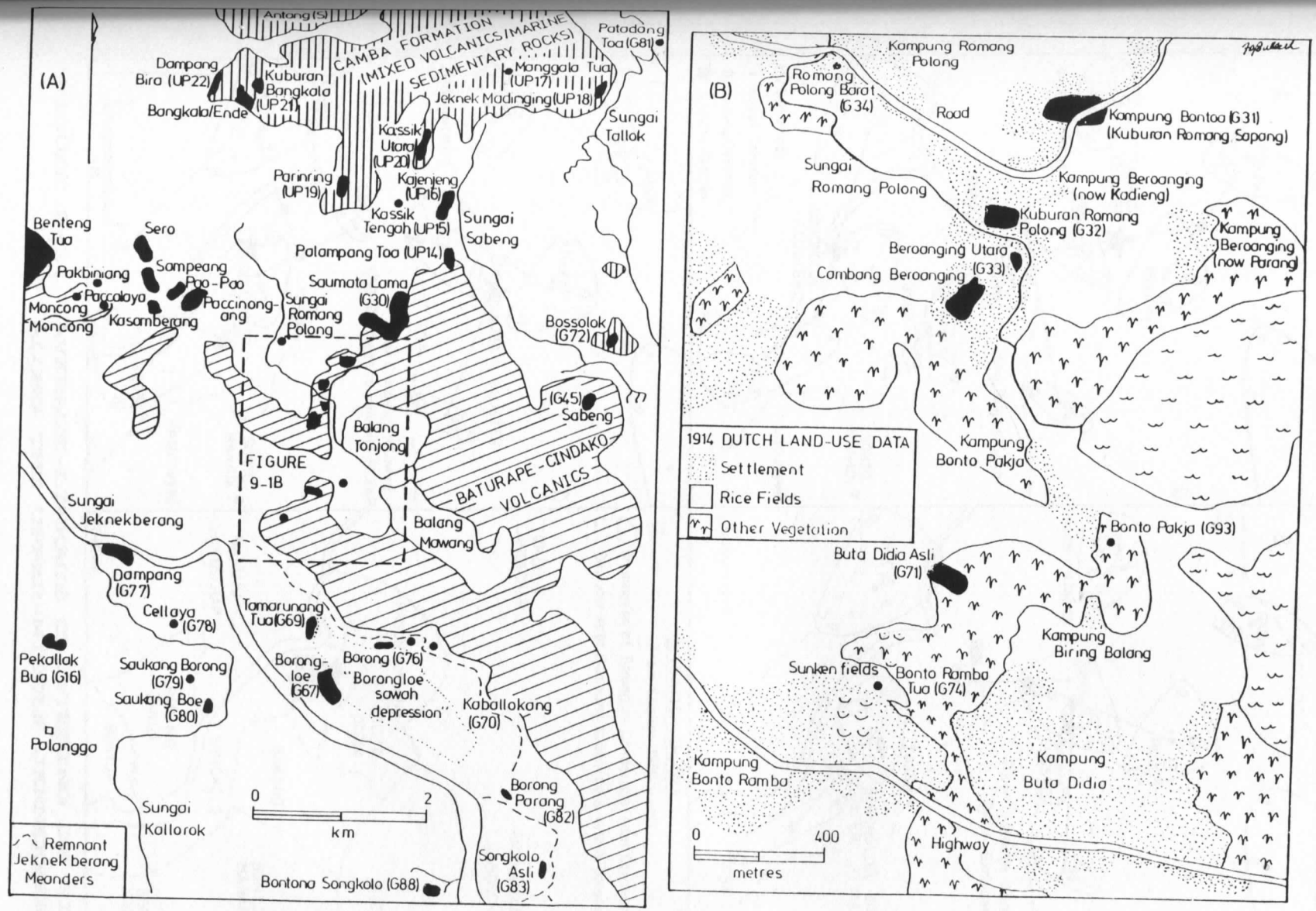


FIGURE 9-1. HISTORICAL SITES ALONG THE UPPER-MIDDLE JEKNEKBERANG

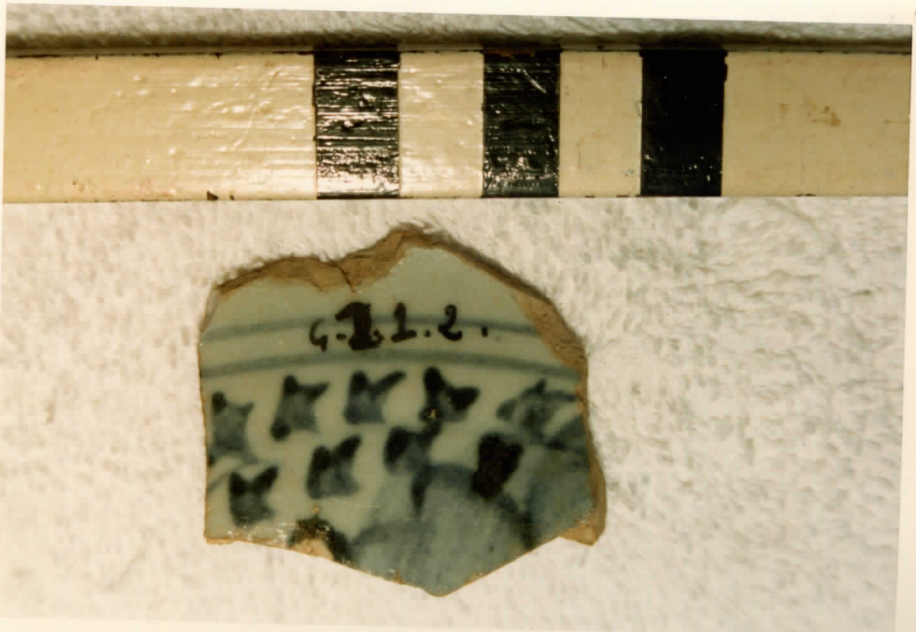
Photo 8-1.
Benteng Anak Gowa, a segment of the outer wall along Zone 4.

Photo 8-2.
Benteng Anak Gowa, Station I, photographed from inside the wall breach looking towards the outside.

Photo 8-3.
G.2.1.2. (Anak Gowa). Rim-cavetto junction of a Ming blue-and-white plate showing the same decoration as on the complete piece shown in Photo 7-18. The characteristics of the sherd's glaze and cobalt blue suggested to me, following Macintosh (1977), a late 15th-early 16th century date, which is commensurate with the date of its complete counterpart.







688•MAR'87 GB

Photo 8-4.

G.2.9.1 (Anak Gowa). A lower cavetto sherd, with two concentric lines bearing the traces of red enamelling (barely visible in the photograph). It was identified as an "early overglaze ware" because of the unusual mottled glaze; this could suggest a 14th-15th century date equally as well as the 13th-14th century date preferred here, although the latter date is fully plausible given the identification of 13th-14th century pieces at several of the surrounding sites.

Photo 8-5.

G.2.9.2 (Anak Gowa). A lower cavetto sherd with an *abu-abu* (subceladon) glaze. I dated it to the 14th-15th centuries, which converts to a 15th-16th century date (see Appendix B).

Photo 8-6.

G.2.15.1 (Anak Gowa). The rim of a jar cover, a blueware whose deep blue glaze approaches black. Tentatively dated to the 16th-17th centuries.

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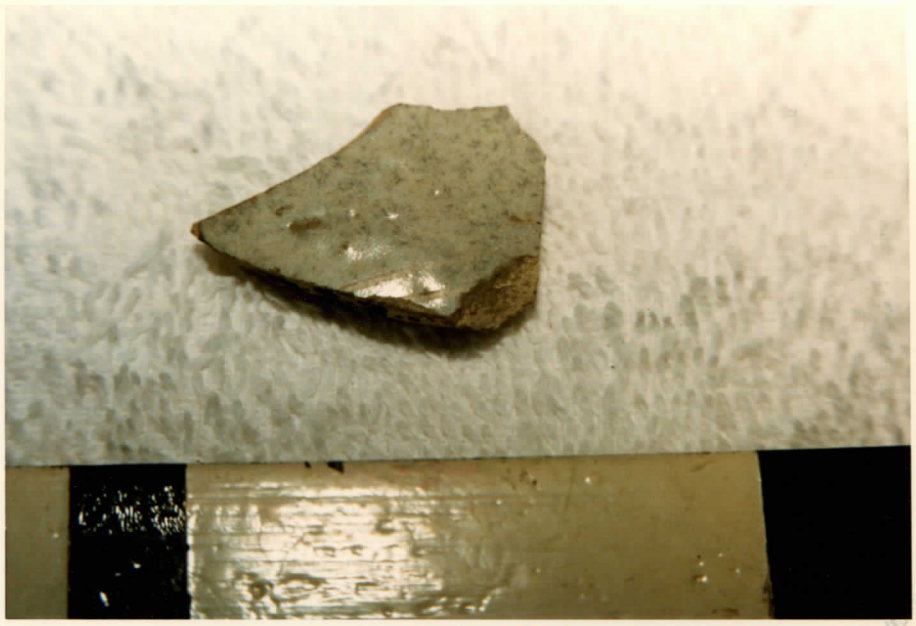

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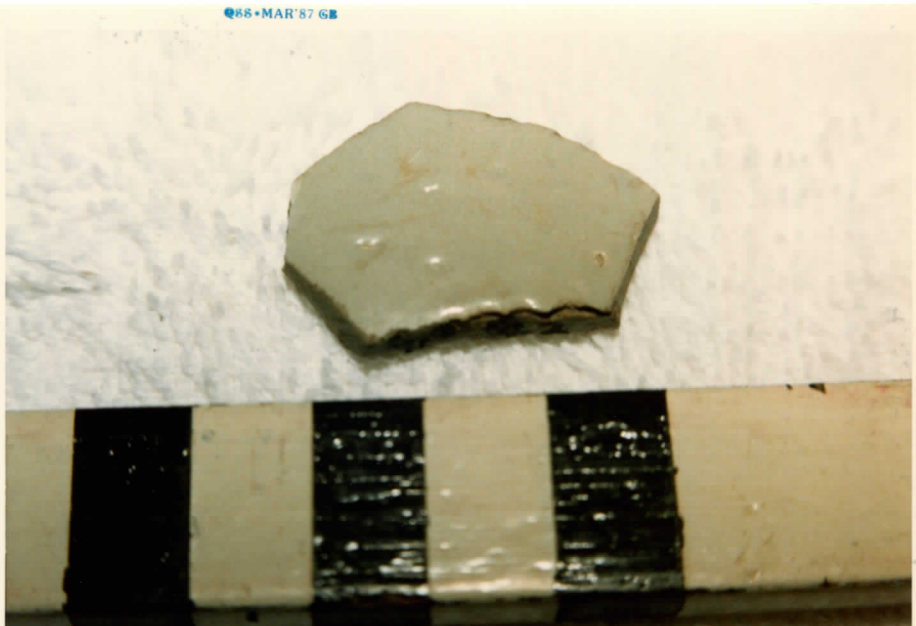

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Photo 8-7.
The *saukang* in the centre of Benteng Anak Gowa. Speculatively the burial spot of Tunipalangga's prematurely deceased son I Tariawang Kg Anak Gowa.

Photo 8-8.
A view of Makam Jingarak, looking northwards across the graveyard. The decorated sceptre-like *nisan* is visible under the tree at left rear.

Photo 8-9.
Northern curve of the former meander of the Sungai Anak Gowa northwest of Benteng Anak Gowa, used for bunded rice fields. Bonto Tangnga Utara is the raised piece of land centre-right, while the meander's eastern bank (left background) is also used for garden trees.

Photos 8-10 to 8-12.
Ming tradewares reportedly from Kanjilo Lama Barat, kept in a house in Tangallak kampung.

Top: Ming *famille verte* plate (top-left); Ming Swatow BW bowls (top-centre and bottom-centre); Ming BW plate with fish in centre (top-right); Ming Swatow BW plates (bottom-left and bottom-right). Note the unglazed, unoxidised central rings of cobalt in the two Ming Swatow BW bowls.

Middle: Terminal Ming BW bowl with devolved *cakra* in centre (left) and broken Wanli BW cup (right).

Bottom: Ming whiteware bowl.



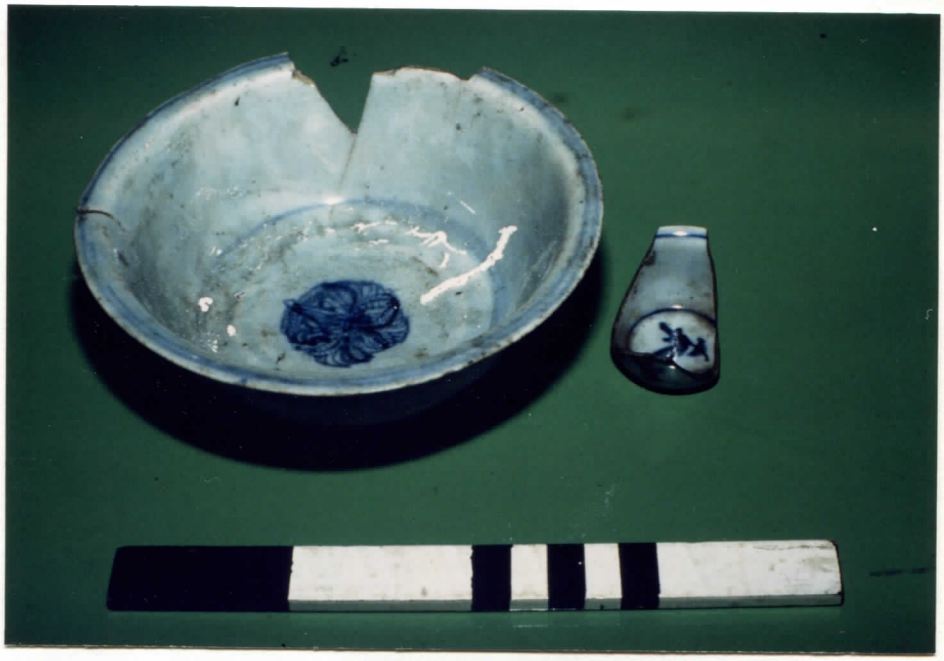



Photo 8-13.
Fine Makassar earthenwares, reportedly from Kanjilo Lama Barat, kept in a house in Tangallak kampung. Two plain serving dishes (left) and a "cogwheel" pot (right).

Photo 8-14.
Kanjilo Lama Timur Daya (old graveyard area), viewed from the Sungei Tangallak northwards across bunded rice fields.

Photo 8-15.
G.12.1.1 (Makam Takbakka). The base to a *Qingbai* bowl with classically Yuan (13th-14th centuries) combed and incised decorations. The same specimen is shown in Bulbeck (in press: Figure 2a).






Q88•APR'87 GE

Photos 8-16 to 8-18.
The photographed sherds from "Tombolok Selatan" (G.12.2).
Top: Brown-glazed sherds from coarse stoneware jars.
Centre: "Early monochrome" sherds (the specimen at right, G.12.2.5, is drawn in Bulbeck [in press: Figure 3c]).
Bottom left: "Early whiteware" sherd G.12.2.6.

(The bottom right sherd, G.12.1.2 (Makam Takbakka), with an incised lotus leaf, is identified as a 15th century celadon.)

Q58•APR'87 GB



Q58•APR'87 GB



Q58•APR'87 GB



Photo 8-19.
Spoil heap ("zone 23") from the well in zone 22, on whose surface 138 earthenware sherds, six 17th to 20th century tradeware pieces and a pig's tooth were observed, Kanjilo Lama Barat.

Photo 8-20.
Rectangular grave marker of masoned stone slabs, inside which a tree has taken root, Kanjilo Lama Timur Daya.

Photo 8-21.
Makam Kocci Borong, showing masonry case grave markers at centre and modern cement grave markers at rear left.







Photo 8-22.
Makam Manyampang, the two sepulchres ascribed to "Karaengta Barombeng from Java", here identified with I Mappataenrek Kg Mamampang Kg Garassik Kg Barombong (1572-1642).

Photo 8-23.
Makam Manyampang, a sheltered and venerated grave 60 metres north of the main graveyard, presumably a modern restoration.

Photo 8-24.
Makam Karaeng Dampang, Lambengnge, with finely masoned stone *nisan* at north and south inside a cement marker within a modern cement tomb. Kg Dampang is probably identifiable with Kg Lambengi (1649 to c.1700).

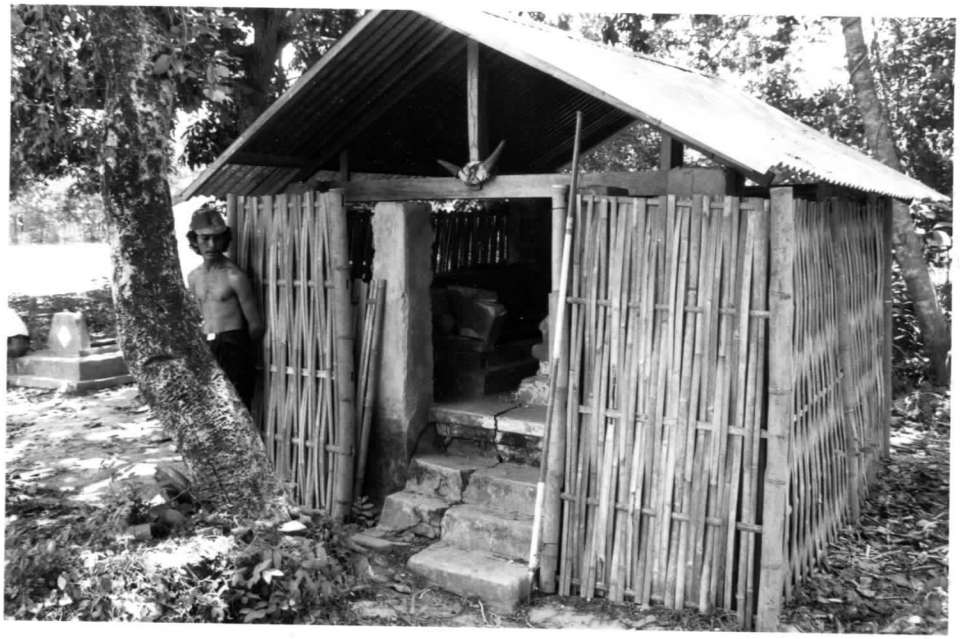





Photo 8-25.
Makam Tua Lambengnge, Bontoalak kampung, showing the modern tomb and enclosed grave markers built on a platform of old, thin bricks which measures eleven metres east-west by ten metres north-south.

Photo 8-26.
Kuburan Islam Takbakka, Sungguminasa, one of the three east-west marked graves.

Photo 8-27.
Kuburan Islam Takbakka, the reported grave of "Minasa Daeng Sunggu", identification not certain.







Photo 8-28.
The brick sepulchre of "Makam Karaengta Jawa" (Makam Takbakka), Tombolok, photographed from the south. The interred individual is not identified.

Photo 8-29.
The tomb of "Karaeng Tompok Balang Malissu Jawa", Kuburan Islam Takbakka, Sungguminasa. Remnant stonework shows the corbel arch entrance meeting the arched interior ceiling, and roof construction like that at the Makam Paccalaya tomb.

Photo 8-30.
"Ming Swatow" plate with dirty foot (reverse) and red overglaze enamelled decorations, looted at Bonto Pakja.







CHAPTER 9. THE UPPER-MIDDLE JEKNEKBERANG

9.1 Settlement Pattern Analysis

This chapter considers the sites on both sides of the Jeknekberang between Dampang, which lies at 10 metres asl, and Bontona Songkolo which lies at 20 metres asl (Figure 9-1a). The geological map of Sukamto and Supriatna (1982) shows the river's course girdled at the northeast by a body of Baturape-Cindako volcanics which, along with some local outcrops of Camba Formation, produces a gently undulating landscape whose spot altitudes rarely exceed 20 metres asl. The configuration of the low hills above the alluvium warps and retards local drainage patterns with two odd results. The courses of the Sungai Romang Polong and Sungai Sabeng are entirely restricted to alluvial deposits, while the alluvial deposits constitute part of the watershed between the Jeknekberang and Tallok rivers. These deposits are generally waterlogged and hence ideal for wet rice, but there are also several swamps where the prevailing ground surface dips well beneath the water table.

According to the geological map, only alluvial deposits bracket the upper-middle Jeknekberang along its southwest bank (Figure 9-1a). However, I observed sporadic outcrops of sedimentary rock which apparently represent a larger body of rock mostly buried beneath the shallow deposits (9.9).

The distances between the historical sites (Table 9-1) produce the range of possible site-clustering patterns shown in Figure 9-2. These clusters exhibit a curvilinear geometry rather than the centred clusters of the lower-middle Jeknekberang (Figure 6-15). Three groups of sites (BKDA, BS, PDCSS) possibly belong to the clusters, but the matter is uncertain because they abut the borders of unsurveyed area. Moreover, had it been possible to extend the survey to Bontomanaik (5.2), some minor re-arrangements could have resulted. On the available data, the reported but uninspected looting at Ujung (U) - virtually the sole kampung between Balang Mawang and Bontomanaik - would point to a link with Bossolok-Sabeng, and membership of the BSU group with the Saumata cluster (Table 9-1). But the terrain is unsurveyed,

TABLE 9-1. UPPER-MIDDLE JEKNEKBERANG INTERSITE DISTANCES IN METRES

Paccalaya	P	K	P	P	S	S	B	K	D	A	M	J	P	B	S	P	K	K	K	P	S	B	K	B
Kasomberang	510																							
Paccinongang	810	130																						
Pao-Pao	690	110	120																					
Sampeang	410	180	285	115																				
Sero	615	455	560	395	130																			
Bangkala/Ende	2675	2360	2050	2055	2050	1795																		
Kubur. Bangkala	2905	2620	2310	2300	2290	2005	150																	
Dampang Bira	2655	2460	2225	2245	2100	1740	175	280																
Antang	4215	3985	3695	3725	3625	3290	1415	1225	1280															
Manggala Toa	-	-	-	-	-	-	3065	2920	3375	2870														
Jeknek Madinging	-	-	-	-	-	-	3900	3760	4225	3810	1005													
Patadang Toa	-	-	-	-	-	-	5065	4935	5340	4780	1885	950												
Bossolok	-	-	-	-	-	-	4880	4920	5365	5640	3080	2675	3270											
Sabeng	-	-	-	-	-	-	4915	5005	5375	5875	4010	3775	4425	1080										
Parinring	2930	2230	2005	2140	2350	2270	1185	1270	1665	2320	2475	3180	4170	3475	3685									
Kassik Utara	3705	3065	2760	2925	3170	3100	1880	1865	2315	2495	1255	2140	3095	2595	3005	905								
Kassik Tengah	3625	2980	2550	2710	3000	2985	1940	2400	2270	2895	1975	2700	3680	2760	3075	705	280							
Kajenjeng	3870	3310	2880	3050	3325	3350	1990	2550	2770	3100	1700	2215	3195	2245	2630	1160	325	425						
Palampang Toa	3850	3155	2860	3060	3355	3400	2750	2755	3225	3630	2180	2550	3505	1900	2180	1480	870	775	350					
Saumata Lama	2865	2370	1860	2085	2415	2535	2560	2745	3060	3895	2575	3175	4115	2230	2090	1285	1220	895	850	485				
Bontoa	2650	2205	1770	1870	2090	2465	3030	3180	3440	4295	3645	3660	4540	2870	2430	1845	2050	2015	1735	950	435			
Kub. Romang Polong	2680	2065	1665	1785	2005	2310	3290	3470	3610	4550	3990	4085	5200	3235	2675	2155	2480	2175	2055	1300	745	255		
Beroanging Utara	2810	2220	1790	1895	2175	2320	3505	3650	3850	4770	4075	4290	5125	3255	2645	2225	2605	2240	2160	1530	895	400	105	
Cambang Beroanging	2740	2135	1790	2000	2270	2355	3580	3750	3890	4820	3975	4305	5825	3310	2730	2310	2690	2345	2220	1650	995	445	155	110
Romang Polong Barat	2145	1505	1075	1225	1400	1730	2530	2775	2870	4085	4080	4515	5700	3700	3295	1755	2380	2005	2260	2080	990	630	830	810
Bonto Pakja	3160	2645	2405	2615	2855	3045	4210	4445	4530	5745	4560	5580	6515	3705	2810	3195	3515	3220	2795	3015	1935	1400	1060	940
Buta Didia Asli	3195	2700	2520	2690	2955	3200	4415	4660	4705	5960	4710	5825	6725	3905	3095	3490	3785	3425	2980	3160	2090	1615	1195	1150
Bonto Ramba	3255	2825	2625	2830	3100	3290	4615	4870	4900	6175	4920	6100	6985	4235	3405	3730	4095	3675	3365	3550	2325	1910	1460	1450
Tamarunang Tua	-	-	-	-	-	-	-	-	-	-	-	-	-	4605	3490	4445	4860	4500	4155	4255	3285	2710	2355	2220
Borongloe	-	-	-	-	-	-	-	-	-	-	-	-	-	4895	3760	5185	5560	5105	5125	4765	3845	3380	3080	2925
Saukang Borong	-	-	-	-	-	-	-	-	-	-	-	-	-	4225	3055	5045	5195	4700	4855	4385	3545	3235	2980	2820

N.B. The sites between Pakbiniang and Sero, and between Manggala Toa and Patadang Toa, are included here to show that they do not cluster with the Saumata cluster. Bracketed intersite distances involve crossings across the Jeknekberang.

	P	K	P	P	S	S	B	K	D	A	M	J	P	B	S	P	K	K	K	P	S	B	K	B
Borong Barat	–	–	–	–	–	–	–	–	–	–	–	–	–	4335	3165	5140	5275	4810	4975	4390	3560	3345	2990	2880
Borong Timur	–	–	–	–	–	–	–	–	–	–	–	–	–	4020	2840	5200	5300	4755	4790	4355	3570	3320	3130	2960
Kaballokang	–	–	–	–	–	–	–	–	–	–	–	–	–	4510	3390	6150	6150	5775	5635	5185	4455	4245	4040	3885
Borong Parang	–	–	–	–	–	–	–	–	–	–	–	–	–	5200	4060	6970	6925	6560	6325	5950	5245	5010	4830	4675
Songkolo Asli	–	–	–	–	–	–	–	–	–	–	–	–	–	5975	5580	8100	8025	7750	7475	6875	6305	6135	5995	5660
Bontona Songkolo	–	–	–	–	–	–	–	–	–	–	–	–	–	(6550)	(5585)	(8050)	(8125)	(7825)	(7650)	(7050)	(6310)	(6040)	(5800)	(5420)
Pekallak Bua	–	–	–	–	–	–	–	–	–	–	–	–	–	(7200)	(6350)	(6090)	(6675)	(6400)	(6390)	(5480)	(4890)	(4600)	(4225)	(3770)
Dampang	–	–	–	–	–	–	–	–	–	–	–	–	–	(6010)	(5585)	(4880)	(5425)	(5120)	(5260)	(4265)	(3555)	(3320)	(2935)	(2580)
Cellaya	–	–	–	–	–	–	–	–	–	–	–	–	–	(5975)	(5075)	(5350)	(5825)	(5540)	(4990)	(5185)	(3760)	(3620)	(3240)	(2755)
Saukang Boe	–	–	–	–	–	–	–	–	–	–	–	–	–	(6150)	(5750)	(5900)	(6300)	(6015)	(5460)	(5590)	(4185)	(3845)	(3710)	(3320)
Saukang Borong	–	–	–	–	–	–	–	–	–	–	–	–	–	(6150)	(5700)	(6090)	(6490)	(6175)	(5580)	(5720)	(4610)	(3975)	(3660)	(3470)

	C	R	B	B	B	T	B	S	B	B	K	B	S	B	P	D	C	S
Cambang Beroanging																		
Romang Polong Barat	805																	
Bonto Pakja	775	1585																
Buta Didia Asli	975	1750	435															
Bonto Ramba	1225	1975	840	345														
Tamarunang Tua	2070	2955	1285	1130	1000													
Borongloe	2735	3575	1930	1690	1520	450												
Saukang Borong	2770	3555	1975	1985	2005	1005	800											
Borong Barat	2805	3655	2000	1980	1995	930	670	110										
Borong Timur	2920	3710	2170	2215	2285	1375	1180	375	475									
Kaballokang	3870	4635	3100	3135	3180	2125	1515	1130	1175	905								
Borong Parang	4775	5515	3895	3915	3930	2835	2220	1940	1925	1720	785							
Songkolo Asli	5760	6665	5000	5010	4915	3720	3000	3000	2730	2770	1875	920						
Bontona Songkolo	(5525)	(6415)	(4670)	(4600)	(4450)	(3110)	(2310)	(2690)	(2620)	(2720)	(1970)	(1300)	(1100)					
Pekallak Bua	(3885)	(4305)	(3365)	(3140)	(2930)	(2850)	(2980)	(3615)	(4080)	(4325)	(4780)	(5295)	(6110)	4995				
Dampang	(2680)	(3050)	(2155)	(1955)	(1770)	(2140)	(2450)	(2925)	(3375)	(3610)	(4250)	(4935)	(5835)	4970	1140			
Cellaya	(2895)	(3520)	(2185)	(1970)	(1725)	(1550)	(1800)	(2330)	(2780)	(3015)	(3565)	(4180)	(5060)	4130	1340	855		
Saukang Boe	(3420)	(4060)	(2600)	(2325)	(2115)	(1465)	(1520)	(2205)	(2630)	(2925)	(3275)	(3765)	(4605)	3585	1535	1475	645	
Saukang Borong	(3600)	(4270)	(2720)	(2485)	(2245)	(1375)	(1300)	(2025)	(2440)	(2690)	(2995)	(3435)	(4230)	3165	1780	1790	945	345

Figure 9-1a main clustering events. SBKBCR joins BBB at 1490m; TBSBB joins KBSB at 2338m; PKKKP joins BKDA at 2364m; SBKBCRBBB joins BS at 3090m; SBKBCRBBBBS joins PKKKPBKDA at 3237m; TBSBBKBSB joins PDCSS at 3368m. (MPPKPPSS is 2268m from SBKBCR, 2759m from BKDA and 3147m from PKKKP, i.e. joins westwards [Tables 6-3 and 6-4]; MJP is 2668m from PKKKP and 4004m from BKDA, i.e. joins northwards [Table 10-1]).

Figure 9-1b main clustering events. SBKBCR joins BBB at 1490m; TBSBB joins KBS at 2228m; SBKBCRBBB joins PKKKP at 2372m; SBKBCRBBBPKKKP joins BS at 2961m.

Figure 9-1c main clustering events. SBKBCR made to join PKKKP at 1849m; so BBB can join TBSBB at 1811m; SBKBCRPKKKP joins BS at 2814m (SBKBCRPKPPP to BKDA is 2957m); BBBTBSBB joins PDCSS at 2502m (BBBTBSBB to KBSB is 3017m); BBBTBSBBPDCSS joins KBSB at 3533m) - see 9.7.2 for explanation.

and it would be easy to mock up site configurations in which Ujung (with or without Bossolok-Sabeng), or the easternmost members of the Borongloe cluster, would be drawn towards Bontomanaik.

Be that as it may, there is a flock of sites along the rim of Baturape-Cindako volcanics and Camba Formation where these geological units abut alluvial plain. The centre fo this flock of sites is the large site of Saumata. The result stands even if we exclude the BKDA group - which only just joins the PKKKP group before the latter would join the SBKBCR group (Table 9-1) - on the grounds that it abuts a survey boundary (cf. 5.5.1). The BS pair could be excluded on similar grounds. But the issue at stake is which peripheral sites belong to the cluster, rather than Saumata's central position.

In contrast, the Borongloe cluster of sites along the alluvium flanking the Jeknekberang is not stable, nor is the central position of Borongloe. To create that situation we must allow sites to cluster across the Jeknekberang, and ignore possible clustering of the PDCSS group south towards Palangga.[1] Treating the Jeknekberang as a barrier could well construe the "Borongloe cluster" as the western member of a larger cluster centred near Bontomanaik (Figure 9-2b).

The area was significant in Gowa's history. Saumata, Borongloe and Bontomanaik were reportedly involved in the succession dispute between Batara Gowa and Kgloe ri Sero (SG:14; ST:5). Saumata and Bontomanaik were regular members of Gowa's *Bate Salapang* during the 16th and 17th centuries (Mukhlis, 1975:61-62). Still, the rise of powerful palace centres in the 16th century does not appear to have restricted the options for communities along the upper-middle Jeknekberang to have shifted their internal allegiances. The relationship between this point and the indecisive site-clustering patterns will be explored in the site descriptions.

[1] Palangga is a large kampung, as shown by the Dutch land-use maps, approximately one km south of Pekallak Bua. It has been a rural centre at least in later times.

9.2 Saumata Lama (Gowa 30)

Saumata Lama (Figure 9-3) incorporates the junction of Campaga Lomo ("Old Campaga") at the north and Samata (*sic*) at the south. These kampungs have probably expanded into the site during the 19th and 20th centuries, for the bare presence of "Qing BW" sherdage suggests little occupation during the 17th-18th centuries (Figures 9-5 and 9-6). The north-south oriented body of the site lies on a flat extension of Baturape-Cindako volcanics raised slightly above alluvial plain. Near the site, the alluvial plain contains seasonally inundated rice fields (Figure 9-1a). Soil tests revealed a brown to reddish brown silt with the slightly acidic pH of 6 at 5 centimetres' depth in both geological units. A retouched flake from zone 22, within the Baturape-Cindako volcanics unit, could have been brought to the surface during looting activities.

Although no looter's holes remain visible, the report of numerous antiques looted at six discrete locations during the 1970s is reliable. Our informant was the elderly inhabitant of zone 27 (Campaga Lomo) who had helped manage the looting operations (then legal) between Sero-Tombolok and Bontomanaik. He also showed us his unsold antiques from Saumata. We recorded the main densities of Saumata's precolonial tradeware pieces in the reportedly looted areas, and also in zone 17 which thus might have once contained antiques too (Figures 9-3 and 9-4).

The apparently oldest burial area corresponds to zones 14 to 16 and 21 at the south of the site. They show a distinct attenuation of "Ming" compared to "early" pieces (Figures 9-3 and 9-4).[2] The unsold antiques from here included two bases from *Qingbai* covered bowls, a *gusi*-type jar, a blackware bowl, three iron weapons and an earthenware which looks like a pedestalled candlestick holder (Photos 9-1 to 9-5). None of

[2] Indeed the "Ming" category is represented only by 15 pieces identified as Swatow in the field (Appendix D) but regrettably not collected for confirmation under laboratory conditions. In the absence of more secure evidence, they may well have come from a type of low-quality monochrome classified as "Swatow" by local ceramic specialists but best regarded as unclassifiable (B.2).

the datable items strays outside the early centuries of our millennium.

Subsequently this cemetery apparently grew northwards into zones 22 to 24 which contained 16th-17th century pieces, and possibly westwards into zone 17 too (Figures 9-3 and 9-4). The northern extension then apparently grew into the now-abandoned Islamic graveyard where river pebbles mark 15 graves in zone 12 (orientation 320° to 30° from north) and possibly 36 graves in zone 36 (Photo 9-8). The pebbles in zone 36 have been largely scattered by looting, suggesting that gravegoods accompanying early Islamic burials were looted (Figure 9-4). However, as the bamboo litter prevented us from seeing any sherdage, the looting could have been directed at gravegoods accompanying pre-Islamic burials mixed among the early Islamic burials.

The disregard for that graveyard contrasts with the careful treatment of the Islamic graves near zone 17. The stones reportedly marking the interment of a medicine woman remain intact despite the construction of the mosque almost on top (Photo 9-6). "Makam Takbakka" across the road, also called Makam Borong Inru, incorporates a *saukang*; 14 graves with stone, cement or iron markers (Table F-6a); and a sheltered brick sepulchre (Photo 9-7). The last encloses three "old" cement markers which must be modern restorations since they are associated with a former "godfather" whose name is not remembered. The implication of considerable time depth (Figure 9-5) for such a small complement of marked graves suggests sporadic re-use over the centuries, or that access to the graveyard was restricted, e.g. to the "godfather's" descendants.

"Early" tradeware pieces were also recorded at Saumata's northern and western extremities, as enclaves within broader scatters of "Ming" pieces (Figure 9-4). The unsold antiques "from west of the mosque", i.e. zones 33 to 35, included three apparent Sawankhalok jarlets and and a Ming BW plate (Photos 9-10 and 9-11). This pre-Islamic cemetery has no clear spatial association with any Islamic cemetery. In contrast the northern area abuts Kuburan Islam Campaga Lomo whose continued use from the 17th century to the present is

represented by 340 graves marked with stone, wood or cement. In addition, a modern, private graveyard within the houseyard of our informant in Campaga Lomo belongs to his wife's family (Figure 9-3; Table F-6a).[3]

The sheltered, restored grave in Campaga Lomo (Photo 9-9) is associated with "Karaeng Samata". The historical records contain several mentions of Saumata: Gelarang Samata who was a late 17th century grandchild of Kg Jeknekponto (SG:62; Figure 4-9); Gelarang Saumata, a *gelarang* of some prominence in 1661;[4] and Daeng ri Samata who died in 1680 (LB:163). In the absence of further evidence these records could all refer to the one individual who might also be the "Kg Samata" buried at Campaga Lomo.

Acceptance of my analysis of three cemetery-trajectories at Saumata Lama, with the southern one displaying the oldest origins, raises the question of the status of the western and northern examples. They could represent semi-autonomous factions within Saumata which had either budded off the original descent group, or left some other origins to join Saumata. However, the local ethnohistorical models would also allow the younger cemeteries to be associated with other kampungs near Saumata which either descended from Saumata (9.3.1) or chose to associate themselves with Saumata's prominent status (9.4).

By any interpretation, Saumata Lama's burial grounds were experiencing elaboration at a time apparently preceding the establishment of most of SSPHAP's pre-Islamic burial sites. Similarly, the standardised chronological histogram of Saumata Lama shows a marked accent on 13th-14th century pieces compared to the 15th-17th century pieces (Figure 9-6). Saumata Lama appears to have been a centre of power during the 13th-14th centuries, quite possibly on a par with old

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[3] Zone 28, to the east of the main northern pre-Islamic burial area, apparently bears some association with the latter, possibly as a small offshoot burial ground in terminal Ming times.

[4] The specific reference mentions that, along with the *Gelarang* of Mangasa, Tombolok and Bontomanaik, Gelarang Saumata warned he would show his solidarity with the regent, Kg Summanak, when the latter threatened to resign his post (Andaya, 1981:61). Kg Summanak had made the threat to enforce Kg Karunrung's exile (3.5.1).

Gowa. Its sphere of influence might have included the area covered by the Saumata cluster. The comparative scarcity of "Ming" compared to "early" tradewares may reflect Saumata's decreased status when it became one of Gowa's *Gelarang* area during the 16th-17th centuries.

Indeed, the accounts of Gowa's succession dispute (c.1500) state that Saumata sided with Karaengloe ri Sero (SG:14) yet that Saumata deserted him for Batara Gowa (ST:5). This might suggest an equivocal attitude on Saumata's part towards the political centralisation proceeding in Gowa's core.

9.3 The Sites to Saumata's South

9.3.1 Beroanging to Bonto Ramba Tua

Present-day Beroanging (Gowa 33) is a dispersed kampung occupying a low rise of Baturape-Cindako volcanics on the south bank of Sungai Romang Polong. Its agricultural basis includes both dryland farming associated with secondary forest regrowth, and rice fields (Figures 9-1b and 9-7).

At the south lie two restored sepulchres, enclosing head and foot stones, associated with Cambang ("Facial Hair") Beroanging and his wife (Photo 9-13). Remembered as a hero contemporary with Hasanuddin, Cambang Beroanging can be identified with either Mappassepek Kg Beroanging (1635-?) or Muhiddin Kg Beroanging (1661-1695) (Table 3-5; Figure 4-12; LB:97,125,181). His descendants are represented by the family cemetery of 37 marked graves abutting at the north. The rest of Makam Cambang Beroanging appears disused, as does a small graveyard in zone 1 to the northwest. In the near vicinity are kampung cemeteries for the inhabitants of Parang, Balang Tonjong and Beroanging (Photo 9-14). The total 245 marked graves, oriented 320° to 340° from north throughout, show a range of 17th to 20th century styles (Table F-6b).

Evidence of pre-Islamic use of the site was found in zone 1 - a Ming BW sherd, and a piece tentatively dated 1350-1450 (Photo 9-16). Moreover, some blue-and-white tradewares were reportedly recovered from Beroanging Utara (zone 10). Presumably Beroanging's initial cemetery, the area contained 25 looter's holes; 16 disturbed stone arrangements marking

graves, oriented between 320° and 350° from north; but no visible sherdage (Photo 9-15; Table F-6b). As with zone 36 at Saumata, its origins could be either pre-Islamic or syncretist Islamic.

To judge from the standardised chronological histogram, Beroanging's main period of occupation occurred from the 17th century onwards (Figure 9-9), corresponding to the elaboration of burial grounds at the south. Moreover, the Parang and Balang Tonjong kampung cemeteries would appear to reflect the establishment of recent communities which have budded off from Beroanging (or possibly chosen to associate themselves with the local hero Cambang Beroanging). The small kampung of Parang was still called Beroanging on the early 20th century Dutch maps. Balang Tonjong corresponds to SSPHAP's site Bonto Pakja (Gowa 93) where we noted a 17th-18th century graveyard with some 60 to 70 marked graves among the dense undergrowth, including the tomb of "Karaeng Bonto Pakja" and a companion (Table F-6b). A ploughed field next to the cemetery contained some Swatow and Qing BW sherdage, but no "recent" tradewares (in accordance with the abandonment of the graveyard). The inhabitants confessed to burying their dead at Beroanging, suggesting they represent a recent recolonisation from Beroanging (see Figure 9-1b).

Buta Didia reinforces the impression of population movement in the land south of Beroanging. A former Buta Didia *lingkungan* headman escorted us to "Buta Didia Asli" (Gowa 71) within a forest of bamboos and old garden trees (Photo 9-17). He said a sackful of tradewares had been found there - blue-and-white, brownwares, plus many celadons and whitewares - which indicates a pre-Islamic burial ground of considerable longevity. 92 looter's holes extend through the regrowth to an open area of four neglected, east-west marked graves and two maize fields scattered with sherds (Figure 9-8). The tradeware component (Photo 9-18) confirms the other evidence pointing to several centuries of pre-Islamic burials at Buta Didia Asli. The tradewares also indicate abandonment of the site by the 19th century (Figure 9-9).

The former headman showed us the other Islamic graveyard, near Biring Balang, associated with Buta Didia Asli. We

estimated that the graves dated to the 19th-20th centuries. He also told us the Buta Didia inhabitants currently use the cemetery in present-day on the Ujung Pandang-Malino highway. Hence Buta Didia's relocation to the highway, which had already occurred when the Dutch land-use maps were prepared, can be dated to around 1900 (cf. 9.7.1). The evacuation of Buta Didia's traditional lands would have allowed the southward expansion of Beroanging descendants.

The 1914 Dutch cartographic data show Buta Didia next to another sizable kampung, Bonto Ramba (Gowa 74). The latter is associated with cemeteries at the north of its settled area, and half-way between there and Buta Didia Asli (Figure 9-1b). The former contained an estimated minimum of 250 marked graves, and the latter a counted minimum of 47 marked graves, all apparently 18th century to modern in style. These cemeteries are probably lateral growths from the original, pre-Islamic to early Islamic burial ground, since they bound an area of sunken fields, excavated into the soil, which had reportedly produced a few celadon, Sawankhalok, and blue-and-white wares. At the north margin of these fields are two stone arrangements marking graves, the remnants of a larger graveyard now covered by thick secondary forest or destroyed during excavation of the fields (Table F-6a).

Although Buta Didia and Bonto Ramba became part of 20th century Borongloe (Figure 9-2d), their early burial grounds and Bonto Pakja join a cluster centred at Beroanging (Figures 9-2a and 9-2b). I suspect this pattern reflects the sphere of Beroanging's influence in the late 17th century, during which time two Beroanging karaengs not descended from the major lineage groups (Figure 4-12) achieved sufficient prominence to be recorded in Gowa's royal diary.

9.3.2 Romang Sappang (Sappanwood Forest) and Romang Polong (Felled Forest)

The excavation of a large irrigation canal at kampung Bontoa (Gowa 31) around ten years ago reportedly recovered many antiques and prompted further looting. We counted nine remnant holes in a mixed grove west of the canal, and seven near a small graveyard east of the road. We were shown a

blue-and-white jar cover (which looked Qing) reportedly found with a knife in the latter diggings. The graveyard, Kuburan Romang Sappang, had 30 rectangular arrangements of pebbles oriented 310° to 45° from north, and 13 masonry or cement markers (Photo 9-19; Table F-6c). The surface sherdage included a few Ming pieces, further supporting the interpretation of the site as a small, terminal pre-Islamic to old-Islamic burial ground. Nonetheless the tradewares point to the 19th-20th centuries as the main phase of occupation at the site (Figure 9-9).

Romang Polong Barat (Gowa 34) is a small area, next to Sungai Romang Polong, where antiques were reportedly found several decades ago. We recorded a Swatow sherd (Figure 9-9) but no remnant looter's holes or Islamic graves, so the site's interpretation is unclear.

Kuburan Romang Polong (Gowa 32), which today serves Romang Polong, Bontoa and Kadieng, occurs in kampung Kadieng[5] directly north of Beroanging across the Sungai Romang Polong (Figure 9-1b). Although measuring only 85 by 60 metres, the cemetery is packed with 542 marked graves of old to modern styles (Photo 9-20; Table F-6c). Reportedly some antiques, mainly blue-and-white ceramics, were found in the vicinity where we also recorded a few "Ming" tradewares (Figure 9-9). The site shows continuity in burials from at least the 16th century to the present.

The association of the word *romang* (forest) with the two recorded Islamic graveyards might connote a formerly well-forested environment, possibly even on the alluvial plain which is now largely sawah (Figure 9-1). However, the value of the connotation for specific environmental reconstruction is dubious, given that there is no date for when the toponyms were applied, and that late 17th century Makassar included woods visible from Fort Rotterdam.[6]

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[5] Somewhat confusingly, today's Kadieng appears on the Dutch land-use maps under the name Beroanging. Even though the graveyard serves the kampungs to the north, we might nonetheless hypothesise that settlement near the graves was initiated from Beroanging, by the 18th century to judge from the recorded tradewares (Figure 9-9).

[6] The specific reference mentions that the Dutch had espied Makassar warriors marching from Gowa towards Bontoalak on 21st March 1675 (Andaya, 1981:172).

9.4 The PKKKP Sites North of Saumata Lama

A short distance north of Saumata Lama along the asphalt road lies Palampang Baru, corresponding to a graveyard shown on the Dutch land-use maps, and 250 metres to the east lies Palampang Toa (UP14).[7] This small kampung area occupies reddish brown silts and dark brownish grey, clayey silts at the northern extremity of the Baturape-Cindako volcanics (Figure 9-1a). The site sits above seasonally indundated rice fields and a small swamp, Balang Tamboko, in the direction of Sungai Sabeng. We recorded a reasonable quantity of European pieces, suggesting the main occupation at the site occurred in the 19th century (Figure 9-12).[8] However, Palampang Toa was also apparently a small burial area during terminal pre-Islamic and early Islamic times. A few remnant looter's holes and the small quantity of surface Ming tradeware pieces (Figure 9-12) confirm the reported looting of antiques. The site also has nine marked graves, seven of masonry and two featuring stones inside cement restorations, within a grove of bananas and pineapples (Table F-6c).

To the north lies Kajenjeng (UP16), an island in a sea of clay-based rice fields. My tests indicated that the soil in the fields was acidic with a pH of 6. A modest number of antiques were reportedly found through much of the site (Figure 9-10), suggesting they were domestic pieces or gravegoods from household-associated burials, at least at Kajenjeng's south which was sprinkled with "early" and "Ming" pieces. Near Kajenjeng's centre lies a small Islamic graveyard with 24 stone and five cement markers oriented due north-south (Table F-6c). A sheltered and venerated grave has fine masonry *nisan* at head and foot 2.2 metres apart. It is associated with "Daeng Kajenjeng" who reportedly owned Kajenjeng prior to Dutch rule (Photo 9-21). Post-Ming sherdage cropped up throughout Kajenjeng except at the north where thick vegetation precluded useful survey. Even though

[7] The Dutch land-use maps curiously show Palampang south of Samata.

[8] In addition, Palampang Toa reportedly used to have a *saukang*, but it had been wrecked.

the site appears to have been occupied from the 13th-14th centuries to the present (Figure 9-12), the small size of the Islamic graveyard accords with the reported burial of most of Kajenjeng's deceased at Kassik Utara.

The Islamic graveyard of Kassik Tengah (UP15)[9] covers an area approximately 30 metres north-south by 60 metres east-west and includes 252 old and new marked graves (Table F-6c). Directly south of the graveyard, as evinced by a small area of remnant looter's holes, people had reportedly found blue-and-white ceramics along with smaller quantities of brownwares, Sawanhalok and celadons. One inhabitant, who was aware of the immediately pre-Islamic tradition of east-west oriented burials, showed us a decorated earthenware and

TABLE 9-2. KASSIK TENGAH'S ANTIQUES ASSIGNED TO BURIALS

	Head	Chest	Foot
Burial 1 (15th century)	2 Vietnamese bowls - 1 BW, 1 subceladon		1 decorated earthenware (Photo 9-22)
Burial 2 (16th century)	1 Ming BW bowl (cloud and lotus scrolls)	1 Ming enamelled *famille verte* bowl (lotus sprays)	1 BW bowl, Ming or late Vietnamese
Burial 3 (15th-16th centuries)	2 Sawankhalok underglaze-iron, covered bowls		
	Location with corpse not estimated		
Burial 4 (late 16th/ early 17th century)	Fragments from 3 Ming BW bowls with devolved floral & abstract decorations		
Burial 5 (16th century)	Ming BW foliated plate with *kilin* in centre		
Burial 6 (16th century)	Ming BW bowl with lotus scroll on external cavetto		

N.B. No bones were reportedly observed (cf. the slightly acidic pH of the area's soils) so how our informant assigned the ceramics to particular parts of former corpses is not clear. Using a flash I badly overexposed my colour slides of the tradewares which thus are not reproduced in this thesis.

[9] The site falls in "Kasi 1" of the 1:50k Dutch land-use map, Sheet 75-XXXIV-C. The cemetery is shown on both the 1:25k and 1:50k sheets as straddling the old road leading north from Saumata Lama, but we recorded it only along the eastern margin of the modern road.

twelve tradeware pieces which he assigned to six burials. These pieces allow the origins of the burial ground to be dated to at least the 15th century (Table 9-2), slightly earlier than the 16th-century date which could be inferred from the small sample of surface sherdage (Figure 9-12).

Kassik Utara (UP20)[10] is a finger of Camba Formation poking through rice fields around 300 metres south of a swampy area called Balang Kassik (Figures 9-1a and 9-11). According to local reports, looting started even before Indonesia's independence, and finally extended between zones 2 and 12, producing mainly Sawankhalok jarlets but also blue-and-white (Vietnamese, Ming, Swatow) and celadon wares. Confirming the report, we recorded four Sawankhalok and 52 pre-Qing Chinese pieces scattered throughout the site (Appendix D; Figure 9-12). We also noted east-west graves[11] at both ends of the reportedly looted area. The one in zone 2 measures 2.5 metres long. The example in zone 12, which is associated with "Karaeng Kassik", clearly commemorates an auspicious person given its protection under a locked shelter and its astounding length of 4.4 metres (Photo 9-23). Possible identifications include Dg Kassik, the wife of the late 17th century harbour master Dg Makulle (ST:8), and Kg Kassikjala (1616-1694) who bore Mappaseppek Kg Beroanging (LB:88,180). The Islamic graveyards in zones 5 and 11 together include 97 graves marked with pebbles and/or cement, plus an unclear number of heavily disturbed, pebble-marked graves in zone 12 (Table F-6c). At the far south of the site lies Kuburan Islam Tamangapa with 108 markers of pebbles, masonry, cement or wood.[12]

The kampung of Parinring, which is situated on Camba Formation (Figure 9-1a), contains an area 80 metres by 20 metres with 63 looter's holes (UP19). The site's pre-Qing surface sherdage was quite rich, probably in large part because the looting had occurred recently.[13] As well as

[10] "Kasi 2" on the 1:50k Dutch land-use map.
[11] Both east-west graves are marked by head and foot stones, oriented at 100° and 110° from north respectively.
[12] Tamangapa is a kampung 500 metres west of Kassik Utara.
[13] The antiques were first come upon in 1985 after the inhabitants had excavated a WC.

collecting a Vietnamese apple-green celadon (Photo 9-28) we were shown a Sukothai "fish bowl" (Photo 9-29) and told that the other antiques were Ming blue-and-white, Sawankhalok covered bowls, and "Korean" (probably Vietnamese). Reportedly Parinring has no Islamic graveyard, rather its deceased are buried in Kassik Utara. Hence Parinring's 14th/15th to 16th/17th century burial ground (Figure 9-12) was apparently abandoned with Islamisation.

The standardised chronological histogram for the combined PKKKP sites shows a steady increase from 13th-14th to 16th-17th century pieces. Kajenjeng produced the oldest tradewares while the four other pre-Islamic burial areas had apparently originated by the 15th century, but possibly no earlier (Figure 9-12). The Kassik sites, especially Kassik Utara, appear to have been the main burial places by the 16th century. This centralisation of burials apparently continued into Islamisation when the Kassik graveyards waxed while the Parinring, Palampang Toa and Kajenjeng burial grounds were abandoned. There is however no evidence for a concomitant abandonment of these kampungs (which would have allowed resettlement from Kassik); indeed Kajenjeng's tradeware profile follows a pattern of steady increase from the 16th century onwards. Rather there seems to have been a transformation of social relations resulting in Kassik's rise as a locally central burial place (cf. Figure 9-2).

9.5 Marginal Members of the Saumata Cluster

9.5.1 The BKDA sites

Dampang Bira (UP22) and Bankala/Ende (UP21) hug the edge of the Camba Formation where it meets the alluvial plain striking south towards Benteng Tua (Figure 9-1a). Eight finely flaked stone artefacts recorded from these sites attest to some prehistoric occupation (Appendix G). Dampang Bira and Ende have burial grounds abandoned by early Islamic times, concomitantly with a centralisation of burials at Kuburan Islam Bangkala (also UP21). Locational data suggest a relationship with Antang, Suaka site No. 253 (Kallupa, 1985:132-133; Photos 36-37), beyond SSPHAP's survey area.

Whether this BKDA grouping belongs with the Saumata cluster, or some other cluster made up largely of sites as yet unsurveyed, is unclear (Figures 9-2a and 9-2b).

Dampang Bira appears to have been a small but well-stocked pre-Islamic burial ground (Figure 9-13). Reportedly the looting occurred in the early 1980s and recovered hundreds of pieces, mostly blue-and-white, but also numerous Sawankhalok covered bowls and some celadons.[14] Our survey recorded a light density of pre-Qing tradewares extending to the maize fields northeast of the reportedly looted area. By the general standards of Gowa's sites, monochrome rather than blue-and-white pieces were prominent (Appendix D), suggesting the burial ground was falling into disuse by the 16th century (Figure 9-15). Its decline was completed by Islamic times as there is no Islamic graveyard in Dampang Bira whose inhabitants use Kuburan Bangkala. During the 17th century or shortly thereafter the site apparently reverted to kampung (Figures 9-15 and 6-2b).

Dampang Bira's 16th century decline apparently corresponds to the first burials at Ende, where maize fields border the alluvial plain (Figure 9-14).[15] We recorded pebbles apparently marking five graves, four oriented 30° from north and one 100° from north; 16th century and later Ming BW pieces (Figure 9-15); and "colonial" pieces which accord with the representation of this area as kampung on the Dutch land-use maps.

Mainly 17th century and later tradewares were recorded along the dirt road westwards to "Makam Karaeng Bangkala" (Figures 9-14 and 9-15). His grave is marked by a large stone inside a rectangle of cobbles on top of an earthen dais held together by cobble walls (Photo 9-24). Near it are three further marked graves oriented 340° from north, one of arranged cobbles, and three of masonry including the graves of Kg Bangkala's two reported *ajudan* or adjutants (Table F-6d; Photo 9-25). The styles suggest a small complex of

[14] The looting was also reportedly most successful where the soil had a layer of *kapur* or "lime", possibly disintegrated or dissolved human bones, on top.

[15] The looting had apparently occurred prior to the arrival of the inhabitants we spoke to whose houses were part of recent suburban developments at the site.

elite 17th century burials, corresponding to local reports that Bangkala used to be a *kerajaan kecil* (local polity) beneath Gowa. Nonetheless it is best not to identify this Kg Bangkala with the Bangkala karaengs mentioned in the historical records, for the latter can be readily associated with Bangkala on the peninsula's south coast (e.g. Andaya, 1981). Finally, Kuburan Bangkala is a good example of an Islamic graveyard displaying 17th to 20th century styles of markers, generally oriented around 350° from north (Table F-6d).

9.5.2 Bossolok (Gowa 72) and Sabeng (Gowa 45)

Bossolok falls within the large expanse of virtually unbroken rice fields between the PKKKP sites and the "Tallok headwater sites" (Figure 10-2a). The kampung occupies an island of Camba Formation which escapes inundation even when the monsoon peaks (Figure 9-1a; Photo 9-26). Its *saukang* occurs at the south, at the opposite end from a small, abandoned Islamic graveyard with 23 stone arrangements (Table F-6d) and 11 looter's holes. Immediately east of the graves 68 further holes occur in a lightly grassed area. Reportedly this was the main source of Bossolok's antiques which were blue-and-white ceramics. The few surface tradewares also indicate a 16th-17th century burial area (Figure 9-15). Corresponding to the virtual absence of 18th-19th century tradewares, the kampung does not appear on the Dutch land-use maps, and the inhabitants stated that they only recently settled Bossolok from Rapo Cidu. This small kampung, half a kilometre to the northwest, was itself probably settled from Bossolok in early Islamic times.[16]

The kampung and graveyard of Malaklang lie on the modern road directly south of Bossolok across the Sungai Sabeng, at the north border of an undulating belt of Baturape-Cindako

[16] The justification for this inference is that Rapo Cidu fully complements Bossolok. Its small graveyard contains markers of cement or masonry with simple *nisan*; attempts to find antiques were reportedly unsuccessful; the surface tradeware sherdage I saw looked all Qing or European; and it is present on the Dutch land-use maps. Bugis immigrants from Sinjai are now numerically dominant at both kampungs.

volcanics. South of the kampung are some gardens, fields and a single house atop a local hill with a yellowish red, silty clay (pH 6) where we recorded two stone flakes (Figure 9-16). An apparently isolated Islamic grave, which serves as Malaklang's *saukang*, is ascribed to Malaklang's reported *nenek moyang*, "Karaeng Sabeng". Originally marked with stones at head and foot, the grave has been improved with a cement marker, brick platform and tin-roof shelter (Photo 9-27). An extensive area south of the grave, still scarred with the occasional looter's hole, reportedly produced blue-and-white, Sawankhalok, whiteware and enamelled overglaze ceramics. Surface sherdage confirmed the first three mentioned categories (Appendix D). In all the data suggest a 15th to 16th-17th century burial ground, associated with occupation which lasted into the 18th century (Figure 9-15). "Karaeng Sabeng", who does not appear in the Makassar texts, was presumably a 17th century headperson of the former community.[17]

Today Bossolok and Sabeng fall just within Desa Samata (Figure 6-2a), mimicking the site-clustering analysis in which they joined the Saumata cluster as its easternmost members (Figure 9-2).

9.6 Overview of the Saumata Cluster

Reviewing the tradeware profiles discussed above, we see a pattern in which the central site, Saumata Lama, apparently shows the oldest origins; the adjacent groupings, BBB, BKDA and PKKKP, evince origins by around the 14th century; and the most peripheral grouping, BS, evinces origins by the 15th century. This pattern could correspond to an expansion of pre-Islamic settlement from Saumata Lama. By the 17th century, however, locally consolidated polities appear to have been established at Beroanging, Kassik, Bangkala and

[17] It is quite feasible that the Sabeng site is historically connected with present-day Malaklang. Even though the Dutch land-use maps show the area as uninhabited, they do provide a place name, Kalimate, corresponding to Malaklang's location. Even if the area had been fully abandoned by the 19th century, memories of a historical link with the area could have persisted among the re-occupants.

possibly Romang Polong, even if Saumata retained the representation on Gowa's *Bate Salapang* council. The tradeware profile for the total cluster shows a marked drop from the 13th-14th to the 15th-16th centuries, owing to the powerful influence of Saumata Lama's profile, followed by a gradual increase from the 17th century onwards (Figure 9-6).

9.7 Borongloe ("Great Garden Area")

9.7.1 A brief history of Borongloe and Bontomanaik

Chabot (1950) produced the classic account of Makassar ethnography based on his work between 1939-40 and 1947-8 in Bonto Ramba, then the seat of authority of the Borongloe adat (customary) community. Although he did not estimate the antiquity of this situation, he was told of local immigration from Pakota (near Bontomanaik) into Bonto Ramba at around 1900 (Chabot, 1950:16), which would accord with the timing of Buta Didia's relocation to the highway (9.3.1). However, before that Borongloe appears to have been rivalled and usually surpassed by Bontomanaik. ST (p.5) cites Borongloe's decision to abandon Kgloe ri Sero for Batara Gowa, whereas SG (p.14) associates the act with Bontomanaik.[18] Borongloe then disappears from the texts until Hasanuddin's reign when it was one of Gowa's districts not numbered among the *Bate Salapang*. By contrast, Bontomanaik remained a member of the *Bate Salapang* from Tunijallok's reign until the late 17th century (Mukhlis, 1975:61-62). Although a "Gelarang Borongloe" is cited for 1868 (Patunru, 1983:98), it was Bontomanaik which belonged to the *Bate Salapang* during its last years between 1894 and the 1900s (Patunru, 1983:137-138). After Gowa's incorporation as an *afdeling* within the Netherlands India administration in 1906-7, Borongloe, which must have been sited at Bonto Ramba by this stage, replaced Bontomanaik as the district's name (Patunru, 1983:120-130 pass.). Thus the district's administrative centre was drawn away from its geographical centre in the

[18] More precisely, Bontomanaik Barat and Bontomanaik Timur, offering the interpretation that "Bontomanaik Barat" connotes Borongloe rather than Bontomanaik 1 (cf. 7.2.4).

general direction of Makassar (e.g. Figure 9-2d), pointing to Gowa's final pacification as the factor which promoted Borongloe's ultimate ascendancy over Bontomanaik.[19]

Chabot described Borongloe's sacred spot as a flat rock sheltered by a dilapidated hut in 1939. He was then told that the couple ancestral to the kin group of the Borongloe headman had delivered their final words here before ascending to heaven. By 1947 the hut had been restored, a pointed rock placed next to the flat rock (orientation not described), and a *saukang* built right by. By this stage the two rocks were intrepreted as the grave of an unknown person. Nonetheless the Borongloe community heads were still inaugurated standing on the flat rock, and Borongloe's annual harvest festival also occurred there (Chabot, 1950:74-76).

In addition the Bonto Ramba headman told Chabot how the investiture rock supposedly arrived. Once upon a time Gowa's king, wishing to build a fort, commanded the people of Tamarunang to collect rocks in the river (Jeknekberang) near Songkolo. The Tamarunang people accidentally included a rock such as lies near Songkolo's *baruga* (festival shed). As the loaded raft drifted downriver (towards Gowa), it refused to travel beyond Bonto Ramba and instead capsized without, however, dislodging the rock. The rock then crept on its own volition to its present location, after which the raft proceeded downriver (Chabot, 1950:70-72). Chabot interpreted the myth to show that Tamarunang and Songkolo were also closely involved in Borongloe's subordinate position with respect to Gowa, and noted that the spot designated as Songkolo's *baruga* in fact lacked any such shed. I suspect that Chabot was taken not to to Songkolo's *baruga* (9.8.2) but to SSPHAP's site of "Borongloe" which, like "Tamarunang Tua", falls within 20th century Songkolo (cf. Figure 9-2d). As discussed below, the myth appears to syncretise the sociopolitical unity symbolised by the flat rock with a

[19] By 1961, however, the tables appear to have been turned again. With the creation of the modern Bonto Marannu *kecamatan*, Bontomanaik became its administrative centre, while Borongloe reverted to being one of the two districts (Patunru, 1983:131). Bonto Marannu's second 1961 district, Pattallassang, is discussed at length in Chapter 10.

historical movement of people and authority from Tamarunang and Borongloe to Bonto Ramba.

9.7.2 Borongloe (Gowa 67)

On the northern outskirts of the Pattiro kampung area, *dusun* Songkolo II, we counted 638 remnant holes over an area 300 metres north-south by 150 metres east-west (Figure 9-18). According to reports, looting occurred in the late 1960s. The looters found ceramics (unassociated with any preserved human bone) four metres below the ground at the north of the site, but only one metre below the ground at the south (which is slighly higher than the site's northern parts). The ceramics were mainly blue-and-white or Sawankhalok, but included some celadons. Despite our extensive survey and the fair surface exposure we recorded only 179 tradeware pieces, most of them Qing to recent, even if the earlier examples confirmed the suggestion of a 15th to 16th-17th century burial ground (Appendix D; Figure 9-20). We were also told that most of the antiques had been found in a few discrete locations, suggesting either an internally partitioned pre-Islamic burial ground, or a pre-Islamic kampung area which incorporated burial spots.

Two bamboo corrals enclose large trees, one at the site's southeast (Photos 9-31 and 9-34) and one at the northwest. The latter resembles Bonto Ramba's sacred spot in that three stones lie on the tree roots and that it accompanies a house-like *saukang* (Photos 9-35 and 9-36). Further evidence of the site's special associations comes from its old Islamic cemetery where, we were told, five Borongloe karaengs lie buried (Photo 9-32). The cemetery was so overtaken with weedy growth, even my note of its size (30 metres by 70 metres) constitutes a rough estimate. The modern cemetery to the west continues to serve the kampungs of Bonto Bado and Borong north of Pattiro.[20]

Further furbishing the case that the Borongloe lineage group used to based here, the site is well raised by virtue

[20] We also observed the grave of a 15-year old *daeng* from Bonto Bado at an intermediate stage in the burial rites before permanent marking (Table F-6d).

of occupying a levee of the Jeknekberang, yet it borders a large depression used for sawah (Photo 9-33). This "Borongloe sawah depression" extends between the levees of the Jeknekberang and its former channel which had meandered northwards until striking Baturape-Cindako volcanics (Figure 9-1a). Ringed by the next three sites to be described as well as Borongloe, the depression's agricultural potential presumably underlay Borongloe's minor prominence in Gowa's precolonial history. It is even possible that the BBB site triplet on occasions lay at the periphery of Borongloe's influence, even though the sites are geographically closer to historical sites at the north (Figure 9-2c).[21]

9.7.3 Tamarunang Tua (Gowa 69)

Tamarunang Tua is perched at the western point of the "Borongloe sawah depression" (Figure 9-19). It covers 250 metres square of fields and groves attached to Bonto Bado kampung, dusun Songkolo IV. Reportedly the site had been puckered in the late 1960s with looter's holes, many more than the 213 which we counted. Hundreds of pieces had been recovered, mostly from zone 14 (in association with fragmented bone) and zone 7, and stored in a local mosque until they covered the floor. In a pattern which invokes Bonto Ramba's sacred spot, a clearing at the centre of the site has a *saukang* (Photo 9-37) flanked by three bamboo corrals, each enclosing flat stones arranged into east-west oriented rectangles (Photo 9-40). Despite the local view that the stones possibly marked graves, the looters had been afraid to plunder the *saukang* clearing.

The reported antiques from Tamarunang - mainly Sawankhalok, then celadons, blue-and-white and some *kuning* (yellow, i.e. Sancai?) and "redwares" - suggest an assemblage earlier than the Borongloe ceramics on the whole. As at Borongloe the surface sherdage was sparse, yet it confirmed

[21] Borongloe's ideal setting could also explain why its tradeware sherdage profile does not hint at a break in occupation (Figure 9-20), for even if much of the original descent group ended up in Bonto Ramba, the resulting vacancies apparently attracted newcomers from the southeast (9.8.3).

the suggested precedence of Tamarunang's pre-Islamic burials (Figure 9-20). Significantly, Chabot (1950:70,72) recorded that Bonto Ramba's investiture stone was itself called Tamarunang, which means "the one not falling off the raft", and that Gowa's and Borongloe's insignia were brought together at Tamarunang a few days before the inauguration of a new Gowa king in 1947. Possibly Tamarunang's ritual importance has retained a memory of the place's apparent chronological priority.

As with Borongloe, Tamarunang Tua could have been an old kampung interspersed with burial areas, in which case it would have been largely abandoned after the 17th century (Figure 9-20). Moreover Bonto Bado lacks an Islamic cemetery, its local inhabitants burying their dead at either Borongloe or Bonto Ramba.

9.7.4 Borong (Gowa 76)

Kampung Borong occupies the levee of the Jeknekberang's former channel. The inhabitants plant wet-season rice in the channel (Photo 9-38) as well as in the "Borongloe sawah depression". A small site of finely flaked stone artefacts, exposed where the descending road meets the channel at "Borong Timur" (Appendix G), suggests that the channel had cut against Baturape-Cindako volcanics in prehistoric times.[22] Next to the stone artefacts was a *saukang* accessible by a bamboo ramp but otherwise similar to its nearby counterparts. Although there is no evidence of burials here, Borong Timur qualifies as a SSPHAP historical site because a local farmer had unearthed a Swatow overglaze piece (Photo 9-30). Further Swatow pieces were recorded in zone 8 immediately across the channel from the *saukang*.

Our transect along the path passing through the main kampung encountered only Qing and recent tradeware sherdage (Figure 9-17). The path led to another *saukang* (here called "Saukang Borong") next to a bamboo corral with a stone

[22] The locals reported that the channel flowed "during the time of the Gowa kingdom", whenever that was, but they might have meant that it had still retained sufficient water to have constituted an oxbow lake.

arrangement oriented 80° from north (Photos 9-41 and 9-42). People had reportedly tried pot-holing the secondary forest south of the *saukang* without success. However, a large, plowed field to the southwest (Photo 9-39) was rich in sherdage, including a Sawankhalok and some Swatow pieces. In the absence of reported antique finds, this field ("Borong Barat") is interpreted as former kampung, as indeed it is depicted on the Dutch land-use maps.

Borong lacks an Islamic graveyard for its inhabitants are buried at Borongloe. Given the evidence of tradewares apparently not associated with burials but dating back to at least the 16th century, a comparable situation appears to have persisted since pre-Islamic times. Borong's close social links with Borongloe are further shown by its enclosed stone arrangement next to a *saukang*, as we recorded at Borongloe and Tamarunang, and described by Chabot at Bonto Ramba.[23]

9.8 The KBSB group

9.8.1 Kaballokang (Gowa 70) and Borong Parang (Gowa 82)

Kaballokang sits at the northeast end of the "Borongloe sawah depression". The local inhabitants reported coming upon some antiques, including the 16th century Ming BW bowl they gave us, in a small area converted to ploughed dryland fields at the time of our visit. Here we collected 23 tradeware pieces spanning the 16th to 18th centuries (Figure 9-20). The track to the fields bore remnants (river pebbles and fragments of masonry) of an old Islamic graveyard which apparently extended into the thick weedy growth along the track. The site appears to have been abandoned during the 18th century; the adjacent kampung of Bonto Tene, which is shown on the Dutch land-use maps, probably represents resettlement from the south at around 1900. The residents use Kuburan Islam Borong Parang, *dusun* Songkolo I, on the northern border of an old eastward meander of the Jeknekberang (Figure 9-1a).

[23] It is unclear at which location this "signature" of membership within Borongloe first arose, since its date is recorded only for Bonto Ramba.

This large cemetery included at least 308 marked graves over an area 250 metres by 50 metres, and probably yet others hidden by regrowth (Photo 9-43). The markers represent styles which apparently date back to the 18th century and possibly the 17th century (Table F-6e). Support for the earlier dating comes from a Swatow sherd recorded on the track passing the cemetery. The cemetery serves most of the kampungs along the north bank of the Jeknekberang between Borongloe (Gowa 67) and the Borong Kaluku area (Figure 9-2d) - Pattiro, Cambagaya, Borong Parang, Borong Kaluku, Borong Bulo and Jamuling, as well as Bonto Tene.

9.8.2 Songkolo Asli (Gowa 83) and Bontona Songkolo (Gowa 86)

Across the Jeknekberang's remnant channel lies Songkolo Asli (*dusun* Songkolo I) - an elevated, pleasantly shaded area interspersed with three kampung areas named Songkolo. We observed its soil profile, deposited by the Jeknekberang, where the river is slowly cutting eastwards towards its old channel (Photo 9-46). Beneath the top 70 cm of loam was a metre of slightly silty sand, and six metres of sand mixed with rounded pebbles which generally increased in size down to the Jeknekberang's water level. The river-cutting topsoil differs slightly from the soil, to a metre's depth, within the surveyed area abutting the remnant channel (Figure 9-21). There we recorded a slightly acidic silty clay (pH 6), coloured dark reddish to very dark brown, whose greater proportion of clay presumably reflects the greater distance from the modern Jeknekberang.

Most of the 201 marked graves in Songkolo Asli's Islamic graveyard (Table F-6e) belong to the modern section at the east. One style, with river pebbles embedded into an earth matrix, appears to be unique to Songkolo Asli. The seven markers in the dispersed western section, which may date back to the 17th century, abut a bamboo grove with 177 looter's holes (Figure 9-21). The grove was reportedly looted ten years beforehand by outsiders who recovered small and large *tempayan* (stoneware jars) containing whitish bones in various stages of fragmentation. The description could signify either bones cremated for a lengthy period at high temperatures (cf.

Ubelaker, 1984:34), or non-cremated bones which had survived the soil's acidity within the micro-environment of the *tempayan*. In any case the account suggests secondary jar burials which need be no older than the 16th or even the 17th century. The only sherdage recorded at the site, south of the bamboos, included tradewares which were all Qing or European (Figure 9-20).

The clearing at the south of the site contains a large *saukang* next to a similarly large shed, both with centrally jutting eaves (Photo 9-44). The shed shelters a flat, square rock, reportedly not a grave but rather a place where someone came and then disappeared (Photo 9-45). At least twice a week relatives of the Songkolo people come from far and wide, especially the islands off the coast between Pangkep and Takalar, to offer food. This site is surely Songkolo's *baruga* with the flat rock which provided the mythological inspiration for Bonto Ramba's investiture stone (9.7.1). The structures' central eaves, the apparent practice of secondary jar burials right up to Islamisation, and the grave markers of pebbles in an earth matrix, are idiosyncratic features by Gowa-Makassar standards, and suggest that the Songkolo people have self-consciously distinguished themselves by doing things differently from their neighbours. The site's retention of a single flat rock and its *Tomanurung*-like associations should probably be interpreted in the same light.

Directly across the Jeknekberang lies the large Kuburan Islam Bontona Songkolo. We inventorised 440 marked graves, 27 in a central area of apparent elite burials (Photo 9-47) and 413 elsewhere (Table F-6e). One grave, oriented east-west, dates the cemetery's origins to the 17th century. It serves not only Bontona Songkolo but also other nearby kampungs along the Jeknekberang's south bank - Jeknek Madinging, Bonto Rita, and some of the inhabitants at Parang Banua (which in addition has its own graveyard).

Reportedly no tradewares have been found here, despite some exploration near the elite graves, but two large, globular earthenware jars were accidentally recovered to the west (Figure 9-22). One, a metre tall, had been found at the

bottom of a still uncovered hole 1.3 metres deep (Photo 9-48). My inspection revealed a very dark brown, gritty silt at 30 cm depth, and dark brown river sands with some small rounded pebbles at the base, both horizons having a pH of 6. Analogy with Songkolo Asli suggests that these were secondary jar burials, again possibly no older than the 17th century. Although the jars apparently retained no contents, they could have once held bones now dissolved by the acidic soil, since their earthenware fabric would have provided less protection compared to Songkolo Asli's stoneware jars.

9.8.3 Settlement expansion from Borong Parang and Songkolo

The KBSB sites indicate late settlement of this stretch of the Jeknekberang. Clear evidence of 16th century origins was found only at Kaballokang, and even this community might then have been an outlier of Borongloe's sphere of influence.

By the 17th century, however, two new "lineage groups" had apparently originated. One is represented by the Songkolo Asli and Bontona Songkolo cemeteries which serve the kampungs immediately west of the Jeknekberang's old meander. The other is represented by the Borong Parang cemetery which serves the other surrounding kampungs.[24] There are no signs of early burial grounds southwestwards of Borong Parang, suggesting that it had been frontier territory recently populated from Borong Parang. Apparently, Borong Parang descendants also colonised northwards as far as Kaballokang and the Borongloe site, in the wake of the former inhabitants who were largely drawn to Bonto Ramba.

The Borongloe *adat* community studied by Chabot had retained one now lost administrative connection - the annexation of Parang Banua and Bonto(n)a west of the Jeknekberang (Figure 9-2d). However, the (still retained) Songkolo subdivision along the Jeknekberang's north bank obfuscates the burial patterns which are primarily towards

[24] This distinction hints that the Jeknekberang had followed its now-abandoned meander when the Songkolo lineage group originated, before straightening its channel and isolating Songkolo Asli from Bontona Songkolo. Of course, other scenarios which do not invoke a change in the Jeknekberang's course are also tenable.

the Borongloe and Borong Parang cemeteries. Presumably this reflects the social importance of Songkolo's *baruga* as a local rallying point. Having not conducted detailed local historical research, I cannot improve on the tentative scenario offered here, but two important points seem clear: the continued use of original cemeteries for centuries by locally expanding "lineage groups"; and the potential for labile social organisation in a thinly populated area.

9.9 The PDCSS group

These five sites lie along the Sungai Kallorok, a tributary of the Jeknekberang (Photo 9-49). The Kallorok crosses a raised area where I observed two low knolls of sedimentary rocks, presumably isolates of Camba Formation, near Saukang Borong and Saukang Boe (Figure 9-1a; Photo 9-50). Four finely flaked stone artefacts recorded at Saukang Boe (Appendix G) further attest to the antiquity of the general land surface. Local people reported that the Jeknekberang had been closer in the past, allowing the inference that the upper-middle stretch of the Jeknekberang has been trapped in a band between Camba Formation at the west and Baturape-Cindako volcanics at the east. As regards cultural affiliations, the PDCSS sites show some strong similarities with the other "Borongloe cluster" sites, although for all I know these similarities could extend into the unsurveyed land south of the PDCSS sites (Figure 9-2).

9.9.1 Cellaya (G78), Saukang Borong (G79), Saukang Boe (G80)

Cellaya is a small area of slightly elevated silts, used for dryland crops, in an ambient landscape of sawah. Virtually all the recordable artefacts were restricted to half of the maize field shown in Photo 9-51, i.e. an area 50 metres by 70 metres which had reportedly been looted. We were told that the ceramics were mostly blue-and-white, but also included celadons and Sawankhalok covered bowls. However, apart from a lone Japanese BW rim, the recovered tradewares were all whiteware, monochrome and coarse stoneware fragments. In the laboratory I could identify them as Song or Yuan pieces,

which is consistent with the absence of Ming BW and other tradeware types which numerically dominate most looted burial grounds (Appendix D). I cannot explain the discrepancy with my informant's report, but the burial ground appears too small to have enjoyed much longevity, and so is here dated to the 13th-14th centuries (Figure 9-26).

Saukang Borong not only mimics the name of Saukang Borong across the Jeknekberang (9.7.4) but also resembles the latter physically. A bamboo corral encloses a flat boulder and a well-maintained *saukang* (Photo 9-52). At the southeast corner a brick wall encloses two flat stones placed along an east-west axis (Photo 9-53). North of the corral, at its entrance, a disturbed area approximately 20 metres square had reportedly produced some *buli-buli* (ceramic jarlets). The whole site occupies a slightly raised, stony area.

Saukang Boe presents the same combination of an enclosed *saukang* with an east-west oriented stone arrangement at its rear and a looted area at the front (Figure 9-23). But in this case the *saukang* corral is also brick (Photo 9-54), and the stone arrangement reportedly marks the grave of an ancestral personage, "Karaeng Boe" (Photo 9-55). Another east-west oriented stone arrangement in a brick corral, reportedly marking the grave of Kg Boe's wife, occurs at the north (Photo 9-56). From the *saukang* as far as the road people had reportedly dug up an estimated 1000 antiques, enough to fill a car, including not only blue-and-white wares (the most common find) but also "red", celadon and Sawankhalok wares, as well as earthenwares. We could confirm this report to the extent of counting 92 looter's holes and collecting four 14th-15th to 16th-17th tradeware sherds (Figure 9-26) despite the generally full vegetation cover. There is every reason to interpret this area as an immediately pre-Islamic burial ground with the conventional east-west directed burials.

A different side-light, however, issues from the reportedly recent recovery of an earthenware jar, containing two gold rings and an iron sword, behind the *saukang*. The remnant hole (Photo 9-58), labelled zone 1, contained 65 earthenware sherds weighing 1.2 kg, and 18 fragments of human

TABLE 9-3. HUMAN BONE FRAGMENTS FROM SAUKANG BOE, ZONE 1

Fragment	Measurements	Weight
Scapula		
Right scapula spine fragment (between neck and acromion)	34 X 26 X 14 mm	13 gm
Vertebral Column		
Cervical disc (between C_3 and C_7)	Anterior-posterior diameter 11 mm; width 22 mm; height 15 mm	2 gm
Thoracic spinous process	33 X 31 X 12 mm	3 gm
Thoracic spinous process	28 X 21 X 12 mm	2 gm
Thoracic lateral transverse process	18 X 13 X 8 mm	1 gm
Medial superior articular lumbar process	20 X 18 X 16 mm	2 gm
Lateral superior articular lumbar process	16 X 16 X 7 mm	1 gm
Inferior articular lumbar process	14 X 10 X 8 mm	1 gm
Ribs		
Seven rib fragments	Measurable widths 5, 5, 6 mm; measurable heights 10, 14, 17 mm	4 gm
Foot		
Complete right talus (measurement definitions from Rao, 1966:82)	Length 43 mm; breadth 33mm; height 29 mm; trochlea breadth 26 mm	15 gm
Complete right cuboid	20 X 13 X 19 mm	2 gm
Possibly long bones		
From femoral/humerus head (?)	22 X 21 X 8 mm	2 gm
Two unidentified fragments	31 X 11 X 3; 27 X 8 X 3	2 gm
Total 20 bones and fragments		50 gm

The bones and fragments were small and gracile by usual adult standards, but since no identifiable epiphyseal parts of the skeleton were represented, it is unclear whether the individual was an adult female or an adolescent.

Surface colour varied from 7.5YR 3/2 (dark brown) to 5YR 4/3 (reddish brown). Beneath the scorched skin the bone was usually 5YR 8/2-8/3 (pinkish white to pink). Diaphyseal bone varied between 10YR 7/2 and 10YR 5/2 (light grey to greyish brown). These observations apply across the collected skeletal parts.

bone (Photo 9-57). The surrounding, slightly sunken field, labelled zone 2, contained 65 earthenware sherds weighing 1.6 kg. Whilst in Ujung Pandang I managed to conjoin some of the zone 1 sherds (Photo 9-60) and observe that no more than one large jar was necessarily represented. The zone 2 sherdage, which included a handle fragment, also appeared to represent one or more large jars. The bone fragments represent a single person, either an adult female or a sub-adult (Table 9-3). The lack of teeth and the scorched appearance of the bones together suggest cremation at a temperature below 800° (cf. Gejvall, 1969; Ubelaker, 1984:34), either of the fresh corpse or of the dry bones after maceration of the corpse. My tests in zones 1 and 2 revealed a dark brown to dark reddish brown, clayey silt with a pH of 6, i.e. an acidic soil which could have dissolved the buried bones but for their prior cremation.

The bones produced a radiocarbon date of 450 ± 220 BP (ANU-5923). This calibrates to 515 BP with a single S.D. range between 300 and 670 BP (cf. Stuiver and Pearson, 1986:810-811), i.e. the 15th century as a best estimate within a likely range covering the 14th to 17th centuries. The use of bone for radiocarbon dates is problematical (e.g. Spriggs, 1989:590,598), so possibly zones 1 and 2 mark a field of secondary jar burials which directly preceded the other pre-Islamic burials to the north (as the lack of tradewares from zones 1 and 2 suggests). However, as an equally tenable interpretation, especially given the proximity to the Songkolo sites where secondary jar burials apparently continued till Islamisation (9.8.2), Saukang Boe incorporates two coeval burial grounds where different rites were practised.

Even allowing for some exaggeration on our informants' part, I would interpret Saukang Boe as a centralised burial ground which served a substantial area. In this view Saukang Borong could have been a minor associated burial ground, while both could have sprung from the population represented at Cellaya. The commemoration of Saukang Borong and Saukang Boe as ancestral locales, rather than Cellaya, could reflect their greater recency. Today the local inhabitants are buried

in two Islamic cemeteries: one in Biring Kallorok west of Saukang Borong with an estimated minumum 500 marked graves (none looking clearly older than the 18th century); and one to the south in Palangisang which I did not inspect. Moreover the kampung names which I recorded, based on their position with respect to the Sungai Kallorok, rarely matched those shown on the Dutch land-use maps. The peculiarity of Saukang Boe's jar burials notwithstanding, the area appears to have been occupied since around the 13th century by one "lineage group" whose centralised burial grounds, indeed whose kampung names, have roamed the local landscape.

9.9.2 Pekallak Bua (Gowa 16)

Pekallak Bua includes two Islamic cemeteries which face each other across the road. These are Kuburan Garassik at the north and Kuburan Pekallak Bua at the south (Figure 9-24). Both have stone markers which could well date from the 17th century, but only Kuburan Pekallak Bua shows clearly modern types. The total variation in orientation extends to markers almost perpendicular to each other, but this is best interpreted as variable success in striking a north-south axis (Table F-6e). Kuburan Pekallak Bua includes Makam Toa Makni, the resting spot of the reported *nenek moyang*, its antiquity indicated by the rotted consistency of the head stones (Photo 9-61). The combination of a stone arrangement atop tree roots with a *saukang* in a bamboo enclosure (Photo 9-64) evokes similar phenomena to the east, especially Borongloe's *saukang* (9.7.2).

Our survey south of the road followed areas where antiques had reportedly been found, as attested by some "Ming" pieces in zone 7 and a few remnant looter's holes. People reported lots of sherdage but no antiques north of the road, again confirmed by our records of Swatow and later pieces. Pekallak Bua appears to have been a burial ground since the 15th century, with occupation near the burials from at least the 17th century (Figure 9-26). This proximity of burials and occupation could reflect a restricted availability of raised land, since the site occurs on a remnant levee flanked by sawah to the north and the south (Photo 9-65).

9.9.3 Dampang (Gowa 77)

Kampung Dampang, called Tete Batu on the Dutch land-use maps, occupies a levee of the Jeknekberang east of its confluence with the Sungai Kallorok (Figure 9-25a). The Jeknekberang is cutting southwards into the site and, we were told, had already washed away the old Islamic graveyard, including two *keramat* graves, north of the *saukang*. The inhabitants however saved the marker of Karaeng Dampang, their reported *nenek moyang*, by removing it to a cement enclosure further up the bank.[25]

Former artefactual deposits appear to be another casualty of the Jeknekberang's southward migration, as revealed at three exposures cut by footpaths down to the river (Figure 9-25a). The main one, Exposure C (Figure 9-25b; Photo 9-62), shows a gradual transition from greyish brown clay at the base to a brown clayey silt, capped by a distinctive layer more than a metre thick of reddish brown river silts (Table 9-4). The most parsimonious scenario for this profile would invoke a southward migration of the Jeknekberang (actually the Garassik) southwards towards Dampang, resulting in the deposition of increasingly coarser flood sediments. However, the abrupt beginnings of the silt layer suggests that either the Garassik radically altered its channel, or it received a markedly greater discharge such as would have resulted from stealing the Gumanti headwaters (cf. 5.4.3).

In any case the silts buried a band, 15-20 cm thick, of earthenware sherds with some tiny brick fragments and tradeware pieces. The tradewares were 15th/16th to 17th century types (Table 9-4), and the brick fragments had the low-fired red fabric also found with the Gowa fortification bricks. Exposures A and C agreed in positioning the artefactual layer immediately beneath the silts (Figure 9-25c). Exposure B (Photo 9-66) showed the artefactual layer cutting across the stratigraphic break. This is probably bext attributed to a depression in the west of the exposure which

[25] Karaeng Dampang's marker is now nothing but a single stone tablet embedded in the soil. However, the protective enclosure is oriented north-south (350° from north).

TABLE 9-4. ARTEFACTUAL CONTENT OF THE DAMPANG EXPOSURES

Exposure A	Depositional Layer	Earthenware Sherds	Brick Fragments	Tradeware Sherds
In situ (zone 1)	Mixed silt/clay	9*	0	0
On path (zone 2)	From zone 1	5	0	0
Exposure B				
In situ (zone 3)	River silts	18	0	0
In situ (zone 4)	Mixed silt/clay	31*	2	0
On path (zone 5)	From zones 3 & 4	25	0	0
Exposure C				
Eroded out (zone 6)	From zone 7	9	0	1#
In situ (zone 7)	Mixed silt/clay	53	2	0
In situ (zone 8)	Mixed silt/clay	46	1	1^
Eroded out (zone 9)	From zone 7	14	0	1@
Eroded out (zone 10)	From zone 8	16*	0	0
Eroded out (zone 19)	From above	5*	0	0
Total from mixed silt/clay		188	5	3
Maximum possible total from silts		43	0	0

* Including one decorated earthenware sherd.
\# 16th century Ming BW sherd with a dotted hexagon outside.
^ Fragment of a white-bodied Sawankhalok celadon.
@ Swatow BW sherd.

Examination of deposits in Zone C:

River silts: virtually no clay component, some fine sand and grit, crumbly even when moist. 5YR 3/4 (dark reddish brown); pH of 7.

Top of mixed silt/clay (artefactual layer): a clayey silt with some grit. 7.5YR 4/2 (brown/dark brown); pH of 7.

Lower mixed silt/clay (below artefactual layer): a silty clay with some grit. 10YR 5/2 (greyish brown); pH of 7.

Clay layer: a slightly silty clay with some grit. 10YR 4/2 (dark greyish brown); pH of 7.

was filled with silts and some washed-in earthenware sherdage when the site was flooded (Figure 9-25c).[26]

Our survey in the slightly lower ground behind the levee counted 57 looter's holes in three antique-bearing locations (Figure 9-25a) reportedly looted in 1973. We also recorded tradeware sherdage dating either to the 16th-17th centuries or to the 19th-20th centuries (Figure 9-26). A well at the southeast revealed a profile like that recorded at the exposures; dark reddish brown river silts in the top 1.5 metres, then a grey brown silty clay in the bottom two metres of the well.

We were informed that lots of celadons had come from the diggings next to a completely modern, "family" graveyard. The celadons do not indicate pre-Ming burials because the antiques we were shown consisted of two Qing celadon pieces and a "Kitchen Qing" spoon (Photo 9-63). Hence it rather looks like 19th century occupation deposits had been looted.

However, a different interpretation applies to the reported looting of numerous Sawankhalok covered bowls, complemented by whitewares and blue-and-white wares, in the south and southeast of the site. These were reportedly found three to four metres below the ground, associated generally with bones and often with east-west oriented *duni*.[27] Here the surface contents included Ming pieces, especially near the well, confirming the other evidence of pre-Islamic antiques.

Dampang appears to have been a 15th-17th century site with occupation at the north and a burial ground at the southeast. A marked change in the behaviour of the Sungai Garassik in the 17th century resulted in the abandonment of the site and

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[26] It is hard to link the reportedly washed-away graveyard with the artefactual layer, since the original markers would have been buried by over a metre of silt. Those which had been washed away must have been post-deluvial restorations, and their location need not have coincided precisely with any antedeluvial graveyard. The artefactual layer itself contains the sorts of debris to be expected in occupation deposits, and probably represents a kampung which was abandoned during a 17th century flood.

[27] These *duni* are wooden, boat-shaped coffins which are found particularly at coastal sites (Chapters 11 to 13). The site's neutral pH (Table 9-9) accords with the reported survival of bones and *duni*, while the great depth at which the antiques were found is understandable given that the site had been buried by more than a metre of silts.

its burial in over a metre of silt. The site was then reoccupied as late as the 19th century; even today most of Dampang's deceased are buried at the nearby Mappala and Pangka Salo graveyards. The "resurrection" of Kg Dampang as the *nenek moyang* can be explained in numerous ways, e.g. a direct historical link between Dampang's former and present inhabitants.

9.10 A Brief Review of the Middle Jeknekberang Sites

The PDCSS grouping apparently corresponds to a cultural transitional zone. Saukang Boe, in particular, hints at some of the peculiarities of the sites to the east, such as the association of the *saukang* with an east-west oriented stone arrangement, and (possibly) the practice of secondary jar burials immediately prior to Islamisation. In contrast Dampang not only has its Karaeng Dampang, as do several sites to the northwest, but also reportedly yielded east-west oriented *duni* which are virtually a trademark of coastal sites.

One feature of the sites of the Borongloe cluster, here including the PDCSS sites, is the lack of any suggestion that 17th century nobles who figured in the Makassar texts had been buried here. The area appears to have lain beyond the sphere of direct meddling, or indeed much interest, on the part of greater Gowa's major lineage groups. After the early 16th century the area fell within Gowa's territory. However, this had apparently exalted rather than restricted local politicking and ritual concerns, as the admittedly late example of Borngloe's ascendancy at Bonto Ramba illustrates. Presumably subordination to Gowa involved little more than supplying surplus produce, and manpower for suitable occasions such as Gowa's military campaigns. The same remarks probably apply to the Saumata cluster sites, although in this case greater proximity to Gowa, or sharing the same expanse of rice fields, had led to more attention from Gowa.

Accepting the Borongloe cluster as depicted in Figure 9-2a, we have a tradeware profile which droops between the 15th and the 17th centuries, with a 16th century nadir (Figure 9-26). The same pattern is paralleled to varying

degrees by the Saumata and Anak Gowa clusters, not to mention the sites surrounding Benteng Tua (Figures 7-11, 8-4 and 9-6). The middle Jeknekberang's share of the incoming tradewares, and possibly therefore population and/or influence, apparently diminished from the 13th-14th centuries through to the rise of greater Gowa.

The rather flat profile shown by Benteng Tua for this period (Figure 6-14) thus takes on a dual significance. Political power within the middle Jeknekberang appears to have became, generally speaking, increasingly centralised in the Gowa royalty. And yet the high arenas of politics moved to the coast (Chapters 11 to 12) as the stakes grew to a regional and, finally, an international scale.

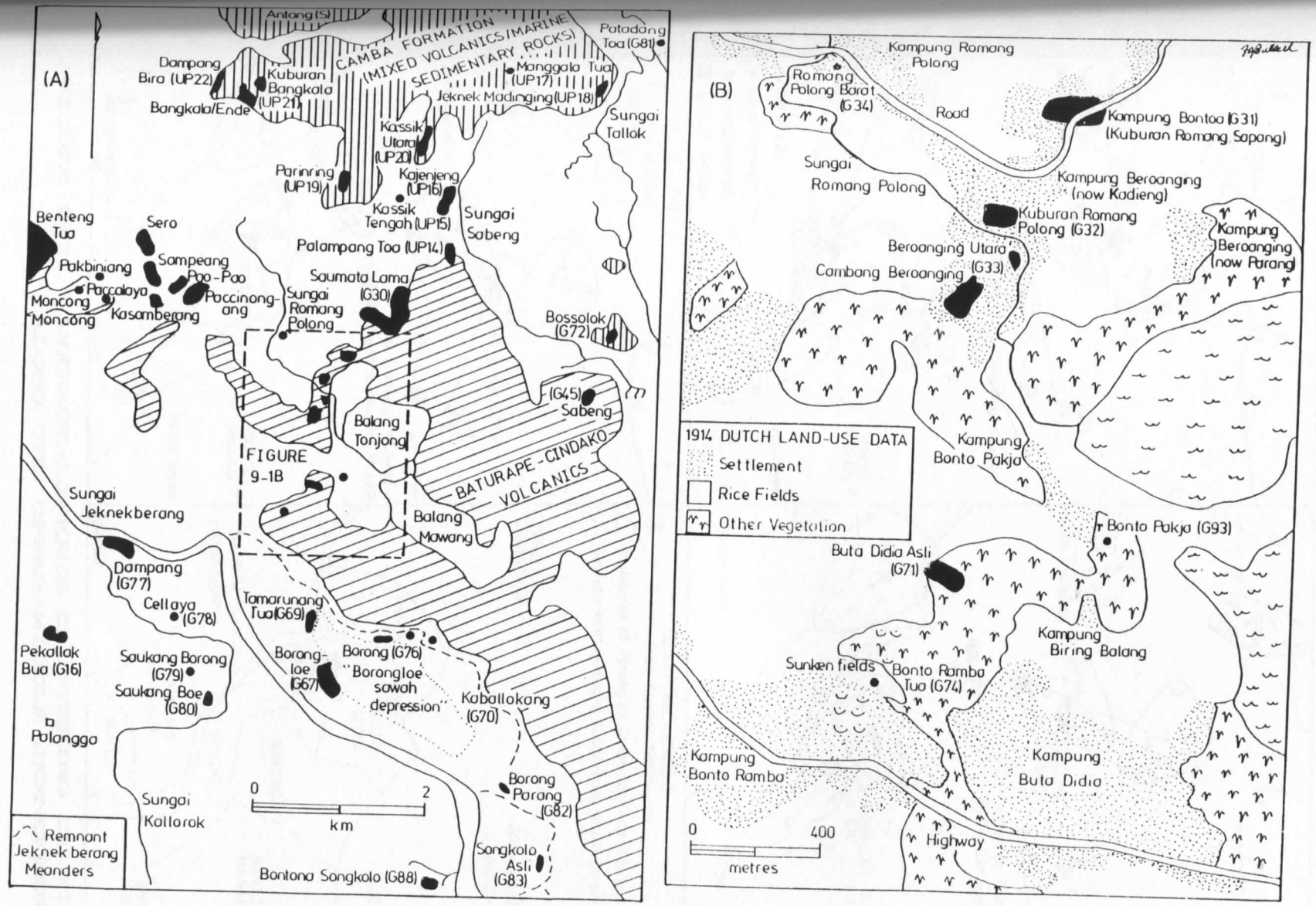


FIGURE 9-1. HISTORICAL SITES ALONG THE UPPER-MIDDLE JEKNEKBERANG

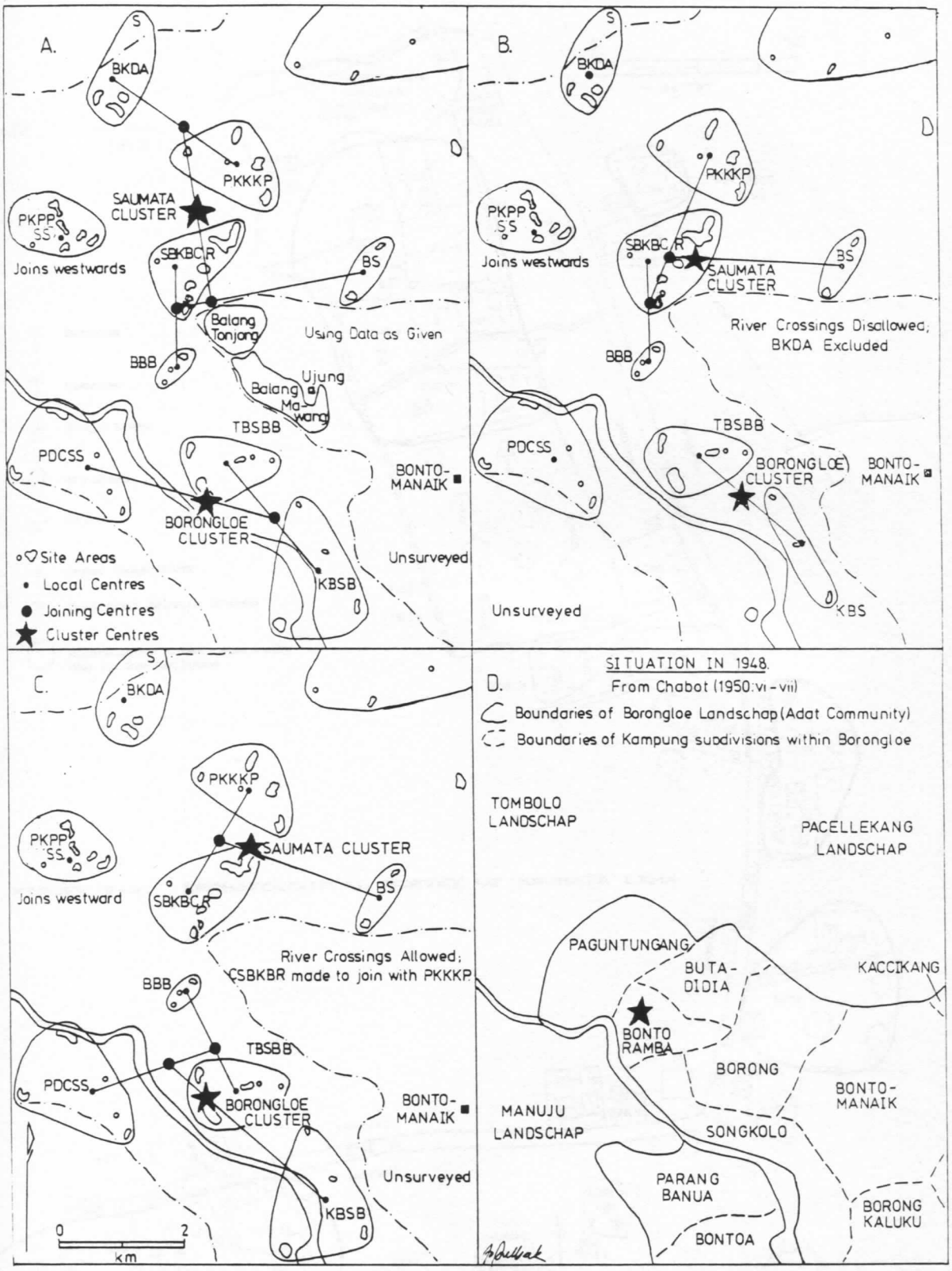


FIGURE 9-2. AVERAGE-LINKAGE CLUSTERING OF SITES ALONG THE UPPER-MIDDLE JEKNEKBERANG

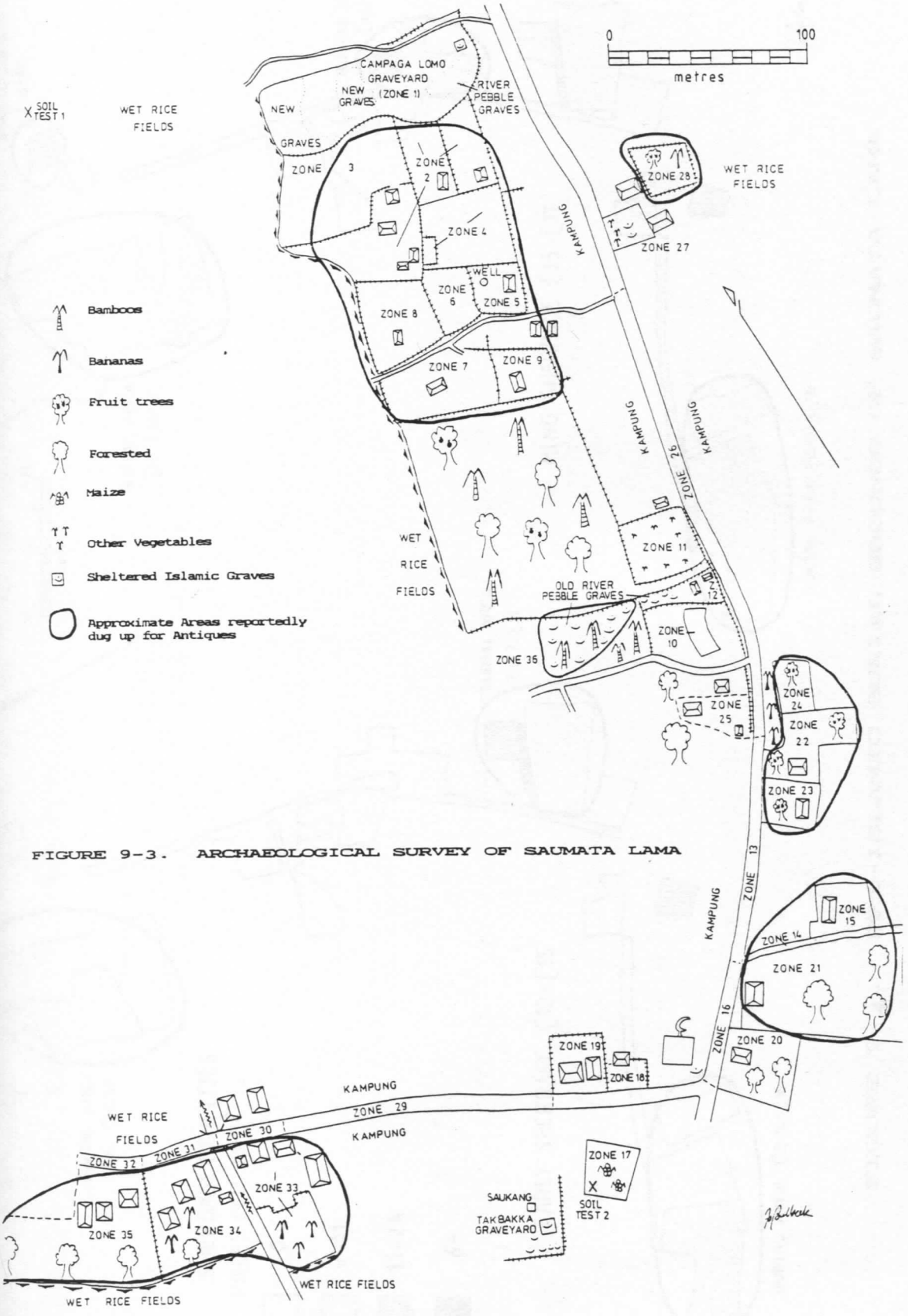


FIGURE 9-3. ARCHAEOLOGICAL SURVEY OF SAUMATA LAMA

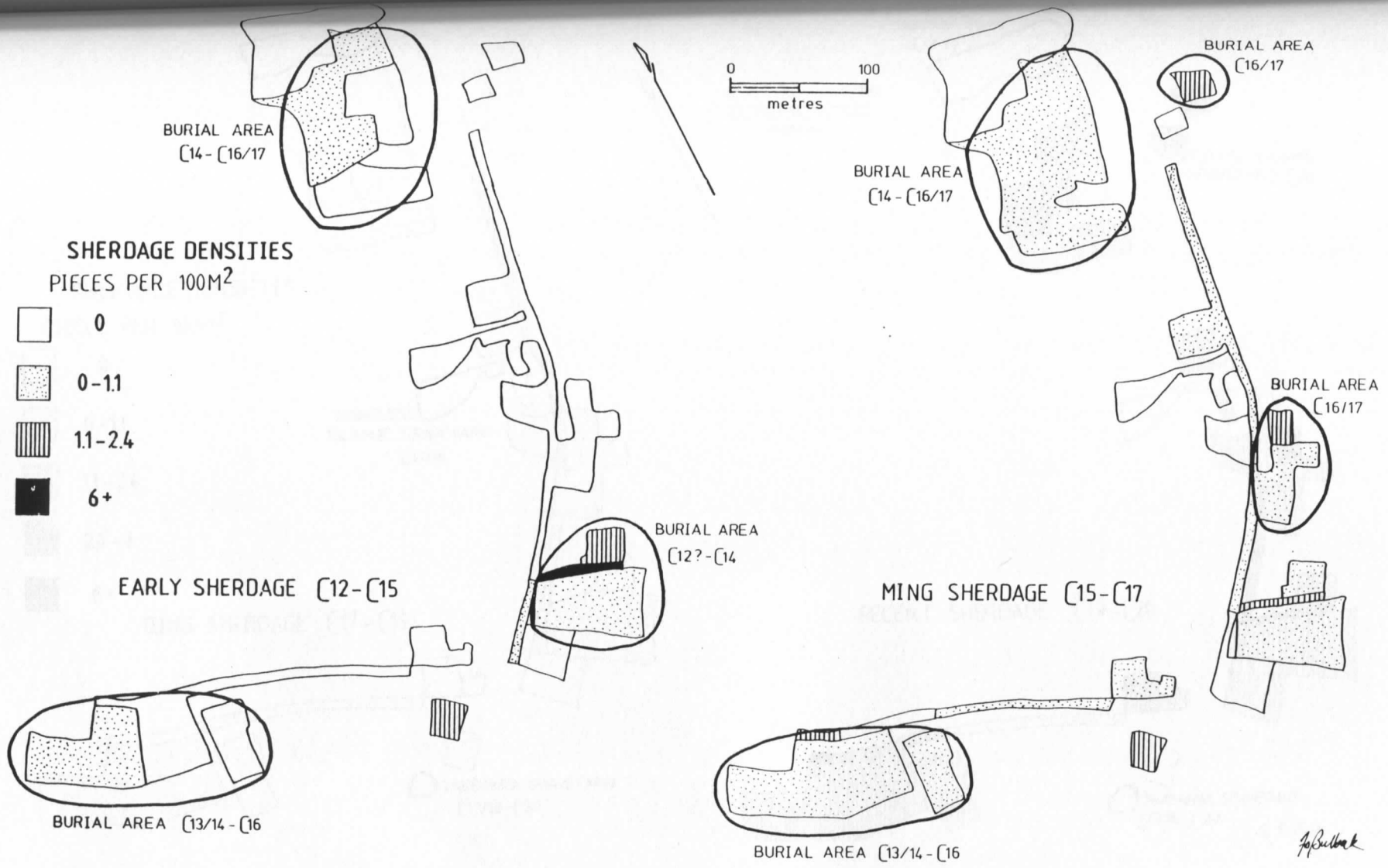


FIGURE 9-4. PRE-ISLAMIC BURIAL GROUNDS OF SAUMATA LAMA

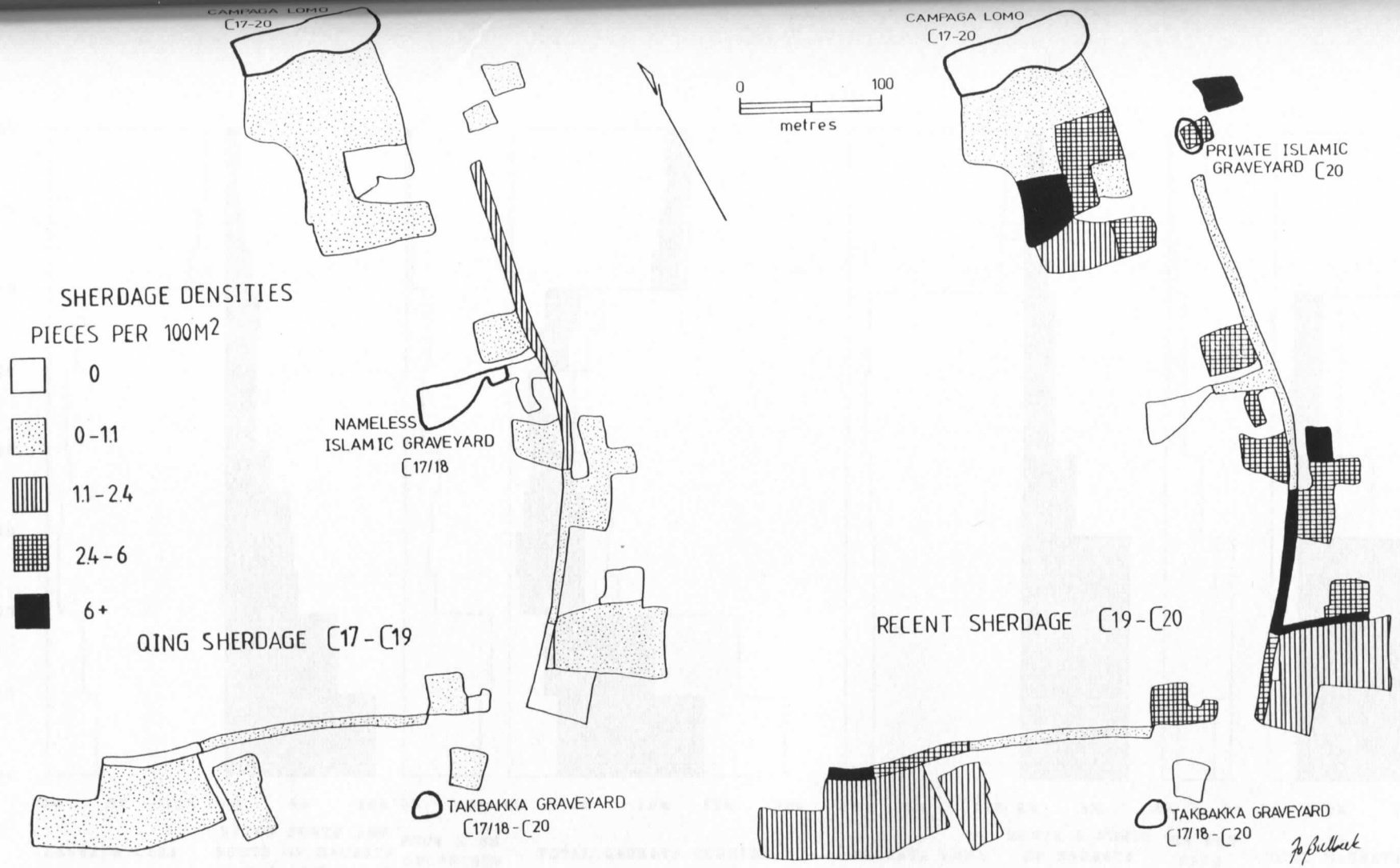


FIGURE 9-5. ISLAMIC BURIAL GROUNDS OF SAUMATA LAMA

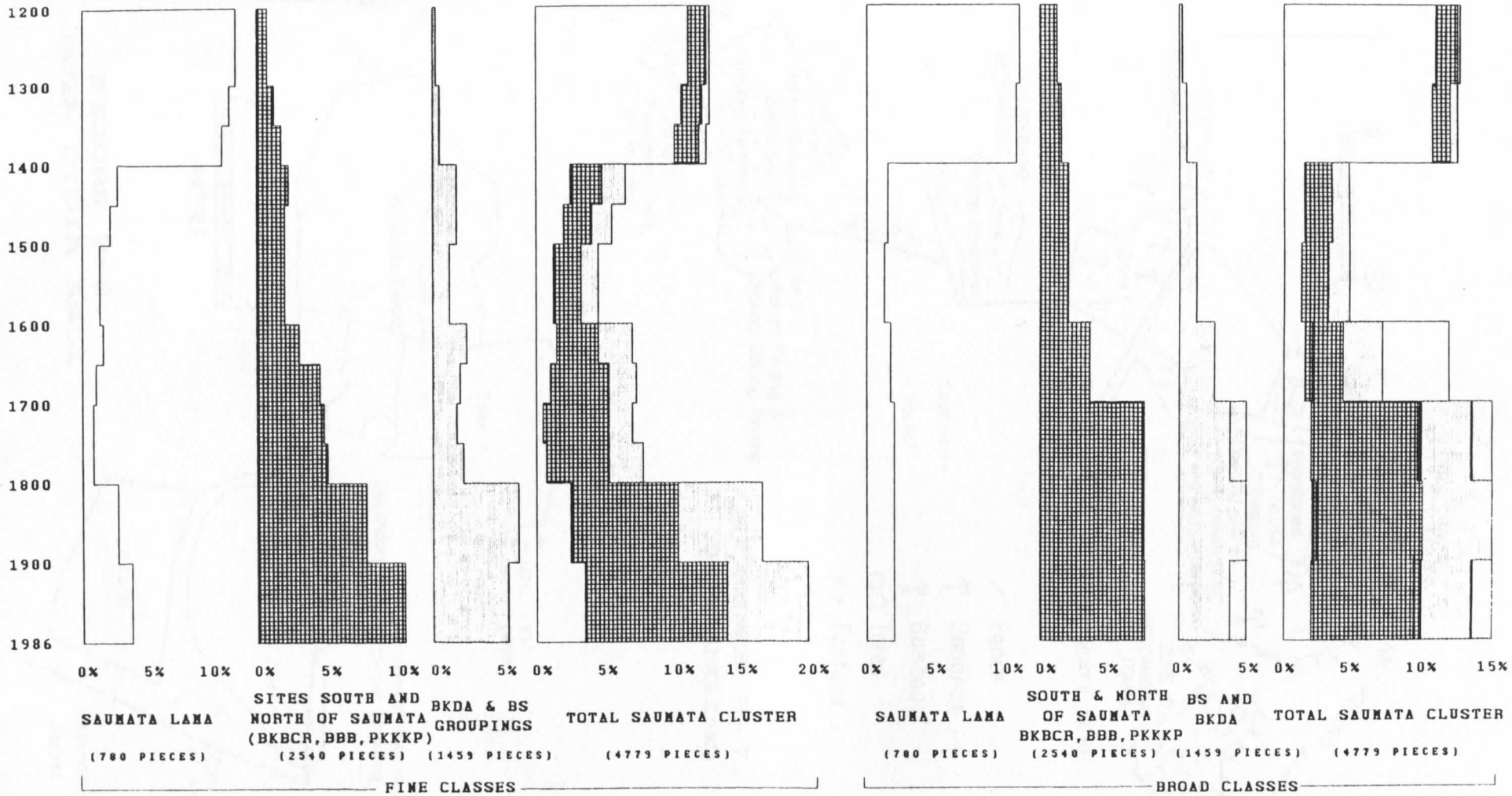


FIGURE 9-6. STANDARDISED CHRONOLOGICAL HISTOGRAMS – SAUMATA LAMA, SAUMATA CLUSTER

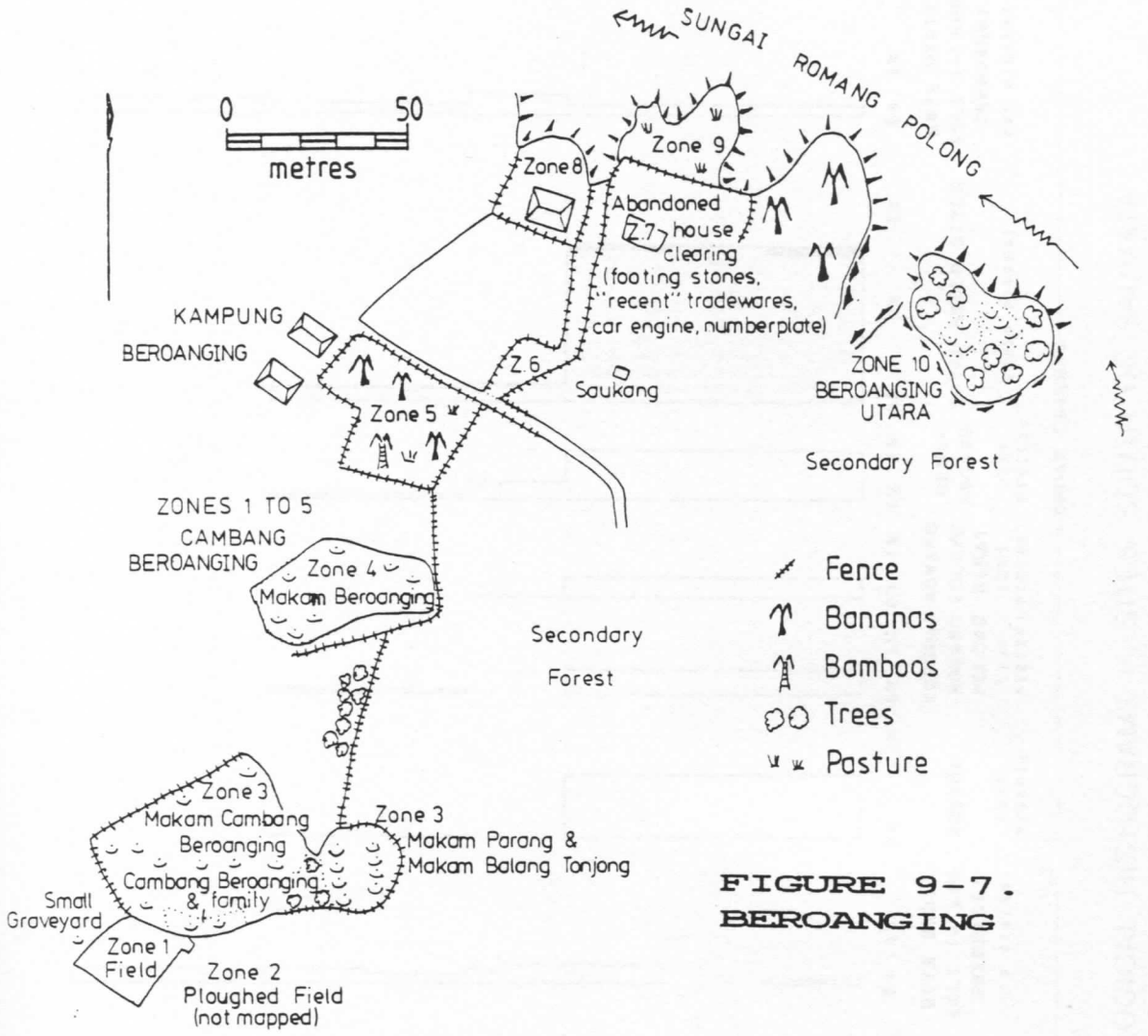


FIGURE 9-7.
BEROANGING

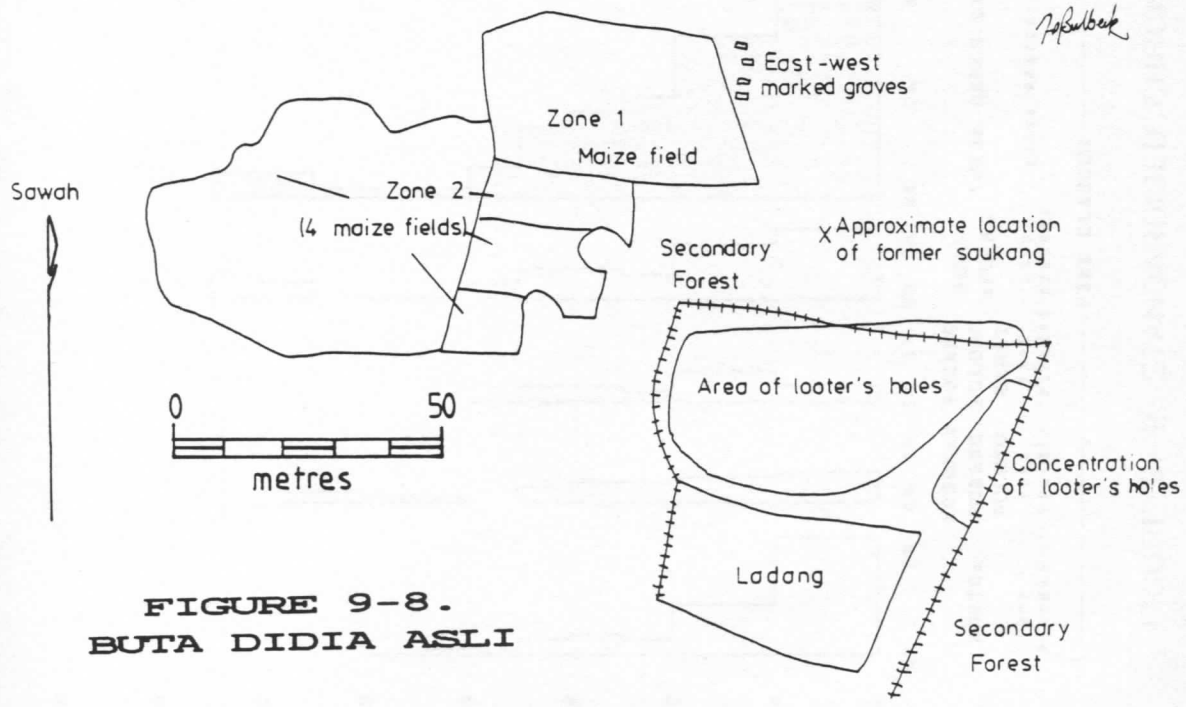


FIGURE 9-8.
BUTA DIDIA ASLI

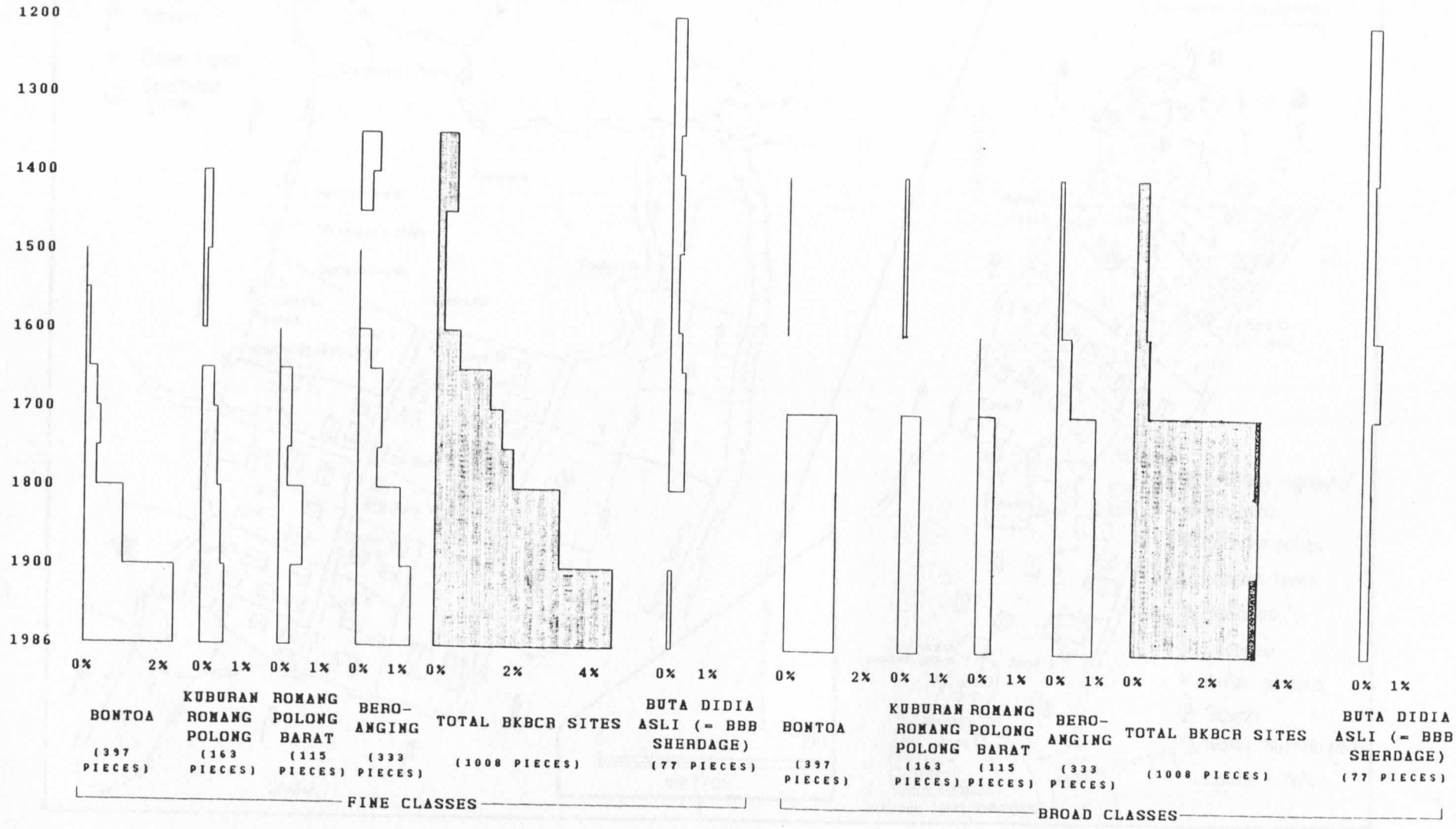


FIGURE 9-9. STANDARDISED CHRONOLOGICAL HISTOGRAMS – SITES SOUTH OF SAUMATA

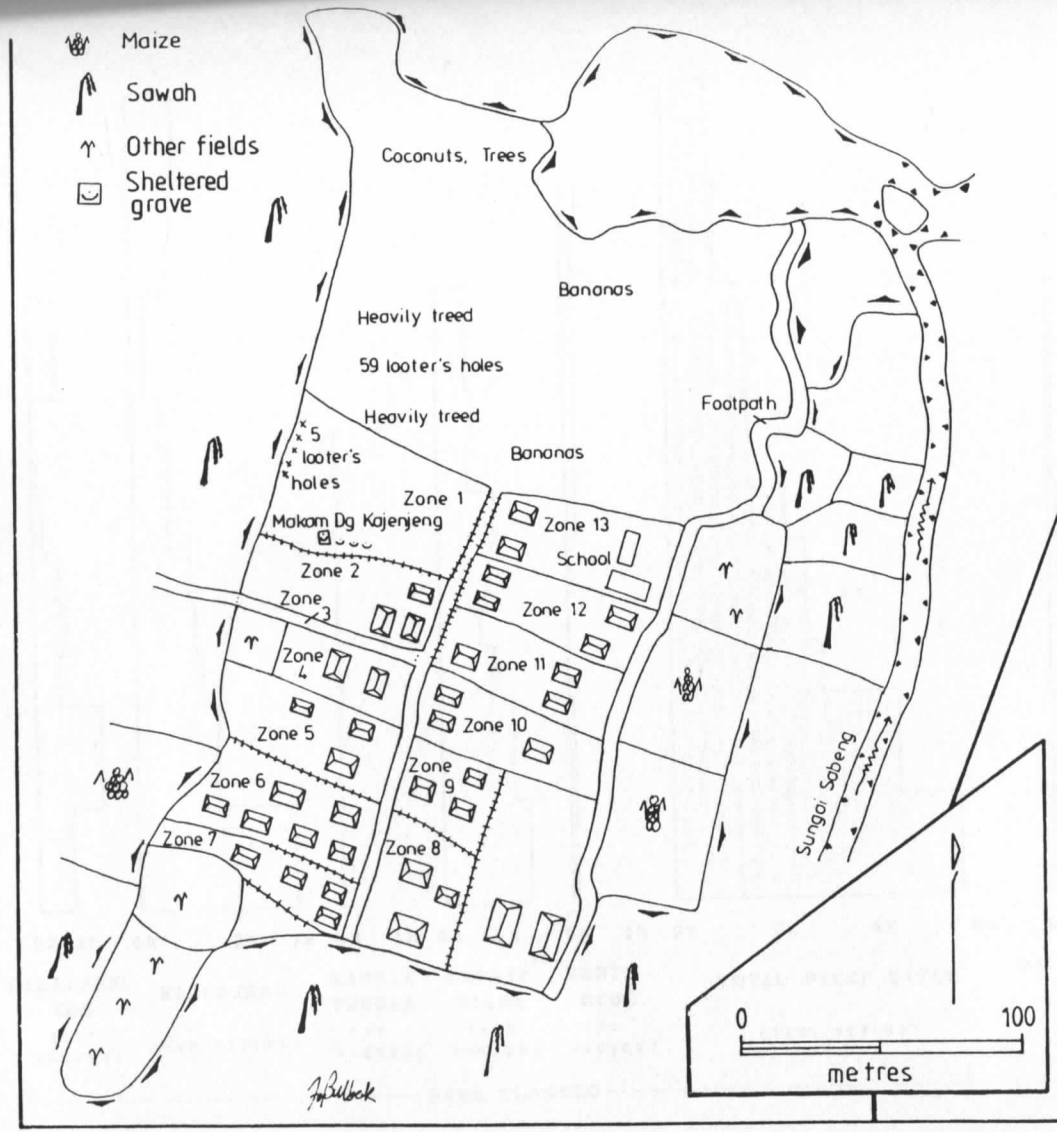


FIGURE 9-10. KAJENJENG

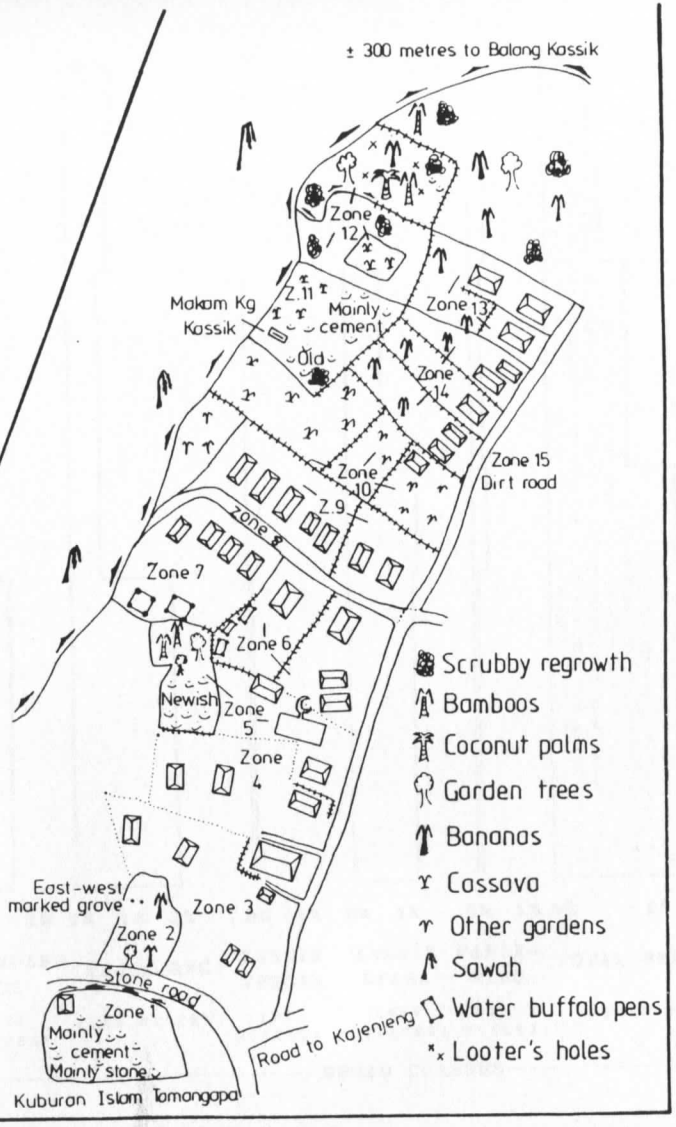


FIGURE 9-11. KASSIK UTARA

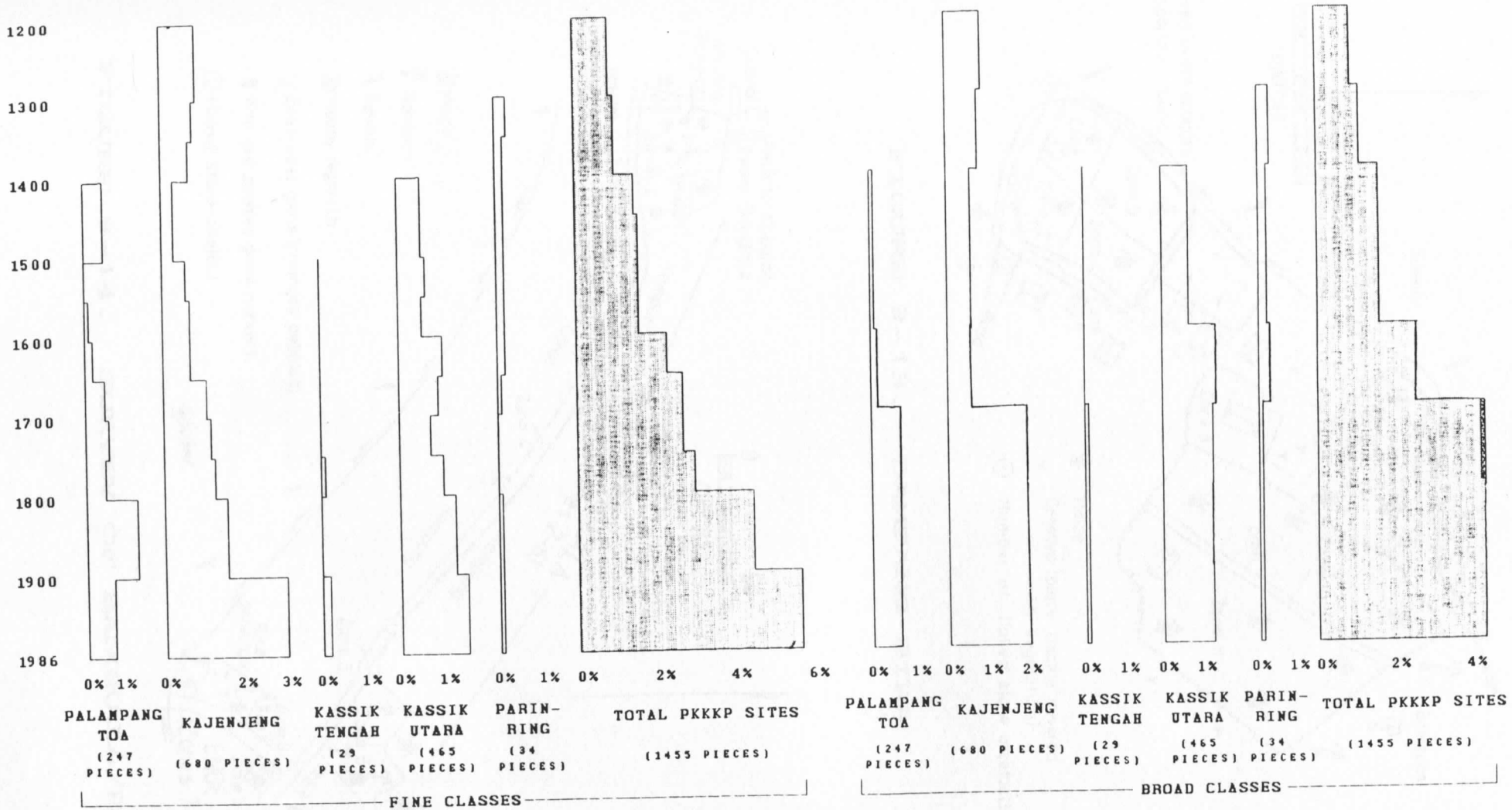


FIGURE 9-12. STANDARDISED CHRONOLOGICAL HISTOGRAMS – SITES NORTH OF SAUMATA

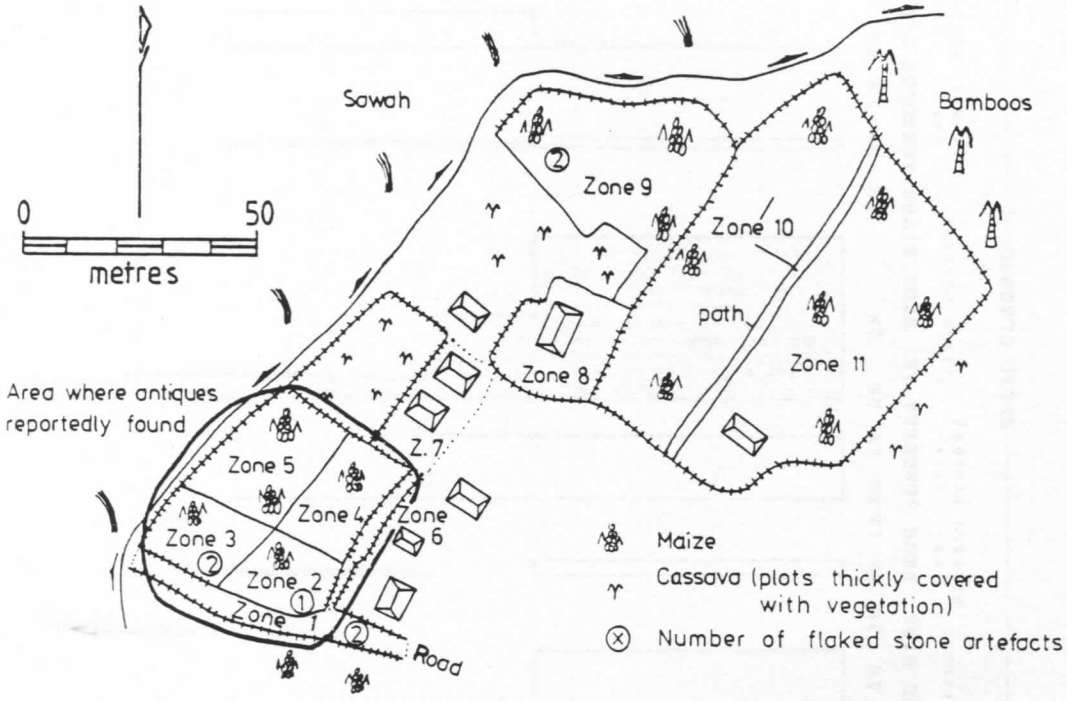


FIGURE 9-13. DAMPANG BIRA

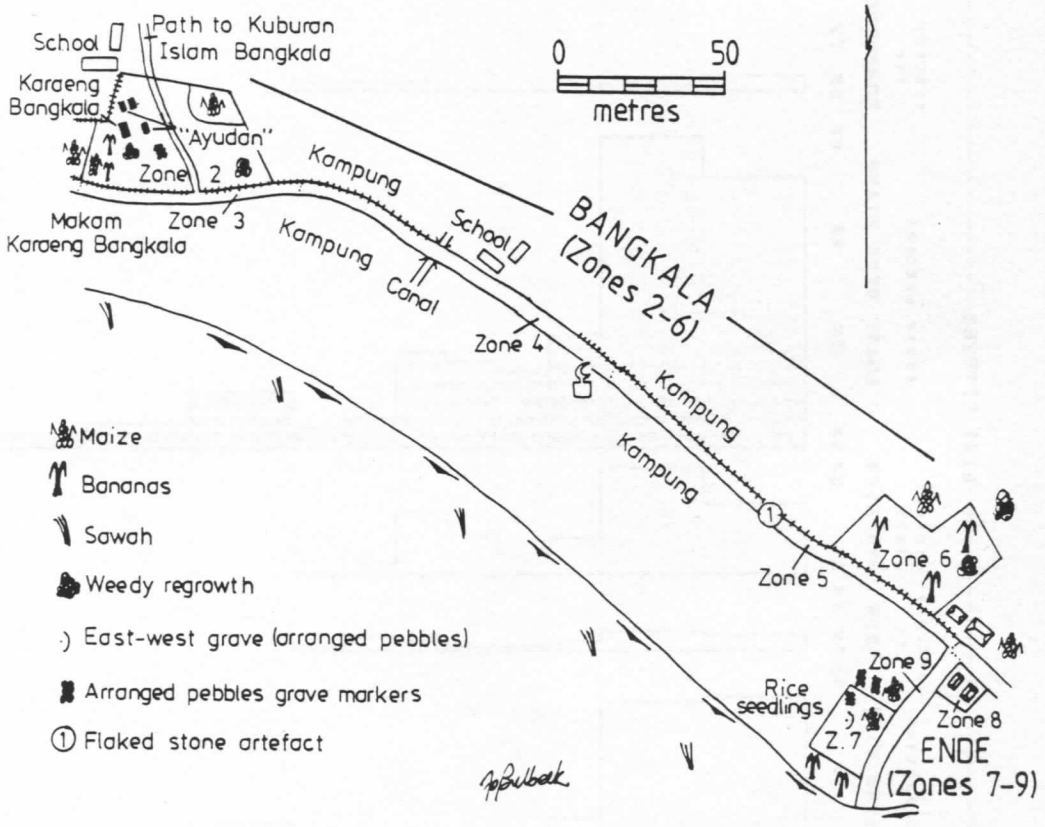


FIGURE 9-14. SURVEY OF BANGKALA/ENDE

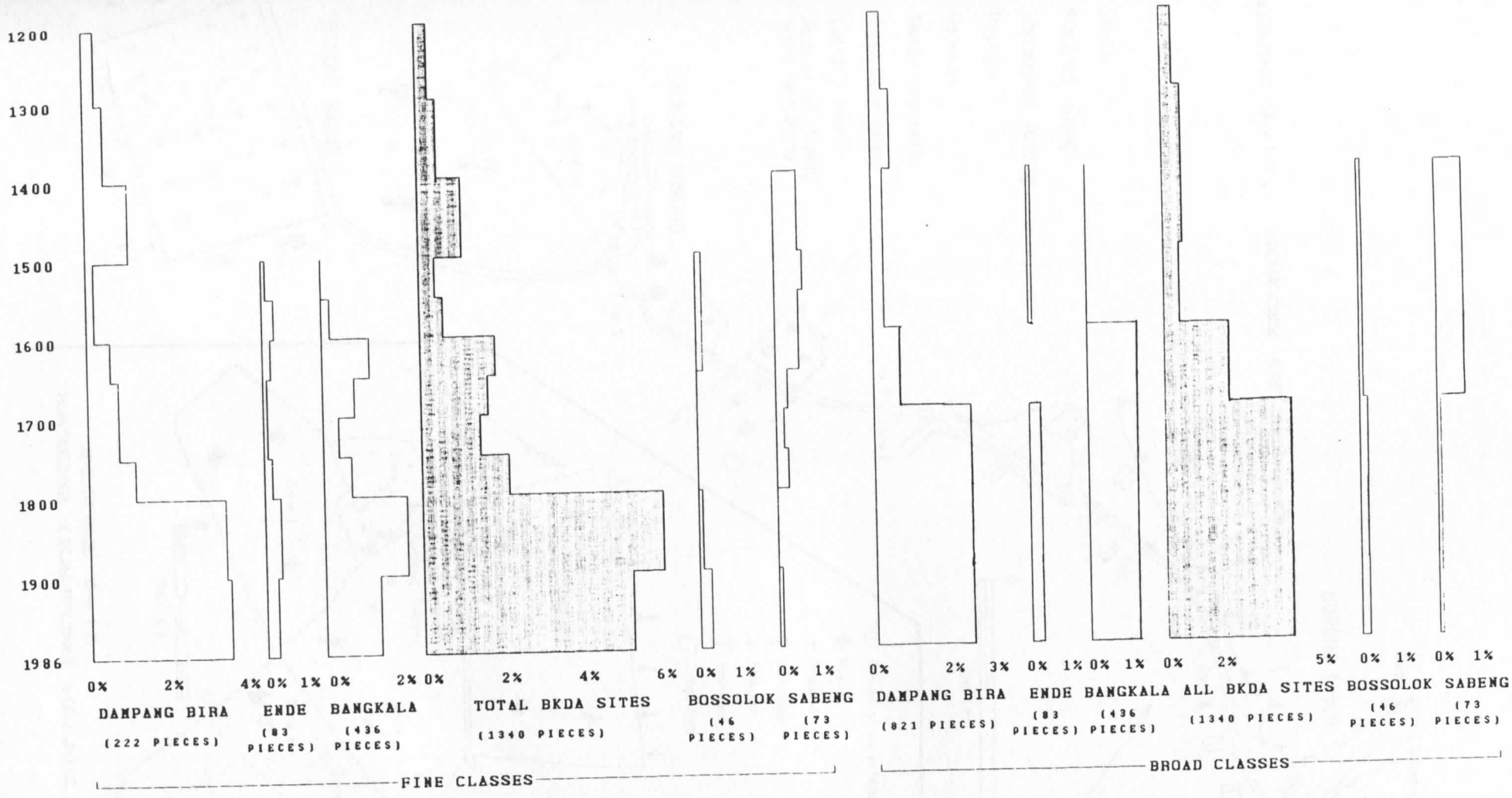


FIGURE 9-15. STANDARDISED CHRONOLOGICAL HISTOGRAMS - BKDA AND BS GROUPINGS

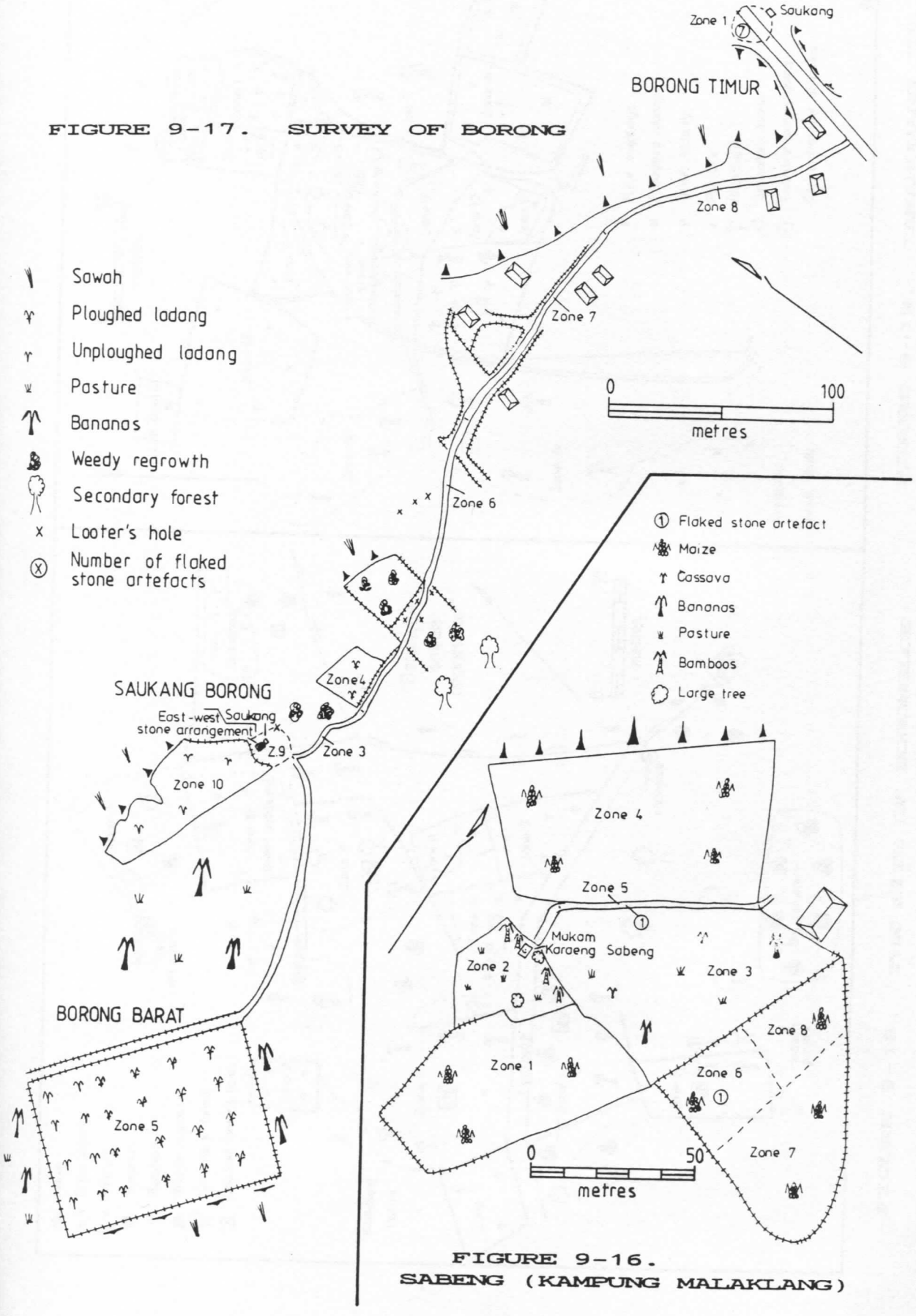


FIGURE 9-17. SURVEY OF BORONG

FIGURE 9-16.
SABENG (KAMPUNG MALAKLANG)

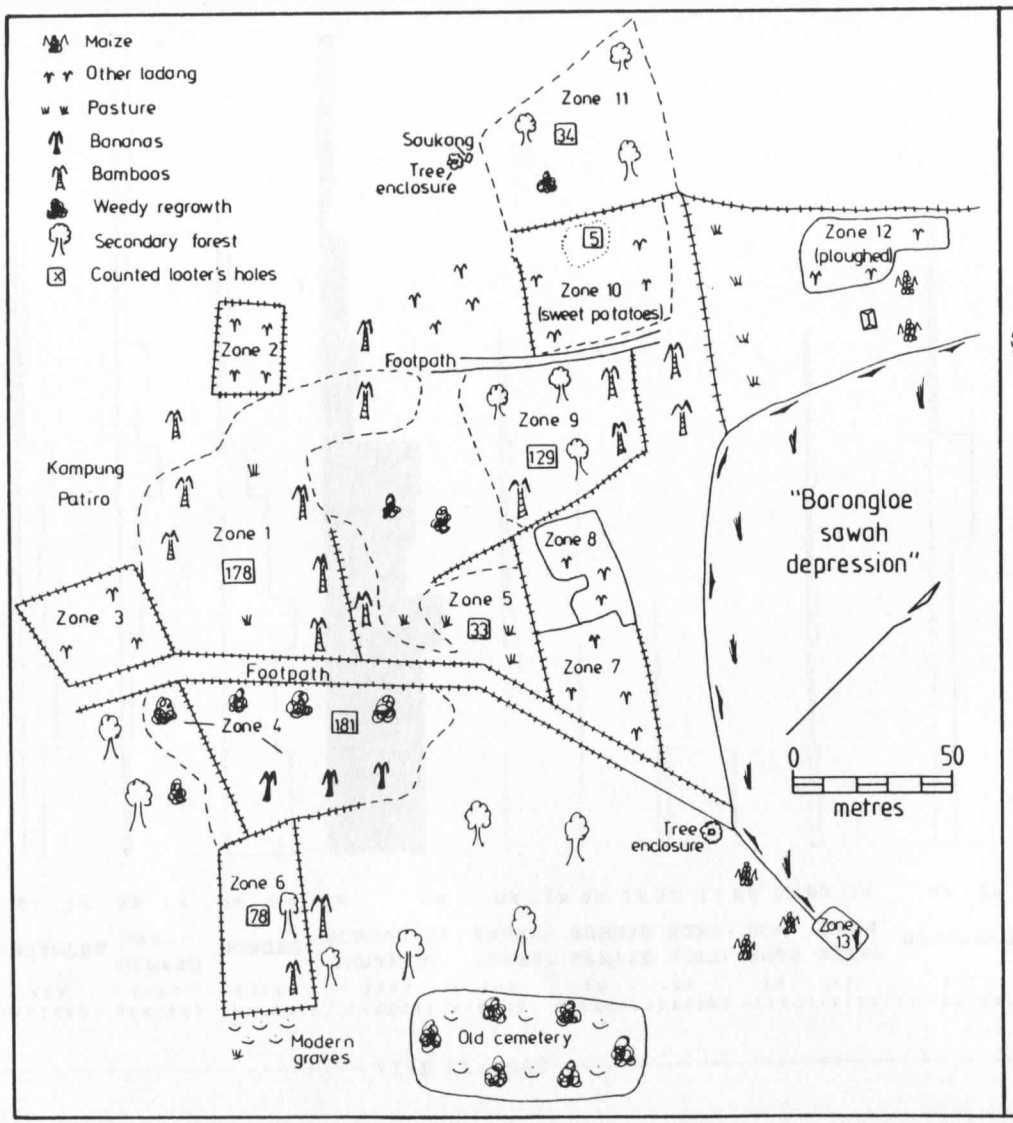


FIGURE 9-18. THE SITE OF BORONGLOE

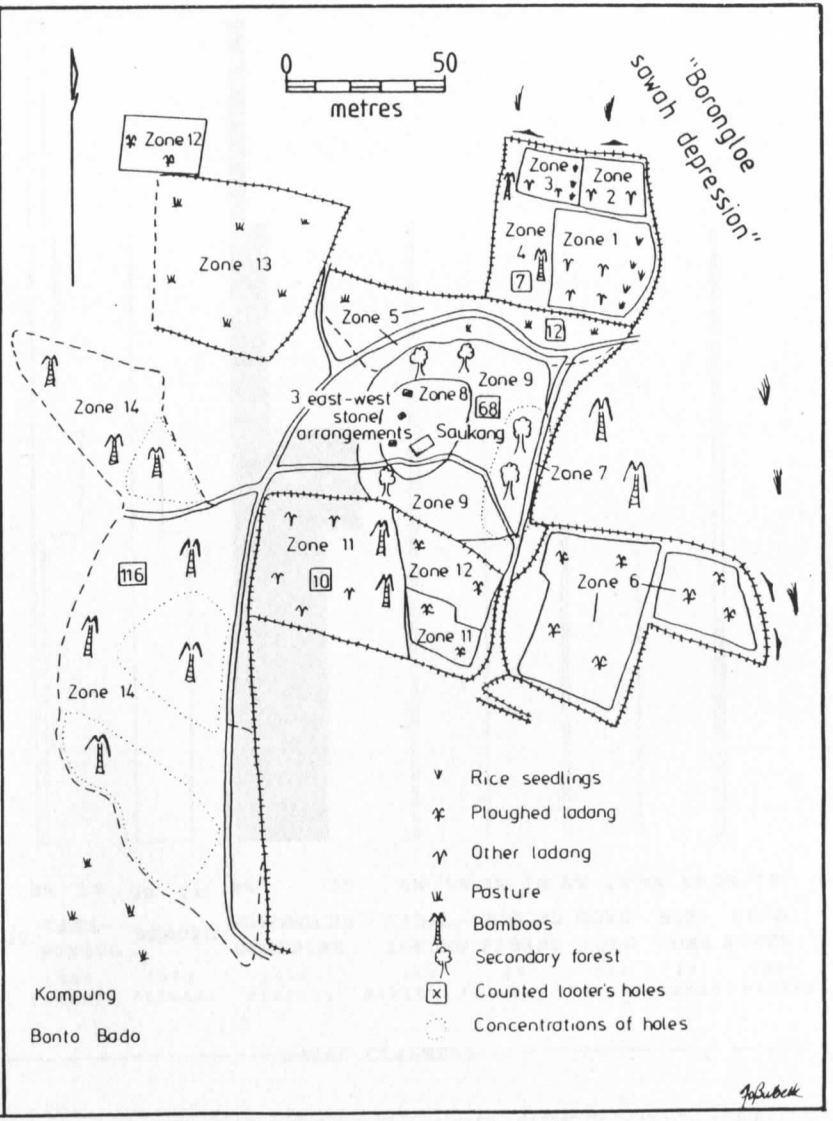


FIGURE 9-19. TAMARUNANG TUA

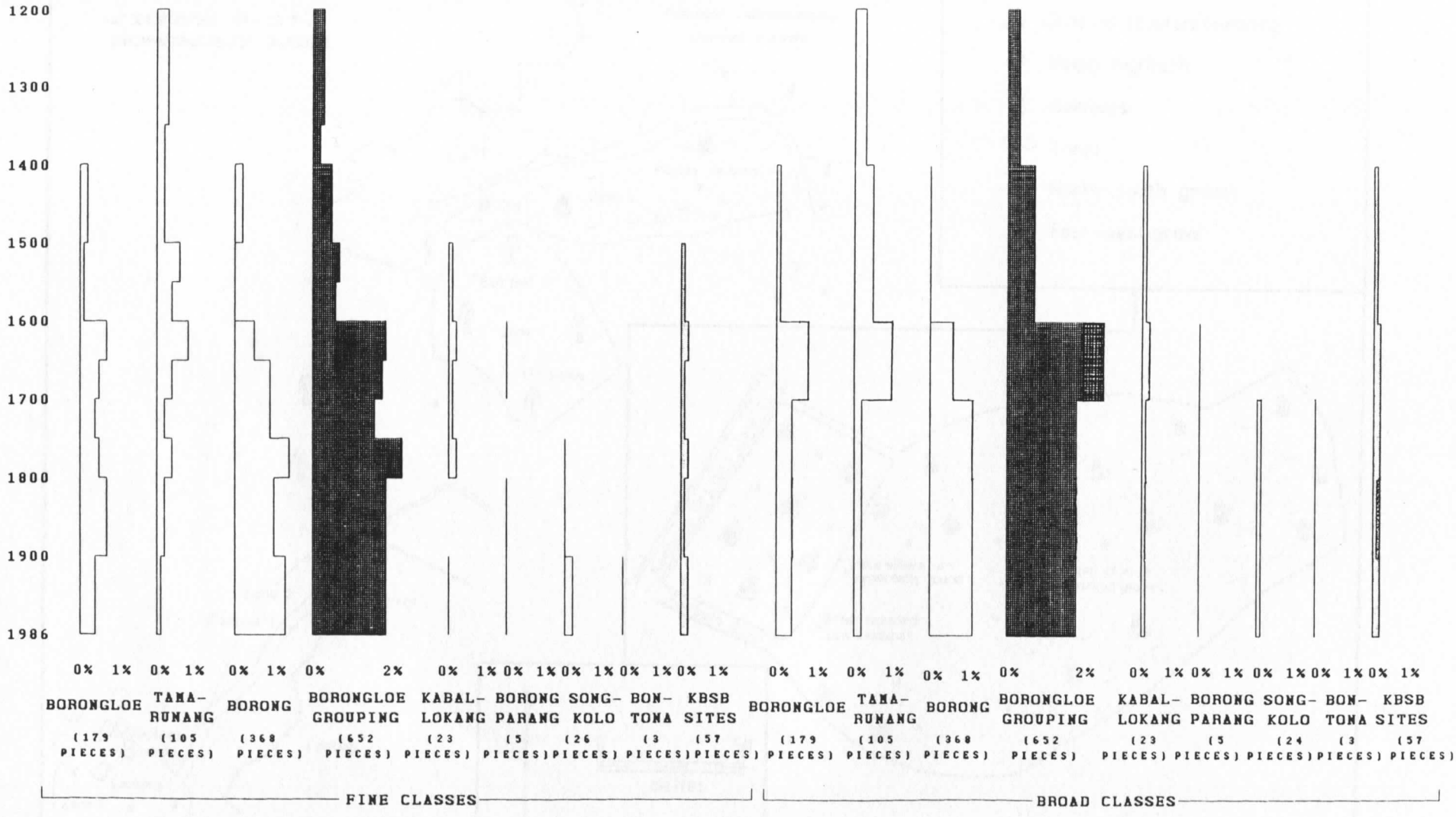


FIGURE 9–20. STANDARDISED CHRONOLOGICAL HISTOGRAMS – BORONGLOE (TBSBB) AND KBSB GROUPINGS

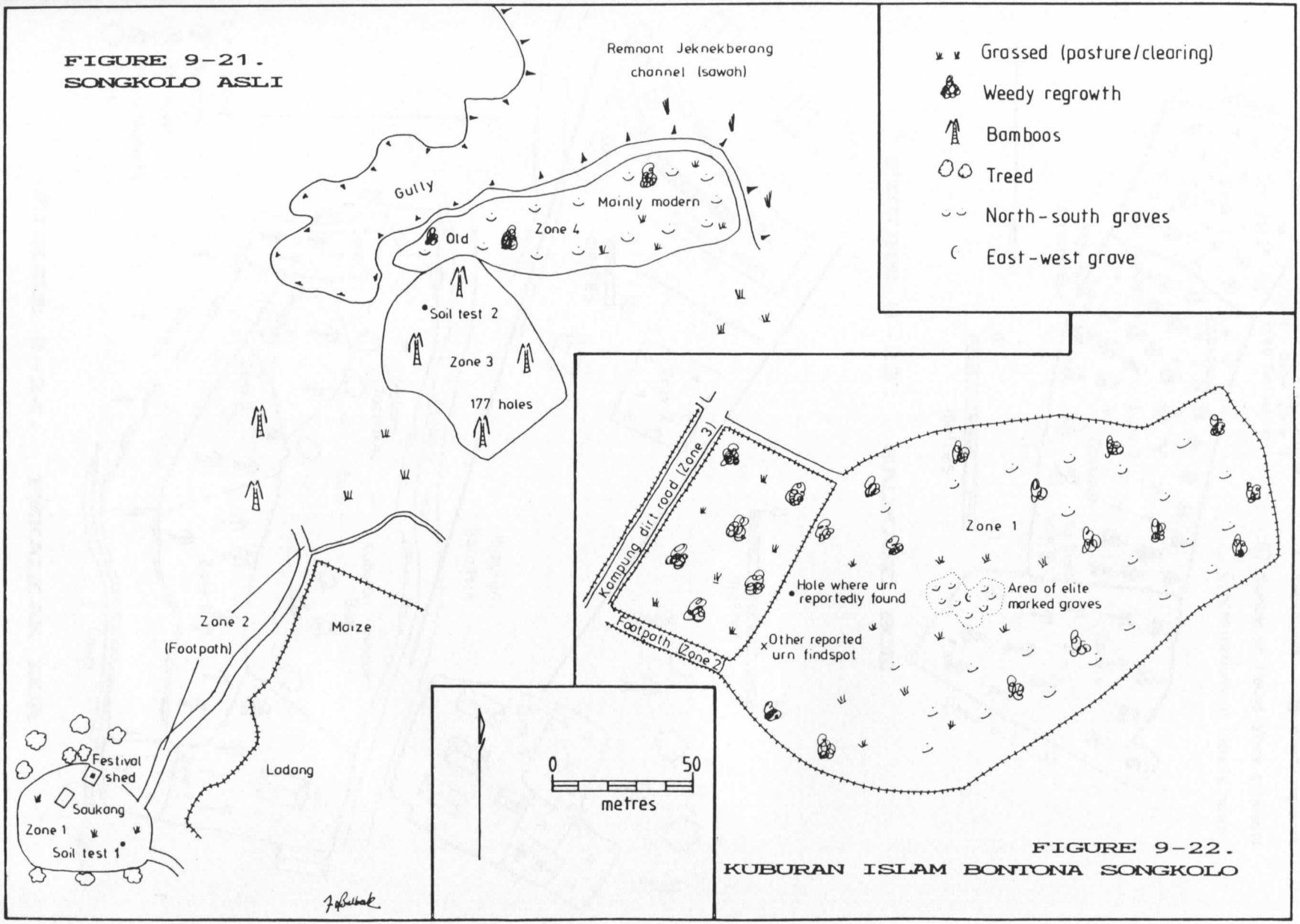


FIGURE 9-21.
SONGKOLO ASLI
Remnant Jeknekberang channel (sawah)
Gully
Old
Mainly modern
Zone 4
Soil test 2
Zone 3
177 holes
Zone 2
(Footpath)
Maize
Ladang
Festival shed
Saukang
Zone 1
Soil test 1
Grassed (posture/clearing)
Weedy regrowth
Bamboos
Treed
North-south graves
East-west grave
Kampung dirt road (Zone 3)
Footpath (Zone 2)
Zone 1
Hole where urn reportedly found
Other reported urn findspot
Area of elite marked graves
0
50
metres
FIGURE 9-22.
KUBURAN ISLAM BONTONA SONGKOLO

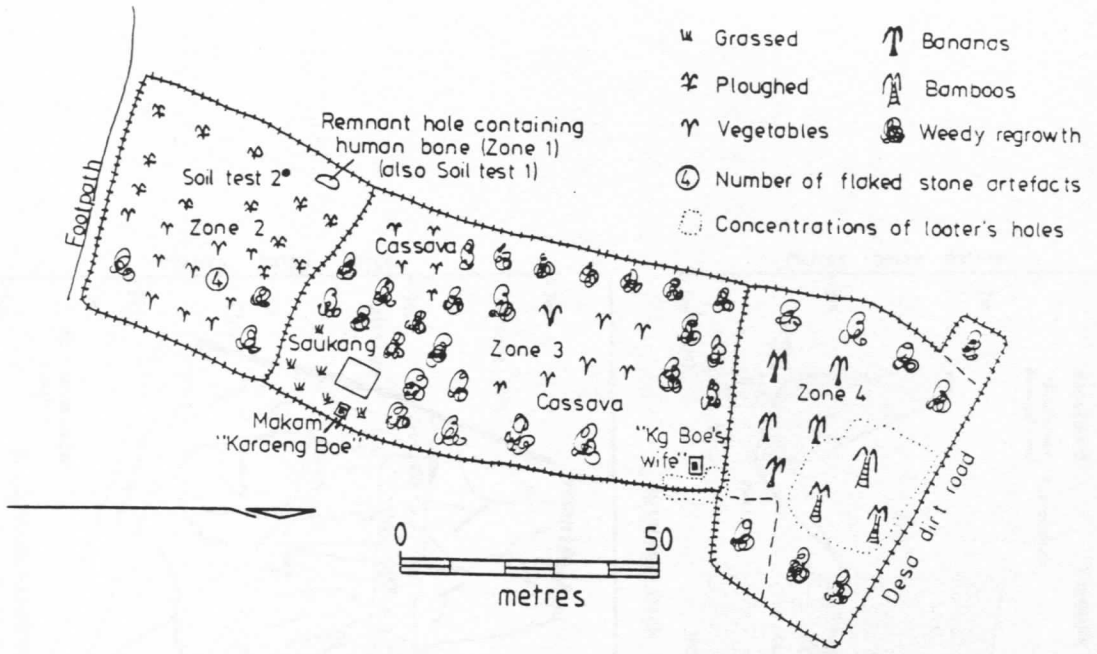


FIGURE 9-23. SAUKANG BOE

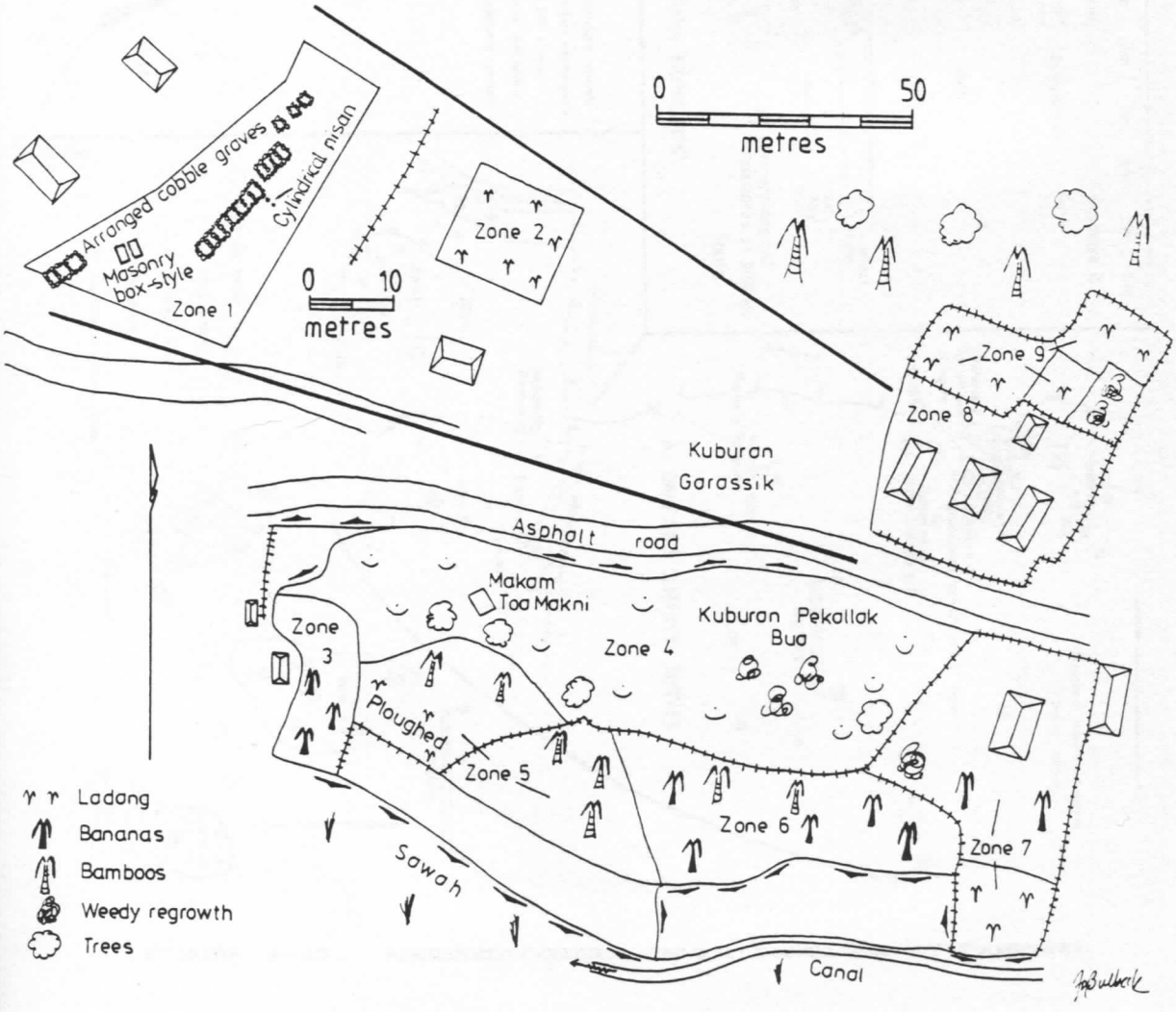


FIGURE 9-24. PEKALLAK BUA

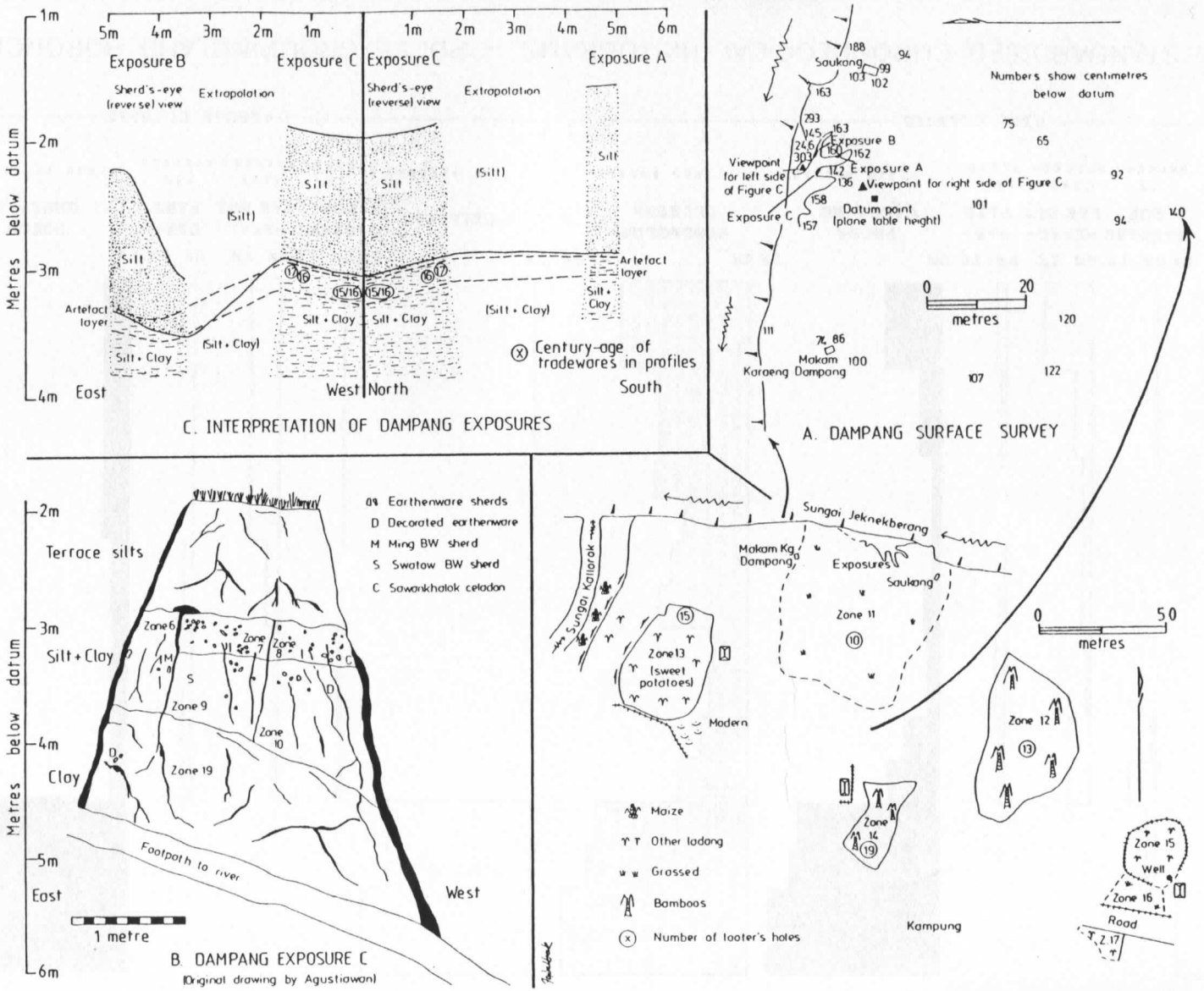


FIGURE 9-25. ARCHAEOLOGICAL INVESTIGATIONS AT DAMPANG

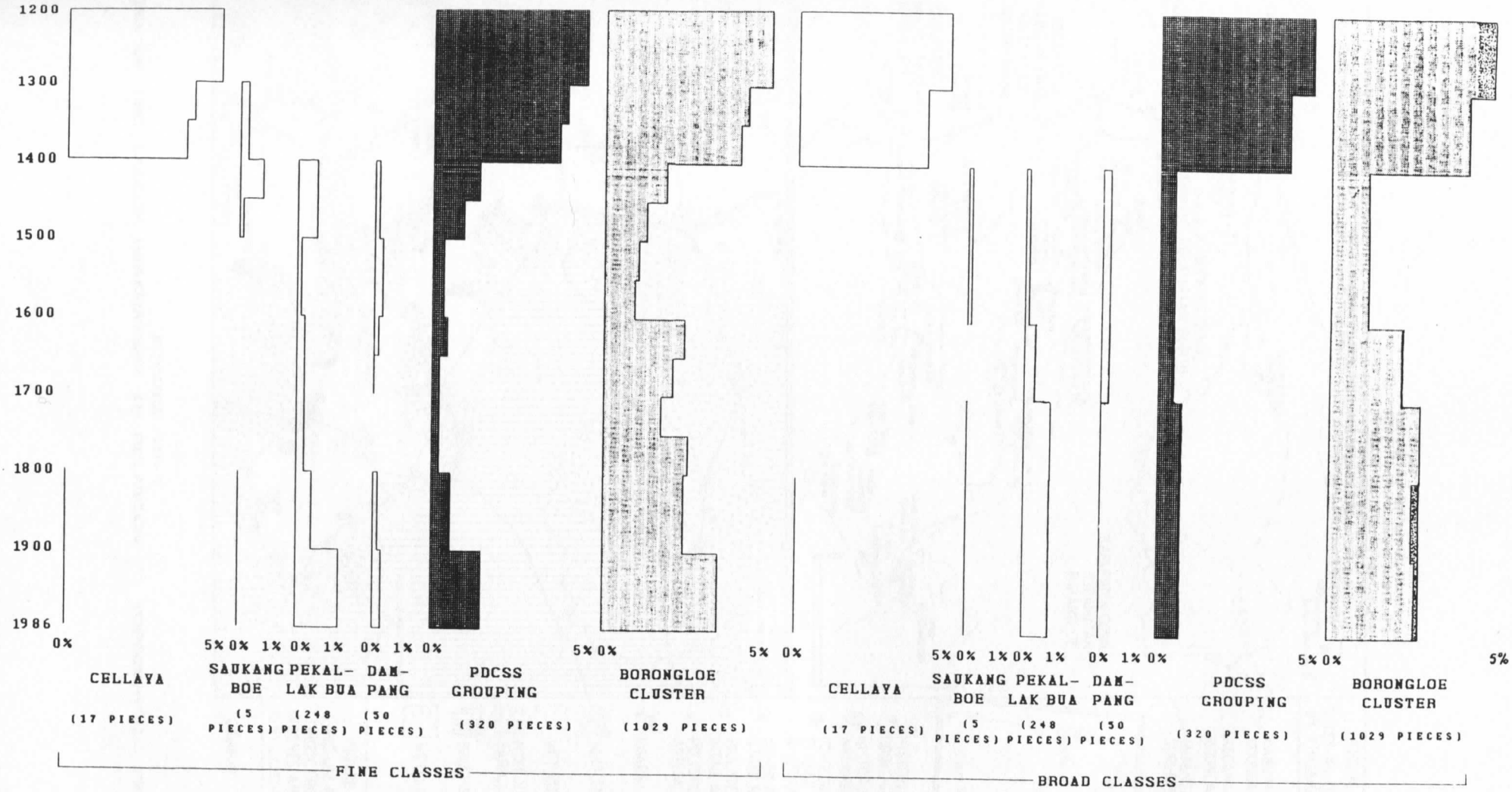


FIGURE 9–26. STANDARDISED CHRONOLOGICAL HISTOGRAMS – PDCSS GROUPING AND BORONGLOE CLUSTER

Photo 8-19.
Spoil heap ("zone 23") from the well in zone 22, on whose surface 138 earthenware sherds, six 17th to 20th century tradeware pieces and a pig's tooth were observed, Kanjilo Lama Barat.

Photo 8-20.
Rectangular grave marker of masoned stone slabs, inside which a tree has taken root, Kanjilo Lama Timur Daya.

Photo 8-21.
Makam Kocci Borong, showing masonry case grave markers at centre and modern cement grave markers at rear left.







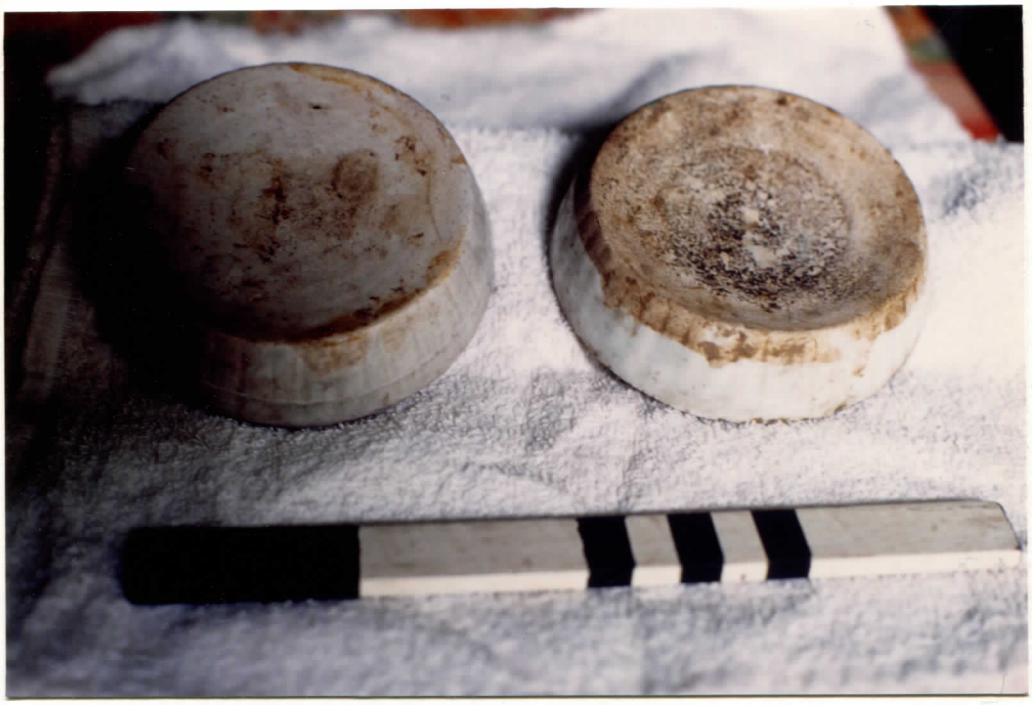






Photo 9-4.
Iron weapons reportedly recovered from east of the mosque, i.e. zones 14 to 16 and 21, Saumata Lama.

Photo 9-5.
Presumably local earthenware shaped like a pedestalled candlestick holder, reportedly recovered from east of the mosque, i.e. zones 14 to 16 and 21, Saumata Lama.

& appears like an incense burner, Phil Winn

Photo 9-6.
Stone arrangement reportedly marking the grave of a medecine woman, abutted at the north by the mosque's fence, Saumata Lama.

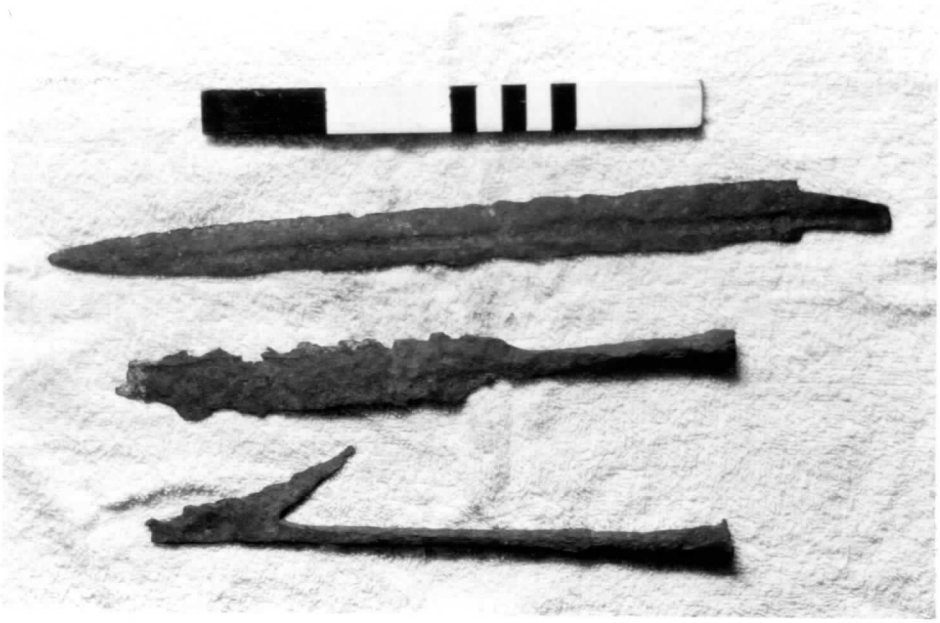






Photo 9-7.
Brick sepulchre supporting three graves restored with modern cement markers and protected by a shelter, Makam Takbakka, Saumata Lama. The sepulchre is associated with a "godfather" figure whose name is reportedly no longer remembered.

Photo 9-8.
One of the clearer examples of a grave marked with a rectangle of arranged pebbles, Zone 36, Saumata Lama.

Photo 9-9.
Concrete and timber shelter protecting the grave of "Karaeng Saumata", Kuburan Islam Campaga Lomo. His grave is marked only by the modern cement restoration.







Photo 9-10.
Three jarlets which we identified as Sawankhalok, reportedly from west of the mosque, i.e. zones 33 to 35, Saumata Lama. All have unglazed bases.

Photo 9-11.
Ming BW plate reportedly from west of the mosque, i.e. zones 33 to 35. Sketchy lotus scroll and glazed base on reverse.

Photo 9-12.
Local earthenware reportedly recovered from the northern looted area, Saumata Lama.







Photo 9-13.
The sepulchres of Cambang Beroanging and his wife, restored cement *nisan*-cases enclosing head and foot stones. Beroanging (Gowa 33).

Photo 9-14.
Makam Beroanging: some of the masonry markers, including some looking distinctly old, and a corner of one of the modern masonry markers protruding into the top of the picture.

Photo 9-15.
The looted area with grave markers of arranged stones at Beroanging Utara. SSPHAP's team member Dubel Driwantoro (now with Puslitarkenas) is holding the staff.





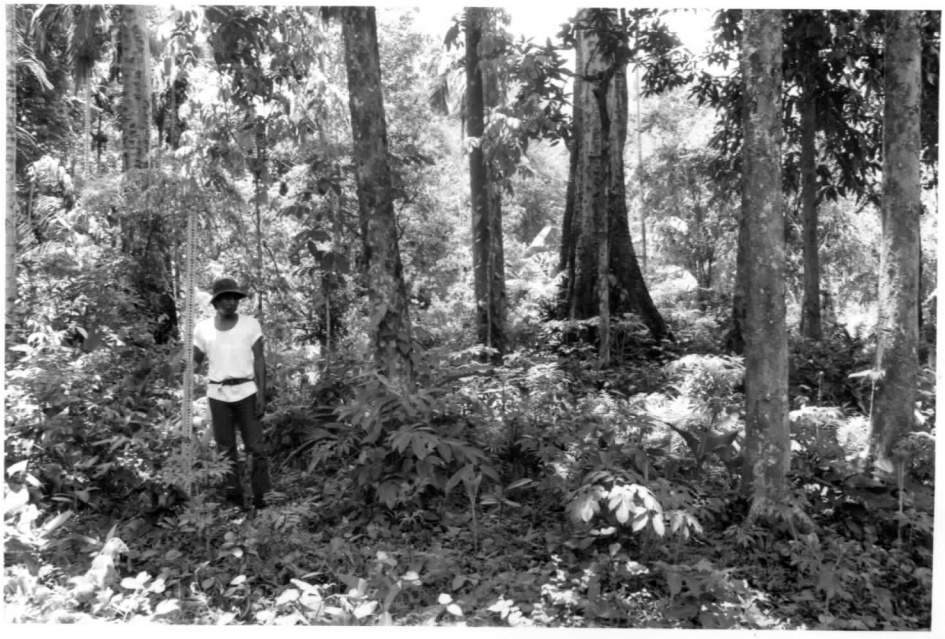


Photo 9-16. G.33.1.2 and G.33.1.3 (Beroanging). These two sherds match to form the rim and cavetto of a deep plate with a flattened rim of around 22 cm diameter.

Tentatively classified as late 13th-early 14th century given (i) flattened rim and deep cavetto (cf. Medley, 1974:40); (ii) three glaze layers to cover paste impurities, and "orange peel" effect on glaze (cf. Macintosh, 1977:21,41); (iii) rim decoration which may be a wave breaking to the right (cf. Macintosh, 1977:135).

However, early 18th century Qing BW also possible since (i) "orange peel" effect then imitated (Macintosh, 1977:41); (ii) the piece's cobalt decoration is lavendar in tone (cf. Macintosh, 1977:77,83); (iii) its glaze apparently splattered with minutely ground cobalt (cf. Macintosh, 1977:74-75).

Photo 9-17.
Buta Didia Asli.
The three large trees were pointed out as the former location of the *saukang* by Buta Didia's former *lingkungan* headman.

Photo 9-18.
Tradeware pieces from Buta Didia Asli.
Top: G.74.1.1, early monochrome. Middle: G.74.1.3, 15th century Ming celadon. Bottom: G.74.2.1, Ming *famille verte*.


4.33.1.2




T-2-

Photo 9-19.
Kuburan Islam Romang Sapang, kampung Bontoa,
showing markers masoned from a coarse conglomerate stone.

Photo 9-20.
Kuburan Islam Romang Polong, kampung Kadieng,
showing some of the range of marked graves.

Photo 9-21.
The grave of Daeng Kajenjeng, site of Kajenjeng.
Cement restoration enclosing finely masoned, sceptre-like
nisan 2.2 metres apart at head and foot, oriented due north.







Photo 9-22.
Decorated, presumably local earthenware reportedly looted from Kassik Tengah. Deep bowl with notched rim and burnished interior.

Photo 9-23.
Makam Karaeng Kassik, Kassik Utara. Cement case-top 4.4 metres long, 100° from north, enclosing old stone facing westward at the eastern end. Also wooden *nisan* at either end.

Photo 9-24.
Makam Karaeng Bangkala, site of Bangkala, showing the single stone (front-centre) and some of the cobbles arranged into a rectangular enclosure, just visible among the regrowth. Also visible are the outline of the cobble platform, some of the wooden beams of the collapsed shelter, and the fallen roof of corrugated iron in the background.







Photo 9-25.
One of the two masonry graves reportedly associated with the "ajudan" (assistants) of Karaeng Bangkala, Bangkala site. Stepped box style with dislodged *nisan* at head and foot.

Photo 9-26.
The raised area of Bossolok, photographed from the south just north of the Sungai Sabeng.

Photo 9-27.
Makam Karaeng Sabeng. Round stone at north, sharpish stone at south, enclosed within a quite old restoration oriented 350° from north. Plastered cement *nisan* connected by mortared bricks, brick platform originally set with mortar and plastered with cement, tin roof shelter.







Photo 9-28.
U.19.1.1, Parinring (from six joining sherds). Vietnamese apple-green celadon bowl, unglazed base and lower cavetto on reverse. This glaze colour is usually dated to the 14th-15th centuries (e.g. Guy, 1986:109; Willetts, 1982:4).

Photo 9-29.
Sukothai fish plate in villager's possession, recovered from an unknown location at the Parinring diggings.

Photo 9-30.
G.70.1.8, recovered by a farmer from Borong Barat and donated to SSPHAP's team. Base to a Swatow *famille verte* overglaze decorated plate. Glaze-splashed bottom but clean foot.

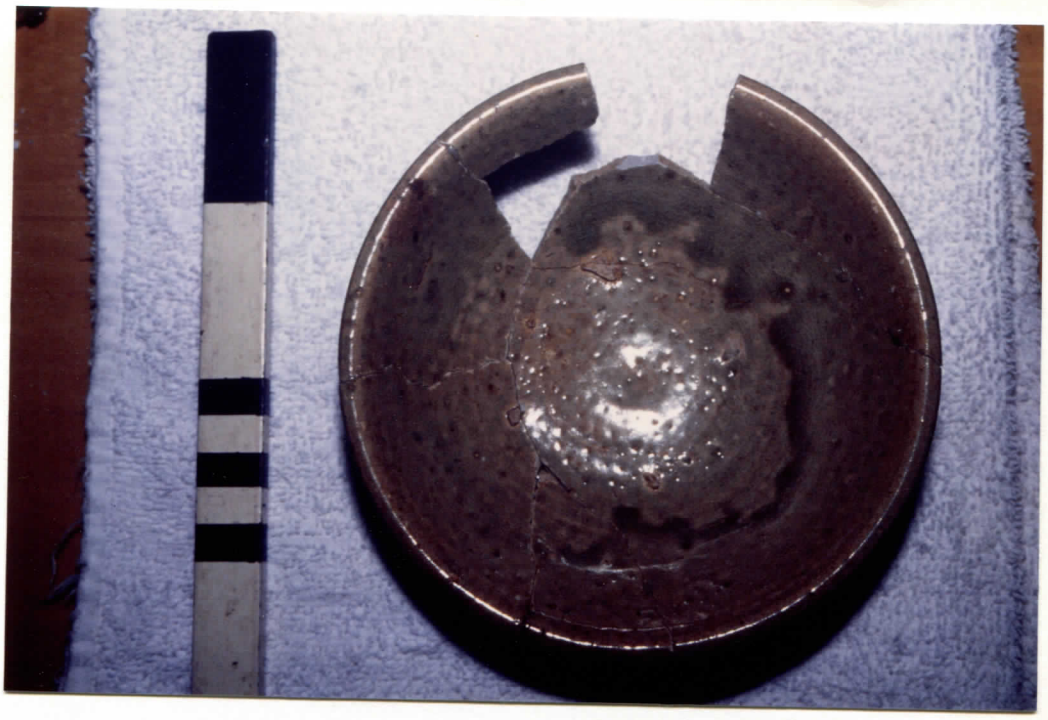






Photo 9-31.
Borongloe's southeast tree enclosure, a bamboo corral enclosing an old tree and a small shelter.

Photo 9-32.
The old cemetery at Borongloe. This sheltered marked grave was reported to be associated with Karaeng Borongloe III.

Photo 9-33.
The "Borongloe sawah depression", photographed from Zone 13 of Borongloe site.







Photo 9-34.
Detail of the interior of Borongloe's southeast tree enclosure (see Photo 9-31). Contents include three local earthenware pots and other votive offerings. Reported not to be a grave.

Photo 9-35.
Detail of the interior of Borongloe's northwest tree enclosure (next to the *saukang*), showing the three large stones on the roots of a large tree within a bamboo shelter.

Photo 9-36.
Votive offerings on the platform in Borongloe's *saukang*. A Ming BW bowl, a handleless globular *tempayan* (Ming?), and an earthenware pot burnished black. The tradewares at least probably came from the looting operations. All three pieces are included in the Zone 11 artefacts (Appendix D).







Photo 9-37.
The *saukang* at Tamarunang Tua.
It resembles the Borongloe *saukang* in that it used to contain a *tempayan* (probably also locally looted). The *tempayan* was smashed by a local villager in a fit of rage and its fragments scattered all over the *saukang* clearing.

Photo 9-38.
The remnant meander of the Jeknekberang at Borong, looking eastwards from Borong's *saukang*.
Note its bunding into wet rice fields.

Photo 9-39.
Zone 5 at Borong ("Borong Barat") showing the ploughed section of the field. The "Borongloe sawah depression" is visible at rear.







Photo 9-40.
Tamarunang Tua. The northern rectangle of arranged flat stones within a bamboo corral; nine plus stones oriented at 100° from north. The middle example had 16 plus stones oriented at 70° from north, and the southern example had two flat stones oriented at 120° from north.

Photo 9-41.
The saukang next to the bamboo corral enclosing an east-west oriented stone arrangement, Borong.

Photo 9-42.
Detail of the stone arrangement next to Borong's saukang. Orientation 80° from north.







Photo 9-43. Kuburan Islam Borong Parang.
One of the ridge-topped masonry cases with a style of finely worked, tablet-like *nisan* apparently peculiar to the site, which we interpreted as the marked graves of local elite.

Photo 9-44.
The *saukang* (front) and the *baruga* or festival shed (rear), Songkolo Asli. Note the prominent, centrally jutting eaves.

Photo 9-45.
The squarish stone inside the Songkolo Asli *baruga*. Reported not to be a grave but rather the place where someone (a *Tomanurung*-type figure) came and then disappeared.







Photo 9-46.
Looking upstream where the Jeknekberang is cutting eastwards into Songkolo Asli, revealing around seven metres' depth of soil profile. Photographed in January 1987, more or less the middle of what was a comparatively mild wet season.

Photo 9-47. Kuburan Islam Bontona Songkolo.
One of the finely carved, crenulated *nisan* decorated in a style apparently unique to the site, which we interpreted as the marked graves of local elite.

Photo 9-48.
Kuburan Islam Bontona Songkolo. The hole where a globular earthenware jar had reportedly been recovered.







Photo 9-49.
The Sungai Kallorok, looking south from the bridge of the road immediately west of Dampang.

Photo 9-50.
Low knoll of outcropping sedimentary rock, measuring around 60 metres east-west by 100 metres north-south. 50 metres east of Saukang Borong (Gowa 79).

Photo 9-51.
The reportedly looted area of Cellaya. Surface tradeware sherdage was restricted to the half of the maize field closest to the camera.

Photo 9-52.
Saukang Borong (Gowa 79), kampung Borong (Biring Kaloro), photographed from the entrance at the north.

Photo 9-53.
The two stones oriented along an east-west axis inside a brick enclosure at the southeast corner of Saukang Borong.

Photo 9-54.
The *saukang* at the Saukang Boe site, kampung Biring Kaloro.



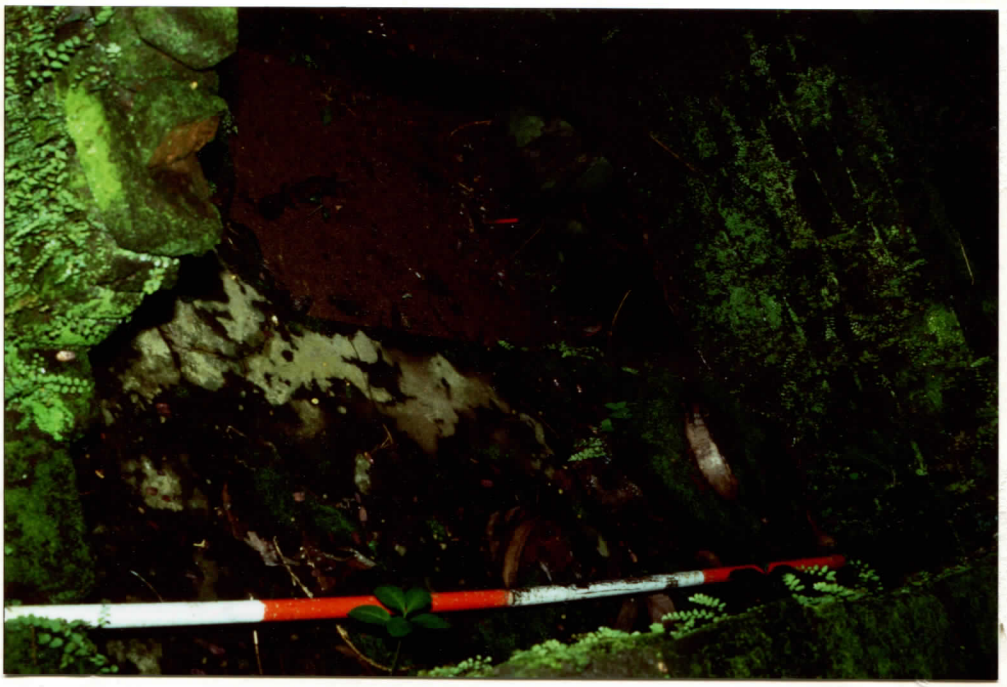




Photos 9-55 and 9-56.
The two east-west marked graves inside brick corrals at Saukang Boe. The southern one next to the *saukang* (above) is reportedly associated with Karaeng Boe, and the northern one (below) with his wife.

Photo 9-57.
Cremated human bone from zone 1, Saukang Boe.
One rib fragment missing from photograph. Identifications left to right.

Top row: scapula fragment; talus; rib fragment.
2nd row: two vertebral processes; unidentified; cuboid.
3rd row: two vertebral processes; cervical disc; two rib fragments.
Bottom row: lumbar fragment; two joined rib fragments; rib fragment; lumbar fragment; two unidentified.






2
21
20
19
18
17
16
15
14
13
12
11

Photo 9-58.
Zone 2, Saukang Boe, the fields containing sherds from one or more large earthenware jars which presumably had contained jar burials. The location of zone 1 is indicated by the ranging pole at back right.

(SSPHAP's team member Agustiawan can be seen wearing white pants in the centre of the photograph.)

Photo 9-59.
Zone 1, the hole where a villager had recovered two gold rings and an iron sword from a large earthenware jar, and where we collected sherds from the jar and 20 fragments of cremated human bone.

Photo 9-60.
Some examples of conjoinable sherds from zone 1, Saukang Boe. Rim sherds were unfortunately absent from the collection which is a desultory representation of the parent vessel(s), but no more than one large jar is necessarily represented.







Photo 9-61.
Detail of Makam Toa Makni, Kuburan Islam Pekallak Bua, showing the style of arranged stones (rotted at the north, next to the tree trunk, through repeated votive rites) abutting an old tree within a bamboo corral.

Photo 9-62.
Exposure C, Dampang, showing the dark reddish brown silt horizon at top, the greyish brown silt and clay horizon below (with a band of potsherds at its top), and the dark greyish brown clay at the base.

Photo 9-63.
Ceramics reportedly looted from Dampang. Complete Qing celadon jar and cover left, Qing celadon jar cover top right, "Kitchen Qing" spoon bottom right. All look 19th century and were presumably recovered from former occupation deposits of the direct predecessors of the present villagers.







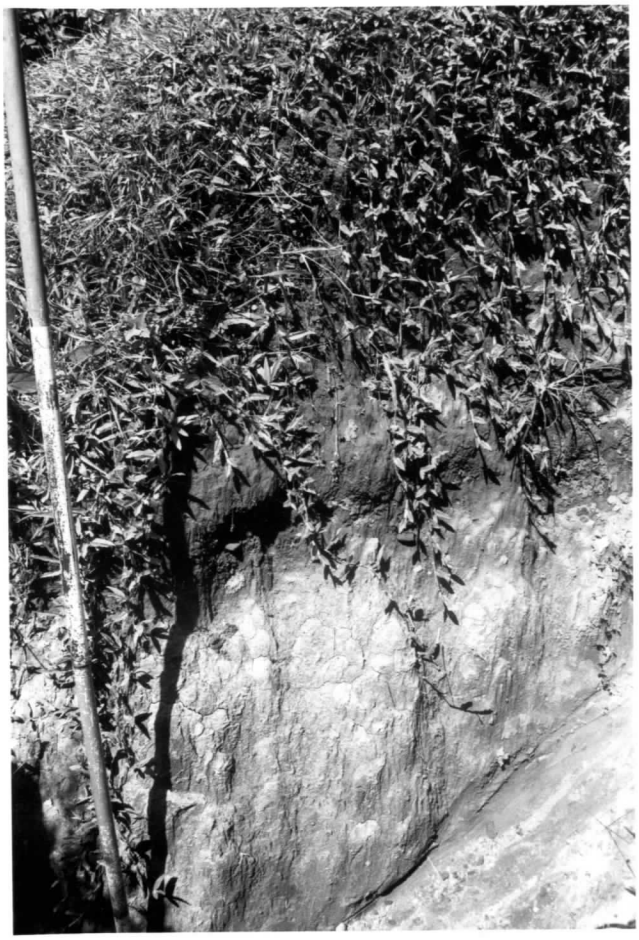
Photo 9-64.
Makam Toa Makni, Kuburan Islam Pekallak Bua (see Photo 9-61), here showing the shelter inside the bamboo corral.

Photo 9-65.
Sawah fields north of Pekallak Bua. Photographed during our second visit to the site in January 1987 (mid-wet season).

Photo 9-66.
Exposure B, Dampang. The stratigraphic break between silts (top), and silt and clay (below), and the band of potsherds cutting across, are clearly visible beneath the hanging grass tendrils.







CHAPTER 10. THE TALLOK HEADWATERS

10.1 Introduction

The Pabundukang and Diccekang tributary systems, which originate in the rugged landscape of Camba Formation behind the coastal plain (Photo 10-3), bring down most of the waters of the Sungai Tallok. Lower down these systems drain a rolling landscape directly northeast of the upper-middle Jeknekberang (Figures 5-2 and 10-1b).

SSPHAP surveyed this area because Pattallassang and Paccellekang, two of Gowa's *Bate Salapang* or council of nine district heads, would be located here by the 1693 map (Figure 5-5). Also, Tallok's origin story (12.2.1) invokes settlements upriver from the Tallok mouth. As the second reason involves "Moncongloe", and both Moncongloe Lappara and Moncongloe Bulu looked like possible matches, SSPHAP ran a thin transect between the two localities (Figure 10-1).

The surveyed area centres on Kecamatan Bonto Marannu,[1] Kabupaten Gowa, and crosses into Kotamadya Ujung Pandang and Kabupaten Maros. The fieldwork, conducted between October and December 1986, was structured according to the reports of antique-bearing sites from our informant in Campaga Lomo (9.2). However, a planned extension of the survey area southwards to Bontomanaik could not be realised (5.3).

As Peter Bellwood pointed out to me, the Tallok appears directly analogous with the coastal rivers of Australia's Kakadu National Park (see Jones, 1985). A primary conditioning factor in both cases is the deeper channels incised during the Pleistocene era when lower sea-levels

[1] Bonto Marannu would appear to be a quite significant historical toponym, specifically because of its association with Kg Bonto Marannu who was possibly the single most important military leader in greater Gowa's resistance during the Makassar War (see Andaya, 1981). However, our quite extensive survey of Kecamatan Bonto Marannu did not recover any evidence which might link it with the historical toponym. The Bonto Marannu shown on the 1693 Dutch map (Figure 5-5) would appear to lie well to the north, in the vicinity of Sungai Bonelengga where apparently no modern toponym even remotely like Bonto Marannu has survived. A more likely location for the historical toponym of Bonto Marannu is near Jongaya in Ujung Pandang city (Table 14-3).

prevailed (see Figure 11-1a). Hence the Tallok mouth is today an inlet, and the sea's tides affect the Tallok waters as far as Patadang Toa, approximately 15 kilometres upstream but only four metres above sea level (Figure 10-1). Further, the deep Pleistocene valleys of the tributaries associated with the Pabundukang have been turned into broad basins by sedimentary infill (Photo 10-1).

The Tallisi tributary originates in one of these mature valleys. The tributary called Balang Tallok has apparently retreated headward to connect with the Tallisi, cutting through a "peninsula" of Camba Formation in the process. This Camba Formation "peninsula" apparently continues as a sub-alluvial ridge running northwards between Balang Tallok and Sungai Sabeng. The latter is apparently fed by the Sungai Menjalling and Lelengang, as the lower reaches of the Bantimurung and Balang Papa rivers are called (cf. Figures 5-2, 5-6 and 10-1b). Indeed the Sungai Sabeng, Balang Tallok and Mangalorang tributary all follow subparallel, northbound courses within a predominantly swampy alluvial landscape. This pattern suggests that these streams do not drain the landscape as such. Rather they mark minor synclines where the land surface drops below the water table of an area of broad discharge (most of which ultimately finds its way into the Sungai Tallok).

The early 20th century Dutch land-use map shows the population concentrated around the swampy depressions which are ideal for sawah (Figure 5-3). The 1969 Indonesian land-use map, however, shows that over much of the survey area, habitation moved away from the mature valleys towards the main roads shown in Figure 10-1b. Congregation of the population along the motorways has since proceeded throughout the survey area, and is indeed a professed policy of local government.[2] In the long term this process had apparently

[2] Actually the roads striking due west and east from Marannu, and the road striking southeastwards from Manyempang Baru (Figure 10-1b), do not appear on the 1969 land-use maps. I have drawn them based on my experience driving through the area. The road from Lamuru to "Tassili Baru" west of Marannu is now dominated by strip development, while the kampungs of Pattiro, Moncong-Moncong and south Macinna (Biring Balang) have also relocated northeastwards along the passing road.

originated by at least c.1900, because the largest 20th century settlement, now called Marannu, appears to have developed largely as a transport node (10.2.4).

Hence as a rule of thumb SSPHAP's sites show evidence of occupation, followed by abandonment during the 19th and especially the 20th century. The abandoned sites were either in ladangs (dryland fields), or covered with a tangled scrub dominated by what looked like lantana, and secondary forests dominated by bamboos and teak, sometimes singly, sometimes in combination or ecological transition.

Despite the often atrocious survey conditions, a small number of flaked stone artefacts were usually recovered, and large prehistoric sites containing backed blades were recorded at Gentung and Balang Sari (Figure 10-1a; Appendix G). The point is made still clearer by distinguishing between the eight historical sites which occurred on Holocene alluvial deposits, and the others which occurred on the Camba Formation geological unit (see Figure 5-2). Only two of the former produced flaked stone artefacts (Moncongloe Lappara, Paccellekang Lama), whereas the latter produced them whenever the extent of available exposures rose above being trivial. In addition, the Tallok headwater sites produced the two polished stone artefacts which SSPHAP's survey recorded outside the Benteng Tua cluster.

The intersite distances, given in Table 10-1, generate the clusters of sites shown in Figure 10-2a. The Pattallassang and Moncongloe clusters reliably include at least those sites depicted. However, the large central cluster called the Paccellekang cluster is unstable. For instance, treating Tassili and Ganrang Jawa as a single area-site[3] would see Tassili-Ganrang Jawa and the sites near them, i.e. a PPST group, cluster with the Pattallassang sites. Another way of showing the same point is to factor in the possible clustering of the BLK sites south towards Sumbarang where, reportedly, antiques have been looted. The PPSTG group would then cluster towards Pattallassang, and the now impoverished

[3] Their closest points are separated by less than 200 metres. Further, the intervening terrain could well have contained "site", only its detection had been rule out by the thick cover of vegetation.

TABLE 10-1. TALLOK HEADWATER SITES: INTERSITE DISTANCES IN METRES

Moncongloe Lappara	M	M	J	P	M	B	E	B	B	P	B	K	M	P	B	S	(U)	(S)	B	L	K	T	G	P	P
Manggala Toa	1850																								
Jeknek Madinging	2065	1005																							
Patadang Toa	2205	1885	950																						
Manyempang Tua	1745	1905	1120	410																					
Balang Patti	1500	2260	1725	1055	490																				
Embung	3010	2855	1855	900	1060	1445																			
Biring Balang	3210	2555	1455	1035	1365	1960	1000																		
Bado-Bado	3590	3015	1935	1435	1750	2275	1090	255																	
Parang Bambe	3940	3235	2130	1630	2010	2600	1230	450	150																
Bangkala/Palembang	3785	2855	1795	1530	1945	2695	1435	365	425	490															
Kuburan Moncong[2]	4510	3585	2255	2235	2635	3240	1905	1035	825	670	350														
Moncong-Moncong	4505	3780	2700	2270	2610	3160	1810	1050	825	630	600	190													
Pattiro/Balang Sari	4980	4235	3095	2825	3135	3650	2295	1435	1225	1045	975	510	310												
Bossolok	5010	3080	2675	3270	3860	4540	3715	2600	2855	2895	2325	2550	2845	2865											
Sabeng	5800	4010	3775	4425	4810	5445	4900	3780	4005	4030	3450	3570	3835	3735	1080										
(Ujung)	7220	5225	5060	5815	6310	6925	6300	5085	5300	5325	4735	4845	5100	4910	2425	1255									
(Sumbarang)	7360	5875	5065	5200	5700	6360	5105	3710	3985	3850	3325	3130	3155	2600	2800	2775	3280								
BontoSunggu/Soppeng	5550	4180	3300	3355	3900	4515	3280	2145	2175	2080	1495	1375	1485	1230	1770	2355	3420	1430							
Lamuru	6415	4950	4180	4320	4800	5445	4265	3210	2785	3080	2085	2330	2420	1930	2070	2350	3205	555	555						
Kuburan Lamuru	6505	5115	4235	4305	4765	5450	4170	3115	3055	2940	2400	2200	2205	1655	2420	2780	3685	805	625	405					
Tassili	7015	5925	4925	4710	5140	5765	4145	3480	3260	3130	2785	2425	2100	1560	3500	4100	4960	935	1470	1445	1035				
Ganrang Jawa	7155	6150	5100	4885	5310	5530	4250	3395	3480	3310	2980	2580	2120	1755	3635	4185	5220	1615	1700	1770	1340	175			
Paccellekang Lama	6675	6025	4950	4490	4865	5250	3875	3300	3060	2865	2490	2110	2000	1430	4275	4955	6000	2830	2355	2685	2270	1245	1190		
Pabundukang Tua	6875	6275	5175	4640	4955	5375	3950	3505	3240	3050	2835	2500	2275	1785	4725	5280	6515	3235	2840	3215	3210	1620	1560	305	
Sawagi	7775	6900	5850	5450	5850	6325	4855	4030	4005	3805	3425	3025	2875	2325	4825	5350	6290	2805	2905	2975	2570	1420	1100	825	905
[Sanggarang]	3100	4760	4385	3450	2810	2405	3115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

N.B. Ujung and Sumbarang, shown in brackets, are only reported sites. They are included in the table to investigate the possible effects of propinquent historical sites beyond the survey boundary. Sanggarang, shown in square brackets, is marginally accepted as a historical toponym. Its distances have been worked out only to the nearest sites as these are adequate to show that Sanggarang would not affect the site-clustering patterns shown in Figure 10-2 (although it could conceivably cluster with Diccekang, depending on where further sites in Kecamatan Mandai might lie).

N.B. The narrow channels would have been easily crossable by strategically sited footbridges (Photo 10-2), so none of the intersite distances involves river-crossings in the sense of the bracketed intersite distances in Tables 6-1 and 9-1.

TABLE 10-1. TALLOK HEADWATER SITES: INTERSITE DISTANCES IN METRES (CONT.)

	M	M	J	P	M	B	E	B	B	P	B	K	M	P	B	S	(U)	(S)	B	L	K	T	G	P	P
Talla-Talla	8750	7765	6810	6510	6845	7365	5960	5175	5040	4815	5140	3755	3520	3325	5250	5610	6345	2620	3410	3065	2840	1710	1100	2040	2155
Pattallassang	9485	8600	7590	7230	7560	8040	6610	5985	5775	5540	5875	4505	4265	4110	6075	6425	6740	3445	4280	3920	3710	2550	1585	2615	2535
Teamate Asli	9395	8430	7460	7160	7525	8045	6595	5880	5700	5465	5145	4810	4700	3995	5340	6100	7160	3100	3990	3645	3355	2240	2040	2660	2710
Palacini Tua	10025	9210	8205	7750	8110	8530	7105	6510	6275	6100	6375	5165	4815	4725	6825	7200	7720	4070	4660	4700	4465	3290	3095	3100	2860
Gentung	9920	9210	8205	7705	8020	8420	6970	6550	6315	6025	6415	5195	4860	4735	7050	7500	8230	4560	5010	4960	4720	3510	3445	3090	2745
Saile Tua	9330	8600	7595	7120	7405	7820	6395	5945	5690	5420	5790	4565	4245	4150	6500	7000	7860	4150	5210	4960	4205	2955	2905	2485	2135
Teko	10100	9500	8485	7900	8185	8550	7115	6800	6425	6255	6625	5465	5160	5070	7550	8050	8850	5130	4670	5515	5240	4000	3910	3380	2925
Diccekang	4960	5850	4675	3620	3440	3425	2560	3335	3185	3160	3185	3420	3315	3640	5060	6125	8665	6400	5710	5775	5575	5160	5090	3875	3635
Moncongloe Bulu	9175	9950	8975	7950	7740	7700	6810	7425	7200	7070	7300	7150	6850	7075	9970	10850	12300	9155	8310	8900	4305	7510	7485	6210	5610

Sawagi	S	T	P	T	P	G	S	T	D	M
Talla-Talla	1125									
Pattallassang	1605	670								
Teamate Asli	1730	510	280							
Palacini Tua	2100	1455	505	1160						
Gentung	2135	1825	910	1200	340					
Saile Tua	1535	1440	850	1080	630	415				
Teko	2515	2430	1630	1905	1010	540	890			
Diccekang	4765	6030	6405	6670	6655	6370	5860	6260		
Moncongloe Bulu	6640	7460	7310	7800	7110	6730	6485	6140	4215	
[Sanggarang]	-	-	-	-	-	-	-	-	2770	6340

Main clustering events - Figure 10-1a. BBPB joins KMP at 889m; PTT joins PGST at 1366m; PMBEJM joins Moncongloe Lappara at 2063m (MJPMBE is 2319m from BBPBKMP); BLK joins BBPBKMP at 2257m (BLK is 2283m from PPSTG and 2291m from BS; BBPBKMPBLK joins PPSTG at 2651m (PPSTG is 2702m from PTTPGST; BBPBKMPBLK is 2955m from BS and 3173 m from PMBEJMM).

Note, if Tassilik and Ganrang Jawa treated as one site, and its distances to other sites are taken as the shortest distance from either Tassili or Ganrang Jawa, then after BLK joins BBBPBKMB at 2257m, the following would occur. PPST (less G) joins PTTPGST at 2677 m (PPST is 2704m from BBPBKMPBLK); BBPBKMPBLK would join BS at 2955m if Ujung not included, otherwise PMBEJMM at 3173m.

Main clustering events - Figure 10-1b. BLK assumed to join southwards, cf. BLK to (Sumbarang) distance of 930m. BBPB joins KMP at 889m; PTT joins PGST at 1366m; PMBEJM joins Moncongloe Lappara at 2063m (PMBEJM is 2319m from BBPBKMP); PMBEJMM joins BBPBKMP at 2660m (PPSTG is 2809m from BBPBKMP); PPSTG joins PTTPGST at 2702m. Inclusion or exclusion of (Ujung) has no possible effect on these clustering events.

Note, Sangarang to Patadang-Manyempang-Balang Patti-Embung (PMBE) is 2945m, to PMBEJM is 3488m, to PMBEJMM is 3432m.

Paccellekang cluster would find its closest wider link with the Moncongloe cluster (Figure 10-2b). The historical evidence (10.8) suggests that the 16th to 17th century patterns of social organisation have vacillated between the configurations represented by Figures 10-2a and 10-2b.

10.2 The Pattallasang Cluster

10.2.1 The PGST group

Palacini Tua (Gowa 54) is located on clays on the southeast bank of the easternmost sawah depression (Figure 10-1). Fields at the west give way to scrub at the east enclosing two small graveyards (Figure 10-3). The "old" graveyard, which we inventorised, has at least nine rectangles of arranged stones, oriented at around 330° from north, hidden among the scrub (Photo 10-4). 65 looter's holes at the fields and the old graveyard confirm the reported looting of blue-and-white ceramics, supplemented by Sawankhalok and celadons, at both areas in the early 1980s. SSPHAP's tiny sample of surface tradeware pieces are distributed across a large expanse of time (Photo 6-19; Figure 10-7). Hence the evidence suggests that burials occurred here from the 13th-14th centuries until recent times, although probably on a sporadic basis. None of the debris necessarily points to occupation during the historical period, and we were told that the site had not been occupied within living memory.[4]

Gentung (Gowa 59) occurs on the north bank of a tributary of the Pabundukang where it enters the easternmost sawah depression (Figure 10-1). A slightly humped knoll covered with scrub (Photo 10-5) contains at least 181 looter's holes (Figure 10-4) and 18 Islamic graves marked with stones (Table F-7a). Reportedly looted in the early 1980s, it had produced lots of Sawankhalok and "Swatow" wares, plus a few celadons. The knoll probably contains the site's main archaeological contents, even though most of the debris was found among the stubble north of the knoll. This includes 51 Toalean-type

[4] Palacini, as shown on the Dutch land-use maps, was located just east of the site. It had been abandoned by 1969 according to the Indonesian land-use map (see Figure 10-1b).

stone artefacts among the lateritic gravels, and 37 tradeware pieces dating mainly between the 15th and 17th centuries (Figure 10-7). Even though the debris gives no reason to suspect occupation during post-Toalean times,[5] and none of the marked graves needs postdate the 17th-18th centuries, the site includes a maintained saukang. The 17th-century kampung of Gentung shown on the 1693 map (Figure 5-5) may have been located east of the site, in the vicinity of the tiny Gentung kampung shown on the early 20th century maps.[6]

Saile Tua (Gowa 61) occupies both levees of the afore-mentioned tributary where it meets the Pabundukang (Figure 10-1; Photo 10-6). Its reported status as an old kampung corresponds to its depiction as settlement on the 20th century maps. 151 holes counted among the thick pasture and weedy cover confirm the reported looting of the site, beginning in the early 1970s. Blue-and-white, Sawankhalok and celadon wares were indicated as the main finds, and one piece was a ceramic bird. Atrocious visibility conditions restricted the observable surface contents to two graves marked with pebbles oriented 30° from north, plus a few sherds. However, the spoil heap from one hole contained 64 earthenware and two tradeware pieces (see Figure 10-5). Only 15th-16th century tradeware pieces were recorded (Figure 10-7),[7] even though the site would appear to have been used both for occupation and burials over a far longer period.

Teko (Gowa 60) differs from the three preceding sites by occuring in an area of ladangs well away from the sawah depression. Two Islamic graveyards approximately 100 metres apart, containing 19 "old" marked graves and ten "new" marked

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[5] Only six earthenware sherds were recorded (Appendix D). Their greater transportability may well have led to their under-representation compared with the heavier tradeware sherds and stone artefacts. Only excavation could really tell whether the site's earthenware sherdage has been almost fully eroded away or whether little earthenware sherdage had been deposited there in the first place.

[6] The 1969 land-use map does not show any kampung within the corresponding area (see Figure 10-1b).

[7] The apparently heightened emphasis on the 15th century given by the fine tradeware profiles (Figure 10-6) largely reflects the 15th-16th century dating, rather than the usual 16th century dating, which I ascribed to the two Ming BW pieces. These two pieces, and the Sawankhalok piece, could all well be of 16th century vintage.

graves, were associated with 47 and 107 looter's holes respectively. These were concentrated near the graveyards but covered much of the intervening terrain. The inhabitants claimed no knowledge of the finds since outsiders had done the looting. Thick pasture precluded a sizable sample of surface sherdage, although a Swatow piece was recorded near the "new" graves (Figure 10-7).

Given the available tradewares, the origins of the PGST burial grounds can be dated no later than the 14th century at Palacini Tua, the 15th century at Gentung, the 16th century at Saile Tua, and the 17th century at Teko. Where reported, the types of antiques found generally support such a chronology. Figure 10-6 might be correct in emphasising the comparative frequency of 15th century pieces, but the general tradeware profile in Figure 10-7 is more reliable as the tradeware sample is small.

10.2.2 Pattallassang Tua (Gowa 52)

Pattallassang Tua occupies a fist of gently sloping land which knuckles into the sawah depression below (Figure 10-1). The gravelly clays which dominate the site's topsoil are coloured reddish grey to bright yellowish red. The early 20th century land-use maps show the site as a small kampung dwarfed by the Islamic cemetery at the kampung's southwest border. Reportedly much of the site had been looted, particularly at six concentrations of antique finds which included "Swatow" as the main type, then brownwares, Sawankhalok and some celadons. One *duni* (wooden coffin) was reportedly found in a decayed state, but no human bones. A seventh haul of antiques - blue-and-white, "Ming red", Sawankhalok and some celadon wares - was fortuitiously recovered as a result of excavations for the foundations of the school on the modern road (Figure 10-8).[a] The site has been largely overtaken by dense scrub or converted to dryland

[a] This area was brought to our attention very late in the day, so we merely estimated rather than mapped its dimensions and location, and did not attempt a complete inventory of its surface sherdage.

fields, so the looter's holes which had not been ploughed back were generally hidden by regrowth.

Choosing fields at the reported antique-bearing areas and less scrubby areas in the Islamic graveyards, we surveyed 15,100 m² in total, involving an effective exposed surface area of 10,408 m². Using the latter areas, we can demonstrate a clear patterning of the site's surface tradewares by plotting the effective densities of "Ming", "Qing BW" and "recent" pieces per zone, grouped to reflect the bunched values in the distribution of densities (Figure 10-9).

Zones 12 to 17 at the west contained the only "early" pieces, the main density of "Ming" pieces, and decreasing densities for the post-Ming tradewares. This would appear to have been Pattallassang's earliest burial area and, along with the schoolyard, the main pre-Islamic burial ground. Zones 8, 9, 11, 18 and 19, which lie between the Islamic graveyards, contained fair densities of "Ming" and "Qing" pieces but few "recent" tradewares. They represent four antique-bearing areas which are best interpreted as terminal pre-Islamic to syncretic Islamic burial grounds, "descended" from the southern burial grounds, and ancestral to the Islamic graveyards.[9] Zones 1 to 8 and 10, at the north of the site, showed the reverse of the pattern noted for zones 12 to 17. The dense presence of "Qing BW" and especially "recent" pieces accords with the depiction of north Pattallassang as kampung on the land-use maps.[10] Representing Pattallassang's tradeware counts with tradeware profiles emphasises the predominance of Ming pieces in upper Pattallassang, i.e. the main burial areas, and the predominance of post-Ming pieces in lower or north Pattallassang (Figure 10-6).

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[9] In this interpretation, the "Qing BW" sherdage would represent some combination of incorrectly classified sherds from Ming ceramics, sherds from Qing wares interred with the syncretic Islamic burials, and occupation debris from former houses built between the graveyards.

[10] The antiques reportedly found here could represent isolated pre-Islamic burials or complete to semi-complete ceramics deposited among the occupation debris. The Indonesian land-use map shows the area still as kampung in 1969 (Figure 10-1b), although the decreased number of 20th century pieces compared to European pieces (Figure 10-6) suggests that the former kampung was at least well on the way towards complete abandonment by 1969.

A partial inventory of Pattallassang Tua's marked graves, accounting for perhaps half the total number, recorded 272 cases, most of them stone arrangements (Table F-7a). The southernmost example, associated with Daeng Malotteng who is a *nenek moyang* figure, includes rough masonry blocks within two arrangements oriented 335° from north (Photo 10-7). The reported burial of a *nenek moyang* next to a companion is a common observation at SSPHAP's sites, but this variant is unusual in that Dg Malotteng's companion is his dog.[11] The largely abandoned, eastern graveyard is dominated by stone arrangements oriented 330° to 340° from north. The western graveyard includes the sheltered graves of Tetta Ruleha and Tetta Bollong associated with a plaque dated 1948 (Photo 10-8), five other sheltered graves and a brick sepulchre. Orientations from north vary from 315° (Tetta Ruleha and Tetta Bolong), to 330° (most zone 9 and 10 graves), to approximately 20° (west of zone 9).

Pattallassang Tua is the largest and certainly the most elaborate burial complex east of Pattiro Tua (see Figure 10-1a). This partly reflects its long use, whereas nearby burial grounds either originated later or have been abandoned, or both. The rest of the explanation could lie in Pattallassang's greater population, and a higher status which could have attracted a large proportion of the bilateral kin upon their decease. Pattallassang Tua also lies close to the geographical centre of the PGST and PTT sites (Figure 10-2).[12] These points accord with Pattallassang's membership

[11] Dogs are unclean animals according to Islam, and the Makassar villages which we visited were all free of dogs. We noted dog-paw impressions on one of the loose fortress bricks at Katangka Toa, Benteng Tua (Station XXX in Figure 6-7), and comparable marks have been observed on the Somba Opu bricks (Reid and Caldwell, 1990:89). The Katangka Toa brick and probably the Somba Opu bricks were made in the 17th century, supporting the indication from Dg Malotteng's grave that dogs were phased out only gradually after the Makassar people adopted Islam.

[12] In Figure 10-2a, the PGST and PTT sites constitute their own cluster with Pattallassang Tua lying close to its centre. Moreover, the possible annexation of the PPSTG sites creates a larger cluster of sites which neatly rings the same sawah depression (Figure 10-2b), suggesting that the competing subsistence interests of the communities involved would have been most effectively harmonised through means of an overarching authority, i.e. Pattallassang.

within the Bate Salapang throughout the 16th and 17th centuries (Mukhlis, 1975:61-62) and, apparently, until the dissolution of the Bate Salapang at around 1900 (Patunru, 1983:120-130 pass.). It confirms a correspondence, already noted in the previous chapter, between outlying "administrative centres" and elaborate burial grounds.

10.2.3 Teamate Asli (Gowa 53)

A short distance from Pattallassang Tua lie two small, abandoned Islamic graveyards with 19 stone arrangements oriented around 330° from north (Table F-7a). Looting at the western graveyard on the hill-top, as evinced by 21 remnant holes (Figure 10-10), had reportedly yielded blue-and-white and Sawankhalok wares, and a celadon plate with two molded fish in its centre.[13] We were shown a 16th century Ming BW bowl (Photo 10-10) and a "Ming Swatow" piece, and recorded a bronze fragment and some "Ming" tradeware sherdage (Appendix D).[14] Further sherdage occurred down the road as far as the eastern graveyard where an experimental hole had reportedly recovered a bowl and a jarlet, both blue-and-white. Except for the reported celadon plate, the earliest burials would be dated to the 15th century (Figure 10-7), while the style of Islamic marker suggests that the burial grounds may have fallen into disuse by the 17th or 18th century.

10.2.4 Talla-Talla (Gowa 50)

Talla-Talla is a spit of pasture and light secondary forest jutting northwards into sawah. A shallow soil test found a dark reddish brown, gravelly clay with a pH of 6. A small Islamic graveyard at the west is associated with "Karaeng Talla" (Table F-7a; Photo 10-9). Looting reportedly took place in the 1960s and the 1980s, yielding blue-and-white,

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[13] These "fish bowls" are generally dated to the Yuan or even the Song dynasty.

[14] Time ran out in Ujung Pandang before I could review the non-lithic artefacts collected at Teamate Asli. Hence I cannot describe the bronze fragment recorded at the site, and indeed I can only assume it was (i) collected, and (ii) not some other copper alloy.

Sawankhalok and some celadon wares, and frequently the crumbled remains of *duni*.

Of the 240 looter's holes, 174 constituted a band running northwards for 160 metres along the juncture of raised land and the sawah to the east (Figure 10-11). This band, which reportedly produced the bulk of the antiques, can be readily interpreted as a pre-Islamic burial ground which had contained east-west oriented skeletons interred side by side.[15] It also produced most of the site's surface tradeware sherdage which matched the reported types of antiques found, being dominated by late 15th to 17th century blue-and-white pieces, and complemented by Sawankhalok celadon and iron-underglaze pieces (Appendix D).[16] The distinct lack of 19th to 20th century pieces (Figure 10-6) matches the apparent abandonment of the Islamic graveyard.

The site falls just east of a large settled area shown as a compound kampung (Pattallassang, Talla-Talla, Ganrang Jawa) on the Dutch land-use map. Today it serves, under the name Marannu, as the local administrative centre for desa Pattallassang (Figure 10-1b). No old burial grounds, Islamic or otherwise, were reported to us in this settlement. Indeed it would appear to have grown as a result of local immigration during the 19th and 20th centuries. According to the Dutch land-use maps, it was the terminus of a main road from the south and a major point of intersection for the footpaths which used to link the Tallok headwater communities. Yet it also falls close to the centre of the Pattallassang Cluster as shown in Figure 10-2b.

These points would relate the kampung's modern growth to some combination of (i) the entrenchment of wider transport and communication links after the 19th century, (ii) a westward expansion of the area administered by Pattallassang during the 20th century,[17] and (iii) Pattallassang's

[15] Although bones were reportedly not encountered during the looting, the acidic pH of the soil would have dissolved any interred bone.
[16] The recovered tradeware sherdage further suggests that the type of celadon recovered was Sawankhalok celadon.
[17] i.e. at the expense of Paccellekang which, after 1910, disappeared as a major administrative unit of Gowa until recently (Patunru, 1983:121-131).

relocation to a more central position within its administered communities.

As a seeming by-product of the more centralised arrangement, a local view has developed that Talla-Talla stood in something of an ancestral relationship as regards not only Marannu, but also the kampungs of Sumbarang and Biring Bonto immediately south of SSPHAP's surveyed area. But Talla-Talla is an impressive site in its lucidity rather than its size. And during the 15th to 17th centuries it seems to have been a peripheral member of the Pattallassang Gelarang district then based at Pattallassang Tua.

10.3 The PPSTG Group

10.3.1 Tassili (Gowa 48) and Ganrang Jawa (Gowa 49)

Tassili and Ganrang Jawa are both associated with Islamic graveyards, still in use, overlapping looted areas (Figure 10-12). Both occur due south of the Tallisi tributary (sic) at the western edge of the easternmost sawah area (Figure 10-1; Photo 10-11). Kompleks Makam Karaeng Tassili is named after two sheltered graves oriented 320° from north, associated with Kg Tassili and his wife, in the cemetery's eastern corner (Photo 10-13). To the east is another marked grave under a shelter, associated with "Daeng Tallo", oriented due north (Photo 10-14).[18] The remaining 238 or more marked graves (Table F-7b) generally fall into two overlapping clusters oriented at either 340°-350° or 30°-40° from north, apart from a restored example oriented 280° from north (Photo 10-15). 19 looter's holes north of the marked graves, along with a light presence of 16th century tradeware pieces recovered from the cemetery and the maize field next to it (Figure 10-17), indicate a late pre-Islamic origin for the graveyard.[19]

[18] The occurrence of a "Daeng Tallo" in this cemetery might be related to the area's intriguing concentration of toponyms which apparently evoke "Tallok" - Talla-Talla, Pattallassang, Sungai Tallisi, Balang Tallok (called the Tallok tributary in Figure 10-1a).

[19] The tradeware profile based on fine classes (Figure 10-16) would further restrict the site's apparent origins to the 16th century. However, such precise dating is unwarranted

Kuburan Ganrang Jawa, a short distance to the east, possibly has older origins, to judge from the 44 looter's holes in zone 10 (Figure 10-12) and the "early monochrome" piece found in zone 8 (Figure 10-16). Its 56 countable marked graves, which are oriented 330°-360° from north, appear to represent the same lengthy chronology of Islamic styles observed at Makam Karaeng Tassili (Table F-7b). The main area of 118 looter's holes, however, occurs around 90 metres to the east in zone 1. The quite good surface exposure in the vicinity (Photo 10-11) revealed a rich surface assemblage (Appendix D) which included a rim fragment from a bronze bowl (Photo 10-12; Appendix G). But only one of the tradeware pieces dates to the 16th century, so occupation deposits rather than pre-Islamic burials might have been plundered.[20] Inspection of the looter's holes revealed a yellowish red clay full of lateritic gravels. The whole site contained a strong presence of Qing and especially European sherdage (Figure 10-16), allowing it to be identified with the northern part of Tassili kampung shown on the Dutch land-use map. Presumably Ganrang Jawa was the site's original name, before the name moved in the 19th or early 20th century to the kampung now called Marannu (10.2.4).[21]

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given the small tradeware sample involved, especially as the tradewares include a Sawankhalok coarse stoneware piece (i.e. 15th-16th centuries). The site shows a healthy presence of earthenware sherdage (Appendix D) which suggests that it may have been under occupation before its use as a burial ground.

[20] My notes mention that some of the holes seemed to pair off along an east-west orientation, supporting the alternative interpretation that zone 1 represents a late retention of pre-Islamic burial practices well into the 17th century. Another possible interpretation is that the sorts of antiques found in zone 1 are virtually unrepresented among the surface artefactual debris in the vicinity.

[21] i.e. the relocation of a significant proportion of the original Ganrang Jawa inhabitants to present-day Marannu, involving a distance of around half a kilometre, allowed the Tassili inhabitants, originally based to the west, to relocate themselves in old Ganrang Jawa. Today the Tassili inhabitants are strung along the road, and their abandonment of old Ganrang Jawa would appear to have been well underway by 1969 (cf. Figure 10-16), even though the Indonesian land-use map here closely matches its Dutch counterpart.

10.3.2 Sawagi (Gowa 51)

Kuburan Islam Sawagi occupies an "island" of Camba Formation in the middle of the easternmost sawah area (Figures 5-2 and 10-1). The soil here is a reddish brown clay full of lateritic gravels, while a soil test in the sawah just north of the graveyard revealed an acidic, stone-free clay (pH 5$^{1}/_{2}$). The 171 marked graves, oriented 350°-10° from north, display a wide variety of styles (Table F-7b) including four corrals made of old large bricks.[22] One of these, under a shelter and associated with a painted wooden *nisan*, has the name *Jerak Lompo* or "big grave" (Photo 10-16). The structure reportedly marks the grave of a man who came from Maros to establish his karaengship in Sawagi. The fields southeast of the cemetery had been comprehensively looted, leaving 176 remnant holes (Figure 10-13). The recorded tradeware sherdage produces a standardised chronological histogram which gently rises from the 15th to the 19th century, before plummeting in the 20th century (Figure 10-16). This agrees with the evidence of a late pre-Islamic to modern Islamic graveyard; the site's depiction as kampung on the Dutch land-use map; and the apparent retraction of settlement eastwards from the graveyard by 1969 (Figure 10-1b).

10.3.3 Paccellekang Lama (Gowa 57)

The site occupies the northern levee of the Pabundukang tributary (Figure 10-1). A soil test revealed dark yellowish brown silts, containing some grit and gravels, with a strongly acidic pH (4$^{1}/_{2}$). Four flaked stone artefacts among the surface debris (Appendix G) suggest the levee had been deposited in prehistoric times.

At the north of the site lies Kuburan Islam Paccellekang which serves the modern kampungs of Pabundukang, Pattiro and Paccellekang (covered by the name "Paccellekang" in Figure 10-1b). The cemetery's 95 marked graves, which are generally oriented between 340° from north and due north (Table F-7b),

[22] These bricks, which are poorly fired and of strong red colour, show outsized dimensions around 78cm by 35cm by 18cm, i.e. around twice as large as the large fortress bricks (cf. Table E-10). They are presumably of local manufacture.

include some early examples such as the one associated with a karaeng whose name has been forgotten (Photo 10-18). However, still earlier origins related to a period of syncretic burial practices are indicated by the conspicuous plundering of one grave (Photo 10-17) and the east-west orientation of another (Photo 10-19). Two looted areas with 130 holes occur west of at the graveyard (Figure 10-14).

To the southeast we counted a further 114 holes concentrated around two enclaves of 15 stone arrangements varying greatly in orientation.[23] Eight coincided with looter's holes, but even if looting has scattered the stones to some degree, this in itself points to syncretic burial practices. Confirming the above-noted indications, the site's tradeware sherdage shows a strong emphasis on 16th to 17th century pieces (Figure 10-16). Hence use of the burial ground apparently began just prior to greater Gowa's adoption of Islam, and ceramics continued to accompany the buried corpses into the 17th century.[24]

The site appears too simple, and its origins too late, to be identified with the Paccellekang *Gelarang* title which was intermittently admitted to the *Bate Salapang* during the 16th and 17th centuries (10.5.1). Moreover the site's location is peripheral, whether associated with the "Paccellekang cluster" centred near Pattiro Tua (Figure 10-2a), or with the Pattallassang cluster (Figure 10-2b). If, as I suspect, the community which used the burial ground during the 16th-17th centuries was called something other than Paccellekang, how then might the site have acquired its name? To answer that question, note that the early 20th century maps show Pabundukang as the only settlement in the vicinity. Hence the modern settlements at Paccellekang (Figure 10-1b) need not have originated much before 1969. After the office

[23] Due east (1 case), 70° from north (3 cases), 60° from north (2 cases), 35° from north (2 cases), 20° from north (3 cases), due north (1 case), and 320° from north (3 cases). The apparently looted examples included those most clearly oriented north-south as well as those most clearly oriented east-west.

[24] The local official who showed us the site disclaimed much knowledge of the antiques found here or antiques in general, but thought that Paccellekang's haul might have included blue, white and green ceramics, as well as an iron sword.

administering Paccellekang desa was established here, the old cemetery could well have been returned to service, and named to reflect the prevailing administrative situation.[25]

10.3.4 Pabundukang Tua (Gowa 58)

This site coincides with the southwestern stretch of the early 20th century kampung of Pabundukang which, before its abandonment by 1969, had been strung along the Pabundukang tributary (cf. Figures 5-2 and 10-1). The sawah belt at the south appears to have been recently extended into the site, beyond scattered old Islamic graves[26] stranded on outposts of slightly raised land or protected by shelters (Figure 10-15; Photos 10-20 and 10-21). The main graveyard, however, occurs in zone 2 on the stream's bank. Oriented generally between 330° from north and due north, the 101 marked graves which could be counted represent a wide chronological gamut of Islamic styles (Table F-7b).[27] We counted 121 holes along a wedge of reportedly looted land separating the main graveyard from the scattered graves. A comparatively rich surface sherdage was recorded along the whole length of the site (Appendix D). The tradewares date from the 14th-15th centuries (Photo 10-22) through to the 20th century (Figure 10-16).

This evidence suggests that Pabundukang Tua was used for burials, either concentrated in certain designated zones or dispersed more widely through the site, from the centuries immediately preceding Islamisation until the present. Before its 20th century abandonment the site was also used for habitation, possibly going back as pre-Islamic times.[28]

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[25] "Paccellekang" as shown on Figure 5-6 is pinpointed at the Paccellekang Lama site, because the exercise here was to show the degree of match between the 1693 and the modern toponyms, rather than to engage in any site interpretation.

[26] Two of these include staff-like *nisan*.

[27] Two marked graves appeared to be oriented 250° from north, but this observation might have suffered from the dishevelment of the older graves and the obscuring effects of weedy regrowth.

[28] Pabundukang is cited as a 17th century karaengship, but this reference probably involved the Pabundukang which is today a desa in Kabupaten Takalar, especially in view of the karaengship's genealogical connection with Alluk (Figure 4-14).

Finally, the absence of recorded stone artefacts possibly suggests that the clays constituting this levee of the Pabundukang were not deposited before the present millennium.

When combined, the PPSTG sites produce a tradeware profile which gradually rises between the 13th and the 19th centuries before plummeting in the 20th century (Figure 10-16). The last point corresponds to the status of three of the sites as settlements abandoned at around the mid-20th century.

10.4 The BLK Group

10.4.1 Lamuru (Gowa 46) and Kuburan Tua Lamuru (Gowa 47)

Lamuru occupies the southern bank of the Tallisi where it cuts through Camba Formation. Soil tests in the lower, more waterlogged part of the site (Figure 10-18) revealed a slightly silty clay with some lateritic gravels, coloured reddish yellow to dark reddish brown, with an acidic pH varying between $5^{1}/_{2}$ and 6. One test was done in a remnant hole in zone 2, measuring 2.5 m east-west by 1.4 m north-south (Photo 10-28), indicated as the findspot of several iron weapons associated with a fragmented but recognisable *duni*. It contained three pieces of wood which our informant identified as having come from the *duni* (Photo 10-23). After submission for radiocarbon dating, the fragments returned an uncorrected date of 340 $\pm$ 70 BP (ANU-5922), which calibrates to (340) 355 (430) BP with a single S.D. range between 310 and 495 BP (cf. Stuiver and Pearson, 1986:810). This 16th to early 17th century date corresponds excellently not only with the Ming and Wanli pieces donated to SSPHAP by the residents (Photos 10-24 to 10-27), but also with the main bulge in the site's tradeware profile (Figure 10-16). But the practice of burials here had originated three to four centuries earlier, as indicated by the several monochrome pieces found among the surface sherdage (Appendix D; Figure 10-16) and a coarse monochrome bowl we were shown from the diggings.[29] This particularly

[29] The estimates we suggested in the field for the bowl's antiquity ranged between the Song and Ming dynasties, and unfortunately my slides of the piece were woefully

clear example of a Makassar pre-Islamic burial ground appears to have been restricted to the zones abutting the band of 207 counted looter's holes (Figure 10-18).

The site has a small Islamic graveyard but it dates only from the 1960s (Table F-7c). Rather, the cemetery of direct relevance to the pre-Islamic burials would appear to be Kuburan Tua Lamuru, 400 metres to the east (Figure 10-1). In the cemetery's northeast corner are four contiguous, rectangular or square stone arrangements which had originally included some large, old red bricks.[30] One arrangement appeared to contain three east-west oriented graves, while another contained "Makam Takba" which evokes the several "Makam Takbakka" along the Jeknekberang. The two sheltered graves were reportedly associated with "Somba Garassik" and a Chinaman who was lucky at gambling (Figure 10-19). Most of the 44 marked graves are modern (Table F-7c), suggesting that what had been a small, old Islamic graveyard has been recently returned to service. Neither surface sherdage nor evidence of antique looting was recorded.[31]

Lamuru's *saukang* sits across the road from the area of pre-Islamic burials. Indeed the site appears to have supported a modest degree of settlement ever since ceasing to function as a burial area (Figure 10-16), and the early 20th century Dutch map depicts the site as the tiny kampung of Lamuru (cf. Figure 5-3). However, the thriving community of around 60 households at the time of our survey claimed to have originated from Bonto Sunggu (10.5.2). The name Lamuru is itself a Bugis name associated with a second-order kingdom of pre-Islamic origins in the upper Walanae valley (e.g. Muttalib, 1978). Apparently our site already had this name by 1693 (Figures 5-5 and 5-6), so the implied immigration of Lamuru Bugis would have had to occur earlier. This could have happened immediately after the Makassar War, possibly

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overexposed. Unlike the pieces donated to SSPHAP (Photos 10-29 to 10-32), the monochrome's provenance had been forgotten by our informants.

[30] Reportedly most of these bricks had been dug up for re-use. However, we were able to record one specimen and it measured 25 cm square by 6 cm thick.

[31] I have no photographic documentation of Kuburan Tua Lamuru and Bonto Sunggu-Soppeng because my camera battery failed in the field.

associated with the changed location of the burial ground, but more feasibly in the 16th century to match the bulge in Lamuru's standardised chronological histogram. In either case, the site appears to have supported some level of settlement continuously from the 13th-14th century to the present, albeit in a pattern of intermittent depopulation followed by immigration.

10.4.2 Bonto Sunggu Asli and Soppeng (Gowa 55)

This compound site occupies the northwest corner of the "peninsula" of Camba Formation dissected by the Tallisi (cf. Figure 5-2). The name Soppeng, best known as a first-order Bugis kingdom whose pre-Islamic "vassals" had included Lamuru (Caldwell, 1988:131), is here associated with the lower, southern part of the site (Figure 10-21). 194 holes remain from the extensive looting which reportedly occurred during the 1970s and early 1980s. The small sample of surface tradeware pieces falls almost entirely between the 15th and 17th centuries, as would be expected of an immediately pre-Islamic burial ground (Figure 10-16). The area lacks any traces of Islamic graves, and is depicted as unoccupied on the land-use maps. Local reports accord the "Soppeng people" a major ancestral rôle in populating the nearby Lamuru, Bonto Sunggu, Japing and Paccellekang kampungs. It is hard to see why the name Soppeng should have become tagged to this area, unless it had indeed been founded or at least dominated by Soppeng Bugis in pre-Islamic times.

The thin carpet of "Ming" sherdage continues uphill through Bonto Sunggu,[32] although here accompanied by an emphasis on Qing tradewares (Figure 10-16). Just past a tiny but possibly old Islamic burial area (Table F-7c) is a second looted area with 33 holes (Figure 10-20). Reportedly tried recently on an "experimental" basis, the area yielded antiques of the same types that we were shown at Lamuru. The profile of the holes revealed a dark reddish brown, clayey soil lightly speckled with lateritic gravels. The

[32] There is no call to identify this minor site with the 17th century Bonto Sunggu karaengship, especially as Bonto Sunggu is not a rare toponym.

comparatively light presence of European and "recent" tradeware sherdage within Bonto Sunggu (Figure 10-16) accords with its tiny area of kampung as shown on the Dutch land-use maps.[33]

Lamuru and Soppeng-Bonto Sunggu are clearly coupled spatially, toponymically and chronologically, and further by invoking a similar set of paradoxes. Both evince continuous occupation from the 14th-15th centuries onwards, but within a pattern of cyclical population increase and decrease. They are central within an area of apparent Bugis influence,[34] yet constitute the peripheral members of some other site cluster in every spatial analysis (Figure 10-2). Their burial practices appear to have been avowedly Makassar rather than agrarian Bugis in immediately pre-Islamic times (cf. 13.2.2), precisely when significant Bugis immigration to these sites apparently occurred. In all they appear to have acted as a window for local immigration and transmigration, possibly because they directly accessed land which could support settlement by farmers, but which was less attractive in the long term than land accessed by adjacent historical sites.

10.5 The KMP and BBPB Groups

10.5.1 Pattiro Tua-Balang Sari (Gowa 63)

The site embraces two knolls of Camba Formation which look directly over the mature valley associated with the Mangalorang tributary (Figure 10-1; Photo 10-29). The western one, which marks the eastern extent of kampung Pattiro as shown in the Dutch land-use maps, is included within the part of the site associated with the toponym Pattiro (Tua). The southern one is called Balang Sari, presumably in reference to the waterlogged area at its northeast shown as swamp in the Dutch land-use maps but now largely converted to rice fields (Photo 10-1). Our soil tests at Balang Sari and Pattiro recorded a slightly silty clay, coloured dark greyish

[33] The kampung is altogether missing from the counterpart Indonesian map, but this may well be an oversight, because Bonto Sunggu is today a substantial kampung.
[34] i.e. including the toponym Pattiro to the north and the immigrant Sinjai Bugis at Rapo Cidu and Bossolok to the west.

brown and dark brown respectively, with a pH of 5$^{1}/_{2}$ in both cases. Our survey zones incorporated 17,347 m^2 in total and an effective surveyed area of 5388.6 m^2, just over two-thirds of both areas within Pattiro Tua (Figure 10-22). As well as counting 61 looter's holes in Balang Sari and 235 in Pattiro Tua, we recorded that the looted area in zone 15 had extended westwards into zone 14 and southeastwards into thick shrubbery (Figure 10-23a).[35]

The stones on top of Balang Sari have been arranged into a web of field boundaries, notably terraces which follow the knoll's contours (Figure 10-22). One of the cornerstones is a large *lesung batu* or stone with inset circular hole (Photo 10-30), a common artefact in Bugis historical sites (e.g. Kallupa et al., 1989) but otherwise absent from SSPHAP's Gowa historical sites.[36] The fields contained one of the densest artefactual assemblages recorded by SSPHAP, including 51 flaked stone artefacts, a polished hatchet, 1667 earthenware sherds and 84 tradeware pieces (Appendices D and G). Soil formation and aeolian deposition appear to have kept pace with erosion, allowing millennia of occupation debris to have accumulated within the topsoil. The shallow soils would have made the hill-top unsuitable as a burial ground, and there is no clear evidence that antiques had been recovered here, so the tradewares probably represent occupation debris. In that case occupation would have commenced by the 13th-14th centuries, peaked in the 15th century, remained strong in the 16th-17th centuries and tailed off dramatically thereafter (Figures 10-23 and 10-26).[37] I interpret the hill-top as the

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[35] Outsiders had been responsible, according to Pattiro's *dusun* headman, who could further report only that he had seen some blue-and-white and celadon wares.

[36] The only other *lesung batu* we saw during the Gowa survey was in kampung Lassang in the upper Jeknekberang (Chapter 16).

[37] This interpretation is based on laboratory identification rather than field identifications (cf. Appendix B). Hence, for instance, much of the "Qing whiteware" sherdage we recorded could be dated to around the 17th century, and maybe such a date would be correct even for the pieces which we could not distinguish from 20th century whiteware fragments. I decided to make a complete collection of the tradeware sherdage because its special nature was already apparent in the field.

main residence of a former local elite which could well have settled on this place for its defensibility.

Two apparently associated burial grounds are represented by looted areas, as also confirmed by the surface tradewares. One occurs immediately below the fields in zone 3, and the other at the foot of the knoll in zone 5 (Figures 10-22 and 10-26). The former is associated with a tomb enclosing two old graves ascribed to Pattiro's *nenek moyang*, alternatively known as Pallapa Barambang or Kg Balang Sari, and his wife (Photo 10-31; Table F-7c). A metre-long stone arrangement at the tomb's entrance, oriented 250° from north, reportedly marks the grave of Pallapa Barambang's *ajudan* (adjutant) buried in a crouched position (Photo 10-32). Thus "Palappa Barambang" would appear to have been a 17th century noble, underlining Balang Sari's aristocratic associations.

The main burial area occupies the gentle slopes facing Balang Sari. Kuburan Pattiro contains 123 marked graves generally oriented 330° to 30° from north, interspersed with 206 looter's holes (Figure 10-22; Table F-7c). Two graves oriented 290° from north were recorded at the cemetery's north, while a further east-west grave occurs on the road (Photo 10-33). Higher up the slope in zone 15 we counted 13 graves, most of them marked by crude masonry blocks arranged into rectangles oriented 330° to 350° from north (Photo 10-34), within a small looted area (Figure 10-22). Some more graves in the same style occur to the immediate east, while 27 rectangles of arranged pebbles or pairs of standing stones (all oriented between 330° from north and due north) occur across the road in zone 17 (Table F-7c). These latter graveyards had not been looted, but are presumably old too, because like the zone 15 graveyard they are attributed to long forgotten families. Only "Ming" tradewares were recorded in the area of Pattiro's graveyards, except in zones 6 and 14 which abut settlement along the modern road (Figure 10-23).

Zones 8 and 9, which look over the graveyards, have apparently not been looted, so their tradeware contents appear to indicate occupation from around the 16th century to the present (Figure 10-23). On top of the knoll was the largest single structure of stone recorded by SSPHAP - an

enceinte 45 metres by 27 metres with walls 1-1.5 metres high (Figure 10-21). Compensating for the lack of masonry, smaller pebbles had been carefully set among the larger cobbles to produce a solid structure.[38] As explained by the *kepala dusun* (dusun headman), it had been built by his grandfather when he was Pattiro's *kepala dusun*, i.e. in the early 20th century.[39]

Of all the historical sites in the general area of *kampung* Paccellekang as shown on the 1693 map (Figure 5-5), this is easily the best candidate. Its elaboration of old burial grounds and strong presence of "Ming" sherdage mimic Pattallassang Tua, and the site lies close to the centre of the "Paccellekang cluster" shown in Figure 10-2a. Yet the site's 20th century name is Pattiro which is otherwise associated with one of the main constituents within the Bugis kingdom of Bone (see Andaya, 1981; Macknight and Mukhlis, in prep.). Here, however, the name can apparently be attributed to marriages with minor Bone aristocrats in the 19th century.[40] Hence, despite the lack of supporting toponymic evidence on the site itself, I identify the site with historical Paccellekang.

A Paccellekang *Gelarang* was included among Gowa's *Bate Salapang* twice in the early 16th century, and again during the mid-17th century (13.3.3). Paccellekang's sporadic membership possibly accords with the statistical fragility of

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[38] I have no information on whether it had been built for purposes of defense or ostentation, but it surely bolsters the impression of the site's longstanding local importance. My photographs of the structure are useless owing to the gloom occasioned by the falling evening and heavy rains.

[39] As further explained by the *kepala dusun*, both his father and his grandfather were also Pattiro's *kepala dusun*. This line could well have constituted the main officials of the area immediately northwest of Pattallassang after 1910, the date of Paccelekang's last pre-modern appearance as a main administrative division of Gowa (Patunru, 1983:121-131). I do not know whether or not Paccellekang survived as any sort of administrative term between 1910, and its emergence as a desa within post-independence Kabupaten Gowa. If it had, then I suggest it would have been seated in Pattiro Tua. In this context, note that modern Pattiro is located next to modern Paccellekang.

[40] According to Pattiro's *kepala dusun*, one of his ancestors married a great nephew of the 19th century Bone king Andi Mappanyukki, and moreover one of his nephews was married to a Bone person. Descendants of the great nephew of Andi Mappanyuki also used to own many rice fields around Pattiro.

the Pattiro cluster (Table 10-1). But note that during the early 17th century the site would have been the karaengship of Bissu Maliba Kga Paccellek(ang), one of Alauddin's sisters (Table 3-6), making it the only historically recorded karaengship within the Tallok headwaters. Her residence which the Paccellekang villagers would have had to provide (cf. Mukhlis, 1975:43) can probably be located on zone 9. Her high status apparently attracted Paccellekang's (and Pattiro's) later leaders to reside on this knoll rather than on Balang Sari (Figures 10-22 to 10-23).[41]

10.5.2 Kuburan Moncong-Moncong, and Moncong-Moncong Lama

Moncong-Moncong (Gowa 56) reportedly includes three looted areas which produced the same types of ceramics as at Lamuru (Figure 10-24). The richest area at the southeast could not be properly recorded as our survey was interrupted by a torrential downpour. The other area also directly overlooking the rice fields was at Moncong-Moncong's Islamic graveyard. Its 246 marked graves, which vary from the very old to the very new (Table F-7d), include a pair of sheltered graves associated with a former "boss" of Moncong-Moncong whose name is no longer remembered (Photo 10-35). The graveyard serves not only present-day Moncong-Moncong but also some of the residents of Macinna to the north (see Figure 10-1b). The graveyard appears on the land-use maps as the southwest point of an elongated kampung striking northwards.

Our survey followed a trail through the former kampung, recording a consistent presence of 17th century and later tradeware sherdage, as far as zones 12 to 15 perched at the top of the slope (Figure 10-24). Zone 13, which reportedly had also produced gold, contained 103 looter's holes associated with clumps of cobbles which not impossibly had been used somehow to mark graves (Photo 10-36). The recorded tradewares at Moncong-Moncong, which unfortunately are rather few, span the 16th to 20th centuries (Figure 10-26).

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[41] There is no evidence to identify her with Pallapa Barambang. Indeed rather few karaengs of the high aristocracy appear to have been buried in their karaengship upon death.

10.5.3 Bangkala-Palemba Tua (Gowa 65)[42]

Bangkala-Palemba occupies deep red, lateritic clays (Camba Formation) above the corner of the sawah depression shared with the other KMPBBPB sites (Figure 10-1). During our survey of Bangkala we collected a water-rounded pebble used (very recently?) as a pestle (Photo 10-37) and three flaked stone artefacts (Appendix G).

A looters' trail stretches 250 metres along fields and houses between its termini, the Islamic cemetery and the *saukang*, both aparently dug without success. The trail includes areas of remnant holes (80 counted) and several spots reportedly associated with specific finds (Figure 10-25). One was a hole oriented 280° from north (Photo 10-38) associated with a fragmented *duni* which had contained some bones. Blue-and-white ceramics were reportedly the main find, along with some Sawankhalok and a few celadons. Palemba Tua just around the corner contains another minor area of looting (Figure 10-25). Both Bangkala and Palemba showed a convincing presence of "Ming" tradeware sherdage, although their profiles are dominated by Qing to recent pieces (Figure 10-26).[43] Finally, Bangkala's old Islamic cemetery, which incorporates 149 marked graves oriented 320°-330° from north (Table F-7d), is dominated by 142 impressive rectangular markers which generally range between two and four metres in length (Photo 10-39).

Bangkala was clearly well-established by at least 1500, admitting a *prima facie* possibility of its identification with the Bangkala cited in Karaengloe's journeys before he founded the Tallok dynasty (cf. Rahim and Ridwan 1975:5).

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[42] Bangkala and Palemba were both 17th century karaengships, but the Bangkala referred to was on the peninsula's south coast (9.5.1), and the Palemba we recorded is too small to have seated a karaengship.

[43] The seemingly strong presence of 14th century pieces as Bangkala rests on two Vietnamese sherds with iron-painted decorations under the glaze. Moreover, although I treated them as having come from two pieces, I noted that the pieces would have been very similar and, indeed, possibly only one piece was involved.

10.5.4 Biring Balang Tua (Gowa 64)

Biring Balang is a spit of slightly raised, lateritic reddish clays (Photo 10-40) jutting westwards into rice fields which become very wet in the vicinity of Balang Tallok. An extensive area had reportedly been looted (Figure 10-20), producing mainly blue-and-white but also some Sawankhalok and a few celadons. We were shown a small Wanli BW bowl from the site (Photo 10-41) and counted 13 remnant holes.[44] The main cemetery's 51 marked graves, oriented 330°-360° from north, are primarily of masonry (Photo 10-43) or arranged stones (Table F-7d).

The recently ploughed surface of one of the fields, zone 3, was cluttered with the great majority of the site's surface artefacts, including two flaked stone artefacts (Appendix G), 2955 earthenware sherds, 243 tradeware pieces and a fragment of green bottle glass.[45] The laboratory identifications of the zone 3 tradewares underpin the identification of the site's main period of use between the 15th and the 18th centuries (Figure 10-26).[46] The slight presence of 19th-20th century tradeware sherdage accords with the glass fragment, the few cement graves, and the site's depiction on the periphery of Macinna kampung in the 1969 (though not the 1910s) land-use map (Figure 10-1b).

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[44] The number of countable holes was small owing to the thick regrowth over most of the reportedly looted area, and the conversion of the remainder to fields.

[45] The pronounced concentration of artefactual debris in zone 3, compared to the zones to its immediate west, could reflect a combination of (i) its slightly more elevated position, making it more attractive for occupation, and (ii) "red herring" factors, e.g. that the farmers had removed much of the debris cluttering zones 1 and 2 into zone 3, or that ploughing in zone 3 had brought a larger proportion of the debris up to the surface.

[46] Laboratory identifications are used because I collected all these tradewares. However, the procedure has exaggerated the late 16th to early 17th century peak in the site's tradeware profile based on fine classes. Approximately one third of the collected pieces were identified as "terminal Ming BW" or "Wanli", identifications which are hard to make in the field. The zone 3 collection is indeed one of the main factors why SSPHAP's broad tradeware categories had to pool the terminal Ming, Qing (BW/Swatow), and Qing whiteware (recent) classes (see B.5).

10.5.5 Bado-Bado Tua and Parang Bambe (Gowa 68)

Parang Bambe's 47 marked graves, oriented 330°-350° from north, include both old and young styles.[47] 150 metres to the west are 19 old marked graves, oriented 350° from north, associated with the former kampung of Bado-Bado (Table F-7d). Four large looter's holes occurred near the latter, and the three fields directly west of the cemetery (zones 1 to 3) contained 16th to 20th century tradeware pieces (Figure 10-26) among other historical artefacts. The 20th century land-use maps depict Bado-Bado as kampung abutting rice fields[48] and Parang Bambe as a cemetery in shifting cultivation. The historical populations represented by these two sites would appear to have been small.

10.5.6 Overview of the KMPBBPB sites

The KMPBBPB sites form a well-defined group of sites bunched at the centre of a curved, elongated sawah depression (Figure 10-1b). Their closest, wider spatial affinities involve sites also abutting this sawah depression (Figure 10-2). The tradeware profile for the KMP sites is dominated by Pattiro-Balang Sari and so shows a pre-Islamic and especially a 15th century accentuation. The BBPB sites show predominantly early Islamic (17th-18th century) sherdage. Tradewares indicate the area has been occupied continually since the 13th-14th centuries and especially after the 15th century. Note that tradewares assigned to the early 16th century, i.e. the approximate period when Paccellekang disappeared from the Bate Salapang and when Tallok originated, appears comparatively scarce (Figure 10-26).

10.6 The Moncongloe Cluster

10.6.1 Jeknek Madinging (UP19-G73) and Manggala Tua (UP18)

Jeknek Madinging, the local name for the stretch of Balang

[47] We were directed to these sites by Bangkala's dusun headman, specifically to Parang Bambe to inspect its old Islamic graveyard.
[48] Present-day Bado-Bado has been relocated a short distance eastwards to the road.

Tallok which constitutes part of the boundary between Kotamadya Ujung Pandang and Kabupaten Gowa (Figure 10-1), covers two locales. The northern locale (UP19), which looks over Balang Tallok, includes an antique-bearing area approximately 15 metres square.[49] The three surrounding houseyards and the dirt road at their front (zones 1, 2 and 4 respectively) contained some 16th-17th century sherdage. However, only 19th-20th century tradeware pieces were recorded in the adjacent houseyard and maize field (Appendix D; Figure 10-32).

200 metres south a path crosses the Jeknek Madinging to a modern tomb (Gowa 73) which, as befits its position in the rice fields, can be inundated to a depth of 1.5 metres (Photo 10-44). The two marked graves inside, ascribed to "Kg Jeknek Madinging" and his bodyguard, are impressive masonry structures of 17th-18th century antiquity (Photo 10-42). Reportedly the tomb was built by people from Bangkala, although visitors come widely from the local area, including Kabupaten Maros, to pay their respects. Stylistically the spiky *nisan* and smooth standing stone are similar to other elite Islamic graves within the Moncongloe cluster. Jeknek Madinging has no other Islamic graves, for its occupants have immigrated from the nearby kampungs and are returned home for burial.

These two burial locales, pre-Islamic and Islamic respectively, are so individually circumscribed that their proximity could reflect coincidence as readily as historical continuity.[50] I would interpret Jeknek Madinging as marginal land for occupation, colonised on an intermittent basis and possibly unsettled for much of the time, as indeed the early 20th century land-use map depicts the area.

Manggala Tua and some further localities on the low spur running west from Jeknek Madinging (Figure 10-1) give the

[49] The householder chanced upon these antiques in the 1970s after digging a wallow for his water buffalo.
[50] Hence Kg Jeknek Madinging's burial place is not accepted as a SSPHAP historical site because, in the absence of further evidence, it could well be of only 18th century antiquity.

same impression.[51] During our investigations we stumbled across two sherd-strewn fields (Photo 10-45) abutting a scrubby patch with ten countable graves marked with masonry or arranged stones (Table F-7d). The available tradewares span the 16th to 19th centuries (Figure 10-32) but, in line with the site's depiction as farmland on the 20th century maps, do not extend to the 20th century. The site, remembered as an old kampung called Manggala, has not been looted, so the tradeware sherdage could represent occupation debris. In that case, the tiny number of graves would suggest that burials occurred here only sporadically despite three to four centuries of occupation.

10.6.2 Patadang Toa, Manyempang Toa, Balang Patti and Embung

Patadang Toa, Manyempang Toa and Embung ring an area shown as sawah on the land-use maps (Figures 5-3 and 10-1b) but which we recorded as unsuitable for any agriculture, even in the dry season.[52] From our experience of making the crossing between Manyempang Toa and Patadang Toa, the water level varies by around one metre diurnally, which can be ascribed to tidal effects transmitted along the Tallok. Balang Patti occurs further north at the Tallok-Diccekang confluence.

Patadang, which appears on the Dutch map as a tiny kampung and on the 1969 map not at all, is an island of ladangs hard against Balang Tallok. Despite the inaccessibility occasioned by its swampy surroundings,[53] Patadang Toa (Gowa 81) is quite a large site, with estimates of 100 looter's holes and 70 marked Islamic graves. The latter, oriented around 340° from

[51] Manggala Toa is very close to two other small Islamic graveyards depicted as the tiny kampungs of Benggala and Lengkesek on the Dutch land-use maps. Benggala's few graves of bricks, masonry or arranged stones looked slightly old and indeed had inspired some reportedly unsuccessful looting attempts. Lengkesek's 60 to 70 marked graves, however, all looked modern. Both kampungs had been abandoned by 1969 (see Figure 10-1b) and so confirm the apparently fleeting nature of settlement here. Moreover, as with Jipang (7.2.1), Lengkesek as described here is definitely not identifiable with the synonymous Polombangkeng polity (4.5).

[52] Probably a combination of too swampy and too brackish.

[53] We did not make a map of the site as the forced wade to reach it prevented us from carrying the appropriate mapping equipment.

north, include a columnar *nisan* under a shelter (Photo 10-46) and other early Islamic styles, as well as a modern brick tomb (Table F-7d). In Macinna we were told that celadons constituted the bulk of the recovered antiques, accompanied by Sawankhalok and blue-and-white. Evidence of an emphasis on celadons rather than the clearly "Ming" classes was not recorded for any other Tallok headwater site, suggesting that the Patadang burial ground enjoyed precocious origins by local standards. Unfortunately, there were no exposures on site which might have revealed tradeware sherdage to test this possibility.

Manyempang Toa (Maros 3) is traversed by the modern road along a raised embankment through the south and north graveyards (Figure 10-30).[54] The north graveyard includes 97 (countable) marked graves in a largely overgrown area which clears to a pasture as it approaches the single sheltered grave. The latter area includes a masonry structure, three metres long by one metre wide, which is apparently a due east-west grave. The other marked graves are all oriented 340°-350° from north (Table F-7f). Attempts to loot here had reportedly been unsuccessful, even though the surface sherdage included a Ming BW piece among later tradewares (Appendix D).

The south graveyard at Manyempang Toa abuts an area of 164 looter's holes which had reportedly produced blue-and-white, Sawankhalok and celadons. The 29 marked graves (Photo 10-47), which include a sheltered grave, are oriented 340°-350° from north, except one example oriented 10° from north. A generally dense cover of secondary forest prevented us from seeing much surface sherdage, but it included Ming BW to 19th century pieces (Appendix D; Figure 10-33).

Balang Pati (Maros 4) is a very similar site - a medium-sized Islamic graveyard (109 marked graves) with an emphasis on masonry (including spiky and undulating *nisan*); considerable use of limestone; and a sheltered grave

[54] Our informant reported that the stretch of road and embankment between the two extant graveyards had also been continuous graveyard. This seems possible, because the extant graves come right to the ditch excavated along the road's course to provide the earth to build the emnbankment.

containing a standing stone (Table F-7f). As at the Manyempang Toa north graveyard, looting attempts had reportedly been unproductive, yet the tiny sample of associated tradeware sherdage included 17th to 19th century pieces (Figure 10-33). Like Manyempang Toa, Balang Pati serves the population of Manyempang Baru (see Figure 10-1b).

Kuburan Tua Embung (Gowa 94) was recorded very scantily. What information I have associates it with the two previously described sites, both in terms of its marked Islamic graves (Table F-7d) and the reported looting of a few antiques.

Despite the quite unpromising aspects today, and the scant early 20th century population as indicated by the Dutch land-use maps, the area of these four sites appears to have enjoyed some local prominence in early Islamic times. All four apparently contain 17th century marked graves. At least three of them represent the major concentration, and possibly the source, of the spiky and undulating *nisan* which are almost the hallmark of the sites within the Moncongloe cluster.[55] We also have the unconfirmed suggestion of precocious origins for Patadang Toa, the most inaccessible of the four sites. Presumably the area has experienced changes to its water regime, e.g. a decreased share of the fresh water discharge and thus a dominance of brackish water, leading to its current marginal utility for agricultural purposes.

10.6.3 Moncongloe Lappara (Maros 2)

Moncongloe Lappara ("low, great hill") looks over a stretch of the Tallok whose banks are only two metres above sea level. The water is brackish during the dry season, such that *nipa* palms occur in the remnants of gallery forest. But it is fresh during the wet season, as indicated by extensive sawah fields immediately west (Photo 10-52) and east of the site.

The deeper course incised by the Tallok during the Pleistocene (Figure 11-1a) would account for the depth of the face of Camba Formation occupied by the site (Figures 5-2 and 10-1). Following the nine-unit model (Douglas, 1977:84-88),

[55] Patadang Toa was not recorded in sufficient detail either to include it in or exclude it from this generalisation.

we can interpret the southern zones as seepage slope, the footpaths labelled zones 2 to 4 and 35 as transportational midslope, the main band of the site as colluvial footslope, and the northeastern zones (6-14, 21-23, 25-27) as alluvial toeslope (cf. Figure 10-28). Zones 6 to 13 constitute a faintly stepped bank (Photo 10-53). The upper bank, which shows broadly similar proportions of clay and silt mixed with lateritic gravels, can be interpreted as a late prehistoric levee of the Tallok[56] now mixed with more recent downwash and colluvium. The lower bank at the water's edge, which is made of gravel-free silts, marks the Tallok's modern levee.[57]

The locations of the site's flaked stone artefacts (observed only in the east part of the site) accord with such an interpretation. Most occurred in the gently declining seepage slope, and the remainder on or along the upper bank here interpreted as late prehistoric terrace (Figure 10-29a).

The east half of Moncongloe Lappara includes seven of the eight Islamic burial areas (as inventorised in Table F-7e), accounting for 219 of the 226 counted marked graves. They do not constitute an exceptionally large number - being exceeded by the cemeteries at Tassili and Moncong-Moncong, for example - but they epitomise the spatial elaboration elsewhere noted at Pattallassang and Pattiro.[58] The graves' orientations rarely fall outside the range 330°-350° from north, and show none of the unusual orientations usually found at Islamic graveyards with deep chronological roots. But old-fashioned masonry occurs prominently and dominates at Kompleks Makam Karaeng Moncongloe (Figure 10-28; Table F-7e). This largely elite cemetery, named after the mosque-like tomb which is the

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[56] This levee would appear to have been deposited after the middle Holocene, because the levee it lower than the sea levels which prevailed at around 4000 BP (see Whitten et al., 1987:20; Figure 11-1b).

[57] The foolowing soil tests have been used in my interpretation. In zone 6 the topsoil was recorded as strong brown, with clay and fine silt in equal proportions, and containing some lateritic gravels. In the taro field in zone 12, the topsoil was recorded as a silty clay with some fine sand and abundant lateritic gravels, and coloured yellowish red. In zone 11 the topsoil was recordedas a yellowish red silt with some clay and sand. Colours refer to dry samples.

[58] As at Pattiro Tua, the graveyards not containing cement markers are associated with families no longer remembered, according to local reports.

centrepiece (Photo 10-49),[59] also holds a discrete group of seven masonry markers with knobbly *nisan* (Photo 10-48) and two cement shelters with masonry *nisan* (Photos 10-50). The north shelter has an unmortared brick base made of two distinct brick types (Table 10-2). The small fat type is modern (cf. Table E-3) but the large thin type, whose dimensions scarcely differ from those of the "large" bricks at Benteng Tallok (Table 12-1), is old.

TABLE 10-2. DIMENSIONS OF THE MONCONGLOE LAPPARA BRICKS

	No.	$\tilde{x}$	S.D.	Range
Large thin bricks				
Length	4	36.0	0.82	35-37
Breadth	11	19.3	2.15	15-21
Thickness	10	5.65	0.47	5-6.5
Small fat bricks				
Breadth	9	11.5	0.71	11-12.5
Thickness	7	5.0	0.50	4-5.5

Isolated instances of further elite marked graves occur among the graves west of zone 21 and south of zone 24. East Moncongloe Lappara also contained virtually all of the site's "Ming" tradewares but few later tradewares. The point stands clearly in the tradeware densities (Figure 10-29) and in the tradeware profiles (Figure 10-32). Patterns like these are usually associated with burial complexes spanning the pre-Islamic and Islamic periods (e.g. Kanjilo Lama, Pattiro Tua). However, local reports denied any antique looting, and we counted only 41 looter's holes which, moreover, were restricted to zones 15 and 38 (Figure 10-28). Further, the most consistent presence of "Ming" tradeware pieces, along the Tallok's upper bank (here interpreted as a late prehistoric terrace), was associated with strong to very high earthenware counts (Appendix D).

Although the site's interpretation is complicated by the variable effects of erosion and deposition, the available data suggest that east Moncongloe Lappara had been under occupation between the 15th and early 17th centuries,

[59] The cemetery is also called Kompleks Makam Kobang, after this main tomb. Kg Moncongloe was locally reported as having been a descendant of Syech Yusuf.

particularly along the Tallok's upper bank.[60] Its occupants might well have been locally prominent, given the strong presence of "Ming" tradeware pieces, and the post-Islamic use of the area as an elaborate burial ground. Zone 15 could then represent a small pre-Islamic burial ground restricted to the local nobility. The site could have owed its prominence to the expanses of surrounding sawah, or more probably to its strategic location on the Tallok at a time of significant transport by prahu. Certainly, the site can be readily identified with the "Moncongloe" which reportedly sided with Kgloe ri Sero upon his succession dispute with his brother Batara Gowa (SG:14).

Finally, west Moncongloe Lappara appears to have been scarcely occupied before the 17th century. The seven houses we mapped there might represent its peak (Figures 10-29 and 10-32).

Moncongloe Lappara is the last site to join the Moncongloe cluster (Table 10-1) and lies well northwest of the cluster centre (Figure 10-2). As our survey did not extend further northwest, I cannot comment on whether there might be other historical sites along this stretch of the Tallok. If such sites do exist, they could conceivably bring the centre of the Moncongloe cluster closer to Moncongloe Lappara, but they could also possibly drag the site into some other site cluster.[61] Nonetheless I retain Moncongloe as the eponym for

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[60] It is after all possible (though not very likely) that pre-Islamic burials had occurred widely. Some could have been eroded out while others have been deeply buried by downslope wash; or they were accompanied by smashed ceramics rather than complete pieces; or tilling had broken up the interred ceramics prior to realisation of their value on the antiques market. Possibly, also, the high earthenware counts could reflect late prehistoric occupation unrelated to the site's tradewares. Yet again, the concentration of artefacts along the upper bank could merely reflect secondary depositional factors. The interpretation offered in the main text, however, makes the least possible deviation in its treatment of the site's evidence from the criteria standardly employed for SSPHAP's other Gowa sites.

[61] It can however be pointed out that the land northwest of Moncongloe Lappara has been only thinly populated during the 20th century (Figures 5-3 and 10-1b), and the apparent historical toponym of Sanggarang does not affect the clustering of the "Moncongloe cluster" sites. Nearby historical sites north of the Tallok would of course also

the cluster, because Moncongloe Lappara is the largest site and the only one identifiable as a historical toponym.

The cluster forms a well-defined entity not only on geomorphological grounds, parked as it is at the confluence of the Tallok and Diccekang tributaries, but also on the stylistic grounds of its early Islamic marked graves. Evidence of mutual influence with the BBPBKMB sites directly to the southeast is also apparent (cf. Figure 10-2b).[62] All of the Moncongloe sites where we recorded surface tradewares show an early 17th century peak in the standardised chronological histograms (Figure 10-32), which interestingly corresponds with the period of Tallok's dominance within greater Gowa (13.3.3).

10.7 Sites Along the Diccekang Tributary

Our road transect eastwards to Moncongloe Bulu, running more or less parallel with the Diccekang, traversed a thinly populated, rolling landscape almost devoid of rice fields (Figure 10-1). The site of Diccekang abuts the single extensive rice field (Photo 10-55), while the creek running through Moncongloe Bulu has been bunded into small rice fields too (Photo 10-51). Absence of a wider surveyed context precludes any speculation on these sites' spatial affinities. But we may certainly hypothesise a very low site density which, if correct, would render the concept of site clusters inapplicable. The main value of the transect may be in showing that some level of settlement had extended along the Diccekang during greater Gowa's precolonial period.

Kuburan Islam Diccekang (Maros 6) includes three spatially segregated graveyards (Figure 10-31) containing 153 marked graves generally oriented 320°-350° from north. The style of

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raise the issue of how to deal with river crossings in the site-clustering analysis.

[62] As noted in the site descriptions, people from Bangkala had built the tomb for Kg Jeknek Madinging, and the cemetery at Moncong-Moncong serves the Macinna occupants. On the other hand, the pronounced presence of masonry markers of often fine workmanship noted for the Moncongloe sites also characterises Bangkala and Biring Balang tosome degree, contrasting with the graveyards east of Bangkala which are dominated by stone arrangements.

stones arranged into a rectangle dominates, even at the newer graveyards at the east and the west which are associated with non-*asli* (non-original) families (Table F-7f). More impressive versions in the same style include a revered example and an example direcly beneath the *saukang* within the central graveyard. Two other marked graves, enclosed in a shelter, are associated with *nenek moyang* figures whose names have been forgotten (Photos 10-56 and 10-57). These four graves, and some of the masonry markers in the central graveyard, are oriented 20° from north. 68 holes attest to looting which had reportedly been carried out by outsiders. The surface sherdage included a single Vietnamese piece with overglaze decorations,[63] otherwise mainly Qing and European pieces (Figure 10-33). These points accord with the site's identification as Diccekang kampung until the kampung recently moved to the modern road.

Moncongloe Bulu (Maros 5) is located at "Moncongloe 2", a fair-sized kampung nestled beneath Batu Moncongloe as shown on the Dutch land-use maps. At the time of our survey the area contained scattered houses among a landscape dominated by shifting cultivation. The cemetery, an area of around 60 metres diameter now enveloped by secondary forest (Photo 10-54), includes 145 looter's holes, 131 countable graves and a *saukang*. The inhabitants could only report that the looting had occurred long ago, but in Bangkala (Gowa 65) we had already been told that only Sawankhalok[64] and blue-and-white ceramics had been found. The marked graves consisted entirely of sharp standing stones, often enclosed in a rectangle of arranged stones, not only at the cemetery but also at two small, reportedly modern graveyards which we saw *en route* to the site. A small surface assemblage which we recorded across the creek from the cemetery had no tradewares other than Qing and European (Figure 10-33).

[63] Although treated as a 15th century piece for the sake of methodological simplicity (B.4.3), its most likely date would be the late 15th to 16th century (cf. Brown, 1988:26).
[64] Including a Sawankhalok celadon kendi under the saukang.

10.8 Overview of the Tallok Headwater Sites

The combined tradeware profile of the Tallok headwater sites is markedly depauperate in 13th-14th century tradeware pieces (Figure 10-32). Assuming comparability with SSPHAP's Gowa sites generally,[65] we would infer that the area was only thinly populated before the 15th century, suggesting a comparatively late utilisation of the area's broad valleys as rice fields. Even if the profile dips and peaks during the subsequent centuries (Figure 10-32), the fundamentals of the settlement pattern shown by the Dutch land-use maps appear to have been established by, and maintained since, the 15th century. The post-Islamic dips can be related to particular historical events, suggesting that historical events might be related to the early 16th century dip.[66]

As argued above, the sites Moncongloe Lappara, Pattiro Tua and Pattallasang Tua can be identified with the historical toponyms Moncongloe, Paccellekang and Pattallasang. Moncongloe sided with Kgloe ri Sero upon his succession dispute with Batara Gowa at c.1500, while the latter two *Gelarang* sided with Batara Gowa (SG:14). The establishment of the kingdom of Tallok appears to have involved some translocation of upstream communities to the Tallok mouth (ST:5-6). Tumapakrisik Kallona's middle reign between c.1520 and c.1540 appears to have witnessed Gowa's embattlement, and a severe reduction in her subject territories including the loss of Paccellekang and Pattallassang (Figure 13-9b). This framework promotes the following interpretation of the Tallok headwater sites.

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[65] It would of course be possible to explain away this result, or any but the grossest inferences arising from the surface tradeware frequencies, with special pleads, e.g. that the communities here had merely taken a belated interest in tradewares or in burying them with the dead, or that the early burial grounds had been missed by the survey, or that the looting of 13th-14th century ceramics had here resulted in very little spallage, etc.

[66] For example, the 20th century dip can be attributed to the construction of roads above the rice fields (10.1). And the dip after the early 17th century into the early 18th century possibly reflects local upheaval associated with Gowa's defeat in the Makassar War and the fear of Bugis spoliation (cf. Andaya, 1981:193-194).

The concentration of Tallok-like names between Tassilli and Talla-Talla supports the notion that people from here might have relocated to Tallok. The evidence for a pre-Islamic Bugis immigration from Soppeng and Lamuru might suggest this area was comparatively underpopulated and possibly beyond any overarching jurisdiction in the 16th century (Figure 13-9b). The early 16th century drop in the tradeware profile, which applies only to the area east of Bangkala, further suggests that the area was then partly abandoned owing to Gowa's inability to provide protection. We can reasonably assume that the area of the Moncongloe cluster then enjoyed Tallok's protection, and may well have received immigrants from upriver even if it also supplied emigrants to the Tallok mouth.

The late 16th century, a period when Gowa enjoyed spectacular local expansion, witnessed the re-admission of Pattallassang to the *Bate Salapang* but not Paccellekang. This might seem anomalous, except that with Gowa's *Bate Salapang* now so widespread, there might have been scope for only one member from the Tallok headwaters, and the post fell to Pattallassang (Figure 13-10b). Then during the 17th century a situation approximating that at the beginning and end of Tumapakrisik Kallona's reign was re-established, with Paccellekang first re-appearing as a karaengship of a Gowa princess, and subsequently being re-admitted to the *Bate Salapang*.

The full scenario adumbrated here possibly drives the available evidence very hard. Still at the very least it shows that my identifications of the toponyms Moncongloe, Paccellekang and Pattallassang, and equally Tallok's origin story, are fully compatible with the evidence from the Tallok headwater sites.

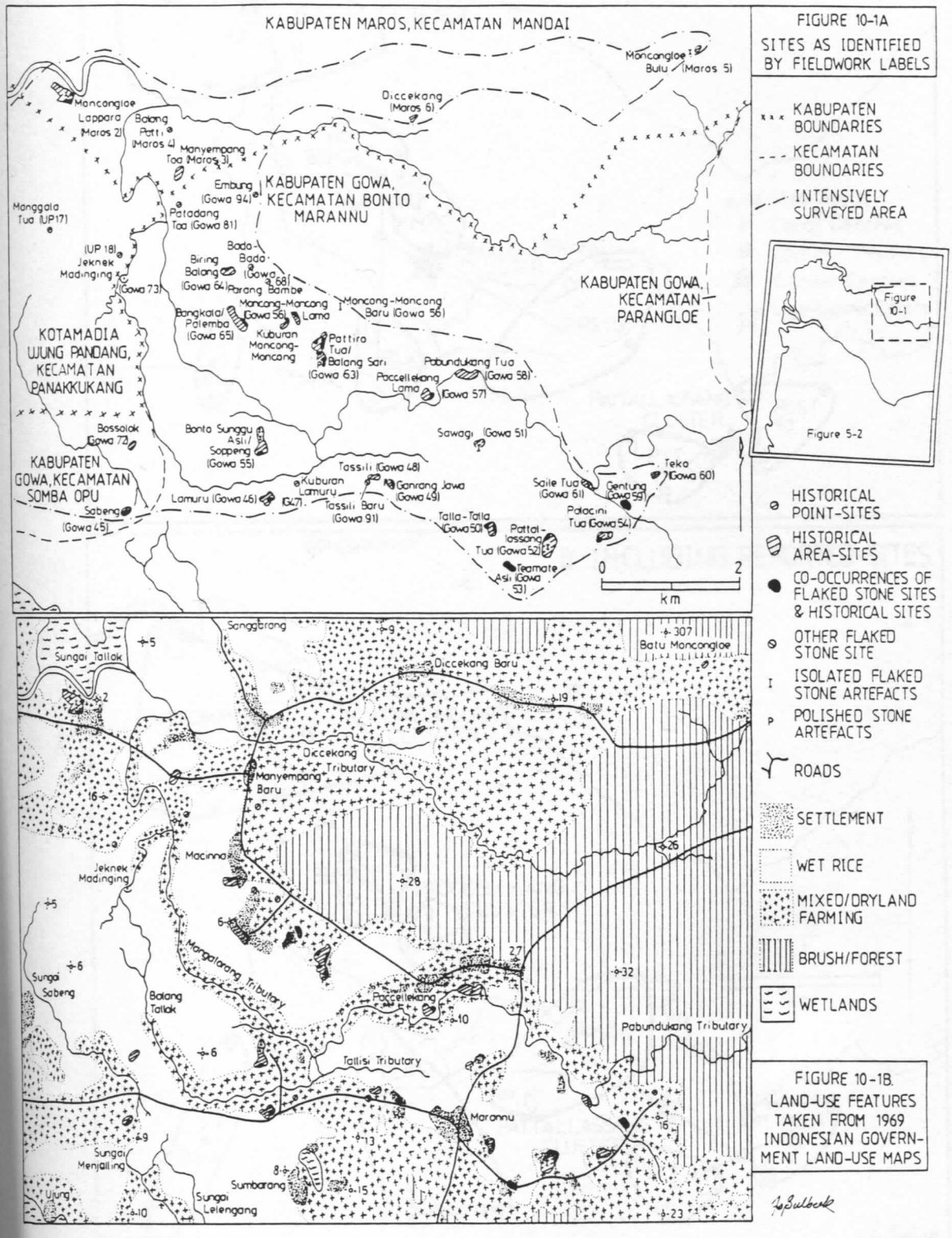


FIGURE 10-1.
SITES OF THE TALLOK HEADWATERS IN RELATION TO TOPOGRAPHIC FEATURES

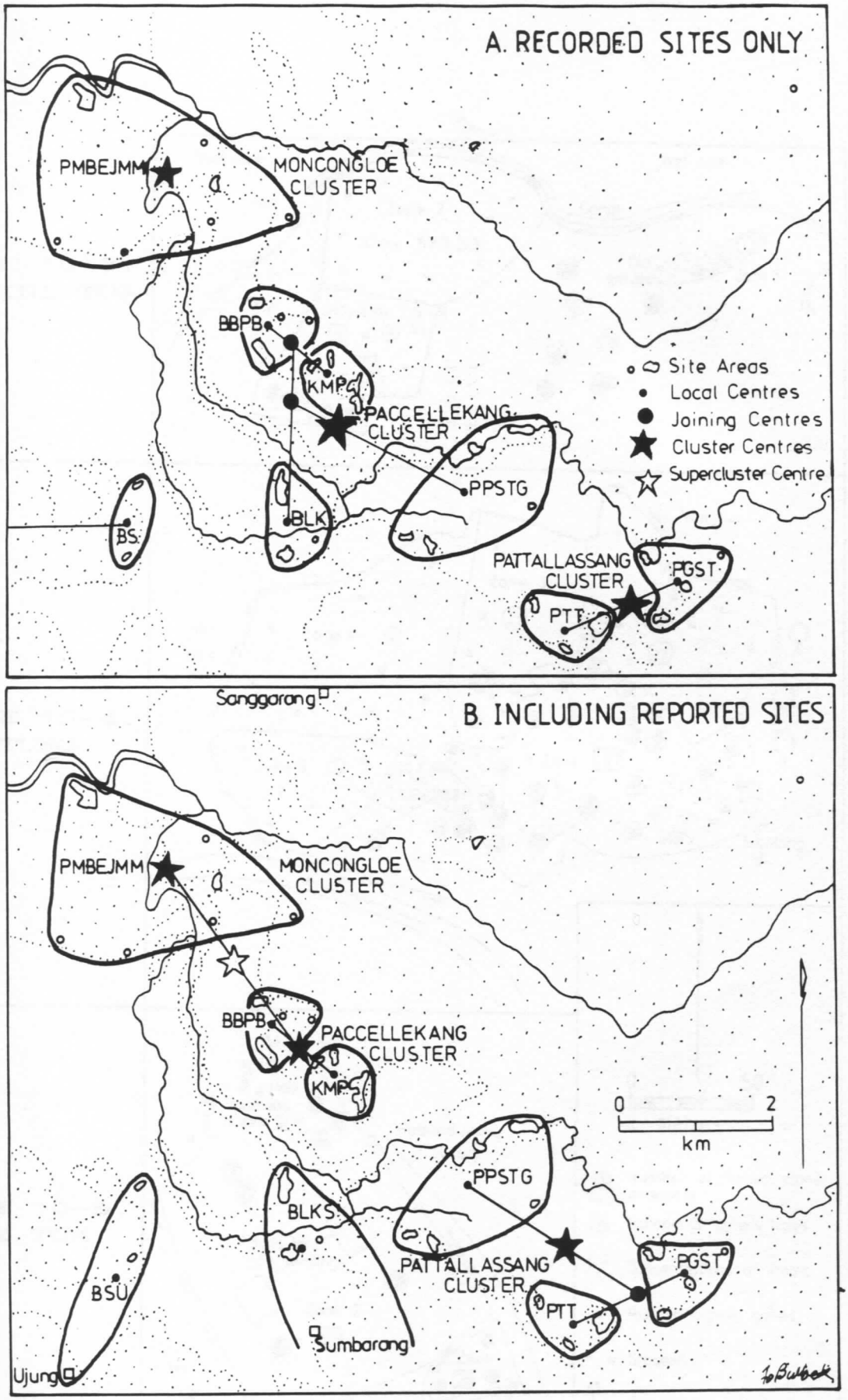


FIGURE 10-2.

AVERAGE-LINKAGE CLUSTERING OF THE TALLOK HEADWATER SITES, SET AGAINST THE SAWAH DEPRESSIONS (UNSTIPPLED AREAS)

FIGURE 10–3.
PALACINI TUA

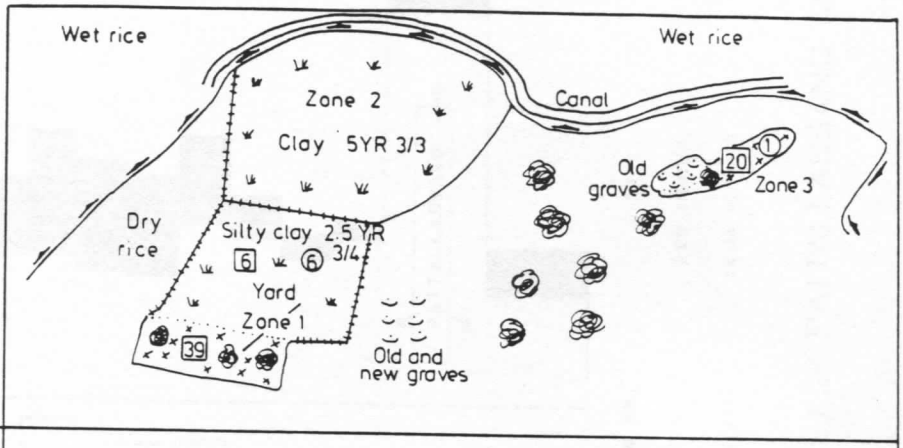


FIGURE 10–4.
GENTUNG

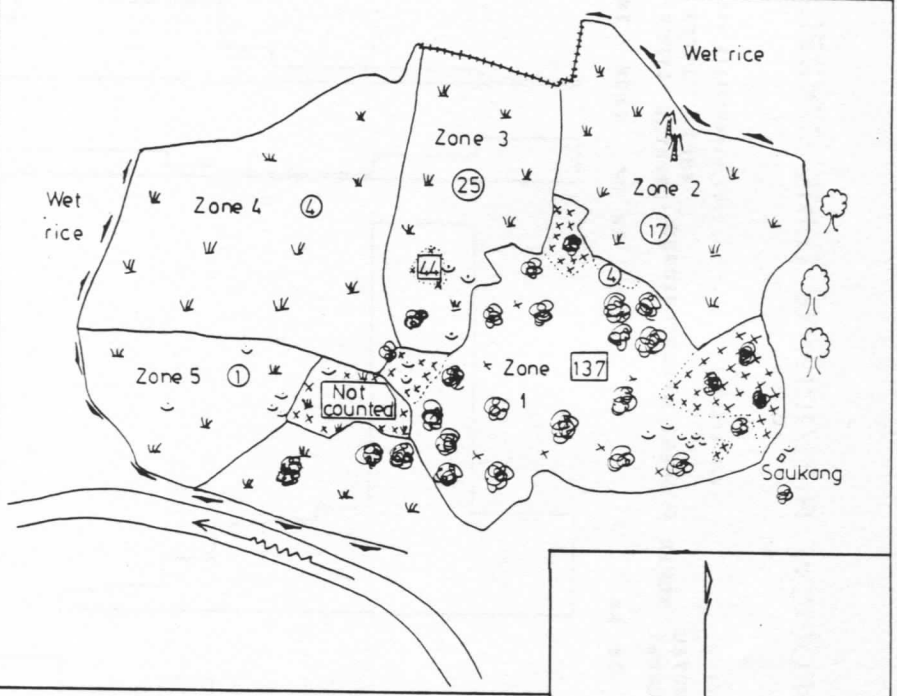
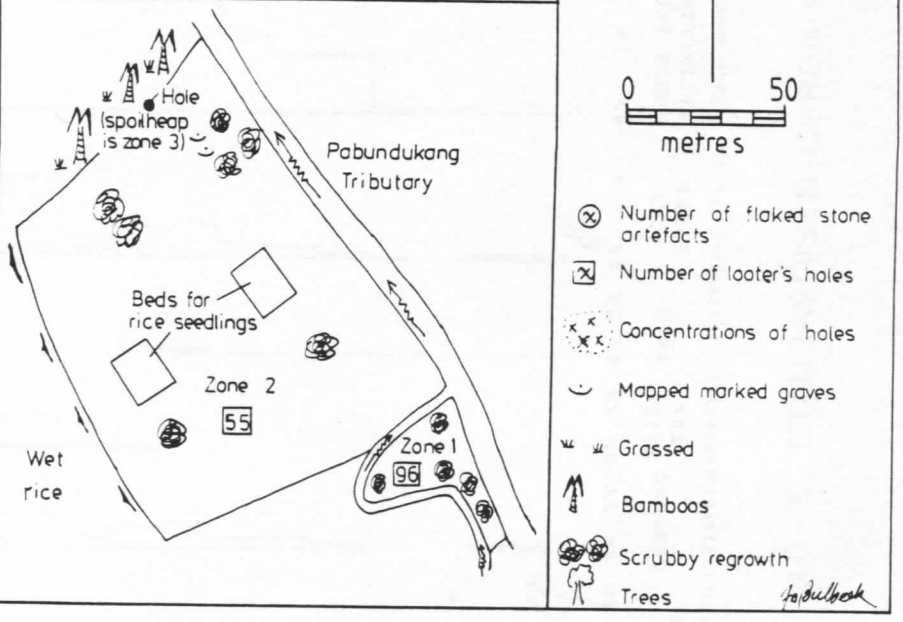


FIGURE 10–5.
SAILE TUA



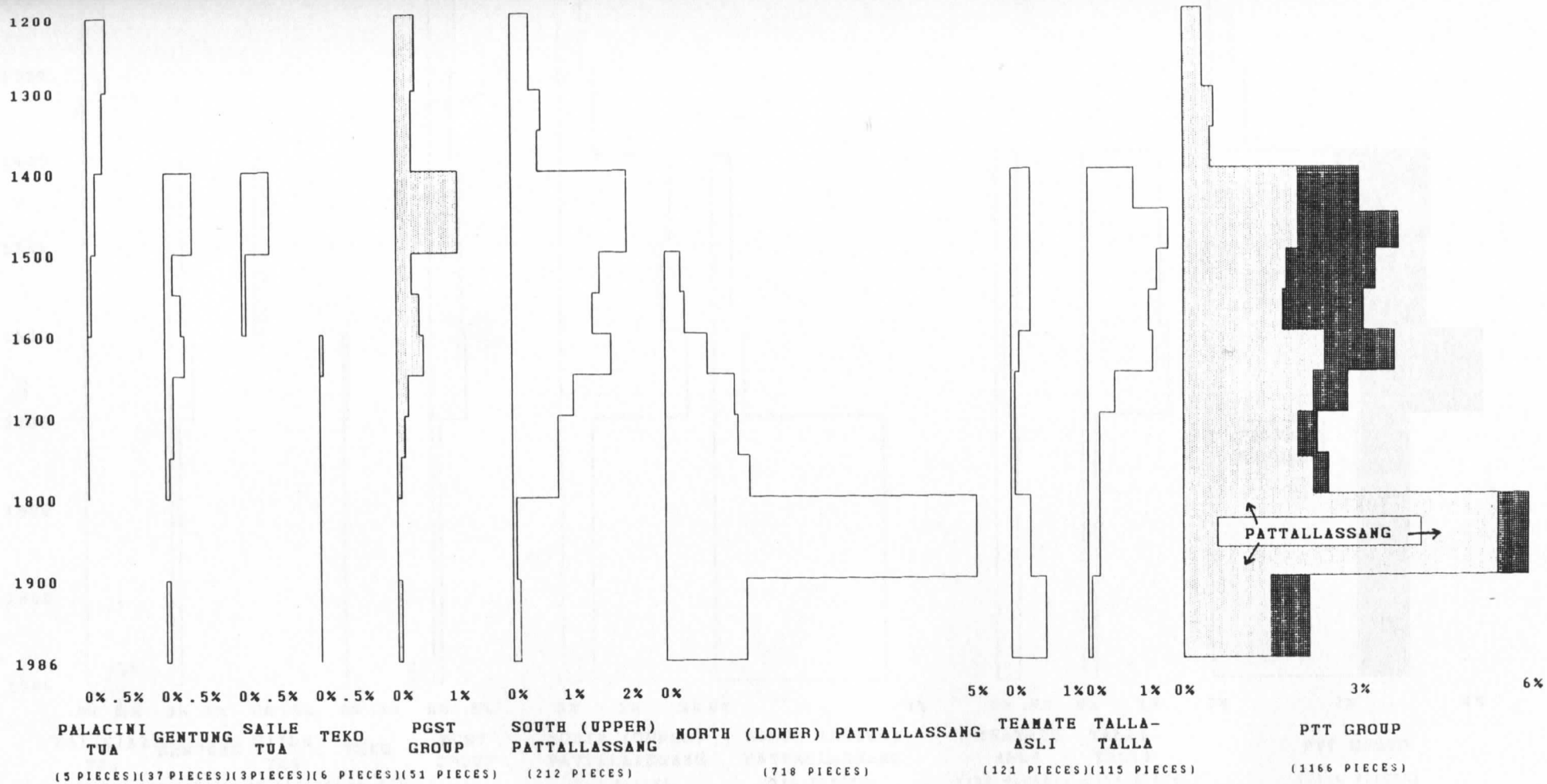


FIGURE 10–6. STANDARDISED CHRONOLOGICAL HISTOGRAMS (FINE CLASSES) – PATTALLASSANG AREA

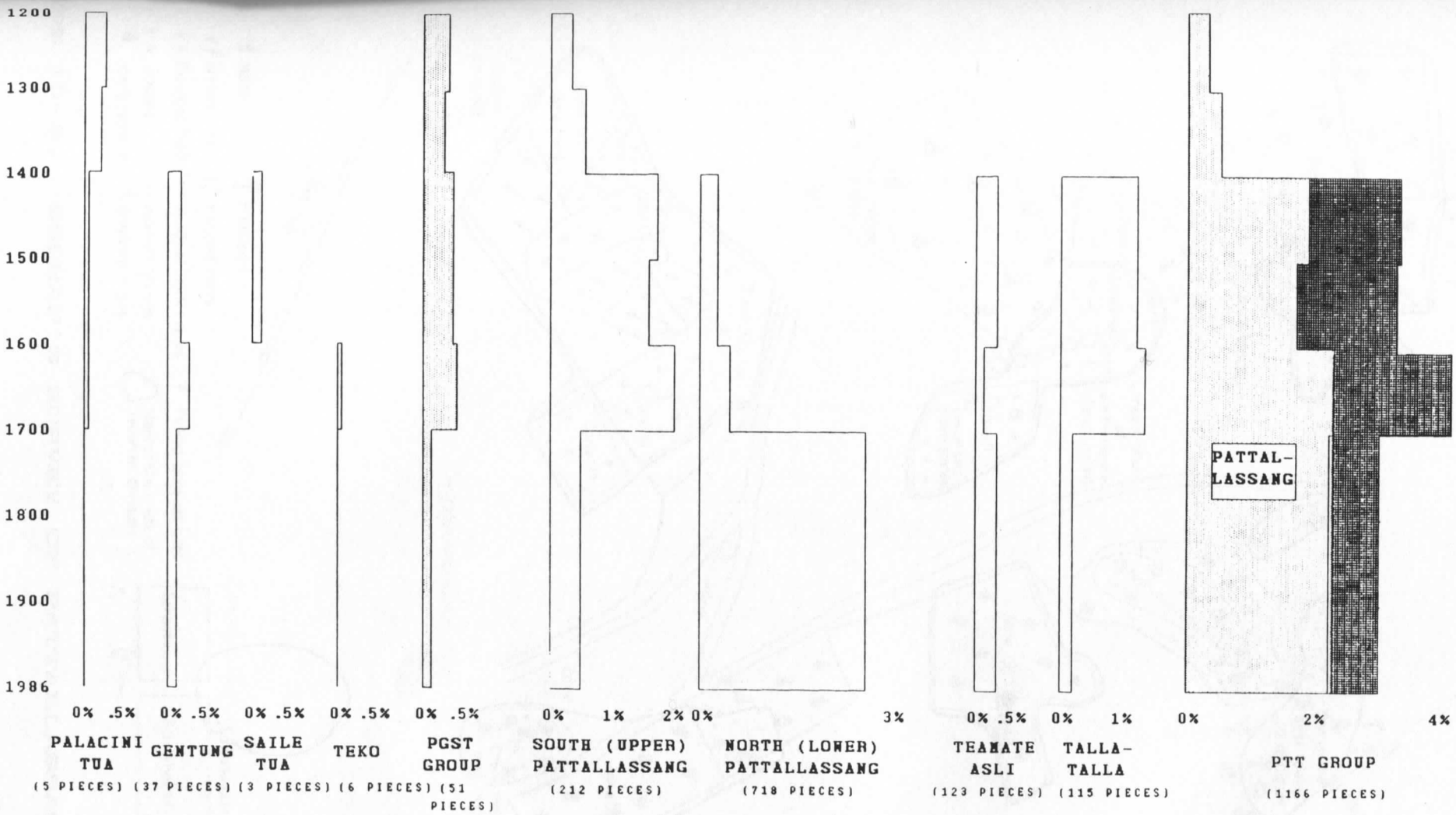
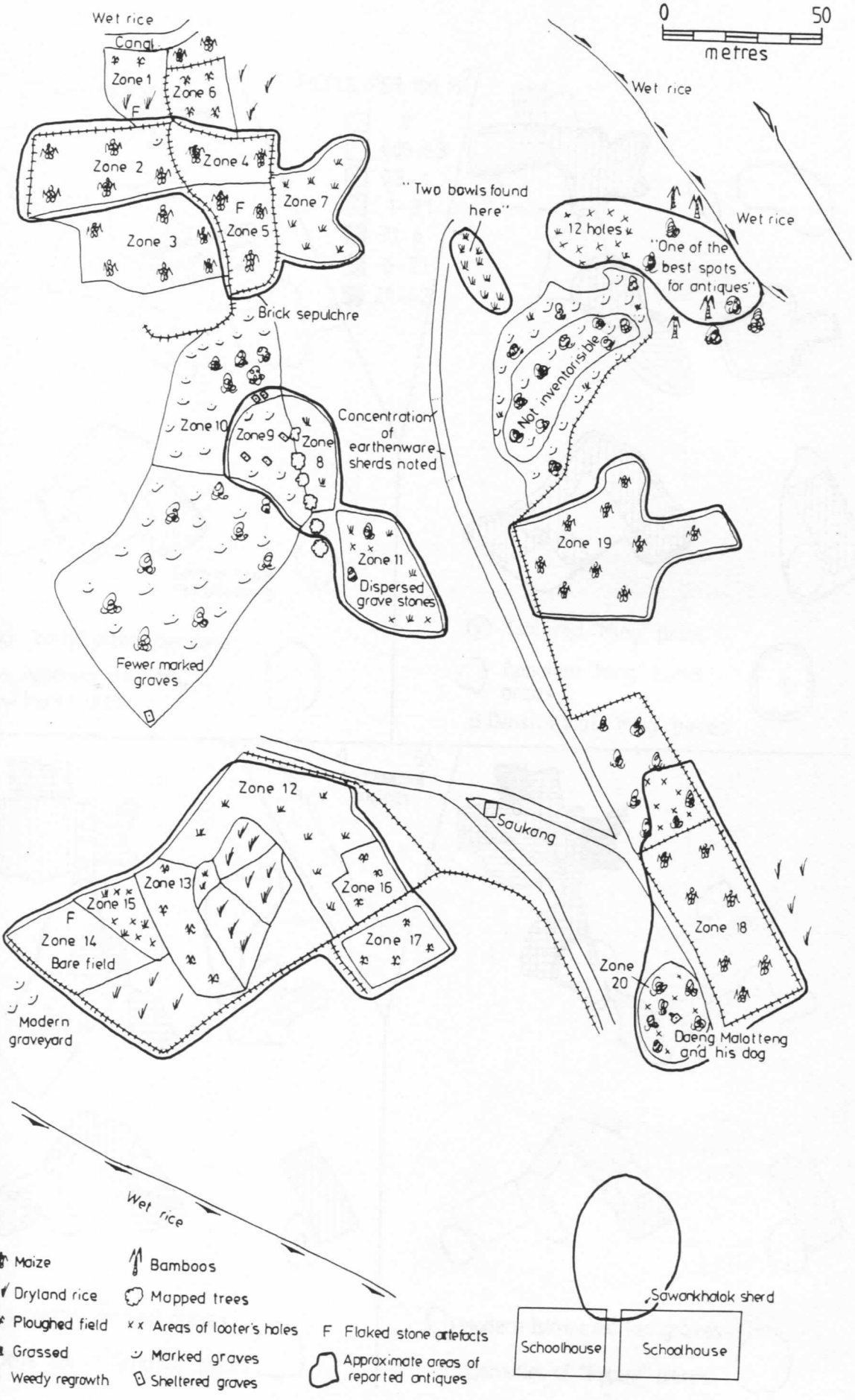


FIGURE 10-7. STANDARDISED CHRONOLOGICAL HISTOGRAMS (BROAD CLASSES) - PATTALLASSANG AREA



GURE 10-8. SSPHAP'S SURVEY OF PATTALLASSANG TUA

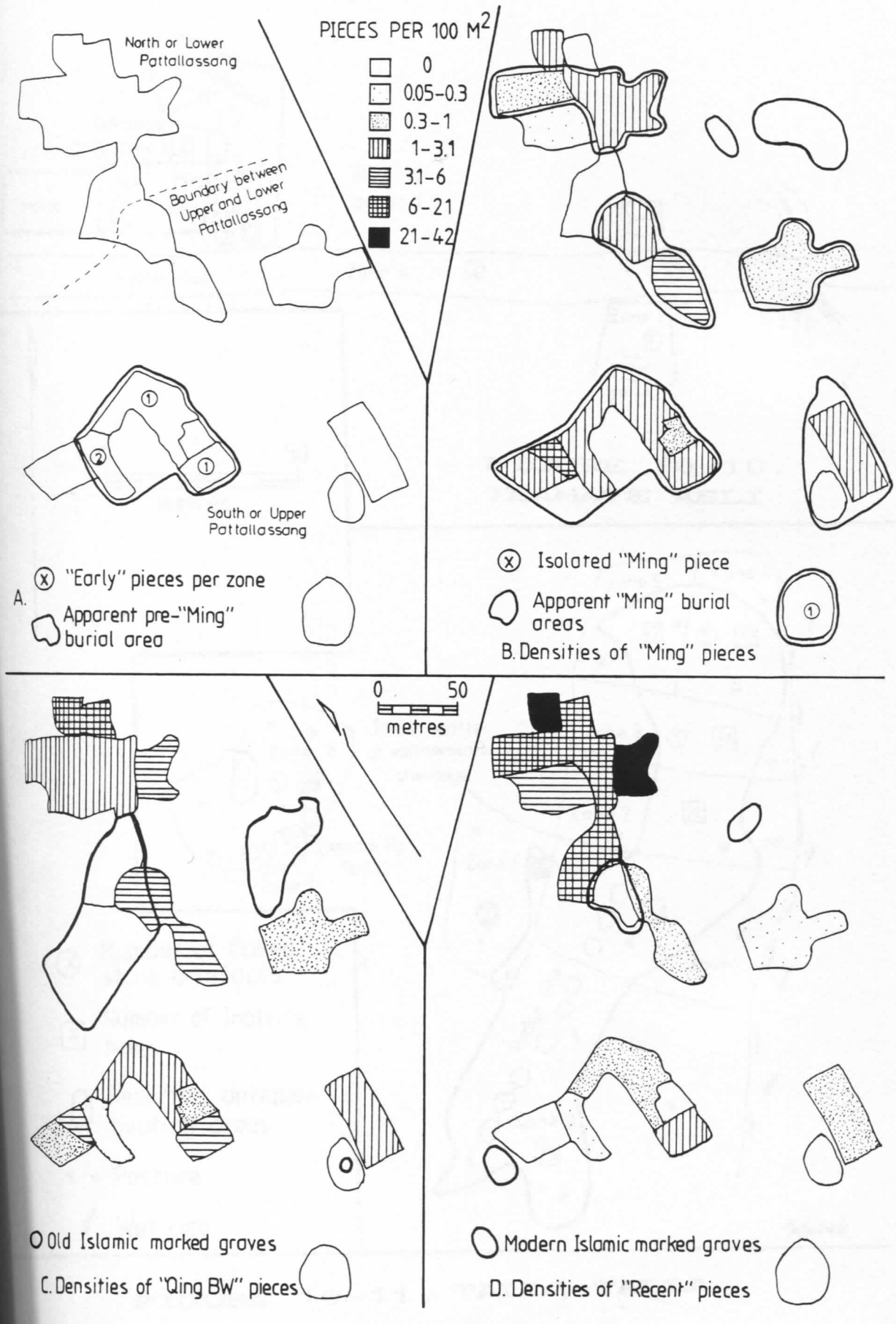


FIGURE 10–9. OCCURRENCES OF "EARLY" PIECES AND DENSITIES OF OTHER PIECES, PATTALLASSANG TUA

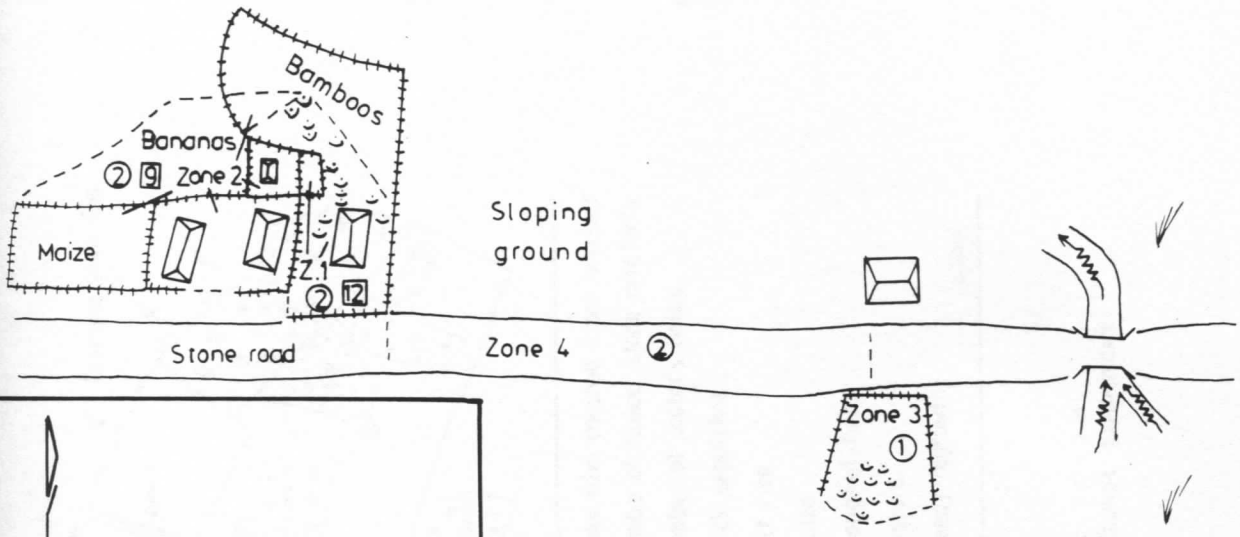


FIGURE 10-10.
TEAMATE ASLI

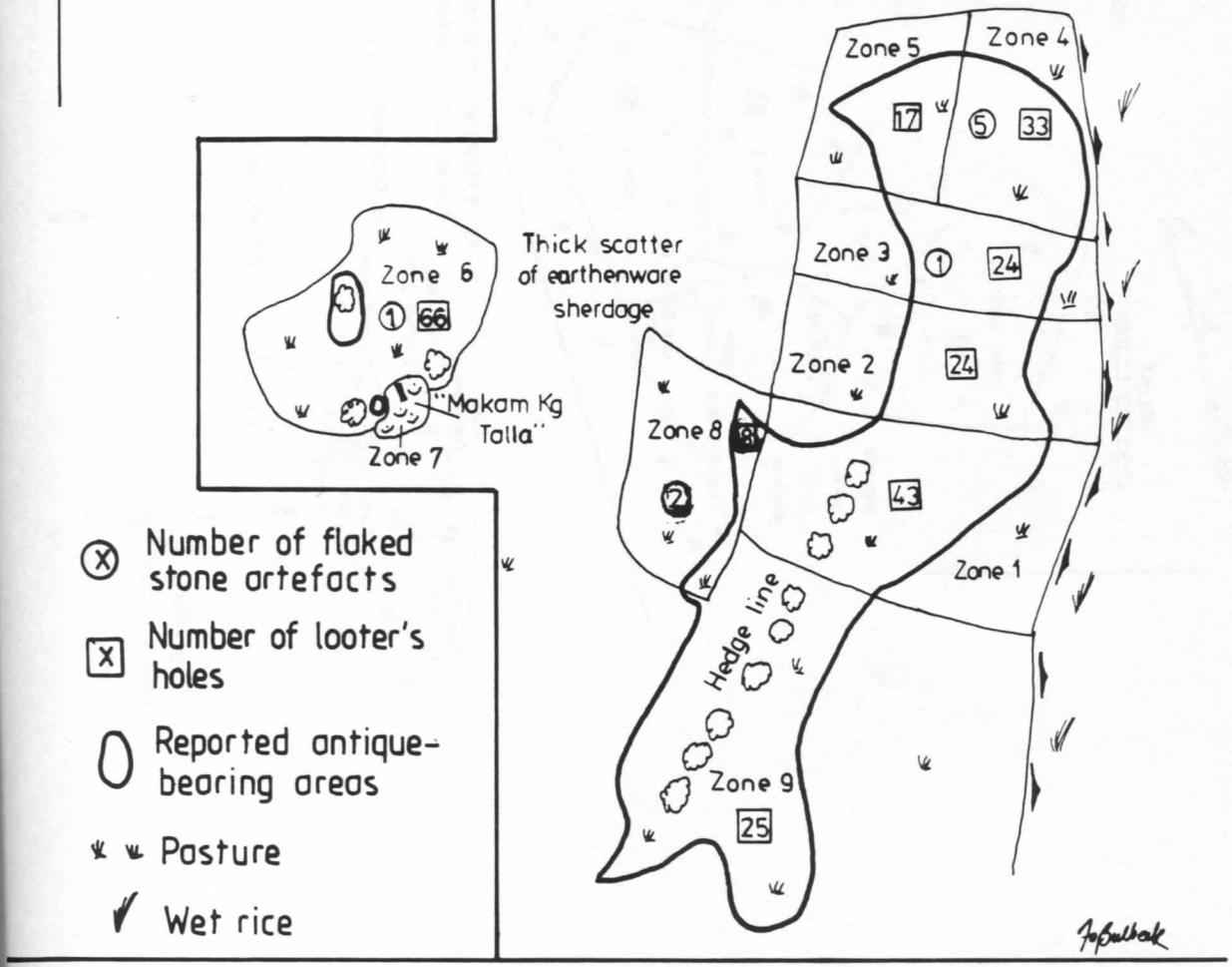


FIGURE 10-11. TALLA-TALLA

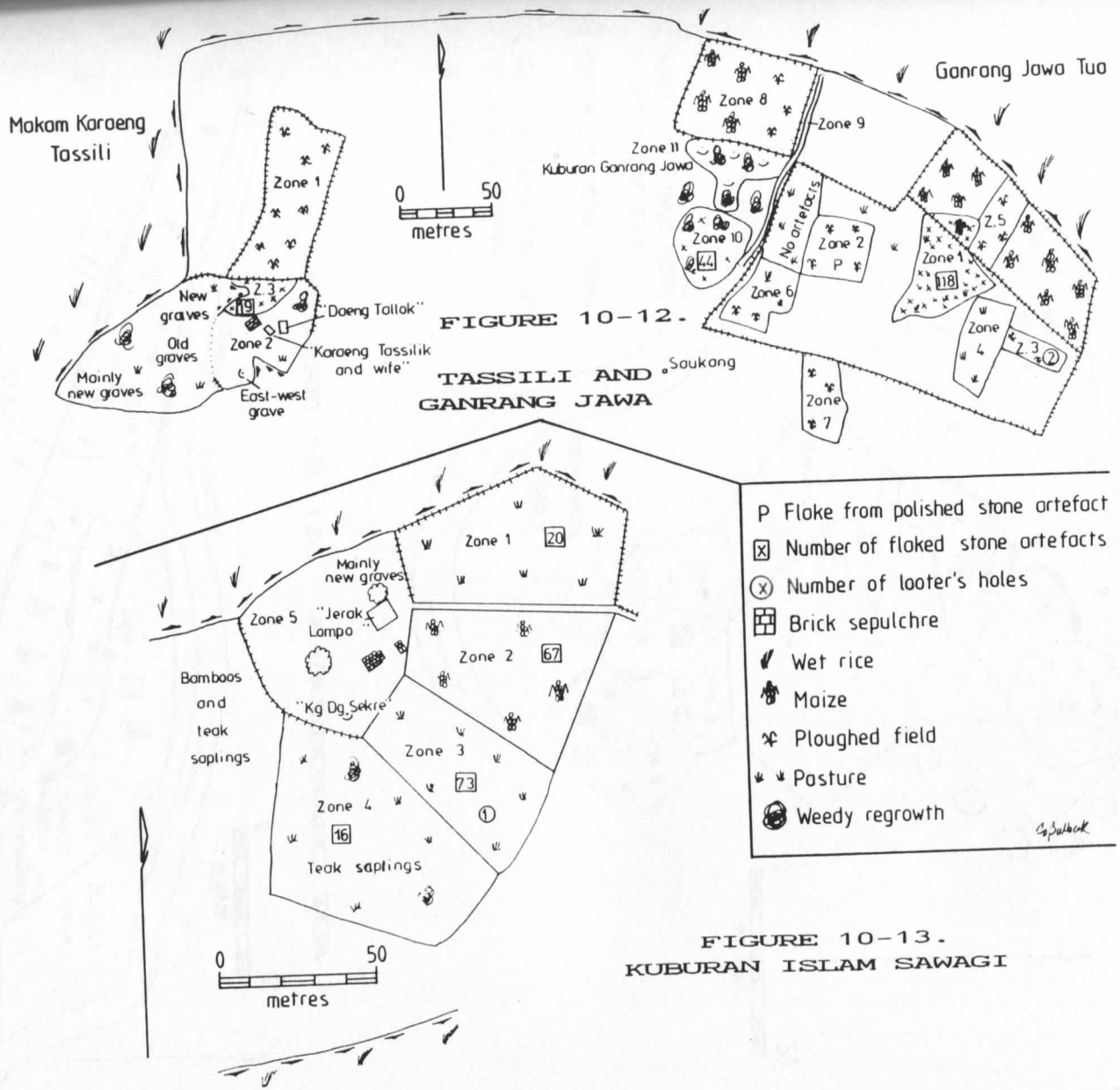


FIGURE 10-12.

FIGURE 10-13.
KUBURAN ISLAM SAWAGI

FIGURE 10–14.
PACCELLEKANG LAMA

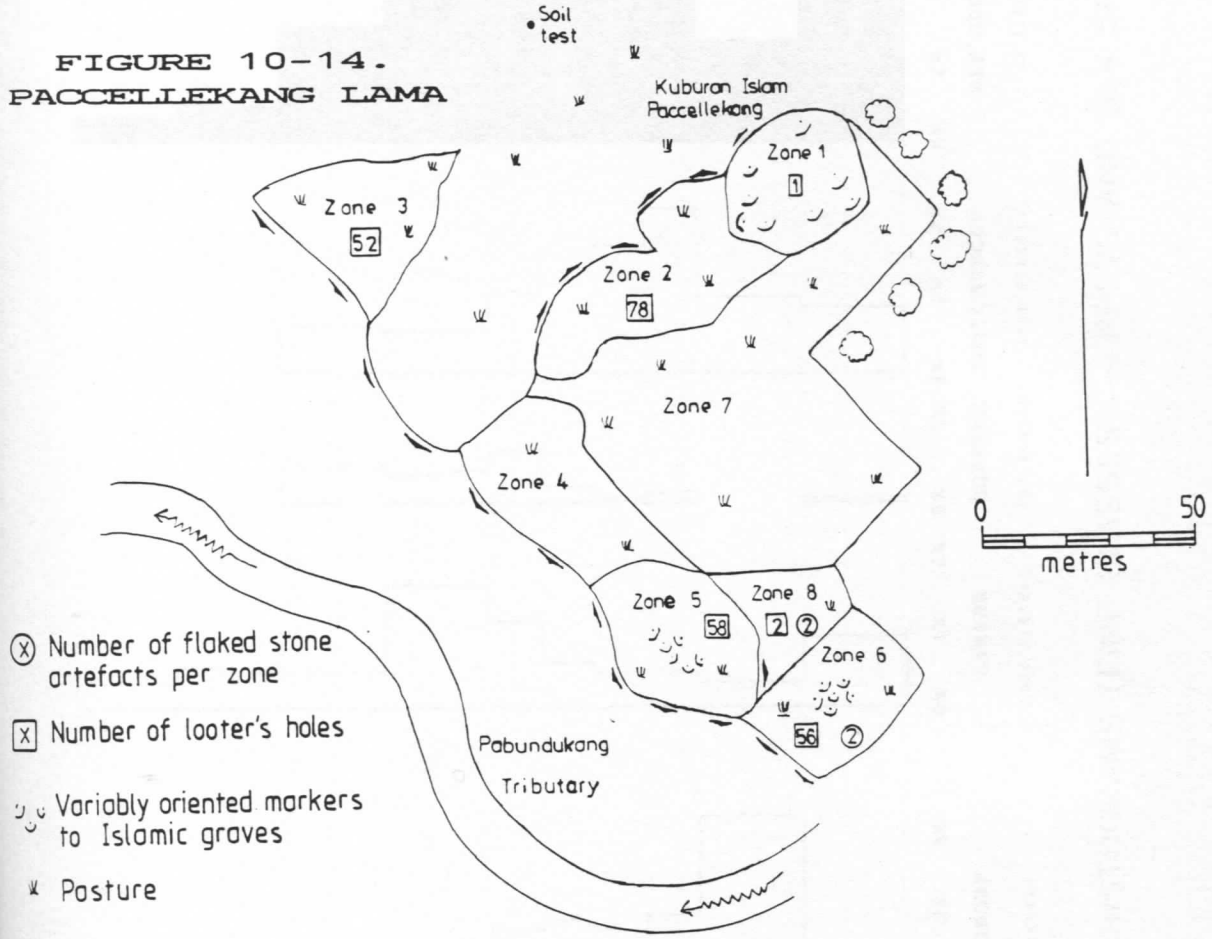
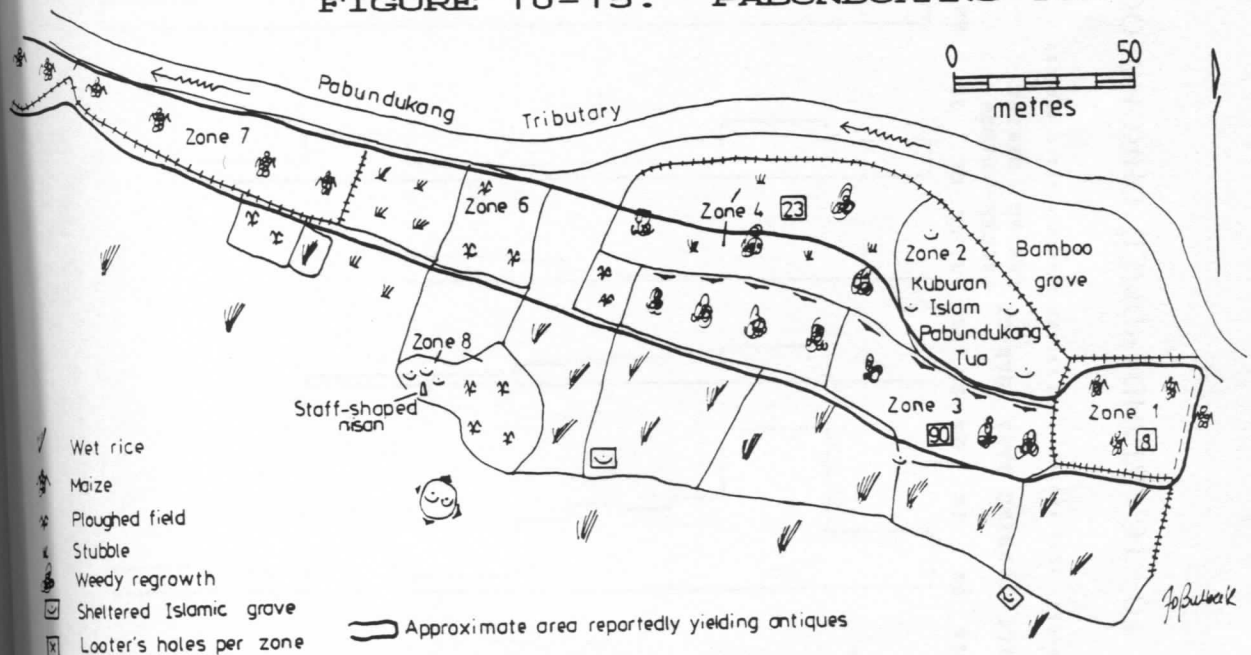


FIGURE 10–15. PABUNDUKANG TUA



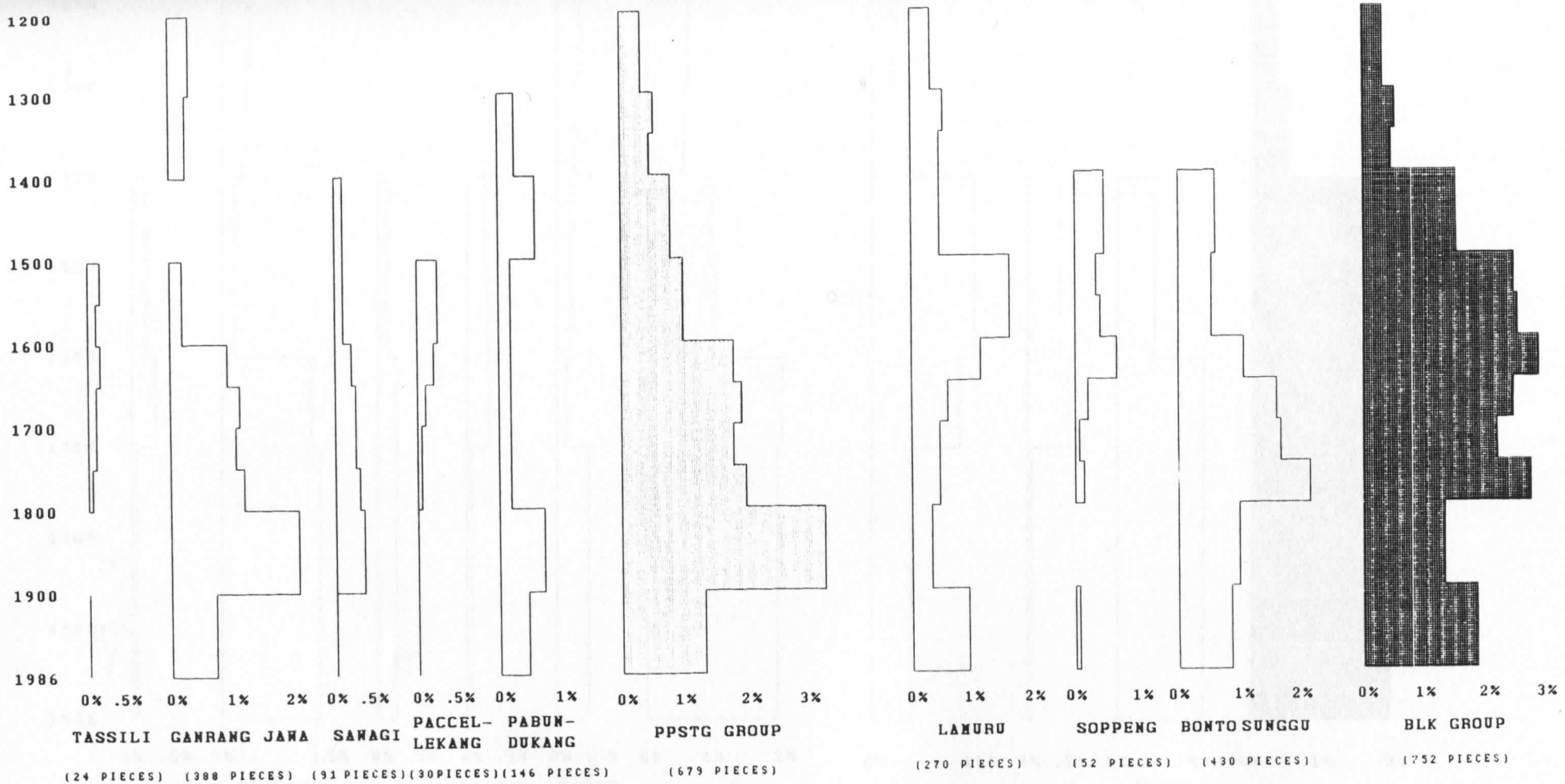


FIGURE 10–16. STANDARDISED CHRONOLOGICAL HISTOGRAMS (FINE CLASSES) – PPSTG AND BLK SITES

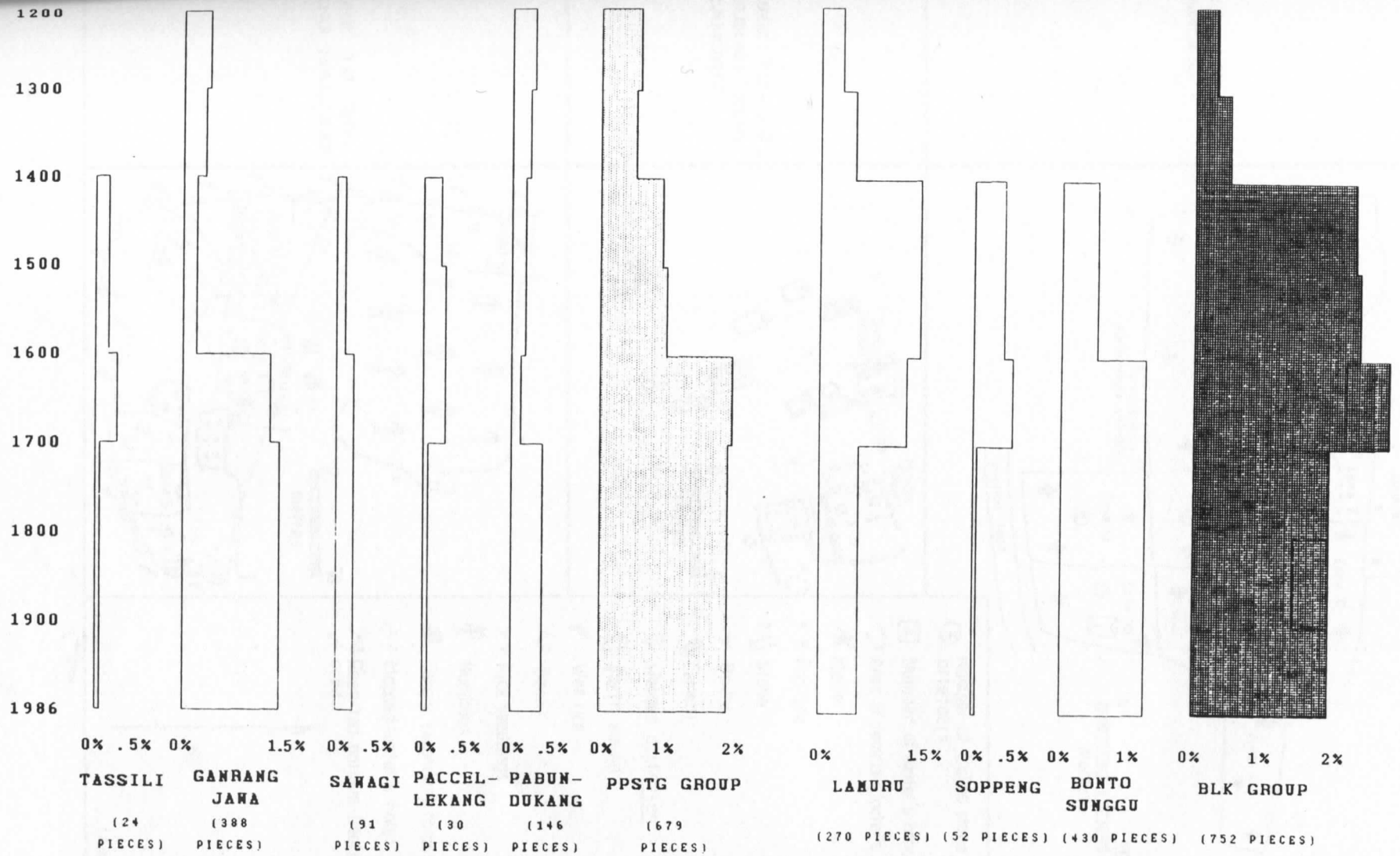


FIGURE 10-17. STANDARDISED CHRONOLOGICAL HISTOGRAMS (BROAD CLASSES) - PPSTG AND BLK SITES

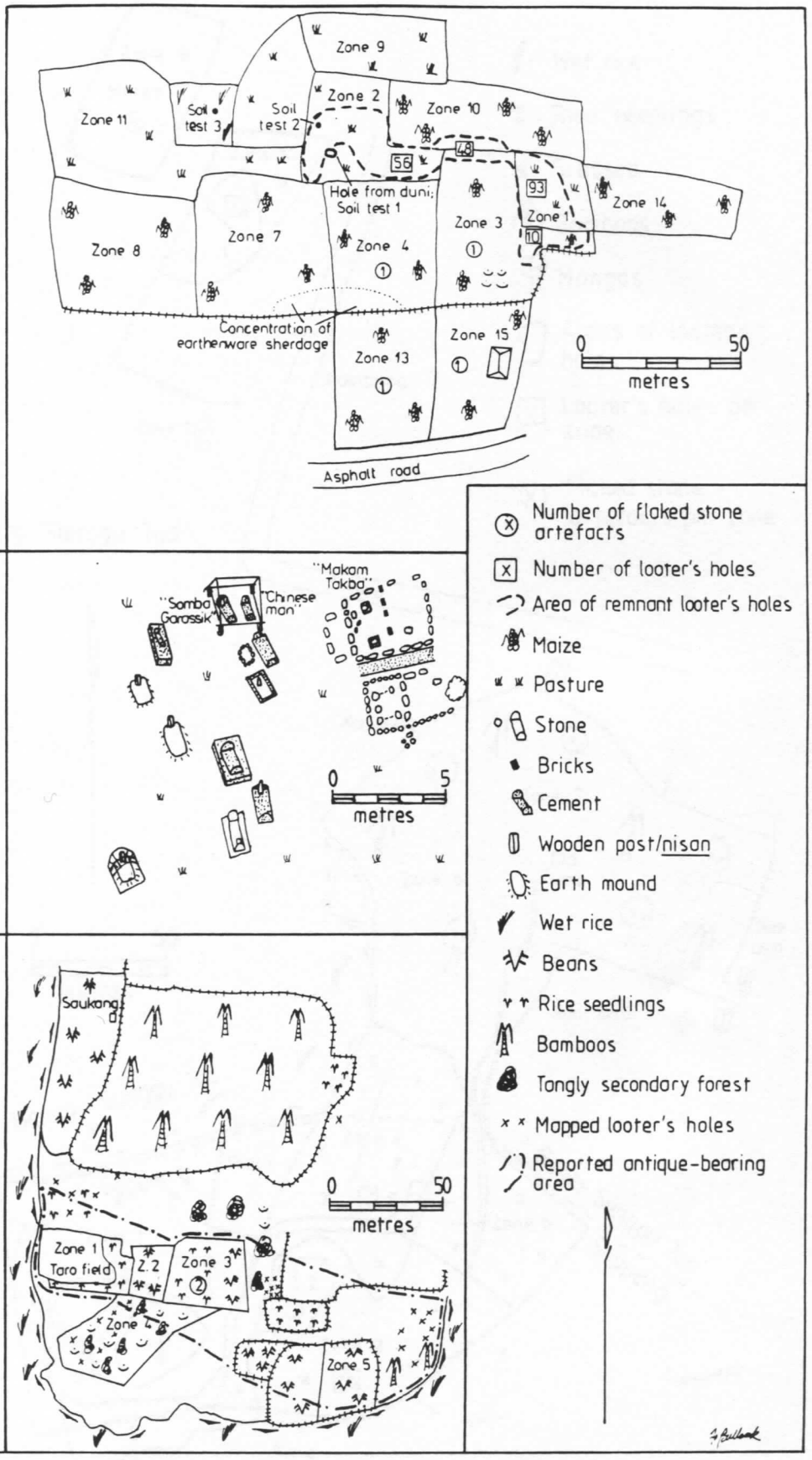


FIGURE 10–18. LAMURU

FIGURE 10–19. KUBURAN TUA LAMURU

FIGURE 10–20. BIRING BALANG

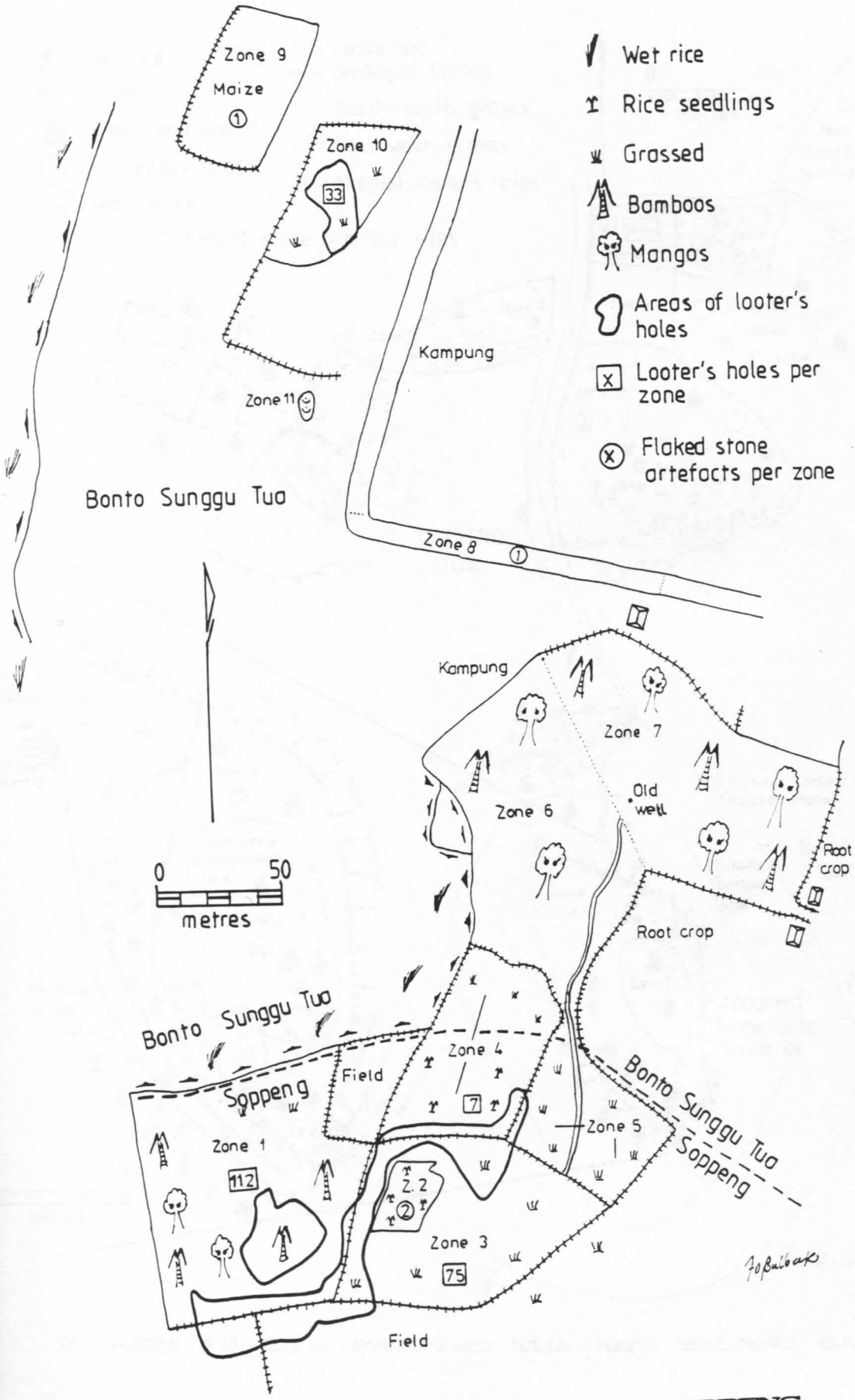


FIGURE 10-21. BONTO SUNGGU AND SOPPENG

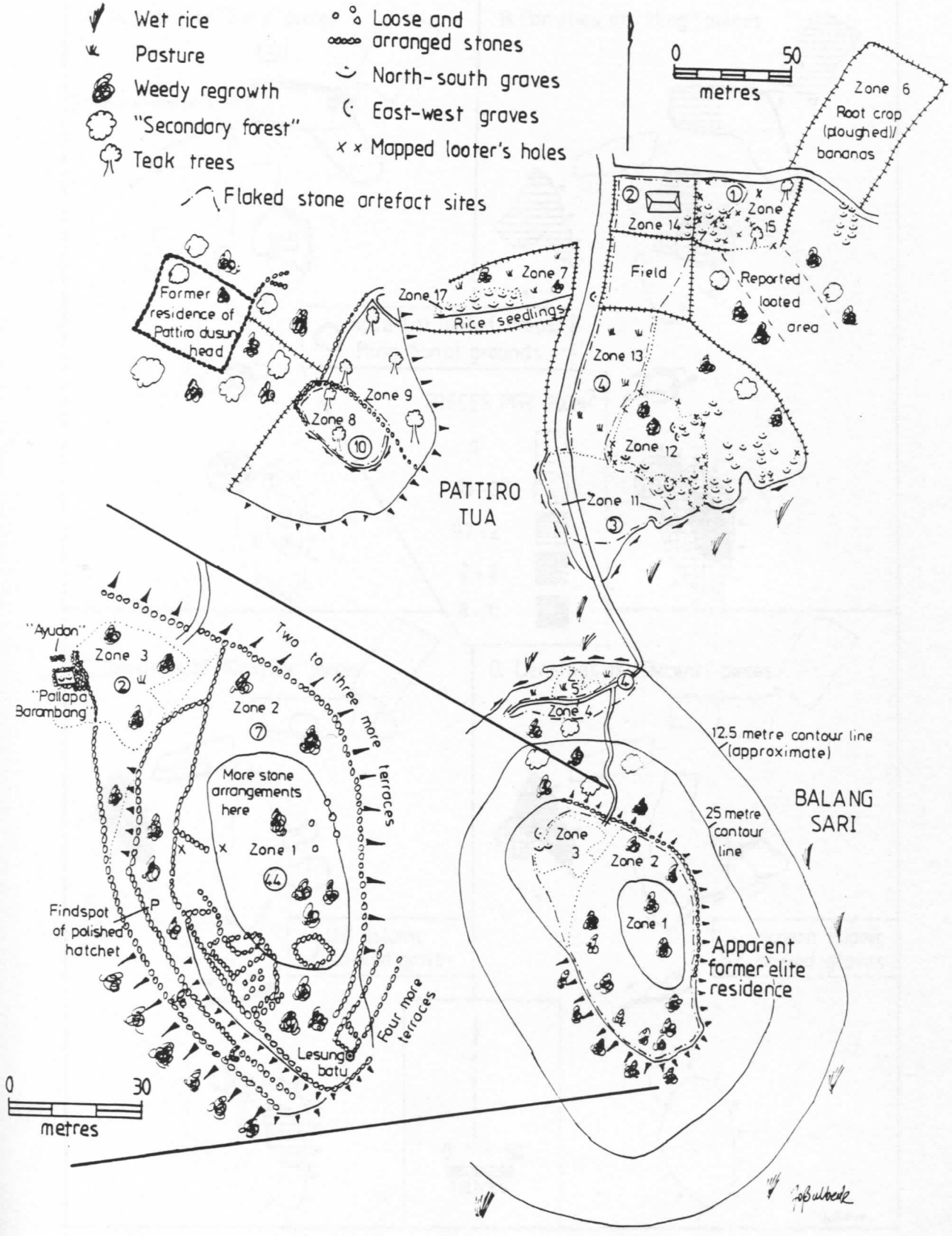


FIGURE 10-22. PATTIRO TUA AND BALANG SARI

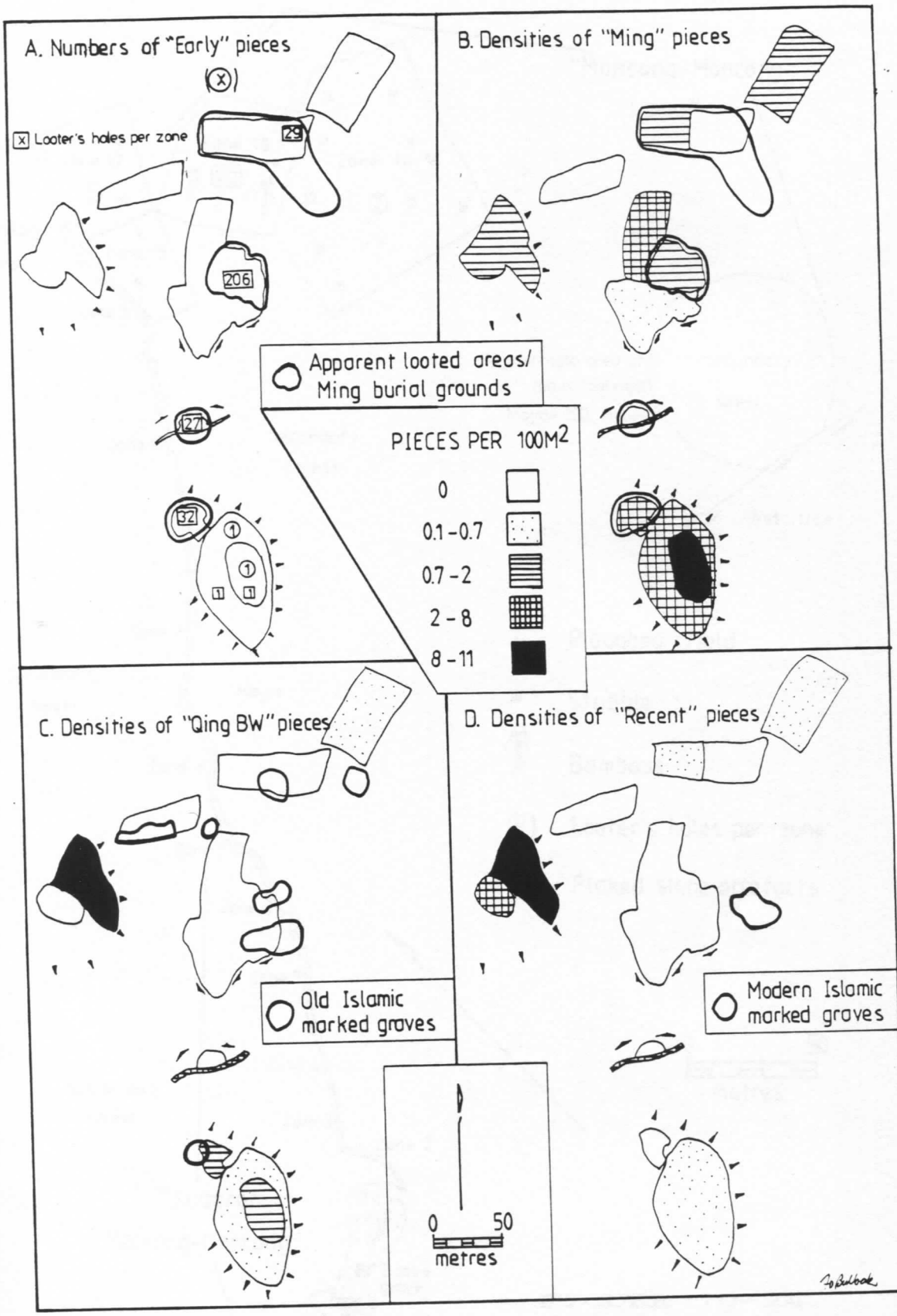


FIGURE 10-23. OCCURRENCES OF "EARLY" PIECES AND DENSITIES OF OTHER PIECES, PATTIRO-BALANG SARI

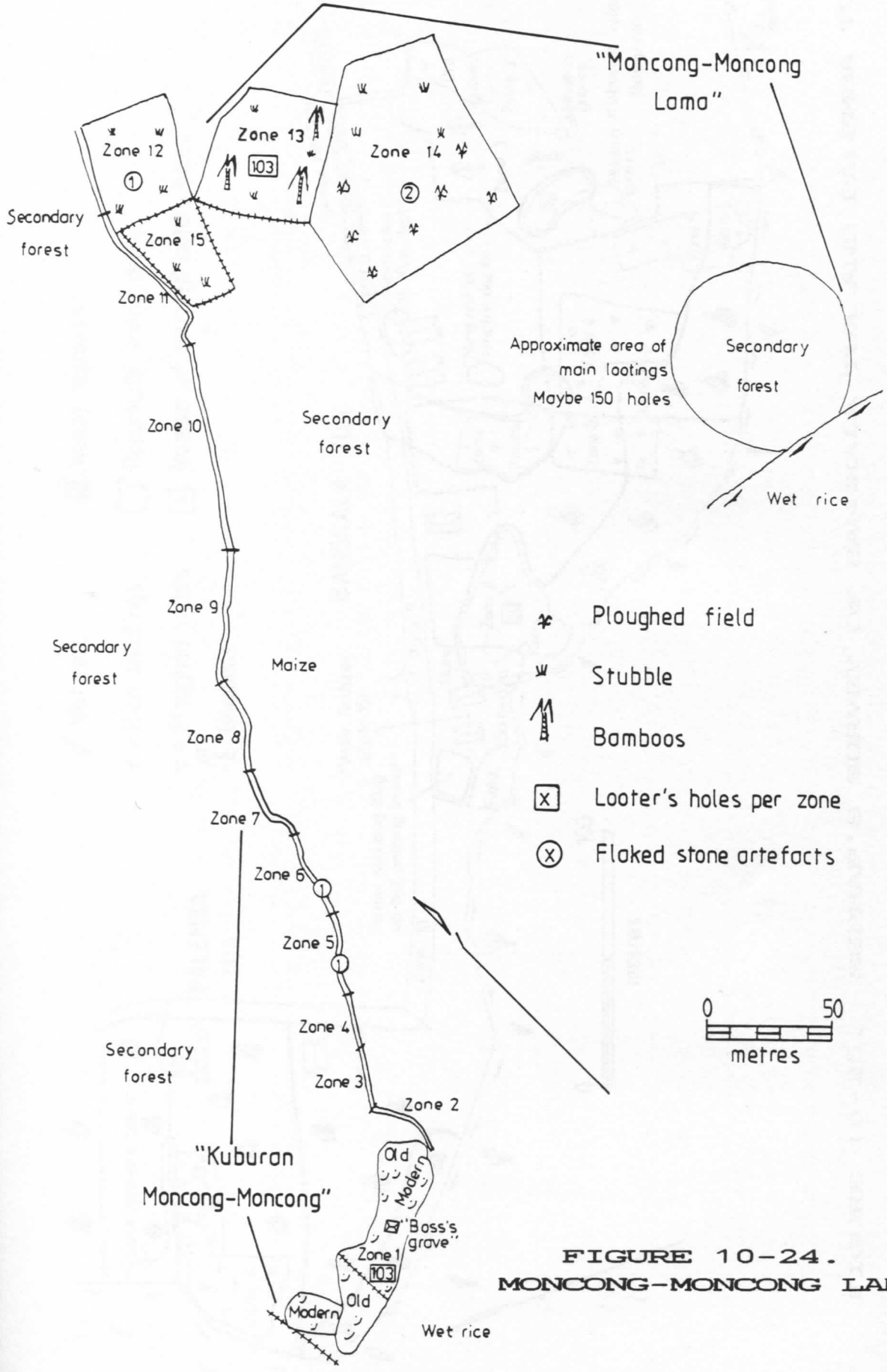


FIGURE 10-24.
MONCONG-MONCONG LAMA

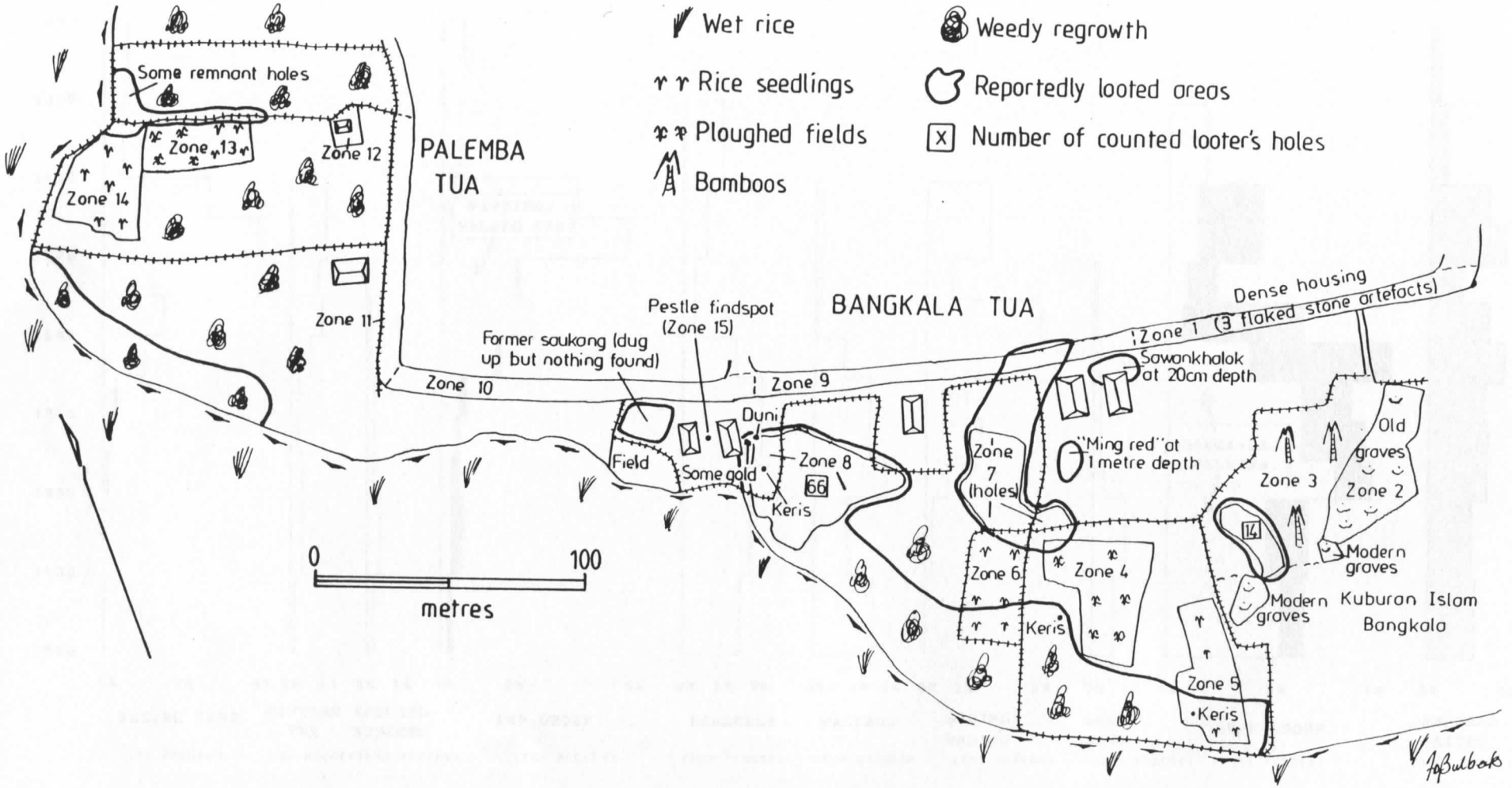


FIGURE 10-25. SSPHAP'S SURVEY OF BANGKALA TUA AND PALEMBA TUA

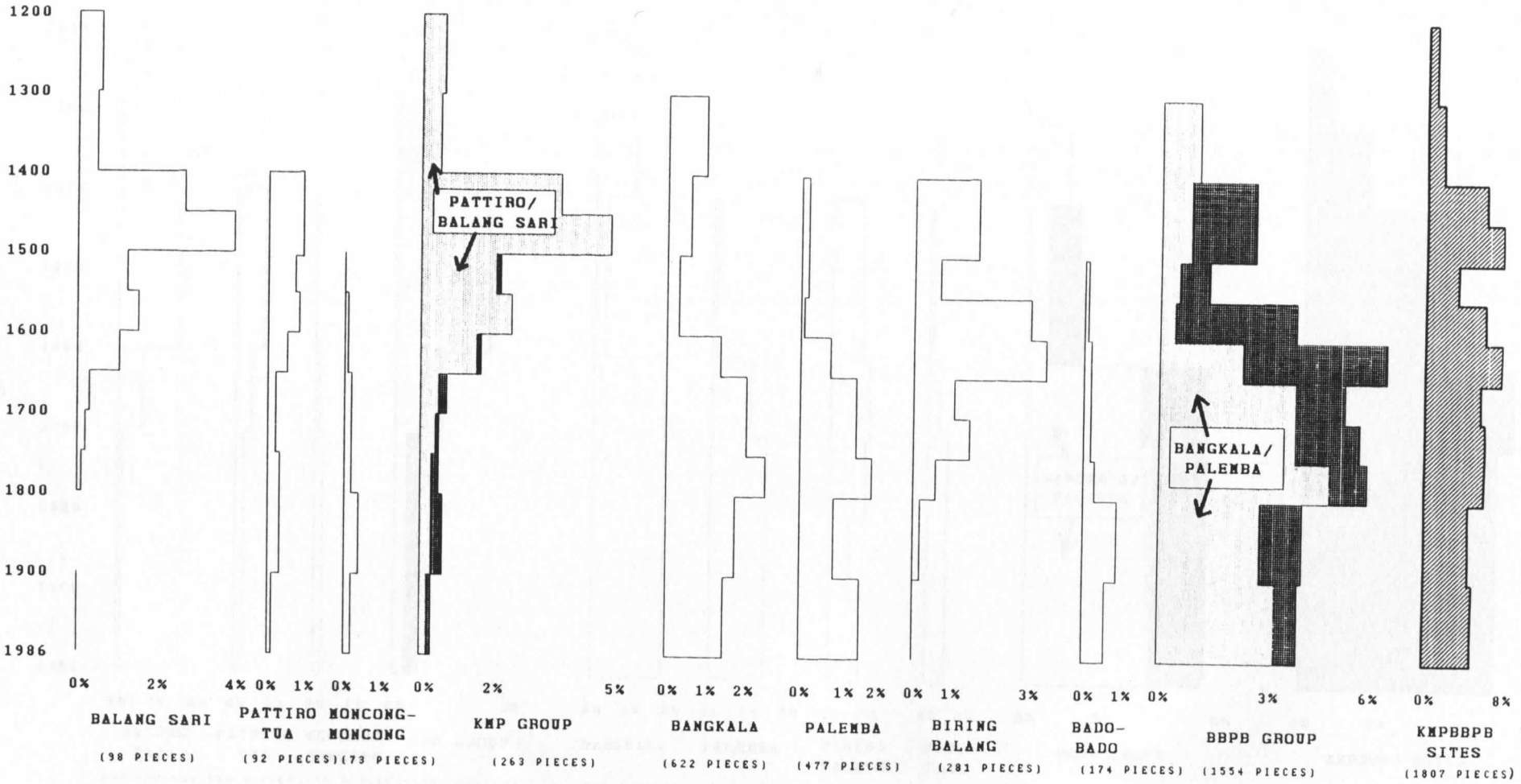


FIGURE 10–26. STANDARDISED CHRONOLOGICAL HISTOGRAMS (FINE CLASSES) – KMPBBPB SITES

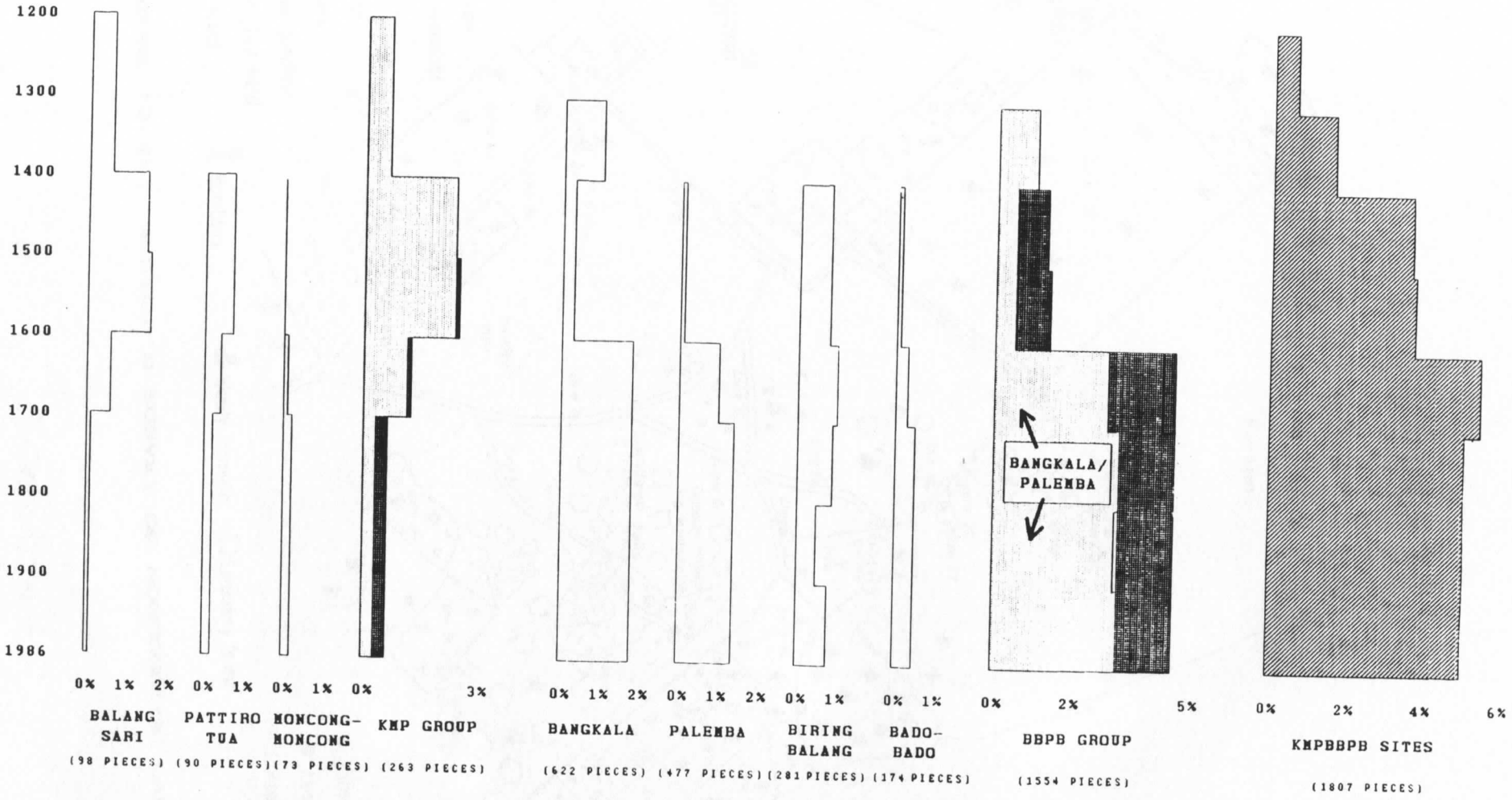


FIGURE 10-27. STANDARDISED CHRONOLOGICAL HISTOGRAMS (BROAD CLASSES) - KMPBBPB SITES

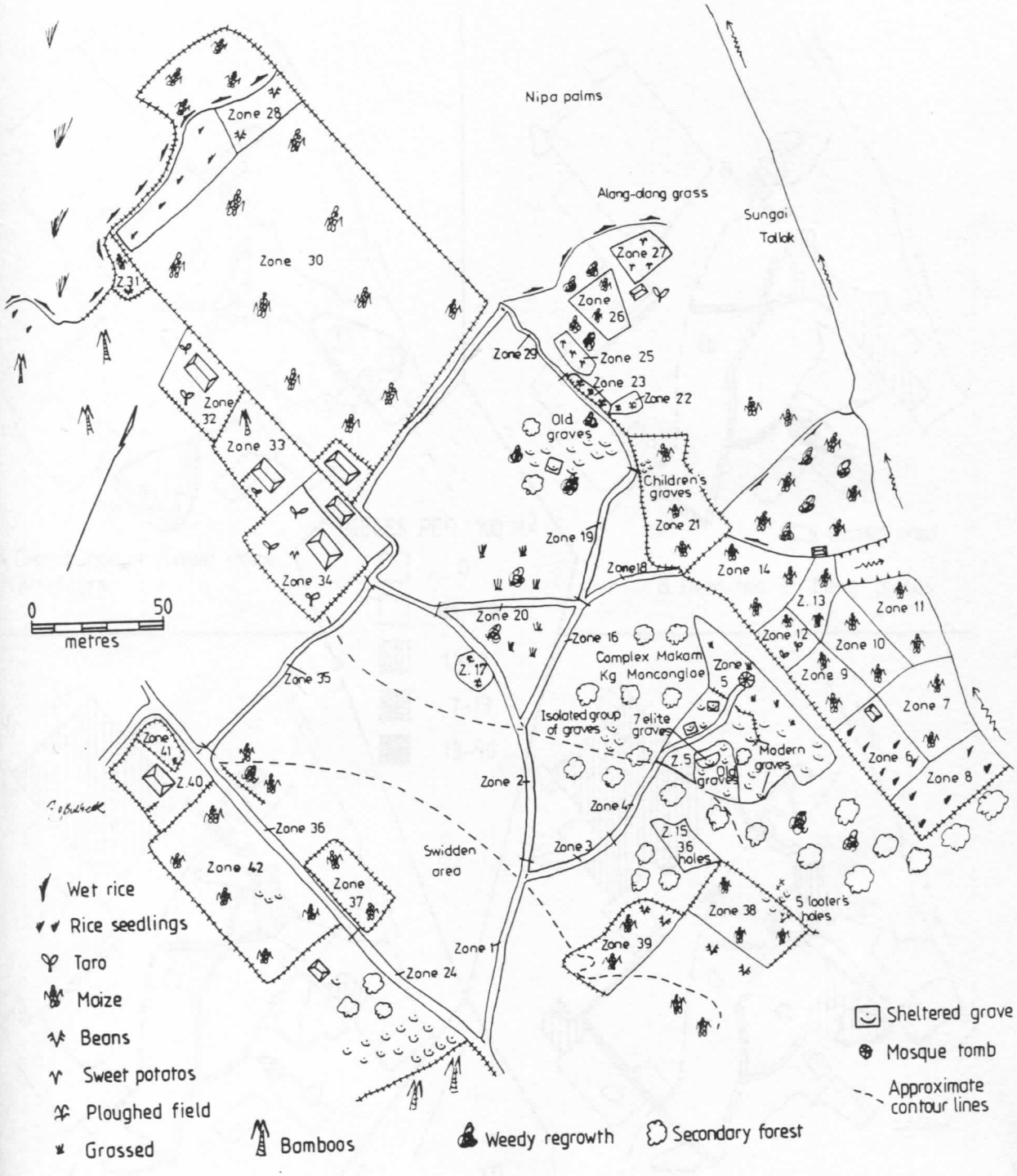


FIGURE 10-28. SSPHAP'S SURVEY OF MONCONGLOE LAPPARA

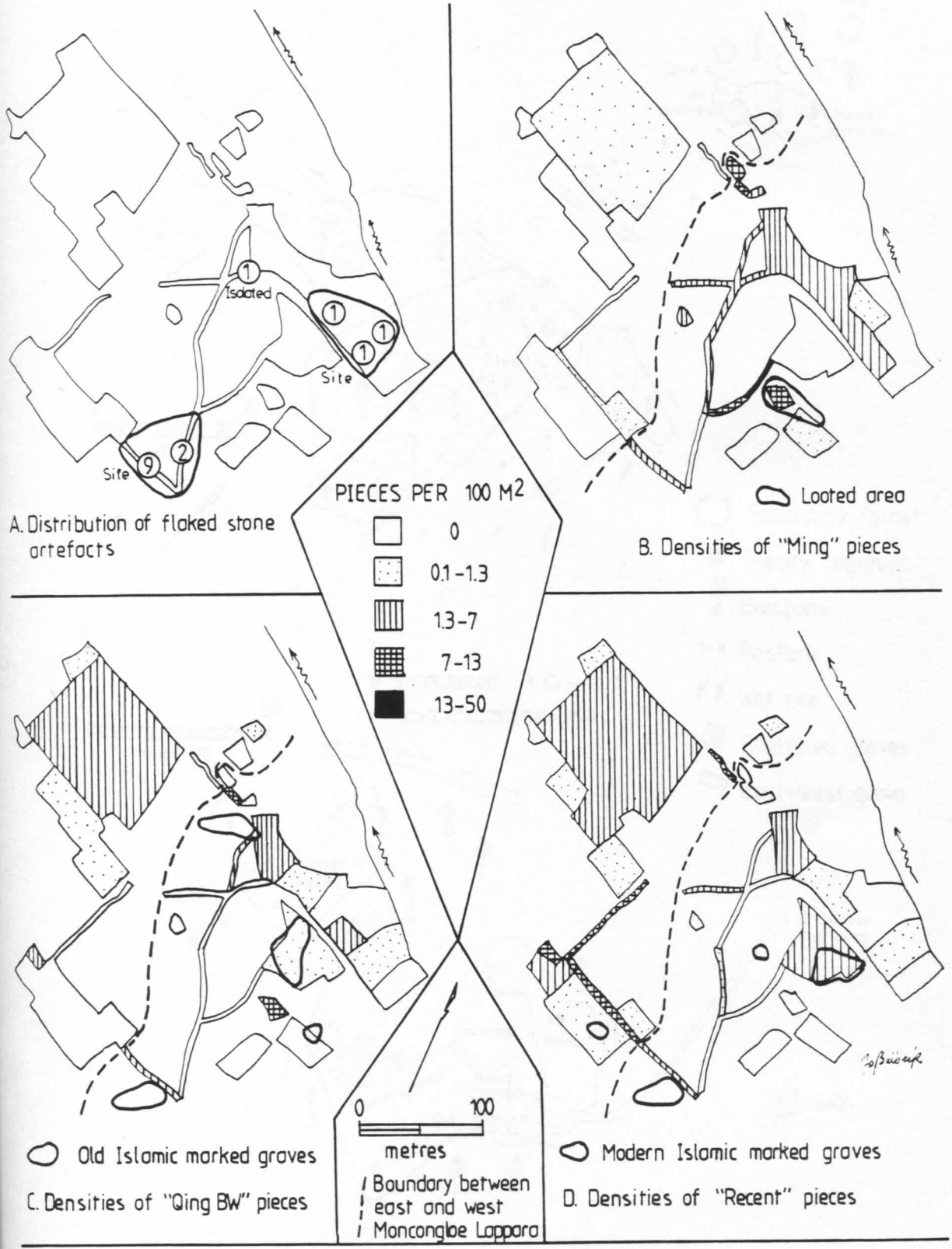


FIGURE 10-29. MONCONGLOE LAPPARA: FLAKED STONE ARTEFACTS AND SHERDAGE DENSITIES

FIGURE 10-30. MANYEMPANG TOA

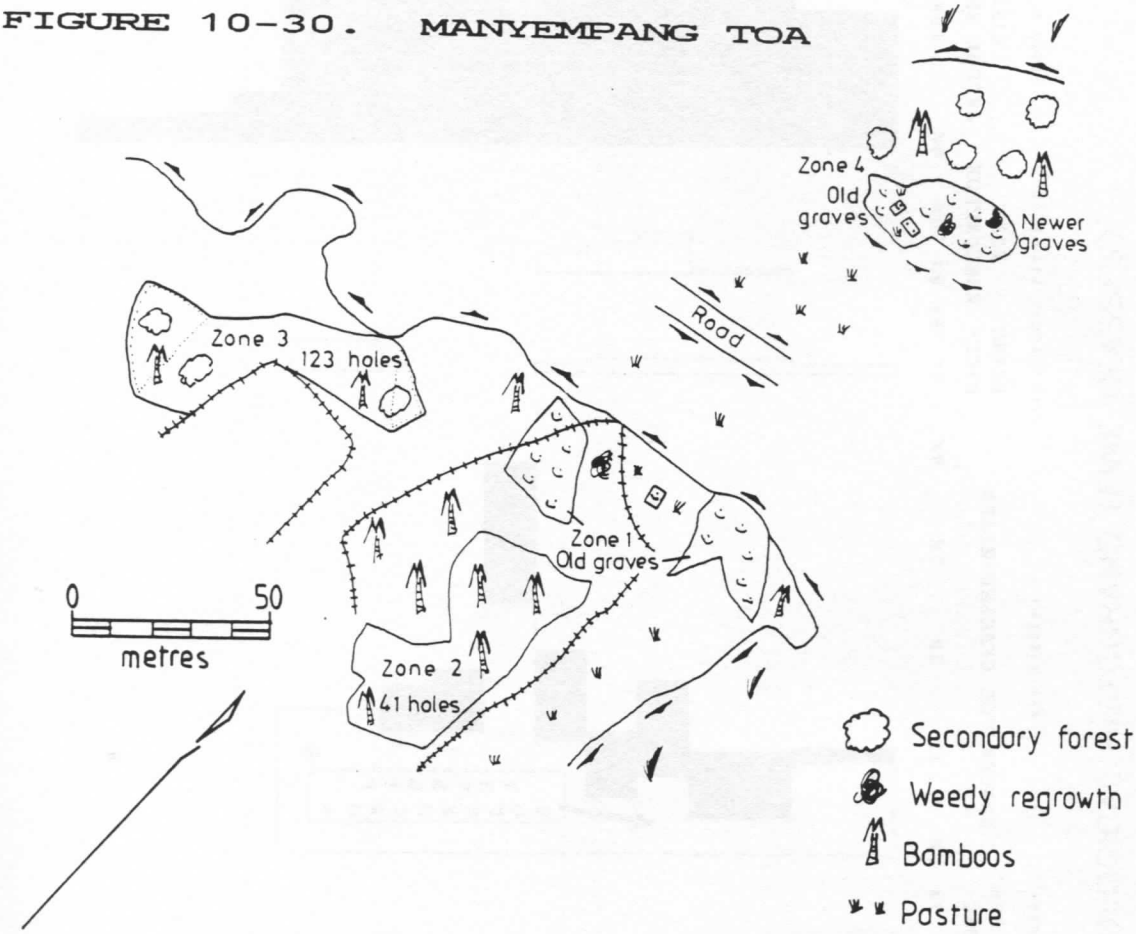
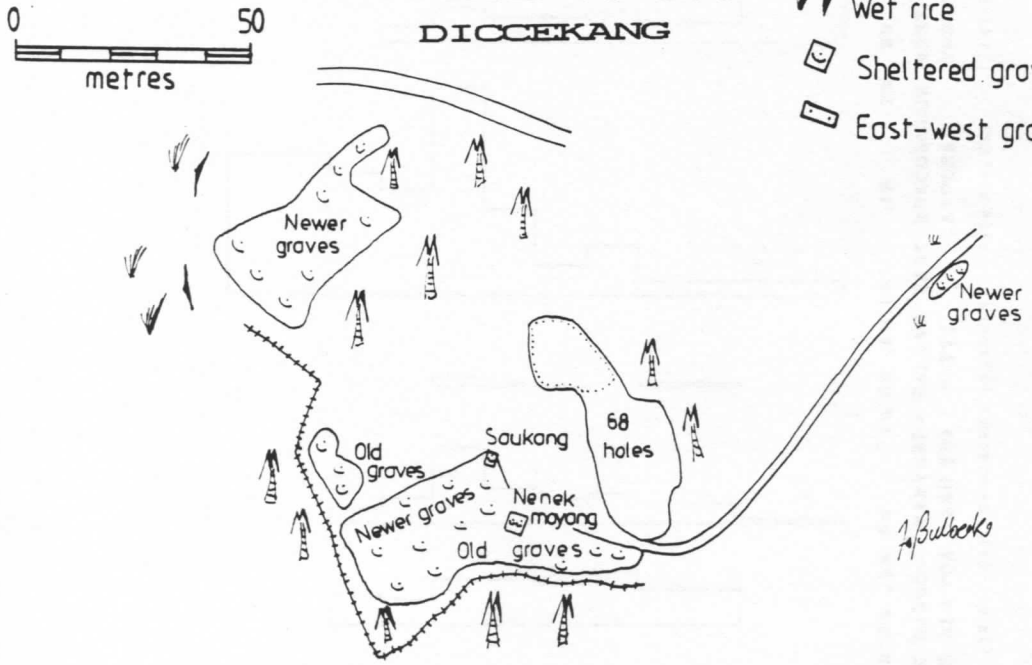


FIGURE 10-31. DICCEKANG



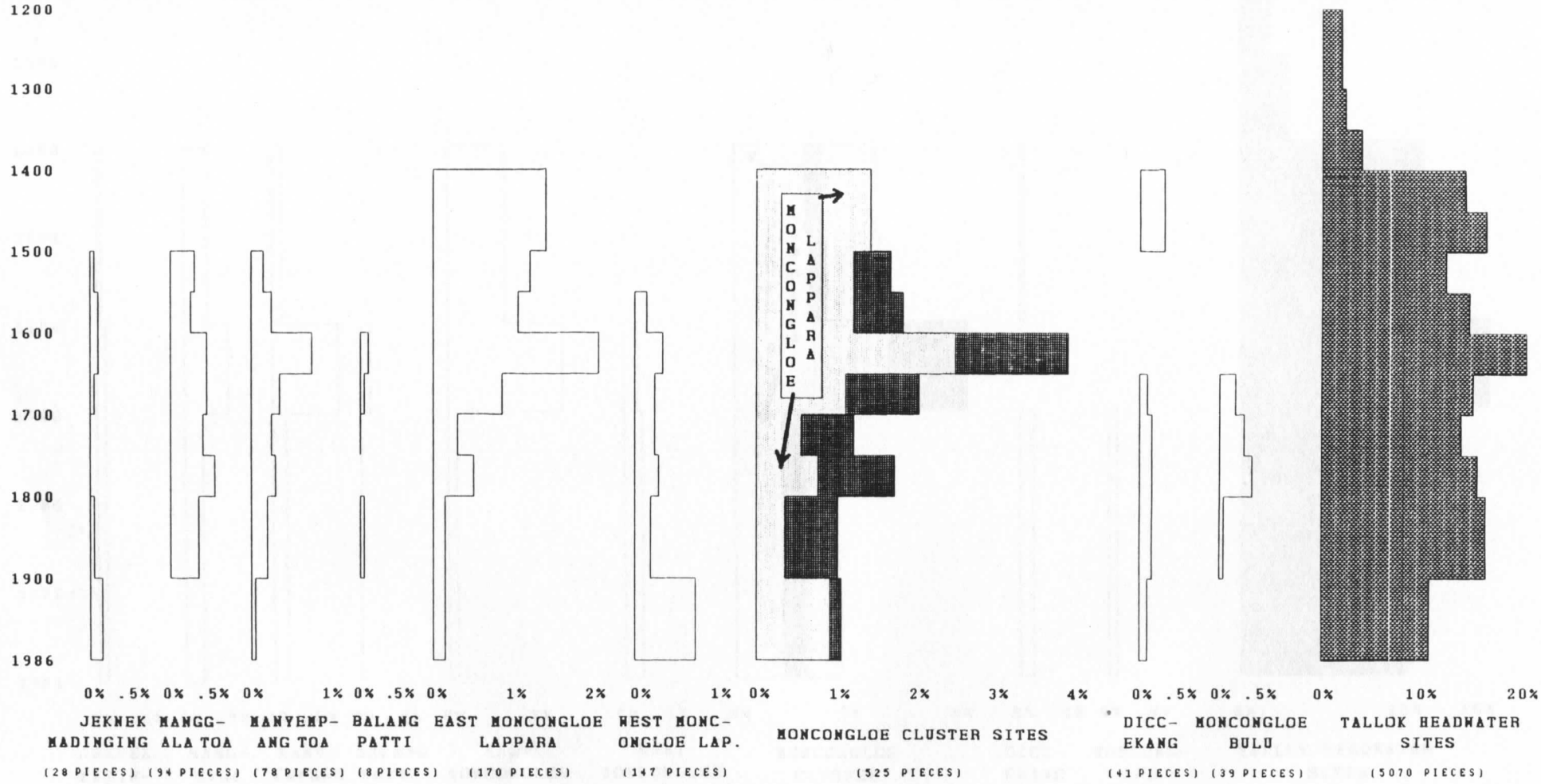


FIGURE 10–32. STANDARDISED CHRONOLOGICAL HISTOGRAMS (FINE CLASSES) – MONCONGLOE CLUSTER; DICCEKANG TRIBUTARY; TOTAL TALLOK HEADWATER SITES

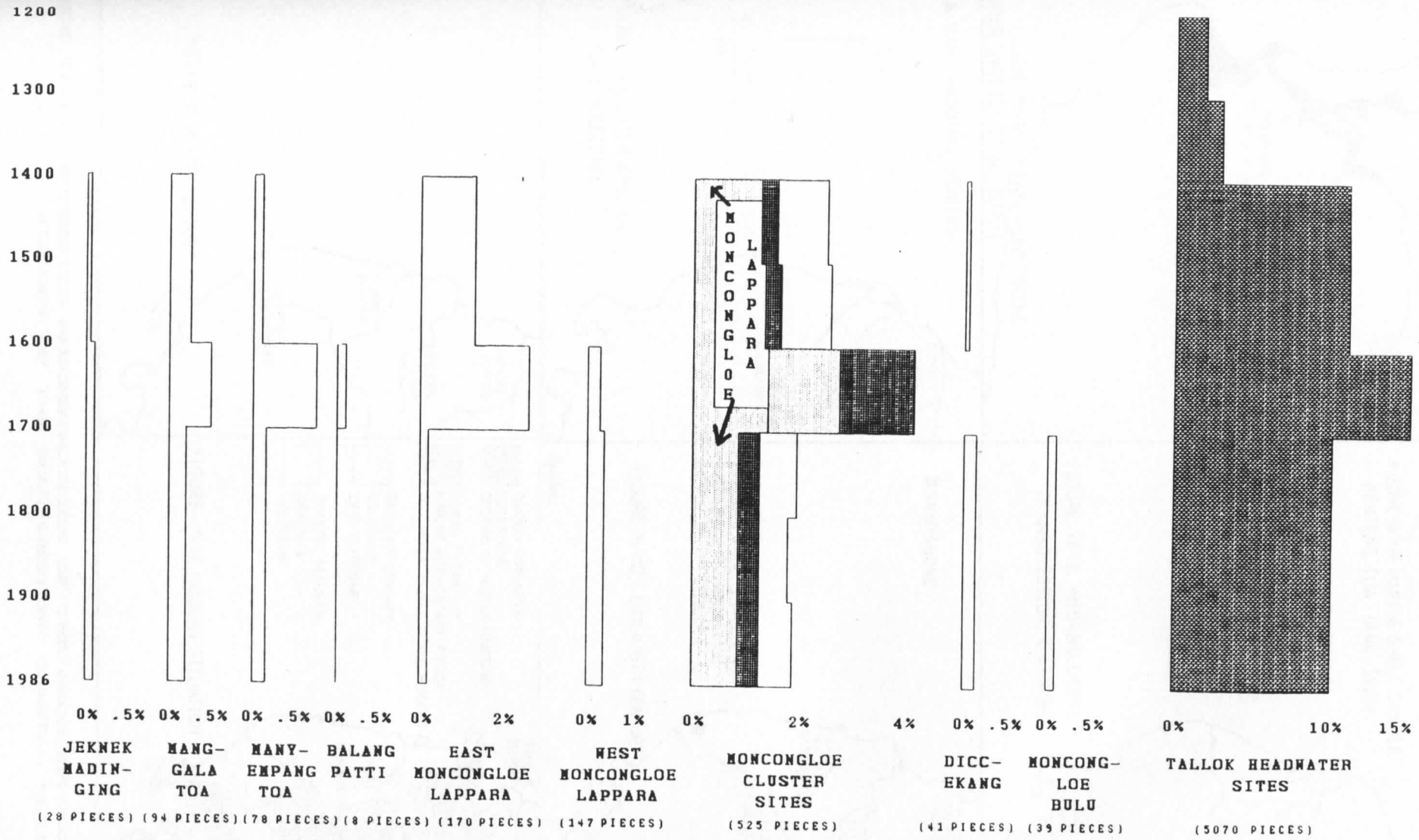


FIGURE 10–33. STANDARDISED CHRONOLOGICAL HISTOGRAMS (FINE CLASSES) – MONCONGLOE CLUSTER; DICCEKANG TRIBUTARY; TOTAL TALLOK HEADWATER SITES

Photo 10-1.
The view eastwards from the knoll of Balang Sari (Gowa 63). The name ("Sari swamp") presumably comes from the area of rice fields, below the knoll, which is shown as swamp on the early 20th century Dutch land-use maps. A low rise of Camba Formation abuts the sawah depression, as elsewhere in the Tallok headwaters survey area, while the rugged landscape further east is shrouded by the approaching downpour.

Photo 10-2.
The Pabundukang tributary at the site of Pabundukang Tua, showing the bridge of bamboo stalks which accesses the site from north of the tributary.

Photo 10-3.
The view to the southeast from the south slope of Batu Moncongloe, showing the rugged forested valley of the Diccekang tributary and, further east, the steep backdrop of the mountains of the Gowa highlands.







Photo 10-4.
Palacini Tua's old graveyard at the east of the site, showing a looter's hole and disturbed remnants of stone arrangements hidden among the scrub.

Photo 10-5.
Gentung, looking southwestwards across the stubble of zone 2. The scrub-covered knoll containing most of the looter's holes and Islamic graves is at rear left.

Photo 10-6.
Saile Tua, zone 1. The confluence of the Pabundukang and its small tributary, which bound the zone, is near the centre of the picture, in front of the trees protruding from zone 2.







Photo 10-7.
Pattallassang. Two graves marked with arrangements of crudely masoned blocks associated with Dg Malotteng (under the shelter, with a small triangular *nisan* at the south) and his dog (at front).

Photo 10-8.
Patallassang. The sheltered graves of Tetta Ruleha (left) and Tetta Bollong (right). Their awry orientation (315° from north) and old-style masonry appear anachronistic given the 1948 date of death on the plaque.

Photo 10-9.
General view of Kompleks Makam Karaeng Talla, Talla-Talla.



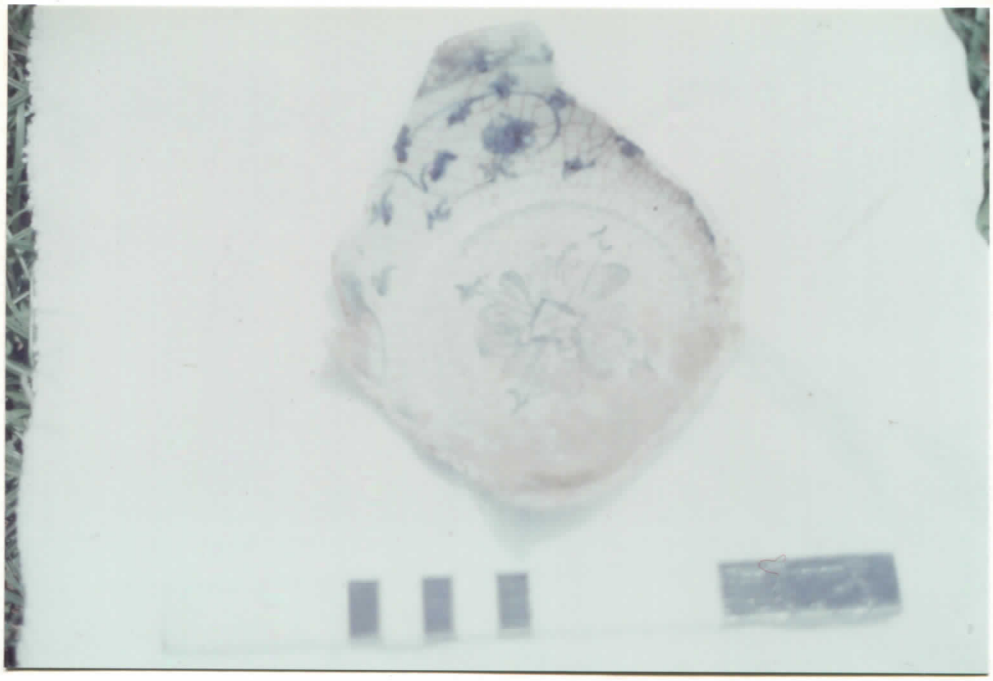




Photo 10-10.
The Ming BW bowl shown to SSPHAP at Teamate Asli.
Double *vajra* in centre and lotus scroll on interior cavetto.
A lotus scroll covers the reverse cavetto.
The double *vajra* may suggest a late 15th to early 16th century date (Addis, 1968a:17-18).

Photo 10-11.
Ganrang Jawa. The recently ploughed field of zone 5 abutting the mature river valley drained by the Tallisi tributary.

Photo 10-12.
Ganrang Jawa, G.49.2.1. Fragment from the rim of a bronze jar or bowl with original diameter of around 18 cm. The fragment is 41.5 by 13 by 6 mm (rim thickness) and weighs 11 grams.





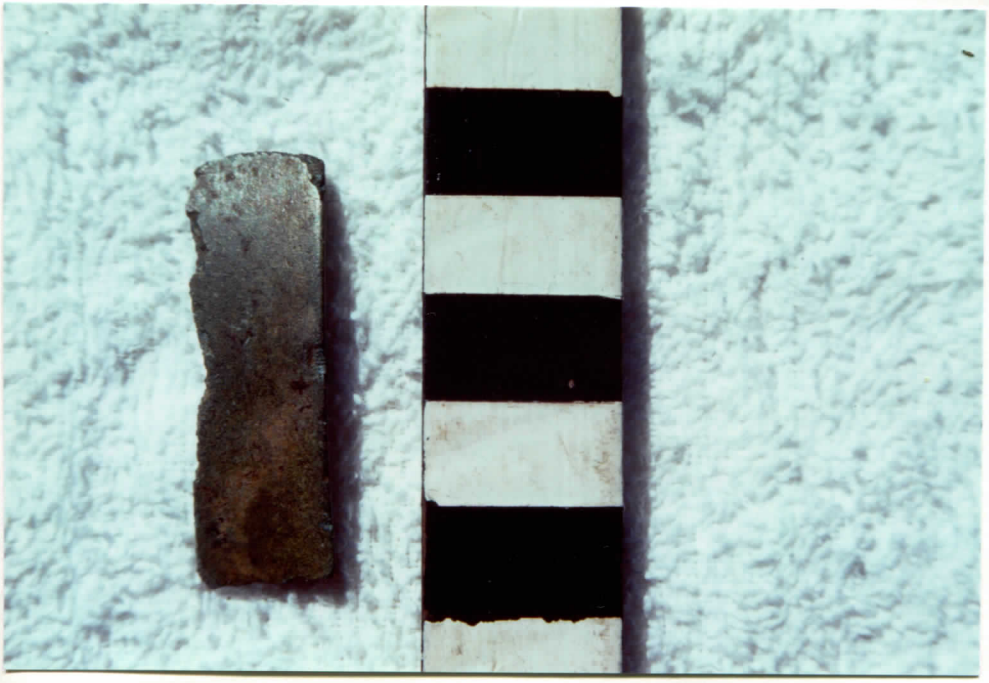


Photo 10-13.
Tassili, the shelter protecting the marked graves ascribed to Karaeng Tassili and his wife, further "improved" with wooden gateway posts and a raised pathway of stones leading to the shelter entrance. The cemetery's brick sepulchre is visible behind the shelter (centre of picture).

Photo 10-14.
Kompleks Makam Karaeng Tassili. The sheltered stone arrangement marking the grave of "Daeng Tallo" (left) next to a grave (temporarily?) marked with a raised earth feature, arranged stones and peg-like *nisan*.

Photo 10-15.
Kompleks Makam Karaeng Tassili. The marked grave oriented east-west (see Table F-7b) can be seen at centre rear.







Photo 10-16.
Jerak Lompo or "Big Grave", Kuburan Islam Sawagi, associated with an immigrant from Maros. Note shelter's centrally crossing eaves and carved cross-beam, and the corral of arranged rocks.

Photo 10-17.
Kuburan Islam Paccellekang. Grave marked with a stone arrangement coinciding with a looter's hole from which a plate was reportedly recovered.

Photo 10-18.
Kuburan Islam Paccellekang, reportedly the oldest grave associated with a karaeng whose name has been forgotten. Slabbed masonry marker enclosing a rectangular stone arrangement and two large headstones pushed apart by the tree trunk. Orientation due north.



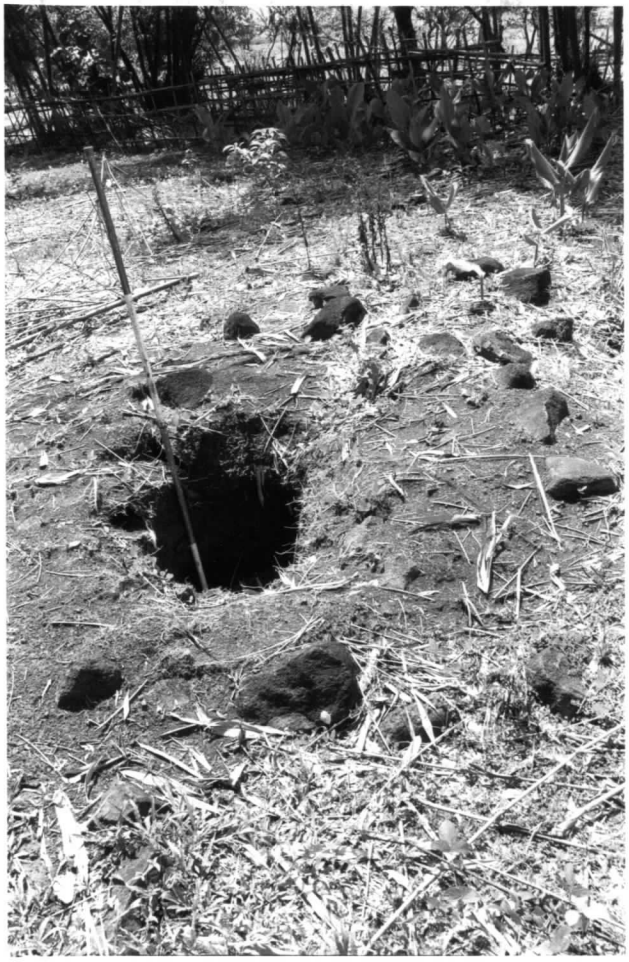




Photo 10-19. Kuburan Islam Paccellekang.
The ranging pole marks the closer end of the stone arrangement oriented east-west at right angles to the north-south stone arrangements at the front of the picture.

Photo 10-20.
The sawah belt south of Pabundukang Tua, looking in the general direction of Marannu. One of the shelters protecting an isolated grave can be seen at centre right.

Photo 10-21.
Pabundukang Tua, showing the staff-shaped *nisan* and associated graves marked with stone arrangements in zone 8.







Photo 10-22.
Pabundukang Tua tradeware sherds, exterior faces. G.58.7.8 at left is classified as Swatow. G.58.7.10 and G.58.7.9 (right), along with G.58.7.7 (not in the photograph), appear to come from the cavetto of the same piece, a foliated bowl with skeletal red overglaze decorations (G.58.7.9) and possibly a band of very poorly fired cobalt (G.58.7.10). Here dated 14th-15th centuries.

Photo 10-23.
Lamuru, G.46.2.4, the three pieces of wood identified by SSPHAP's informant as having come from a wooden coffin found in zone 2. Weight of the sample 51 grams. Conventional radiocarbon age 340 ± 70 BP (ANU-5922), which calibrates to (340) 355 (430) BP, single S.D. range 310-495 BP.

Photo 10-24.
Lamuru, G.46.5.3 (right), G.46.5.2 and G.46.5.1 (left). Reportedly recovered from zone 2. Undecorated exteriors; glazed bases. Identified as Wanli wares (G.46.5.1 as a Wanli whiteware) whose rounded-off period, 1550-1650 AD, fits excellently with the calibrated ^{14}C date from the wood.



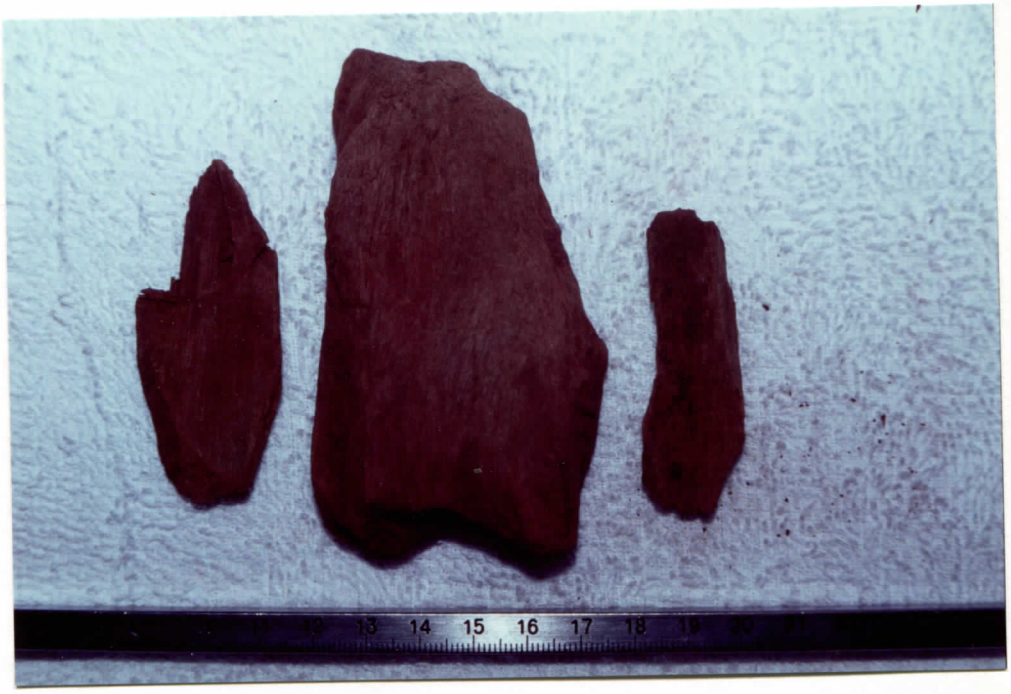

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Photo 10-25.
Lamuru, G.46.6.2, reconstructed from sherds from zone 4. Reverse cavetto contains the same decorations in vertical panels as the obverse cavetto; glazed base. Wanli blue-and-white (cf. McElney, 1979).

Photo 10-26.
Lamuru, G.46.12.1 (reportedly from zone 1) and G.46.6.1 (reconstructed from sherds reportedly from zone 4). G.46.12.1, identified as 16th century Ming BW, has the motif in its centre reproduced four times on its reverse cavetto above a scroll of *ju-i* lappets; base unglazed. G.46.6.1, identified as "Ming Swatow", has the reverse cavetto puckered with equally spaced dots; dirty footring but glazed base.

Photo 10-27.
Lamuru, G.46.12.5 (left) and G.46.12.4 (right), reconstructed from sherds reportedly from zone 1. Both identified as 16th century Ming BW. In addition to its *qilin* in centre and obverse rim decorations, G.46.12.5 has a cloud scroll along its reverse rim; base glazed. Reverse cavetto decoration on G.46.12.4 is a lotus scroll; base glazed.

(G.46.12.2 and G.46.12.3, which could not be joined with any other sherds, were respectively identified as 16th century Ming BW, and Wanli BW with *famille verte* enamel decorations.)

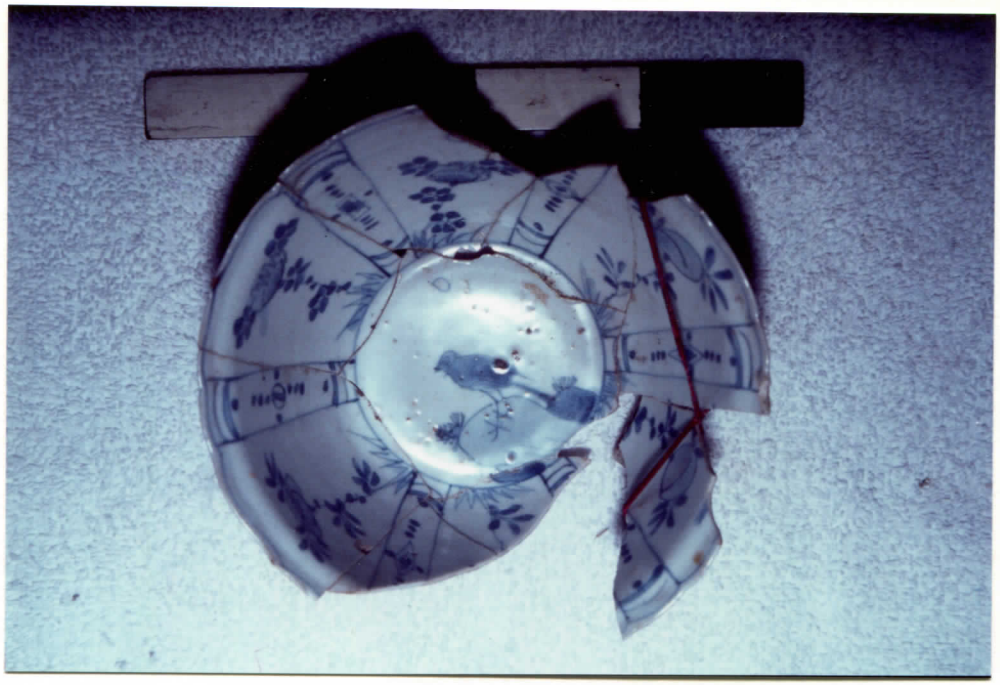





Photo 10-28.
The remnant hole in zone 2, Lamuru, where a *duni* (wooden coffin) had reportedly been found.

Photo 10-29.
The knoll of Balang Sari, looking southeastwards across the intervening sawah from zone 8, Pattiro Tua.

Photo 10-30.
Lesung batu or stone with ground-out circular hole, present at the corner of one of the stone arrangements in zone 2, Balang Sari. Its shape and size possibly suggest an original use for supporting the corner post of a house.







Photo 10-31.
The grave of Pallapa Barambang or Karaeng Balang Sari, zone 3, Balang Sari. Note the roughly triangular *nisan* which are either masoned or possibly had this shape naturally, and the second headstone wrapped with cords.

Photo 10-32.
The metre-long stone arrangement at the entrance to the tomb of Pallapa Barambang, reportedly marking his assistant buried in a crouched position.

Photo 10-33.
The extant gravestone facing west from the east side of the dirt road which traverses Pattiro Tua.







Photo 10-34.
Pattiro Tua, zone 15, one of the graves marked by a rectangular arrangement or roughly masoned, cuboid blocks.

Photo 10-35.
Kuburan Moncong-Moncong. The sheltered graves associated with a former "boss" of Moncong-Moncong whose name is no longer remembered (with the peg-like masonry *nisan* bearing remnant cord marks) and his companion.

Photo 10-36.
Moncong-Moncong Lama, zone 13 at the flat area at the top of the survey through the site. Note the looter's hole at the centre of the picture amidst a clump of large stones.







Photo 10-37.
Bangkala Tua, G.65.15.1.
Pebble pestle, trachyte or other volcanic rock, measuring 119 by 57 by 39 mm, 5YR4/2 to 5YR3/2 in colour, weighing around 300 grams. Stained from residues at the thicker, used end.

Photo 10-38.
Bangkala Tua, zone 8.
The remnant hole where a *duni* (wooden coffin) had reportedly been recovered containing some human bones.

Photo 10-39.
Kuburan Islam Bangkala Tua, some of the large impressive markers of roughly masoned slabs and cuboid blocks, with or without triangular *nisan*, which dominate the cemetery.







Photo 10-40.
Biring Balang. The taro field in zone 1 looking south towards the secondary forest which has grown over the main cemetery.

Photo 10-41.
Small Wanli BW bowl, reportedly looted from Biring Balang, shown to us in Bangkala. Undecorated exterior, base unglazed.

Photo 10-42.
The graves of Karaeng Jeknek Madinging and his bodyguard, showing the spiky to undulating triangular nisan which tend to characterise elite graves among the "Moncongloe sites".



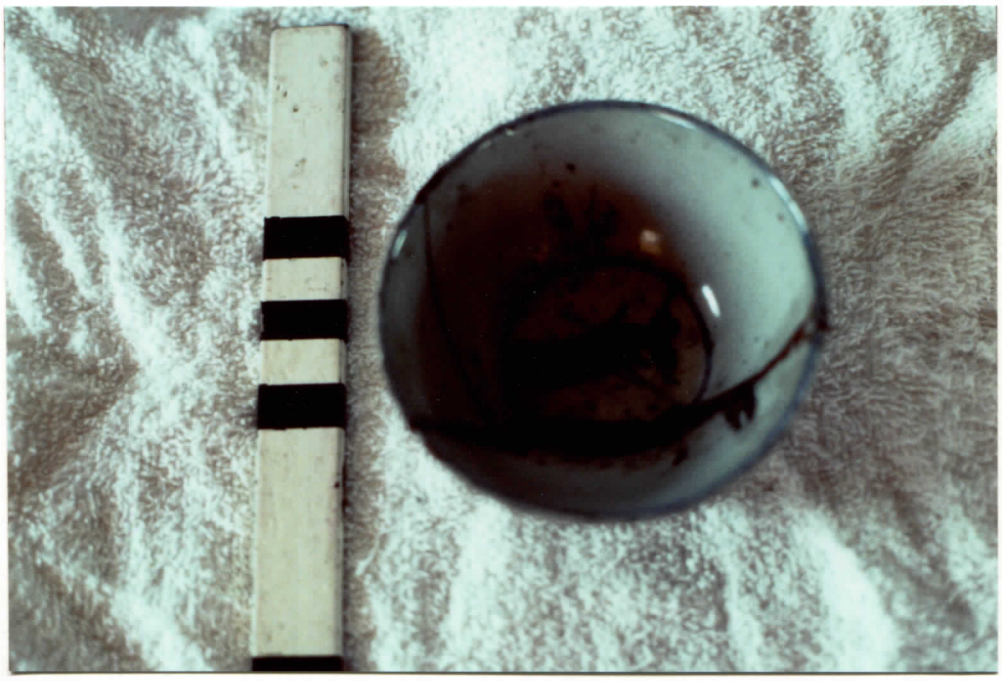



Photo 10-43. Kuburan Islam Biring Balang (zone 4) showing one of the graves marked with slabbed masonry.

Photo 10-44.
The modern cement tomb protecting the graves of Kg Jeknek Madinging and his bodyguard. High water-level marks are visible to the height of the door, caused by flooding of the "Jeknek Madinging" stretch of Balang Tallok whose course is marked by the tree line behind the tomb.

Photo 10-45.
Manggala Tua, zone 1. Recently ploughed field planted with cassava and other vegetables, which contained most of the sherdage recorded at the site. The modern housing development at Antang, which can be seen encroaching from the rear, reportedly did not result in any hauls of antiques.







Photo 10-46.
Patadang Toa. Sheltered grave with columnar *nisan* at one end.

Photo 10-47.
Manyempang Toa zone 1 (southern cemetery) showing one of the graves marked with finely masoned, undulating *nisan*.

Photo 10-48.
Kompleks Makam Kg Moncongloe, Moncongloe Lappara zone 5, showing three of the seven elite graves with finely masoned, knobbly *nisan*, including the one which also has a single sceptre-like *nisan* (centre of picture).



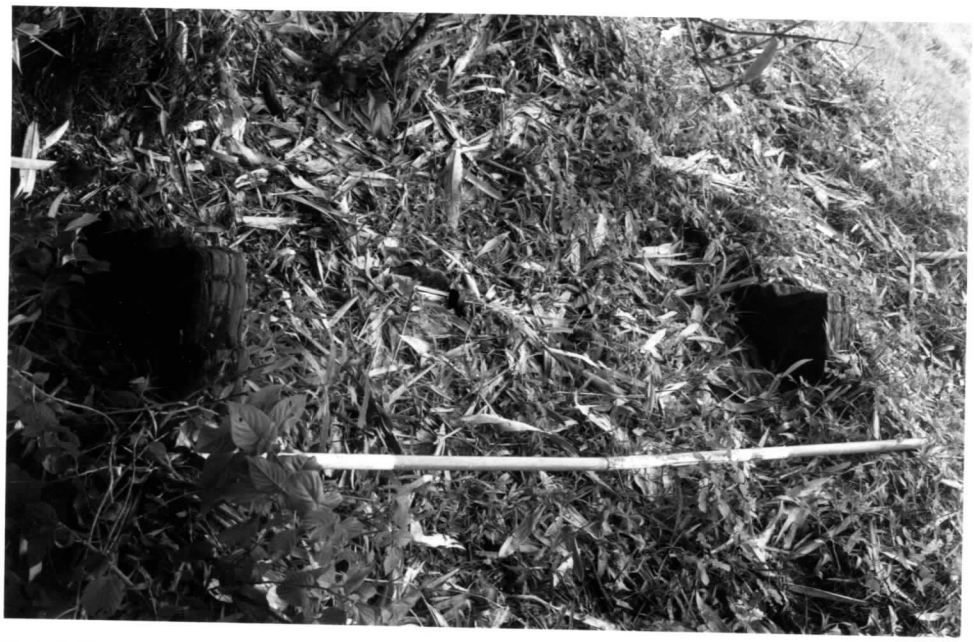



Photo 10-49.
The mosque-like tomb of Karaeng Moncongloe, Moncongloe Lappara zone 5, protected by lock and key.

Photo 10-50.
The southern sheltered grave at Kompleks Makam Kg Moncongloe. Note the circumscribing lines on the masonry peg-like *nisan*, presumably left by cords repeatedly wrapped around it.

Photo 10-51.
The small stream bunded into rice fields which runs through the site of Moncongloe Bulu between the small exposure (zone 1) and the looted cemetery.







Photo 10-52.
The sawah fields immediately west of the site of Moncongloe Lappara, directly beyond the drop in slope shown in the top-left corner of Figure 10-28. The course of the Sungai Tallok is marked by the line of trees at rear.

Photo 10-53.
Moncongloe Lappara. The view up the faintly stepped terraces of the Sungai Tallok from zone 11 to zone 9. The upper bank, where the banana palms are, is here interpreted as probably having been deposited during the middle Holocene.

Photo 10-54.
Moncongloe Bulu. The grove of secondary forest containing the site's old, looted cemetery.







Photo 10-55.
The sawah fields directly south of Kuburan Islam Diccekang which have been created along a small tributary of the Sungai Diccekang.

Photos 10-56 and 10-57.
Kuburan Islam Diccekang. The two graves marked with limestone inside a shelter which are associated with *nenek moyang* figures whose names have been forgotten.







CHAPTER 11. GARASSIK (MAKASSAR)

In its heyday Makassar was an entrepôt-city at a major delta - the archetypal location of Southeast Asia's historical entrepôts (Kathirithamby-Wells, 1990:3-4). European descriptions of the city include several eye-witness accounts, plus three sketches made of Makassar at c.1638 (Photo 1-1), 1660 (Boxer, 1967: Plate III) and 1667 (Bassett, 1958: Plate 2). Although not all details are immediately clear,[1] the sources demonstrate the general organisation of the city into quarters for foreigners near the north oulet of the Garassik (Jeknekberang), Makassar settlements near the south outlet, and Benteng Somba Opu on the deltaic island betwixt (Reid, 1983a; Bulbeck, 1990).

Shortly after his conquest of Somba Opu in 1669, Speelman wrote that the only part which should properly be called the city of Makassar was the constellation of individually named villages between Somba Opu and the Garassik's south channel (Reid, 1983a:146-8). Speelman's description precisely matches a cluster of sites at a density which would appear to be semi-urban. This "Makassar cluster" is flanked at the immediate south by a lesser cluster strung along the Aeng river (11.2). Both clusters can be treated together under the covering label "Garassik" - an independent kingdom prior to being swallowed by its neighbours, then a major karaengship during the 17th century (4.3).

11.1 Physical Setting and Fortifications

20th century Dutch topographic maps, along with air photographs taken in the 1940s (Allied Geographical Section, 1945) and afterwards, show the continual growth of the

[1] Contradictions between the three sketches occur, as in the location of the Portuguese quarter, and none depicts the fortifications as the archaeological record shows them (Bulbeck, 1990). Nonetheless the c.1638 sketch (Photo 1-1) is the most detailed and realistic of the sketches, and can be followed so long as we remain awake to its apparent simplifications. The other detailed sketch, of Makassar at 1660, includes at least three errors: a location of the Portuguese quarter too far northwards, the mislabelling of Benteng Barombong as "Fort Bayoa", and the mislabelling of Benteng Ujung Pandang as "Fort Bontecouge [Bonto Keke]".

Jeknekberang's delta to the point where it now impinges on Ujung Pandang's harbour. Large quantities of sand are carried to the Jeknekberang's mouth, while the sea transgresses the growing delta. Consequently the prevailing southwards currents deposit south-running sandbars which block the main outlet and force it to migrate gradually northeastwards (Sobur, 1984/85; see Figure 11-4a).

The main body of sandbars mimics the cheniers on which colonial Makassar (Ujung Pandang) was built, while the curved outlet mimics the northeast directed spit of raised land once occupied by Benteng Tallok (12.1). The comparison implies that these cheniers had been deposited by an ancestor of the Jeknekberang which, at some stage after the mid-Holocene transgression, debouched where the Tallok inlet now is (Reid, 1983a:119). The late Holocene date is shown by the point that most of the surface of the cheniers is less than five metres above sea level, i.e. below the level to which the sea levels rose at approximately 4300 BP (cf. Whitten et al., 1987:19-20). As a further consideration, SSPHAP's sites Somba Opu, Benteng Garassik and Bayoa 1 appear to fall along a low, dissected ridge identifiable as the southwest bending tail of the prehistoric Ujung Pandang cheniers. Five flaked stone artefacts were recorded at Garassik (Figure 11-15a), and so by stamping the site's landform as prehistoric, allow us to date the formation of the Ujung Pandang cheniers to between 4000 and 1000 BP (Figures 11-1b and 11-1c).[2]

Evidence reviewed previously suggests that the lower Sungai Garassik may have followed the Anak Gowa until straightening its course past Benteng Tua by the 17th century (8.1; 9.9.3). The Paknakkukang-Pattukangang chenier, to the south of the Jeknekberang, confirms the suggestion by

[2] A piece of volcanic stone from Bayoa, which resembles a bipolar core even though Johann Kamminga (pers. comm.) recommends "smashed stone aggregrate" as the more parsimonious classification, offers further possible support for this interpretation.

The course of the late prehistoric Jeknekberang, shown in Figure 11-1c, follows the present-day Sungai Bantimurung above Bontomanaik, based on what appears to be a remnant channel leaving the present-day Jeknekberang directly upstream from Bissua and articulating with the Bantimurung (see Figures 5-2 and 5-6).

mimicking the form of the modern delta on a much reduced scale (Figure 11-19). It would have been largely deposited by the 15th century, the date of the oldest tradewares recorded on the chenier (11.5.3). Hence the stage at which the Garassik breached the south tail of the Ujung Pandang cheniers can probably be dated to around the early 16th century. Even then, the Garassik was probably still a modest river, with its drainage basin restricted to the coastal plain, and its entry to its delta marked by the course of the modern Anak Gowa (Figure 11-1d). So when Tunipalangga built Somba Opu's first brick walls in the mid-16th century (SG:26), the fort would have sat on the shore directly north of the Garassik delta, towards the south of a large bay enclosed by the old cheniers (cf. Figure 11-2).

As a next stage the Garassik would have begun the process of northwards delta formation, leading to the situation of two channels, north and south of Somba Opu respectively, as depicted by the 17th century European sketches. The coastline at Somba Opu and southwards must have prograded somewhat by this stage (see Figure 11-2), so the European sketches would be slightly inaccurate in depicting Somba Opu right on the shore.[3]

The approximate course of the south outlet of the Garassik, likewise its status as a navigable river and the main outlet, is clear from the European sketches (e.g. Photo 1-1) and all the other sources of evidence. The latter include Speelman's description of Makassar, and his citation of Patto [Pattung] as one of the villages along the channel (Reid, 1983a:146); the account of the assault on Somba Opu (Andaya, 1981:131); the 1693 map (Figure 5-5); and the position of the channel's counterpart in the modern delta. In Figure 11-2 I locate the south outlet to follow a peculiar remnant channel, shown on the Dutch land-use maps, between Lekokbodong and Bonto Lakja.

[3] My "reconstruction of Makassar 1667" (Bulbeck, 1990:Figure 2) had accepted the position of Somba Opu right on the beach front as depicted by the sketches. But this is because I misinterpreted the old chenier line as the 17th century coastline.

However, it is harder to determine the course of the outlet north of Somba Opu. The c.1638 sketch has the channel running due west along the fort's north wall before passing the Portuguese quarter (Photo 1-1). Contrast that with Speelman's description, written in 1669.

'... As you look at [Somba Opu], along the north side flows a river, named the new river or Binanga-beru, because this was dug by the father of Karaeng Pattingalloang, Tumenanga ri Agama or Karaeng Pattingalloang, from this bank to Sambong Jawa and further to the north of Sombaopu to the Portuguese quarter.' (Reid, 1983a:146).

Speelman's words suggest a northward course. The toponym he cites, Sambung Jawa or "Extension for Foreigners", was located well north of Somba Opu by at least 1693 (Figure 5-5). True, Sambung Jawa as shown on the 1693 map had either moved north from its 1669 position, reflecting the relocation of local administration from Somba Opu to Fort Rotterdam, or else covered a large area. But the 1693 map also shows that the north outlet, which by then appears to have been inactive, did not abut Somba Opu so much as follow a course halfway between Somba Opu and Mariso (Figure 5-5). Moreover the toponym Balang Baru, which seated a karaengship between 1634 and 1659 (LB:95,121), is today approximately halfway between Mariso and Benteng Somba Opu (Figure 11-4). By analogy with the use of the name "Balang Beru" for the Jeknekberang's most recent channel forged in 1977 (Photo 11-1; see also Suaka, 1986/87:Photo 5), the 17th century toponym probably also sat on the "new river" of the Garassik.

In one interpretation, then, the c.1638 sketch erred in giving the channel a due west course rather than the northwest course it had (see Figures 11-5c and 11-5d). In the other interpretation, the c.1638 sketch correctly depicts the 1638 course, but by 1669 it followed a new outlet further to the north. The latter interpretation is not unnecessarily complicated, rather it fits today's pattern in which the prevailing currents force the Jeknekberang's north outlet to migrate gradually northeastwards (Sobur, 1984/85). In either

interpretation, the north outlet followed a northwest course by 1667, along the lines shown in Figures 11-5c and 11-5d.[4]

A further channel shown in Figure 11-2 follows Speelman's report of Hasanuddin's "last ditch" which he excavated between Garassik and Somba Opu after the Dutch briefly occupied Paknakkukang in 1660 (Reid, 1983a:146; Andaya, 1981:49).

While the 1660s witnessed the frenetic fortifying of Makassar (Andaya, 1981:49-60), an equally pronounced campaign occurred in the early 1630s, corresponding to an interlude of Dutch aggression as seen from Makassar (LB:95-96). The renovation of Macinnik Dangang (Somba Opu) for the Gowa raja and his family (LB:92-93), along with some of the coastal fortifications, can be attributed to Gowa's Alauddin (Table 11-1). But an equal number of works are ascribed to Tallok's Abdullah after he was rethroned in 1634 (LB:95). As I pointed out previously (Bulbeck, 1990:92-93), interpreting these works depends on reading the relevant passages in LB and ST together, contextualised within SSPHAP's archaeological documentation of the coastal defence works. The latter includes an earthen fort at Paknakkukang backed by a snatch of brick wall (Figures 11-3b and 11-19), no less than 1.2 km of brick wall from Pattukangang to Barombong, and snatches of brick wall at Garassik (Figure 11-3a) and Bayoa which had apparently once connected as a wall extending along the chenier towards Somba Opu.

Now confirmed at BSO.

Data on brick sizes (Figure 11-2) demonstrate that the Barombong and Bayoa bricks, and the "smaller" bricks at Paknakkukang and Garassik, constitute the same type which was slightly larger, and in particular thicker, than the

[4] For further discussion see 12.1, including my argument that Speelman was probably confused in attributing this north outlet to the earthworks of Abdullah (Kg Matoaya). Note also that I had earlier suggested a north-north-west course for the Garassik's north outlet (Bulbeck, 1990), but this is because I had believed the 1660 sketch in its location of the Portuguese quarter far to the north of Somba Opu (see footnote 1). Note also that if the north outlet had migrated northeastwards between 1638 and 1669, as the totality of the evidence suggests, then the Portuguese had also relocated their quarters when the outlet moved, and Balang Baru could have moved too. Localised relocation is of course a common experience for communities living on a delta's edge.

TABLE 11-1. FORTIFICATION WORKS AT GARASSIK (MAKASSAR)

Works	Sponsoring Ruler	Date	References
Somba Opu's first brick walls	Tunipalangga	c.1550	SG:26
Somba Opu's additional brick walls	Alauddin	1631-2	LB:92-93
Somba Opu's town gate	Abdullah	1635	ST:17-18; LB:96
Coastal wall from Ujung Tana south to Somba Opu	Abdullah	1634	ST:17 (Bulbeck, 1990); LB:95
Coastal wall Somba Opu to Paknakkukang	Abdullah	1634	ST:17 (Bulbeck, 1990:92)
Benteng Paknakkukang	Alauddin[a] or Abdullah	1634	LB:95
Barombong wall strengthened	Alauddin[b] or Abdullah	1635	LB:96
Channel between Somba Opu and Garassik	Hasanuddin	c.1660	Speelman (Reid, 1983a)
Pattukangang wall	Hasanuddin	1661	LB:124
Second Barombong wall	Hasanuddin	1662	LB:126

[a] The passage mentions that the 'Raja', i.e. Alauddin, stayed at Paknakkukang while its walls were being built.

[b] The work was reportedly carried out by 855 people from Somba Opu, which might implicate Alauddin rather than Abdullah.

"smaller" bricks at the palaces (E.1). The suggestion, that these stretches of coastal wall were all built in the same programme, confirms the interpretation that Abdullah built a coastal wall from Ujung Tana to Paknakkukang in 1634, followed by the construction of Barombong's first brick wall in 1635 (Table 11-1). According to my model in which bricks tend to have gradually decreased in size during the same works (E.3), construction of the wall between Paknakkukang and Garassik started at Paknakkukang,[5] and construction of Barombong's wall also started at the south. The earth forts at Garassik (11.5) and, apparently, Bayoa (11.6) were possibly also made at this juncture.

The unusually thick bricks SSPHAP measured at Pattukangang (Figure 11-2) suggest a different programme, one which might match the record of a brick wall built on the south side of Benteng Paknakkukang in 1661 (LB:124). Accepting this identification would mean that only Barombong's second wall, reportedly built in 1662 (LB:126), remains unmatched with a particular archaeological expression. Now note that the total length of the Barombong wall amounts to 800 metres, but SSPHAP's brick measurements sampled only the 400 metres at the south. As my scenario argues that unusually thick bricks were used in the early 1660s to complete the wall between Paknakkukang and Barombong, I infer that Barombong's "second wall" refers to some or all of the 400 metres at the north, and hence I predict this section should contain unusually thick bricks. If not, parts of my scenario may need modification.

11.2 Site Clustering Analysis

Figure 11-4a labels the "North Polombangkeng" and "Garassik" historical sites, along with the historical toponyms to the direct north (12.3). The North Polombangkeng sites are not dealt with in this thesis, and I include their clustering analysis to show that they form their own clusters distinct from the Garassik sites (Table 11-5; Figure 11-6).

[5] Here confirmed by the presence of some "large" bricks at Paknakkukang which were already technologically obsolescent by that stage and absent from any later brickworks.

Figure 11-4b shows the the recorded land-use topography in 1969, the modern administrative divisions established by 1973, and the lower Jeknekberang pre-1977. Before the 1977 flood the south outlet of the Jeknekberang used to run north of Somba Opu, but during the flood it straightened its course south along Somba Opu (Photo 11-1), washing away the former site of Lekokbodong (hence now treated as a historical toponym) and much other settlement besides. The outlet now debouches directly north of Paknakkukang, dumping large amounts of sand which the prevailing southwards currents have reworked into longshore bars west and south of Paknakkukang (Photo 11-2). This geomorphic remodelling notwithstanding, the dominant land-use patterns shown by the 1969 map - rice fields, settlement and some fish ponds - persist in those areas most affected by the 1977 flood as elsewhere.

The 1977 destruction of Lekokbodong, and the small size of many of the recorded sites, indicate that only an impoverished sample of archaeological sites along the lower Jeknekberang is available for recording.[6] What remains may well be restricted to those examples perched on resilient enclaves of raised land which have survived the rigours of channel alteration. While site clusters corresponding to Speelman's "Makassar city" can be reconstructed, the demonstration would presumably be more incisive in an undisturbed landscape.[7]

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[6] For instance Bonte Keke, mentioned by Speelman as one of the larger villages along the Garassik's south outlet (Reid, 1983a:146), has vanished even as a toponym. Andaya (1981:319) notes that it and another nearby village attacked in 1669, Tana-Tana, do not appear on the 1693 map, which he ascribes to the prediliction of the Makassar not to resettle disaster-struck sites. However, Speelman's description of Bonto Keke postdates the attack on the village, and Tana-Tana was the karaengship of Mohammad Ali's daughter Fatimah (1673-1739).

[7] By the same token, the lack of sites and scarcity of historical toponyms directly north of Somba Opu cannot be taken at face value. The area would be largely constituted of recently formed and, hence, recently occupied land surfaces. A survey immediately north of Somba Opu, carried out by Muttalib (Suaka) and Albertinus (archaeology student, Hasanuddin University), found only European and recent tradewares. Granted that most of the archaeological record may well have been destroyed through deltaic remodelling, nonetheless much of this would refer specifically to the 17th century foreigners' quarters centred in this area. Hence we

To gauge the possible effects of river channels on site clustering patterns (6.6.2), we use the inferred 1660s' channels.[8] The issue whether or not to count fortress wall as site (6.6.2) does not affect Somba Opu and Paknakkukang/Pattukangang, which both count as one site either way. But it does suggest coastal wall as an analogue, both the recorded and the inferred lengths.

Hence four approaches are used: (A) site excluding walls, river channels ignored; (B) all recorded site, river channels ignored; (C) site excluding walls, joins prevented across inferred channels; and (D) all recorded and inferred site, joins prevented across inferred channels. As three classes of site are entertained, intersite distances are given thrice (Tables 11-2 to 11-4). But the same pattern of sites consistently emerges regardless of how the data are projected. The sites between Somba Opu and the Aeng river, or between the south Garassik outlet and the Aeng river if inferred channels are treated as barriers, join together in a "supercluster" (Figure 11-5).

Treating the inferred channels as barriers looks suspect. Even if I have located the 1660s channels precisely, they were of course in flux. The delta channels undoubtedly operated more as highways than as barriers, while the inconveniences for pedestrians were probably remedied by strategically located ferries (cf. Photo 11-1). The value of the exercise, as it were, is its identification of Somba Opu as a "central place" (Figure 11-5c). Somba Opu's 17th century name Macinnik Dangang ("Watch the Trade") betrays its central location to supervise the trade occurring along the Garassik outlets, both at the north where foreigners were mainly involved and at the Makassar-dominated south.[9] But clearly Somba Opu's rôle as a central place was neither to administer local communities after the manner of Benteng Tua (6.7), nor

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are spared the quandary of deciding whether or not such places should be ranked alongside SSPHAP's Makassar sites.

[8] Hasanuddin's defensive channel dug in 1660 is here ignored as too trivial for consideration.

[9] I could have simply noted that Somba Opu sits centrally within Garassik island and left it at that. However, treating the channels as barriers simulates the same result within the site-clustering procedures followed here.

TABLE 11-2. GARRASIK INTERSITE DISTANCES IN METRES - WALL IGNORED

	R	M	B	J	B	B	B	B	S	P	L	B	B	B	B	B	K	G	M	T	B	M	B	G
Rappocinik	2190																							
Mariso	2750	840																						
Bonto Rannu	2710	1700	1190																					
Jongaya	3160	2470	1930	780																				
Bonto Tangnga	3550	2340	1600	840	790																			
Balang Beru	2580	3130	3000	1630	1650	2420																		
Bonto Kapette	3530	4120	3900	2540	2240	3020	1005																	
Bontomanaik 1	(4580)	(3300)	(2480)	(1880)	(1520)	(1070)	(3050)	(3360)																
Somba Opu	(5200)	(3670)	(2840)	(2360)	(2130)	(1530)	(3610)	(3800)	340															
Pattung	(4630)	(3700)	(2980)	(2070)	(1480)	(1370)	(2770)	(2880)	670	930														
Lekokbodong	(5460)	(4480)	(3725)	(2890)	(2305)	(2150)	(3470)	(3410)	(1110)	(900)	(820)													
Bonto Lakja Selatan	(5310)	(4320)	(3580)	(2740)	(2175)	(2030)	(3350)	(3320)	(950)	(800)	(680)	140												
B. Lakja Timur Daya	(5405)	(4350)	(3610)	(2810)	(2260)	(2030)	(3490)	(3485)	(935)	(720)	(760)	170	165											
B. Lakja Barat Daya	(5510)	(4450)	(3680)	(2920)	(2380)	(2140)	(3620)	(3610)	(985)	(710)	(905)	240	250	125										
Bonto Lakja Barat	(5830)	(4510)	(3840)	(3170)	(2685)	(2360)	(4100)	(4190)	(1080)	(770)	(1250)	600	660	530	380									
Bayoa 2	(6180)	(4690)	(4070)	(3480)	(3050)	(2520)	(4340)	(4470)	(1310)	(980)	(1660)	1050	1070	950	790	420								
Kaccia	(6230)	(5200)	(4410)	(3645)	(3080)	(2870)	(4150)	(4125)	(1670)	(1370)	(1600)	720	870	820	690	650	725							
Gotong	(6660)	(5580)	(4800)	(4060)	(3500)	(3260)	(4595)	(4555)	(2030)	(1690)	(2020)	1150	1300	1240	1150	940	730	340						
Makam Kg Papok	(6840)	(5760)	(5000)	(4270)	(3680)	(3480)	(4820)	(4640)	(2210)	(1870)	(2235)	1330	1480	1420	1330	1110	900	510	180					
Timbuseng	(7360)	(6340)	(5550)	(4800)	(4180)	(4020)	(4750)	(4915)	(2790)	(2450)	(2740)	1850	2010	1970	1850	1710	1440	1100	760	570				
Bilaya Lama	(6300)	(4100)	(4170)	(3815)	(3340)	(2750)	(5010)	(5140)	(1610)	(1405)	(2280)	1790	1805	1670	1450	1210	780	1530	1530	1620	2040			
Mamampang	(5800)	(4210)	(3410)	(3180)	(2720)	(2250)	(4120)	(4670)	880	690	1820	(1760)	(1720)	(1620)	(1520)	(1320)	(1070)	(1860)	(1950)	(2080)	(2475)	(530)		
Bayoa 1	(5380)	(4000)	(3170)	(2620)	(2310)	(1790)	(3870)	(4440)	690	920	1590	(1495)	(1410)	(1310)	(1230)	(1070)	(930)	(1670)	(1870)	(2020)	(2560)	(860)	215	
Garassik	(6150)	(4380)	(3580)	(3530)	(3450)	(2740)	(4840)	(5110)	(1410)	(1630)	(2370)	2380	2330	2210	2120	1890	1510	2290	2250	2320	2700	720	(310)	(750)
Paknakkukang/Pat.	(7350)	(5700)	(4880)	(4650)	(4110)	(3620)	(5830)	(6080)	(2410)	(2330)	(3210)	2600	2750	2610	2450	2100	1610	2230	2170	2190	2470	940	(1160)	(1650)
Makam Tuan Biraeng	(7480)	(5850)	(5040)	(4610)	(4220)	(3750)	(6050)	(6140)	(2550)	(2430)	(3300)	2730	2790	2650	2510	2130	1630	2310	2110	2120	2400	1010	(1310)	(1820)
Tangaya	(7560)	(5950)	(5140)	(4720)	(4320)	(3870)	(6110)	(6220)	(2650)	(2510)	(3380)	2820	2860	2720	2550	2210	1685	2360	2150	2130	2395	1110	(1410)	(1910)
Saukang Parasangang	(7720)	(6120)	(5290)	(4890)	(4590)	(3990)	(6225)	(6300)	(2790)	(2630)	(3470)	2880	2950	2800	2640	2320	1750	2330	2140	2090	2230	1230	(1540)	(2040)
Barombong	(7220)	(6030)	(5200)	(4490)	(4410)	(3930)	(5780)	(5850)	(2570)	(2290)	(3050)	2350	2430	2315	2050	1810	1220	1790	1530	1400	1685	1030	(1510)	(1880)
Bontoa	(8160)	(6680)	(6010)	(4540)	(5320)	(4810)	(6740)	(6730)	(3440)	(3190)	(3970)	3280	3370	3230	3070	2730	2145	2650	2350	2250	2270	1850	(2260)	(2710)
Ujung Kassik	(8330)	(6910)	(6200)	(5310)	(5370)	(4920)	(6680)	(6610)	(3560)	(3260)	(3960)	3200	3300	3190	3025	2710	2130	2480	2135	2000	1890	2010	(2480)	(2880)
Aengtoa	(9120)	(7570)	(6830)	(6440)	(6080)	(5620)	(7150)	(7050)	(4235)	(3970)	(4680)	3910	4020	3910	3750	3420	2845	3200	2870	2730	2510	2680	(3110)	(3530)
Karama	(9970)	(8580)	(7510)	(7050)	(6900)	(6190)	(8200)	(8090)	(5090)	(4790)	(5470)	4680	4810	4700	4550	4220	3670	3920	3570	3390	3135	3550	(3990)	(4400)
Jonggoa Batu-Batu	(8290)	(6860)	(6010)	(5630)	(5090)	(4830)	(6195)	(5950)	(3530)	(3170)	(3620)	2750	2900	2835	2690	2470	2020	1940	1600	1520	990	2380	(2930)	(3100)
Summanak	(9050)	(7670)	(6860)	(6400)	(5880)	(5600)	(7000)	(6730)	(4270)	(3930)	(4410)	3550	3680	3620	3480	3230	2750	2730	2400	2220	1775	3000	(3520)	(3770)
Pangkajeknek	(9490)	(8160)	(7370)	(6930)	(6350)	(6130)	(7370)	(6990)	(4850)	(4500)	(4900)	4030	4120	4130	3980	3790	3350	3210	2870	2690	2170	3670	(4210)	(4430)
Pakkala Barat	(9550)	(8360)	(7490)	(6990)	(6415)	(6195)	(7380)	(6950)	(4930)	(4590)	(4950)	4070	4230	4190	4040	3870	3450	3260	2950	2780	2230	3790	(4330)	(4530)
Pakkala Timur																								

N.B. Bracketed intersite distances involve crossings across either one or both of the reconstructed Garassik channels. Historical toponyms and sites close to the Garassik sites but not actually clustering with them are included to show they do not cluster.

TABLE 11-2. GARRASIK INTERSITE DISTANCES IN METRES - WALL IGNORED (CONT.)

	R	M	B	J	B	B	B	B	S	P	L	B	B	B	B	B	K	G	M	T	B	M	B	G
Sampulungang	(11590)	(10200)	(9350)	(8780)	(8460)	(7800)	(9720)	(9510)	(6730)	(6470)	(7090)	6235	6285	6300	6140	5850	5320	5465	5110	4930	4560	5280	(5730)	(6110)
Kanjilo T-L	-	-	-	-	-	-	(3795)	(3365)	(2735)	(2540)	(1995)	1575	1750	1890	1990	1945	2355	1495	1715	1720	1810	3135	(3380)	(3200)
Kanjilo B-L	-	-	-	-	-	-	(3775)	(3375)	(2565)	(2360)	(1835)	1380	1570	1730	1795	1745	2160	1325	1565	1580	1690	2935	(3185)	(3000)
Kanjilo Barat	-	-	-	-	-	-	(3930)	(3930)	(2620)	(2405)	(1910)	1425	1635	1745	1820	1690	2065	1230	1390	1395	1455	2860	(3165)	(3000)
Kanjilo T-D	-	-	-	-	-	-	(4225)	(4225)	(3005)	(2750)	(2325)	1825	2050	2160	2225	2035	2400	1570	1650	1640	1575	3190	(3530)	(3390)
Kanjung Maek	-	-	-	-	-	-	(4460)	(4460)	(3140)	(2935)	(2480)	1940	2170	2260	2335	2080	2405	1580	1645	1630	1450	3190	(3610)	(3465)

Paknakkukang/Pat.	P	M	T	S	B	B	U	A	K	J	S	P	P	P	S	K	K	K	K
Makam Tuan Biraeng	550																		
Tangaya	710	180																	
Saukang Parasangang	890	290	110																
Barombong	1050	430	250	125															
Bontoa	1310	860	750	730	630														
Ujung Kassik	1790	990	810	700	560	930													
Aengtoa	2090	1520	1335	1250	890	1000	390												
Karama	2640	2080	1890	1770	1420	1690	870	410											
Jonggoa Batu-Batu	3510	2730	2550	2440	2300	2530	1730	1180	880										
Summanak	2860	2415	2280	2190	1880	1560	1730	1190	1740	2195									
Pangkajeknek	3330	2800	2650	2570	2250	2030	1580	1105	1430	1580	810								
Pakkala Barat	4050	3520	3250	3280	2870	2740	2210	1800	2060	1870	1330	610							
Pakkala Timur	4190	3680	3510	3450	3140	2870	2450	1980	2215	2060	1430	890	150						
Sampulungang	5190	4640	4460	4350	4210	4230	3450	2880	2640	1710	3570	2790	2620	2720					
Kanjilo T-L	3785	3905	3900	3895	3930	3385	-	-	-	-	-	-	-	-	-				
Kanjilo B-L	3685	3905	3830	3725	3875	3220	-	-	-	-	-	-	-	-	-	158			
Kanjilo Barat	3560	3635	3620	3610	3685	3055	-	-	-	-	-	-	-	-	-	151	126		
Kanjilo T-D	3925	3955	3900	3845	3800	3250	3810	3480	-	4840	2910	3075	3785	3305	-	324	520	183	
Kanjung Maek	3990	3900	3850	3790	3750	3165	3725	3400	-	4660	2765	2885	3530	3055	-	584	494	290	145

Figure 11-5a. BG joins P(/P) at 530m, these (BGP) join M at 703m; MTSP joins Bontoa at 743m; GMT joins Bilaya at 810m; BBBB joins KB at 745m, these join SPL at 962m (BBBBKB to GMTB is 1305m and SPL to BGPM is 1441m); MTSPB joins UAK at 1256m (UAK to Jonggoa is 1263m); BBBBKBSPL joins BGPM at 1525m (BBBBKBSPL to GMTB is 1555m and BGPM to MTSPBUAK is 1753m); BBBBKBSPLBGPM joins GMTB at 1707m (GMTB is only 1556m from KKKKK but KKKKK had already joined AAJB at 1217m [Table 6-4]); BJB joins MB at 1872m (BJB to BB is 2250m); BJBMB joins Rappocini at 2872m (BJBMB to BB is only 2765m but BB had already joined eastwards at 1785m [Analysis 6-3]); SPPP joins Jonggoa at 1926m (Jonggoa to Sampulungang is only 1710m but the latter had already joined south [Table 11-5]); Jonggoa to MTSPBUAK is 2042m); MTSPBUAK joins SPPPJ at 2319m (MTSPBUAK to BBBBKBSPLBGPMGMTB is 2451m; SPPPJ to B(2)B is 2611m [Table 12-6]); MTSPBUAKSPPPJ joins BBBBKBSPLBGPMGMTB at 2845m.

Figure 11-5c. BJB joins MB at 1872m (BJB to BB is 2250m); BJBMB joins Rappocini at 2872m (BJBM to BB is only 2594m, but BB had already joined BJKKMKKBKPMPKPPSSPT at 2542m [Analysis 6-4]).
SPLBG (forced join) - "Somba Opu cluster".
PM joins MTSBB at 983m (MTSBB to UAK is 1256m); UAK joins Jonggoa at 1263m (thus UAKJ); BBBKB joins GMTB at 1305m; UAKJ joins SPPP at 1920m (UAKJ to PMMTSBB is 2219m, SPPP to GMTB is 2441m); PMMTSBB joins BBBBKBGMTB at 2185m; PMMTSBBBBBBKGMTB joins UAKJSPPP at 2831m.

TABLE 11-3. GARASSIK INTERSITE DISTANCES IN METRES - SURVEYED WALL INCLUDED

	R	M	B	J	B	B	B	B	S	P	L	B	B	B	B	B	K	G	M	T	B	M	B	G
Rappocinik																								
Mariso	2190																							
Bonto Rannu	2750	840																						
Jongaya	2710	1700	1190																					
Bonto Tangnga	3160	2470	1930	780																				
Balang Beru	3550	2340	1600	840	790																			
Bonto Kapette	2580	3130	3000	1630	1650	2420																		
Bontomanaik 1	3530	4120	3900	2540	2240	3020	1005																	
Somba Opu	(4580)	(3300)	(2480)	(1880)	(1520)	(1070)	(3050)	(3360)																
Pattung	(5200)	(3670)	(2840)	(2360)	(2130)	(1530)	(3610)	(3800)	340															
Lekokbodong	(4630)	(3700)	(2980)	(2070)	(1480)	(1370)	(2770)	(2880)	670	930														
Bonto Lakja Selatan	(5460)	(4480)	(3725)	(2890)	(2305)	(2150)	(3470)	(3410)	(1110)	(900)	(820)													
B. Lakja Timur Daya	(5310)	(4320)	(3580)	(2740)	(2175)	(2030)	(3350)	(3320)	(950)	(800)	(680)	140												
B. Lakja Barat Daya	(5405)	(4350)	(3610)	(2810)	(2260)	(2030)	(3490)	(3485)	(935)	(720)	(760)	170	165											
Bonto Lakja Barat	(5510)	(4450)	(3680)	(2920)	(2380)	(2140)	(3620)	(3610)	(985)	(710)	(905)	240	250	125										
Bayoa 2	(5830)	(4510)	(3840)	(3170)	(2685)	(2360)	(4100)	(4190)	(1080)	(770)	(1250)	600	660	530	380									
Kaccia	(6180)	(4690)	(4070)	(3480)	(3050)	(2520)	(4340)	(4470)	(1310)	(980)	(1660)	1050	1070	950	790	420								
Gotong	(6230)	(5200)	(4410)	(3645)	(3080)	(2870)	(4150)	(4125)	(1670)	(1370)	(1600)	720	870	820	690	650	725							
Makam Kg Papok	(6660)	(5580)	(4800)	(4060)	(3500)	(3260)	(4595)	(4555)	(2030)	(1690)	(2020)	1150	1300	1240	1150	940	730	340						
Timbuseng	(6840)	(5760)	(5000)	(4270)	(3680)	(3480)	(4820)	(4640)	(2210)	(1870)	(2235)	1330	1480	1420	1330	1110	900	510	180					
Bilaya Lama	(7360)	(6340)	(5550)	(4800)	(4180)	(4020)	(4750)	(4915)	(2790)	(2450)	(2740)	1850	2010	1970	1850	1710	1440	1100	760	570				
Mamampang	(6300)	(4170)	(4100)	(3815)	(3340)	(2750)	(5010)	(5140)	(1610)	(1405)	(2280)	1790	1805	1670	1450	1210	780	1530	1530	1620	2040			
Bayoa 1	(5800)	(4210)	(3410)	(3180)	(2720)	(2250)	(4120)	(4670)	880	690	1820	(1760)	(1720)	(1620)	(1520)	(1320)	(1070)	(1860)	(1950)	(2080)	(2475)	(530)		
Garassik	(5380)	(4000)	(3170)	(2620)	(2310)	(1790)	(3870)	(4440)	690	920	1590	(1495)	(1410)	(1310)	(1230)	(1070)	(930)	(1670)	(1870)	(2020)	(2560)	(860)	215	
Paknakkukang/Barombong	(6150)	(4380)	(3580)	(3530)	(3450)	(2740)	(4840)	(5110)	(1410)	(1630)	(2370)	2380	2330	2210	2120	1890	1510	2230	2110	2090	2230	720	(310)	(750)
Bontoa	(7220)	(6030)	(5200)	(4490)	(4410)	(3930)	(5780)	(5850)	(2570)	(2290)	(3050)	2350	2430	2315	2050	1810	1220	1790	1530	1400	1685	1030	(1510)	(1880)
Ujung Kassik	(8160)	(6680)	(6010)	(4540)	(5320)	(4810)	(6740)	(6730)	(3440)	(3190)	(3970)	3280	3370	3230	3070	2730	2145	2650	2350	2250	2270	1850	(2260)	(2710)
Aengtoa	(8330)	(6910)	(6200)	(5310)	(5370)	(4920)	(6680)	(6610)	(3560)	(3260)	(3960)	3200	3300	3190	3025	2710	2130	2480	2135	2000	1890	2010	(2480)	(2880)
Karama	(9120)	(7570)	(6830)	(6440)	(6080)	(5620)	(7150)	(7050)	(4235)	(3970)	(4680)	3910	4020	3910	3750	3420	2845	3200	2870	2730	2510	2680	(3110)	(3530)
Jonggoa Batu-Batu	(9970)	(8580)	(7510)	(7050)	(6900)	(6190)	(8200)	(8090)	(5090)	(4790)	(5470)	4680	4810	4700	4550	4220	3670	3920	3570	3390	3135	3550	(3990)	(4400)
Summanak	(8290)	(6860)	(6010)	(5630)	(5090)	(4830)	(6195)	(5950)	(3530)	(3170)	(3620)	2750	2900	2835	2690	2470	2020	1940	1600	1520	990	2380	(2930)	(3100)
Pangkajeknek	(9050)	(7670)	(6860)	(6400)	(5880)	(5600)	(7000)	(6730)	(4270)	(3930)	(4410)	3550	3680	3620	3480	3230	2750	2730	2400	2220	1775	3000	(3520)	(3770)

N.B. Bracketed intersite distances involving crossings across either one or both of the reconstructed Garassik channels are retained even though the results are not directly analysed here.

TABLE 11-3. GARASSIK INTERSITE DISTANCES IN METRES - SURVEYED WALL INCLUDED (CONT.)

	R	M	B	J	B	B	B	B	S	P	L	B	B	B	B	B	K	G	M	T	B	M	B	G
Pakkala Barat	(9490)	(8160)	(7370)	(6930)	(6350)	(6130)	(7370)	(6990)	(4850)	(4500)	(4900)	4030	4120	4130	3980	3790	3350	3210	2870	2690	2170	3670	(4210)	(4430)
Pakkala Timur	(9550)	(8360)	(7490)	(6990)	(6415)	(6195)	(7380)	(6950)	(4930)	(4590)	(4950)	4070	4230	4190	4040	3870	3450	3260	2950	2780	2230	3790	(4330)	(4530)
Sampulungang	(11590)	(10200)	(9350)	(8780)	(8460)	(7800)	(9720)	(9510)	(6730)	(6470)	(7090)	6235	6285	6300	6140	5850	5320	5465	5110	4930	4560	5280	(5730)	(6110)
Kanjilo T-L	-	-	-	-	-	-	(3795)	(3365)	(2735)	(2540)	(1995)	1575	1750	1890	1990	1945	2355	1495	1715	1720	1810	3135	(3380)	(3200)
Kanjilo B-L	-	-	-	-	-	-	(3775)	(3375)	(2565)	(2360)	(1835)	1380	1570	1730	1795	1745	2160	1325	1565	1580	1690	2935	(3185)	(3000)
Kanjilo Barat	-	-	-	-	-	-	(3930)	(3930)	(2620)	(2405)	(1910)	1425	1635	1745	1820	1690	2065	1230	1390	1395	1455	2860	(3165)	(3000)
Kanjilo T-D	-	-	-	-	-	-	(4225)	(4225)	(3005)	(2750)	(2325)	1825	2050	2160	2225	2035	2400	1570	1650	1640	1575	3190	(3530)	(3390)
Kanjung Maek	-	-	-	-	-	-	(4460)	(4460)	(3140)	(2935)	(2480)	1940	2170	2260	2335	2080	2405	1580	1645	1630	1450	3190	(3610)	(3465)

Paknakkukang/Barombong	P	B	U	A	K	J	S	P	P	P	S	K	K	K	K
Bontoa	630														
Ujung Kassik	560	930													
Aengtoa	890	1000	390												
Karama	1420	1690	870	410											
Jonggoa Batu-Batu	2300	2530	1730	1180	880										
Summanak	1880	1560	1730	1190	1740	2195									
Pangkajeknek	2250	2030	1580	1105	1430	1580	810								
Pakkala Barat	2870	2740	2210	1800	2060	1870	1330	610							
Pakkala Timur	3140	2870	2450	1980	2215	2060	1430	890	150						
Sampulungang	4210	4230	3450	2880	2640	1710	3570	2790	2620	2720					
Kanjilo T-L	3785	3385	-	-	-	-	-	-	-	-	-				
Kanjilo B-L	3685	3220	-	-	-	-	-	-	-	-	-	158			
Kanjilo Barat	3560	3055	-	-	-	-	-	-	-	-	-	151	126		
Kanjilo T-D	3800	3250	3810	3480	-	4840	2910	3075	3785	3305	-	324	520	183	
Kanjung Maek	3750	3165	3725	3400	-	4660	2765	2885	3530	3055	-	584	494	290	145

Figure 11-5b. BG joins P(/B) at 530m, these (BGP) join Mamampang at 703m; GMT joins Bilaya at 810m; BBBB joins KB at 745m, these join SPL at 962m (BBBBKB to GMTB is 1305m and SPL to BGPM is 1441m); UAK joins Bontoa at 1207m; BBBBKBSPL joins BGPM at 1525m (BBBBKBSPL to GMTB is 1555m and BGPM to UAKB is 1964m); UAKB join Jonggoa at 1580m; BBBBKBSPLBGPM joins GMTB at 1690m (GMTB is only 1556m from KKKKK but KKKKK had already joined AJB at 1116m [Table 6-3]); UAKBJ joins SPPP at 1920m (SPPP to B(2)B is 2634m [Table 12-6]); BJB joins MB at 1872m (BJB to BB is 2250m); BJBMB joins Rappocini at 2872m (BJBMB to BB is only 2765m but BB had already joined eastwards at 1785m [Analysis 6-1]); BBBBKBSPLBGPMGMTB joins UABKJSPPP at 3110m (UABKJSPPP to Sampulungang is 2957m but Sampulungang had joined south [Table 11-5]).

TABLE 11-4. GARASSIK INTERSITE DISTANCES IN METRES - RECORDED AND INFERRED WALL INCLUDED

	M	R	B	J	B	B	B	B	S	P	L	B	B	B	B	B	K	G	M	T	B	M	P	B	U
Mariso-Ujung Tana																									
Rappocinik	2190																								
Bonto Rannu	840	2750																							
Jongaya	1700	2710	1190																						
Bonto Tangnga	2470	3160	1930	780																					
Balang Beru	2340	3550	1600	840	790																				
Bonto Kapette	3130	2580	3000	1630	1650	2420																			
Bontomanaik 1	4120	3530	3900	2540	2240	3020	1005																		
Somba Opu wall	(3300)	(4580)	(2480)	(1880)	(1520)	(1070)	(3050)	(3360)																	
Pattung	(3670)	(5200)	(2840)	(2360)	(2130)	(1530)	(3610)	(3800)	340																
Lekokbodong	(3700)	(4630)	(2980)	(2070)	(1480)	(1370)	(2770)	(2880)	670	930															
B. Lakja Selatan	(4480)	(5460)	(3725)	(2890)	(2305)	(2150)	(3470)	(3410)	(1110)	(900)	(820)														
B.Lakja Timur Daya	(4320)	(5310)	(3580)	(2740)	(2175)	(2030)	(3350)	(3320)	(950)	(800)	(680)	140													
B.Lakja Barat Daya	(4350)	(5405)	(3610)	(2810)	(2260)	(2030)	(3490)	(3485)	(935)	(720)	(760)	170	165												
Bonto Lakja Barat	(4450)	(5510)	(3680)	(2920)	(2380)	(2140)	(3620)	(3610)	(985)	(710)	(905)	240	250	125											
Bayoa 2	(4510)	(5830)	(3840)	(3170)	(2685)	(2360)	(4100)	(4190)	(1080)	(770)	(1250)	600	660	530	380										
Kaccia	(4690)	(6180)	(4070)	(3480)	(3050)	(2520)	(4340)	(4470)	(1070)	(980)	(1660)	1050	1070	950	790	420									
Gotong	(5200)	(6230)	(4410)	(3645)	(3080)	(2870)	(4150)	(4125)	(1670)	(1370)	(1600)	720	870	820	690	650	725								
Makam Kg Papok	(5580)	(6660)	(4800)	(4060)	(3500)	(3260)	(4595)	(4555)	(1870)	(1690)	(2020)	1150	1300	1240	1150	940	730	340							
Timbuseng	(5760)	(6840)	(5000)	(4270)	(3680)	(3480)	(4820)	(4640)	(2020)	(1870)	(2235)	1330	1480	1420	1330	1110	900	510	180						
Bilaya Lama	(6340)	(7360)	(5550)	(4800)	(4180)	(4020)	(4750)	(4915)	(2475)	(2450)	(2740)	1850	2010	1970	1850	1710	1440	1100	760	570					
Mamampang	(4170)	(6300)	(4100)	(3815)	(3340)	(2750)	(5010)	(5140)	(530)	(1405)	(2280)	1790	1805	1670	1450	1210	780	1530	1530	1620	2040				
Paknakkukang/Bar.	(4380)	(6150)	(3580)	(3530)	(3450)	(2740)	(4840)	(5110)	(310)	(1630)	(2370)	2380	2330	2210	2120	1890	1510	2230	2110	2090	2230	720			
Bontoa	(6030)	(7220)	(5200)	(4490)	(4410)	(3930)	(5780)	(5850)	(1510)	(2290)	(3050)	2350	2430	2315	2050	1810	1220	1790	1530	1400	1685	1030	630		
Ujung Kassik	(6680)	(8160)	(6010)	(4540)	(5320)	(4810)	(6740)	(6730)	(2260)	(3190)	(3970)	3280	3370	3230	3070	2730	2145	2650	2350	2250	2270	1850	560	930	
Aengtoa	(6910)	(8330)	(6200)	(5310)	(5370)	(4920)	(6680)	(6610)	(2480)	(3260)	(3960)	3200	3300	3190	3025	2710	2130	2480	2135	2000	1890	2010	890	1000	380
Karama	(9120)	(7570)	(6830)	(6440)	(6080)	(5620)	(7150)	(7050)	(3110)	(3970)	(4680)	3910	4020	3910	3750	3420	2845	3200	2870	2730	2510	2680	1420	1690	410
Jonggoa Batu-Batu	(8580)	(9970)	(7510)	(7050)	(6900)	(6190)	(8200)	(8090)	(3990)	(4790)	(5470)	4680	4810	4700	4550	4220	3670	3920	3570	3390	3135	3550	2300	2530	1730
Summanak	(6860)	(8290)	(6010)	(5630)	(5090)	(4830)	(6195)	(5950)	(2930)	(3170)	(3620)	2750	2900	2835	2690	2470	2020	1940	1600	1520	990	2380	1880	1560	1730
Pangkajeknek	(7670)	(9050)	(6860)	(6400)	(5880)	(5600)	(7000)	(6730)	(3520)	(3930)	(4410)	3550	3680	3620	3480	3230	2750	2730	2400	2220	1775	3000	2250	2030	1580
Pakkala Barat	(8160)	(9490)	(7370)	(6930)	(6350)	(6130)	(7370)	(6990)	(4210)	(4500)	(4900)	4030	4120	4130	3980	3790	3350	3210	2870	2690	2170	3670	2870	2740	2210
Pakkala Timur	(8360)	(9550)	(7490)	(6990)	(6415)	(6195)	(7380)	(6950)	(4330)	(4590)	(4950)	4070	4230	4190	4040	3870	3450	3260	2950	2780	2230	3790	3140	2870	2450
Sampulungang	(10200)	(11590)	(9350)	(8780)	(8460)	(7800)	(9720)	(9510)	(5730)	(6470)	(7090)	6235	6285	6300	6140	5850	5320	5465	5110	4930	4560	5280	4210	4230	3450

TABLE 11-4. GARASSIK INTERSITE DISTANCES IN METRES - RECORDED AND INFERRED WALL INCLUDED (NOTES)

N.B. "Mariso-Ujung Tana" refers to the wall apparently built along the coast between Ujung Tana and Mariso. "Makassar wall" includes Somba Opu, Bayoa 1 and Garassik in the same "site". As the latter wall's extent north beyond Somba Opu can only be guessed, Somba Opu is used as a proxy for measuring the distance between the "Somba Opu wall" and sites to the north. Bracketed intersite distances involve crossings across one or both of the reconstructed Garassik channels. For remaining distances see previous table.

Figure 11-5d. BJB joins Bonto Rannu but no further joins (Table 12-6).
Somba Opu wall joins Pattung and Lekokbodong (SPL or "Somba Opu cluster").
PB joins Mamampang at 875m (hence PBM); UAK joins Jonggoa at 1263m (hence UAKJ); BBBBKB joins GMTB at 1305m; PBM joins UAKJ at 1784m (PBM to BBBBKBGMB is 1837m, and UAKJ to SPPP is 1920m); PBMUAKJ joins SPPP at 2247m (BBBBKBGMTB is 1837m to SPPP and 3180m to PBMUAKJ); PBMUAKJSPPP joins BBBBKBGMYB at 3120m.

TABLE 11-5. NORTH POLOMBANGKENG INTERSITE DISTANCES IN METRES

Summanak	S	P	P	P	J	B(2)	B	S	T	J	B	B	C	T	T	P	M	M	M	M	P	T
Pangkajeknek	810																					
Pakkala Barat	1330	610																				
Pakkala Timur	1430	890	150																			
Jonggoa Batu-Batu	2195	1580	1870	2060																		
Bontomanaik 2	2720	3080	2820	2695	4365																	
Bonto Pakja	2425	2730	2280	2110	4760	730																
Sampulungang	3570	2790	2620	2720	1710	4885	5445															
Tabaringang Barat	3270	3045	2320	2330	2685	4030	4760	1690														
Jamarang	4585	4305	3750	3810	3150	5750	6430	1470	1630													
Bonto Lebang	4155	3920	3310	3320	3105	5050	5780	1770	910	700												
Bebak	-	-	-	-	-	-	-	2810	2730	1150	1570											
Campagaya Lama	-	-	-	-	-	-	-	3040	2900	1570	1755	480										
Taipanorang	-	-	-	-	-	-	-	3690	3350	2030	2190	890	400									
Tamasongok	-	-	-	-	-	-	-	4950	4660	3080	3530	2150	1630	990								
Parebalang	-	-	-	-	-	-	-	4215	3610	2530	2530	1440	850	630	1210							
Mandallek/Pannujuang	-	-	-	-	-	-	-	3710	2990	2070	1925	1190	625	720	1480	280						
Matoanging	-	-	-	-	-	-	-	4110	3480	2390	2350	1510	840	880	1370	340	180					
Maccinik Kondo	-	-	-	-	-	-	-	4560	3510	2990	2650	2320	1330	1730	2190	1135	540	555				
Manjalling Lompoe	-	-	-	-	-	-	-	5230	3940	3750	3290	3230	2480	2640	2870	2040	1440	1480	930			
Borong Punaga	-	-	-	-	-	-	-	5310	4070	3820	3390	3090	2220	2590	2810	1960	1440	1410	905	470		
Talaborong	-	-	-	-	-	-	-	5320	3950	3930	3410	3500	2780	3000	3330	2390	1730	1810	1250	190	110	

Figure 11-6. Campagaya Lama/Taipanorang joins Bebak at 685m; Mandallek/Matoanging/Parebalang joins Maccinik Kondo at 743m; CTP joins MMPM at 1172m; Jamarang/Bonto Lebang joins Tabaringang Barat at 1270m; JBT joins Sampulungang at 1643m; MMPMCTB joins Tamasongok at 1574m; MMPMCTBT joins MBT at 2222m.

If Tabaringang Barat rejected from analysis for abutting a survey boundary, then Jamarang/Bonto Lebang would join Sampulungang at 1620m. If MBT rejected from analysis for same reason, then MMPMCTB would join Jamarang/Bonto Lebang/Sampulungang at 2808m.

TABLE 11-6. RESULTS OF SOIL TESTS CARRIED OUT AT SOMBA OPU

Locality	Soil Type	Munsell Colour	pH	Interpretation
Soil Test 1, looter's hole in east Sapirea	Silts with some fine sand and clay top 70 cm	7.5YR 6/2 to 10YR 6/2 (pinkish grey to light brownish grey)	Not recorded	Jeknekberang's levee deposits
" "	Clayey silts 70 cm to water table at 2 metres	10YR 3/4 to 7.5YR 3/4 (dark yellowish brown to dark brown)	Not recorded	Jeknekberang's older levee deposits
Soil Test 2, field in north Sapirea	Topsoil silts	Not recorded	6 1/2	Jeknekberang's levee deposits
Soil Test 3, hole at fortress south	Fine sand with a minor silt fraction	10YR 6/3 (pale brown) (dry sample)	Not recorded	Jeknekberang's post-1977 banks
Soil Test 4, ploughed field at fort southwest	Topsoil fine sand	7.5YR 3/2 (dark brown)	6	Jeknekberang's levee deposits
Soil Test 5, field in fallow	Topsoil silts	7.5YR 3/4 (dark brown)	6 1/2	Jeknekberang's pre-1977 banks
Soil Test 6, rice field bund 100 m west of fort, c. 500 m east of sea	Topsoil silty clay	5YR 5/4 (reddish brown)	7	Backswamp clays mixed with silts from annual floods
" "	10-25 cm depth, silt with some laminations	5YR 5/4 (reddish brown)	7	Jeknekberang's levee deposits
Soil Test 6, hole in the bunded field	25 cm to 1 metre depth muddy clay with some grit	5YR 4/3 (reddish brown)	7	Older backswamp deposits

Additional notes on Soil Test 6 location: mangrove-type vegetation along rice-field bunds; area regularly flooded to around 15 cm depth in wet season; water from the wells is bitter (brackish).

to provide the kind of defensive focus for which Benteng Anak Gowa appears to have been built (8.2.1).

The acceptance of the Barombong wall as "site", such that it joins Pattukangang-Paknakkukang to form a site nearly two kilometres long, creates a configuration which neatly mimics the 1667 siege of Makassar (Figure 11-5b). The "Makassar cluster" embraces the Paknakkukang-Barombong wall and the immediately hinterland defended by the wall, i.e. the city and its coastal defences, an area which Speelman and Arung Palakka (Sahaduddin) failed to penetrate before 1669. The "Aeng cluster" corresponds to the battle line during the siege between the Makassar troops holding the north bank of the Aeng and the Bugis land troops amassed along the south (Bulbeck, 1990:82-3). This cluster also includes Bontoa where the 1667 Bungaya treaty was signed at the end of the siege (Kallupa, 1985:154-156).

The ongoing organisation of Garassik during times of security, which was the rule rather than the exception at least between c.1550 and 1615 (e.g. Reid, 1981), is probably best represented by Figure 11-5a. Accordingly I will use that configuration to organise my description of the sites.

11.3 Benteng Somba Opu

11.3.1 Physical remains and reconstruction

Benteng Somba Opu lies at six metres asl between the 20th century south outlet of the Jeknekberang up to 1977, and the post-1977 south outlet (see Figure 11-4). The site's deposits, as observed by SSPHAP, can all be ascribed to these 20th century outlets and the degree of proximity to the sea (Table 11-6). But local reports describe the deeper deposits below three metres as sands. These could represent the south tail of the Ujung Pandang cheniers, or possibly 17th century beach or riparian deposits.

Since the completion of SSPHAP's fieldwork, Somba Opu has hosted extensive excavations and an ambitious programme of restoration and interpretation (Reid and Caldwell, 1990:88-89). The work supersedes SSPHAP's programme which

mapped the visible structural remains (Figure 11-9),[10] cleared a small section and measured some bricks (Figure 11-2). Few details from the excavations are yet readily available, and I will be lucky if my review of the information at hand (E.2.3; E.4) does not need any revision. Available photographic information shows the "one-on-two" method of laying bricks (Photo 11-4) and the massive construction of the west wall and bastion (Photos 11-5 and 11-6).[11] A chart of excavated squares shows their concentration along the rubble-strewn footpath at the site's north (Photo 11-3), suggesting the excavators were following the north wall. It defuses the suggestion by Reid (1983a:149), followed by Bulbeck (1990:93), that the fort had once extended well to the north of the surveyable remains, and so suggests that Somba Opu as a comparatively small palace centre which embraced only 11.8 hectares.

SSPHAP recorded Somba Opu's surface tradewares over several visits, working both by observed concentrations of sherdage and by land-use zones. The hybrid compilation of the data notwithstanding, they can be matched against the c.1638 sketch of the fort (Photo 1-1) and what is known of the occupation history.

The clearest internal structures consisted of a rounded mound, here interpreted as a flagstand (Photo 11-8), and a surrounding line of wall rubble in the fort's northwest corner (Figure 11-9). The field north of the mound, Gowa 3.3, contained an extraordinary quantity of blue-and-white and coarse stoneware pieces, and earthenware sherdage (Appendix D). After making a complete collection on our first visit to serve as laboratory identifications (LIs),[12] we noted on a

[10] The first published survey of Somba Opu is Reid's (1983a:147) rough sketch. The original plane-table survey of Somba Opu's external walls was instigated and supervised by Peter Bellwood on 19 August 1986. In September 1986 Suaka (1986/87) independently surveyed Somba Opu with a plane table and included the west *Pakbenderang* or flag stand which had been reported by Sagimun (1985:279). This was added to SSPHAP's plan and complemented with traces of internal structures on 14 November 1986.

[11] Somba Opu's brick walls are described as three and a half metres thick by the Dutch sources (Andaya, 1981:131).

[12] Labelled G.3.3B in Appendix D. The earthenwares are very underrepresented in this collection.

later visit that ploughing had brought up an even greater assemblage which we then identified in the field (FIs). Both assemblages produce a "fine" tradeware profile with a 16th century spike (Figure 11-8).[13] With the assemblages combined, the resulting densities of "Qing BW" and especially "Ming" pieces exceed any other recorded densities at the site (Figure 11-10).

The next highest densities, which also produced a 16th-century spike, were recorded in a field due south labelled zone 8. Although no structural remains have survived, the locality coincides with where the c.1638 sketch placed Somba Opu's wooden "royal palace". This was probably the Maccinik Danggang palace which stood between 1631 and 1650 (Reid, 1983a:144; LB:92,112).

If so, zone 3 must have been the palace occupied by Hasanuddin when Somba Opu was sacked in 1669. The traces of concentric brick walls accord with the written references to Somba Opu's massive fortifications in its last days (Andaya, 1981:117-136), while the dense sherdage would reflect the palace's forced abandonment and subsequent ransacking. Zones 3 and 8 probably also sited the royal palaces between c.1550 and 1618, given their strong emphasis on 16th century sherdage (Figure 11-8).

Further eastwards we recorded evenly spaced patches of sherdage within a pattern of dwindling amounts and densities (Figure 11-10). Zone 6 is flanked by two interrupted lines of brick rubble which might represent internal structures (Figure 11-9), possibly the "other palace" and royal storehouses of the c.1638 sketch. Further east are an old sepulchre (Photo 11-9) and a commemorated grave in a cement tomb at the south (Photo 11-7). As the only two old Islamic graves SSPHAP recorded, these might match the recorded burials of two Makassar nobles associated with Gowa's

[13] Figure 11-8 also shows the standardised chronological histograms based on SSPHAP's broad tradeware classes. As pointed out elsewhere (B.5.2), the implications which can be drawn from the broad tradeware classes are unnecessarily coarse when large tradeware samples are available. For instance, while they correctly identify the masses of "Ming" sherdage at Somba Opu, very little of this sherdage is of 15th century antiquity.

"lineage group", Ralle Dg Paikak and Dg Manarai Kg Mamampang, at Somba Opu in 1692 (LB:176).[14] The graves are bracketed by two looted areas, zones 2 and 4, which presumably mark pre-Islamic burial grounds of the site's ordinary inhabitants. Next to the tomb is a cannon called *Mariang polong* (fragmentary cannon) which, according to Sagimun (1985:278), had been salvaged from Somba Opu and kept in Kaccia before its recent return to Somba Opu (Photo 11-7). It alone seems to have escaped the Dutch seizure of 44 cannons and other arsenal which had guarded the palace (cf. Andaya, 1981:134).

Some further "Ming" pieces were recorded along or beyond the fort's outer west wall (Figure 11-10). Either they reflect use of Somba Opu's beach frontage or they are *ex situ* remains from zone 3. The footpath transect recorded mainly later pieces which would correspond to the development of modern Sarombe kampung. Sarombe's area has also included the westernmost strip of Somba Opu during the 20th century, and its cemetery of 20 to 30 cement graves, oriented around 20° from north, has been established at Hasanuddin's former palace. The rest of Somba Opu has become part of Sapirea kampung whose Islamic cemetery, situated on the line of wall rubble at the north of the site, has looked generally older than Sarombe's.[15] Sapirea's inhabitants were also our informants on the looting which appears to have been after bricks as well as antiques (Figure 11-9).

The few "early" tradewares found at the far west (Figure 11-10) have spalled off celadon plates which were presumably part of Gowa's royal wealth. But the larger number to the east includes Vietnamese monochromes and early whiteware, BW and enamelled pieces (Appendix D). These demonstrate use of the site before its fortification, especially as the southern zones, 1 and 4, show a pre-Ming emphasis in their tradewares

[14] Unfortunately I did not ask about the associations of the marked graves we observed. Ralle Dg Paikak (1626-1692) was the sister of Kg Lengkesek and wife of Gowa's Mohammad Said and, later, Bima's Abdul Khair. Kg Mamampang was the son of Hasanuddin's son Kare Tojeng Kg Galesong (Chapter 3).

[15] I use the past imperfect tense here as I would not wish to predict the fate of these kampungs or their cemeteries during Somba Opu's restoration and interpretation.

profile (Figure 11-8). According to the c.1638 sketch, Somba Opu's mosque was constructed in this area. The spot might have been chosen because of its keramat (mystically powerful) associations with the site's original community centre. Zone 2, however, can be identified with the burial ground of the populace who lived at the fort's rear, according to the c.1638 sketch.

11.3.2 Occupation history

The evidence of light occupation during the 13th-14th and 15th centuries suggests the site had probably enjoyed a raised location at the shore, and access to fresh water, before Tunipalangga built there. The tradewares correctly identify massive occupation during the 16th and early 17th centuries, although their emphasis on the early 16th century at the palaces appears precocious (Figure 11-8). This unexpected result might be an artefact of the specific nature of the Ming BW assemblage.[16] On the other hand, there is no reason why Gowa could not have occupied the site during the early 16th century. Gowa's lineage group briefly ruled Garassik at the beginning of the 16th century; Paiva referred to Makassar as the port-city of Gowa in 1544; and the passage on Tunipalangga's brick walls possibly implies that Somba Opu, like Benteng Tua, previously had earth walls built by Tumapakrisik Kallona (4.3). Transposing the early and late 16th century segments of the tradewares profile might well be adequate correction to represent Gowa's early use of Somba Opu faithfully.

The tradewares also correctly identify Somba Opu's substantial abandonment after the early 17th century (Figure 11-8). The profiles based on the fine classes more suggest a "whimper" than the "bang" we know took place, except for the profile of zone 3 based on laboratory identifications which, like the "broad" tradeware profiles, correctly pegs Somba

[16] e.g. the comparatively large proportion of blue-and-white jars of sturdy production, compared to the more fragile bowls which usually dominate "Ming" assemblages; and the use of the ceramics as royal household goods, which might have involved a longer life span than that of the wares buried in graves.

Opu's sudden demise to c.1700.[17] Note also that even after 1669 the site still played a rôle, as indicated by its inclusion in the 1693 map (Figure 5-5), the recorded 1692 burials, and the death in 1724 of Matinroe ri Somba Opu.[18]

11.4 Other BBBBKBSPL Sites (Sites Near Somba Opu)

11.4.1 Pattung (Gowa 4), Lekokbodong, and Bayoa 2 (UP 7)

The apparently substantial site of Pattung is annually inundated at depths up to one and a half metres despite its protection by an earthen dyke constructed along the Jeknekberang's south bank.[19] Two areas emerge above the Jeknekberang's greyish brown silty sands: an old graveyard (no further recorded) hard against the dyke (Photo 11-10); and 300 metres southwest, at a slightly higher elevation, a ploughed field whose artefactual contents we collected. The tradewares suggest fairly steady occupation from the 16th century (Figure 11-10), although the lack of 20th century pieces might place the field outside the kampung depicted on the maps. The intervening land has reportedly been extensively looted, producing mainly blue-and-white wares (Photo 11-11), but also coming upon the occasional skeleton, head directed eastward, in a *duni*. The available evidence provides a good case for identifying the site with "Pattunga"

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[17] The difficulty here is that Somba Opu's second phase as Gowa's palace, 1631 to 1669, overlaps with the initial period of "Qing Swatow" and Qing BW wares. The "fine" tradeware profiles based on laboratory identifications compensate for this possible distortion by two means. Firstly, Qing BW pieces (1650-1800) could be more closely identified as "Kangxi" (1650-1750) in the laboratory, but such a fine level of classification is not feasible in the field. Secondly, Wanli and late Ming BW pieces are very hard to discriminate from Qing Swatow and Qing BW pieces in the field. See Appendix B for details.

[18] i.e. Kg Anak Moncong Sultan Ismail (GXX/BXIX/SXIX) who died in 1724 shortly after being removed simultaneously from the Bone and Soppeng thrones (Ligtvoet, 1880:201-202). As he was buried at Benteng Tua (6.5.1), "Matinroe" must here refer to where he died.

[19] My site map (Figure 11-4) portrays Pattung as a dot because any topographic features which might have allowed me to locate its area precisely on my pre-1977 maps appear to have been buried since the Jeknekberang had changed its course.

cited in the Makassar records as a 16th-17th century karaengship (Table 3-5).

Lekokbodong kampung had been located on the south levee of the lower Jeknekberang before the straightened south outlet swept it away in 1977. The inhabitants saved the grave markers and removed them to Tamanjalling across the Sungai Anak Gowa from Kanjilo Lama. The restored cemetery is called Kompleks Makam Islam Karaeng Lekokbodong after its eponymic personage Sambalik Kg Lekokbodong.[20] The genealogical records provide a precise match (LEK2 in Table 3-5) which allows the toponym to be identified with the 17th century Lekokbodong (ex-Marusuk) descent group (4.8.2). Within the vicinity of the former kampung itself, we could not gather any reports of looting, although such information might have been lost since the 1977 flood.

The Dutch 1:50k map shows two kampungs called Bayoa along the Sungai Banda (Anak Gowa) - Bayoa 1 near Garassik, and Bayoa 2 inside a meander one kilometre upstream. The Banda has straightened its channel here, as shown by air photographs, prompting the abandonment of "Bayoa 2". The former kampung area includes an enclave of raised land (Photo 11-16) where looting has left a small residue of "Ming" sherdage (Figure 11-10). As this small pre-Islamic burial ground is not associated with any old Islamic graves,[21] the site may have been abandoned in the 17th century before its subsequent resettlement from Bayoa 1.

11.4.2 Kaccia Lama (UP 4)

The site is a strip of slightly raised land which includes two Islamic graveyards, 80 metres apart, adjacent to looted areas (Figure 11-7). The south cemetery contains over 100 marked graves and the north cemetery more than 50, old to modern in both cases (Table F-8a).

The south graveyard incorporates an apparently elite cluster of old graves perched on a raised brick platform

[20] I was unaware of this specific association when I visited the cemetery and did not record his grave marker, nor indeed the cemetery itself apart from noting its new (i.e. restored) appearance.

[21] The single, wooden marked grave at the site is modern.

which may be of similar antiquity. Two of the markers enclose exquisitely carved masonry *nisan* which resemble the 17th century royal Gowa *nisan* in form and delicacy of style (Photos 11-14 and 11-15). Blue-and-white ceramics were reportedly obtained in the vicinity, while 16th century origins for the burial ground is supported by the Ming Swatow piece we found.

The north graveyard abuts the main looted area. We were shown three antiques: "Ming red" and Ming BW bowls (Photo 11-12), and a marble figure of a lion which looks Chinese (Photo 11-13). We observed two holes spaced two metres apart along an axis 15° from north, and were told of their association with a north-south directed skeleton buried with gravegoods, even though the other skeletons encountered were reportedly aligned east-west. The datum suggests an unusual syncretist burial, either a pre-Islamic burial influenced by Islamic ideas of orientation,[22] or an initial Islamic burial among the pre-Islamic ancestors. The small but interesting assemblage of tradewares points to a possible 14th century origins and a climax in the 15th century (Figure 11-10; Appendix D).

Kaccia appears to have been organised into two "families" which have kept distinct burial grounds for more than four centuries. The original family would be the one represented at the north. The younger family at the south apparently achieved particular prominence in early Islamic times, possibly related to Kaccia's central location in its site cluster (Figure 11-5).

11.4.3 Bonto Lakja (Gowa 62)

Suaka's local field officer Aziz Allang alerted SSPHAP to the unearthing of some empty *tempayan* (stoneware jars) at Bonto Lakja. This led us to record four contiguous sites at an altitude of around three metres asl. Three of the sites are small islands in a sea of sawah, susceptible to being flooded to a metre's depth when the Jeknekberang bursts its banks,

[22] Malays were present in Makassar, not far from Kaccia, by the mid-16th century.

while the fourth site has been converted to bunded fields (Figure 11-11).

In Bonto Lakja Selatan we were shown the hole where the *tempayan* (Photo 11-17) were reportedly found with their mouths approximately 30 cm underground. The *tempayan* (Photos 11-20 to 11-23) compare very well with pre-Ming jars made in China between the 10th and 14th centuries (cf. Harrisson, 1986:45): four small handles horizontally applied at the neck; ovoid form with swelling shoulders; rolled lips; "Brittleware" or "Guangdong" type body; and smallness compared with either the coeval "gusi" jars or later Ming Chinese jars (Table 11-7).[23] *Tempayan* in the ground tend to be a feature of Bugis areas where they were buried with cremated remains until Islamisation (e.g. Kallupa et al., 1989). I tested the soil at six localities in Bonto Lakja to see if there was any relationship between pH and the presence of human burials, but the results suggest none (Table 11-8). Other tradewares at Bonto Lakja Selatan were 17th century and later (Figure 11-12), and none of the 110 marked graves in the cemetery looks very old (Table F-8a). Whether the jars had been stashed or had contained human burials, they precede the other archaeological remains recorded at Bonto Lakja Selatan by several centuries.

A short distance north, in Bonto Lakja Timur Daya, lie 47 marked graves identified with Bonto Lakja's original inhabitants by the "family" which uses the graveyard (Table F-8a). The oldest graves, as indicated by inspection and what we were told, are called Makam Petta Sakga. They consist of five single stones, apparently marking north-south burials, spaced along a dilapidated platform of red bricks 4 metres east-west by 1.5 metres wide. We counted 15 looter's holes by the platform and 19 more to the immediate west. Reportedly, antiques were first found when the school's foundations were being excavated, and consisted of lots of blue-and-white supplemented by Ming whitewares, Sawankhalok and a few celadons. Confirming the report of many *buli-buli* (jarlets)

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[23] The spouted jar may be a "gusi" form, but this specimen and the others were either glazed brown or black, whereas "gusi" jars are glazed greenish (cf. Harrisson, 1986:44).

TABLE 11-7. OBSERVATIONS ON THE BONTO LAKJA TEMPAYAN

Jar	Lip diameter	Shoulder circum-ference	Basal diameter	Height to shoulder	Total height	Glaze Colour	Unglazed Base Colour	Comparisons (Harrisson, 1986)
G.62.0.1	11.5 cm	110 cm	12.5 cm	27 cm	36 cm	5YR 4/4 (reddish brown)	7.5YR 6/6 (reddish yellow)	35 (Chinese, 11-12th centuries)
G.62.0.2	12 cm	112 cm	13 cm	27 cm	36 cm	5YR3/3 (dark reddish brown)	7.5YR 6/4 (light brown)	35 (Chinese, 11-12th centuries)
G.62.0.3	11.5 cm	112 cm	12 cm	24 cm	33 cm	5YR3/2 (dark reddish brown)	2.5Y 7/2 (light grey)	35 (Chinese, 11-12th centuries)
G.62.0.4	6 cm	53.5 cm	11.5 cm	12.5 cm	19.5 cm	10YR 3/3 (dark brown)	10YR 7/3 (very pale brown)	26 (Vietnamese, 10-11th centuries)
G.62.0.5	9.5 cm	52.5 cm	11 cm	11.5 cm	16 cm	10YR 2/1 (black)	10YR 7/4 (very pale brown)	-

Other diagnostic traits. Four horizontal handles on all jars (supplemented with a spout and a vertical handle for pouring on G.62.0.4). Glaze comes right to the base with a smooth finish on all jars (although there is some slight dripping on G.62.0.4). Smooth base with a fine fabric corresponding to either the "Brittleware" or the "Guangdong" type of Harrisson (1986).

N.B. As all the jars are undecorated, specific comparisons with examples featured in Harrisson (1986) and elsewhere are scarce because decorated jars are usually preferred in the books.

TABLE 11-8. RESULTS OF SOIL TESTS CARRIED OUT AT BONTO LAKJA

Locality	Soil Type	Munsell Colour	pH	Reason for test
Soil Test 1, zone 4 where jars found	Gritty silt with some clay at 5 cm depth	10YR 3/3 (dark brown)	6	Possible human burials
Soil Test 2, zone 5 at 5 cm depth	More gritty silt with less clay than Soil Test 1	10YR 3/2 (very dark greyish brown)	$6^{1}/_{2}$	Comparison with Soil Test 1
Soil Test 3, zone 5 at 5 cm depth	Gritty silt with some clay and small gravels	5YR 3/3 (dark reddish brown)	$6^{3}/_{4}$	Comparison with Soil Test 1
Soil Test 4, zone 8 (Kuburan Nenek Moyang)	Loose sandy silt at 5 cm depth	5YR 3/4 (dark reddish brown)	6	Known human burials
Soil Test 5, zone 9 at 5 cm depth	Silt slightly looser and more sandy than Test 4	5YR 3/4 (dark reddish brown)	6	Suspected human burials
Soil Test 6, sawah bund north of school	Clayey silt at 5 cm depth	5YR 3/4 (dark reddish brown)	6	Unoccupied land without burials

we were shown a "Ming red" example (Photo 11-23). Surface sherdage also included a 16th century piece (Figure 11-12).

A short distance west lies Kuburan Islam Tuan Said whose 47 marked graves include a few old styles (Table F-8a). Tuan Said was reported to be the *nenek moyang* of Cikkoang people in south Takalar. His sheltered grave shares a brick platform, 13 metres east-west by five metres wide, with four masonry marked graves (Photo 11-18). The occurrence of two such platforms at Bonto Lakja and one at Kaccia point to a local tradition. The 14 bricks we measured, which showed little size variation, have dimensions within the general range observed at the Makassar fortifications, although no particular identification can be made (Figure 11-2).

Bonto Lakja Barat consists of three rice fields where some antiques had reportedly been found (Photo 11-19). Zone 13 in particular produced 206 tradeware pieces ranging between the 13th-14th and 19th-20th centuries and 668 earthenware sherds (Appendix D).[24] It would appear to mark a focus of habitation until the 17th century (Figure 11-12), and provides a chronological link between the possible pre-Ming jar burials, Ming-period pre-Islamic burial ground, and early Islamic cemeteries recorded nearby.

All four localities at Bonto Lakja might have originally belonged to the same land surface, and the total tradewares indicate a strong presence until the late 17th century. Hence Bonto Lakja, possibly under another name, may have been one of the larger villages along the lower Garassik until the 1669 raids, or changes in river discharge patterns, decreased the village's suitability.

11.5 Garassik Heartland (BGPM Group)

11.5.1 Benteng Garassik (Gowa 5)

The site is best approached with a synopsis of my main interpretations. The 1977 flood reduced Garassik kampung to a vestige of its former self, and what has survived of historical Garassik must also be a minute fraction.

[24] The zone 12 pieces were also from this general area, brought to us by children.

Nonetheless the extant remains include fortifications which identify the site with Benteng Garassik cited in the Bungaya treaty for destruction (Andaya, 1981:306). The nature of the other archaeological debris further stamps the site as having been, in all probability, old Garassik's core.

In the early 20th century, and apparently as late as 1969, the site constituted the southwest tail of Garassik kampung which then lay across the Sungai Banda from "Bayoa 1". The Jeknekberang's 1977 flood speared Garassik kampung, washing it away or covering it with silts, apart from Benteng Garassik. The Banda now runs south of Bayoa, and the modern stream between Garassik and Bayoa is part of a network of channels where the Banda meets the Jeknekberang delta (Figure 11-4). The sinuous contours of the fields around the site, and the alternation of silts and sands in the fields and the wells (Figure 11-14), reflect these fluvial reconstructions of the landscape during the 20th century.

The former wall line along Bayao's footpath is directed at Benteng Garassik's northwest corner (Figure 11-14), corroborating folk memories that a brick wall had once connected Bayoa and Garassik. The *in situ* brick wall at Garassik's northwest corner includes a line on the surface, an intersection exposed by a hole (Photo 11-26), and a cross-section in the bank of a sunken field at the north (Figure 11-3a). This part of Garassik also contains a masonry post-support (Photo 11-27) - one of five reportedly found at the site - and by far the main concentration of brick rubble. Most of the other brick rubble occurs to the east in a pattern which suggests colluvial redeposition from the northwest corner. However, north of Benteng Garassik rubble was restricted to the field flanking the sunken field with the exposed cross-section, so the wall had probably contined north-north-east towards Somba Opu. Thus the snatches of Garassik's *in situ* brick wall appear to outline a squarish

[25] Without this perspective it would have been tempting to interpret the line of fields running west along Benteng Garassik's north border, before turning northwest, as a remnant of the defensive ditches excavated along Makassar's coast in the 1660s (cf. Andaya, 1981:51). The work mapping the fields and recording deposits in the well profiles was directed primarily by Sonny Wibisono.

structure, presumably a parapet, outside a line of coastal wall (Figure 11-14).

The parapet marks the fort's location but is not the actual fort. As shown in Figure 11-15,[26] "early" pieces (and flaked stone artefacts) were widely but sparsely distributed, even occurring in the sunken fields which, of course, drop into the site's older deposits. But the "Ming" and "Qing BW" pieces - which would cover any 17th century pieces - were specifically concentrated in the raised area of silts southeast of the brickworks. Many antiques have reportedly been found within this raised area (none in the surrounding fields) which also includes two old, venerated Islamic graves (Table F-8b). As this part of the site appears to have long been a focus of habitation with some burials, sentimental considerations would have dictated its fortification rather than, say, the area abutting the parapet's northwest. Probably also the most stable surface would have attracted fortification while, mutatis mutandis, the works would have subsequently protected the deposits. But there are no clear signs of brickworks coinciding with the site's archaeological heart. Hence Garassik Fort would appear to have been essentially earthen.[27]

The site's tradeware profile summarises the distinction between the tradewares inside and outside the apparent fort (Figure 11-21). The site's high counts of coarse stoneware

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[26] The two small surveyed squares in Figures 11-14 and 11-15 are remnants of SSPHAP's initial work at Garassik before I realised that surveying by quadrants rather than land-use zones was just a waste of time. We had also surveyed some other small squares but these were subsequently replaced by survey of the land-use zones including the squares. Zone 6, it should be mentioned, was noted and surveyed by two of SSPHAP's crew members on separate occasions. All of the "Ming" and Qing Swatow identifications were collected on the first occasion (G.5.6 in Appendix D); the other pieces were returned and so could have been among the identifications on the second occasion (G.5.6B in Appendix D); hence my analysis adds the counts for the classes collected on the first occasion but otherwise uses whichever count is higher. Note also that G.5.1 is a general collection made on SSPHAP's first visit, and provenanced no more tightly than to the raised part of the site southwest of the brickworks.

[27] The argument admittedly appeals through circumstantial evidence and default rather than direct evidence, but no other alternative seems at all attractive until excavation recovers evidence to the contrary.

sherds (Appendix D) also indicate that at various times it was either a palace centre (cf. 11.4.1) or a port.

The tradewares also indicate a clear origin by at least the 14th century.[28] The point contextualises the site's name which almost certainly derives from north Java (Reid, 1983a). Gresik was a leading spices port from the early 15th century, following what must have been a meteoric rise given Ma Huan's report, written in 1433, that it had been founded by Chinese late in the 14th century (Guy, 1986:32-33). The name must also have been quickly grafted onto Makassar's shores given that Garassik existed as a kingdom by the late 15th century (Figure 4-6). The 15th century, indeed early 15th century surge in Garassik's histogram probably corresponds to when the settlement took Gresik's name. But this would have occurred in the context of Gresik Javanese exerting major influence on an already well-established community.

The histogram's late 15th century dip (Figure 11-19) might be related to a decline in Garassik's fortunes directly preceding its absorption by Gowa at c.1500. But it might be more parsimonious to interpret the result as an artefact of analysis, e.g. the difficulty in distinguishing late 15th century pieces from 16th century pieces. A better perspective might be gained from evening out the tradeware profile into a generalised 15th century apogee. At the same time, the strong presence of pieces dated to the 16th century is not totally anomalous,even though the period witnessed Garassik's absorption (4.3) and the establishment of Somba Opu a short distance to the north (11.4.2). Benteng Garassik could well have remained a port or a local population centre throughout the 16th century. All in all, I interpret the site as a historical palimpsest whose various rôles - small 15th century palace, 17th century fortress, and more generally a burial, habitation and port area - are not readily disentangled by surface survey alone.

[28] The observed tradewares include a range of rarely recorded classes which, not without some misgivings, I generally assigned to 14th-15th century classes (Appendix D; Photo 11-24).

11.5.2 Bayoa 1 (Ujung Pandang 1)

During the 1980s Bayoa's villagers raided a nest of antiques in an area now containing two concentric *empang* (fish ponds) tidally inundated via the Sungai Bontorea (Banda). Inspecting the inner *empang* we found five fragments of bronze leaf (Photo 11-29) and, oriented 130° from north, the visible outline of a *duni* or log coffin (Photo 11-30). The banks of the inner *empang* appeared artificially built up but the northern faces of the outer empang retained the original deposits (Photo 11-28). Artefactual remains were essentially restricted to the banks of the inner *empang* and eastern outer *empang*, so we treated the vertical faces and directly associated horizontal surfaces as eight survey zones (Figures 11-16). The resulting patterns of tradeware densities highlight the concentration of "Ming" and "Qing BW" pieces in the *empang* compared to the rest of Bayoa (Figure 11-16). After standardisation the tradewares date mainly between the 13th-14th and the 17th centuries, with an apparent 15th century peak (Figure 11-21).[29] Other observed remains included 73 brick fragments; seven *Tridacna* shells presumably brought in as gravegoods or for funerary feasts; and nine fragments of bone, none of which looked clearly human (Photo 11-32).

On 20 September 1986, coinciding with the return of Sonny Wibisono who had co-directed the initial survey, Suaka salvaged the *duni* (Photo 11-31). The excavation revealed a hollowed log with two slits in the base, enclosed by a partly preserved outrigger resting on wooden end supports (Figure 11-17c). The log measured 4 metres long, 90 cm wide and 30 cm deep, and the outrigger was 5 metres long by 1.2 metres. Some

[29] A rationale for zoning the *empang* was to analyse the within-distribution of the tradewares, but 40 tradewares spread over eight zones comes to a small sample in each case, and the alternation of high and null tradeware densities reflects the zones' small areas. Earthenwares, including fragments of "cogwheel pots" (cf. Photo 7-16) and finely incised and stamped sherds, were recorded in abundance (Appendix D). Obviously the ratio of earthenwares to tradewares is anomalously high by general standards, which presumably reflects the greater visibility of earthenware sherdage on clean vertical surfaces than on vegetated and scuffed horizontal surfaces.

earthenware and blue-and-white sherds were found in the excavation. I inspected the baulks whose profiles can be projected against zone 1's profile, using the top level along zone 1 as my datum (Figure 11-17a). The comparison places the *duni* at the base of the silty clays which constitute the bottom half of the *empang*'s deposits, immediately on top of black, gritty beach sands (which I would interpret as the tail of the Ujung Pandang cheniers). The deposits at the level of the *duni* were yellowish and slightly acidic, contrasting with the alkaline, brown to black deposits elsewhere.

We were informed that many antiques had been found with the *duni* but no human remains were described. It would seem that decomposition of possibly several corpses, and to some degree the coffin itself, had created a slightly acidic micro-environment in which wood but no human bones were preserved, even though the deposits are generally alkaline. Two samples, Bayoa A and Bayoa B respectively, were taken from the outside of the log's north and east ends for radiocarbon dating. Bayoa A dated at 101.7 ± 2.2 %Modern (ANU-5926), which converts to 50 (70) 250 BP if we follow the 101.7 date, while Bayoa B was dated 270 ± 120 BP (ANU-5927), i.e. a corrected date of 310 BP with a single S.D. range between 30 and 480 BP (Stuiver and Pearson, 1986:810). If we ignore Bayoa A and focus on the older part of Bayoa B's range the *duni* could be as old as the 15th-16th centuries. But a 17th century date catches the overlap between the two radiocarbon dates and must be preferred, even though greater Gowa had embraced Islam by this stage.[30] Nor can we argue the specimen might merely be an abandoned canoe; its perforated base (to drain the decomposing body fluids) and east-west orientation also characterise the log coffins excavated at

[30] The sketchiness of my records notwithstanding, both samples clearly came from inside the tree-trunk which supplied the log, and so would merely date when the tree was alive. It could have been a fast-growing tree felled specifically to make the coffin, so a date in the 17th century can still stand as the best estimate. On the other hand, a date as late as the 18th century would be allowed by the tradewares found in the *empang*.

Agop Atas, Sabah (Bellwood, 1988b:103) and Palambeang, Pangkep (Tjandrasasmita, 1970:23-24).[31]

North of the *empang* a pasture full of looter's holes reaches Bayoa's cemetery which is itself flanked by further looted areas (Figure 11-16). The cemetery's 94 marked graves include three east-west examples overgrown by tree-roots (Photo 11-33; Table F-8b). A slight concentration of "early" and "Ming" tradeware pieces occurs in the vicinity (Figure 11-18). Hence it seems that from the east part of the *empang* to the footpath along the cemetery, the area had been used for burials, including a substantial syncretist Islamic phase which might have lasted till the 18th century.

Antiques had also reportedly been found throughout the kampung, including three still unsold 16th-17th century pieces (Photos 11-35 and 11-36). The report matches the wide dispersal of "Ming" sherdage (Figure 11-18). However, it is hard to say whether occupation debris or goods associated with isolated graves are involved.

Bayoa's footpath runs between the streams which flank the kampung. Brick rubble occurs right along the footpath which thus marks the former wall through the site (Photo 11-37). The area south of the footpath has clearly been the focus of Bayoa's occupation, at least between the 15th and 19th centuries (Figure 11-21). The early 20th century maps show that the footpath marks the former border between kampung and backswamp at the north. However, the kampung used to extend further south, past the *empang* to the point on the Bontorea labelled zone 34. Here I noticed some objects eroding out of the bank into the stream (Photo 11-34), and some children fishing for molluscs retrieved further objects in the water. The combination of artefacts and a remarkable range of natural stone (Table 11-9; Photos 11-38 and 11-39) points to an artificial deposit, particularly as pebbles were not observed at comparable depths in the *empang*. Something other than an 18th to 20th century rubbish dump is involved because

[31] The Agap Atas log coffin also had a jar underneath the hole to catch the body fluids (Bellwood, 1988b:252-253); for a discussion of its dating, see 13.2.3. The Palambeang coffin was associated with decomposed human bones and 15th-16th century tradewares.

TABLE 11-9. OBJECTS FISHED OUT OF THE BONTOREA AT ZONE 34

Type of Object	Number		Weight
Late Ming BW plate footring sherd	1		63 gm
Sawankhalok brownware tempayan base	1	(2 sherds)	323 gm
Earthenware sherds (jars and bowls)	9		735 gm
Fragments of old red brick	18		?
Volcanic stone with rough incised line	1		230 gm
Flaked quartzite pebble	1		136 gm
Flake of basalt	1		6 gm
Larger lateritic pebbles	21		?
Smaller lateritic pebbles	3		350 gm
Slabs of slate	2	smaller is	220 gm
Limestone pebbles	2		686 gm
Other sedimentary pebbles	2		174 gm
Quartz pebbles	9		?
Other pebbles (large)	15		?
Other pebbles (small)	72		?

N.B. The flaked quartzite pebble and basalt flake are only probably products of intentional flaking and even then need not be prehistoric. Only collected objects were weighed. The late Ming BW piece is included in Bayoa's total tradewares profile but not in the *empang* or "south of footpath" profiles (Figure 11-21).

the datable artefacts fall in the 16th-17th centuries. One possible explanation for the range of non-ceramic objects would be their inclusion as support materials in the base of an earthen wall. Hence I tentatively infer that an earth fort had been built at Bayoa, possibly confined to the triangular area between zones 20, 34 and 25. Such a fort would resemble Benteng Garassik in having been built behind the coastal wall at a major focus of coastal occupation.[32]

Bayoa 1 can be clearly identified as a main settlement of Gowa's Bajau (Bayo) population whose maritime services to Gowa are reported by Speelman (Reid, 1983a:126). The site's total tradewares profile suggests occupation by the 13th-14th centuries preceding the main phase which spanned the 15th and 16th centuries (Figure 11-21). Even better than Benteng Garassik's tradeware profile, Bayoa's correlates with what we can deduce of Garassik's history, implying that the Bajau played a major rôle in Garassik's rise (cf. Reid, 1983a:128-129). The Bajau's continued importance till the

[32] There is no clear record of a Bayoa fort, but the 1660 European sketch of Makassar does mislabel Benteng Barombong as "Bayoa Fort".

late 17th century is indicated by the tradeware profile and the indications that the site had been fortified.

11.5.3 Paknakkukang-Pattukangang (UP2)

The dominant landform at this site (Figure 11-19), a curved body of brownish grey sands, appears to be a chenier deposited by a protohistorical ancestor of the Garassik (11.1). The chenier's north boundary used to be the Banda mouth; as shown by the 20th century land-use maps, Paknakkukang's main settlement (UP.2.1) occupied an island in the mouth. In 1977 the Jeknekberang forged a new south outlet immediately north of Paknakkukang. The stone road along the west base of the chenier marks the pre-1977 shoreline, but since 1977 a sandy strip several hundred metres wide has been deposited further westward. Nonetheless the small channel which runs through Paknakkukang, and the backswamp converted to fish ponds behind the chenier, do not appear to have changed much, even if they used to articulate with the Banda and not with the Jeknekberang. The backswamp may even have existed by 1660 if the 1660 sketch (Boxer, 1967:Plate III) can be believed.

The most obvious remnant fortification, a mounded line of brick wall which actually crosses Paknakkukang's small channel (Photo 11-41; Figure 11-3b), has previously been interpreted as a wall of Benteng Paknakkukang (Nurhadi et al., 1983:10-11; Kallupa, 1985:151-152). But there are no traces of connecting brick wall, rather the wall peters out at one of the sandy mounds in the bamboo grove which screens the wall from the road. However, there is a low heaped line which connects the mounds, and it shows that Paknakkukang was an earthen fort with five mounded bastion features (Figure 11-19; Photo 11-42).[33] This perspective frees the brick wall for interpretation as part of the coastal wall between Paknakkukang and Ujung Tana.

[33] Detection of the fortress wall is difficult because the bamboos obscure a holistic view of the site's relief and because prior expectations involved a brick fort rather than an earthen one. It took me personally four visits and a lot of puzzling before I could make the mental switch.

After surveying the wall line, I met Paknakkukang's *tokoh masyarakat* (social exemplar) who explained that three of the mounds had been *pakbenderang* (flagstands), including the *Maccinik Sombala* (Place to Watch for Sails) at the northwest where the *saukang* now stands. I also observed some stray looter's holes which showed that brick rubble and coral blocks had occasionally been included to strengthen the packed sandy matrix of the walls and bastions (Photo 11-43). The fort displays surprisingly insubstantial construction in view of its strategic location at the Garassik mouth (Figure 11-1) although, to be sure, the Dutch occupied Paknakkukang in 1660 with ease (Andaya, 1981:49). Further, the coastal wall behind Paknakkukang might have hindered greater Gowa's defence of the fort just as it apparently helped curtail any Dutch movement inland.

The most elevated part of the extant fortress occurs at the south. Here the wall line curves beneath and around the Islamic cemetery which serves Paknakkukang and Pattukangang. There are two tombs reportedly associated with the early 17th century founders of Paknakkukang's line of *tokoh masyarakat*. These are the "man from London" (Photo 11-40), who can be identified with a renegade Englishman who converted to Islam before dying in 1637,[34] and his wife. A similar sheltered grave on the southwest bastion was ascribed to a former Paknakkukang "owner" of unremembered name (Table F-8b).[35]

We counted 63 looter's holes adjacent to the cemetery and heard that lots of blue-and-white, merah and brownwares had been recovered. Wares still unsold from the looting comprised three Ming whitewares, two Ming BW bowls, three Ming Swatow, one Wanli BW, one Transitional BW and three Swatow pieces (Photos 11-45 and 11-46). These date between the 15th and

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34 The present *tokoh masyarakat*, who identified himself as tenth in the line, gave quite a detailed account. The "man from London" converted to Islam and then married into the Paknakkukang community. His son Abdul Said was *tokoh masyarakat* when the Dutch occupied the site. These details match the European records of an English constable who joined up with Gowa as the chief adviser on firearms. He converted to Islam before dying in 1637 (de Crucq, 1941:95).

35 This "owner" might be identifiable with Kg Paknakkukang (PKK1), a Sanrabone princess who married Tallok's Sultan Mudhaffar in the early 17th century (Figure 4-10).

17th centuries, and hence link chronologically with the Islamic cemetery's 17th century to modern graves. As the fort's south walls neatly enclose the burial area, it would appear to have served as an axial point when Abdullah planned the fort's construction.

The chenier directly south of Paknakkukang, shown as Pattukangang kampung on the Dutch land-use maps, contains what I call the Pattukangang wall. Its traces begin 50 metres south of Benteng Pattukangang and follow a southward course before crossing the stone road (Photo 11-40) and joining the Barombong coastal wall (Figure 11-2). As the Pattukangang wall does not connect with Paknakkukang's fortifications (Figure 11-17), and appears to have been built of anomalously thick bricks (E.2.3), it was probably a distinct construction event. My reading of the records dates it to the 1660s, 30 years after Paknakkukang's works (11.1).

"Ming" pieces were widely if thinly dispersed along the chenier (Figure 11-20). The comparatively strong density of "Ming" pieces inside Benteng Paknakkukang reflects some examples found in looter's holes; elsewhere bamboo leaves comprehensively littered the ground. But there is no clear evidence that the fortifications ever protected a local settlement, even if Benteng Paknakkukang protected the burial ground. Paknakkukang's occupation by over 500 Dutch soldiers for several months in 1660 (Andaya, 1981:49-56), might be associated with the strong density of "Qing BW" pieces in zone 2 at the fort's northeast wall.[36] The marked absence of "recent" pieces in the centre of the site could correspond to its former use as a firing range by the Dutch, as reported by the *tokoh masyarakat*.[37]

The tradeware profiles suggest that Pattukangang had been occupied by the 15th century (Figure 11-21). While

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[36] i.e. the soldiers had spent more time around Benteng Paknakkukang than actually inside it. 500 people in the fortress would be a real squeeze. From Andaya's account it is not quite clear how many months of Dutch occupation were involved.

[37] The report is confirmed by Sonny Wibisono's recovery of a corroded bullet near zone 13. I should also acknowledge Wibisono's involvement in the site's initial survey, especially that he first noticed the point where the Pattukangang brick wall started.

Paknakkukang's sherdage does not date before the 16th century, this part of the site includes the pre-Islamic burial ground where wares as old as the 15th century have been found. Pattukangang (PTK) recurs as a karaengship through the 15th and 17th centuries, including an initial association with Garassik (e.g. Figure 4-6). The rarity of the toponym removes the last conceivable obstacle to identifying the site with historical Pattukangang. As the earliest occurrence of the toponym Paknakkukang dates to the early 17th century, it seems likely that Paknakkukang either budded off or was grafted onto Pattukangang at this juncture, possibly in response to the deposition of new habitable land at the Garassik's south outlet.

11.5.4 Mamampang (Ujung Pandang 5) and overview

Mamampang appears on the Dutch land-use maps, but not on the Indonesian counterparts, as a tiny kampung on the south border of the extensive backswamp between Pattukangang and Kaccia. We surveyed it as a possible match to the historical toponym Mamampang; not because of reported looting or old Islamic graves which were as absent as housing at this abandoned kampung. The thin scatter of surface sherdage included a few "colonial" pieces and, at one particular locality (Photo 11-47), a few "Ming" pieces (Figure 11-22). Given the thorough geomorphic reworking of this general area, the "Ming" pieces would constitute an adequate basis to identify the site with the historical toponym, except for the direct evidence linking historical Mamampang with Makam Manyampang (8.5.1).

Mamampang finishes our description of the BGPM sites. Their combined chronological histogram shows a presence of pieces, after standardisation, as pronounced in the 15th century as at any later juncture (Figure 11-21). I interpret this as the period when the ancestral Garassik river had deposited the Paknakkukang-Pattukangang chenier and was debouching, via a northeast curving outlet, at Bayoa and Garassik. A quantum leap in trade between the communities along the Garassik delta and Java apparently also occurred at this stage, resulting in the establishment of the small

port-polity of Garassik. The area enclosed by the BGPM sites (Figure 11-5a) possibly approximates old Garassik's political heart. The new outlet slightly to the north, which the Garassik river apparently forged by the 16th century, could be related to Somba Opu's subsequent ascendancy.

11.6 The GMTB Group

Gotong (UP8) is a small raised area of silty fields (Photo 11-48) with 103 looter's holes. The main antiques reported were blue-and-white ceramics, along with some Sawankhalok and celadons. The small sample of "Ming" pieces found on site possibly suggests a mainly 15th century burial ground (Figure 11-23). The indications of a decline into the 16th century are supported by the absence of Islamic marked graves. The more recent tradewares suggest sporadic occupation of the site after the late 17th century.

Shortly after Islamisation the Gotong people might have moved their burial ground to Timbuseng. My notes describe Makam Timbuseng as an old to modern graveyard which had never been looted.

Stronger evidence of 17th century Islamic burials occurred some 80 metres to the south where we recorded two sheltered graves with finely carved wooden *nisan* on a platform of old-looking bricks (Photo 11-49; Table F-8b). We were told that these were the oldest graves in Timbuseng, plus the following information. The two graves were associated with Karaeng Papok, a *mubalig* (Islamic preacher) from Pangkep, and his companion. They did not stand in an ancestral relationship to the Timbuseng villagers. However, people from the Pangkep islands often came to pay homage.

200 metres further south we recorded a Swatow piece in a ladang ("Timbuseng" in Figure 11-4a; U.9.1 in Appendix D). The other tradewares here and at Makam Kg Papok (U.9.2) were all Qing to recent (Figure 11-23).

Bilaya Lama (Gowa 11) is a small raised area with around 50 to 100 marked Islamic graves which appear very old to modern (Table F-8b). The site's sheltered grave (Photo 11-50) is ascribed to a Gowa karaeng whose name was not recalled. 11 holes still dotted the cemetery from the looting which had

reportedly occurred 20 years beforehand. The antiques, mostly blue-and-white but also some celadons, *merah*, brownwares and Sawankhalok, were reportedly found four to five metres below ground. This burial ground appears to have been in continuous use from at least the 16th century till the present, even though the only tradeware sherdage at the site was Qing to recent (Figure 11-23).

The tradewares profile of the GMTB sites combined suggests occupation of the area by at least the 15th century. The apparent early 17th century nadir (Figure 11-23) could be the result of inadequate sampling. The sites are so unimpressive that they would seem to mark the social as well as the spatial periphery of precolonial Makassar.

11.7 The Aeng Cluster

11.7.1 Barombong (Ujung Pandang 3)

After jagging across the stone road at Pattukangang (Figure 11-19), the extant wall line meets a ridge of light brownish grey sands running along the west side of the road to Barombong. A continuous line of brick rubble, studded with occasional exposures of *in situ* bricks, can be traced along the sand ridge for 800 metres (Figure 11-1). In August 1986 SSPHAP's team made a rough sketch of the north 400 metres of the Barombong wall. We started with the section which traverses Pattukangang Baru, noted that 150 metres could not be directly surveyed because the Barombong naval training college has been built over the wall line, and observed only Qing to recent sherdage and modern Islamic graves. We had also sketched the remaining 400 metres, but in this case I later decided on a plane-table survey and fuller documentation of the quite interesting associated remains. The resurvey was carried out in June 1987 (Figure 11-24).

At the north is the Islamic grave of "Tuan Biraeng" which looked to be of 18th century vintage. The bole of a banyan tree has grown right over it and is starting to envelope the corrugated iron shelter protecting the grave. A late Ming BW piece was found with other, later tradewares (Figure 11-26). Further south is Kuburan Islam Tangaya, a modern cemtery

built on the wall line (Table F-8b), where the earliest recorded tradewares were Swatow (Figure 11-26). Also, a small looted area across the road had reportedly produced approximately 40 blue-and-white, Sawankhalok and celadon pieces, plus a ceramic bird figurine. The sandy drop between the wall line and the beach steadily widens to this point, and shortly southwards the longshore deposits break away from the mainland to create a seawater inlet (Photo 11-2). The inlet reaches as far north as Saukang Patanna Parasangang which abuts the sheltered grave of Tuan Caddi. Tuan Caddi reportedly hailed from Cikkoang in south Takalar, and thus pairs with Bonto Lakja's Tuan Said (11.4.3). Even though no looting had occurred, the wealth of surface tradewares included two 13th-14th century pieces, and 16th century and later pieces otherwise (Figure 11-26).

Further south the wall line crosses the road and finishes in several scatters which seem to outline a small polygon. Unless the shape merely reflects chance dispersal caused by housing developments, it suggests a bastion. Barombong Fort had presumably existed here at the end of the wall line, and the absence of any further brick rubble suggests that it had been an earthen fortress.

Immediately west of the possible bastion, a *duni* and some ceramics were reportedly looted at the inlet after being originally exposed by erosion (Photo 11-53). We found only Qing and later pieces here,[38] but pieces as early as the 16th century were found around Kuburan Islam Barombong to the immediate south (Figure 11-26). The circumstances of the cemetery suggest it should date back to the 17th century, and such a vintage could be suggested for Makam Salekowa which also serves as a *saukang* (Table F-8b).

In totality the Barombong pieces suggest occupation of this old longshore ridge by the 13th-14th centuries, but only sporadically until the late 16th century (Figure 11-26).[39] The small size of the two looted areas, and the reported

[38] The tradeware pieces from zone 3 (the looted area) and zone 4 (the possible bastion) were collected separately in the field, but I mixed them up while washing them and hence they are both placed under "zone 4" in Appendix D.

[39] Note that the total Barombong pieces include the Qing to recent pieces recorded at Pattukangang Baru (U.3.8).

finds, agree with such a scenario. This previously insignificant area achieved strategic significance in the early 17th century when it fell under the jurisdiction of Abdullah's stepbrother, Kg Mamampang Garassik Barombong (Figure 4-6), and when its first fortifications were built.

11.7.2 Bontoa (UP26) and Ujung Kassik (UP6)

Makam Kuno Bontoa covers around 30 metres by 20 metres and has graves which my notes record as of 17th/18th to 20th century vintage (Photo 11-54; Table F-8c). There are a few suspicious holes in the scrub, confirming a report that some antiques were found here (S. Rasyid A., pers. comm.), even though locals denied any looting. Bontoa is locally renowned as the site where the Bungaya Treaty was signed in 1667 (Kallupa, 1985:154-156; Sagimun, 1985:234). Hence Bontoa was a 'small village near Barombong called Bungaya' (Andaya, 1981:98) in 1667 and so would appear to have seated the mid-17th century Bungaya karaengship (Figure 4-17).

Ujung Kassik is a small kampung along the Aeng inlet south of where it meets the sea at Kuburan Islam Barombong. An old Islamic marked grave sits on a mound grown over by a succulent (Photo 11-55). Reportedly people had found many antiques - lots of blue-and-white, but also *merah*, celadons, iron (including a kris) and bronze - next to the grave in land now covered by the inlet. The only tradeware sherds which we recorded here (UP.6.1) and on the adjacent beach (UP.6.2) were Qing and European (Figure 11-26).

11.7.3 Aengtoa, Jonggoa Batu-Batu and Karama

Aengtoa (Takalar 2) occupies a bend of the Aeng river, still tidal at this point, south of Ujung Kassik. The site's deposits consist of a silty clay with some sand and grit, ranging in colour from light brownish grey at the north to reddish brown at the south. Elevation varies between seven metres asl at the north and four metres asl at the south.

Aengtoa appears to have contained a substantial population from pre-Islamic times. Reportedly ceramics which were generally blue-and-white, but also *merah* and celadons, were

recovered from six discrete areas either full of looter's holes or indicated as productive areas. Two looted areas are associated with "old" Islamic graveyards, while the site also contains an isolated brick sepulchre and a "new" graveyard (Table F-8c). The main cemetery contains several groups of "old" graves at distinct orientations, including one group whose graves vary between 125° and 145° from north (Figure 11-25). Surface tradewares range between the 15th and 20th centuries, although with the suggestion of an early 17th century dip (Figure 11-26). Non-ceramic finds at the site included a stone pestle (T.2.4.11).[40]

A kampung strung along a raised beach ridge, called Jonggoa on the Dutch land-use maps, is now divided into Jonggoa at the north and Batu-Batu at the south. At the kampung border lies the Islamic cemetery of Jonggoa Batu-Batu (Takalar 5). The marked graves would appear to have originated by the 17th century, given the presence of an east-west oriented stone arrangement and at least 100 masonry markers lacking *nisan* (Photo 11-56; Table F-8c). The small sample of tradewares at the cemetery was all Qing and later (Figure 11-27), while an antique reportedly recovered from the site looks like a Qing brownware jar (Photo 11-51). The site can be matched with the mid-17th century Batu-Batu karaengship (Figure 4-6),[41] particularly as it is the only Batu-Batu I can find on the 1693 map (Figure 5-5). However, the late 16th century Batu-Batu karaengship, associated with a Tallok princess who married Tunijallok (Figure 4-8), would either refer to this area in a more general sense, or refer to some other unidentifed place.

Karama (Takalar 34) lies across the Aeng river from Aengtoa, near a backswamp extending behind the beach ridge which contains Jonggoa Batu-Batu (Figure 11-4). My admittedly sparse notes document it as a SSPHAP historical site. Its older cemetery contains masonry markers lacking *nisan* (Table

[40] The pestle is a water-rounded pebble of hard metamorphic stone. It is naturally fractured at one end, and abraded and slightly flattened and glossed at the other. It is 105 mm long and 42 by 30 mm in cross-section, and weighs around 250 grams.

[41] This Kg Batu-Batu lost his life in 1660 defending Paknakkukang against the Dutch (LB:123).

F-8c), while looting at Karama has yielded antiques (A. Rasyid S., pers. comm.). At a later stage I was shown a collection of antiques reportedly recovered by the "Aeng" inhabitants when they dug an *empang*. Given the local land-use patterns and other information on the area, this had occurred at Aengtoa or Karama. As the collection spans the 13th-14th to the 19th centuries (Photo 11-52), it may not all be from one locality.

11.7.4 Pangkajeknek, Summanak and Pakkala Toa

Kompleks Makam Pangkajeknek (Takalar 3) lies along the Kaballokang - the name of the Aeng river inland from Aengtoa - in an area of sawah and *empang* (Figure 11-4). The cemetery covers around 50 metres square and incorporates two sheltered graves, including that of "Manyaurang Dg Gassing" which is reportedly the oldest. A small area of around 15 looter's holes was associated with a few Qing and later surface tradewares (Figure 11-27). Even though we dated the oldest marked graves to the 18th century, the site has produced antiques (A. Rasyid S., pers. comm.) and so probably has at least 17th century origins.

A short distance north lie Katinting and Summanak, both synonymous with 17th century karaengships. Katinting, now a deserted kampung, can be rejected as an old toponym. It contains no signs of any burial remains; the observed sherdage (T.31.1 in Appendix D) is all Qing to recent; and Kg Katinting himself is buried at Tallok (14.2.4). The circumstances of Summanak (Takalar 33), however, are all positive. Its cemetery includes old as well as modern styles (Table F-8c; Photo 11-57); a few antiques have been found here (A. Rasyid S., pers. comm.); the site is depicted on the 1693 map (Figure 5-5); and Kg Summanak was a son of Kg Mamampang Garassik Barombong (11.7.1). Despite the site's unspectacular qualities, it can be identified as the karaengship of an important Tallok noble who vied with Kg Karunrung for the regency after Mahmud's death (3.5.1).

Pakkala Toa (Takalar 4), an area of light brown clays, comprises two site areas. Pakkala Toa Barat straddles the road which runs northwards along the east side of the

Kaballokang (Figure 11-4). West of the road is a cemetery (zone 5) with around 40 marked graves which are either old masonry styles, or modern wooden styles where children are buried (Table F-8c). Many of the masonry graves have been largely buried in deposits, notably one east-west directed slabbed marker (Photo 11-58). Two of the abutting fields (zones 3 and 6) were bare of tradewares, but one ploughed field to the east (zone 2) contained "early" and "Ming" pieces. Approximately 180 metres to the east lies Pakkala Toa Timur. A Swatow piece was found in a field (zone 4), 100 metres from a venerated grave consisting of two stones 1.6 metres apart along an east-west axis (in zone 1). There were no signs of looting and locals denied it had occurred, although Pakkala is known to have produced a few antiques (A. Rasyid S., pers. comm.). In any case the small tradewares sample covers a very long period (Figure 11-27), and the Islamic burials, at least, would date from the 17th century.

11.7.5 Overview

As the story has it, Gowa's legendary second ruler born of the *Tomanurung*, Massalangga Barayang, had ascended (disappeared) on the north side of Jonggoa (SG:12; Figure 2-2).[42] Jonggoa mentioned above is the only instance at all near Gowa, and I was disappointed by the lack of evidence to identify it as a very old toponym. On reflection, I see the story invokes Jonggoa (Ujung Gowa) to say that Massalangga Barayang ascended at "the end-point of Gowa" rather than to identify some particular place where this occurred.

In one sense, though, the Aeng cluster marks the end-point of Gowa. It includes Makassar's southernmost fortifications at Barombong; the place where the Bungaya treaty was signed; Aeng(toa), where greater Gowa prepared a major defensive post unbreached during the 1667 Makassar War (LB:133; Andaya, 1981:90-97 *pass.*); and Batu-Batu, which the offensive forces occupied (LB:134). It includes two karaengships associated

[42] As might be expected of a figure of Massalangga Barayang's prowess, his ascent was marked by an appropriate display from the firmaments, in this case a crack of lightning and a downpour of hot rain.

with important Tallok nobles (Barombong and Summanak) and two karaengships, apparently outside the major lineage groups, mentioned in the mid-17th century genealogical records (Bungaya and Batu-Batu). Interestingly, Aeng(toa) is absent from the genealogical records, even though it was clearly the cluster's central place.[43] It is tempting to link the early 17th century gap in Aengtoa's tradewares profile (Figure 11-24) with an emigration to surrounding kampungs, especially Barombong, in response to greater Gowa's heightened interest in the area.

In return, Aeng's elite members would appear to have maintained a resilient independence during the juncture. Probably their pride still dwelt in the recent past when Aeng either ruled a little polity along the Aeng-Kaballokang river, or enjoyed the status of being old Garassik's junior partner.

11.8 The Antiquity of "Makassar"

The sites included in Speelman's precolonial Makassar together show a tradewares profile which sweeps upwards from the 13th-14th centuries, peaks in the 16th and early 17th centuries, and drops sharply thereafter (Figure 11-23). The early 16th century appears as the specific apogee; although this is partly an artefact of analysis,[44] it does correspond to when powerful neighbouring kingdoms - Gowa, Tallok and Siang - took a sharp interest in the Garassik delta (Figure 4-7). The conversion of 15th century Garassik into a major port by the early 16th century is also clear from Paiva's 1544 description.

The evidence strongly indicates considerable trading activity here by the 13th-14th centuries. On top of the early pieces at the "Makassar" sites themselves (Figure 11-23), the area surely served as the seafront for the importation of the far greater share of early ceramics at sites along the middle Jeknekberang (Chapters 6 to 9). In addition, rechanneling of

[43] Not only the site consistently close to the cluster's spatial centre (Figure 11-5), but also the largest site in the cluster and a complex burial ground (Figure 11-23).
[44] See footnotes 16 and 17.

the Garassik-Jeknekberang delta has destroyed many sites. The older a site, the greater the chance of its destruction, and so the oldest phases of Makassar's tradeware profile could well be systematically underrepresented.

The Javanese poem *Deśawarṇana* (*Nagarakertagama*) of 1365 cites "Makasar", along with Selayar, among the "islands" known to the east (Pigeaud, 1960:16-17). However, both Pelras (1981:154) and, more forcefully, Reid (1983a) argue that this Makasar was not the same place as 17th century Makassar. In Reid's view, trade to the Makassar area before c.1500 was almost entirely restricted to the south coast, and earlier references to "Makassar" involved the Bajau inhabiting the southwest coast's offshore islands. Reid's first point is disproved by the ceramics evidence (although I cannot comment on whether or not the south coast enjoyed more of the early trade). Reid's second point needs adapting: several lines of evidence suggest that the Bajau played a major part in regularising South Sulawesi's early long-distance trade links, but these were Bajau based at rivermouth ports rather than on islands (11.5.2; 13.1).

Makassar is a very rare toponym. Normally, rarity of a toponym increases our confidence in making the identification, but not in this case. Makassar occurs so rarely precisely because it was a name used only by outsiders. To my knowledge, the Makassar texts always refer to 16th-17th century Makassar by another name, usually Somba Opu. In contrast Makassar to the Portuguese was virtually synonymous with South Sulawesi. In c.1515 Pires described 'Macaçar' as a large country with numerous islands (Cortesão, 1944), and the mid-16th century Portuguese records used Makassar to mean the Bugis coastline between Siang and Suppak, whose rulers Paiva had baptised (Jacobs, 1966:272-277). Hence "Makasar" as cited in the *Deśawarṇana* was probably also a general placename.

The archaeological evidence, not the "identity" of the toponym, proves that Gowa and its environs enjoyed regular trade links with the wider archipelago by the 13th-14th centuries.

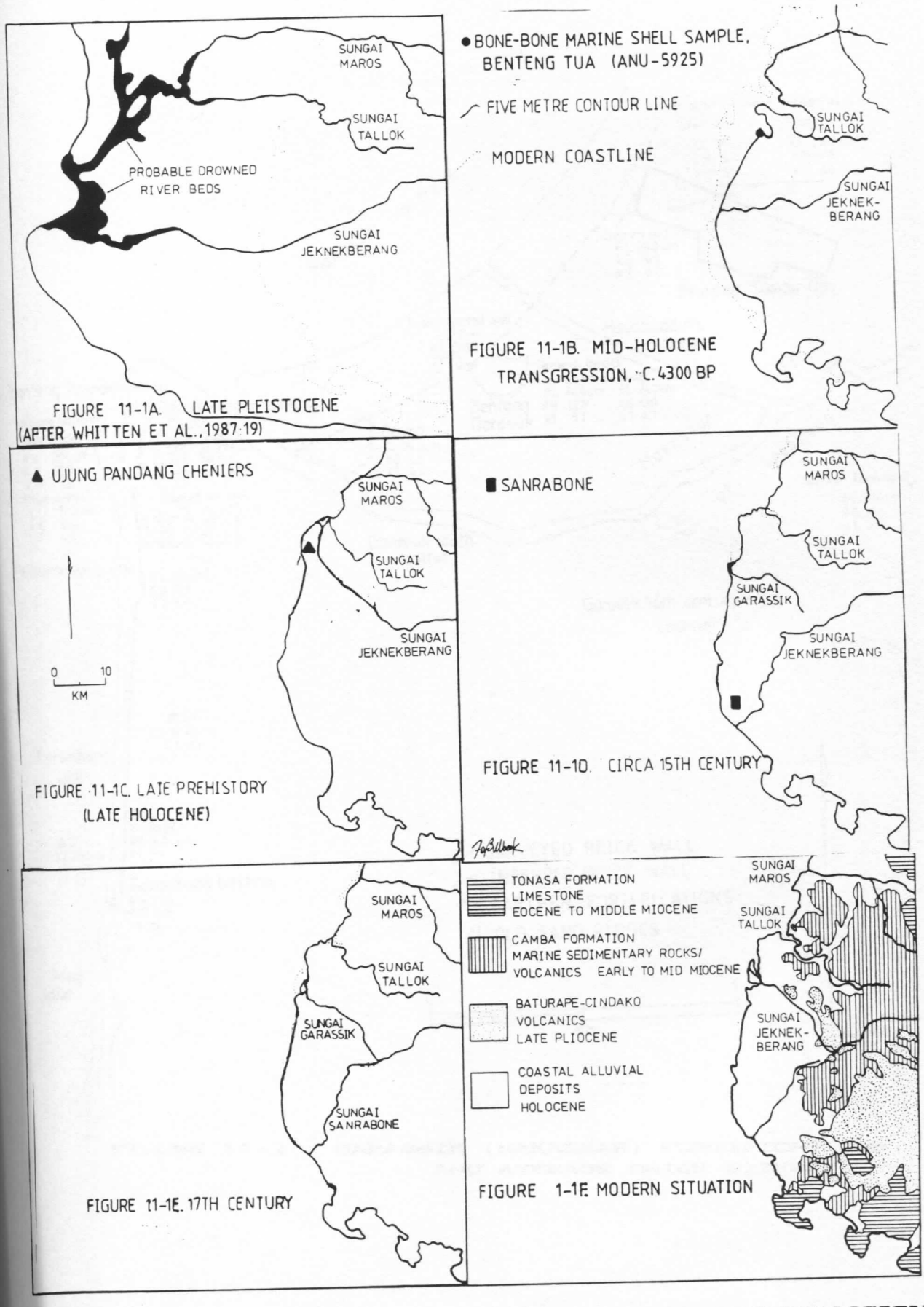


FIGURE 11-1. SUGGESTED RECONSTRUCTION OF THE GEOMORPHOLOGICAL HISTORY OF THE SOUTHWESTERN COASTAL PLAIN

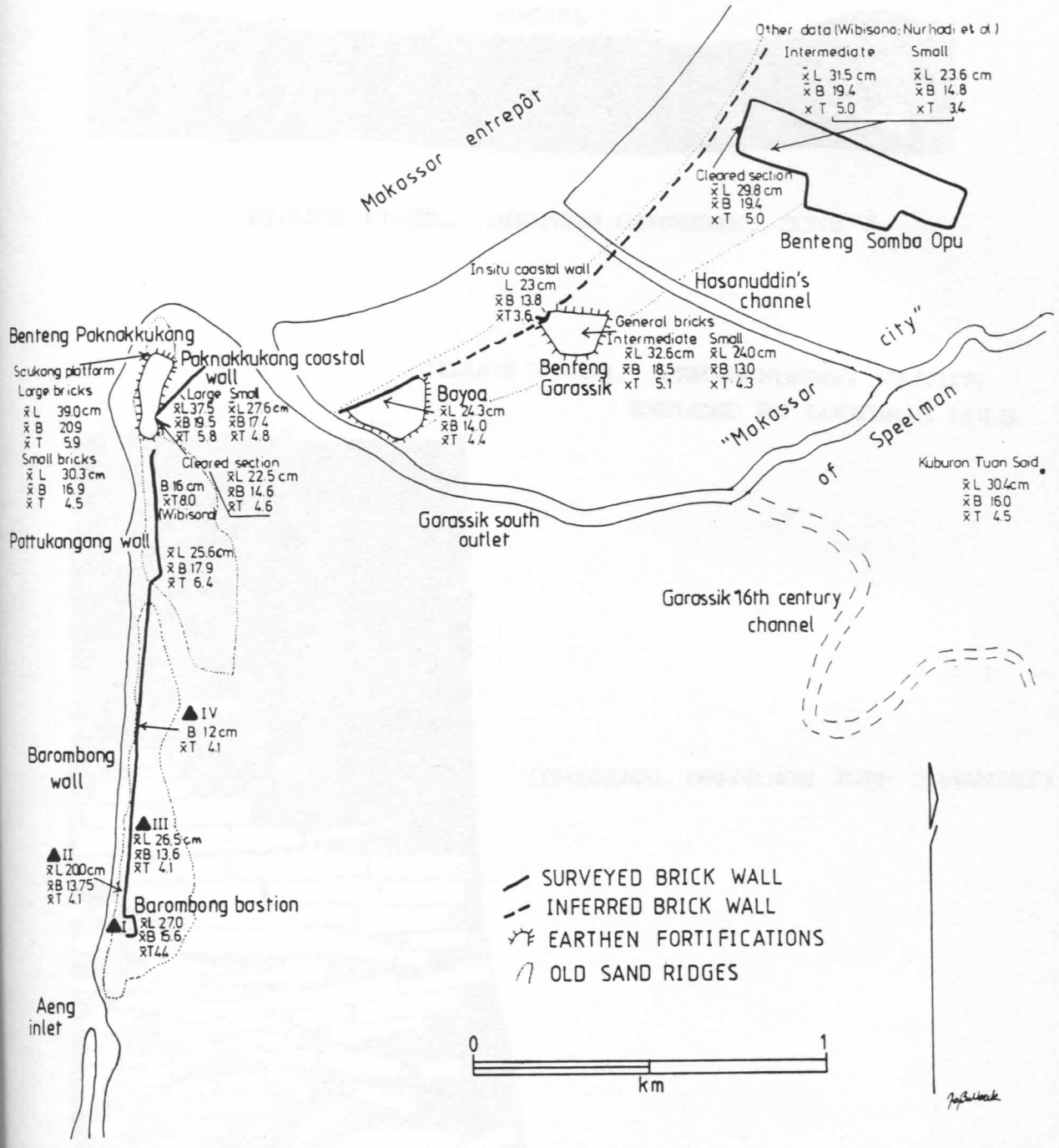


FIGURE 11-2. GARASSIK (MAKASSAR) FORTIFICATIONS AND AVERAGE BRICK SIZES

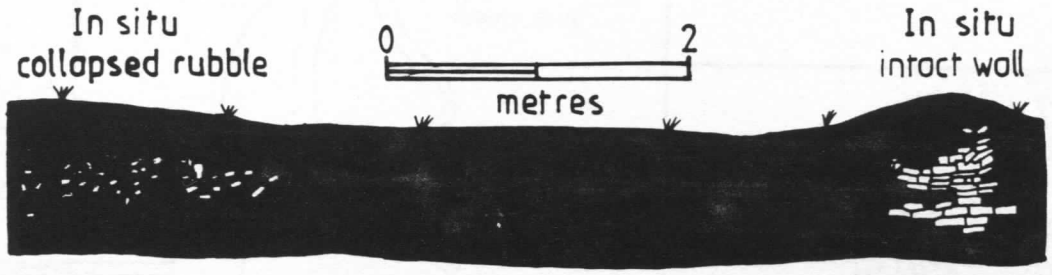
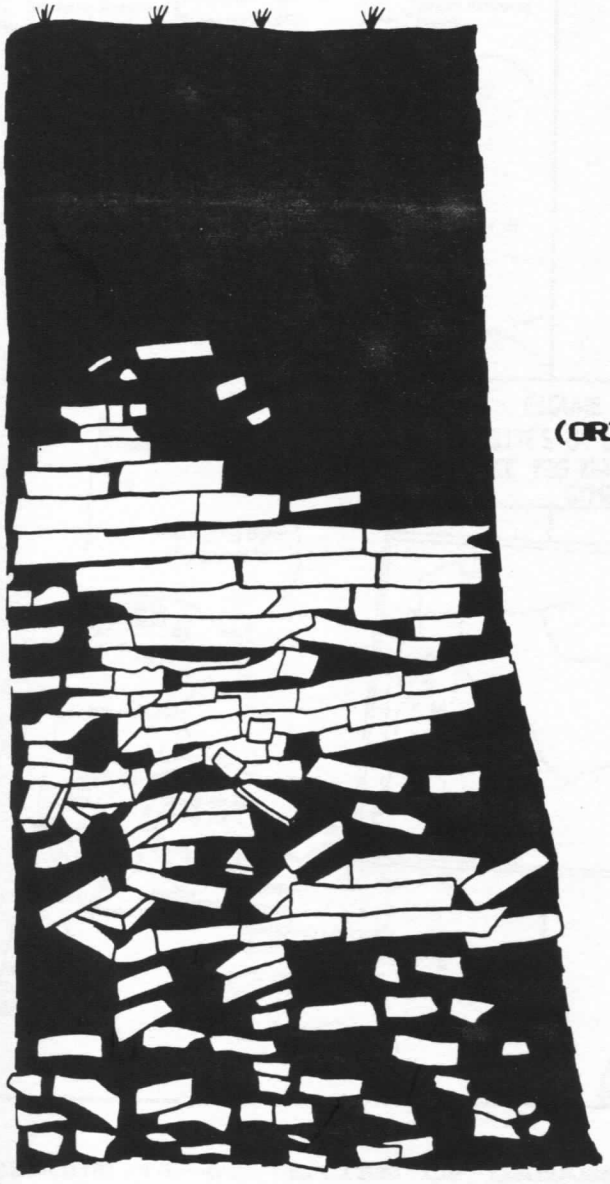


FIGURE 11-3A. BENTENG GARASSIK, ZONE 7

FIGURE 11-3B. PAKNAKKUKANG SECTION
EXPOSED BY LOOTER'S HOLE



(ORIGINAL DRAWINGS IWAN SUMANTRI)

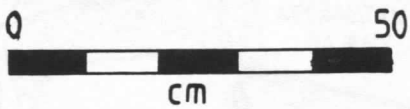


FIGURE 11-3. COASTAL WALL SECTIONS

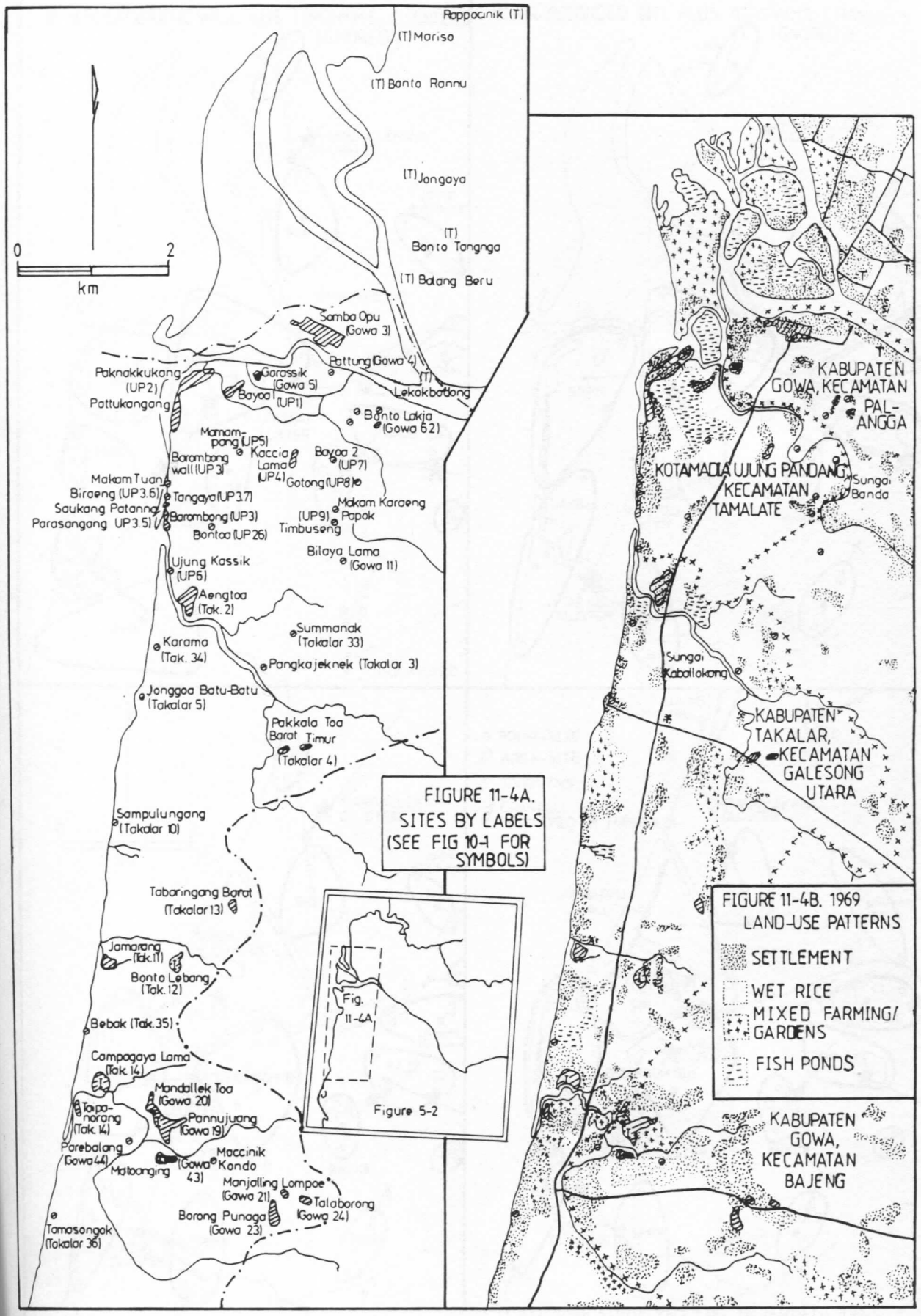


FIGURE 11-4. SITES OF GARASSIK AND NORTH POLOMBANGKENG

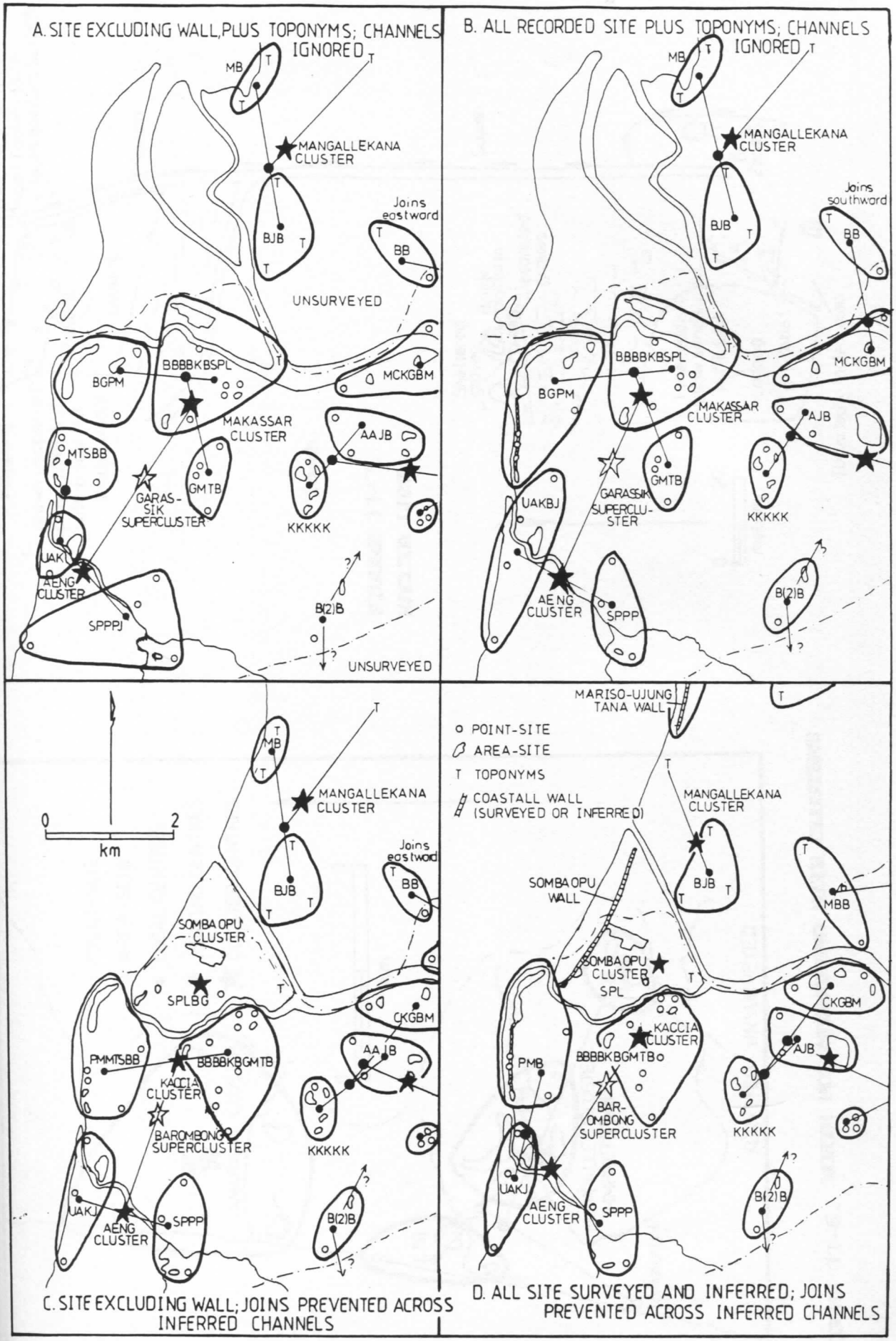


FIGURE 11-5. CLUSTERING PATTERNS OF THE GARASSIK SITES

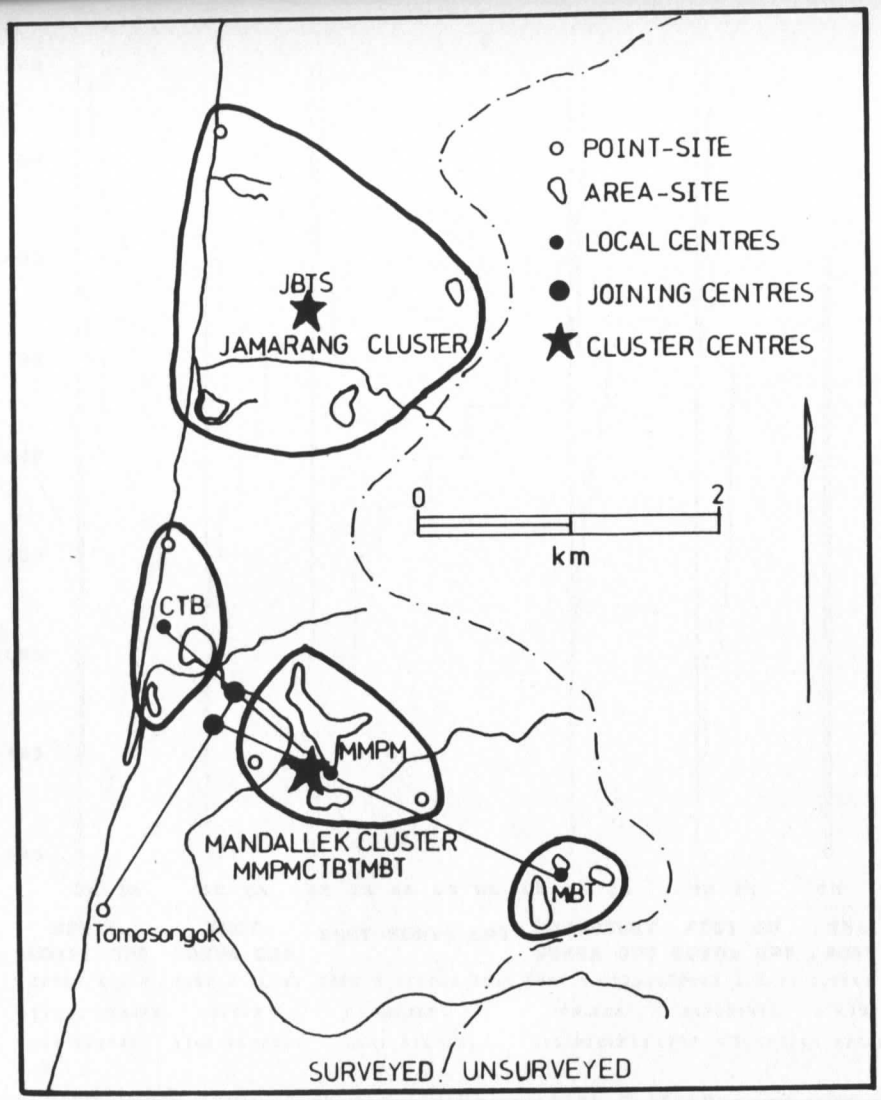


FIGURE 11-6. NORTH POLOMBANGKENG SITE CLUSTERS

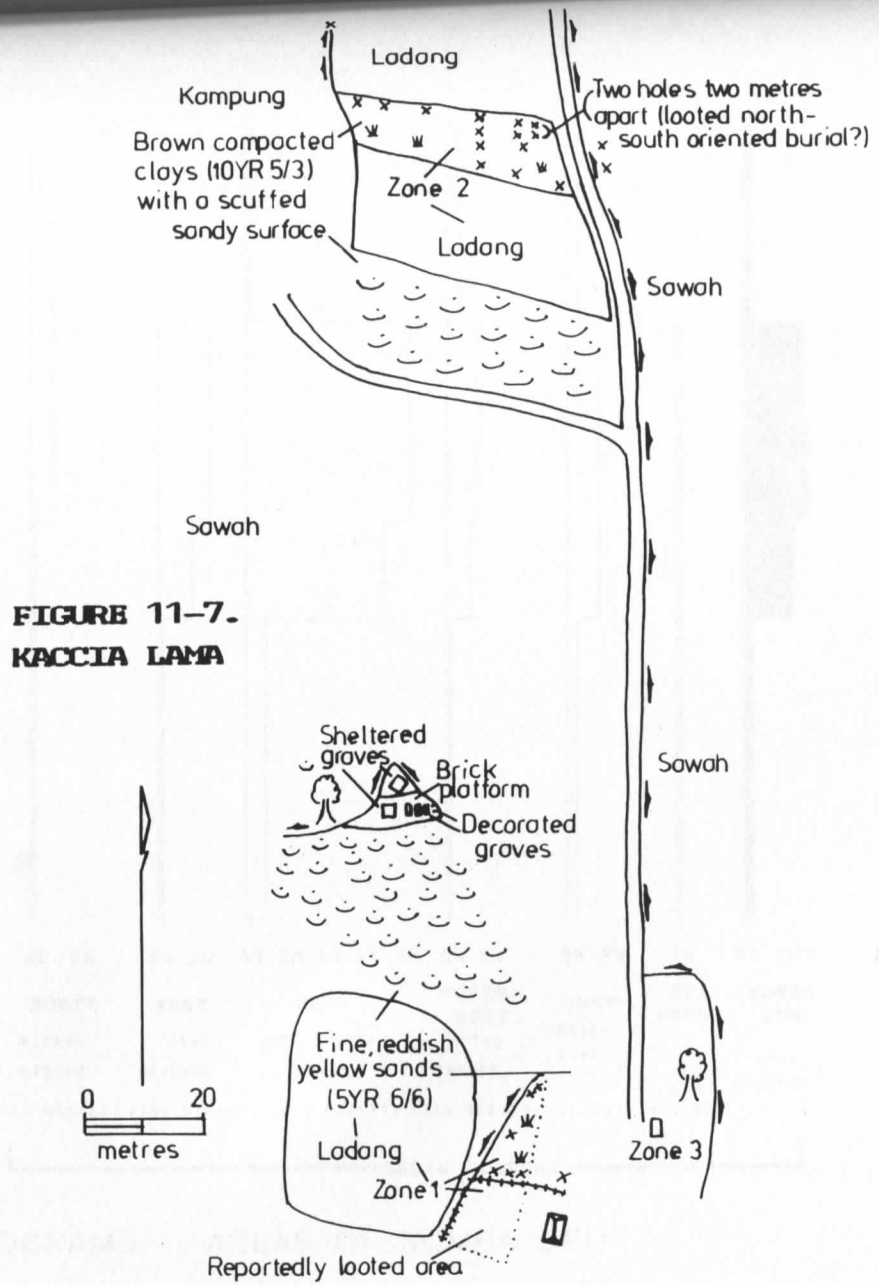


FIGURE 11-7.
KACCIA LAMA

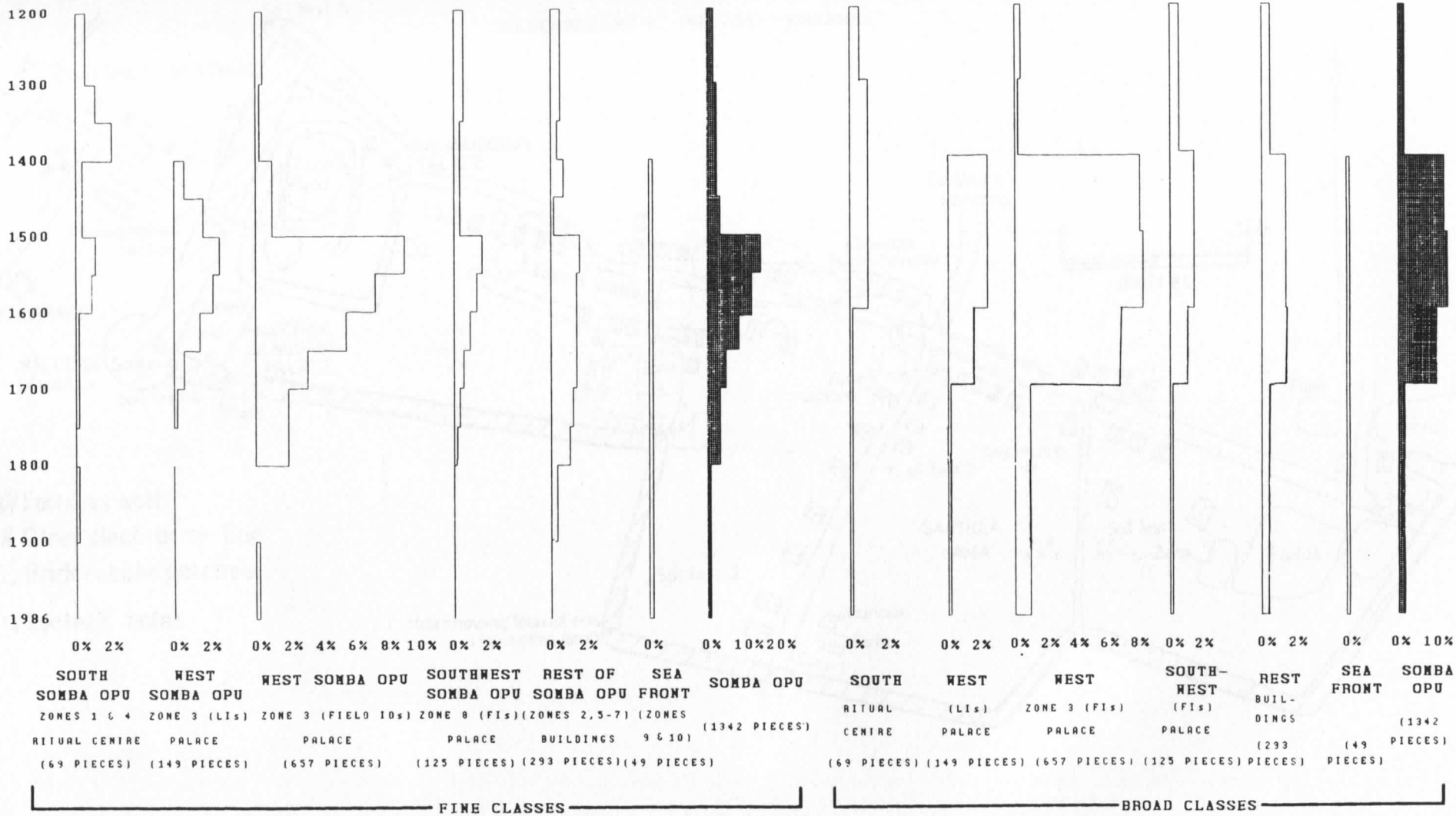


FIGURE 11–8. STANDARDISED CHRONOLOGICAL HISTOGRAMS – AREAS OF SOMBA OPU

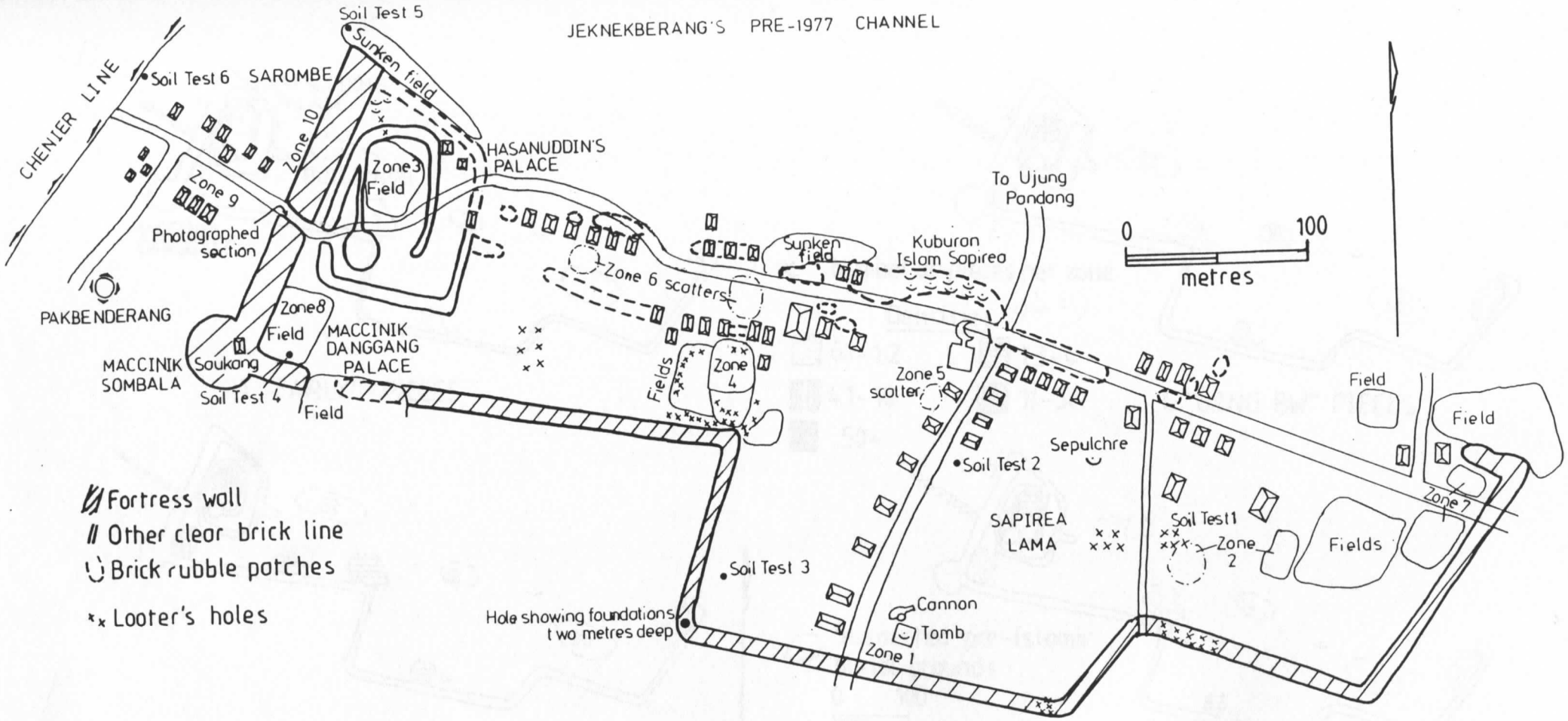


FIGURE 11-9. BENTENG SOMBA OPU

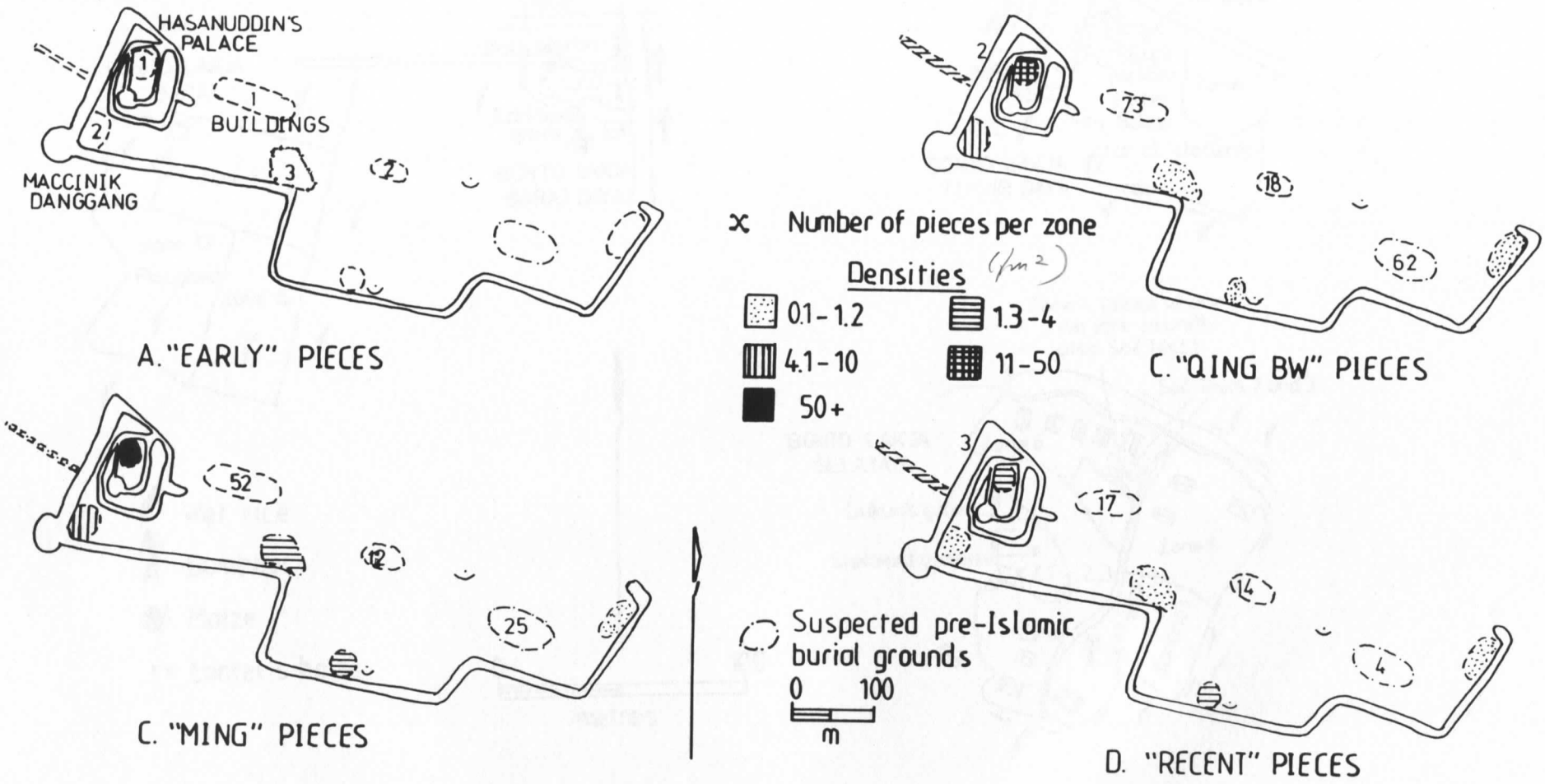


FIGURE 11-10. TRADEWARE COUNTS AND DENSITIES AT SOMBA OPU

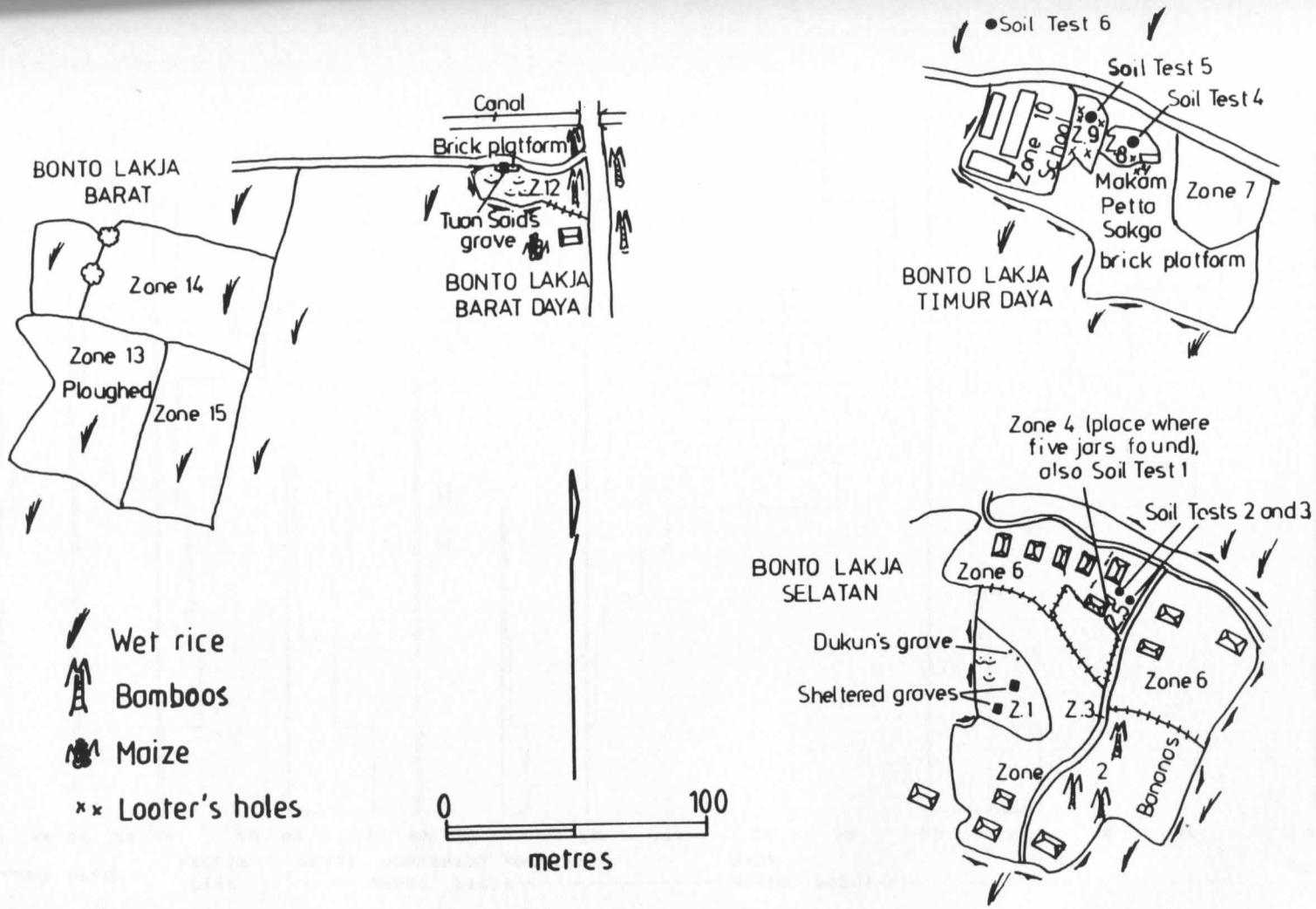


FIGURE 11-11. BONTO LAKJA

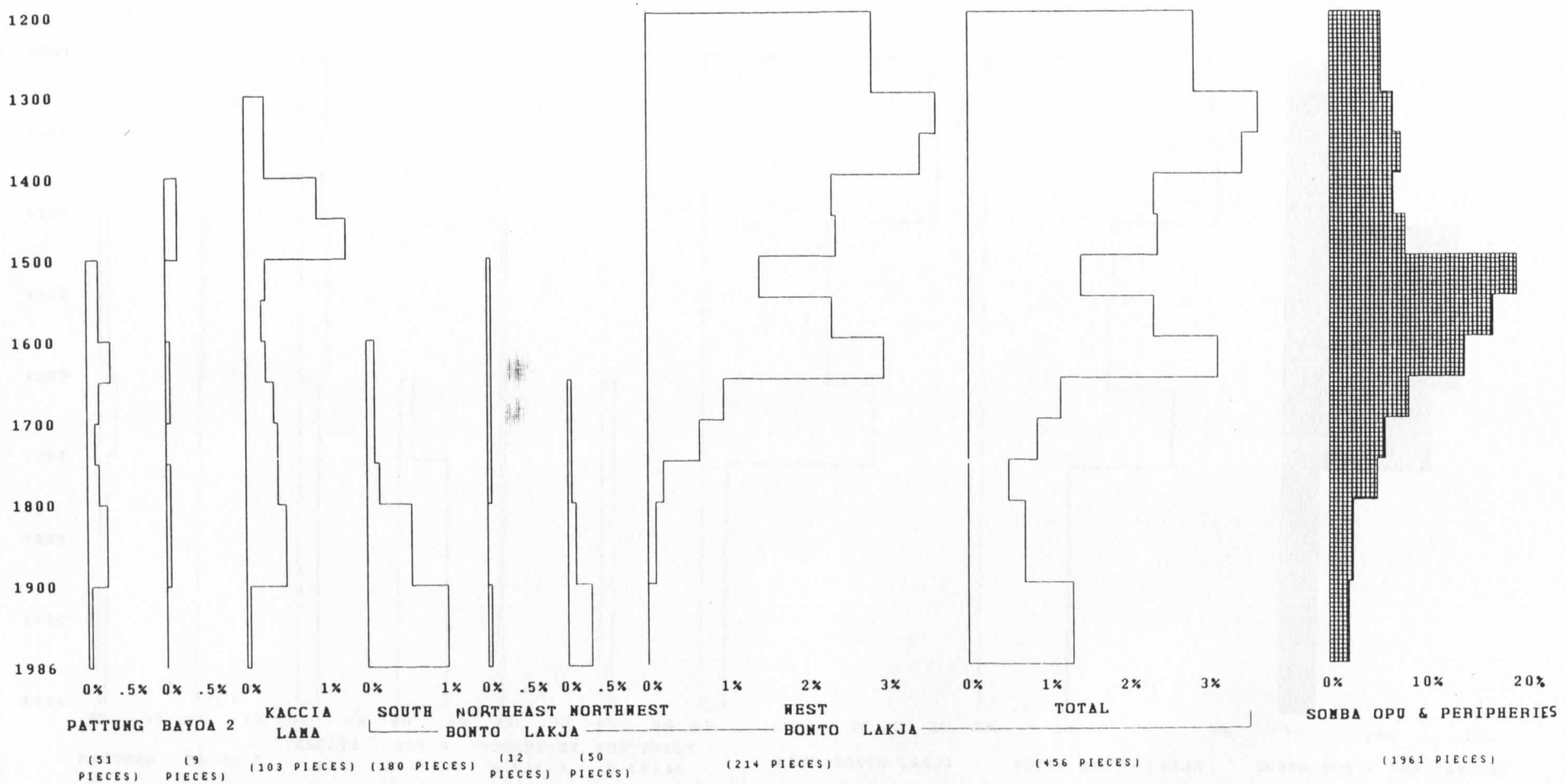


FIGURE 11-12. STANDARDISED CHRONOLOGICAL HISTOGRAMS (FINE CLASSES) - SOMBA OPU'S PERIPHERIES

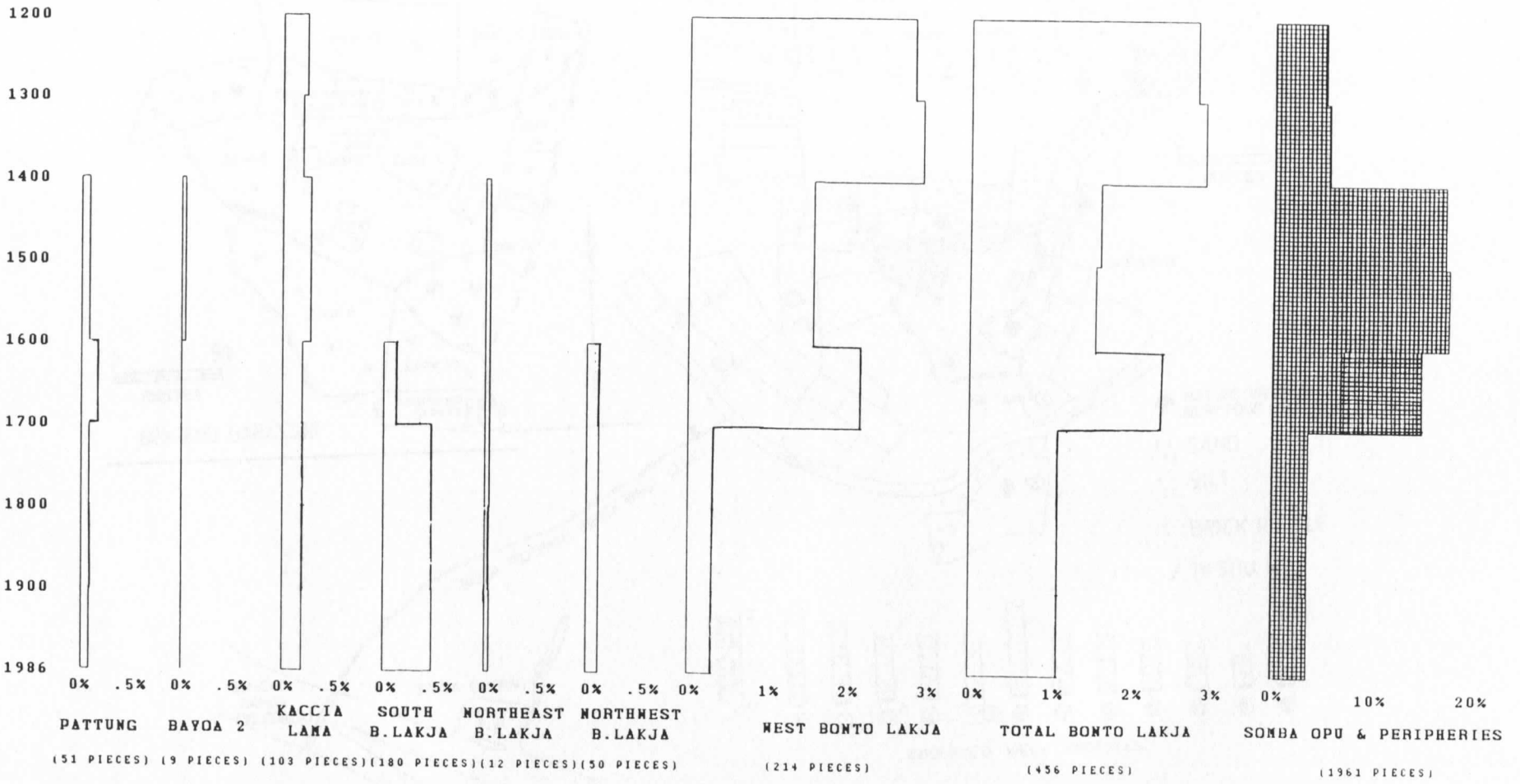


FIGURE 11-13. STANDARDISED CHRONOLOGICAL HISTOGRAMS (BROAD CLASSES) – SOMBA OPU'S PERIPHERIES

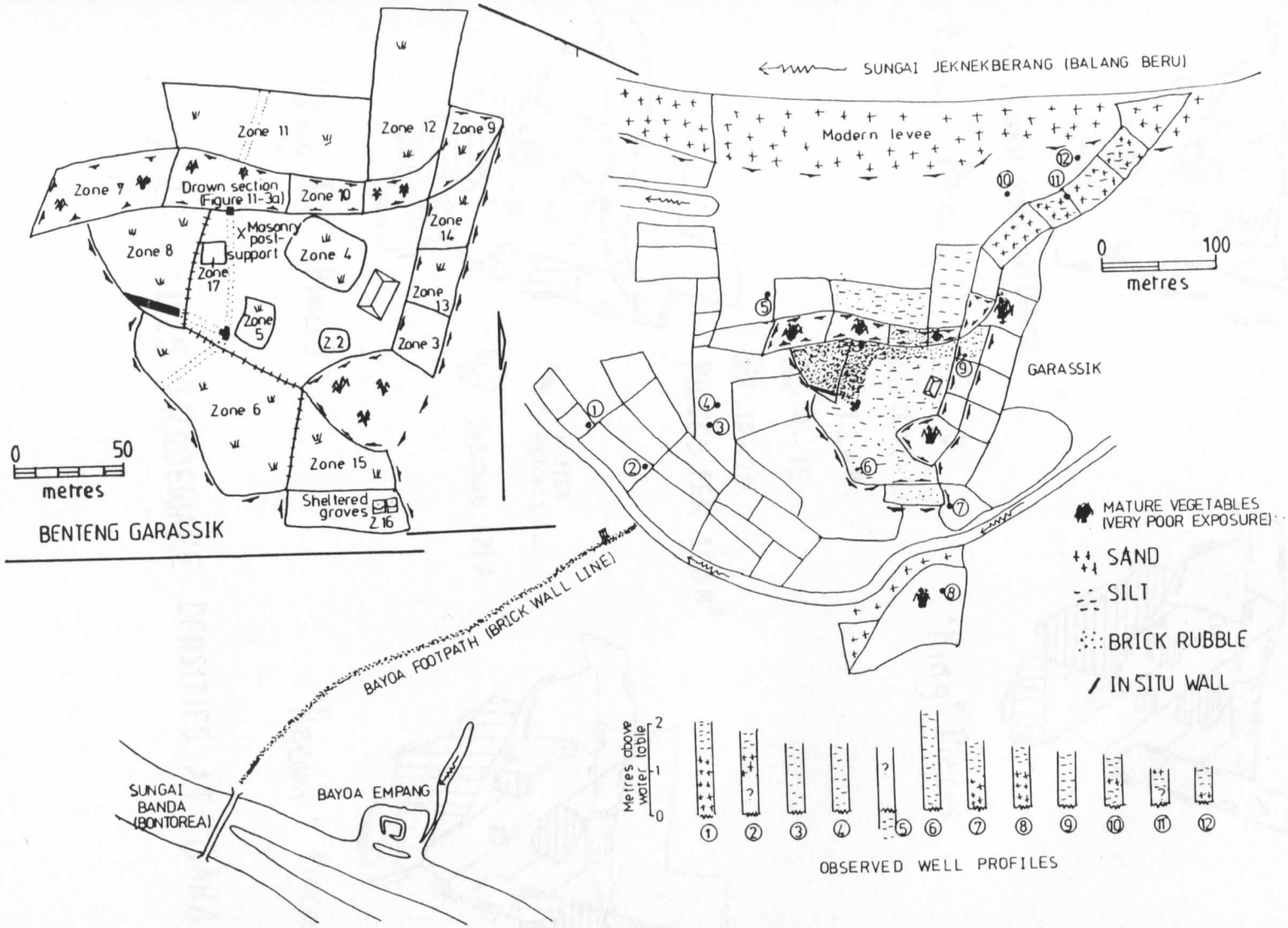


FIGURE 11-14. BENTENG GARASSIK AND ENVIRONS

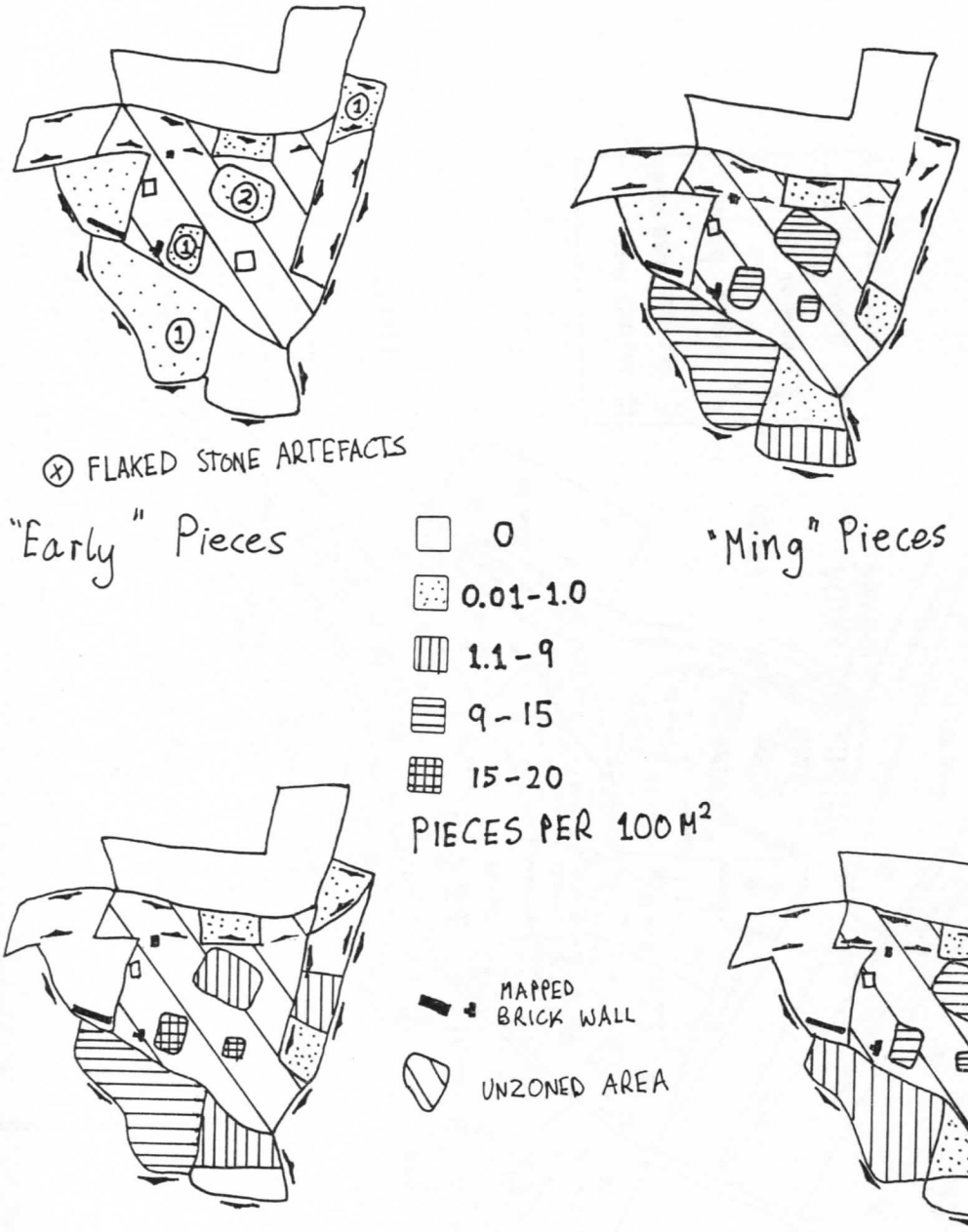


FIGURE 11-15. TRADEWARE DENSITIES AT GARASSIK

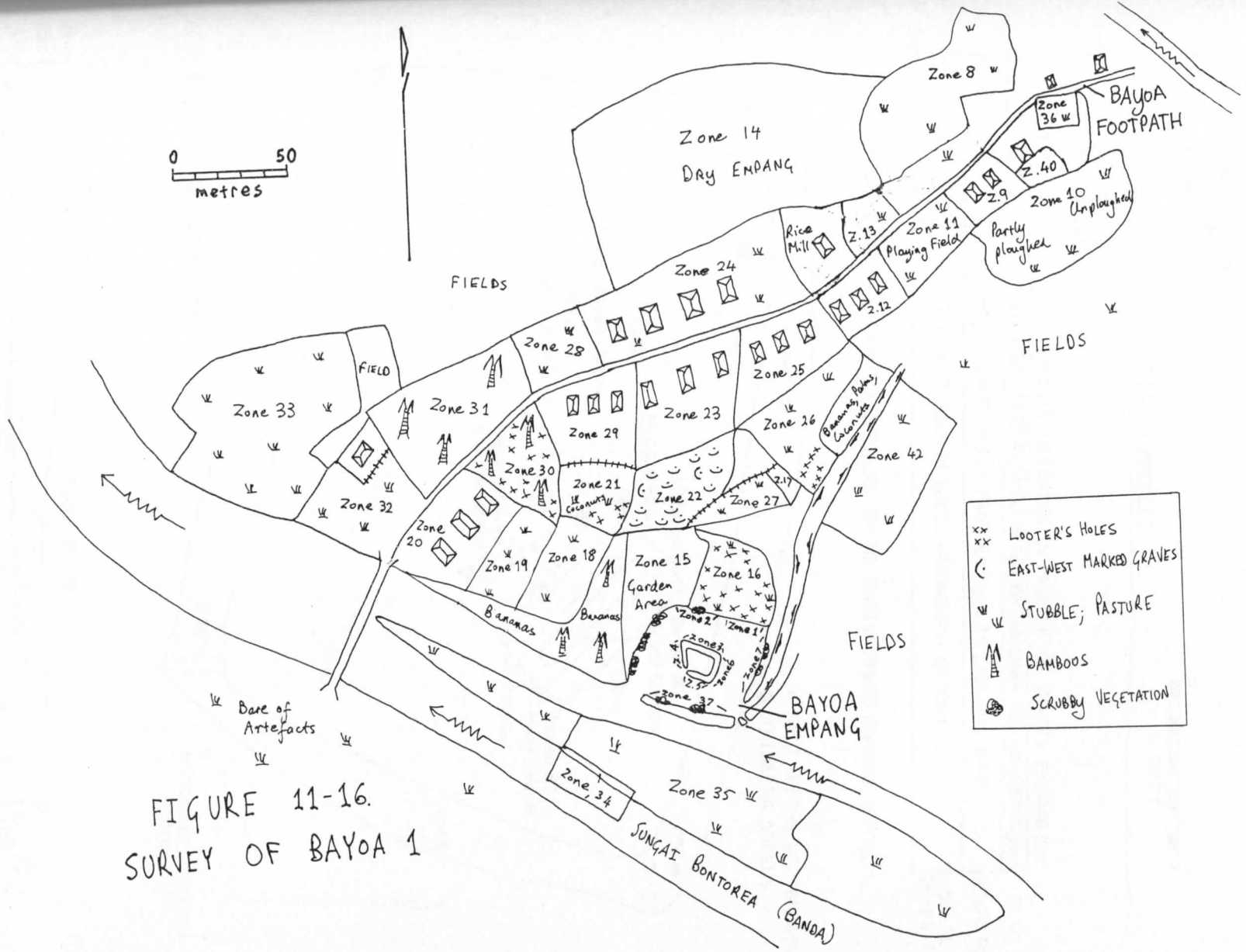
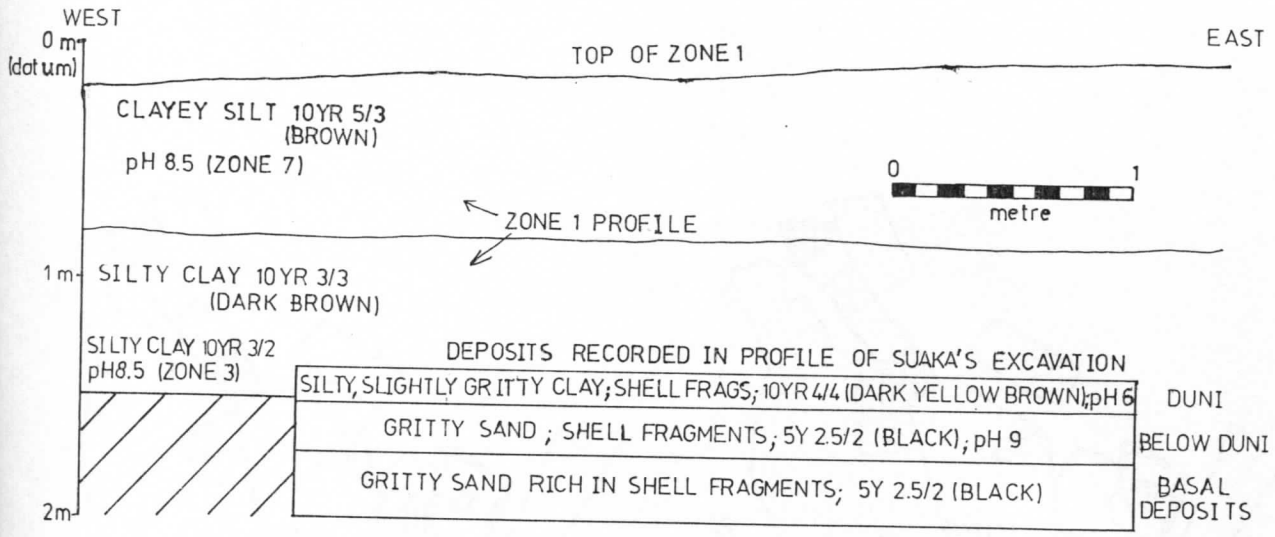
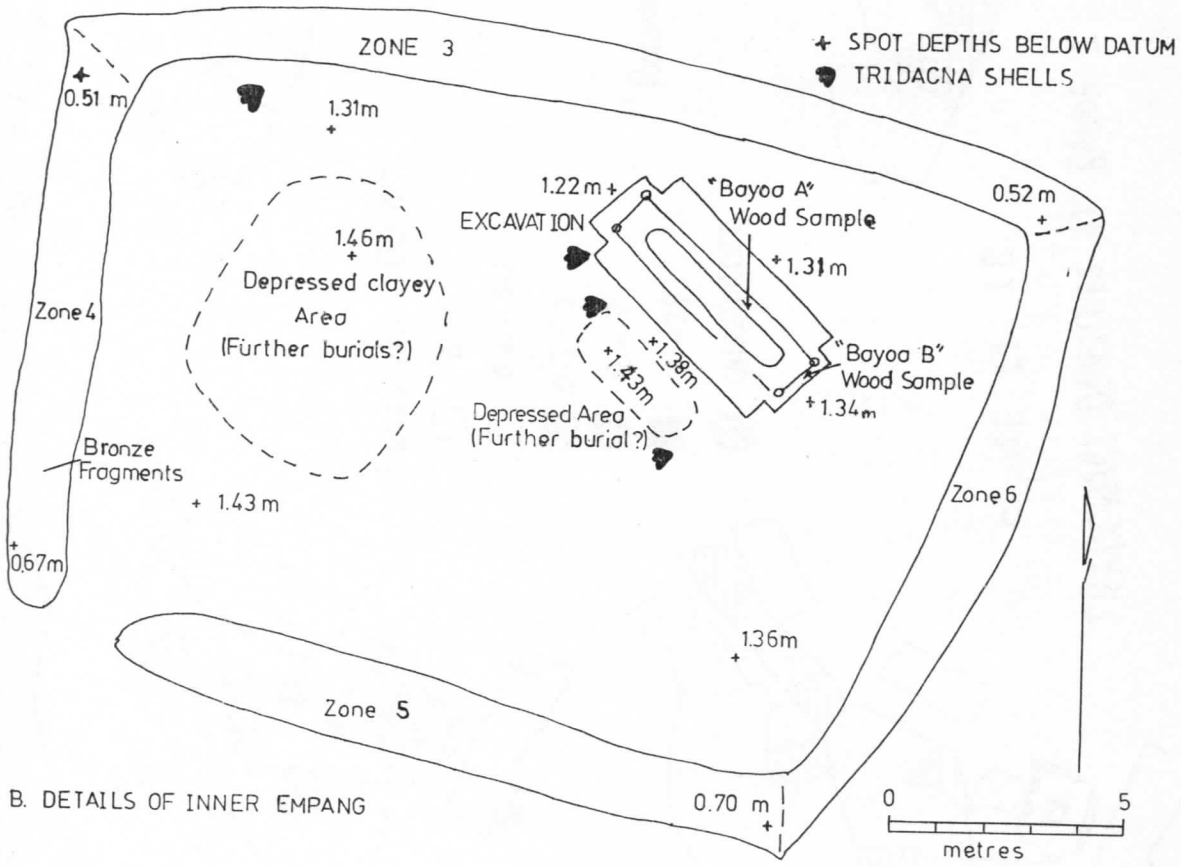


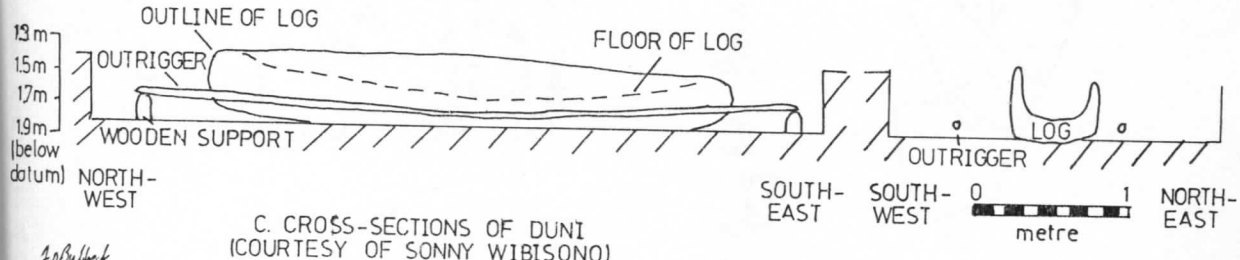
FIGURE 11-16.
SURVEY OF BAYOA 1



A. PROJECTION OF EXCAVATED DEPOSITS ON TO UNDISTURBED EMPANG DEPOSITS



B. DETAILS OF INNER EMPANG



C. CROSS-SECTIONS OF DUNI (COURTESY OF SONNY WIBISONO)

FIGURE 11-17. DETAILS OF BAYOA 1 EMPANG

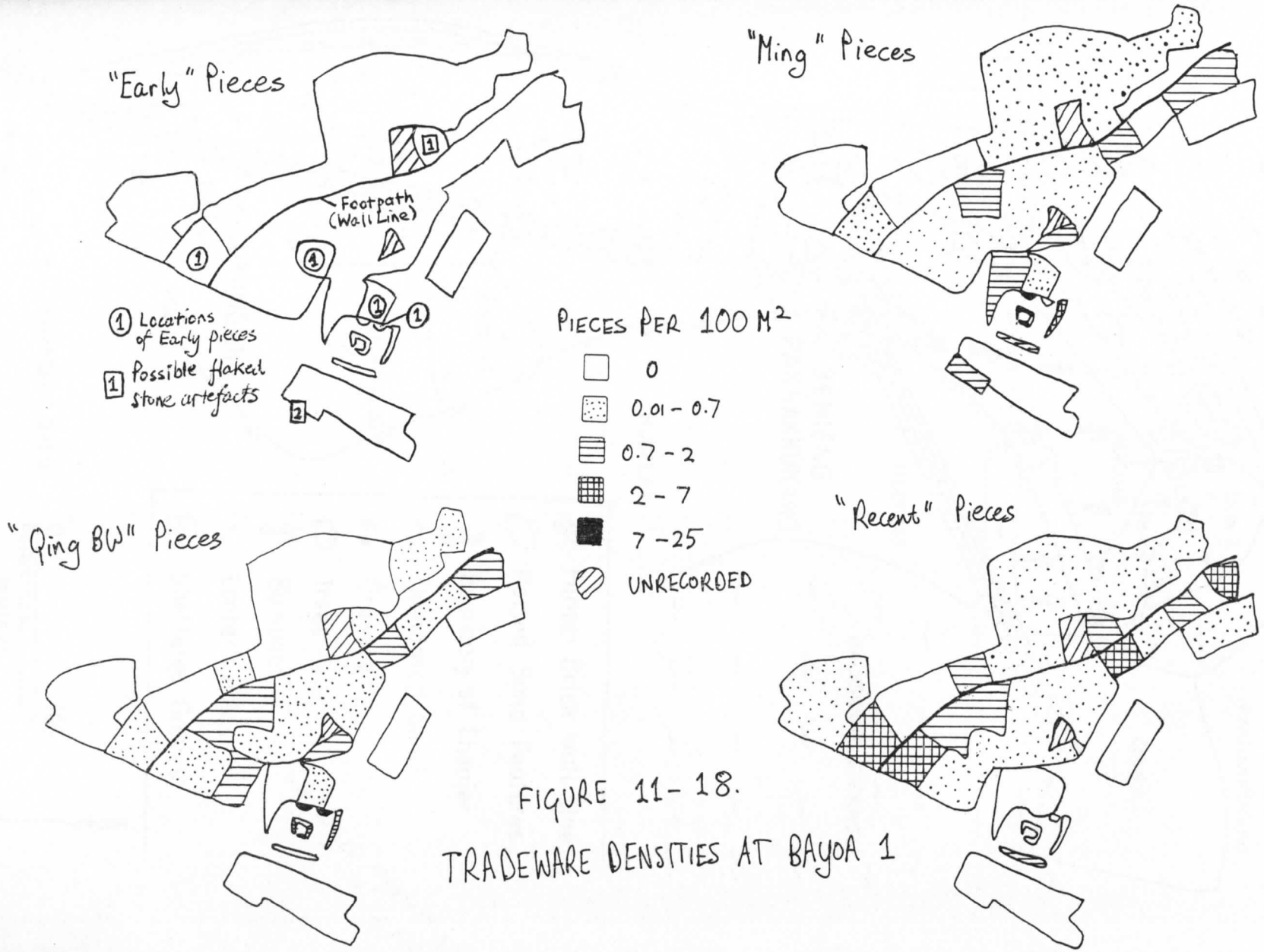


FIGURE 11-18.

TRADEWARE DENSITIES AT BAYOA 1

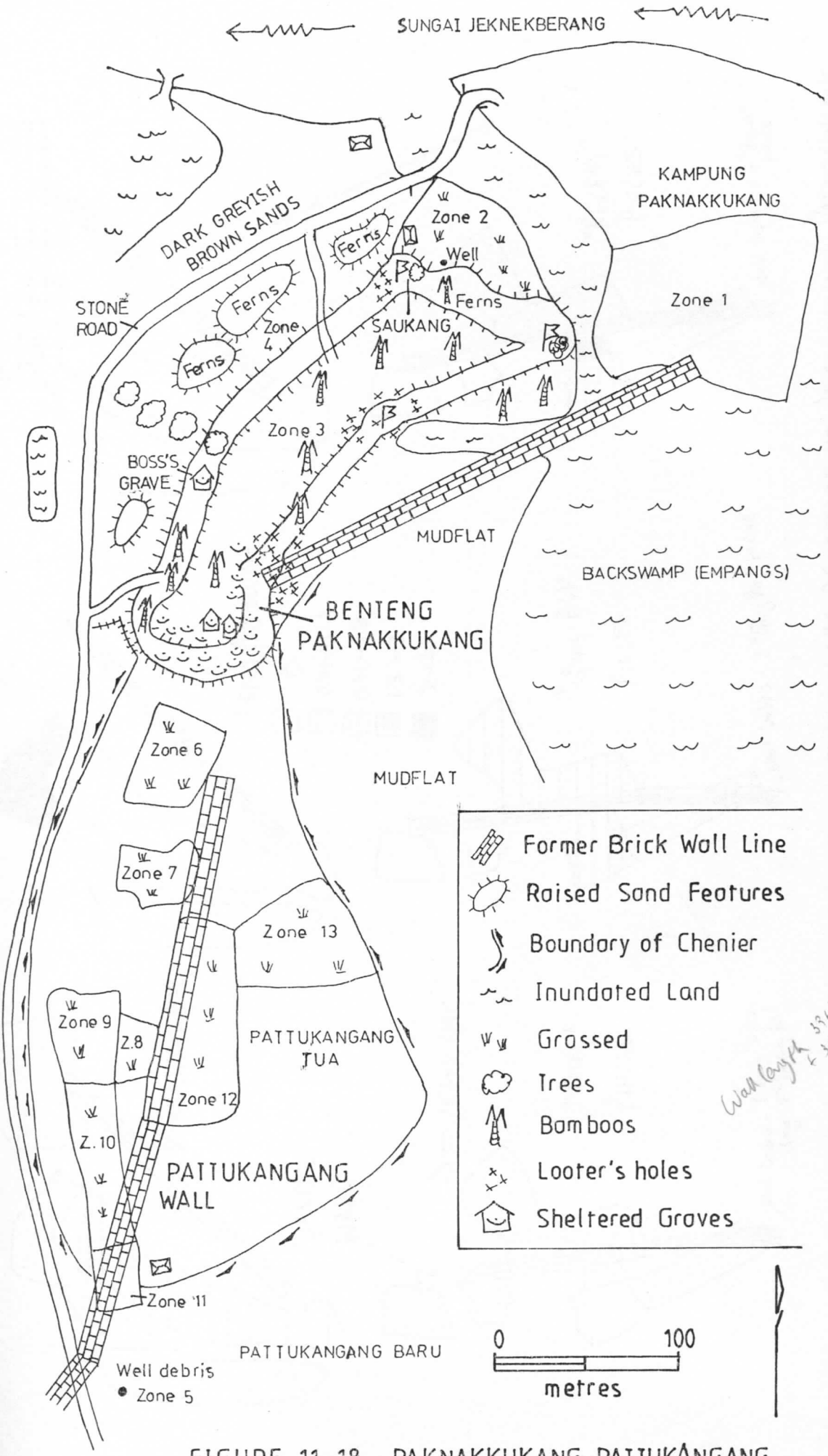


FIGURE 11-13. PAKNAKKUKANG-PATTUKANGANG

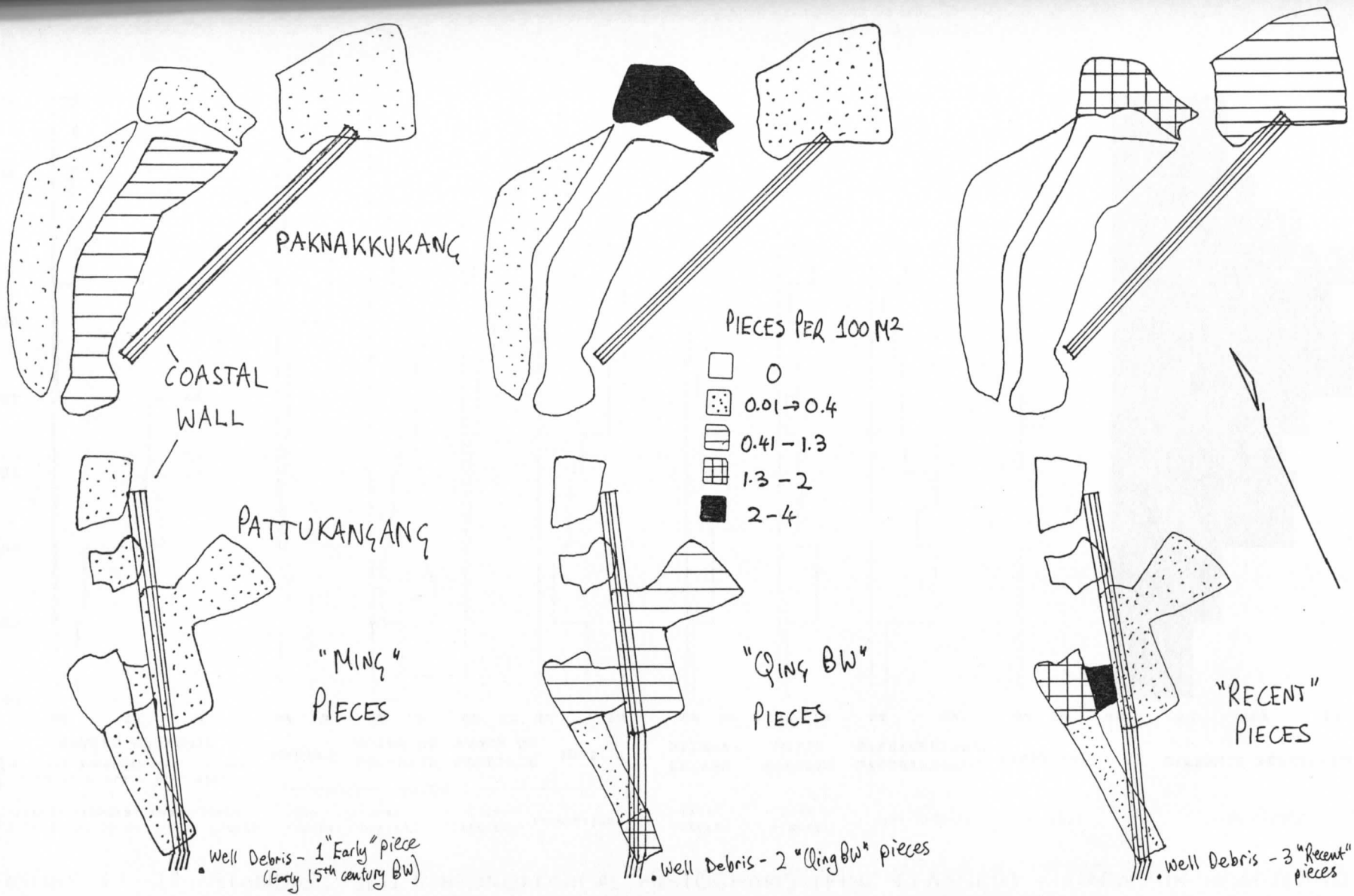


FIGURE 11-20. TRADEWARE DENSITIES AT PAKNAKKUKANG-PATTUKANGANG

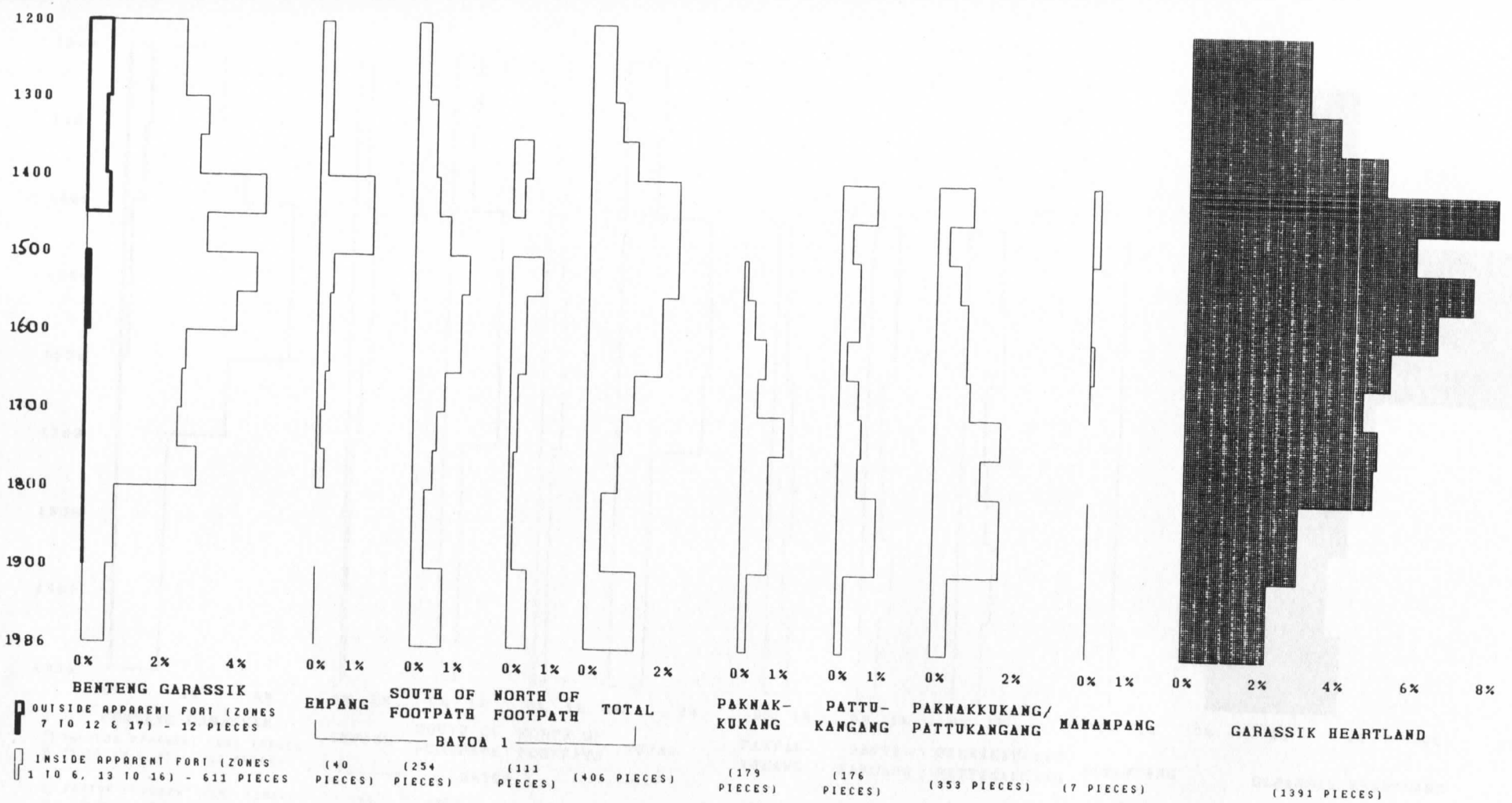


FIGURE 11-21. STANDARDISED CHRONOLOGICAL HISTOGRAMS (FINE CLASSES) - GARASSIK HEARTLAND SITES

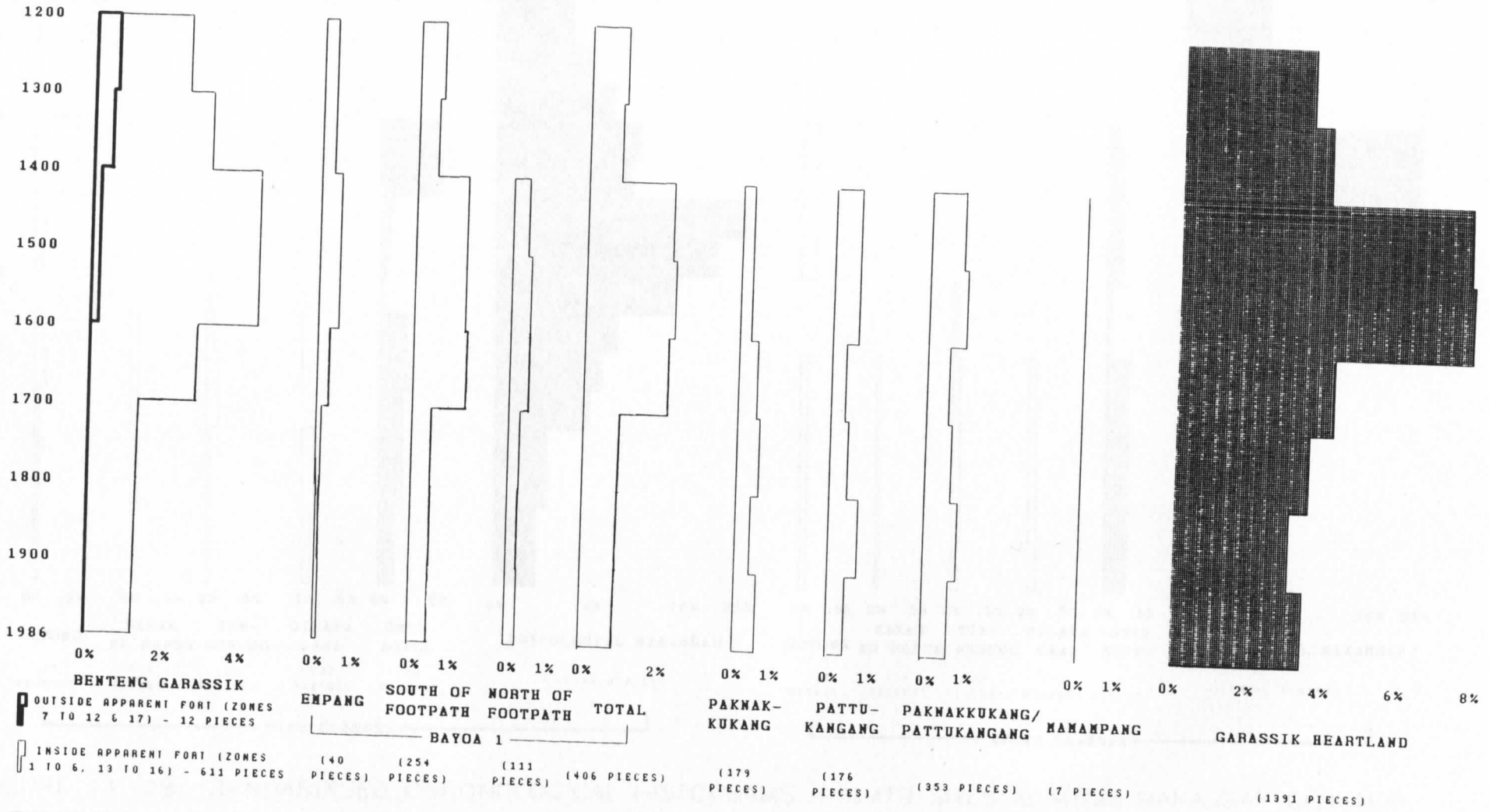


FIGURE 11–22. STANDARDISED CHRONOLOGICAL HISTOGRAMS (BROAD CLASSES)– GARASSIK HEARTLAND

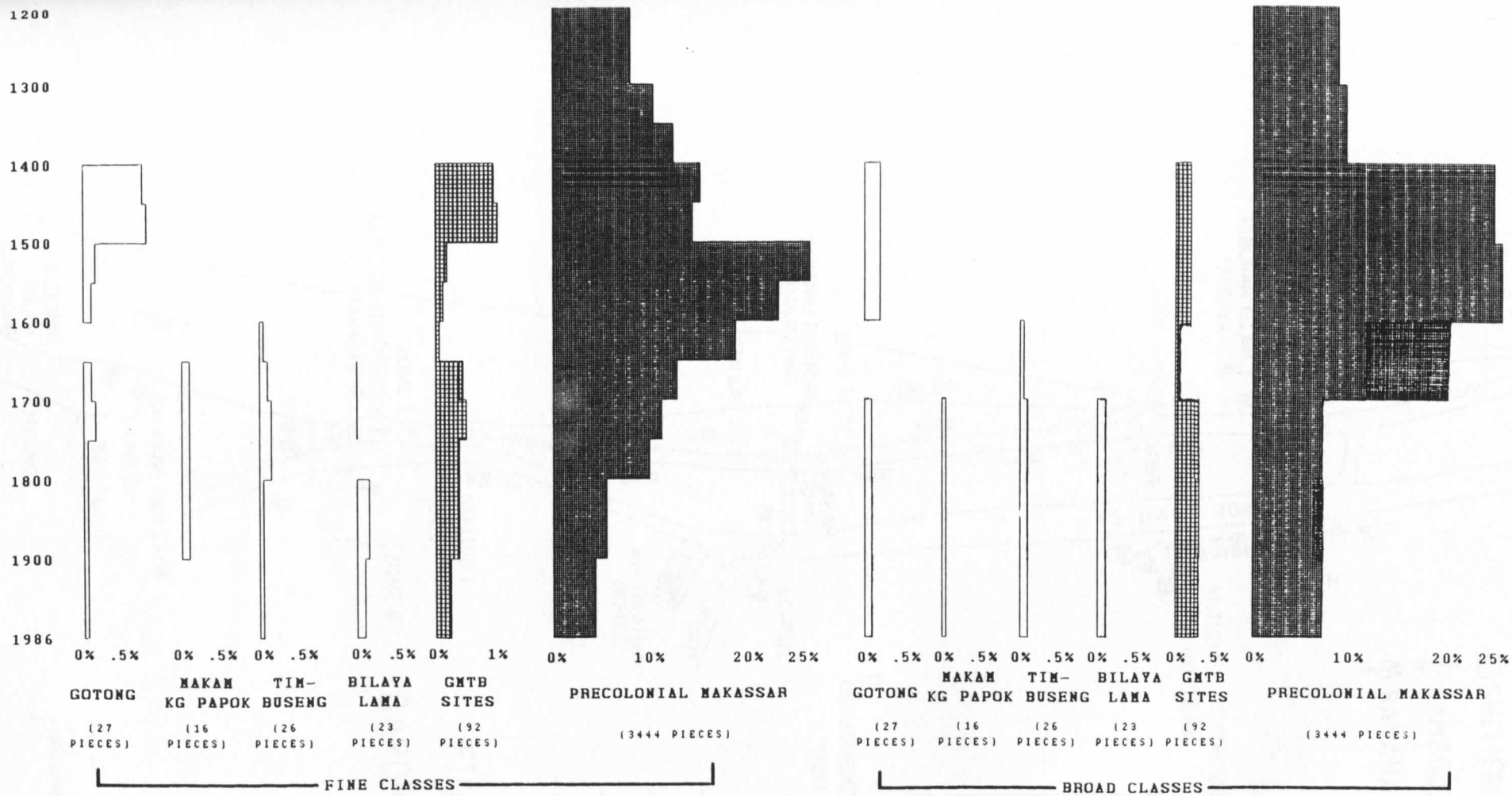


FIGURE 11-23. STANDARDISED CHRONOLOGICAL HISTOGRAMS – GMTB SITES & TOTAL MAKASSAR CLUSTER

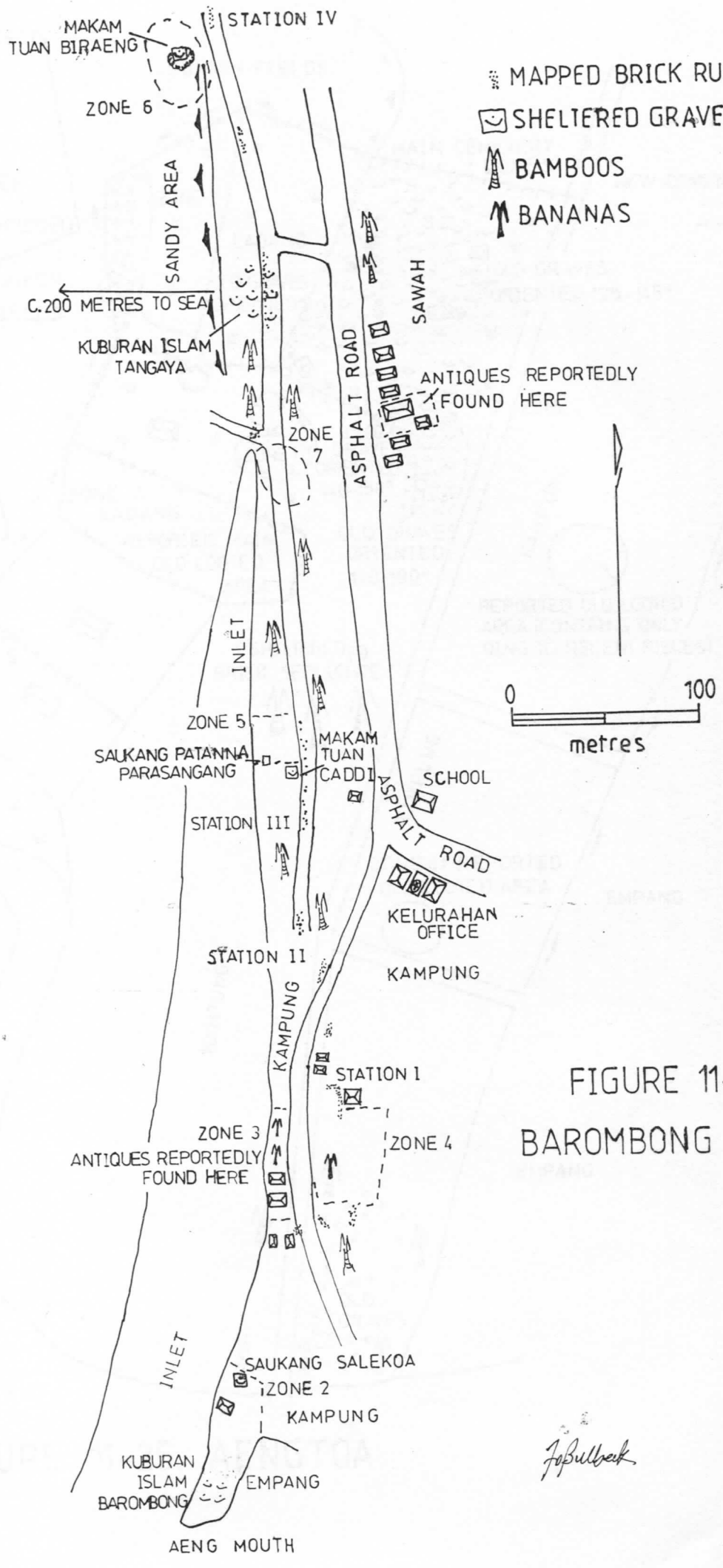


FIGURE 11-24.
BAROMBONG WALL

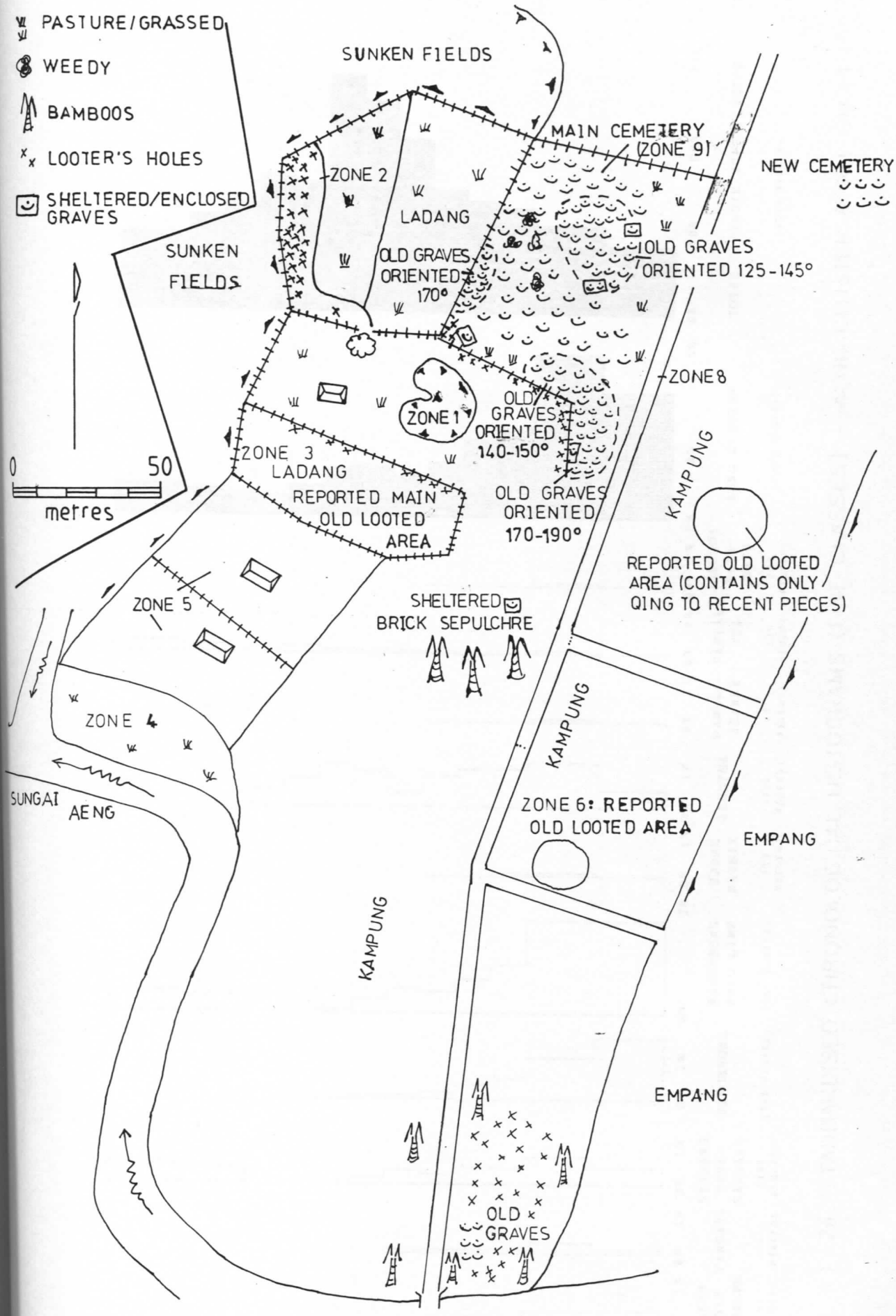


FIGURE 11-25. AENGTOA

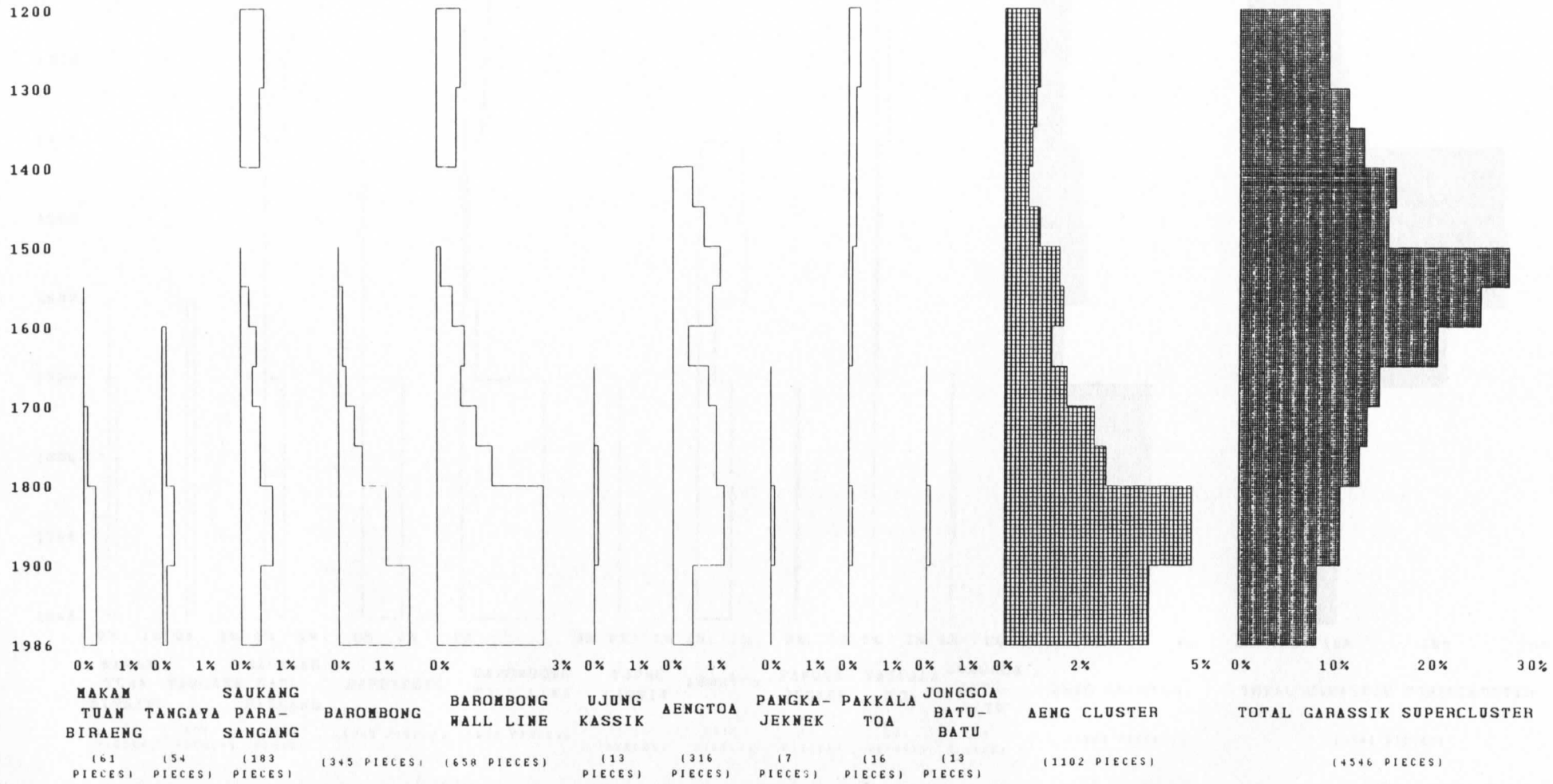


FIGURE 11--26. STANDARDISED CHRONOLOGICAL HISTOGRAMS (FINE CLASSES) - AENG CLUSTER & ALL CH.11

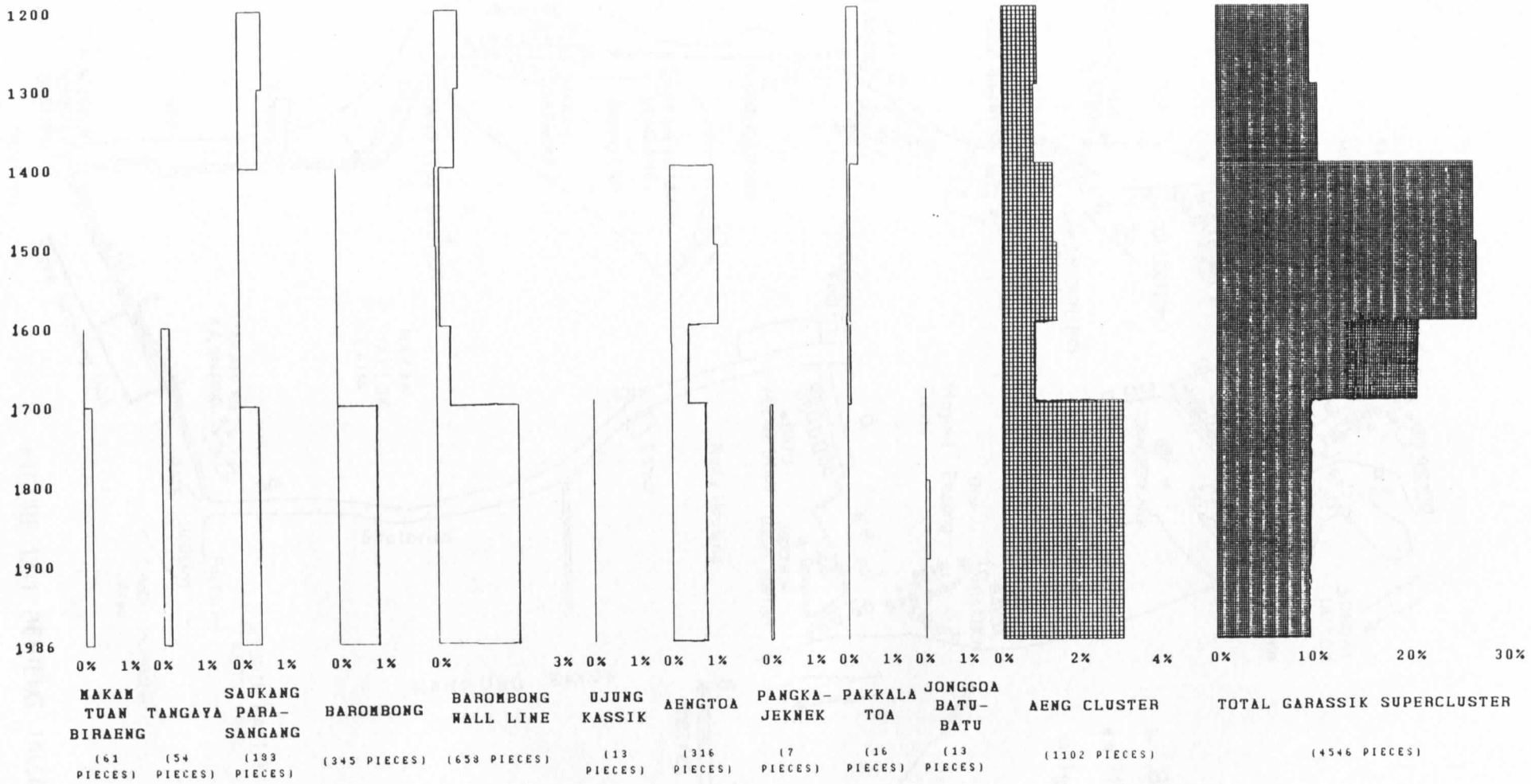


FIGURE 11–27. STANDARDISED CHRONOLOGICAL HISTOGRAMS (BROAD CLASSES) – AENG CLUSTER & CH. 11

Photo 11-1.
Ferry crossing the south outlet of the Jeknekberang created during the 1977 flood, locally known as Balang Beru ("New Swamp"). The eastern part of Benteng Somba Opu is behind the trees at rear.

Photo 11-2.
The view north from the beach at Kuburan Islam Barombong, showing the inlet between the old sand ridge along which the 17th century Barombong wall was built at right, and the recent longshore bar at left.
The latter does not appear on the early 20th century Dutch land-use maps, nor even on the Indonesian 1969 land-use map.

Photo 11-3.
Plan of Benteng Somba Opu and excavations made by Suaka Peninggalan Sejarah dan Purbakala Sulawesi Selatan.
The line of squares from west to east suggests that these excavations were following the fort's north wall.

Photo: Ian Caldwell.





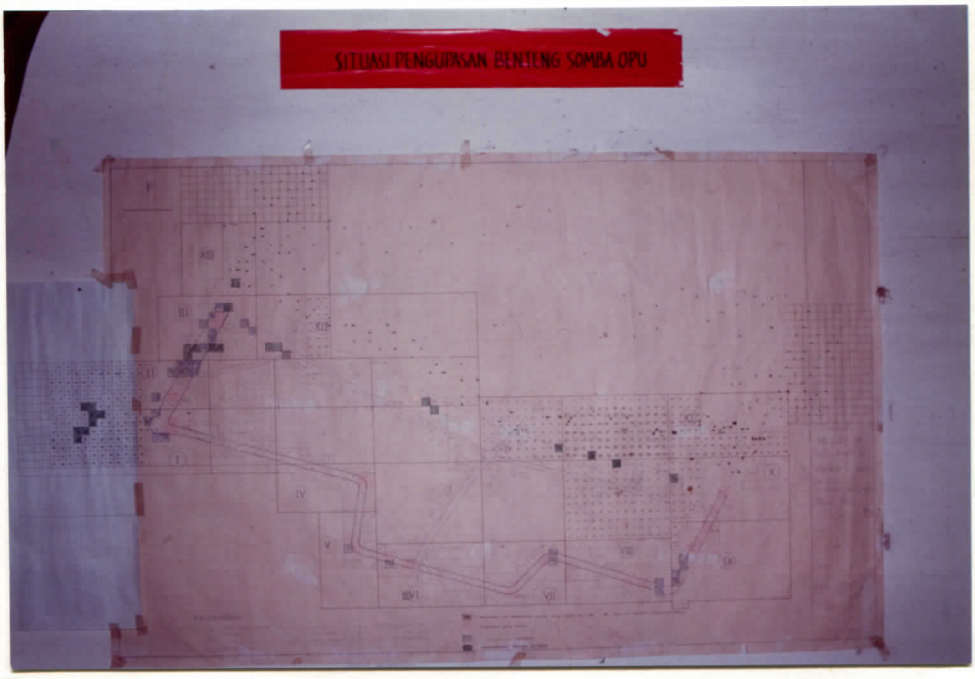

SITUASI PENGUPASAN BENTENG SOMBA OPU

Photo 11-4.
Benteng Somba Opu, example of a brick wall base excavated at some point along the footpath at the north of the site.

Photo: Peter Spillett Daeng Makulle.

Photo 11-5.
Benteng Somba Opu, showing Suaka's excavation of the still partly intact west wall. The picture gives an idea of its massive construction.

Photo: Peter Spillett Daeng Makulle.





Photo 11-6.
Suaka's excavation of the southwest bastion or
Maccinik Sombala ("Watch for the Sails"), Benteng Somba Opu.

Photo: Peter Spillett Daeng Makulle.

Photo 11-7.
Mariang polong ("fragmentary cannon") and the associated tomb
at the south of Benteng Somba Opu.

Photo: Peter Spillett Daeng Makulle.





Photo 11-8.
Apparent internal structures inside
Benteng Somba Opu's west wall.
Circular mound, possibly a flagstand, at very front.
Mounded ridge, possibly an internal wall, at rear.

Photo 11-9.
Old *keramat* (holy) masonry Islamic sepulchre,
Sapirea, Benteng Somba Opu.

Photo 11-10.
Sheltered graves at the Islamic cemetery at Pattung.

Sonny Wibisono, of Puslitarkenas, at right.







Photo 11-11.
Swatow Blue-and-white plate reportedly found at Pattung, featuring "Ducks in a Lotus Pond 1" (Harrisson, 1979). Reverse has partly glazed base and dirty foot.

Photo 11-12.
Ming bowls reportedly excavated at Kaccia Lama.

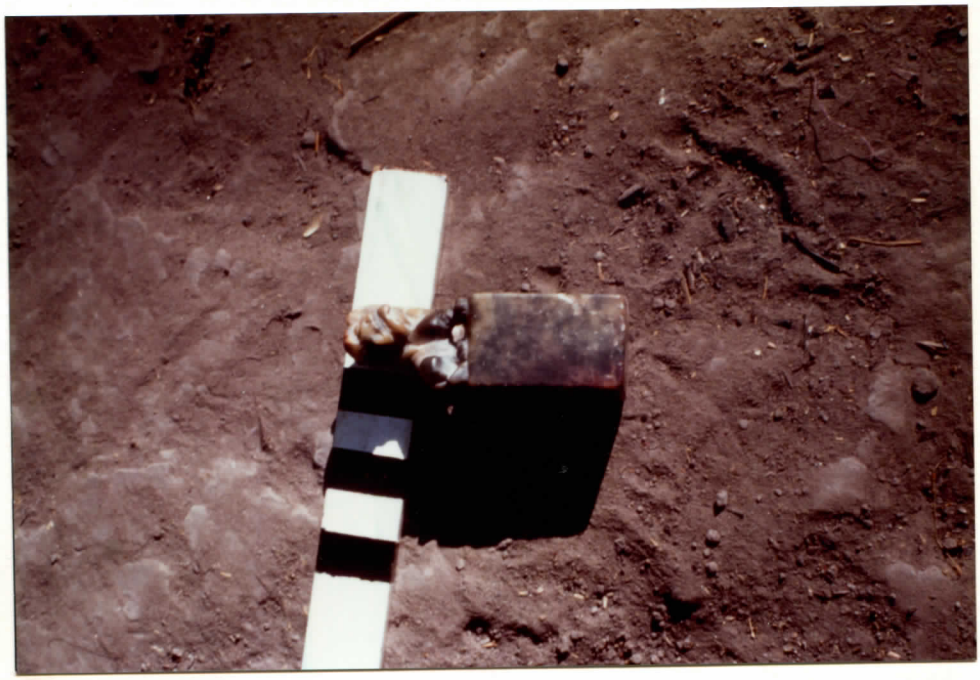
Left: BW bowl with lotus scroll on reverse and undecorated interior. 15th century to judge from the unglazed base.

Right: "Redware" with red and green enamels making a floral spray. Inside centre has a calligraphic motif in red enamels.

Photo 11-13.
Lion figurine, carved from a siliceous semi-precious stone, reportedly excavated at Kaccia Lama.







Photos 11-14 and 11-15.
The two finely decorated masonry grave markers at the south Islamic cemetery, Kaccia Lama.
The example at top features Arabic script.

Photo 11-16.
Bayoa 2. The line of trees at rear marks the course of the Sungai Banda.







Photo 11-17.
Bonto Lakja Selatan,
with the ranging pole indicating the spot where the
five *tempayan* (stoneware jars) were reportedly found.

Photo 11-18.
Bonto Lakja Barat Daya, showing the sheltered grave of "Tuan
Said" and the brick platform beneath it.

Photo 11-19.
Bonto Lakja Barat, with zone 13 in the centre of the photo.
The line of trees at rear marks the course
of the Sungai Banda.

Photos 11-20 to 11-22.
The brownware *tempayan* found at Bonto Lakja Selatan.
Jars 1 to 3 from top to bottom.







Photo 11-23.
Jar 4 or the spouted jar (left), and Jar 5 or the blakcware jar (right), found at Bonto Lakja Selatan.

Photo 11-24.
The *Ming merah bulu-buli* (Ming jarlet with overglaze enamels) reportedly dug up at Bonto Lakja Timur Daya. Base unglazed.

Photo 11-25.
G.5.1.2, basal sherd to a bowl found at Benteng Garassik. Note the solar motif in centre and unglazed stacking ring. Base unglazed. Apparently A Vietnamese iron-painted ware.



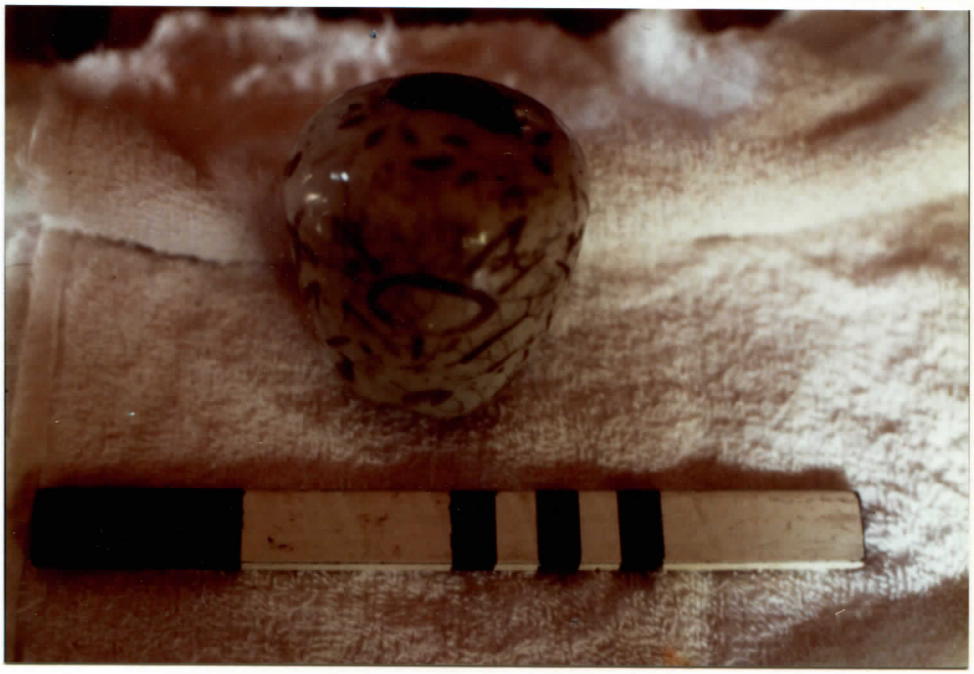



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Photo 11-26.
The hole at Benteng Garassik exposing the apparent intersection of the coastal wall (which continues in front of the photograph) and the short line of brick striking westwards.

Photo 11-27.
The masonry post-support seen in the northwest corner of Benteng Garassik, apparently one of five found at the site.

Photo 11-28.
Bayoa Empang, north face, zone 1.

Karaeng Demmanari is shown crouched, recording the artefactual contents.







Photo 11-29.
The five fragments of bronze leaf collected from Bayoa *Empang*. Thickness varies between 0.5 mm and 2 mm. Total weight 1.5 gm. Oxidised; surface colour is greener than Munsell gley 5G 5/2.

Photos 11-30 and 11-31.
The Bayoa *Empang duni*, as first seen (left) and after its excavation by Suaka (right). Note the complete and semi-complete *Tridacna* shells near the *duni* (left). Photographs look south-east-east.

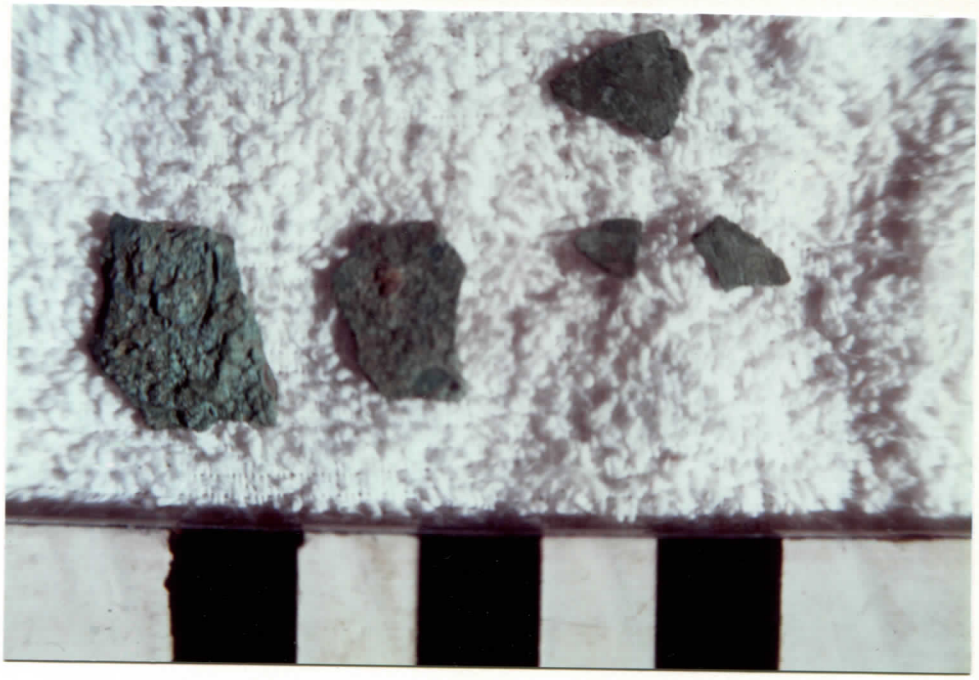






Photo 11-32.
Bone fragments found along the west face of Bayoa *Empang*.
None looks human, and interpretation is unclear.

Photo 11-33.
One of the east-west oriented, masonry marked graves
in the Islamic cemetery at Bayoa 1.

Photo 11-34.
Bayoa 1, zone 34, on the bank of the Sungai Bontorea (Banda)
where an unusual collection of objects was found
eroding from the bank, and in the water immediately below.

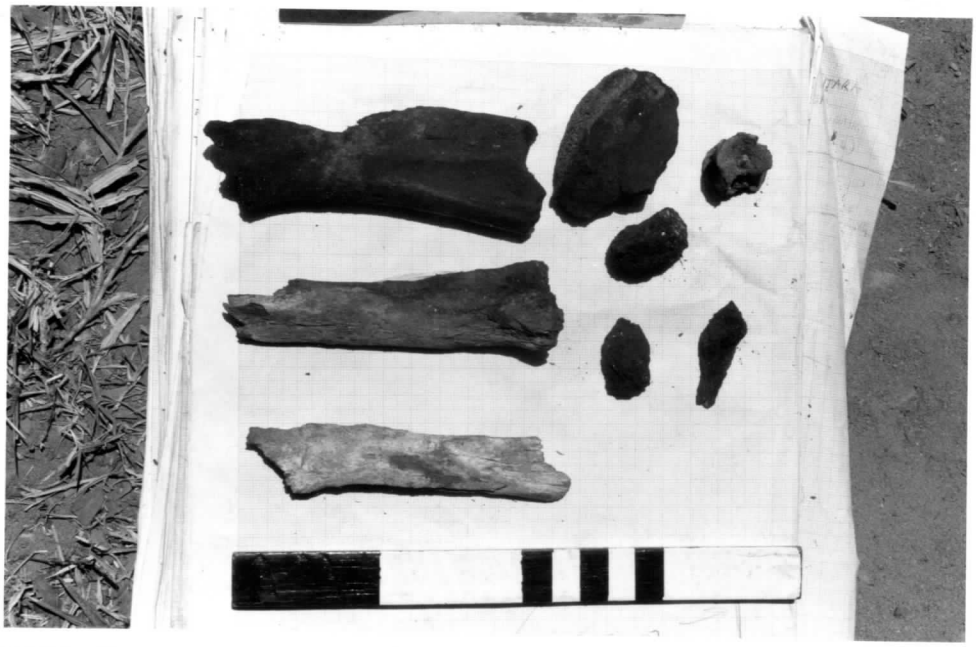






Photo 11-35.
Bases to two miniature blue-and-white covered bowls reportedly found in the general kampung area of Bayoa 1.

Left: Swatow, exterior decorated only with Swatow roundels.

Right: Identified as "Ming Swatow". A complete specimen of the piece, G.62.13.71, from Bonto Lakja Barat.

Photo 11-36.
A third base to a miniature blue-and-white covered bowl found at Bayoa 1 kampung Probably late Ming.

Photo 11-37.
Bayoa 1 footpath at the. southwest of the site, one of the clearer segments showing the line of brick rubble.







Photo 11-38.
Fragments of old red bricks found at zone 34, Bayoa 1.

Photo 11-39.
Some of the rocks found at zone 34, Bayoa 1,
including two limestone pebbles
& quartz pebble (right) at the front.

Photo 11-40.
The exposed line of *in situ* brick wall at Pattukangang where
it crosses the road to join the Barombong wall.





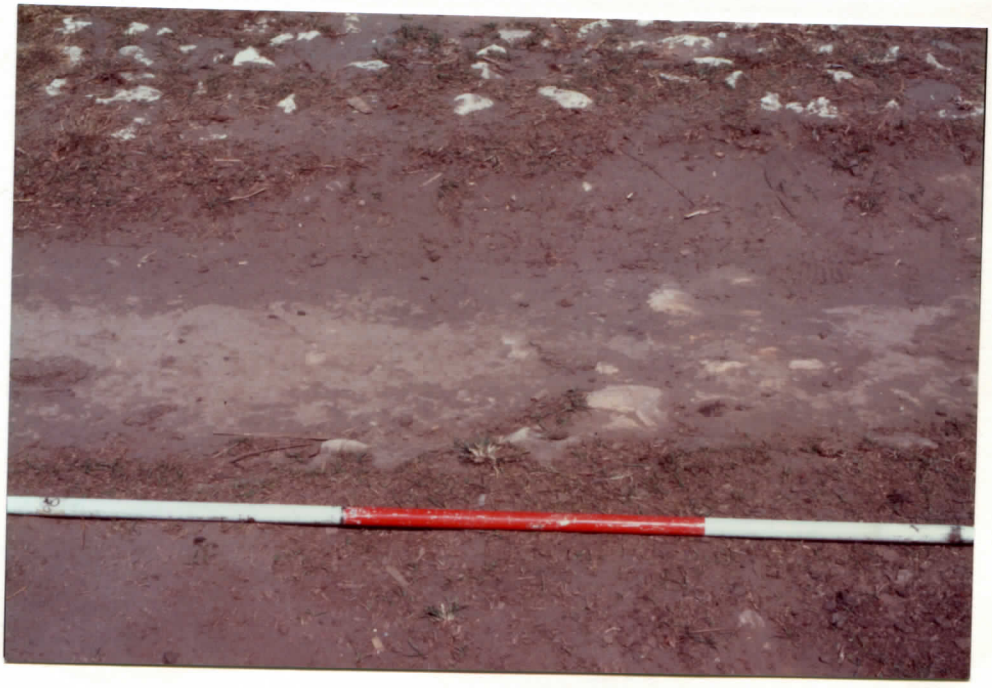


Photo 11-41.
Hole exposing the foundations of the Paknakkukang coastal wall where it runs above the backswamp entrance. Note the presence of both large and small bricks.

Photo 11-42.
The central eastern bastion mound of Benteng Paknakkukang, locally interpreted as a *pakbenderang* (flagstand).

Fieldworkers Dubel Driwantoro and Iwan Sumantri (obscured) are on top.

Photo 11-43.
A looter's hole in the wall of Benteng Paknakkukang, showing a coral block which was presumably placed there as support.





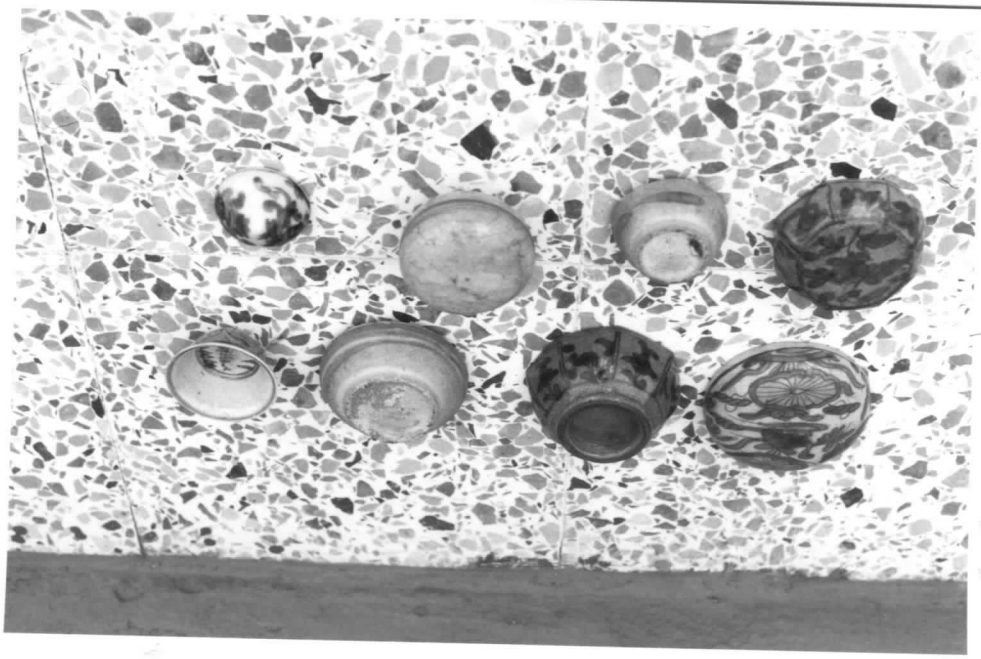


Photo 11-44.
Paknakkukang's *tokoh masyarakat* (social exemplar) and his wife inside the tomb of the grave of "the man from London".

Photos 11-45 and 11-46.
Antiques reportedly looted from the cemetery inside Benteng Paknakkukang.

Photo 11-45:
top row, left to right, Ming BW bowl and Wanli BW plate; bottom row, left to right, Ming Swatow BW bowl, Ming whiteware teapot and cup.

Photo 11-46:
top row, left to right, Swatow cover to bowl, body to Swatow covered bowl, body to Ming Swatow covered bowl, Ming BW bowl; bottom row, left to right, Swatow cover to bowl, body to Ming Swatow covered bowl, cover to Ming whiteware covered bowl, cover to "Transitional BW" bowl.



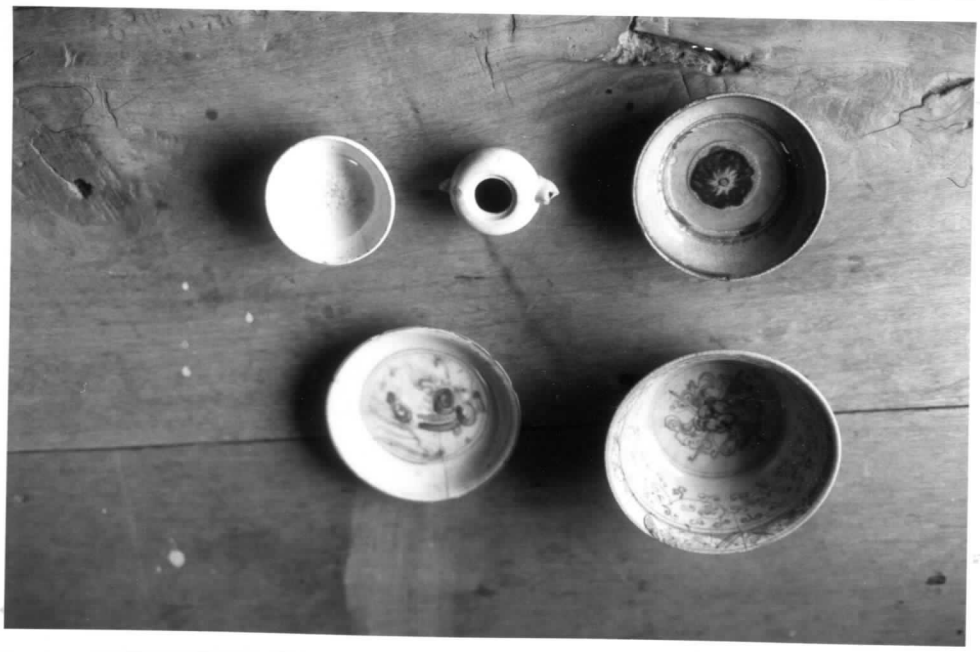


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Photo 11-47.
Mamampang,
with the boy crouched at the scatter of "Ming" pieces.

Photo 11-48.
Gotong, the area looted for antiques.

Photo 11-49.
Makam Karaeng Papok, Timbuseng.







Photo 11-50.
Bilaya Lama, the sheltered grave of a Gowa Karaeng whose name has been forgotten.

Photo 11-51.
A tempayan (stoneware jar) reportedly recovered from the ground at Jonggoa Batu-Batu, identified as a Qing brownware.

Photo 11-52.
Antiques reportedly recovered during the excavation of a fish pond by the inhabitants of either Karama or Aengtoa.

Font left: two Wanli BW bowls.
Behind them: three Qing BW pieces (cover, bowl lacking cover, spoon) and a Swatow BW bowl (lacking cover) at right.
To the immediate right: two Vietnamese monochrome bowls.
Front right: Dehua early whiteware bowl (lacking cover).
Rear right: Late Ming brownware jar (glaze mostly lost).



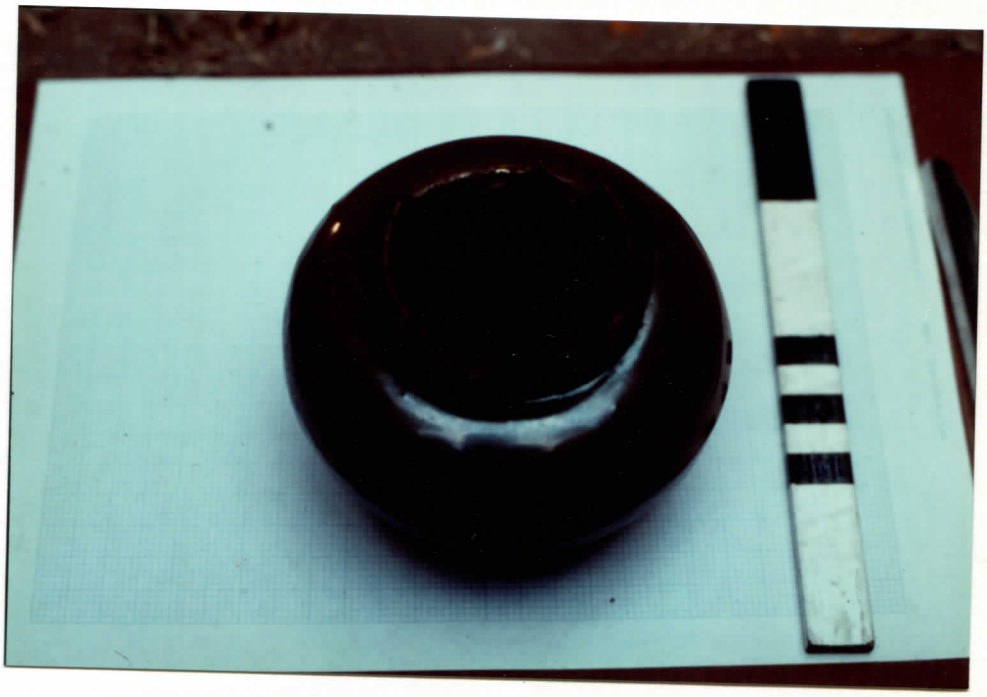

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Photo 11-53.
Barombong, zone 3, the reportedly looted area. Behind it is the same inlet shown in Photo 11-1.

Photo 11-54.
Kampung Bontoa, where the 1667 Bungaya Treaty was signed. Some of the old graves at the Islamic cemetery.

Photo 11-55.
Ujung Kassik, showing the old Islamic grave overgrown by a cactus at front, and the general area of reported looting behind it.







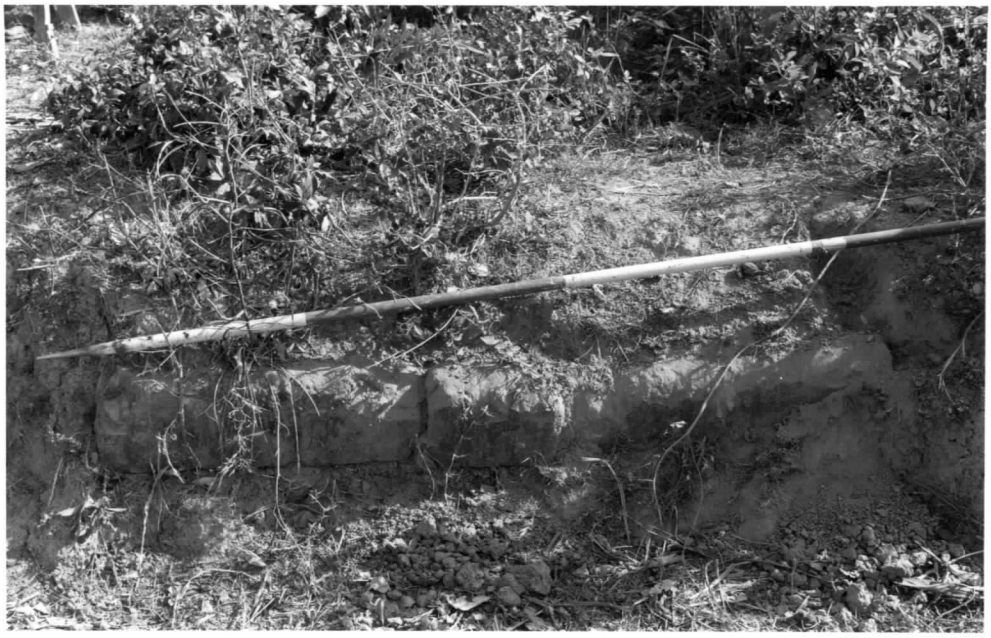
Photo 11-56.
The Islamic cemetery at Jonggoa Batu-Batu, showing some of the old masonry markers and the modern brick corral at rear.

Photo 11-57.
Kuburan Islam Summanak,
showing some of the old masonry graves.

Photo 11-58.
Pakkala Toa Barat, showing the east-west directed line of masonry blocks buried by deposits except at this exposure, interpreted as an east-west oriented Islamic grave.







CHAPTER 12. BENTENG TALLOK AND UJUNG PANDANG

12.1 Introduction

As shown by SSPHAP's general site maps (e.g. Figure 5-2), the survey of Benteng Tallok at the Tallok inlet (Photo 12-1) constitutes an enclave of archaeological data amidst the unsurveyed urban belt of Ujung Pandang. If realised my further plans would have furnished a broader surveyed context, but when these intentions proved impractical I acceded to surveying the fortress alone (5.2). Having left the survey of Tallok to the last, SSPHAP had only three days in which to complete the work, just enough to record the fundamental data on the fortifications and enclosed historical sites. Fortunately enough I have also been able to "survey" Ujung Pandang city through a literature search as part of the preparation of this thesis (12.3.1).

As first noticed by Reid (1983a:119), the colonial city of Makassar (Ujung Pandang) developed on cheniers deposited by an ancestor of the Jeknekberang which had debouched near the present Tallok inlet. Analogy with the Jeknekberang's present delta (11.1) and evidence from air photographs suggest the following scenario. At the time the river debouched here, which can be dated to the late Holocene (Figure 11-1), the prevailing southwards sea currents created subparallel sandridges whose tail reached as far as the modern Jeknekberang delta. These ridges tended to block off a direct debouchment and fence the main outlets into an increasingly northeast position, until they finally curved around the spit of land occupied by Benteng Tallok. After the old river found a new course to the coast in the mid-Holocene, the southwards currents have gradually reworked the delta head and redeposited the sediments either along Ujung Pandang's beachline or on the Tallok spit. During historical times the northern beachline of the Tallok spit has receded slightly further inland.

Elevations within colonial Makassar reach six metres asl along the cheniers, but also drop into intervening furrows which the early 20th century Dutch maps depict as sawah or narrow swamps. These appear to have become arteries of water

spearing northwards after the Garassik, the Jeknekberang's historical ancestor, augmented the available fresh water discharge by breaching an outlet through the tail of the Ujung Pandang cheniers (11.1).

A tree-lined irrigation canal running northwards behind Makassar into sawah, shown in the c.1638 Dutch sketch (Photo 1-1), presumably followed one of these furrows. Now the air photographs show a swampy furrow which runs north-north-east from Balang Beru before making a right turn towards the beach immediately north of Mariso (cf. Figure 12-5). It would not appear to be a natural outlet of the Garassik because it cuts across a chenier lined with historical sites. Hence it can probably be identified with the c.1638 canal, in which case the creek meeting the sea at the left of Photo 1-1 would be the canal's outlet. This canal is probably the "Binanga-beru" (New River) attributed by Speelman to Abdullah (cf. Reid, 1983a:146).[1]

The identification is crucial to reconstructing 17th century Makassar. The belt of sawah reaching the coast on the left of Photo 1-1 can be identified with the land between Fort Rotterdam (Benteng Ujung Pandang) and Mariso. Support comes from the early 20th century Dutch maps, which show considerable expanses of sawah here, and from the lack of historical toponyms in this area (Figure 12-5). The northern settlement in Photo 1-1, which held most of the foreign factories, can then be matched to the area between Mariso and Balang Beru. The area is extensively labelled Sambung Jawa ("Extension for Foreigners") on the early 20th century maps, and the name apparently covered a similar area in the 17th century when it was described as both north and south of Mangallekana.[2] The river running by Somba Opu's north wall

[1] Speelman actually described this "Binanga-beru" as the river running by the north face of Benteng Somba Opu (see Photo 1-1) but he must have been confused. The north river is readily explained as a natural outlet of the Garassik (11.1) and so scarcely requires us to invoke Abdullah's hand in its creation. Nor do the Makassar sources attribute earthworks as massive as hewing new rivers to Abdullah, but they do identify him as the first raja to make irrigation canals (ST:16).

[2] Sambung Jawa is clearly depicted north of Mangallekana on the 1693 map (Figure 5-5) but Speelman's description of the

(Photo 1-1) would then have followed a course past Balang Beru ("New Swamp", i.e. "New River") between the fort and 20th century Sambung Jawa (Figure 12-6).

The low-lying expanse of sawah at Makassar's rear shown in Photo 1-1 persisted until after 1969. But with the pressures of urbanisation, the section north of the Jeknekberang has now been overtaken by suburbia.[3] As we follow the Ujung Pandang cheniers northwards we move beyond the available 17th-century sketches to the heart of colonial Makassar which, as we shall see, originally fell within Tallok's domain. Further northeast again lies a tidally inundated belt, apparently marking one of the outlets of the Jeknekberang's prehistoric ancestor, which defines the southwest boundary of the Tallok spit. With altitudes rising to six metres asl the spit is one of the highest landforms along the lower Tallok; free of wet season inundation, it is blessed with immediate access not only to the sea but also inland via the Tallok river (cf. 12.2.1).

12.2 Benteng Tallok (Ujung Pandang 25)

12.2.1 The story of Tallok's origins

Tallok was reportedly founded by Batara Gowa's brother, Kgloe ri Sero, after a succession squabble which can be dated to the end of the 15th century (2.5.2). As this chapter analyses the whole suite of clues to which the previous chapters allude, translation of the relevant passages is appropriate.

'[After Tunatangkaklopi died] his *Gelarang* and villagers split in their allegiances, with one group preferring Batara Gowa, and the other group favouring Karaengloe ri Sero. Those who turned to Batara Gowa were Paccellekang, Pattallassang, Bontomanaik Timur, Tombolok, Mangasa and Bontomanaik Barat; while those who turned to Kgloe ri Sero were Saumata, Pannampu, Moncongloe and Parangloe.' (SG:14).

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north Garassik outlet clearly implies Sambung Jawa was to the south (Reid, 1983a:146).

[3] The doughty residents simply put up with the annual saturation of their roads and yards.

'[After Tunatangkaklopi was carried off to heaven, Kgloe ri Sero] had a dispute with his brother and left for Java.[4] A portion of the *Gelarang* [of Kgloe ri Sero] - Tombolokeke, Saumata, Borongloe, Paccinongang, Pao-Pao - left him for his brother Batara Gowa. Those *Gelarang* who did not leave were not summoned either, rather they merely waited for the return of their king. After Karaengloe returned from Java he was informed that not all of his populace had been carried off by his brother, so he went to settle at a place on the north side of Bangkala called Passanggaleang.

'After Karaengloe had stayed there quite a while, one of his *Gelarang* built a boat. When the boat was ready the *Gelarang* sailed to the river's mouth. At this point the king summoned the *Gelarang*, only to be told that the *Gelarang* was not there. When the *Gelarang* went home the people in his house told him that he had been summoned by Karaengloe. Hearing that he went to Karaengloe who asked, 'Hey, where have you been, Gelarang? I had just ordered you to see me and you weren't around.' The *Gelarang* replied, 'Your servant went to the river's mouth to look and take notice. That place would serve any people well. Here our situation is less fitting for we are neither at the shore nor at the foothills.'

'The king agreed, so the populace left to build their houses at Tarung. They had a good look at the quite high place called Campagaya and it pleased them. Thereupon [Karaengloe] ordered them to build houses - to leave their lands and set themselves up in Tallok.' (ST:5-6).

12.2.2 The Benteng Tallok survey

The Benteng Tallok survey followed the wall line, except at the longer of the two sections now under sea, and the southern corner which falls within a zone of restricted access. Information from the Mangara Bombang residents living in stilt houses inshore, and from Karaeng Demmanari who had participated in the previous survey by Nurhadi et al.

[4] i.e. the archipelago to the west, not necessarily the island of Java.

(1980),[5] allowed the missing sections to be plotted in (Figure 12-1).

The fort has an elongated trapezial form, 1.24 km long by around 290 metres wide, defined by 2.74 km of wall line which enclose 40.34 hectares. Nine truly straight sections make up the four major faces and the indentation at the west corner. The fort appears to have had two gates. One coincides with the modern road entrance on the northwest face, and the second occurs in the east corner. In total the fort covered a spit of raised land bounded by the sea, the Tallok inlet, and between them the tidally inundated belt along the fort's southwest wall.

Time did not allow us to document tradeware densities as done at the other palace sites. Rather, we gauged the history of occupation by means of our two tradeware collections made at the site's north corner, and our records of looted areas and Islamic graves along or within the walls (Figure 12-1). We also documented the large tradeware collection made during Suaka's restoration of the royal Tallok graves, now kept at the site museum.

12.2.3 Tallok's fortifications

The most remarkable feature of Tallok's fortifications is the substantial presence of masonry which is otherwise absent from greater Gowa's fortifications. Even at Tallok, masonry was restricted to the north half of the fortress, between Balang Cidi's brick bastion north of the indented west corner, and Bayoa's remnant brick bastion south of the royal cemetery (Figure 12-2). Furthermore the relative proportions of masonry and brick vary greatly. While only laid masonry survives along certain lengths (Photo 12-4), other lengths are dominated alternatively by stone or by brick rubble.

The northern bastions are similarly heterogeneous. The exposed section at the Gampangcaya bastion (Photo 12-2) shows masonry laid atop two lines of brick built on the local silty sand and separated by silt fill. Local reports further described the edifice as previously thickened with lateral

[5] The map of Tallok created during this survey was not included in the published report.

additions of earth and crowned with amorphous coral blocks (Figure 12-3). But the *Pakbenderang* (flag stand) and the corner bastion at the Tallok mouth appear to have been built with a masonry core topped by coral blocks (Photos 12-3 and 12-5). The same may have been true of the remnant bastion at the east corner. Yet the two remnant bastions immediately to its south, which appear to have marked a gateway into the fort, show a rapid transition to brick in their associated rubble (Figure 12-2).

To some degree, the variable presence of brick or stone could reflect the height of the extant structure or the vagaries of rubble accumulation. But certain stretches also suggest that brick and masonry had been used as functional equivalents. For instance, stone was apparently used only on a sporadic basis south of the east bastion, given that the dominance of brick increases in the two subparallel lines of rubble striking south towards Bayoa's bastion (Figure 12-2).

Only brick was observed from Bayoa's bastion to where we lost the wall line in Bayoa kampung. The wall could then be detected again as a line of bricks between the houses in Tallok Lama kampung. At this point the line strikes towards the brick bastion at the fort's west corner called Maccinik Sombala or "Watch for the Sails" (Photo 12-6). Close inspection of Maccinik Sombala showed firstly a general reliance on the "one-on-two" method, although a small proportion of the bricks had been laid parallel with those in the course below, and secondly that clay had been used as mortar. Between Maccinik Sombala and Balang Cidi's bastion the wall line is indented. Much of it is well preserved, standing up to one and a half metres high and as wide as two and a half metres (Photo 12-7).

During the survey we measured the masonry blocks at three stations and bricks at ten stations. The bricks were mostly the "smaller" variety (cf. E.2.2) but included a few large bricks near (but not actually within) Maccinik Sombala bastion. The average dimensions at the various stations are shown in Figure 12-2, and the full statistics are given in Table 12-1. The masonry shows far greater intra-sample variability than inter-sample variability; otherwise, few

TABLE 12-1. BRICK AND MASONRY SIZES AT BENTENG TALLOK

Large Bricks

Station	Length n	Length x	Length SD	Length Range	Breadth n	Breadth x	Breadth SD	Breadth Range	Thickness n	Thickness x	Thickness SD	Thickness Range
Balang Cidi (VI)	1	38			1	21.5			1	9		
Balang Cidi (V)	8	38.1	±1.2	(36-40)	9	22.4	±1.3	(20.5-24)	4	5.1	±2.0	(3-8.5)
Maccinik Sombala (II)	2	44.5		(42,47)	2	21.0		(18,24)	1	8		
Total	11	39.2	±2.9	(36-47)	12	22.1	±1.7	(18-24)	6	6.25	±2.3	(3-9)

Smaller Bricks

Wall Stations	Length n	Length x	Length SD	Length Range	Breadth n	Breadth x	Breadth SD	Breadth Range	Thickness n	Thickness x	Thickness SD	Thickness Range
Balang Cidi (VI)	30	25.7	±1.7	(22-29)	30	15.55	±1.2	(12-18)	18	5.2	±0.7	(3.5-6)
Balang Cidi (V)	21	26.4	±2.7	(24-32)	21	16.9	±2.4	(13.5-23)	8	5.0	±0.8	(4-7)
Maccinik Sombala (IV)	28	25.8	±1.1	(23-28)	29	16.0	±0.7	(13.5-17)	13	3.9	±0.5	(3-5)
Maccinik Sombala (II)	30	24.6	±1.9	(20-29)	32	14.0	±1.3	(12-17)	22	3.8	±1.4	(2-7)
Maccinik Sombala (I)	25	21.7	±1.6	(19-25)	25	12.1	±1.0	(10-14)	23	2.7	±0.4	(2-3.5)
Gampangcaya (VII)	6	20.8	±1.7	(18.5-24)	30	12.2	±1.5	(10-18)	30	3.3	±0.5	(2.5-5.5)
Total Wall	140	24.7	±2.6	(18.5-32)	167	14.4	±2.4	(10-23)	114	3.7	±1.2	(2-7)
Bastion Stations	**n**	**x**	**SD**	**Range**	**n**	**x**	**SD**	**Range**	**n**	**x**	**SD**	**Range**
Maccinik Sombala (III)	30	21.9	±2.5	(19-30)	30	13.0	±2.3	(11-23)	30	3.3	±0.7	(2.5-6)
Bayoa (X)	14	23.3	±2.9	(20-27)	25	13.5	±2.0	(10-18)	18	3.5	±0.4	(2.5-4)
Royal Graveyard (IX)	17	22.4	±1.8	(19-26)	22	12.2	±1.5	(9-15.5)	11	3.7	±0.4	(3-4)
Gampangcaya (VIII)	1	20			15	11.7	±0.7	(10-12.5)	15	3.3	±0.5	(2.5-4.5)
Total Bastion	62	22.3	±2.3	(19-30)	92	12.7	±1.8	(9-23)	74	3.4	±0.6	(2.5-6)
Total Smaller Bricks	202	23.9	±2.7	(18.5-32)	259	13.7	±2.3	(9-23)	188	3.6	±1.0	(2-7)

Masonry

Stations (all bastions)	Length n	Length x	Length SD	Length Range	Breadth n	Breadth x	Breadth SD	Breadth Range	Thickness n	Thickness x	Thickness SD	Thickness Range
Gampangcaya (XII)	27	53.7	±10.9	(35-70)	27	31.5	±6.1	(16-44)	27	20.1	±4.5	(10-28)
Gampangcaya (VIII)	30	41.6	± 8.3	(26-58)	30	26.1	±4.5	(12-35)	30	26.1	±4.5	(10-28)
Mangara Bombang (XI)	33	50.8	±12.2	(25-76)	33	29.0	±6.6	(20-48)	10	18.2	±5.85	(12-30)
Total	90	48.6	±11.8	(25-70)	90	28.8	±6.2	(12-48)	67	18.9	±4.7	(10-30)

TABLE 12-2. ONE-TAILED STUDENT'S T-TESTS COMPARING BENTENG TALLOK'S SAMPLES OF "SMALLER" BRICKS

(NEGATIVE VALUES SHOW THAT THE MEASUREMENT IS SMALLER AT THE STATION INDICATED IN THE COLUMN)

Brick Lengths

T-Test Value

Station	VI	V	IV	III*	II	I	X*	IX*	VIII*	VII
VI	--	-1.15	-0.23	6.87	2.34	9.03	4.20	6.30	(3.44)	6.49
V	> 0.1	--	1.12	6.16	2.79	7.30	3.68	5.19	(2.35)	4.71
IV	> 0.1	> 0.1	--	7.67	2.91	11.05	5.31	7.89	(5.41)	9.22
III*	<<0.0005	<<0.0005	<<0.0005	--	-4.79	0.55	-1.85	-0.78	(0.74)	0.96
II	< 0.025	< 0.005	< 0.005	< 0.0005	--	6.10	2.12	3.88	(2.43)	4.65
I	<<0.0005	<<0.0005	<<0.0005	> 0.1	<<0.0005	--	-2.72	-1.37	(1.04)	1.14
X*	< 0.0005	< 0.0005	<<0.0005	< 0.05	< 0.025	< 0.005	--	1.23	(1.63)	2.56
IX*	<<0.0005	<<0.0005	<<0.0005	> 0.1	< 0.0005	< 0.1	> 0.1	--	(1.33)	1.85
VIII*	< 0.0005	< 0.01	<<0.0005	> 0.1	< 0.01	> 0.1	< 0.1	< 0.1	--	(-0.48)
VII	<<0.0005	< 0.0005	<<0.0005	> 0.1	< 0.0005	> 0.1	< 0.01	< 0.05	> 0.1	--

Significance Level

Brick Breadths

T-Test Value

Station	VI	V	IV	III*	II	I	X*	IX*	VIII*	VII
VI	--	-2.72	-1.28	5.36	4.90	11.59	4.74	8.94	11.82	9.84
V	< 0.005	--	2.04	5.84	5.70	9.07	5.27	7.69	8.10	8.73
IV	> 0.1	< 0.025	--	6.55	7.00	16.35	6.27	11.60	14.16	12.44
III*	<<0.0005	<<0.0005	<<0.0005	--	-1.18	1.72	-0.88	1.39	1.91	1.65
II	< 0.0005	<<0.0005	<<0.0005	> 0.1	--	5.51	0.97	8.32	5.68	9.27
I	<<0.0005	<<0.0005	<<0.0005	< 0.05	<<0.0005	--	-3.12	-0.17	1.41	-0.08
X*	< 0.0005	<<0.0005	<<0.0005	> 0.1	> 0.1	< 0.005	--	2.52	3.38	2.90
IX*	<<0.0005	<<0.0005	<<0.0005	< 0.1	<<0.0005	> 0.1	< 0.01	--	1.11	-0.09
VIII*	<<0.0005	<<0.0005	<<0.0005	< 0.05	<<0.0005	< 0.1	< 0.001	< 0.1	--	-1.07
VII	<<0.0005	<<0.0005	<<0.0005	< 0.1	<<0.0005	> 0.1	< 0.005	> 0.1	> 0.1	--

Significance Level

TABLE 12-2. ONE-TAILED STUDENT'S T-TESTS ON BENTENG TALLOK'S SAMPLES OF "SMALLER" BRICKS (CONT.)

Brick Thicknesses

T-Test Value

Station	VI	V	IV	III*	II	I	X*	IX*	VIII*	VII
VI	--	0.54	5.39	8.58	3.92	14.03	8.90	6.54	9.03	14.40
V	> 0.1	--	3.59	5.56	2.16	9.74	6.28	4.66	6.41	7.57
IV	<<0.0005	< 0.001	--	2.70	0.29	7.38	2.58	11.60	3.38	3.86
III*	<<0.0005	<<0.0005	< 0.005	--	-1.49	3.67	-0.73	-1.49	0.32	0.41
II	< 0.005	< 0.025	> 0.1	< 0.1	--	3.41	0.89	0.24	1.33	6.56
I	<<0.0005	<<0.0005	<<0.0005	< 0.0005	< 0.05	--	-5.73	-6.39	-3.80	-4.37
X*	<<0.0005	< 0.01	<<0.0005	> 0.1	> 0.1	<<0.0005	--	-1.34	1.31	1.47
IX*	<<0.0005	< 0.0005	<<0.0005	< 0.1	> 0.1	<<0.0005	< 0.1	--	2.37	2.51
VIII*	<<0.0005	<<0.0005	< 0.005	> 0.1	< 0.01	< 0.0005	< 0.1	< 0.025	--	0.00
VII	<<0.0005	<<0.0005	< 0.0005	> 0.1	<<0.0005	< 0.0005	< 0.1	< 0.01	> 0.1	--

Significance Level

N.B. Asterisks indicate the bastion stations. Bastion and wall bricks treated separately because the latter are significantly larger (t=9.8, p<<0.0005 for lengths; t=8.4, p<<0.0005 for breadths; t=2.4, 0.01>p>0.005 for thicknesses)
The values in brackets show the z-value of the single brick length recorded at Station VIII. Otherwise, Student's t-test for small samples (Startup and Whittaker, 1982:106-107) used throughout. T-tests based on means and S.D.'s taken to three decimal places, rather than the single decimal place shown in Table 14-1.

TABLE 12-3. RESULTS OF THE T-TESTS COMPARING BENTENG TALLOK'S SAMPLES OF "SMALLER" BRICKS

12-3A. Wall Stations Compared

	Column sample larger than row sample	Column sample smaller than row sample	Column sample significantly larger(p<0.1)	Row sample significantly larger(p<0.1)	Column sample significantly larger(p<0.05)	Row sample significantly larger(p<0.05)
Lengths	13 (86.5%)	2 (12.5%)	8 (100%)	0 (0%)	8 (100%)	0 (0%)
Breadths	12 (80%)	3 (20%)	11 (85%)	2 (15%)	11 (85%)	2 (15%)
Thicknesses	14 (93%)	1 (7%)	12 (92%)	1 (8%)	12 (92%)	1 (8%)
Sum	39 (87%)	6 (13%)	31 (91%)	3 (9%)	31 (91%)	3 (9%)

TABLE 12-3. RESULTS OF THE T-TESTS COMPARING BENTENG TALLOK'S SAMPLES OF "SMALLER" BRICKS (CONT.)

12-3B. Bastion Stations Compared

	Column sample larger than row sample	Column sample smaller than row sample	Column sample significantly larger(p<0.1)	Row sample significantly larger(p<0.1)	Column sample significantly larger(p<0.05)	Row sample significantly larger(p<0.05)
Lengths	3 (50%)	3 (50%)	0 (0%)	1 (100%)	0 (0%)	1 (100%)
Breadths	5 (83%)	1 (17%)	4 (100%)	0 (0%)	2 (100%)	0 (0%)
Thicknesses	3 (50%)	3 (50%)	1 (50%)	1 (50%)	1 (100%)	0 (0%)
Sum	11 (61%)	7 (39%)	5 (71%)	2 (29%)	3 (75%)	1 (25%)

12-3C. Wall and Bastion Stations Compared

	Column sample larger than row sample	Column sample smaller than row sample	Column sample significantly larger(p<0.1)	Row sample significantly larger(p<0.1)	Column sample significantly larger(p<0.05)	Row sample significantly larger(p<0.05)
Lengths	21 (88%)	3 (13%)	22 (88%)	3 (12%)	20 (91%)	2 (9%)
Breadths	19 (79%)	5 (21%)	20 (100%)	0 (0%)	18 (100%)	0 (0%)
Thicknesses	19 (79%)	5 (21%)	17 (77%)	5 (23%)	15 (83%)	3 (17%)
Sum	59 (82%)	13 (18%)	59 (88%)	8 (12%)	53 (91%)	5 (9%)

12-3D. All Stations Compared

	Column sample larger than row sample	Column sample smaller than row sample	Column sample significantly larger(p<0.1)	Row sample significantly larger(p<0.1)	Column sample significantly larger(p<0.05)	Row sample significantly larger(p<0.05)
Lengths	37 (82%)	8 (18%)	30 (88%)	4 (12%)	28 (90%)	3 (10%)
Breadths	36 (80%)	9 (20%)	35 (95%)	2 (5%)	31 (94%)	2 (6%)
Thicknesses	36 (82%)	8 (18%)	30 (81%)	7 (19%)	28 (87.5%)	4 (12.5%)
Sum	109 (81%)	26 (19%)	95 (88%)	13 (12%)	87 (91%)	9 (9%)

N.B. Percentages in the third to sixth columns refer only to those cases where the column sample or the row sample was significantly larger at the confidence level indicated.

useful conclusions can be drawn from either internal comparisons or external comparisons (E.2). The important issue is the size of the smaller bricks.

As indicated by the t-tests (Table 12-2), the samples of smaller bricks often show significantly different dimensions. Two possible explanations can be raised. One hypothesis notes that the bastion bricks are significantly smaller than the wall bricks, and so would explain the differences by the type of structure. The other hypothesis notes that the largest smaller bricks occur immediately south of Balang Cidi bastion, and the smallest bricks are found immediately to its north. The explanation here invokes a directional diminution in brick size.

To test these competing hypotheses, we take Balang Cidi bastion as our basepoint and compare each sample with all its clockwise counterparts. If the type of structure is the determining factor, then the bastion samples and the wall samples should not show any directional change. If directional change is the determining factor, then the transition to smaller bricks should stand regardless of whether bastion bricks or wall bricks are compared.

Consider first the comparison between any station and every other station located further clockwise, regardless of what type of structure is represented. Around 80% of the comparisons show decreasing brick size, whether lengths, breadths or thicknesses are considered. If we consider only those comparisons which involve statistically significant differences, the ratio rises to around 88% at the 0.1 confidence interval, and 91% at the 0.05 confidence interval (Table 12-3D).

The above figures are virtually duplicated when we restrict the pair-wise comparisons to stations representing different structural types (Table 12-3C). It follows that the same figures result when stations representing like structural types are compared. Hence the clockwise trend to smaller bricks is independent of whether bastion bricks or wall bricks have been sampled. We infer that the bastion bricks appeared generally smaller than the wall bricks only

because most of the sampled bastion stations occur clockwise from most of the sampled wall stations.[6]

The clockwise trend towards smaller bricks at Benteng Tallok correlates with another pattern - the inclusion of some large bricks south of Balang Cidi bastion, and the presence of masonry at the north. Given our global model in which size of the fortification bricks generally decreased over time (E.4), we would infer that the building programme started at Balang Cidi bastion, and originally included some large bricks either made from obsolescent molds or brought in from earlier brickworks. Size of the usual, smaller bricks steadily decreased as the construction followed a clockwise course. Along the final stretches after Bayoa bastion, coral blocks (presumably fetched from the sea) and masonry were included in the superstructure.

Construction of Benteng Tallok is squarely accredited to Abdullah (ST:16). Presumably he did it during his first stint on the Tallok throne (1593-1620) before he moved to Bontoalak (ST:24). His construction of Tallok's brick walls can be dated to around 1615. During this crisis period in greater Gowa's relations with the Dutch and the English, an English account records that the whole land was busy making bricks to build two castles (cf. Reid, 1981:11). The identification of these two castles with Benteng Tua and Benteng Tallok is supported on the one hand by the 1618 date given for Benteng Tua's construction (6.4), and on the other hand by the extraordinary similarity in size between the "smaller" bricks used at the two forts (Table E-28).

The Indonesian translation refers to '*dinding dari batu*' (walls of stone), whereas the original Makassar reference is to '*batu-bata*' ("stone tiles", i.e. bricks). As the texts

[6] The comparisons even seem to suggest that the clockwise diminution in brick size characterises the wall bricks in particular, whereas the bricks in the bastions do not show a size transition (Tables 12-3A and 12-3B). To explain the pattern, I would suggest that the bastions were all built in one hit as strategically-sited thickenings to the already (or virtually) completed wall. However, such an interpretation introduces an extra category of explanation which may not be justified on the available data, and so appears less parsimonious than the more straightforward interpretation offered in the main text.

would not seem to ascribe Tallok's masonry to Abdullah, I had previously assigned Tallok's masonry to a renovation programme following the fort's reported demolition in 1670 (LB:138). Imitation of Fort Rotterdam's masonry appeared attractive to explain why Tallok was the only Makassar fort to include masonry (Bulbeck, 1990:94).[7] However, the Makassar written forms for "batu" and "bata" differ by a single diacritic (Macknight, pers. comm.), and to confound the matter further, Tallok's walls display both bricks and masonry. Certainly it would be unwise to read the reference in ST as denying that Abdullah had built Tallok's masonry, and the works themselves indicate that masonry was a systematic part of the original construction. Moreover, the royal tombs leave no doubt that monumental masonry was locally practised before the Makassar War (Appendix F).[8]

12.2.4 Tallok's royal cemetery

"Kompleks Makam Raja-Raja Tallok" occupies the east corner of the fortress, directly inside the four bastions interpreted as marking a gateway (Figure 12-1). Nurhadi et al. (1980) observed the original wall line which would have been built around the cemetery when the Tallok aristocracy decided it was full. The outer wall is part of Suaka's restoration. Apart from a brick *kobang* tomb, all the grave structures are built with masonry in 17th to 19th century styles (Table F-1).

SSPHAP's sketch of the cemetery shows the grave styles associated with named individuals and, where I have a record, their year of death (Figure 12-4).[9] The buried people include

[7] After all, the 1693 map shows Tallok as a fortress (Figure 5-5), suggesting that it had been rebuilt by then to the degree that it had been demolished in 1670.

[8] Caldwell (Reid and Caldwell, 1990:87) reports that Tallok's 'great sea wall' of stone was built under Portuguese supervision in the early 17th century, but to my knowledge there are no first-hand written references in support. As interpreted here, Tallok's masonry may well be the oldest substantial masonry works in Makassar, but it would seem to lie well within the technical expertise acquired in greater Gowa by the early 17th century.

[9] Information on the identity of the individuals was supplied by Pak Sampara, Suaka's officer at the site. Iwan Sumantri made the original sketch of the graves.

Tallok's 17th-19th century rajas, starting with Mudhaffar (Photo 12-8) but excluding Harunnarasyid. Important Tallok aristocrats such as Kg Popok and Kg Bonto Sunggu are also buried here.[10]

Tallok's early rajas were not buried here. Kgloe ri Sero was apparently buried at Sero (7.1.1); Tunilabu ri Suriwa's remains were lost at sea (ST:7); and Tumenanga ri Makkoayang and Sultan Abdullah were buried at Benteng Tua (6.5). The burial site of Tallok's queen, Kg Bainea, appears unknown, but this hardly constitutes evidence for any burials at Tallok's royal cemetery before Mudhaffar in 1641.

12.2.5 Other historical sites within Tallok

Small numbers of antiques were reportedly recovered at two locations west of the royal graveyard (Figure 12-1). One, which occurs directly outside the west corner of the royal graveyard, was discovered around 1970. The looting came upon an impoverished range of the tradewares found at Bunting Berua (see below), in association with east-west extended skeletons. I label it Agangpencara after the name which the Dutch maps assign to this part of Tallok. The other coincides with a banana plot associated with Bayoa kampung. Bayoa could have included further locations before the adjacent complexes of factories and navy housing restricted the kampung to Sungai Tallok's bank. According to antique dealers, many

[10] LB specifies the following individuals as having been buried at Tallok in the late 17th century: I Dg Nisayu (Tumailalang Kg Lekokbodong's mother) in 1678 (LB:158); I Callak, Arung Maroanging's daughter, in 1678 (LB:158-159); Kg Bidara in 1680 (LB:163); (I Pangkak) Kg Tamalingu in 1681 (LB:164); Sahaduddin's *bibi* (aunt) in 1686 (LB:171); and Kg Lengkesek in 1695 (LB:181). The lack of a clear match between these recorded burials, and the burials remembered today, is hardly encouraging. Nonetheless the recorded burials reinforce the interpretation of Tallok's royal graveyard offered here.

Reid and Reid (1988:55), and Reid and Caldwell (1990:87), state that Mudhaffar's tomb is locally identified with the burial place of "the white tiger of Tallok", i.e. Abdullah, and then point out that Abdullah was in fact probably buried at Benteng Tua. Going from the information I received, I would infer that Mudhaffar was in fact "the white tiger of Tallok".

antiques were found during the construction of these complexes (Demmanari, pers. comm.).

The area north of the royal graveyard, as far as the small bay abutting the Tallok's mouth, today belongs to Gampangcaya kampung (Figure 12-1). Gampangcaya's Islamic cemetery includes hundreds of marked graves, some of which look like they could date back to the 18th century. The cemetery also serves the Mangara Bombang residents because they identify themselves as belonging to the same "family". Next to the cemetery is a sandy depression which used to be a tidally inundated fish pond before it filled in with sediments. It was reportedly looted in the 1950s, as evinced by looter's holes in the pasture surrounding the old fish pond. The finds were described as mainly blue-and-white wares, plus Sawankhalok covered boxes, celadons (including large plates) and a kris. East-west extended skeletons were also reported.

Still within Gampangcaya, at its boundary with Mangara Bombang, lies the heavily looted burial ground "Makam Bunting Berua" (Figure 12-1). The diggings were reportedly very successful, for instance recovering a hundred pieces in one "three metre by one metre" hole. In addition to the dominant strains of blue-and-white wares, finds included Sawankhalok (especially jarlets), celadons (but no large plates), overglaze-enamelled wares, earthenware pots as high as a metre, human skeletons extended in an east-west direction, and *duni* (wooden coffins).[11]

Apart from ten modern Islamic graves at the west, there are 37 markers whose styles appear to span the 17th to 19th centuries. The apparently oldest Islamic grave markers, labelled "west" and "central" in Table F-9, lie between the wall line and the looter's holes. The same styles occur with other styles where the graveyard crosses the Gampangcaya bastion. These graves must postdate Benteng Tallok's demolition and so can be dated to the 18th century or later. Over half of the bastion is now under sea, and some of the markers have toppled onto the beach (Photo 12-9). Three marked Islamic graves at the east fall among the styles

[11] Local reports specifically denied the presence of *duni* at the other looted burial grounds.

recorded on the bastion (Table F-9). In sum, the Islamic graves appear to represent the tail of what may have been Tallok's main cemetery in pre-Islamic times.

Mangara Bombang was the karaengship of an unsexed child of Tunipasukruk, i.e. in the late 16th century. However, the kampung is bare of burial remains except where it borders Balang Cidi, a shallow depression flooded at high tide (Figure 12-1). Makam Mangara Bombang (as I call it) includes 12 graves marked out in old-style masonry hard against the wall line, and some modern children's graves on the wall line itself (Table F-9). We noticed some looter's holes here and were told that a small group of blue-and-white ceramics, supplemented by a few Sawankhalok and celadon pieces, had been found.

The remaining land inside Benteng Tallok, between Mangara Bombang and Bayoa, is associated with "Tallok Lama" kampung. The area includes three historical sites.

The northwest bank of Balang Cidi includes a second set of old Islamic graves called "Makam Takbakka". These six masonry markers, which occur alongside approximately 50 modern marked Islamic graves (Table F-9), were reportedly moved here during the Japanese occupation. Before that they occupied a spot, near the *Batu Pelantikan*, where many antiques have been found. This *Batu Pelantikan* or royal Tallok "inauguration stone" occurs at the heart of the fortress (Figure 12-1). The stone, which appears artificially rounded, is largely overgrown by the roots of a banyan tree (Photo 12-10). It is 72 cm in diameter and 31 cm thick (Kallupa, 1985:55).

South of Balang Cidi lies an old graveyard which has reportedly been severely looted, accounting for the small number of extant Islamic marked graves. One grave which has survived has a "dollop-shaped" *nisan* (Table F-9), a style I have not seen anywhere else (Photo 12-11). The grave is ascribed to an unremembered Karaeng.

Near the suspected fortress gate stands the tomb of Karaeng Katinting (1627-1650), a son of Gowa's Sultan Alauddin (LB:90,112; SG:59). This multi-tiered slab-roofed tomb resembles the tomb at Makam Paccalaya (7.1.3), as it is collapsing under its own weight owing to the use of unbonded

masonry blocks (Photo 12-12). It is part of a cemetery which includes approximately ten old Islamic masonry grave markers (Table F-2). A wider area of around 1500 square metres has been looted (Figure 12-1), reportedly producing BW wares in abundance, as well as lots of celadons and Sawankhalok covered boxes.[12]

The tidally inundated area southwest of the fortress is called Campagaya. I have no evidence that it was ever occupied, but Campagaya is cited as the locality which pleased Tallok's prospective inhabitants (12.2.1).

The walls of Benteng Tallok enclose eight spatially discrete, reportedly looted burial grounds, five of which include a direct association with early Islamic marked graves. The quite standard range of ceramics reported throughout suggests no greater time span than the 15th to 17th centuries. The burial grounds sort out into five "toponymic sites" (Appendix C) and six "point-" or "area-sites" (12.3.2). These perspectives indicate a major population buildup in immediately pre-Islamic times.

12.2.6 Tradewares recorded at Tallok

The pottery found during Suaka's restoration of the Tallok royal graveyard was collected, and subsequently stored in the site museum. This collection, U.25.1, includes abundant earthenware sherds such as "ratchet" fragments from the "cogwheel pots" (cf. Photo 7-16). The most diagnostic part of the collection, however, consists of 925 tradeware pieces.[13] After standardisation the tradewares show a strong presence of 13th-14th century to early 17th century pieces, but with a very pronounced 16th century spike (Figure 12-5).

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[12] Hence the origins of the burial ground considerably precede Kg Katinting's death. Kg Katinting's karaengship apparently within or very near Tallok's very walls in the mid-17th century confirms other evidence that Tallok was based at Bonto Alak at this stage (12.3.2). His wife, Dg Talarra Kg Tabaringang, was of broadly Lekokbodong origins (Figure 4-12).

[13] The tradewares were identified by Karaeng Demmanari and myself under laboratory conditions (cf. B.2). In the packed action of my last days in Ujung Pandang I missed out on even toting up the number of earthenwares present in the collection.

Relatively speaking, tradewares dated later than 1650 are rare indeed.[14] This date corresponds with Mudhaffar's burial. The assemblage could represent gravegoods buried with people who had died beforehand, except that Tallok's earlier rulers were not apparently buried here (12.2.3). The "palatial" associations of the assemblage are clear not only from the sheer quantity of 16th century pieces, but also from the comparatively strong presence of large pieces such as porcellanous jars. The "early" pieces are dominated by early celadon plates rather than Vietnamese monochrome or early whiteware pieces, and so could represent inherited wealth rather than early use of the site (cf. 11.3.1). All the indications match up with a palace assemblage restricted to the period a few decades either side of the 16th century.[15] Conversion of the old palace grounds to a royal cemetery, which can be dated to Mudhaffar's burial, would follow the pattern observed at Benteng Tua.

SSPHAP's survey collected the sherds from the dried-up fish pond in Gampangcaya (U.25.3) and the small bay to the immediate west (U.25.2). The standardised chronological histogram from the tradewares looks like a flattened version of the royal graveyard's, supplemented however by a stronger presence of Qing and later pieces (Figure 12-5). U.25.2 has been looted, while the south boundary of U.25.3 is the looted cemetery "Makam Bunting Berua". Hence the assemblage in essence appears to represent the sorts of (late) 15th to early 17th century gravegoods reported from the looting.

Some of the early pieces from U.25.1 could well relate to use of the site by the 13th-14th centuries. Indeed, it seems most unlikely that the mouth of the Tallok had been totally uninhabited before the late 15th century, given its prime real-estate virtues as described in Tallok's origin story (12.2.1). However, the tradewares certainly confirm the story's description of massive immigration to the site in the late 15th century. More generally, Tallok pairs with Somba

[14] Part of Suaka's restoration was to clear squatters out of the site. This sort of temporary habitation at the site can accommodate the later tradewares.
[15] i.e. by assuming that the profile would show a steep ascent between the early and late 15th century junctures, rather than the sudden jump at 1500 AD.

Opu (11.3) in suggesting a focus of attention on river-mouth locations at around 1500 AD.

12.3 Historical Toponyms in Ujung Pandang

12.3.1 Identification of the toponyms

When the Dutch established themselves in Fort Rotterdam (Benteng Ujung Pandang) after the 1667 Bungaya Treaty, they created a new administrative focus. The lands attached to Fort Rotterdam attracted persons displaced by the warring, resulting for instance in the establishment of "Kampong Beru", while Bone's Sahaduddin installed himself at Bonto Alak a short distance from Fort Rotterdam (Andaya, 1981; Bulbeck, 1990). Over the centuries that followed a new Makassar entrepôt developed along the coast north of Fort Rotterdam, opening opportunites for the Wajok Bugis and other entrepreneurial immigrants (e.g. Noorduyn, 1987a).[16] Nonetheless the colonial city of Makassar hardly strayed beyond the Ujung Pandang cheniers until very recent times. Then in 1971, to meet the need for new housing projects and government offices in the burgeoning post-independence city, the gazetted territory of the capital was greatly expanded and renamed Ujung Pandang[17] (Kallupa, 1985:12-13).

To reconstruct what I can of the historical, precolonial settlements in the area, I have studied the early 20th century Dutch maps in search of toponyms, cited in pre-1667 contexts, which I had not identified with SSPHAP's surveyed sites.[18] However, the city's vortex of development has intensified the turnover of place names which, as we have

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[16] For quite a long time the Netherlands India government toyed with the idea of developing Makassar as a free port to rival Singapore (e.g. Reid, 1983a).

[17] i.e. "Pandanus Point". This particular name change is like deciding to expand metropolitan Sydney and so rename it "Bondi Beach".

[18] Note that I am specifically interested in the settlement patterns of the Makassar inhabitants, and so I am not interested in trying to pinpoint the former location of the various European and foreign Asian quarters, Sambung Jawa etc.

seen, is a common train of events in Makassar rural areas.[19] Accordingly I developed six criteria to help certify the identification of pre-1667 and modern toponyms.

The criteria are adumbrated in Table 12-4 which also explains my scoring system whereby "2" connotes strong supporting evidence, "1" connotes weak supporting evidence and "0" connotes contrary evidence. Table 12-4 further lists all the possible matches which I have entertained, and rates their reliability based on tallying the scores from the six criteria. However, only modern toponyms scoring 6/12 or higher are accepted as reliable identifications. These toponyms are plotted in Figure 12-5.

Figure 12-5 further types the toponyms according to whether they have associations with Tallok, Gowa, both or neither. To fill in the picture, SSPHAP's adjacent sites with either Tallok or Gowa associations are also plotted. The exercise identifies Tallok's heartland centred at Benteng Tallok, and extending along the adjacent shores and the lower Tallok. Gowa's heartland, based at Benteng Tua, incorporates the middle Garassik (Jeknekberang) and land to the north and the east. The toponyms near Balang Pampang, between the heartlands, show either Tallok or Gowa associations. The same applies to the Garassik delta, although significantly the area contains five toponyms unassociated with the political giants. The three political domains - Tallok, Gowa, and Garassik-Makassar - closely match their "Thiessian polygon" counterparts shown in Figure 2-1.

Interpenetration between the Gowa and Tallok heartlands is restricted to karaengships. The single Gowa karaengship in Tallok's heartland, Kg Ujung Tana (UJT2), was Tunijallok's son by the Tallok queen Kg Bainea. Two of the four Tallok karaengships within Gowa's heartland reflect the marriage between individuals within Gowa's and Tallok's genealogical cores.[20] Along with the burial of Tumenanga ri Makkoayang and Abdullah at Benteng Tua, and the burial of Kg Katinting at

[19] Some former names have proliferated within the city area as the communities branched out (e.g. "Parang"), others could well have moved around, while others have been overwritten by the new kampung names (e.g. "Wajo") brought by long-distance immigrants.

[20] See Chapter 4 for a discussion of genealogical cores.

TABLE 12-4. MATCHING PRE-1667 TOPONYMS TO MODERN TOPONYMS

Six criteria are used in the table to indicate the reliability of a match, and scored as follows. A score of 6/12 or better is taken as an acceptable match.

(i) Suaka site. Does the modern toponym contain a site classifiable as a SSPHAP historical site? The crucial reference here is Kallupa's (1985) survey of Kotamadya Ujung Pandang. "2" means such a site is reported, "1" means that a possibly suitable site is reported, while "0" stands for the lack of such a site. Reference will also be made to Makkullasse's (1986) survey of Maros, one of the abutting *kabupaten* most effected by Kotamadya's rezoning, and to Ibrahim's (1985) survey of Takalar as regards certain possible alternative identifications.

(ii) Sound match. Modern toponymic candidates sometimes have to be recast to equal the historical toponym. "2" means the two names are identical; "1" means their difference is trivial; and "0" means that a greater transformation is required for the names to match up.

(iii) Rarity. Chance coincidence rather than historical identity could be involved, and the probability increases with the common toponyms. "2" if the modern name is unique or rare; "1" if it occurs in only a few localities; and "0" if it is widespread.

(iv) 1693 map. Some pre-1667 toponyms can be linked to modern toponyms through the Dutch 1693 map (Figures 5-5 and 5-6). "2" if the map suggests a link; "1" if the toponym is present on the 1693 map, but in an equivocal location; "0" if I have not identified the toponym on the 1693 map.

(v) Administrative name. Old name places have sometimes stamped an area, and later resurfaced as local government names, even in cases where no particular kampung bears the name. However, non-urban *kecamatan* (and higher-level names) can be useless, both because they cover too wide an area to pinpoint any old name, and because even then they might exclude the synonymous historical site. For instance Kecamatan Somba Opu (Kabupaten Gowa) excludes Benteng Somba Opu but includes two places which became the Gowa palace after Somba Opu's fall (Benteng Tua and Sungguminasa). And Kecamatan Paknakkukang (Kotamadya) excludes Benteng Paknakkukang or any Paknakkukang-like toponym. The small *kecamatan* within Makassar's colonial hub appear immune from these problems, but in these cases the *kecamatan* name also recurs as a lower-level subdivision. Hence "2" for *kelurahan* names, "1" for *lingkungan* names, "0" for neither (Kotamadya); "2" for *desa* names, "1" for *dusun* names, "0" for neither (rural *kabupaten*).

(vi) Fit. This criterion mainly summarises locational associations, e.g. that a Tallok-related toponym can be more confidently identified with a modern place near Tallok than one further away. But other considerations also apply, e.g. whether the reported actions at the historical place would make sense in terms of a modern place's geography. "2" means good to excellent; "1" means possible or equivocal; "0" means that some other candidate seems more apt.

TABLE 12-4. MATCHING PRE-1667 TOPONYMS TO MODERN TOPONYMS (CONT.)

Historical toponym and reference	Modern toponym	Suaka site	Sound match	Rarity	1693 map	Admin. name	Fit	Score
			A. Early Tallok toponyms					
Passangaleang (ST:5)	Pattungalengang, Takalar	0	1	2	2	0	1	6/12
Passangaleang (ST:5)	Leang, Maros	0	0	2	0	0	1	3/12
Buloa *empang* (ST:7)	Buloa, U.P.	0	2	2^	0	0	2	6/12
Buloa *empang* (ST:7)	Buluk-Buluk, Jeknekponto	?	0	1^	0	?	1	2/8 (=3/12)
Buloa *empang* (ST:7)	Buluk-Buluk, Maros	0	0	1^	2	0	1	4/12
Talakapandang sawah (ST:7)	Balang Teleko Talapa + Balang Pampang (lower Tallok)	0	1	2	1 (Pampang)	0	1$	5/12
Talakapandang sawah (ST:7)	Talaka + Panjang, Jeknekponto	?	1	2	1*	?	0	4/8 (=6/12)
Talakapandang sawah (ST:7)	Takkalasi + Pandangnge, Maros	0	1	2#	1#	1#	1	6/12
Pannampu (SG:14)	Pannampu	0	2	2	0	2	2	8/12
Parangloe (SG:14)	Parangloe	0	2	0	2	1	2	7/12

^ Buloa is a rare toponym, but its hypothesised doublet Buluk-Buluk is more common.
$ The location is good but these brackish anabranches of the Tallok are not suitable for sawah.
* Panjang Lassang on the 1693 map could possibly be related to Talakapandang.
# Toponyms like Takalar or Pandang are common, but the proximity of the two (as at Maros) is rare. Takkalasi in Maros, a dusun name, would interestingly appear to correspond to Talaka as shown on the 1693 map.

N.B. I had been unable to locate Buloa (mislabelled Butoa on the Dutch maps), Passangaleaang and Talakapandang to my satisfaction, and so I cast a wide geographical net looking for other coincidences of the toponyms. I now accept the identifications nearest Tallok, but this depends less on the above exercise which in fact is indecisive, than on the archaeological support for Tallok's origin story (12.4).

TABLE 12-4. MATCHING PRE-1667 TOPONYMS TO MODERN TOPONYMS (CONT.)

Historical toponym and reference	Modern toponym	Suaka site	Sound match	Rarity	1693 map	Admin. name	Fit	Score
			B. Tallok Karaengships					
Karuwisi (SG:59; ST:21)	Karuwisi	0	2	2	2	2	2	10/12
Panaikang (ST:27; LB:91)	Panaikang	0	2	2	0	2	2	8/12
Pattingalloang (ST:9,12,20,23)	Pattingalloang	0	2	2	0	2	2	8/12
Bonto Marannu (LB:110-132 pass.)	Bonto Rannu	1^	1	1	0	2	1	6/12
Tamalakba (ST:23)	Tamalakba	0	2	2	0	0	2	6/12
Langkanaya (ST:8)	Lakkang	0	0	2	0	2	2	6/12
Lembaya (ST:20)	Lembo	0	1	2	0	1	2	6/12
			C. Tallok Daengs					
Paotereka (ST:19,24)	Paotere	0	1	2	0	1	2	6/12
Kalling (ST:26; LB:91)	Rapo Kalling	0	0	2	0	2	2	6/12
			D. Gowa Karaengships					
Lempangang# (ST:27; SG:58)	Lembangang	0	1	2	0	1	2	6/12
Mangallik (LB:117)	Mangalliki, Gowa	0	2	2	0	0	2	6/12
Bonto Matekne (SG:68)	Bonto Matekne	0	2	2	0	0	1	5/12

^ The site is called Kompleks Makam Karaeng Bonto Marannu, which confirms the assocation with the Bonto Marannu karaengship more strongly than the name Bonto Rannu would imply. Kallupa (1985:162) noted the site but did not record it, although it has been given a Suaka site number (No. 11).

Treated as a Gowa Karaengship as Kg Lempangang was a Gowa princess, but note she married a Tallok sultan.

TABLE 12-4. MATCHING PRE-1667 TOPONYMS TO MODERN TOPONYMS (CONT.)

Historical toponym and reference	Modern toponym	Suaka site	Sound match	Rarity	1693 map	Admin. name	Fit	Score
			E. Gowa Daengs					
Rappocinik (SG:20,43-44)	Rappo Cinik	2	2	2	0	2	2	10/12
Kapette (SG:32; LB:105)	Bonto Kapette	0	1	2	0	1	2	6/12
			F. Gowa Gelarang areas					
Sudiang (Mukhlis, 1975:62; SG:20)	Sudiang	1*	2	2	0	2	2	9/12
Pampang (Mukhlis, 1975:61)	Pampang	0	2	2	2	0	2	8/12
Batua (Mukhlis, 1975:61)	Batua	0	2	1	2	0	2	7/12
Cambaya& (Mukhlis, 1975:62)	Cambaya	0	2	1	0	2	2	7/12
Tamamangung (Mukhlis, 1975:62; SG:20)	Tamamao	0	1	2	0	1	2	6/12
Kalli (Mukhlis, 1975:61)	Rapo Kalling	0	0	2	0	2	0^	4/12
Parang-Parang (Mukhlis, 1975:61)	Parang	0	1	0	0	0	0$	1/12

* No site specifically called Sudiang, but several major historical sites occur within Sudiang (Kallupa, 1985:125-127).
^ Kale of "Kale Gowa" seems a more parsimonious identification.
& Mukhlis cites "Camba" but the recorded death of Gelarang Cambaya in 1639 (LB:100), nine days after the death of Alauddin during whose reign alone "Camba" belonged to the *Bate Salapang* (Mukhlis, 1975:61-62), makes it clear that Cambaya was involved.
$ On the grounds of parsimony I prefer Pandang-Pandang near Benteng Tua, otherwise the numerous occurrences of "Parang" along the Jeknekberang (Jeknek Parang).

TABLE 12-4. MATCHING PRE-1667 TOPONYMS TO MODERN TOPONYMS (CONT.)

Historical toponym and reference	Modern toponym	Suaka site	Sound match	Rarity	1693 map	Admin. name	Fit	Score
Table 12-4. Matching pre-1667 Toponyms to Modern Toponyms (Cont.)								
			G. Forts and Palaces					
Benteng Ujung Pandang (ST:16; Andaya, 1981:306)	Ujung Pandang	2	2	2	2^	2	2	12/12
Bonto Alak (ST:24)	Bonto Alak	2	2	1	2	2	2	11/12
Benteng Mariso (Andaya, 1981:306)	Mariso	0	2	2	2	2	2	10/12
Ujung Tana (ST:16; Bulbeck, 1990:96)	Ujung Tana	0	2	2	0	2	2	8/12
			H. Non-designated Toponyms					
Kaluku Bodoa (SG:15)	Kaluku Bodoa	0$	2	1	2	2	2	9/12
Jongaya (LB:127)	Jongaya	0	2	2	0	2	1	7/12
Balang Beru (LB:121,142)	Balang Beru	2	2	2	0	0	1	7/12
Tabaringang (LB:90,137)	Tabaringang	0	2	1	0	2	1*	6/12
Bonto Tangnga (LB:151,152,179,183)	Bonto Tangnga	1	2	0	1	1	1	6/12
Maroanging (SG:62)	Maroanging	0	2	1	0	1	2	6/12
Sanrangang (Andaya, 1981:59)	Sangarrang	0	1	2	2	0	1	6/12
Bonto Kamase (LB:114)	Bonto Kamase	0	2	1	0	0	1	4/12
Lotengang (SG:45)	Lentengang	0	1	2	0	0	1	4/12

^ i.e. Fort Rotterdam.
$ However, Kaluku Bodoa is known as one of the main antique-bearing locations in colonial Makassar city.
* The burial of Kg Tabaringang's husband Kg Katinting near modern Tabaringang to some degree supports the identification of her Karaengship with that modern Tabaringang.

TABLE 12-5. TALLOK-UJUNG PANDANG INTERSITE DISTANCES IN METRES - WALL IGNORED

Tallok Utara	T	B	B	M	T	M	B	K	P	L	T	P	P	T	U	B	U	M	M	M	R	C	K	P	L	L	P	T
Bayoa	270																											
Batu Pelantikan	285	120																										
Makam Mangara Bombang	500	455	330																									
Tallok Lama	635	435	355	230																								
Makam Kg Katinting	670	515	480	400	140																							
Buloa	1280	1160	1060	895	760	570																						
Kaluku Bodoa	1720	1570	1500	1365	1230	1010	490																					
Pannampu	2630	2600	2480	2170	2130	2030	1510	1400																				
Lembo	2690	2650	2520	2230	2170	2060	1520	1350	180																			
Tabaringang	3140	3140	3010	2670	2660	2580	2080	1970	570	650																		
Pattingalloang	3330	3330	3200	2860	2840	2770	2280	2170	770	835	200																	
Paotere	3120	3120	3010	2650	2650	2590	2130	2060	670	780	210	245																
Tamalakba	2830	2850	2710	2360	2360	2300	1840	1805	460	620	370	510	300															
Ujung Tana	3650	3680	3540	3190	3190	3150	2600	2550	1170	1270	630	480	400	760														
Bonto Alak	3700	3590	3490	3250	3170	3010	2430	2055	1370	1200	1340	1420	1570	1630	1750													
Ujung Pandang	5340	5280	5170	4890	4830	4700	4130	3820	2740	2660	2340	2220	2450	2700	2170	1810												
Makam Kg Tompok Balang	3830	3710	3620	3410	3310	3130	2560	2160	1570	1410	1480	1640	1790	1850	1980	240	1810											
Makam Ibu Syech Yusuf	1690	1550	1520	1535	1370	1110	820	520	1890	1810	2455	2650	2560	2320	3100	4100	2260	2400										
Makam Datuk ri Bandang	2100	1790	1790	1830	1635	1400	1110	790	2080	2010	2620	2820	2750	2520	3290	2330	4170	2370	300									
Rapo Kalling	2520	2310	2320	2370	2190	1910	1630	1230	2350	2210	2860	3040	3010	2820	3500	2310	4100	2260	830	530								
Cambaya	3030	2820	2820	2850	2690	2440	2090	1660	2570	2520	3030	3180	3200	3040	3640	2240	3950	2160	1325	1040	515							
Karuwisi	3310	3120	3100	3130	2980	2730	2375	1930	2750	2630	3260	3320	3350	3215	3770	2280	3920	2170	1610	1320	800	275						
Pampang	3410	3200	3220	3300	3130	2890	2620	2210	3200	3040	3640	3810	3820	3670	4250	2800	4430	2690	1810	1500	990	615	510					
Lembangang	3570	3410	3450	3590	3420	3180	2955	2590	3630	3485	4090	4250	4270	4090	4710	3240	4860	3130	2130	1840	1350	1060	960	450				
Lakkang	2980	3000	3120	3440	3350	3210	3430	3370	4770	4680	5320	5520	5450	5180	5970	5000	6780	4980	2860	2720	2680	2800	3000	2610	2390			
Parangloe	2820	3180	3310	3500	3680	3750	4290	4610	5790	5820	6320	6510	6320	6010	6870	6660	8380	6750	4260	4450	4700	5220	5480	5260	5220	3180		
Tamamao	4850	4650	4670	4720	4550	4310	3960	3490	4130	3940	4430	4555	4640	4560	4970	3260	4450	3060	3180	2900	2370	1860	1580	1480	1450	3770	6660	
Panaikang	4520	4390	4460	4630	4470	4240	4080	3720	4770	4620	5210	5380	5400	5240	5825	4280	5775	4145	3250	2950	2495	2190	2045	1570	1150	2530	5670	1570
Batua	6120	6000	6040	6190	6020	5770	5550	5130	5980	5800	6330	6470	6530	6430	6880	5200	6335	5000	4720	4415	3910	3500	3250	2920	2595	4090	7250	1940
Rappocinik	5770	5570	5520	5450	5310	5080	4580	4090	4080	3900	4160	4200	4360	4415	4500	2810	3210	2570	4010	3800	3365	2880	2630	2890	3090	5460	8090	1865
Mariso	7210	6990	7000	6830	6710	6500	5860	5500	4980	4810	4780	4740	4955	5230	4820	3640	2800	3440	5590	5460	5140	4735	4540	4900	5175	7500	9930	4030
Bonto Tangnga	8940	8760	8680	8615	8490	8250	7740	7250	7050	6880	6980	6970	7185	7290	7160	5700	5230	5470	7170	6980	6410	6020	5760	5030	6105	8320	11260	4590
Jongaya	8420	8215	8160	8010	7930	7720	7190	6700	6400	6235	6300	6290	6495	6630	6440	5060	4490	4830	6680	6490	6065	5590	5350	5570	5720	8070	10970	4310

Table 12-5. Intersite Distances in Metres - Wall Ignored (Cont.)

	T	B	B	M	T	M	B	K	P	L	T	P	P	T	U	B	U	M	M	M	R	C	K	P	L	L	P	T
Balang Beru	9230	9080	9000	8810	8780	8530	8020	7510	7180	7010	7070	7030	7250	7395	7170	5820	5130	5600	7500	7320	6900	6430	6190	6400	6550	8880	11660	5120
Bonto Rannu	8030	7890	7820	7650	7510	7320	6780	6330	5790	5650	5600	5650	5780	5960	5660	4470	3560	4270	6410	6250	5890	5480	5270	5590	5810	8160	10670	4580
Bonto Kapette	8060	7920	7940	7390	7750	7500	7050	6540	6670	6480	6720	6770	6940	6990	7050	5270	5480	5150	6360	6120	5620	5190	4830	4870	4870	7070	10270	3400
Bontomanaik 2	8900	8670	8670	8670	8500	8240	7840	7360	7580	7390	7720	7730	7900	7920	8000	6310	6490	6090	7130	6870	6350	5830	5550	5520	5420	7530	10625	4040
Antang	7700	7620	7700	7935	7770	7570	7460	7150	8170	8050	8630	8790	8740	8680	9230	7590	8860	7430	6680	6380	5940	5640	5460	5020	4590	4940	7910	4910

	P	B	R	M	B	J	B	B	B	B
Panaikang										
Batua	1635									
Rappocinik	3440	3390								
Mariso	5600	5390	2190							
Bonto Tangnga	5975	5090	3160	2470						
Jongaya	5810	5125	2710	1700	780					
Balang Beru	6590	5820	3550	2340	790	840				
Bonto Rannu	6130	5750	2750	840	1930	1190	1600			
Bonto Kapette	4580	3530	2580	3130	1650	1630	2420	3000		
Bontomanaik	4890	3640	3530	4120	2240	2540	3020	3900	1005	
Antang	3450	2430	5910	7750	7320	6530	7890	8110	5300	4925

N.B. "Balang Telepo Talapa-Balang Pampang", which I identify with an early Tallok toponym (Table 12-4A), is not considered in this analysis for two reasons. Firstly, if the identification is indeed correct then it refers to an area where sawah was established, i.e. agricultural land, and so would be conceptually distinct from SSPHAP's sites. Secondly, "Pampang" (on Balang Pampang) is already included as a cited Gowa *Gelarang* district.

However, I include "Buloa" even though the reference cites its fish ponds, i.e. its status as productive land. My reason is that there is indeed a Buloa kampung. This settlement would date back to at least the 17th century given that the very person whom ST (p.6) acknowledges as the reliable source on Tallok's origin story was I Kare Bajik Dg ri Buloa.

Figure 12-6A main clustering events. TBBMTM joins BKMMR at 1570m; CKPL joins TP at 1666m; PLTPPTU joins BMU at 1871m; BJB joins MB at 1872m (BJB is 2250m from BB); CKPLTP joins Batua at 2640m (Batua is only 2430m from Antang, but Antang had joined BKD at 1307m [cf. Table 6-3]); TBBMTMBKMMR joins PLTPPTUBMU at 2852m; BJBMB joins Rappocinik at 2866m (BJBMB is only 2765m from BB, but BB had joined eastwards [Table 6-4]; CKPLTPB joins Lakkang at 2920m; CKPLTPBL joins TBBMTMBKMMRPLTPPTUBMU at 3765m. (BJBMBR probably would join southwards, at 4746m).

TABLE 12-6. TALLOK-UJUNG PANDANG INTERSITE DISTANCES IN METRES - SURVEYED WALL INCLUDED

	B	B	K	P	L	T	P	P	T	U	B	U	M	M	M	R	C	K	P	L	L	P	T	P	B	R	M	B	J	B	B	B	B
Benteng Tallok																																	
Buloa	560																																
Kaluku Bodoa	1010	490																															
Pannampu	1890	1510	1400																														
Lembo	1925	1520	1350	180																													
Tabaringang	2390	2080	1970	570	650																												
Pattingalloang	2470	2280	2170	770	835	200																											
Paotere	2370	2130	2060	670	780	210	245																										
Tamalakba	2090	1840	1805	460	620	370	510	300																									
Ujung Tana	2910	2600	2550	1170	1270	630	480	400	760																								
Bonto Alak	2965	2430	2055	1370	1200	1340	1420	1570	1630	1750																							
Ujung Pandang	4600	4130	3820	2740	2660	2340	2220	2450	2700	2170	1810																						
Makam Kg Tompok Balang	3090	2560	2160	1570	1410	1480	1640	1790	1850	1980	240	1810																					
Makam Ibu Syech Yusuf	1110	820	520	1890	1810	2455	2650	2560	2320	3100	4100	2260	2400																				
Makam Datuk ri Bandang	1380	1110	790	2080	2010	2620	2820	2750	2520	3290	2330	4170	2370	300																			
Rapo Kalling	1900	1630	1230	2350	2210	2860	3040	3010	2820	3500	2310	4100	2260	830	530																		
Cambaya	2400	2090	1660	2570	2520	3030	3180	3200	3040	3640	2240	3950	2160	1325	1040	515																	
Karuwisi	2690	2375	1930	2750	2630	3260	3320	3350	3215	3770	2280	3920	2170	1610	1320	800	275																
Pampang	2820	2620	2210	3200	3040	3640	3810	3820	3670	4250	2800	4430	2690	1810	1500	990	615	510															
Lembangang	3090	2955	2590	3630	3485	4090	4250	4270	4090	4710	3240	4860	3130	2130	1840	1350	1060	960	450														
Lakkang	2800	3430	3370	4770	4680	5320	5520	5450	5180	5970	5000	6780	4980	2860	2720	2680	2800	3000	2610	2390													
Parangloe	2610	4290	4610	5790	5820	6320	6510	6320	6010	6870	6660	8380	6750	4260	4450	4700	5220	5480	5260	5220	3180												
Tamamao	4280	3960	3490	4130	3940	4430	4555	4640	4560	4970	3260	4450	3060	3180	2900	2370	1860	1580	1480	1450	3770	6660											
Panaikang	4140	4080	3720	4770	4620	5210	5380	5400	5240	5825	4280	5775	4145	3250	2950	2495	2190	2045	1570	1150	2530	5670	1570										
Batua	5700	5550	5130	5980	5800	6330	6470	6530	6430	6880	5200	6335	5000	4720	4415	3910	3500	3250	2920	2595	4090	7250	1940	1635									
Rappocinik	5010	4580	4090	4080	3900	4160	4200	4360	4415	4500	2810	3210	2570	4010	3800	3365	2880	2630	2890	3090	5460	8090	1865	3440	3390								
Mariso	6500	5860	5500	4980	4810	4780	4740	4955	5230	4820	3640	2800	3440	5590	5460	5140	4735	4540	4900	5175	7500	9930	4030	5600	5390	2190							
Bonto Tangnga	8230	7740	7250	7050	6880	6980	6970	7185	7290	7160	5700	5230	5470	7170	6980	6410	6020	5760	5030	6105	8320	11260	4590	5975	5090	3160	2470						
Jongaya	7700	7190	6700	6400	6235	6300	6290	6495	6630	6440	5060	4490	4830	6680	6490	6065	5590	5350	5570	5720	8070	10970	4310	5810	5125	2710	1700	780					
Balang Beru	8530	8020	7510	7180	7010	7070	7030	7250	7395	7170	5820	5130	5600	7500	7320	6900	6430	6190	6400	6550	8880	11660	5120	6590	5820	3550	2340	790	840				
Bonto Rannu	7320	6780	6330	5790	5650	5600	5650	5780	5960	5660	4470	3560	4270	6410	6250	5890	5480	5270	5590	5810	8160	10670	4580	6130	5750	2750	840	1930	1190	1600			
Bonto Kapette	7470	7050	6540	6670	6480	6720	6770	6940	6990	7050	5270	5480	5150	6360	6120	5620	5190	4830	4870	4870	7070	10270	3400	4580	3530	2580	3130	1650	1630	2420	3000		
Bontomanaik	8210	7840	7360	7580	7390	7720	7730	7900	7920	8000	6310	6490	6090	7130	6870	6350	5830	5550	5520	5420	7530	10625	4040	4890	3640	3530	4120	2240	2540	3020	3900	1005	
Antang	7490	7460	7150	8170	8050	8630	8790	8740	8680	9230	7590	8860	7430	6680	6380	5940	5640	5460	5020	4590	4940	7910	4910	3450	2430	5910	7750	7320	6530	7890	8110	5300	4925

Main clustering events (Figure 12-6B). BBK joins MMR at 1167m (so making BBKMMR); CKPL joins TP at 1666m; PLTPPTU joins BMU at 1871m; BJB joins MB at 1872m (BJB is 2250m from B(2)B); CKPLTP joins BBKMMR at 2403m; BJBMB joins Rappocinik at 2866m (BJBMB is only 2765m from BB, but BB had joined eastwards [Table 6-3]); CKPLTPBBKMMR joins Lakkang at 2914m; CKPLTPBBKMMRL joins PLTPPTUBMU at 3337m. (Batua is 4764m from CKPLTPBBKMMRLPLTPPTUBMU, and 5094m from BJBMBR, so could join BKDA depending on how BKDA joins. BJBMBR would probably join southwards, at 4669m.)

TABLE 12-7. INTERSITE DISTANCES IN METRES - SURVEYED AND INFERRED WALL INCLUDED

	B	B	K	P	L	T	P	P	T	U-M	B	M	M	M	R	C	K	P	L	L	P	T	P	B	R	B	J	B	B	B	B
Benteng Tallok																															
Buloa	560																														
Kaluku Bodoa	1010	490																													
Pannampu	1890	1510	1400																												
Lembo	1925	1520	1350	180																											
Tabaringang	2390	2080	1970	570	650																										
Pattingalloang	2470	2280	2170	770	835	200																									
Paotere	2370	2130	2060	670	780	210	245																								
Tamalakba	2090	1840	1805	460	620	370	510	300																							
Ujung Tana-Mariso wall	2910	2600	2550	1170	1270	630	480	400	760																						
Bonto Alak	2965	2430	2055	1370	1200	1340	1420	1570	1630	1370																					
Makam Kg Tompok Balang	3090	2560	2160	1570	1410	1480	1640	1790	1850	1500	240																				
Makam Ibu Syech Yusuf	1110	820	520	1890	1810	2455	2650	2560	2320	3100	4100	2400																			
Makam Datuk ri Bandang	1380	1110	790	2080	2010	2620	2820	2750	2520	3290	2330	2370	300																		
Rapo Kalling	1900	1630	1230	2350	2210	2860	3040	3010	2820	3500	2310	2260	830	530																	
Cambaya	2400	2090	1660	2570	2520	3030	3180	3200	3040	3620	2240	2160	1325	1040	515																
Karuwisi	2690	2375	1930	2750	2630	3260	3320	3350	3215	3680	2280	2170	1610	1320	800	275															
Pampang	2820	2620	2210	3200	3040	3640	3810	3820	3670	4160	2800	2690	1810	1500	990	615	510														
Lembangang	3090	2955	2590	3630	3485	4090	4250	4270	4090	4630	3240	3130	2130	1840	1350	1060	960	450													
Lakkang	2800	3430	3370	4770	4680	5320	5520	5450	5180	5970	5000	4980	2860	2720	2680	2800	3000	2610	2390												
Parangloe	2610	4290	4610	5790	5820	6320	6510	6320	6010	6870	6660	6750	4260	4450	4700	5220	5480	5260	5220	3180											
Tamamao	4280	3960	3490	4130	3940	4430	4555	4640	4560	3650	3260	3060	3180	2900	2370	1860	1580	1480	1450	3770	6660										
Panaikang	4140	4080	3720	4770	4620	5210	5380	5400	5240	5260	4280	4145	3250	2950	2495	2190	2045	1570	1150	2530	5670	1570									
Batua	5700	5550	5130	5980	5800	6330	6470	6530	6430	5300	5200	5000	4720	4415	3910	3500	3250	2920	2595	4090	7250	1940	1635								
Rappocinik	5010	4580	4090	4080	3900	4160	4200	4360	4415	1910	2810	2570	4010	3800	3365	2880	2630	2890	3090	5460	8090	1865	3440	3390							
Bonto Tangnga	8230	7740	7250	7050	6880	6980	6970	7185	7290	2470	5700	5470	7170	6980	6410	6020	5760	5030	6105	8320	11260	4590	5975	5090	2470						
Jongaya	7700	7190	6700	6400	6235	6300	6290	6495	6630	1700	5060	4830	6680	6490	6065	5590	5350	5570	5720	8070	10970	4310	5810	5125	2710	780					
Balang Beru	8530	8020	7510	7180	7010	7070	7030	7250	7395	2340	5820	5600	7500	7320	6900	6430	6190	6400	6550	8880	11660	5120	6590	5820	3550	790	840				
Bonto Rannu	7320	6780	6330	5790	5650	5600	5650	5780	5960	840	4470	4270	6410	6250	5890	5480	5270	5590	5810	8160	10670	4580	6130	5750	2750	1930	1190	1600			
Bonto Kapette	7470	7050	6540	6670	6480	6720	6770	6940	6990	3130	5270	5150	6360	6120	5620	5190	4830	4870	4870	7070	10270	3400	4580	3530	2580	1650	1630	2420	3000		
Bontomanaik	8210	7840	7360	7580	7390	7720	7730	7900	7920	4120	6310	6090	7130	6870	6350	5830	5550	5520	5420	7530	10625	4040	4890	3640	3530	2240	2540	3020	3900	1005	
Antang	7490	7460	7150	8170	8050	8630	8790	8740	8680	7750	7590	7430	6680	6380	5940	5640	5460	5020	4590	4940	7910	4910	3450	2430	5910	7320	6530	7890	8110	5300	4925

N.B. Ujung Tana, Ujung Pandang and Mariso become one site with the Ujung Tana-Mariso wall.

Main clustering events (Figure 12-6C). PLTPP joins U-M at 785m (so making PLTPPU-M); BBK joins MMR at 1167m (so making BBKMMR); CKPL joins TP at 1666m; BJB joins B at 1573m (BJB is 2250m from B(2)B); PLTPPU-M joins BBKMMR at 2356m; CKPLTP joins Batua at 2640m; CKPLTPB joins Rappocinik at 2884m (Rappocinik is 3043m from BJBB and 3055m from BB); CKPLTPBR joins Lakkang at 3238m; CKPLTPBRL joins PLTPPU-MBBKMMR at 3625m. BJBB is only 2250m from BB but BB had joined eastwards (Table 6-3); affinities of BJBB unclear.

Benteng Tallok, these points reflect the wedded destiny of the two kingdoms. Nonetheless Gowa and Tallok guarded their geopolitical cores, generally speaking, as closely as they guarded their genealogical cores.

12.3.2 Settlement pattern analysis

In addition to the historical toponyms, I also include some venerated early Islamic burial sites described by Kallupa (1985) which are not associated with any specific toponym I had been looking for. Whether or not my efforts successfully simulate an archaeological survey, any patterns which the toponyms and Suaka sites might indicate should be shown formally. Hence I adopt the procedures used in the other site-clustering analyses, in particular those used for Makassar (11.2). This entails the recognition of three types of site, namely burial and settlement sites (specifically affecting the sites inside Benteng Tallok), surveyed wall (Tallok's walls), and inferr former wall (the coastal wall between Ujung Tana and Mariso suggested by Bulbeck [1990]). Hence three tables of intersite distances are given (Tables 12-5 to 12-7), producing three variant configurations of site clusters (Figure 12-6).[21]

Despite minor differences, all configurations identify a "Bonto Alak supercluster" stretching from Benteng Tallok southwards, but not as far as the "Mangallekana cluster" whose affinities probably lie southwards with the "Garassik supercluster".[22] The "Bonto Alak supercluster" occasionally

[21] Here it is unnecessary to ponder the effects of river channel crossings, for we have already seen that the sites do not cross the reconstructed north channel of the Garassik under any circumstances (11.2), and similarly Parangloe always fails to join with the sites south of the Tallok. Note that Mariso is identified only as a coastal fort, but by analogy with the other coastal forts I assume that a Makassar community lived in association. The historical toponyms are treated as point-sites with the point located at the main kampung's main Islamic cemetery shown on the Dutch maps, otherwise in the centre of the kampung if no cemetery is depicted.

[22] I have not measured all the distances between sites in the Mangallekana and Benteng Tua clusters, so I cannot prove that the Mangallekana cluster would join southwards rather than eastwards. Given also other uncertainties (e.g. would the BKDA group or the Anak Gowa cluster join the Benteng Tua

or regularly includes some toponyms along the fringe of Gowa's heartland (Rappocinik, Tamamao and Batua), but in essence corresponds to Tallok's heartland south of Sungai Tallok (cf. Figure 12-5).

I prefer Bonto Alak rather than Tallok as the label for the supercluster because I believe it matches Tallok only at the height of its power, during the period when Kg Kanjilo (Sultan Abdullah) and Kg Pattingalloang (Sultan Mahmud) were regents. Abdullah's decision in 1620 to move to Bonto Alak and retain the regency, while handing over the Tallok throne to Mudhaffar (cf. ST:24), reflects the impracticality of Benteng Tallok as the centre from which to administer Makassar entrepôt. Abdullah's construction of a coastal wall from Ujung Tana to Paknakkukang in 1634 (Table 11-1) marked and protected the area then administered from Bonto Alak.

The continuing importance of Bonto Alak is clear from several references - the construction of its mosque in 1635, the first public observation of Friday prayers here in 1648, and the construction of its "carved house" (*ballak niukirika*) in 1652 (LB:96,110,114). These dates take us to Mahmud's death (1654), suggesting that he also exercised his regency from Bonto Alak. Bonto Alak was of course a more suitable location than Benteng Tallok for Mahmud to receive his frequent European visitors (cf. Reid, 1981). Even after Mahmud's death, during Hasanuddin's reign, Bonto Alak apparently retained its importance as a "half-way house" for aristocratic immigrants to Makassar, and as the administrative centre for the attached arable lands (Mukhlis, 1975:57-58).[23]

The "Tallok cluster" includes two sacred Islamic cemeteries. One is associated with Datuk ri Bandang, the man locally credited with bringing Islam to the Makassar people (Kallupa, 1985:58-62). The other is associated with Syech Yusuf's mother (Kallupa, 1985:63-65). These cemeteries cap

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cluster?) it is wisest to leave the Mangallekana cluster on its own.

[23] Sahaduddin's move to Bonto Alak, after the Dutch occupied Ujung Pandang (Fort Rotterdam), becomes particularly significant in the light of Bonto Alak's earlier history as a centre for administering Makassar.

the crescendo of evidence that the Islamisation of the Makassar people was inaugurated at Benteng Tallok.[24]

I have not been able to pinpoint Mangallekana, which appears to be a lost toponym, but the 1693 map (Figure 5-5) clearly places it in the area of my "Mangallekana cluster". Mangallekana was the *Daeng* title of Gowa's harbourmaster during Tunipalangga's reign (3.5.2), and sited the first Malay mosque built in Makassar during Tunijallok's reign (SG:50). Between 1684 and 1694 Mangallekana served as Abdul Jalil's palace and royal mosque (LB:169,176,180).[25] At these junctures Mangallekana area clearly fell under Gowa's jurisdiction, but it probably fell under Tallok's partial or total jurisdiction during much of the 17th century.

12.4 The Origins of Tallok

The passages on Tallok's origins (translated in 12.2.1), and my preferred identification of the associated sites and toponyms, leads to the schematic representation shown in Figure 12-7. Batara Gowa appears to have been hemmed in by a still-independent Garassik to the west, some sort of polity (Tarung?) at the mouth of the Tallok to the north, and the *Gelarang* owning allegiance to Kgloe ri Sero at the east (Figure 12-7A). Hence the dispute between the two brothers takes on the aspect of a dramatic expansion by Batara Gowa

[24] For instance that it was Tallok's ruler (subsequently called Sultan Abdullah) who decided to choose Islam rather than Christianity (e.g. Gervaise, 1688); that the first public Friday prayers occurred at Tallok in 1607 (LB:109); and that Syech Yusuf himself had Tallok origins (6.5.6). Further, Pelras (1985:109) interprets the second point to show that Tallok's mosque had been built by 1607, which could be correct; certainly, the available references discredit the popular notion that Katangka mosque, at Benteng Tua, was the first Makassar mosque (6.5.5).

[25] Kallupa (1985:157-148) describes a low "fortress wall" around Kompleks Makam Balang Beru, i.e. a site associated with one of my "Mangallekana cluster" toponyms. He gives a brick measurement (30 X 20 X 5.5cm) which would scrape in as a particularly large representative of the Gowa fortification "smaller" bricks (E.1.3). This structure might be associated with Abdul Jalil's Mangallekana palace. Interestingly Jongaya, one of the toponyms in the cluster, later served as Gowa's palace over some period between the 19th and 20th centuries (Kallupa, 1985:150-151).

eastwards, gobbling up Kgloe ri Sero's former *Gelarang* in the process (Figure 12-7B).[26]

As the story has it, Kgloe ri Sero initially fled to "Java" before returning to settle at a location somewhere on the lower Tallok. The story implies that he was unfamiliar with the Tallok mouth, so presumably he fled along the Sungai Garassik and also returned to Gowa before moving to the Tallok.[27] After one of his *Gelarang* discovered the value of the Tallok mouth, the Sero faction moved there *en masse* and overpowered the locals. The newly inaugurated kingdom of Tallok maintained its control of the lower Tallok, and extended its control over the adjacent coastline, as indicated by the location of the three *Gelarang* Moncongloe, Pannampu and Parangloe (Figure 12-7B).

However, a second hypothesis on Tallok's origins is suggested by two points (Figure 12-8). All the toponyms associated with Kgloe ri Sero's movement have equal or better matches on the south coast than along the Tallok. And the story frequently refers to Kgloe ri Sero simply as "Karaengloe", which evokes the Polombangkeng "Karaengloe", and the mountain called Batu Karaengloe. The south coast also contains passable matching toponyms for Buloa and Talakapandang, where Tunilabu ri Suriwa made fish ponds and wet rice fields respectively. In this interpretation, a succession dispute in Gowa has been rolled up with a dimly remembered tradition of Tallok's origins from the south coast, to legitimise Tallok's status as Gowa's "younger brother" (cf. Vansina, 1985:23-24).

However, having found better matches for Buloa and Talakapandang on Benteng Tallok's doorstep (Figure 12-5), and passable matches along the Tallok for the other toponyms,[28] I

[26] Saumata, associated with a site at least as large as Sero, stands against the tide of the shifted allegiances. This prompts the speculation that Saumata may have initially seen an opportunity to claim Sero after Kgloe ri Sero's flight.
[27] It might be simpler to suggest that Kgloe ri Sero did not go to "Java" at precisely this juncture.
[28] "Tarung" remains unidentified, presumably a lost toponym (as is also Pasik, a recurring Tallok karaengship). Note also that "Bangkala" occurs as a kampung name directly south of Leang, although I still prefer to identify "Bangkala" with a site that had demonstrably come into existence by the 15th century.

think that the scenario in Figure 12-7 should be accepted as more parsimonious. Most importantly, the tradeware profile of Sero-Tombolok shows a pronounced drop corresponding to c.1500 AD (Figure 7-4), corresponding to the even more pronounced jump in Tallok's tradeware profile (Figure 12-5). Within the limits of archaeological site survey, more convincing evidence of a major population relocation from Sero-Tombolok to Tallok would be hard to imagine.

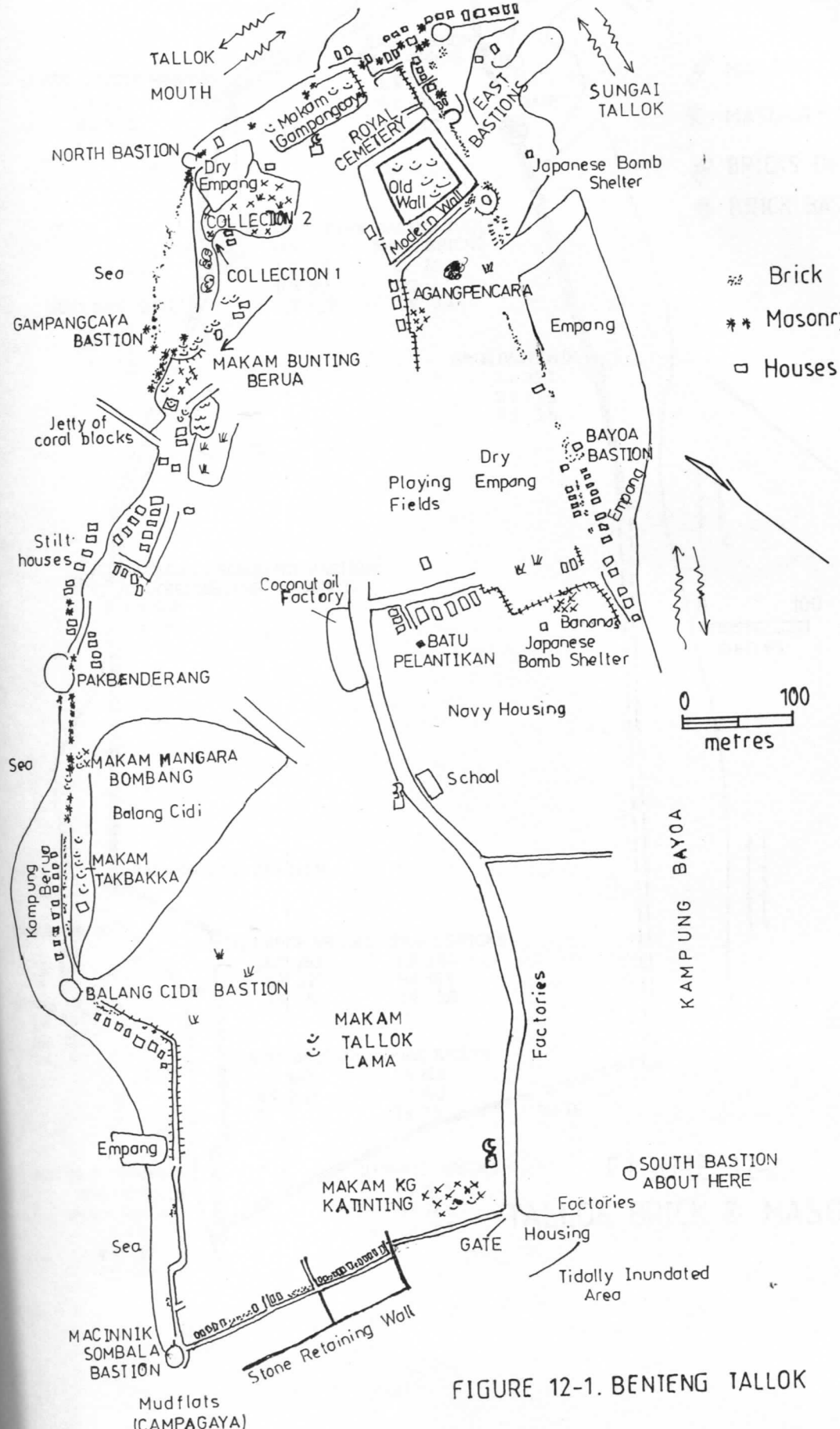


FIGURE 12-1. BENTENG TALLOK

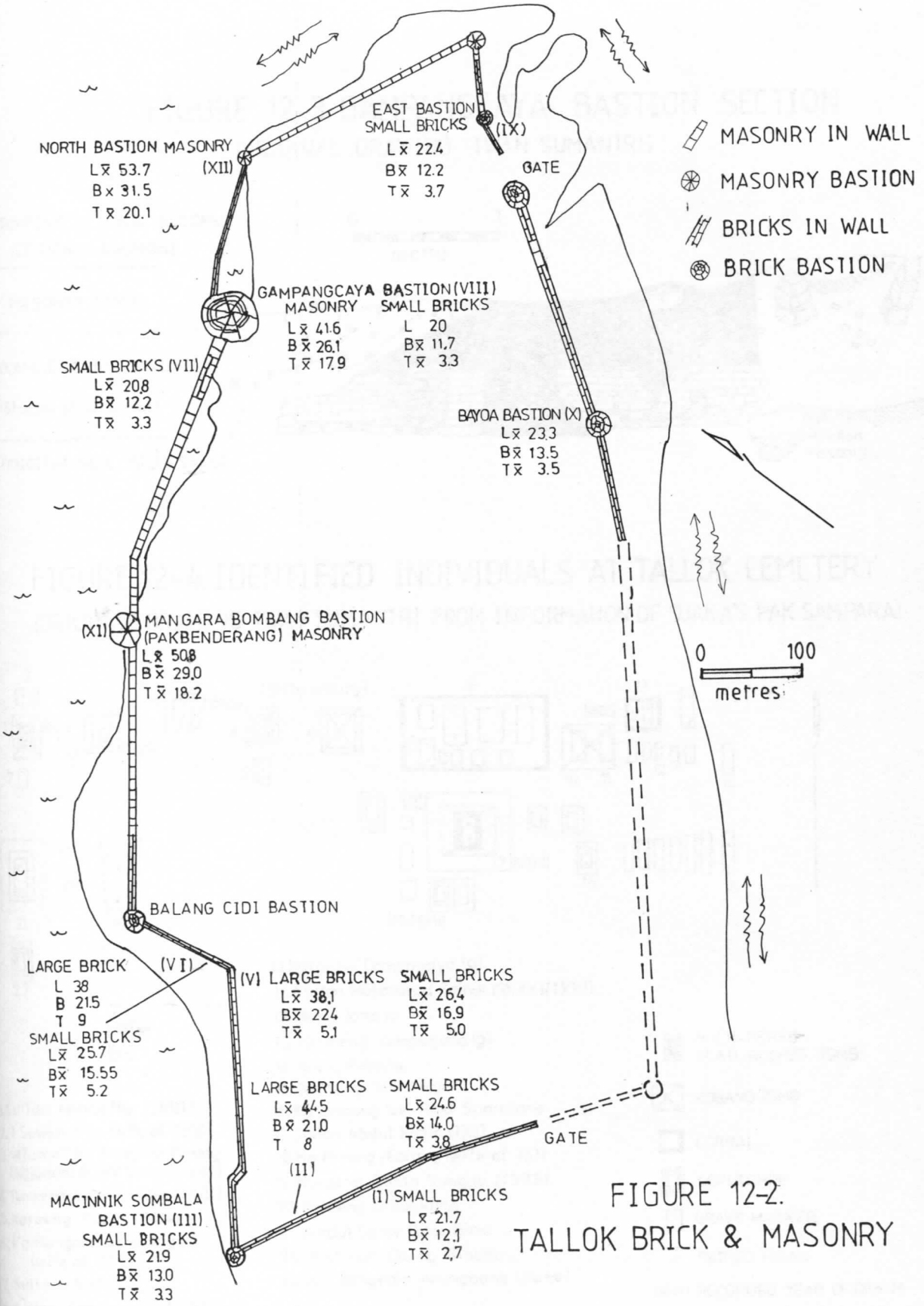


FIGURE 12-2.
TALLOK BRICK & MASONRY

FIGURE 12-3. GAMPANGCAYA BASTION SECTION

(ORIGINAL DRAWING IWAN SUMANTRI)

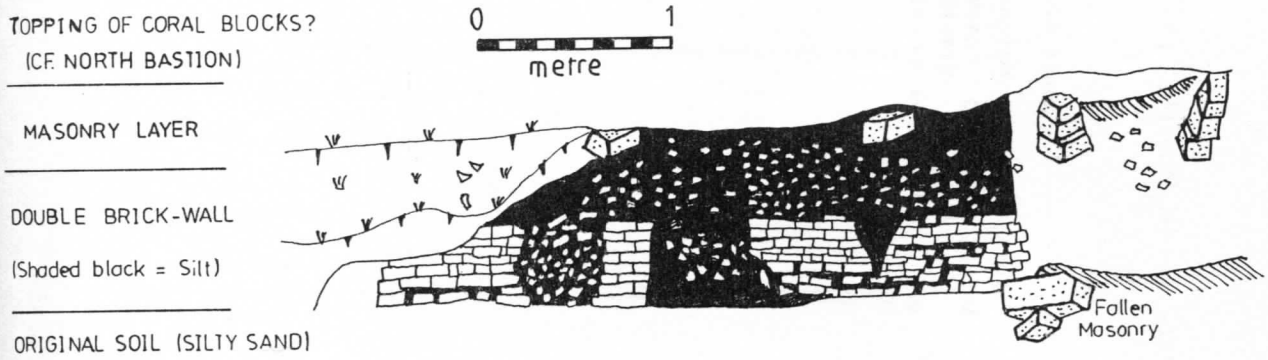
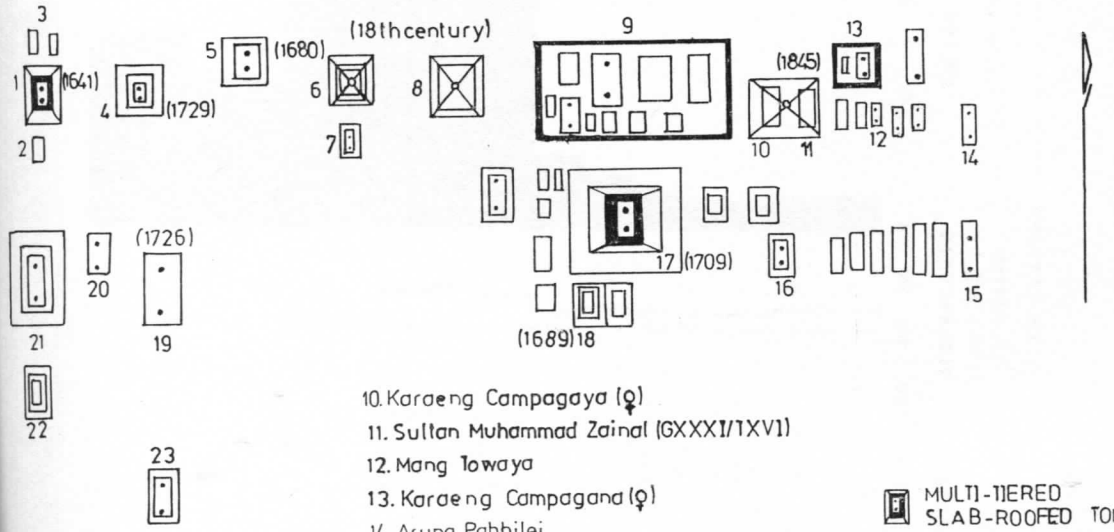


FIGURE 12-4. IDENTIFIED INDIVIDUALS AT TALLOK CEMETERY

(ORIGINAL DRAWING IWAN SUMANTRI FROM INFORMATION OF SUAKA'S PAK SAMPARA)



1. Sultan Mudhaffar (TVIII)
2. I Sowerannu (wife of TVIII)
3. "Ajudan" & "Panglima Perang" (Adjudant & War Commander)
4. Tuamenanga ri Jawaya (TXIII)
5. Karaeng Popok (TMJ4)
6. Kg Mangara Bombang (wife of TXIV)
7. Sultana Sitti Aisyah
8. Sultan Syaifuddin (TXIV)
9. Sultana Sitti Saleha (TXV)
10. Karaeng Campagaya (♀)
11. Sultan Muhammad Zainal (GXXXI/TXVI)
12. Mang Towaya
13. Karaeng Campagana (♀)
14. Arung Pabbilei
15. Karaeng Samanggi
16. Kg Gunung Sari Raja Sanrabone
17. Sultan Abdul Kadir (TXI)
18. Kg Parang-Parang (wife of TXI)
19. Karaeng Bonto Sunggu (TBB8),
20. Karaeng Labakkang
21. Abdul Gafar Datu Bima
22. Abdullah Daeng Riboko
23. Kg Bangkala Arungpone (Bone)

MULTI-TIERED SLAB-ROOFED TOMB

KOBANG TOMB

CORRAL

SEPULCHRE

GRAVE MARKER

PAIRED NISAN

(1641) RECORDED YEAR OF DEATH

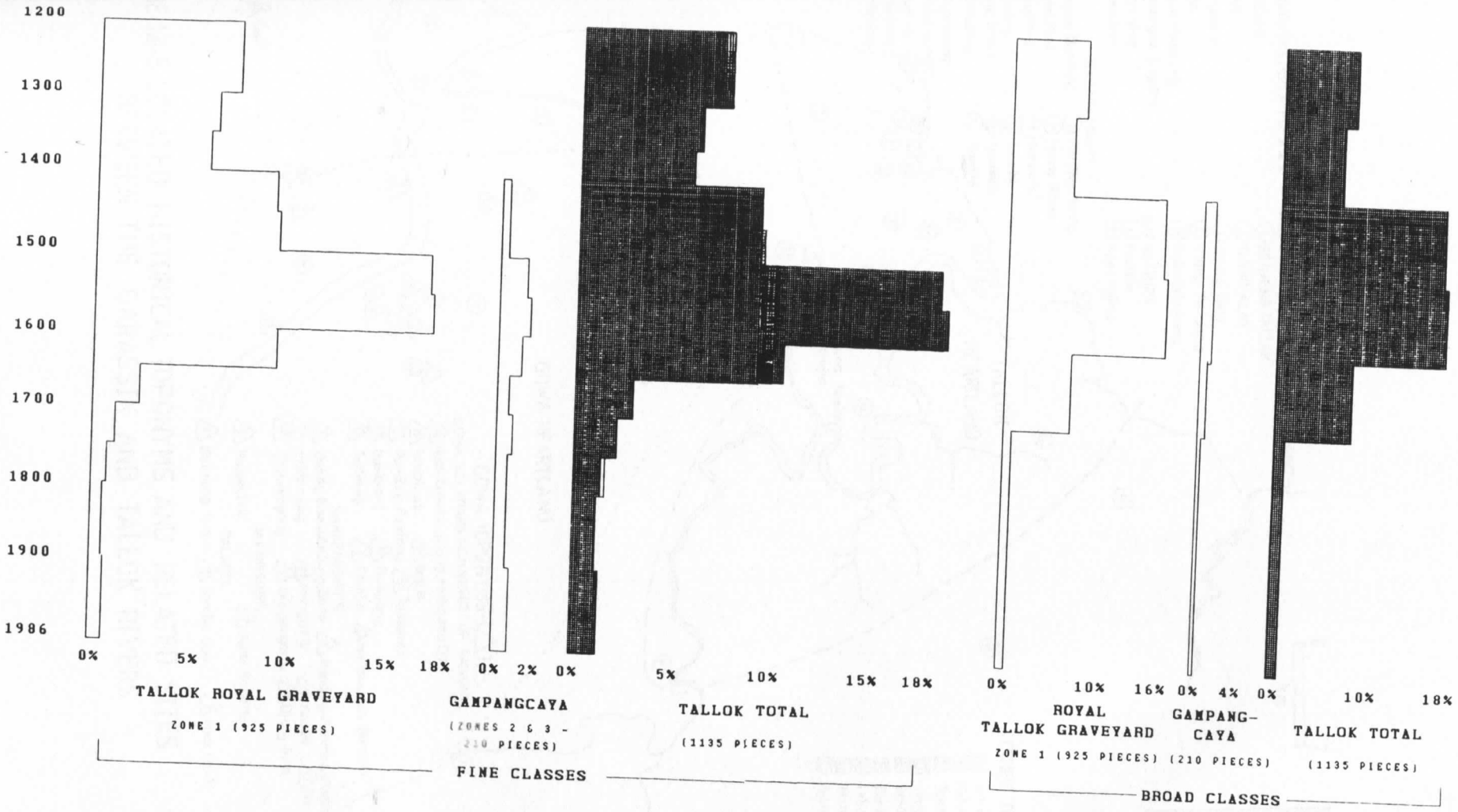


FIGURE 12–5. STANDARDISED CHRONOLOGICAL HISTOGRAMS – BENTENG TALLOK

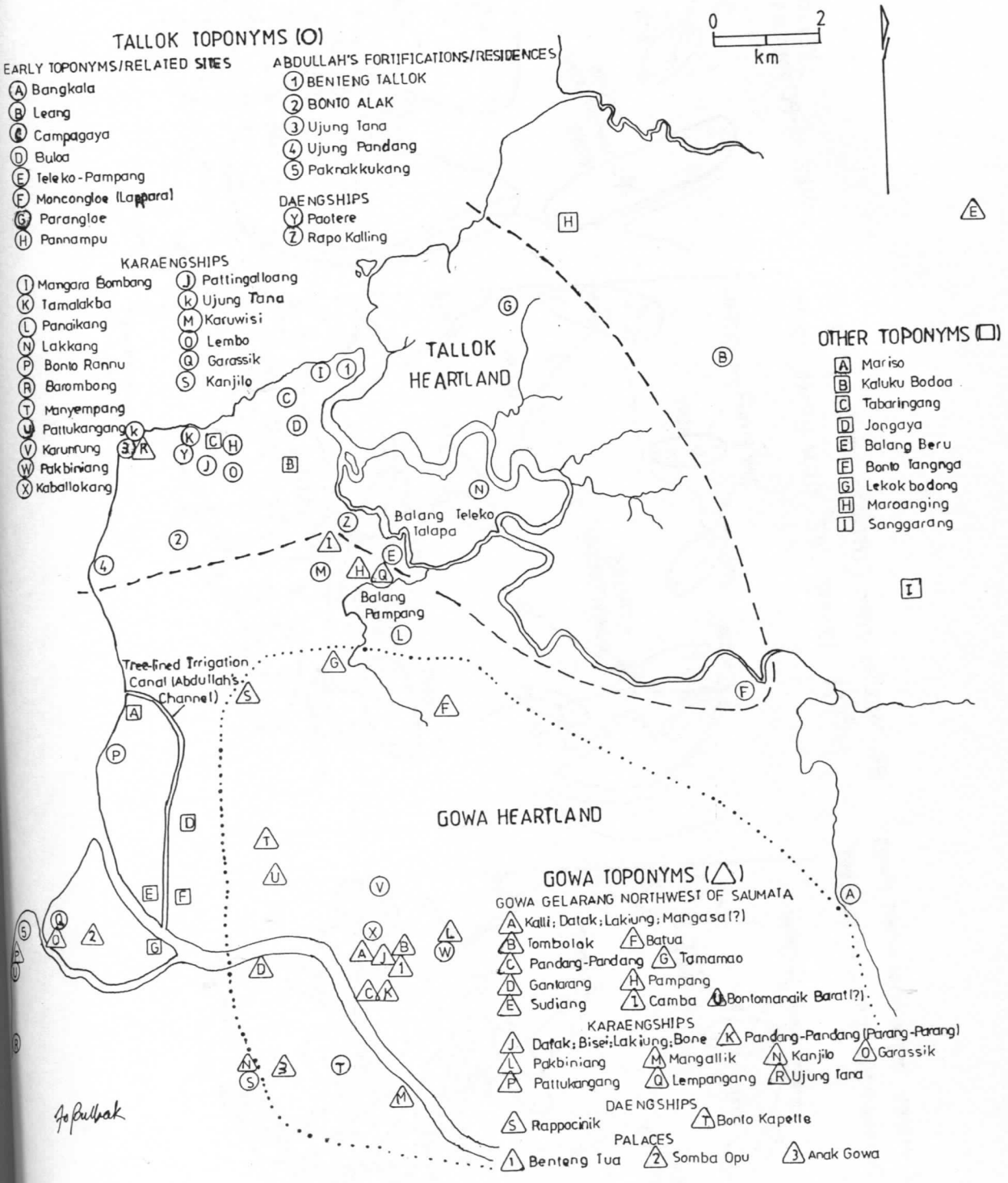


FIGURE 12-5. LOCATED HISTORICAL TOPONYMS AND RELATED SITES BETWEEN THE GARASSIK AND TALLOK RIVERS

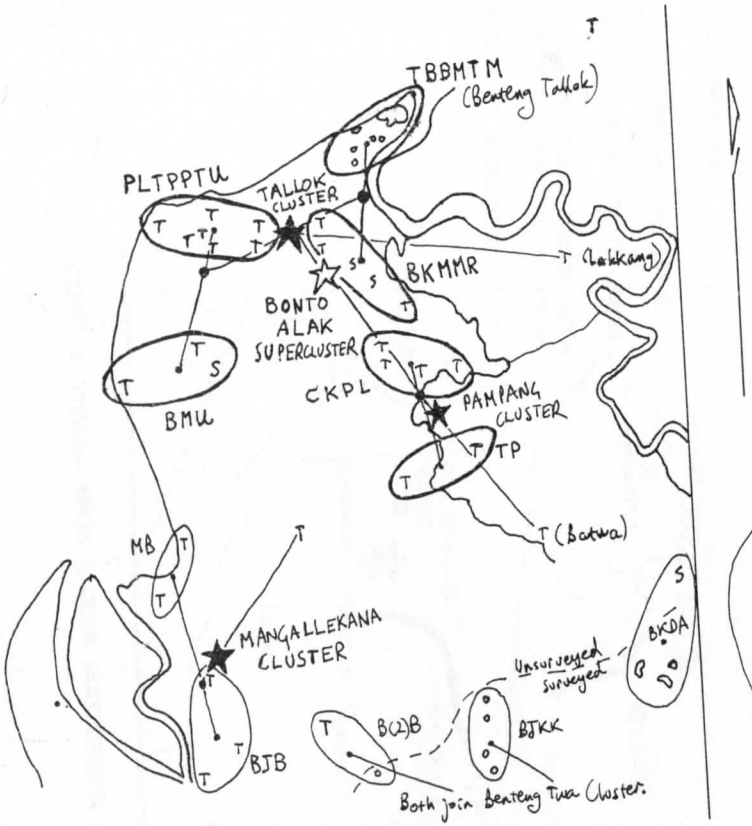


FIGURE 12-6A. TOPONYM + SITE CLUSTERING PATTERNS UJUNG PANDANG MODERN URBAN AREAS — WALL IGNORED

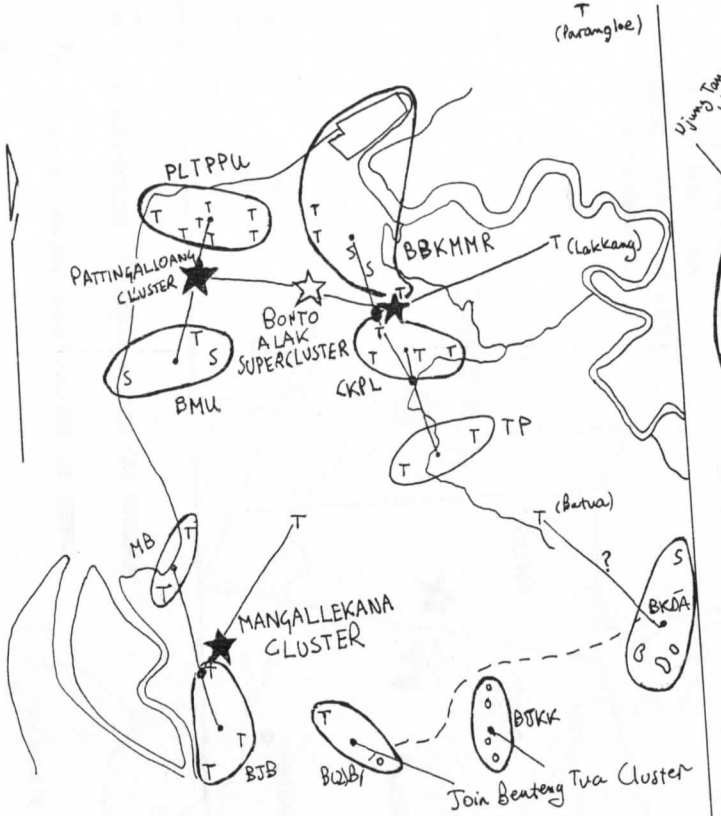


FIGURE 12-6B. AS WITH FIGURE 12-6A, BUT SURVEYED WALL (TALLOK'S) TREATED AS "SITE"

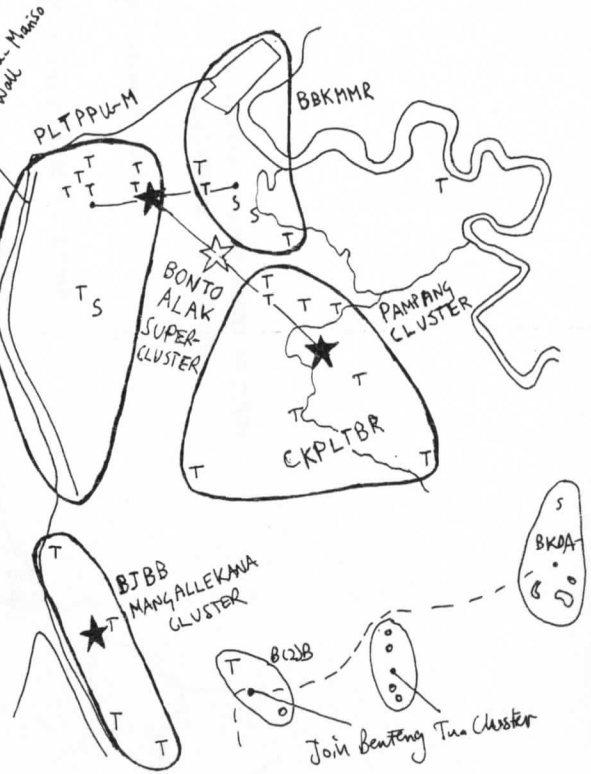


FIGURE 12-6C. SURVEYED AND INFERRED WALL TREATED AS "SITE"

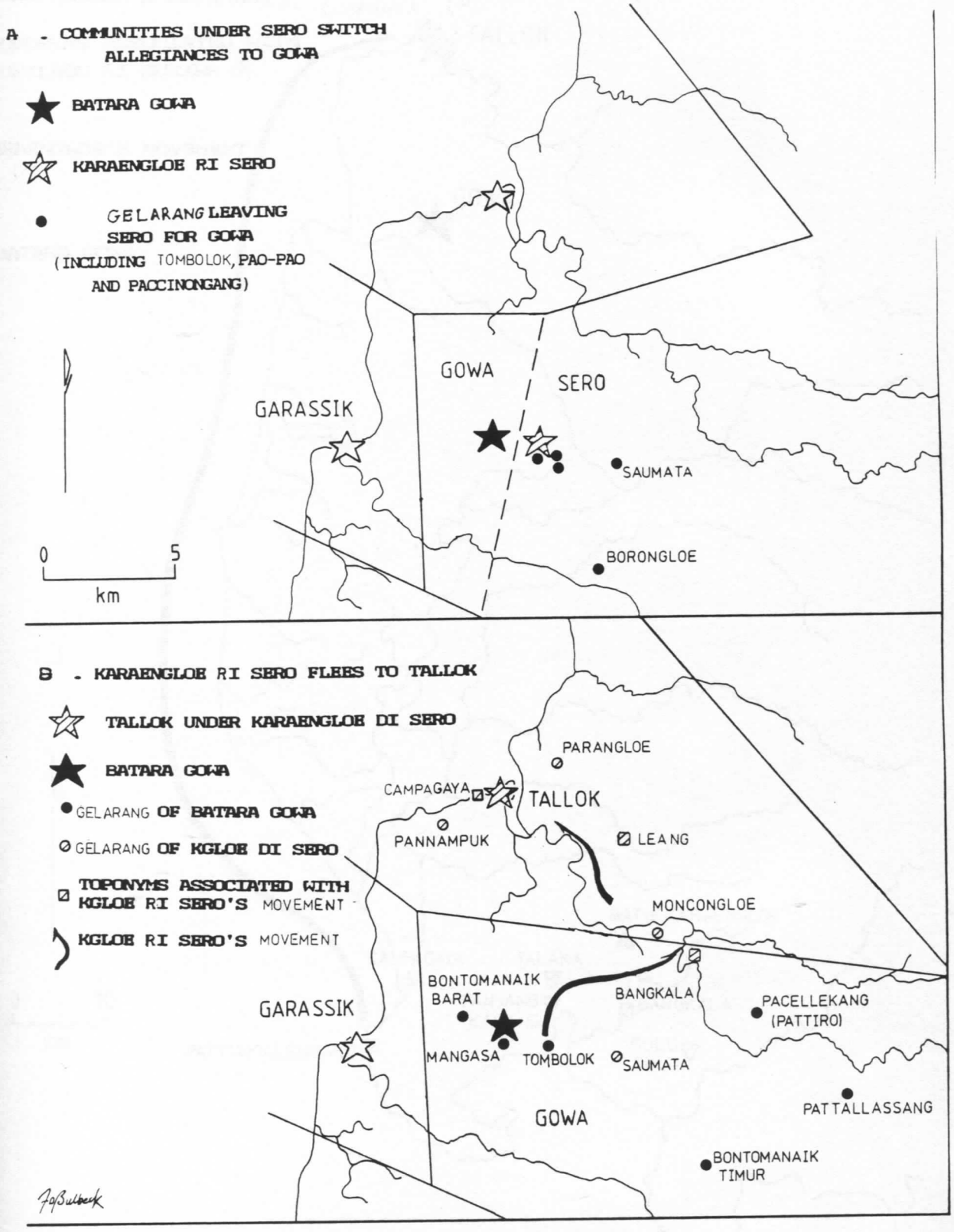


FIGURE 12-7. THE ORIGINS OF TALLOK FROM A GOWA SUCCESSION DISPUTE (LIKELY)

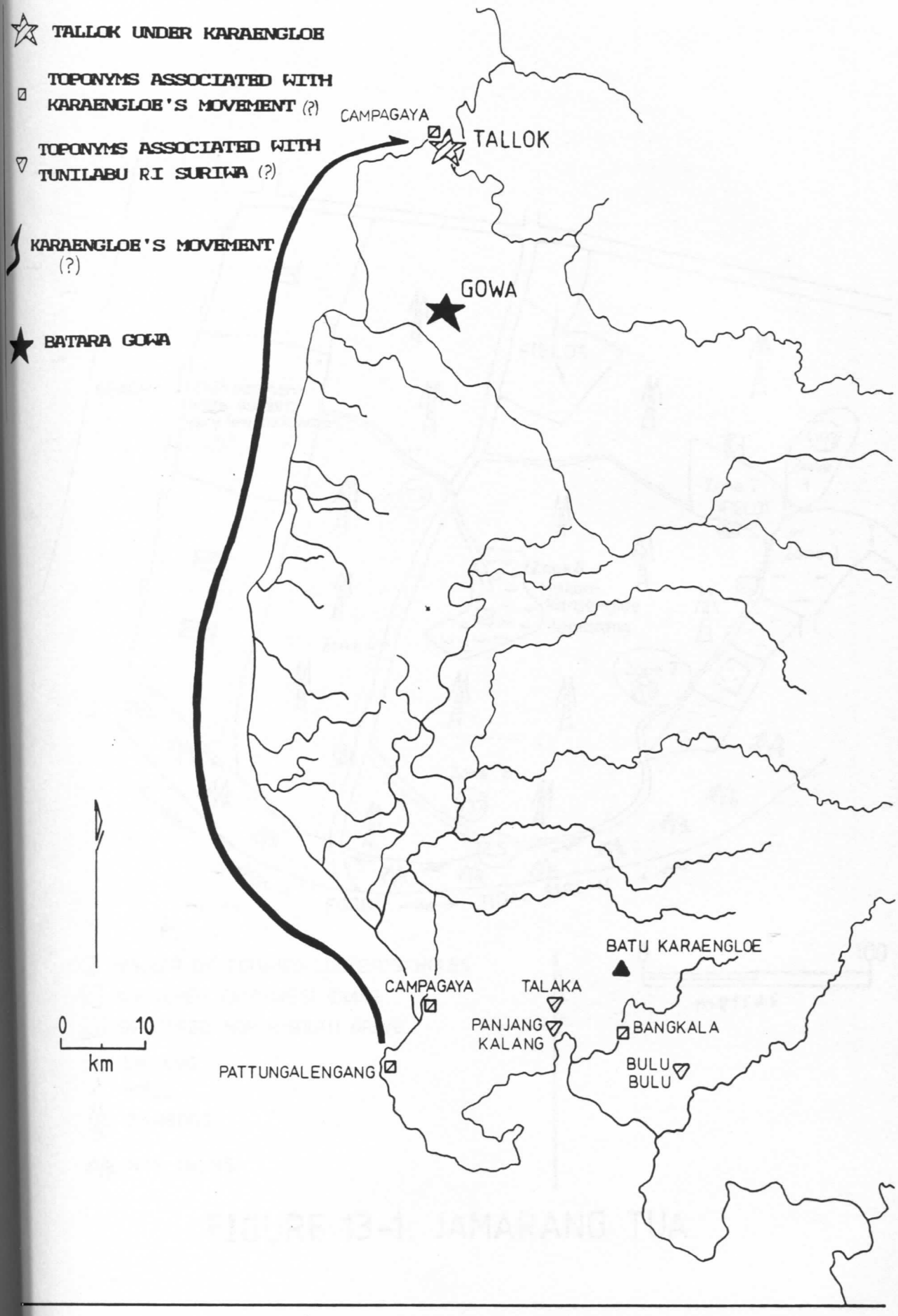


FIGURE 12-8. THE ORIGINS OF TALLOK FROM THE SOUTH COAST (UNLIKELY)

Photo 12-1.
The Tallok inlet where it curls behind the royal Tallok cemetery, Benteng Tallok.

Photo 12-2.
Section of the Gampangcaya bastion exposed by the sea. The ranging pole marks the silt packed between the two lines of brick. Note the tumbled masonry blocks.

Andi Said Cam, archaeology student and regular fieldwork participant, is standing at left.

Photo 12-3.
The *Pakbenderang* (Flagstand) at Mangara Bombang, Benteng Tallok. Masonry presumably underlies the covering of coral blocks.







Photo 12-4.
The line of laid masonry foundations at Mangara Bombang, Benteng Tallok.

Photo 12-5.
The sea bastion at the north corner of Benteng Tallok. Note the laid masonry underneath a covering of coral blocks.

Photo 12-6.
The brick bastion, Maccinik Sombala ("Watch for the Sails") at the west corner of Benteng Tallok.

Photo 12-7.
The line of brick wall northeast of Maccinik Sombala, representing the best preserved wall segment of the old fort.

Photo 12-8.
The royal Tallok cemetery, showing the masonry sepulchre of Tuamenanga ri Jawaya (Tallok's 13th raja) at the front, and the multi-tiered slab-roofed masonry tomb of Sultan Mudhaffar (Tallok's eighth raja) at the rear. Notice the holes in the sepulchre of Tuamenanga ri Jawaya which had originally contained ceramic plates.

Photo 12-9.
Makam Bunting Berua, Gampangcaya, where the sea is cutting back into the bastion and the Islamic graves on top.



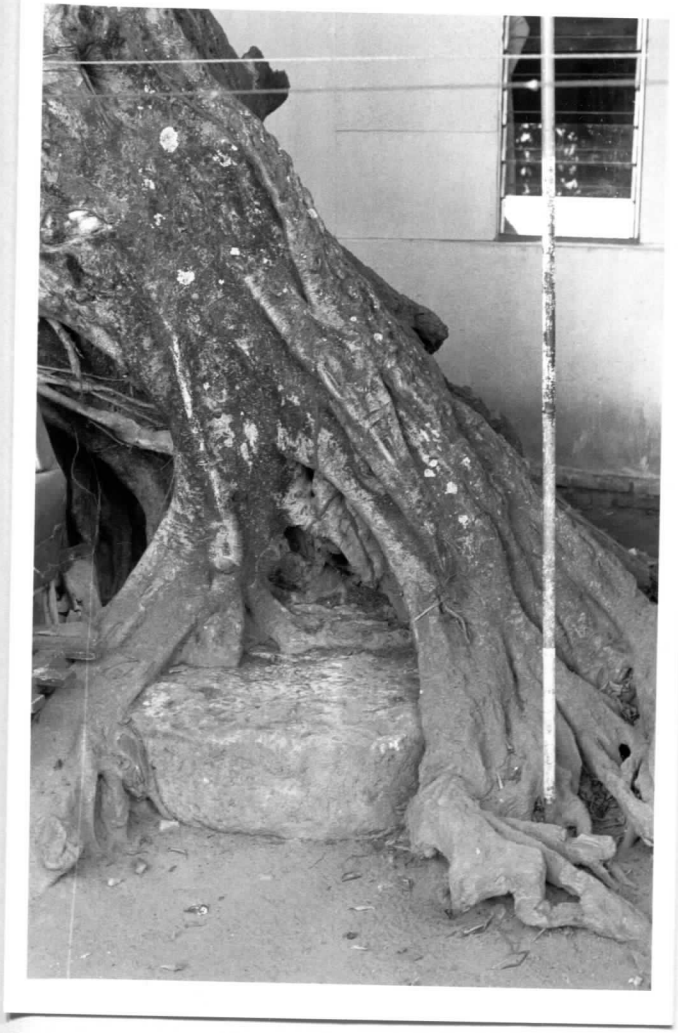




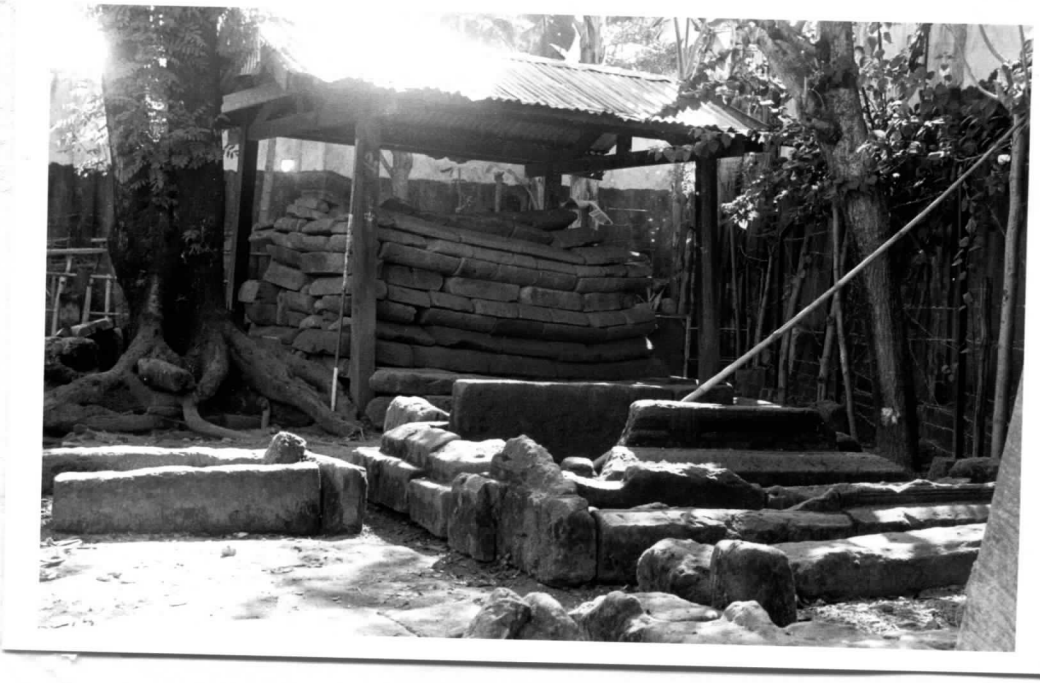
Photo 12-10.
Batu Pelantikan (installation stone) of the Tallok rajas, Tallok Lama, Benteng Tallok.

Photo 12-11.
Dollop-shaped *nisan* of the unknown Karaeng, Tallok Lama.

Photo 12-12.
The multi-tiered masonry tomb of Karaeng Katinting, Tallok Lama, and some other old masonry graves next to it.







CHAPTER 13. THE WIDE VIEW

13.1 Some Final Data from the Coastal Survey

As was particularly evident at sites south of Pakkala Toa, the immediately pre-Islamic burial grounds along the coast were reportedly dominated by east-west extended skeletons, quite often associated with *duni* (log coffins). A summary of key sites, abstracted from Bulbeck (in prep. b), further clarifies the case.

Jamarang Tua (Takalar 11) and Mandallek Toa (Gowa 20) seated the two northern Polombangkeng polities (4.5). Both sites include large pre-Islamic burial grounds. Jamarang (Figure 13-1) has produced an abundance of "early" and "Ming" ceramics, and informants explained that only the ban on looting stopped them recovering more. Although no intact bones were reported, degraded *duni* were apparently found at approximately one in 15 antique-bearing spots, in association with far more wares than was usually the case. Mandallek Toa (Figure 13-2) includes a looted area, extending from zone 2 westwards, where an abundance of celadons and Ming period wares were reportedly recovered in association with east-west directed skeletons. No *duni* were reported, but this could be partly due to lack of preservation in the slightly alkaline soils (pH $7^{1}/_{2}$), as would also account for the reported recovery of human bone.

The other old, local political centre in today's Kecamatan Galesong Utara is Campagaya Lama (Takalar 14), the seat of the government of Galesong between c.1600 and 1635 (4.7). As this juncture corresponds to when Mandallek appears not to have supported a karaengship (4.5.2), and Mandallek Toa sits on Campagaya's back door (Figure 11-4a), we may reasonably lnik the rise of local rule in Campagaya with Mandallek's decline (Figure 13-11). The Islamic burial ground at Campagaya Lama, where the Galesong personages were buried, was preceded by a pre-Islamic burial ground a short distance to the west (Figure 13-3). Reports describe east-west oriented skeletons associated mainly with Ming-period wares, and bronze and celadons too, but no *duni*.

Kota Galesong (Figure E-4) holds a most impressive concentration of archaeological remains dating after the relocation of Galesong's rule here in 1635. SSPHAP's survey also documented six discrete pre-Islamic burial grounds, and a proportionately greater presence of 15th century than 16th century remains, suggesting that Galesong had flourished as a local port before its subjugation by Tumapakrisik Kallona (Figure 4-3). Of particular interest, Bayoa kampung at the rivermouth includes a place where two large *duni* and a small one had reportedly been found, all directed towards the sea (i.e. oriented east-west). Remains kept at the local "Culture and Education" office included one of the large *duni* (Photo 13-1);[1] human bones which can be ascribed to a minimum of two and a likely maximum of three individuals (Table 13-1; Photos 13-4 to 13-6); and 15th to 16th/17th century tradewares (Photos 13-10 to 13-13).[2] The reported and collected items can all be ascribed to three people buried in the *duni*, except that the tradeware pieces could represent at least a century (i.e. the late 15th to late 16th centuries), which might suggest that more than three people had originally been buried. I did not collect any samples for dating and so I cannot offer a more definite interpretation.

A *duni* was also found at Benteng Sanrabone at "Bayoa" (Figure E-3), in this case named after the revered, east-west directed grave of "Karaeng Lolo Bayo", the "Bajau king washed away at sea" (Photo 13-7). The *duni*, which was oriented at 85° from north, presented only a very partial exposure (Photo 13-3), and the wood sample we collected for dating must have come from the inside top. On a later occasion, after Suaka excavated the *duni*, I counted 80 tree rings from where the sample would have been taken, to the outermost extant tree ring (Photo 13-2). The sample ("Sanrabone 1") returned a date of 780 ± 80 BP (ANU-5564), which calibrates to 690 BP with a single S.D. range of 670-770 BP (cf. Stuiver and Pearson, 1986:811). Allowance for the 80 countable tree rings brings

[1] The *duni* has since been relocated to Suaka's museum at Benteng Ujung Pandang.
[2] The Qing BW fragment is so small (Photo 13-13) that its association could well be accidental.

TABLE 13-1. BONES REPORTEDLY FOUND WITH THE GALESONG *DUNI*

Cranial Skeleton

Three matching and two other posterior neurocranial fragments, probably from the one individual with completely unclosed sagittal and lambdoid sutures, and a very slight transverse occipital torus. Probably less than 20 years old at death (cf. Brothwell, 1981:43).

Truncal skeleton

One clavicle representing a sub-adult.
Two rib fragments.
Three vertebral discs.
Three pelvis fragments, one with a wide greater sciatic notch which suggests a female.

Arms

Isolated humerus head, possible representing a sub-adult.
Matching pair of gracile humerus shafts (female or sub-adult).
Matching pair of distal humerus fragments which do not join the shafts.
One proximal ulna fragment.
(Probably) one right radius represented by proximal and distal fragments.
Three metatarsal fragments.

Legs

Two matching pairs of femora.
One pair: semi-complete; possibly male as rugged.
Second pair: medial fragments; female or sub-adult as gracile.
Matching pair of medial tibia fragments.
One medial fibula fragment.

N.B. The bones represent a minimum of two individuals, an adult male and a sub-adult or teenage female. However, the bones could easily represent three individuals - an adult male, an adult female, and a sub-adult - given the spotty representation of any possibly represented individual.

the date forward to 610 BP (590-690 BP), i.e. 1340 AD with a single S.D. range of 1260 to 1360 AD.

This date precedes the great bulk of Sanrabone's archaeological remains. Very few "early" tradewares were recorded, and none at the burial ground with the *duni*. Benteng Sanrabone was not built before 1668, when Hasanuddin's son who later became Gowa's Sultan Abdul Jalil was installed as Sanrabone's raja (E.1.3). Even the origins of Sanrabone's royalty cannot be dated before the mid-15th century (Figure 4-10).

There are ways of accommodating the discrepancy, such as suggesting that the *duni* had had a long prior use as a boat, or that it had been maintained as a *keramat* object before its use as a coffin. However, it is difficult to ignore the spatial association with the local culture hero Kg Lolo Bayo, particularly as "Karaeng Bayo" apparently married Gowa's *Tomanurung* at the end of the 13th century (Figure 2-2) and so would have probably died in the early 14th century. To my knowledge there is no other place associated with Kg Bayo in the whole southwest coastal plain, so it would be hard to imagine what other sort of evidence could possibly better confirm Gowa's origin story.[3] In any case, we certainly have strong evidence that burials in *duni* occurred at a place called Bayoa (later, Sanrabone) by at least the 14th century, at which time Bayoa could well have been located on the mouth of the main river draining the Gowa highlands (Figure 11-1d).

Probably the earliest directly dated remains collected during SSPHAP's survey come from Talaborong (Gowa 24) a short distance inland from Mandallek Toa. Apart from a couple of pieces which could date to the 15th century, and some much later pieces, Talaborong's surface tradewares were dominated by coarse stonewares (15% of the total), early monochromes and early whitewares (Photos 13-15 and 13-16), including

[3] Hence it may be superfluous to treat the story as an allegory of deeper realities, as done by Reid (1983a), when the story could be merely true. If it is to be treated as a fable, then its inclusion in SG is most parsimoniously associated with Gowa's enslavement of Sanrabone during Tumapakrisik Kallona's reign (when local literacy was founded), or even with Gowa's absorption of the Sanrabone throne in 1668.

examples of the "bowls with thickened rims" which Lam (1985) dates to the 11th-12th centuries. I collected the surface earthenwares which comprised mainly sherds from jars and boxes. Of particular interest, four of the zones produced 34 human bone fragments weighing 86 gm (Table 13-2). These were submitted for radiocarbon dating and produced a date on the apatite fraction of 920 ± 170 BP (ANU-5924), which calibrates to 795, 830, 855, 905 BP with a single S.D. range of 680-980 BP (cf. Stuiver and Pearson, 1986:811). Thus the age of the bone, between the 11th and 13th-14th centuries AD, corresponds perfectly with the age of the main tradeware assemblage.

The bone fragments constitute a typical assemblage of cremated bone in their colour, which varies from white to pink and brown shades to dark grey, and in their size which generally ranges between 10 and 30 cm (Table 13-2). The absence of teeth is also typical of cremated remains (Gejvall, 1969). More specifically, the fragments sometimes show transverse fracture lines, irregular lengthwise splitting and warping, indicating that they were cremated in the flesh (Photos 13-8 and 13-9). They do not show the cracking and longitudinal splitting of dry bones cremated after maceration (Ubelaker, 1984:35-36).

Talaborong joins with three other sites not described here, Matoanging (near Mandallek Tua), Likuloe (see Figure 5-1) and Kalukuang (see Figure 5-2). At these sites, reports of burned human bone fragments found in jars can be confidently dated to the age of the Talaborong remains or earlier (Bulbeck, in prep. b). Direct and indirect evidence of the same practice was observed at the middle Jeknekberang sites Saukang Boe, Songkolo Asli and Bontona Songkolo, where it can probably be dated between the 14th and 17th centuries (Chapter 9). At least in the case of Talaborong, cremation of the corpse appears to have been involved, followed by secondary burial of the "ashes" in jars.

TABLE 13-2. HUMAN BONE FRAGMENTS COLLECTED AT TALABORONG (RADIOCARBON SAMPLE "GOWA 24")

Specimen No.	Identification	Length (mm)	Breadth (mm)	Thick-ness (mm)	Outer bone colour	Inner bone colour	Weight
G.24.1.1	Fibula midshaft (male?)	105	16	11	7.5YR 6/2	10YR 8/2	16 gm
G.24.1.2	Vertebral disc fragment	13	7	6	10YR 8/2	10YR 8/2	1 gm
G.24.1.3	Radius/ulna	24	10	3.5	7.5YR 8/2	7.5YR 7/4	2 gm
G.24.1.4	Mandibular corpus between M_1 and C sockets (male?)	21	15	10	10YR 8/1	10YR 8/1	2 gm
G.24.1.5	Parietal fragment with unfused sagittal suture	27	15	5	10YR 8/1	10YR 3/1	3 gm
G.24.2.1	Radius (?)	20	9	4	5YR 8/1	5YR 8/1	5 gm
G.24.2.2	Basicranium	18	14	6	7.5YR 8/2	7.5YR 8/2	2 gm
G.24.2.3	Humerus (?)	13	12	5	5Y 8/1	5Y 8/1	2 gm
G.24.2.4	Pelvic girdle (?)	32	13	6	5Y 8/1	5Y 8/1	3 gm
G.24.2.5	Pelvic girdle	16	8	4	10YR 8/2	N 4/-	1 gm
G.24.2.6	Fibula	33	13	4	10YR 7/1	10YR 8/1	2 gm
G.24.2.7	Humerus (?)	12	9	5	10YR 7/1	N 6/-	1 gm
G.24.2.8	Unidentified	14	10	2			1 gm
G.24.2.9	Metacarpal/metatarsal	16	6	2	10YR 7/1	10YR 7/2	1 gm
G.24.2.24	Radius/ulna/carpal	20	9	5	5YR 8/1	5YR 8/1	1 gm
G.24.3.1	Calvarium	19	16	6	10YR 8/1	10YR 8/1	3 gm
G.24.3.2	Humerus/ulna	24	15	5.5	7.5YR 7/2	7.5YR 7/4	4 gm
G.24.3.3	Metacarpal/metatarsal	19	5.5	3	7.5YR 8/2	7.5YR 8/2	1 gm
G.24.3.4	Occipital bone (male?)	39	28	10	N 8/-	N 8/-	6 gm
G.24.3.5	Calvarial (unfused suture)	22	17	6	N 8/-	5YR 4/6	2 gm
G.24.3.6	Humerus/ulna	9	7	4	7.5YR 7/2	7.5YR 7/2	1 gm

TABLE 13-2. HUMAN BONE FRAGMENTS COLLECTED AT TALABORONG (CONT.)

Specimen No.	Identification	Length (mm)	Breadth (mm)	Thick-ness (mm)	Outer bone colour	Inner bone colour	Weight
G.24.6.1	Calvarial	17	12	3.5	N 8/-	5YR 3/3	1 gm
G.24.6.2	Humerus midsfhaft	45	14.5	5	10YR 8/1	5YR 3/4	8 gm
G.24.6.3	Radius/ulna	36	10	3	10YR 7/1	5YR 5/6	2 gm
G.24.6.4	Humerus midshaft	17	11.5	6	5YR 7/2	5YR 5/6	4 gm
G.24.6.5	Radius/ulna	20	7	2	10YR 8/1	5YR 4/6	1 gm
G.24.6.6	Metatarsal/metacarpal	16	10	2	7.5YR 7/2	5YR 5/6	1 gm
G.24.6.7	Femur/humerus/tibia	10	7	4	5Y 8/1	5YR 4/6	1 gm
G.24.6.8	Calvarial	13	13	3	5YR 8/2	5YR 3/3	1 gm
G.24.6.9	Femur/humerus/tibia	17	11	3.5	5YR 8/1	5YR 4/6	1 gm
G.24.6.10	Tibia (?)	16	9.5	6.5	7.5YR 8/2	5YR 4/6	2 gm
G.24.6.11	Tibia (?)	11	7	5.5	10YR 8/2	5YR 3/2	1 gm
G.24.6.12	Unidentified	12	9.5	4	5YR 7/1	5YR 7/1	1 gm
G.24.6.13	Long bone	9	9	2.5	7.5YR 8/1	7.5YR 4/6	1 gm
G.24.6.14	Tibia (?)	9	9	3	5YR 8/1	5YR 4/4	1 gm

	Zone 1		Zone 2		Zone 3		Zone 6		Total	
	Number	Weight	Number	Weight	Number	Weight	Number	Weight	Number	Weight
Cranial Skeleton	2	5 gm	1	2 gm	3	11 gm	2	2 gm	8	20 gm
Long Bones	2	18 gm	5	11 gm	2	5 gm	10	22 gm	19	56 gm
Extremities	-		1	1 gm	1	1 gm	1	1 gm	3	3 gm
Other/unidentified	1	1 gm	3	5 gm	-		1	1 gm	5	7 gm
Total	5	24 gm	10	19 gm	5	17 gm	14	26 gm	34	86 gm

N.B. Some of the bone fragments with the same coloured surface inside and outside had grey cores. The minimum number of represented individuals is 1, but very probably a larger number is involved.

TABLE 13-3. MAIN PREHISTORIC BURIAL SITES OF THE SOUTH SULAWESI LOWLANDS

Site	Dating Material	Date (one S.D. ranges in brackets)	Other Main Associations	Inferred Type of Disposal
Leang Burung 1, Trench B	Partly fossilised human bone, apatite fraction 4610±220 BP (ANU-6175)	5325 BP (4980-5595 BP)	Aceramic Toalean	Disturbed primary inhumation
Leang Burung 1, Trench A	Burned femur fragment: collagen fraction 2260±90 BP (ANU-6173); apatite fraction 1660±190 BP (ANU-6173)	2330 BP (2150-2350 BP); 1550 BP (1350-1820 BP)	Earthenware sherds; Toalean stone artefacts	Macerated bones cremated when dry and secondarily disposed
Leang Burung 1, Trench A	Burned femur fragment: collagen fraction 1660±190 BP (ANU-6174); apatite fraction 640±240 BP (ANU-6174)	1550 BP (1350-1820 BP); 580, 650 BP (490-790 BP)	Earthenware sherds; Toalean stone artefacts	Macerated bones cremated when dry and secondarily disposed
Leang Burung 1, Trench A	Unburned human bone, collagen fraction 1160±200 BP (ANU-6172)	1065 BP (930-1290 BP)	Earthenware sherds; flaked stone artefacts	Disturbed secondary disposal of uncremated (?) bones
Ulu Leang 2	Glass beads, copper bead, iron fragments	c.1700-c.2000 BP	Unburned human bones; earthenwares	Secondary disposal in jars; uncremated
Leang Codong, Soppeng	Carnelian, stone beads; bronze leaf; iron point	c.1000-c.2000 BP	Unburned human bone; bone, stone, shell artefacts	Secondary disposal not in jars; uncremated

TABLE 13-4. MAIN PROTOHISTORIC/HISTORICAL BUGIS AND MAKASSAR SECONDARY BURIAL SITES

Site	Dating Material	Date (one S.D. ranges in brackets)	Other Main Associations	Inferred Type of Disposal
Sabbang, Luwu	Earthen- and tradeware sherds, iron spearheads	c.1000 BP (?)	Stone bark pounder	Urnfield; secondarily disposed remains
Leang Pette Kere, near entrance	Dark-surfaced incised earthenware sherds	c.1000 BP (??)	Burned human bones	Primary cremation; secondary burial of remains in jars
Talaborong (Gowa 24)	Burned human bone, apatite fraction 920±170 BP (ANU-5924)	795,830,855,905 BP (680-980 BP)	Vietnamese and Chinese pots, Song/Yuan age	Primary cremations; secondary burial of remains in jars
Saukang Boe (Gowa 80)	Burned human bone, apatite fraction 450±220 BP (ANU-5923)	515 BP (300-670 BP)	Large earthenware jar, gold, iron sword	Primary cremation (?); secondary burial of remains in the jar
Sompoh, Wajo	Vietnamese, Thai and Ming Chinese tradeware sherds	c.350-c.550 BP	Calcined human bone	Primary cremation; secondary burial of remains with pots
Lampokko, Bone	Vietnamese, Thai and Ming Chinese tradeware sherds	c.350-c.550 BP	Calcined human bone	Primary cremation; secondary burial of remains with pots
Soppeng royal burial sites	Yuan/Ming Chinese, Thai, Vietnamese tradewares	c.300-c.750 BP	Associated with pre-Islamic Soppeng rulers	Reportedly sites where tradeware urns held the rulers' cremated remains

TABLE 13-5. MAIN PROTOHISTORIC/HISTORICAL, PRE-ISLAMIC MAKASSAR PRIMARY BURIAL SITES

Site	Dating Material	Date (one S.D. ranges in brackets)	Other Main Associations	Inferred Type of Disposal
Bayoa, Sanrabone (Takalar 6)	780±80BP (ANU-5564) - wood from inside of hollowed log with 80 tree-rings	690 BP (670-770 BP) [590-690 BP]	Vietnamese, Thai, Ming Chinese tradewares	East-west directed, primary burial in boat-shaped coffin
Bayoa, Galesong (Takalar 20)	Vietnamese, Thai and Ming Chinese tradeware sherds	c.400-c.500 BP	Bones from 2-3 individuals, 3 coffins reported	Primary burials in boat-shaped coffins; east-west directed
Bayoa (Ujung Pandang 1)	270±120 BP (ANU-5927) - wood from boat-shaped coffin	310 BP (30-480 BP)	Bronze; Thai and mainly Ming Chinese tradewares	East-west directed primary burials with 1 boat-shaped coffin
Lamuru (Gowa 46)	Wood fragments reportedly from a boat-shaped coffin 340±70BP (ANU-5922)	340, 355, 430 BP (310-550 BP)	Vietnamese, Ming Chinese and Thai tradewares	East-west directed primary burial with 1 boat-shaped coffin
Ulu Leang 1	Vietnamese pot gravegood	c.450-c.550 BP	Iron; shroud	East-west primary burial
Sompu, Takalar	Vietnamese, Thai and Ming Chinese tradewares	c.350-c.550 BP	Bronze, iron, gold items; earthenwares	East-west directed primary burials
Malewang, Pangkep	Vietnamese, Thai and Ming Chinese tradewares	c.350-c.600 BP	Gold eyelid covers, iron knives	East-west directed primary burials
Palambeang, Pangkep	15th-16th century sherds; Vietnamese covered box	c.350-c.550 BP	4 metre long board; decomposed bones; iron	Disturbed east-west log burial
Batang Mata Sapo, Selayar	Vietnamese, Thai, Ming Chinese tradewares	c.300-c.550 BP	Coin minted by Sultan Abdullah	East-west directed primary burials
Sabbang, Luwu	Vietnamese, Thai and Ming Chinese tradewares	c.350-c.550 BP	Bronze	Cemetery of primary burials (?)

13.2 South Sulawesi Lowland Pre-Islamic Burials

Elsewhere I have detailed the range of pre-Islamic burial sites currently documented in the South Sulawesi lowlands (Bulbeck, in press). The present review summarises the main examples (Figure 13-4), as well as incorporating the information from radiocarbon dates which have recently become available. Along the lines just explained, I have calibrated all the radiocarbon dates according to the charts in Stuiver and Pearson (1986), except for the single mid-Holocene date which has been calibrated from Pearson et al. (1986:1008). These calibrated dates are shown bracketed in Tables 13-3 to 13-5, which also summarise other main associations.

13.2.1 Prehistoric burials from closed sites

As a result of the strong interest in the "Toalean" flaked stone industry, which dates broadly to the middle Holocene, numerous rockshelters and caves have been excavated in the South Sulawesi lowlands (e.g. van Heekeren, 1972). In most cases the stone artefacts were associated with fragments of human bone, but always mixed with pottery, metallic and glass fragments as well, so the antiquity of the bones is unclear (Bulbeck, in press). The single exception comes from Leang Burung 1, one of the sites in Leang-Leang, Maros, re-excavated by Mulvaney and Soejono (1970). Among the still undescribed faunal assemblage I found an array of fragments, probably representing a single primary inhumation, from Trench B (Bulbeck, in prep. a). The *circa* 5000 year old calibrated date (Table 13-3) accords well with the trench's virtually aceramic deposits (Chapman, 1981).[4]

Trench A at Leang Burung 1 may be more typical of the generality of South Sulawesi's "Toalean" cave sites. The trench's clearly disturbed deposits contain comparable frequencies of potsherds and stone artefacts throughout, except in squares 3-5 below 140 cm where stone artefacts prevail (Chapman, 1981). After sifting through the excavated

[4] The date also considerably expands the chronology of the deposits which were previously dated by a single calibrated date to around 3700 BP, with a single S.D. range of 3218-4239 BP (Spriggs, 1989:596).

materials I found approximately 50 bits of human bone - either fragments or complete small bones - more or less restricted to the top 140 cm (Bulbeck, in prep. a). Chapman (1981:109) likens the pottery from Leang Burung 1 to globular cooking pots, so burial of some or all of the Trench A bones inside or with pots is only possible at best.

Approximately 40 bits appear burned or at least scorched. The former evince longitudinal cracks indicating they had been macerated before their subsequent cremation in the dry state (cf. Ubelaker, 1984:35). The two femur fragments submitted for radiocarbon dating produced significantly older dates on the collagen than on the apatite fraction (Table 13-3), reflecting the problems with dating bone (e.g. Spriggs 1989:590-598). The best estimate for the ANU-6173 sample would be c.2000 BP, while the best estimate for the ANU-6174 sample would be c.1000 BP, i.e. broadly the 1st millennium AD for both. As regards the approximately ten bits which showed no evidence of firing, their calibrated radiocarbon date similarly places them late in the 1st millennium AD (Table 13-3).

The human bone from Trench A, Leang Burung 1, resembles the much larger assemblage from Arku Cave, northeast Luzon, dated between approximately 4000 and 2000 BP (Thiel, 1986-7). All the bones and fragments were from secondary burials, usually multiple, and only occasionally buried in jars. Outside of one small area which contained only unburned bone, almost all the discrete individuals recognised by Thiel were represented by components of burned and unburned bone, single burials included. This pattern is inconsistent with primary cremations that would have reduced the corpse to a state ready for secondary deposition of the bone (e.g. Gejvall, 1969). So either light cremation had been practised in preparation for full maceration, or the previously macerated bones were cremated as part of their preparation for final burial. In the latter interpretation, which would allow direct comparison with Leang Burung 1, the variable percentages of burned and unburned bone can be attributed to

differences in intensity of the heat, method of firing, cohesiveness of the macerated assemblage, etc.[5]

During late Holocene prehistory, secondary disposal of uncremated remains was possibly the most widespread burial practice in the eastern archipelago (e.g. Bellwood, 1985), in which regard the Leang-Leang sites follow suit. The interior of Leang Pette Kere contained an association of unburned human bones and potsherds (Glover, 1978:74). These remains can be interpreted in the context of Ulu Leang 2, Leang-Leang, where 79 kg of unburned human bone representing 50 individuals were collected along with 98 kg of earthenware sherdage, 131 glass beads, a copper bead and four iron fragments (Andrews and Glover, 1986). Based on the associated artefacts, Andrews and Glover date the burials to the interval 1700-2000 BP. They also infer that the corpses had been macerated elsewhere before the bones were placed inside jars within the cave.

In some ways Ulu Leang 2 pairs with Leang Codong, Soppeng.[6] In 1938 Willems and Frederick McCarthy excavated over 2500 permanent teeth of modern Indonesian morphology plus a sprinkling of other human bones (van Heekeren, 1972:112; Jacob, 1967). Objects from Leang Codong held at the National Museum in Jakarta comprise a stone point, 61 shell artefacts, seven sea-urchin spines, an iron point and some bronze leaf (Catalogue Nos 5529, 5551-4, 5586). McCarthy (pers. comm. 2-9-85) noted further stone artefacts and 15 beads (red carnelian, white stone, pink and blue) during the excavation. Van Heekeren (1972:112) cites 12 barbed arrow-heads, shell scrapers and potsherds. The last could not have have been significant because pottery is not noted in any primary (Anon., 1938; McCarthy, pers. comm. 2-9-85) or secondary source (van Heekeren, 1949:92). Leang Codong was apparently an ossuary for teeth and some other bones buried directly or within perishable containers, datable to the 1st millennium AD by the associated Metal Period artefacts.[7] By

[5] Thiel (1986-7) does not describe the fracture patterns, proportional representation of the skeleton or other details which would allow a definitive interpretation.
[6] Usually known, incorrectly, as Leang Cadang.
[7] Jacob (1967:116) ascribed Leang Codong a "Mesolithic" date based on the scanty "Toalean" assemblage. But obviously the

analogy, some (and, not impossibly, all) of the other fragmentary human remains considered "Toalean" by van Heekeren (1972) would represent late Holocene secondary burials (Bulbeck, in press).

Let us summarise the evidence on burials in the South Sulawesi lowlands dated to between c.1000 and c.2000 BP, a period which can be confidently identified with the direct ancestors of the Bugis and Makassar (1.3). The dominant burial practice consisted of macerating the corpse, collecting the bones and depositing them in a rockshelter or cave. Communities which did not have access to closed sites presumably deposited the bones in open contexts, even if there is as yet no clear supporting evidence. In some cases the bones were cremated before disposal, presumably as a purification rite (cf. Tillotson, 1989a), and in some cases the bones were deposited inside jars. Neither primary inhumations nor, possibly, cremations of the corpse rather than the macerated bone (see 13.2.2) appear to have been practised in the South Sulawesi lowlands during this period.

To follow Tillotson's (1989a, 1989b) review of ethnographic mortuary practices in island Southeast Asia, we would infer that the late prehistoric Bugis and Makassar had been organised into competitive ranked societies. Wealth was seen not as an accumulable asset but in terms of producing and redistributing agricultural surplus, notably at the complex mortuary feasts which showed off the family's ability in this regard. Individual communities would have enjoyed political autonomy within an environment of strenuous competition for power and status between individuals within the communities, and between communities. The economy was probably based on subsistence agriculture carried out within the territory owned by the community.

Metal Period artefacts are a better guide, especially as the teeth are of modern Indonesian size and morphology (Jacob, 1967; Bulbeck, 1986). From the descriptions it is clear that the deposits, which have been completely excavated, had no stratigraphic integrity. The floor slopes strongly downwards from the entrance to the back of the shelter (fieldnotes), not to mention the disturbance caused by the burials.

13.2.2 Immediately Pre-Islamic burial grounds

Considering the protohistorical secondarily burial sites (Table 13-4), we note the dominance of cremated remains buried in jars, at open sites, dated to between c.350 and c.850 BP (1100-1600 AD). Although only a minority of SSPHAP's pre-Islamic Makassar burial grounds evince this tradition, it was the common practice among the Bugis before Islamisation. For instance van Vuuren (1914) excavated an urn containing "ashes" in Wajo, and reported other urns and an urnfield in Wajo, Sidenreng and Bone. Calcined human remains were found with Ming period tradewares at Sompoh in Wajo and Lampokko in Bone (van Heekeren 1958:84-85). The tradewares recorded at commemorated elite cremation sites in Soppeng were predominantly of Ming vintage, and 9-20% were either complete urns or coarse stoneware sherds (Kallupa et al., 1989).

The bone from Talaborong (Gowa 24) suggests primary cremation of the corpse rather than secondary cremation of the macerated bone. A wealth of historical references indicate the same for the Bugis (Hadimuljono and Macknight 1983:69-71). For instance, a 16th century Portuguese account of Sawitto states that the dead were burned and the ashes collected in jars for burial. The Wajok chronicle describes the cremation of two pre-Islamic figures, in one case specifying disposal of the ashes in an urn.

One example of the same practice recorded in a cave at Leang-Leang, rather than an open site, should probably also be considered "protohistoric" rather than prehistoric. Glover (1978:74) collected charred human bone fragments, associated with dark-surfaced incised potsherds, directly above the entrance to Leang Pette Kere. Boedhisampurno (1982) attributes the 170 fragments to four male and two female adults, and describes them as cremated when still fresh. He further reports that Glover felt the pottery was broadly Metal Period, i.e. within the period 1000-2500 BP. Given the apparent lack of gravegoods, the mode of burial is possibly our safest guide to providing a date. A date of c.1000 BP may be the best estimate until further study shows the remains are either younger or older.

There are also hints that the secondary deposition of macerated but uncremated remains was not totally discontinued before protohistoric times. The large earthenware urns excavated by Willems (1938) at Sabbang, Luwu, did not contain any preserved bone, which possibly suggests that they had held uncremated remains. Interpretation of the site as a cemetery depends largely on local memories to that effect (Willems, 1938), which in turn suggests a date within the last 1000 years. In addition the deeper levels at Sompu, Takalar, contained patchily represented and peculiarly disposed human remains which, to go from their description, were uncremated (Tjandrasasmita, 1970:7,9,11,17).[8] Finally, numerous limestone caves along the Bulukumba coastline, directly across the strait from Selayar Island, contain human bones. They are either single or piled together, free or placed within log coffins, and so might include secondarily disposed remains (Engelhard, 1884; Muttalib, 1983). In one cave Engelhard (1884:377-379,392) collected glass beads, bronze jewellery, an iron sword, fine local pots including kendis, and three early Ming coins - objects which would appear to date up to the 15th century.[9]

The dominant mortuary practice observed at SSPHAP's immediately pre-Islamic burial grounds - east-west oriented inhumations, sometimes associated with *duni* - also characterises other areas populated by people speaking Makassar languages (Table 13-5). Examples have been excavated at Ulu Leang 1 in Leang-Leang (Glover, 1976); Sompu, Malewang and Palambeang (Tjandrasasmita, 1970); and Batang Mato Sapo in Selayar (Wibisono, 1985). In all cases the associated tradewares are Ming period.[10] The Palambeang excavation even recovered a *duni* (Tjandrasasmita, 1970). Moreover, the 16th century Portuguese sources note that the dead at Gowa were buried (Hadimuljono and Macknight, 1983:69), while Gervaise

[8] Sompo's deeper levels also produced burned remains interred in jars, interpreted by the excavators as water buffalo burials (Tjandrasasmita, 1970:27), but which I think might have been cremated human remains.

[9] The possible chronology of the remains in the Bulukumba "death caves" urgently needs to be sorted out.

[10] Sompu produced some earlier tradewares, but in association with the apparent secondary burials.

(1688) mentions the wealth of ceramics, jewellery and gold looted from an old royal grave at Gowa.

On present evidence the Sanrabone *duni* provides the earliest direct date on the practice which, thus, appears to have spread within the coastal Makassar belts from at least the 14th century. Circumstantial evidence further suggests the practice was adopted in coastal Luwuk, a Bugis area. The spectacular antique hauls recently made in Luwuk are not in keeping with other Bugis areas but instead recall the coastal Makassar belt (Reid, 1983a:122).[11]

In summary, at around 1000 AD open burial sites in the South Sulawesi lowlands began to proliferate, and the practice of primary cremations had appeared in the peninsula's southwest corner. By c.1400 AD the central distinction between primary cremations in most Bugis areas, and primary inhumations in coastal Makassar areas and (apparently) Luwuk, was well established. As a body these sites indicate a transformation of the social landscape. Firstly, even the oldest generally occur within a site complex which includes immediately pre-Islamic to Islamic cemeteries, suggesting that they mark the foundations of historical continuity into the present societies. In the same vein, the graves of the most prominent figures were permanently marked, and many can still be recognised today. Finally, the distillation of two widespread but distinct burial traditions suggests that communities over large areas had begun to realise common cultural affinities, i.e. two major culture areas were under establishment.

13.2.3 Wider patterns in the archipelago

While primary cremations and primary inhumations may well be new developments in South Sulawesi during the 2nd millennium AD, both practices have lengthy antecedents in the islands to the west.

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[11] In June 1985 Campbell Macknight and myself briefly inspected one large pot-holed area, less than a km from the Sabbang urnfield, and were shown a wealth of bronze artefacts and Ming period tradewares from the site.

Clear evidence of primary cremations dated to the Neolithic or the Metal Period comes from the West Mouth of Niah Cave, Sarawak. Firstly, some of the 68 extended burials show partial burning, which suggests incomplete cremation of the corpse followed by primary burial (Bellwood, 1985:254). Secondly, Harrisson (1967) divides the 59 secondary burials into "cremations", where the bones are distorted and largely converted to ash, and "lustrations" where the application of heat has fractured or superficially charred the bones. While Harrisson's categories probably do not exactly correspond to cremations of the corpse and cremations of macerated bone, they cover the same range (cf. Ubelaker, 1984:35-36).

As implied above, the West Mouth of Niah also contained primary inhumations which do not show traces of cremation, sometimes buried in log coffins which may be the oldest yet dated in the archipelago (Bellwood, 1985:89,256). Cemeteries dominated by extended burials, often associated with log coffins, have been excavated widely in Sumatra, Java, Bali and the Malay peninsula, in contexts dated between 1000 BC and 1000 AD (Bellwood, 1985:265, 289-301; Peacock, 1979; Soejono, 1985; Tillotson, 1989b). The two log coffins dated from Sabah are also approximately 1000 years old (Bellwood, 1988b:252-253).[12] Such cemeteries appear absent from these places after 1000 AD, presumably reflecting a widespread adoption of cremation.[13]

As the practices described above do not seem to have appeared in South Sulawesi before the 2nd millennium AD, the prospect is raised of the adoption of new cultural repertoire. However, as Dianne Tillotson pointed out to me, both practices can be seen as a simplification of late

[12] The Madai 1 coffin was excavated on top of a coarse stoneware jar placed beneath the drainage hole to catch the decomposed body fluids. The jar has been identified as a possibly 14th-15th century Kalong or other Thai ware, which would make it at least three centuries younger than the coffin on top (Bellwood, 1988b:252). However, the pictures of the jar (Bellwood, 1988b:234) show that it has the ovoid form, four horizontal handles and rolled rim which characterise the Chinese and Vietnamese jars made during the 10th-13th centuries and exported widely to the archipelago, including Borneo (see Harrisson, 1986).

[13] Later replaced by Islamic mortuary practices in much of the area.

prehistoric Bugis-Makassar eschatology. The old rite of macerating the corpse and burning the bones before their disposal could have been transformed into primary cremations (and secondary burials) by simply burning the corpse before maceration, or rather as the method of maceration. And primary inhumation can be seen as combining maceration, and disposal of the corpse with its gravegoods, in one act. Even the log coffins need not have been a new element because, as recorded in numerous ethnographies (Tillotson, 1989a), the old practice of macerating the corpse may well have occurred in above-ground coffins already containing gravegoods. Whether or not the immediately pre-Islamic Bugis and Makassar practices involved new attitudes to death, they are best interpreted as marking a new internal social organisation.

The direct parallel for the extended inhumations practised by the coastal Makassar comes from the Philippines lowland and especially coastal locations. Philippine cemeteries containing inhumations are unknown before their proliferation during the early 2nd millennium AD, associated with occasional log burials (Hutterer, 1973; Ronquillo, 1987; Tillotson, 1989b), and tradewares dating between the 12th and 16th centuries (Evangelista et al., 1981; Langrick, 1982; Hutterer, n.d.). Tillotson (1989b:9) links these sites with the rise of trading entrepôts, arguing that the shift from subsistence preoccupations to a more entrepreneurial economy had fostered the use of simpler and more materialistic mortuary status markers. Hutterer (n.d.) associates the increasing quantities of tradewares and size of the burial grounds with the development of large-scale societies, hereditary social strata and supralocal political hierarchies, as indicated by the earliest Chinese and European historical sources. Hutterer further notes that the internal and external social hierarchies were still immersed within a bilateral kinship system, which would agree with the weak spatial segregation between the rich and the poor in the cemeteries (Langrick, 1982).[14] This general perspective can

[14] Langrick's analysis further suggests to her that the Philippine societies were egalitarian, i.e. equivalent to Tillotson's competitive ranked societies. However, her use of the amount of energy expended in a burial as a guide to

accommodate all the available data on immediately pre-Islamic, Makassar burial grounds before the establishment of designated royal cemeteries during the 16th century.

The details are so similar in the Philippines and South Sulawesi lowlands that totally independent development seems unlikely. In particular the Bajau, whose area of influence has long extended to Borneo, the Malay peninsula and the southern Philippines, appear to be deeply implicated. All three complete *duni* recorded by SSPHAP were found at a locality specifically called Bayoa. Coincidence maybe, but the one-to-one relationship between the toponym Bayoa and the four major rivermouth ports - Tallok, Makassar, Kota Galesong and Sanrabone - is not.[15] Nor is there any particular reason to doubt that the Gowa royalty originated with the marriage of a Karaeng Bayo and a Katangka (Gowa) princess (13.1.1). Very probably the Bajau of the southwest coast practised primary east-west inhumations, possibly the first group to do so. Their apparent status as a major early trading community could well have facilitated the switch by the Makassar to this simplified burial procedure.[16]

It is more difficult to interpret the immediately pre-Islamic cemeteries of the Bugis, south of Luwuk, owing to the lack of professional excavation. However, note that hereditary stratification appears to have developed earlier here than elsewhere in the peninsula (13.4.1), and the vast quantities of "early" and "Ming" tradewares at Soppeng's

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social complexity appears to be directly inapplicable to the Austronesian situation (especially because, as Tillotson shows, the competitive ranked societies usually expended energy in disintegrating rather than elaborating the burial remains). Further the cremations at Pila need not represent a custom introduced to the Philippines at around the 14th century, given a much earlier presence at Arku Cave.

[15] Here I ignore "Bayoa 2" which appears to represent a late resettlement from Bayoa at Makassar (11.4.1). Note that the Sanrabone River continued to function as a major river harbour for craft until the very late 17th century (cf. Andaya, 1981:168).

[16] Note that I am not advocating some simple model of cultural diffusion. Rather, I hold that cultural traits and complexes diffuse because they answer local cultural requirements. The case for long-term contacts between South Sulawesi and the Philippines, which would make "independent invention" of the same burial practice unlikely, is adumbrated by Macknight (1986).

former palace sites (Kallupa et al., 1989) highlight the importance of trade. On present evidence, it can be reasonably inferred that both aristocrats and commoners were cremated, with status differences marked by the permanence and grandeur of the shelters built to protect the remains buried in jars (Hadimuljono and Macknight, 1983:69-70; Kallupa et al., 1989).[17] A number of complementary reasons can be proposed for the Bugis preference for cremations. Cultural contradistinction from the societies practising inhumations could have been desirable. The Bugis heartland societies retained a primarily agrarian basis (e.g. Caldwell, 1988) and hence a continuity of the traditional concern with subsistence rituals (cf. Tillotson, 1989b:9). Further, cremation as a mortuary practice was then fairly widespread in the western archipelago, which could have endouraged the Bugis tendency to do the same.

13.3 Settlement Pattern Analysis

13.3.1 Main results of the site clustering analysis

The total area-sites, point-sites and historical toponyms recorded during SSPHAP's Gowa survey are shown in Figure 13-5, along with relevant toponyms and Suaka sites outside the surveyed area.[18] The target sites were "surface

[17] Hadimuljono and Macknight (1983:70) suggest that the Bugis cremations represent Indic influence, and so may have been restricted to the aristocracy. But the Portuguese accounts do not support the proposition, and the archaeological evidence from Niah shows that primary cremations preceded any Indic influences in the archipelago. Moreover, primary cremations were apparently established at coastal Makassar locations by around 1000 BP.

On top of that, it is hard to imagine what other funerary rite could have been practised among the commoners. Cemeteries of inhumed pre-Islamic Bugis would have been discovered by now if that were the case. The only other possibility would be that the corpses of Bugis commoners were macerated and the bones then disposed of, possibly after secondary cremation. But this seems unlikely as the commoners would then have received more complex treatment than the aristocracy.

[18] The Suaka sites in Kecamatan Galesong Selatan were plotted to indicate the case for a spatial and hence a social orientation of Kota Galesong to the southeast rather than to the north. The point is not relevant here.

archaeological remains found either within 17th century and earlier burial grounds, or within the directly associated area" (5.5.1). Note that all fortifications were detectable as target sites. Also, the more substantial burial grounds were often associated with considerable evidence of contemporary occupation in the direct vicinity, especially where "site" (i.e. number of sites or the area covered by site) appears densest (e.g. 6.5; 7.1). Sometimes the target sites apparently hosted burials during just part of their existence as substantial kampungs (e.g. 9.4 and 9.5.1); sometimes occupation at a site preceded its use as a burial ground.[19] Sometimes burial grounds apparently acted as the anchor within a peripatetic or expanding settlement system (e.g. 8.3). All in all, the target sites appear to correspond to the former long-standing fixtures in the social landscape, and the density of site corresponds to the long-term socio-political importance of an area.

The main results of the various site clustering exercises are brought together in Figure 13-6.[20] Overall there is a pleasing tendency for the cluster centres to coincide with key sites, i.e. palace sites in the high political arena between Benteng Anak Gowa and Tallok, and complex burial grounds further afield. Examples of successful "identifications" of palace sites include Benteng Tua, Anak Gowa and, to a lesser degree, Bonto Alak.[21] Examples of successful "identifications" of complex burial grounds include Saumata, Paccellekang, Pattallassang, Borongloe, Aengtoa, Mandallek and Kota Galesong. Moreover, the largest (Saumata Lama, Mandallek Toa) are more stable as central sites than are smaller burial complexes such as Paccellekang Lama and Borongloe (see Figures 9-2, 10-2 and 11-6).

[19] e.g. Sampulungang and Makam Datu Bonto Lebang (Bulbeck, in prep. b).

[20] Although not proven in the clustering exercises, I know of further looted burial grounds a short distance south of the "Bonto Pakja" group, which would probably have the effect of allowing the Benteng Tua and Anak Gowa clusters to join into a "supercluster".

[21] My lack of success in "identifying" the river mouth palace sites of Tallok and Somba Opu reflects the lack of sites at sea. I have not tried to factor in the merit of access to the sea in my "central place" model.

The "Tallok cluster" is strung along the coast southwest of the Tallok mouth. A distinct "Makassar cluster" stands out at the former mouth of the Garassik (Jeknekberang), and its closest spatial links are with the site cluster centred on the lower Aeng. Further south the Jamarang, Mandallek and Galesong clusters correspond to the drainage basins of coastal streams. River mouths and streams clearly acted as the anchors of the historical settlement system along the coast (Figure 13-6).

The dotted line drawn 3.6 km inland from the 17th century coastline in Figure 13-5 neatly plots the hinterland border of the coastal clusters, and possibly points to the existence of a Makassar historical "pesesir" subculture with strong orientations to the coast. The dotted line 8 km inland from the 17th century coastline neatly demarcates the lower-middle Jeknekberang sites (Chapters 6 to 8) from those further east (Chapters 9 and 10). It may validate the notion of an "immediate hinterland" as opposed to a "hinterland" adaptation, at least within the survey area (Figure 13-5).[22]

The average-linkage procedure which I used to cluster the sites is a type of hierarchical clustering (6.6.1), and hence it produced a hierarchical result even if the intersite distances conform to a random distribution (e.g. Sneath and Sokal, 1973). To test whether the intersite distances depart from a random distribution, I followed the formula and procedures of the Nearest Neighbour Analysis as outlined by Gibbon (1984:227). After sectioning the 1:50k version of Figure 13-5 into coastal, immediate hinterland, and hinterland areas - based on the lines 3 km and 7.5 km inland from the late 17th century Gowa coastline - I then used 1 mm graph paper to measure the surveyed areas, and took the nearest neighbour distances of the "point-sites" and "site-areas" within the continuously surveyed area.

[22] To draw these lines I have translated the 17th century coastline along a southeast axis to fit the main axis of river drainage, rather than translate the coastline south-east-east as would better fit the axis of the coastline itself.

TABLE 13-6. NEAREST NEIGHBOUR ANALYSIS - MAIN SURVEYED AREA

	Number of sites#	Average nearest neighbour distance	Area surveyed	Density (sites/km²)	Degree of Randomness (R)
Coastal	51	308.84 m	39 km²	1.31	0.73
Immediate Hinterland	43	220.91 m	30 km²	1.43	0.53
Hinterland	49	400.10 m	98 km²	0.50	0.56
Total	143	313.67 m	167 km²	0.86	0.58

includes only those sites with their nearest neighbour definitely within the surveyed area.

The results (Table 13-6) confirm the visual impression (Figure 13-5) that the sites are clustered beyond a random pattern ($R << 1$) within the three areas considered and in the surveyed area as a whole. Furthermore, we may apply the C test statistic to the total sample because n exceeds 100 cases. C is estimated at 17.76, indicating that the degree of clustering is highly significant (cf. Hodder and Orton, 1976:40).[23]

13.3.2 Population densities

The c.1638 sketch of Makassar (partly reproduced in Photo 1-1) depicts the city's hinterland as a vast uninhabited plain stretching to the mountains. This contrasts acutely with the distribution of historical sites (Figure 13-5). Indeed the sites in the immediate hinterland - i.e. the area covered by the Benteng Tua and Anak Gowa clusters - produced a higher site density than the coastal areas did (Table 13-6). Clearly this particular aspect of the c.1638 sketch reflects the limits of Dutch intelligence gathering rather than population distribution.

I suspect that Reid's (1983a) crucial article on Makassar has relied too heavily on the European sketches, prompting

[23] Arguably, the degree of clustering has been overestimated because my distance measurements exclude area within the sites (6.6.1). However, any such overestimation is slight, because the surface area shown as site in the main surveyed area is only about two square kilometres (see Appendix C).

him to model Makassar's rise within a sparsely populated landscape (p.120), and to relegate Benteng Tua to the status of a mere sacral centre from around 1590 onwards (p.141). Rather, the land behind Makassar has had a very long history as a densely populated network of rice bowls (Chapters 6 to 10) and must have been a key factor behind Makassar's success. Previous accounts of Makassar correctly identify the importance of its proximity to good sawah land, but misleadingly emphasise the distant fields of Maros and Takalar (e.g. Reid, 1983a:119; Villiers, 1991:152). Indeed the continually growing status of Makassar as an entrepôt, from the early 16th century to the late 17th century (and till this day), correlates with augmented discharge along the Garassik as its source cut back, until capturing the headwaters of the Sanrabone River in the 17th century (11.1). Not only would the river's growth have provided better anchorages and more available drinking water near the mouth, but also it would have enhanced the seasonal inundation and wet rice yields in the city's direct hinterland.

Population estimates which can be derived from the historical sources, rubbery though they are, support the view that considerably more people lived around Makassar than in it. In this exercise I will follow Reid's (1987) understanding of Makassar as the coastal strip from Ujung Tana to Paknakkukang extending around one km inland.[24] The contiguous villages can then be understood as the surrounding arc embracing the rest of the Makassar cluster and Bonto Alak supercluster, and all of the Aeng, Anak Gowa and Benteng Tua clusters (Figures 13-5 and 13-6). The wider surrounds can be understood as the area beyond the contiguous villages but still within a 20 km radius of Makassar.

Turning to the derived population estimates (Table 13-7) we see that in the period 1614-1615, the number of people living within 24 hours' mustering distance (say 20 km) was maybe five to six times the number that lived in the city. During the heyday of Makassar, say the 1630s to the 1660s,

[24] When estimating from the sites I will allow two kilometres as this is the distance of Bonto Alak, one of the key locations in the city, from the sea.

TABLE 13-7. ESTIMATES OF POPULATION SIZE IN OR NEAR MAKASSAR

Estimates from Historical Sources (after Reid, 1987)

Year	Referred Area	Reference	Population Size
1614	Makassar City	1260 houses burned down (assume 20% of total)	25,200-31,500
1615	Circa 20 km radius of city	36,000 fighting men mustered within 24 hours	180,000
1636	City and contiguous villages	60,000 died in a plague (assume 30% of total)	200,000
1640 -1660	Makassar City	10 houses per acre	100-125,000
1660s	City and contiguous villages	160,000 men capable of fighting	800,000 (accept 400,000)

Estimates from Number of Toponymic Sites

Referred Area	Number of Sites/ Historical Toponyms	Population Size
MAKASSAR CITY	30	30,000
Bonto Alak supercluster	28	28,000
Mangallekana cluster	6	6,000
Makassar cluster	16	16,000
Aeng cluster	9	9,000
Benteng Tua cluster	30	30,000
Anak Gowa cluster	12	12,000
CITY AND CONTIGUOUS VILLAGES	101	101,000
Upper-Middle Jeknekberang	33	33,000
Tallok Headwaters	32	32,000
North Polombangkeng	16	16,000
Kota Galesong	9	9,000
Other	13	13,000
20 KM RADIUS OF CITY	204	204,000

N.B. Four to five persons per household assumed (based on contemporary Indonesian statistics). Reid assumed four.

20% of population able to bear arms allowed as a generous estimate (based on general demographic data of pre-industrial societies). Reid allowed a maximum 40%.

1000 people per toponymic site inferred for SSPHAP's survey. Toponymic sites are shown in Figure 5-2, historical toponyms and Suaka sites in Figure 13-5, and the site clusters in Figure 13-6.

the number of people living in contiguous villages was twice or thrice the number in the city.[25]

To derive estimates from the site survey I use "toponymic sites" (5.6.1) to strike a direct parallel with the historical toponyms which are crucial in this exercise. My toponymic sites basically reflect the number of burial grounds associated with distinctive kampung-like toponyms. To convert these frequencies to population estimates, I refer to the present situation in Kecamatan Somba Opu and Kecamatan Bonto Marannu in Kabupaten Gowa, and Kecamatan Galesong Utara in Kabupaten Takalar, as these were virtually surveyed in full.[26] I counted 41 modern Islamic cemeteries associated with distinctively named kampungs in Somba Opu, estimate 44 in Bonto Marannu, and counted 28 in Kecamatan Galesong Utara. These serve 41,369 inhabitants, 35,792 inhabitants and 27,784 inhabitants respectively (cf. Kantor Sensus dan Statistik Sulawesi Selatan, 1985:Table 1.2). Averaging these figures leads to 972 (around 1000) people per modern equivalent of my toponymic sites.[27]

The results of inferring 1000 historical inhabitants per toponym or toponymic site are shown in Table 13-7. They should be an overestimate of the population, even in Makassar's heyday, because a proportion of my toponymic sites had fallen into disuse as burial grounds by the 17th century. But they correspond very well with the figures estimated for 1614-1615: around 30,000 people in the city; 71,000 further people in contiguous villages (twice to thrice the number in

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[25] Strictly speaking we would estimate two to seven times the number. However, Gervaise is noted for having romanticised the achievements of the Makassar, and his report of 160,000 fighting men possibly doubles the likely figure.

[26] To accommodate the Bontomanaik area of Kecamatan Bonto Marannu, which is the main area missed by my survey, I accept one cemetery for every kampung distintively named on the Dutch land-use maps.

[27] This figure seems large as it far exceeds the usual number of inhabitants per kampung or the greatest number of marked graves which SSPHAP recorded in any cemetery. The first point is explained by the common practice of centralised burial grounds serving several kampungs. The second point would reflect the large proportion of graves whose markers are either perishable or likely to become indistinct owing to vegetation regrowth, human or animal use of the cemetery, etc. (see Appendix F).

the city); and a total of around 200,000 in these areas plus the wider surrounds.

Makassar at its peak is probably underrepresented by my data. North of Somba Opu, I had to rely on toponyms; I did not consider Makassar's foreign residents (12.3); and many former sites at the Garassik (Jeknekberang) mouth must have been destroyed or deeply buried (11.2). Let us assume that Reid's (1987) preferred estimate of 100,000 residents in Makassar during its heyday is a better estimate. Let us further assume that my survey of the wider surrounds covered only half of the population living there. Changing nothing else, we would have 100,000 people in Makassar; 171,000 in Makassar and its contiguous villages; and a total of 377,000 in these areas plus the wider surrounds. These figures are quite comparable with those suggested, by the historical sources, between the 1630s and 1660s (cf. Table 13-7).

Regardless of how we play around with the data the same range of estimates surfaces. This encourages me to accept the general reliability of the figures, including the estimates derived archaeologically. Now, only the archaeological evidence allows us to estimate population densities earlier than the 17th century, so I restrict my comparisons to the continuously surveyed area. To follow the divisions used in Table 13-6 I recognise a coastal belt with an estimated 53,000 inhabitants; an immediate hinterland with 43,000 inhabitants; and a hinterland with 71,000 inhabitants.[28] The sites which might represent these people are toponymic sites where some tradeware sherdage was recorded: 47 along the coast (1128 people/site); 41 in the immediate hinterland

[28] These figures follow from accepting my estimates based on the number of archaeological sites (cf. Figures 5-2, 13-5 and 13-6) as representing the mid-17th century situation. The estimated 79,000 inhabitants along the coast between the Tallok cluster and the Saro sites immediately south of Kota Galesong include 53,000 in the continuously surveyed area south of Somba Opu. The estimated 51,000 inhabitants in Makassar's immediate hinterland (i.e. the isolated Lakkang toponym and the Bonto Pakja group, as well as the Pampang, Benteng Tua and Anak Gowa clusters) include 43,000 in the continuously surveyed area. The estimated 73,000 inhabitants further inland include 71,000 within SSPHAP's continuously surveyed area.

(1049 people/site); and 68 further hinterland (1044 people/site).

The age estimates accepted by SSPHAP for datable pre-Qing tradeware classes and individual pieces (Appendix B) frequently cover two centuries (e.g. 15th-16th centuries) or straddle different centuries (e.g. late 15th to early 16th century). These sorts of estimates can be assigned forward in time, i.e. a 16th century date for the cases just mentioned, to bring them into comparability with pieces dated to a single century are assigned. Figures 13-7 and 13-8 show the distribution of the pieces thus dated across the toponymic sites.

If there is a correspondence between the number of sites dated by tradewares and the population represented, then SSPHAP's sites dated to the 17th century should correspond with the population estimates derived from historical references. By area there are 39 such sites along the coast (1359 people/site), 27 in the immediate hinterland (1593 people/site), and 56 further inland (1268 people/site). The number of people represented per site varies within tolerable limits, suggesting that we can use the combined average - 1369 people/site - for the sites dated by the presence of earlier tradeware classes. The resulting estimates are given in Table 13-8.

Consider first the 17th century estimates which, as discussed above, appear to match the figures suggested by the historical records. The densities exceed 1200 people per km^2 along the coast and in the immediate hinterland, and 1000 people per km^2 overall. Now these sorts of urban population densities might be expected of Speelman's "Makassar city" and Benteng Tua. After all, the 17th century brick constructions included 11.4 km of wall around the four palaces (Benteng Tua, Tallok, Somba Opu and Sanrabone) and a similar length along the coast. In addition, the inland densities have been exaggerated by the strong survey emphasis on the rice lands, and the 1693 map (Figure 5-5) indicates a proliferation of kampungs along the south coast. The figures appear realistic

TABLE 13-8. POPULATION DENSITIES AND DISTRIBUTION OVER TIME

Number of toponymic sites dated per interval

	14th century	15th century	16th century	17th century	Total sites
Coast	11	19	35	39	47
Immediate hinterland	19	18	26	27	41
Inland	13	25	52	56	68
Total	43	62	113	122	156

Raw estimates (assume 1369 people per dated toponymic site)

	14th century	15th century	16th century	17th century
Coast	15,059	26,011	47,915	53,391
Immediate hinterland	26,011	24,642	35,594	36,963
Inland	17,797	34,225	71,118	76,664
Total	58,867	84,878	154,697	167,018

Estimated people per square km (cf. areas in Table 13-6)

	14th century	15th century	16th century	17th century
Coast	386	667	1229	1369
Immediate hinterland	867	821	1094	1232
Inland	181	349	727	782
Total	352	508	927	1000

Proportion of population in different zones (percentages)

	14th century	15th century	16th century	17th century
Coast	25.6	30.6	31.0	32.0
Immediate hinterland	44.2	29.0	23.0	22.1
Inland	30.2	40.3	46.0	45.9
Total	100%	100%	100%	100%

Proportion of 17th century population at earlier phases

	14th century	15th century	16th century	17th century
Coast	28.2	48.7	89.7	100%
Immediate hinterland	70.4	66.7	96.3	100%
Inland	21.4	46.4	92.9	100%
Total	34.4	51.6	92.7	100%

if, maybe, slightly too high.[29]

The population densities calculated for earlier periods are predicated on a constant ratio between toponymic sites and population represented, which may not be a sustainable assumption. Certainly, much lower densities would have resulted from calculations based on the number of dated tradewares rather than the number of sites (B.4.5). But hundreds of people per km² in certain areas such as the vicinity of Benteng Tua, even by the 14th century, may be a reasonable inference. The general implication of a three-fold population growth between the 14th and 17th centuries may well be the right order of magnitude.

The estimated proportion of the population in the various zones within SSPHAP's survey area reiterates the conclusions already derived from the tradeware profiles. The immediate hinterland[30] appears to have contained by far the greatest population density by the 14th century. During the centuries that followed, population growth along the coast and in the further hinterland apparently greatly outstripped the concurrent population growth within the immediate hinterland. The data suggest the development of quite intensive wet rice agriculture in the immediate hinterland by the 14th century. By this time the initial conversion of the mature river valleys of the Tallok headwaters into large expanses of rice fields had probably begun. Population growth along the coast can possibly be attributed to more intensive subsistence activities (wet rice agriculture and other farming, the development of fish ponds, more intensive fishing), but above all to the growing importance of trade.

[29] Compare them, for instance, with the modern population densities which can be calculated from Kantor Sensus dan Statistik Sulawesi Selatan (1985:Table 1.2) for SSPHAP's main surveyed *kecamatan*: 1473 people per km² in Somba Opu; 260 people per km² in Bonto Marannu (which includes a lot of lightly occupied foothills); 1277 people per km² in Galesong Utara.

[30] And slightly further inland as well to incorporate the "early" burial grounds at Saumata Lama and Cellaya (Chapter 9).

13.3.3 Geopolitical transformations

I base my estimates of the area under Gowa's direct control on the recorded membership of Gowa's *Bate Salapang* (Mukhlis, 1975:60-62),[31] the distribution of karaengships held by Gowa aristocrats, and the location of Gowa's palace. Only the latter two sources of information are available for Tallok, and I assume that its *Gelarang* districts fell within the same area. I also plot abutting independent kingdoms and, where relevant, their extended existence as semi-autonomous karaengships (e.g. Jipang). Boundaries separating contiguous places associated with abutting polities are drawn along the perpendicular bisectors. As so much information is available I dispense with redundant data points,[32] and summarise the much fuller series which could be reconstructed down to ten phases (Figures 13-9 to 13-11).

We can begin with the apparent situation immediately after Kgloe ri Sero's installation at Tallok (12.4). The number of *Gelarang* who are unambiguously cited as supporting Batara Gowa (12.1.1) comes to nine (Figure 13-9a) which suggests that it represents the origins of Gowa's nine representative districts. In that case the nine cited as the original founding flags (Figure 2-2) could represent the nine at the time writing was locally developed, during Tumapakrisik Kallona's reign, backdated to Gowa's origins only for the want of evidence. Certainly the restricted area they cover would fit other evidence of significant territorial expansion by Tallok during Tunipasukruk's reign, notably at Gowa's expense (Figure 13-9b),[33] and the possible evidence of concurrent social instability in the Tallok headwaters

[31] The precise location of some of the *Bate Salapang* members, notably Mangasa, is not certain, but the distances involved in choosing one of the other possible locations are insignificant.

[32] e.g. Benteng Tua rarely if ever did not contain a Gowa aristocratic karaengship, but Gowa's control of the fort is clear from plotting the *Bate Salapang*. Similarly, the main palace (Somba Opu) and subsidiary palaces (Benteng Tua and Anak Gowa) which can be recognised for Tunipalangga's reign (Figure 13-9d) could also have been depicted as Gowa aristocratic karaengships.

[33] The intermediate phase between Figures 13-9a and 13-9b, when Gowa ruled Garassik, is not depicted here.

(10.8). Gowa's spectacular territorial expansion towards the end of Tumapakrisik Kallona's reign, primarily at the expense of Polombangkeng at the south (Figure 13-9c), is clear from plotting Gowa's *Bate Salapang* (4.2.1) and local vassals (Figure 4-3).

A political renaissance in Polombangkeng during Tunipalangga's reign is clear from the re-emergence of Jipang and Sanrabone as independent polities, and the removal of Tumapakrisik Kallona's southernmost *Gelarang*, Manuju, from the *Bate Salapang* (Figure 13-9d). Tumapakrisik Kallona's northernmost *Gelarang*, Sudiang, also appears to have been regained by Maros. The contraction of Gowa's local territory does not contradict Tunipalangga's status as a great warlord, rather it reflects the redirection of his energies towards military conquests further afield (Figure 4-4). His conquests also included Bajeng, suggesting that Tunipalangga had decided to settle the Polombangkeng question permanently by removing its leading member. By Tunijallok's reign Gowa's *Bate Salapang* covered their former extent; Mandallek appears to have been replaced by a Galesong ruled by a Gowa noble; and Tunijallok had taken Tallok as Gowa's wife (Figure 13-10e). Tunijallok's focus on local political power, which also included the defeat of Maros, corresponds to his apparently reduced interest in the wider military horizons (Figure 4-4). It also set the stage for his son, Tunipasuluk, to rule Gowa, Tallok and Maros concurrently, giving him the single greatest area ever directly ruled by Gowa (Figure 13-10f).

The successful palace revolution initiated by Karaeng Kanjilo (later Sultan Abdullah) does not appear to have affected the extent of Gowa's *Bate Salapang*, but it restored Tallok's autonomy, and apparently the semi-autonomy of three areas previously ruled directly by Gowa - Galesong (Campagaya Lama), Pattekne and Maros (Figure 13-11g). As a complementary point, the loosened political bonds at home corresponded to greater Gowa's (Abdullah's) establishment of the maritime empire (Figure 4-5).

The notion of distinct geopolitical territories at home is, for the first time, mollified by the evidence of shared

authority. The point is suggested by the Gowa karaengships within the semi-autonomous regions,[34] and Somba Opu's encirclement by Tallok karaengships. However, during the part of Alauddin's reign when he was based in Benteng Tua (1618-1631), it would seem that Gowa had been returned to the status of a hinterland kingdom (Figure 13-11h). Not only was Makassar filled with Tallok karaengships, plus the Lekokboding (Marusuk) karaengship of I Sambalik (LEK2), but also Abdullah had installed himself in nearby Bonto Alak while keeping Benteng Tallok for his son, Mudhaffar.

I suspect that the issue of Gowa's direct coastal access, which appears to have been a major stake in 16th century politics, was still a cause for some tension between Gowa and Tallok. Resolution of the tension, and a fully mature realisation by Gowa and Tallok of their inseparably shared interests, appears to have come with Gowa's establishment as a truly coastal kingdom. Loosely covered by the reigns of Mohammad Said and Hasanuddin, the period (1631-1667) witnessed Makassar's heyday as a great maritime city (Reid, 1987), extending more or less from Gowa's palace at the south to Tallok's palace at the north (Figures 13-12i and 13-12j). The two kingdoms displayed a less proprietary attitude to their political cores (not to say that the right to resume full control was ever abandoned). For instance, Gowa's Kg Katinting established himself at Tallok during the period when Kg Pattingalloang Sultan Mahmud was based at Bonto Alak, and Tallok karaengships (Karunrung, Pakbiniang) directly abutted Benteng Tua during Hasanuddin's reign. The shared Gowa-Tallok area, best depicted as the entrepôt during Alauddin's early reign (Figure 13-11g), is better thought of as the land immediately backing the entrepôt during the mid-17th century.

[34] Although for the sake of simplicity I have depicted Gowa's Ujung Tana karaengship within Tallok's area, the marriages of this Kg Ujung Tana are unknown (Table 3-5), suggesting that he had been expelled from Tallok along with Tunipasuluk. The inclusion of the Tabaringang karaengship within Campagaya Lama might also be misleading because she was presumably based in Sanrabone where she bore the king many offspring (three depicted in Figure 4-10). There is however no evidence of a return of the Moncong Sipong karaengship to Maros.

17th century relationships between Gowa and Tallok dramatically affected the level of political autonomy further south. Gowa's reduced territorial derring-do under Alauddin paved the way for local rule along the densely populated south coast, and the re-established Mandallek karaengship during Mohammad Said's reign can be seen in the same light. Nonetheless his reign also witnessed the first re-establishment of a greater Gowa karaengship along the south coast (Popok), followed during Hasanuddin's reign by the Mandallek, Galesong, Sanrabone and Lengkesek karaengships.[35] Greater Gowa's creeping rule southwards may well have placed the Turatea rulers in fear of losing their karaengships, and encouraged them to switch their allegiances to Speelman and Arung Palakka (Sahaduddin) during the 1667 siege of Makassar.[36]

13.3.4 Political jurisdiction

In broad terms Figures 13-9 to 13-12 depict numerous karaengships but no or few *Gelarang* districts along the coast, and the reverse situation in the agricultural hinterland. Although not emphasised here, Gowa's immediate hinterland contained the highest density of karaengships. It also contained the highest density of *Gelarang*, including the two (Mangasa and Tombolok) whose title holders regularly acted as important decision makers. The scarcity of karaengships which can be plotted in post-conquest Maros, and the significance of the *Tumailalang* post for the Lekokbodong (Maros) lineage group (3.5.3), casts Maros in the same light as Gowa's *Gelarang* districts.

[35] Mandallek and Sanrabone might not be considered as good examples because Mandallek's entrustment to a Tallok noble was in direct anticipation of the Makassar War (4.5.2), and Abdul Jalil's installation at Sanrabone in 1668 can be interpreted as flight rather than political expansion (E.1.3). However, the Mandallek case reflects greater Gowa's capacity to assume direct authority by this juncture, while the Sanrabone throne had been left vacant since 1658.

[36] As reported by Andaya (1981), Turatea's change of heart was the crucial event which prompted greater Gowa to capitulate and sign the Bungaya Treaty. Note also that Kg Lengkesek secretly switched sides too, and his decision may well have been prompted by the vulnerability of his karaengship between Jipang and Turatea.

In gross terms the karaengships corresponded to control over labour, while Maros and the *Gelarang* districts corresponded to areas of agricultural surplus.[37] This distinction would imply that the south continued to be divided into karaengships either directly ruled by greater Gowa or ruled by friendly leaders, because its value lay in its population rather than its agricultural surplus. The very high 17th century population densities which I estimate along the coast, about twice the inland densities even though these were probably exaggerated by my survey procedure (13.3.2), support the distinction. The immediate hinterland would have acted as both a ready supply of manpower, and the belt of agricultural land closest to the city.

Note, however, that the distinction does not reflect a hard dichotomy. The Dutch sketches of Makassar emphasise its garden setting (Reid, 1983b); the south (Polombangkeng) was essentially a landscape of productive rice fields (e.g. Reid, 1983a:119); Maros may have been as densely populated as Polombangkeng (Figure 5-5); at its peak, Makassar had to import rice from overseas (Reid, 1987); and the great bulk of Makassar's potential manpower lived outside the city (13.3.2). Presumably the south coast was expected to provide its own subsistence needs, plus a surplus of seafoods; only the city of Makassar relied on tribute and trade to feed its people.

Hence the distinction should be rephrased. The areas with the highest density of karaengships, i.e. the land enclosed by the arc from Barombong to Benteng Tua and Benteng Tallok, supplied the most available pool of manpower, including war captives at particular intervals, slave labour and heavy corvée duties from the commoners more generally.[38] The south

[37] Hence the Makassar texts talk of the appointment of karaengs, or the populace "choosing" their new leader or being entrusted to a new Karaeng. The lands of Maros, on the other hand, were apparently divided among the Makassar lords by villages and lots following Tunijallok's conquest, at least according to Speelman (Reid, 1983a:119).

[38] Reid (1987; 1988:136) emphasises the importance of corvée labour as opposed to slave labour, which contrasts with Hasanuddin's use of huge numbers of Bugis slaves (see Andaya, 1981). We may speculate that Bugis-Makassar slaves were not exported from Makassar during its mid-17th century heyday precisely because their labour was required at home.

coast provided maybe the bulk of the Makassar engaged in trading seafoods or luxury items in the city, plus a pool of warriors who could be shipped up to defend Makassar or galvanised into action from their kampungs.[39] The inland areas and Maros probably combined an agricultural value with what may have been the largest, if least directly accessible, reservoir of manpower.

This description would be most appropriate for the mid-17th century when the various lineage groups had lost their territorial integrity, and when the kinship system served as a well-oiled apparatus for administering manpower. During the 16th century the stake appears to have been direct territorial conquest in search of both new land and new subjects.

At no stage is there any evidence of a register of lands, which appears to have been an administrative convention introduced by the Dutch (see Andaya, 1981). It was unnecessary because people were identified with the land where they lived, and so territorial karaengships (including the largest, the Gowa karaengship) represented rule over both. At the sorts of population densities described here, in the order of 1000 people/km^2, precise land-holding rights were probably a major concern of the villagers, sparing the administration from overt concern.[40] The system worked as a very precise way of dividing the social landscape and its occupants because of the high density of karaengships and, to a lesser degree, the *Gelarang* posts.

13.3.5 (Greater) Gowa's rise as a secondary state

As a result of the data presented in this thesis, I think that (greater) Gowa can be considered as a case of a state

[39] e.g. the attack by Lukmuk ri Mandallek on Bima (4.5.2), and the attention the Dutch gave to attacking the south coast.

[40] Indeed, SSPHAP's use of burial grounds as a reflection of population distribution worked because of the identification between people and their right as land holders - the right which in essence distinguished free commoners from slaves. True, there are considerable references to population movement in association with the described geopolitical changes (13.3.3), but this made the relocated populace the subjects of another karaengship.

TABLE 13-9. CHECKLIST OF (GREATER) GOWA'S ATTRIBUTES AS USUALLY ASSOCIATED WITH THE DEVELOPMENT OF EARLY STATES

Attribute	Reference	Date
Literacy*	Kluckholm (see Macknight, 1975)	Early 16th century
Towns of more than 5000* people (Benteng Tua)	" "	14th century?, certainly 16th century
Monumental architecture*	" "	Mid-16th century
Urban environment* (Gowa as described by Paiva)	Wheatley, 1983	Mid-16th century
Intensive agriculture (wet rice)	Fagan, 1989	13th-14th centuries
State sponsored irrigation works*	" "	c.1600 (Abdullah)
Advanced military technology	" "	Mid-16th century
Specialised trade (Kg Lolo Bayo)	" "	13th-14th centuries
Specialised craftsmen* (3.5.4)	" "	Mid-16th century
Large-scale warfare*	" "	Early 16th century
State religion*	" "	1605 (Islam)
Concentrations of wealth (east-west inhumations)	" "	14th-15th centuries
Administrative posts*	" "	Early 16th century
Hereditary social strata*	" "	At least 1500
Geopolitical boundaries*	Claessen, 1977	16th century
Poltical autonomy*	" "	15th century
High population density* (500-1000 people per km^2)	" "	14th century?, certainly 16th century
True capital city*	" "	c.1550 (Makassar)
Stable capital city*	" "	c.1550 (Makassar)
Existence of other towns*	" "	c.1550 (Benteng Tua)
Extensive infrastructure*	" "	c.1550 (brick walls)

TABLE 13-8. CHECKLIST OF (GREATER) GOWA'S ATTRIBUTES (CONT.)

Attribute	Reference	Date
Domain over 2460 km²*	Spencer, 1987	1540 (Figure 13-9c)
Central administration*	" "	16th century
Delegation of authority in a pluralistic network*	" "	c.1600 (Kg Matoaya)
Coinage (Abdullah)*	Balmuth, 1975	Early 17th century
Standard weights and measures*	" "	Mid-16th century

* Indicates the more useful, specific criteria.

whose development and administration are very clear. Hence I do not see much point in reviewing the "negara", and "Asiatic Mode of Production" theories of Southeast Asian state formation (see Wisseman-Christie, 1986) - whatever they may describe, it is not Gowa.[41] Views to the effect that southeast Asian societies lacked the true lineages necessary to institutionalise social stratification or to assure orderly succession (Bentley, 1986:290; Wolters, 1982:19-20), or that the early Southeast Asian states were special for having developed in the context of sparse population (Wolters, 1982:2-3; Wheatley, 1983:419; Bentley, 1986:290), can also be dismissed as irrelevant for Gowa. Friedman's (1979) model of asymmetric wife exchange would be inapplicable to the Makassar aristocracy. Gibson's (1990) model of "predatory island Southeast Asian states", and the usual model of long-distance trade as the factor which precipitated Southeast Asian states out of tribes (e.g. Fagan, 1989:446-448; Algaze, 1989:572-573), at least pass first muster, and so will be reviewed in the context of wider developments in the South Sulawesi lowlands (13.4.3).

[41] Wisseman-Christie describes a third model, the so-called "mandala" model, based on the notion of states with well-defined centres but unfixed borders (see also Higham, 1989:239-240). I do not understand which early states would not be "mandalas". For instance, territorial expansion cannot occur if the borders are fixed beforehand.

Table 13-9 provides a checklist of the sorts of attributes usually associated with early states, and when they can be recognised in our case. The very general concepts (e.g. intensive agriculture) have origins which can be pushed back very early, but they are not as useful as the more specific criteria. Of these 18/22 (82%) were in place by the 16th century, and the remainder were established by the early 17th century. More theoretical criteria such as those which deal with the complexity of interrelations between the parts (see Fagan, 1989) are probably also better ascribed to Kg Matoaya's (Abdullah's) reign than to the the mid-16th century. Hence greater Gowa by at least 1600 can be considered a full-fledged, secondary state.

Following Wisseman Christie (1990) rather than Cherry (1978) I retain the term "secondary state" because, clearly, Gowa did not go to the bother of reinventing administrative institutions and technological developments which were already available. For instance, to consider advances in military technology which were obviously crucial in Gowa's rapid expansion, we find that Tunipalangga introduced some innovations which could well be locally developed (reducing the size of the shields and shortening the spear staffs), but that others (placing cannons around forts, manufacturing Palembang bullets and making brick forts) must have been borrowed (see Andaya, 1981:25).[42] Of course the adoption and integration of innovations into the social network reflect local sophistication and political skill, so Gowa's description as a secondary state does not denigrate Gowa's achievements. And, most significantly, Makassar aristocratic organisation was not some imported version of the Javanese and Malay systems which it resembles, but rather the sophisticated adjustment of local kinship principles to the requirements of royal rule and territorial expansion (Chapters 3 and 4).

[42] Note, however, that the manner in which the fortress walls usually combined lines of brick and packed earth would seem to be unusual, and represent the grafting of adopted technology onto the older techology of earthen walls.

13.4 A General Bugis-Makassar Perspective

13.4.1 The origins of the Bugis-Makassar kingdoms

All of the major and many of the minor Bugis-Makassar kingdoms were ruled by a royalty tracing its origins back to white-blooded *Tomanurung*, or descended ones (Maeda, 1986). Typically a *Tomanurung* couple was involved, although Gowa and Siang invoke the descent of a single, female *Tomanurung*. Another interesting variant, confined to the northern Bugis, derives the female *Tomanurung* from the underworld and the male from the upperworld. The *Tomanurung* couples sometimes originated from the same general locality and sometimes from distant places (Table 13-10; Figure 13-13). Northwest of the lower Walanae, in the cases coupling West Soppeng with Suppak and Bacukiki with Sidenreng, apparent historical rulers took on the *Tomanurung* aura when they started a royal line (Table 13-10). But otherwise the *Tomanurung* and even the first rulers tend to be seeped in mythological overtones, as is the case with Gowa (2.5.2).

Those kingdoms with a written genealogical succession include the *Tomanurung* in the genealogy, allowing us to estimate the kingdom's supposed antiquity. This can be done by starting with a dated ruler and dating back, either by an average reign length of 25 ± 17 years, or by an average male generation length of 30 ± 10 years (2.5.1).[43] The figures produce comparable estimates. For instance, one of the five sisters of the Soppeng king La Makkanengnga married the Cina prince La Panorangi as recorded in two quite independent genealogies (Caldwell, 1988). By backdating reign lengths, Caldwell, 1988:128-9,167) estimates c.1400-1425 for La Makkanengnga's reign and c.1430-1455 for La Panorangi's reign. If we use male generation length, the birth of Matinroe ri Salassakna in 1654 (Ligtvoet 1880:179) would indicate 1354 ± 10 for La Makkanengnga's birthyear, while Arung Palakka's birth in 1634 (LB:96) would indicate

[43] The slightly shorter reign length reflects the occasional succession of siblings (rather than descendants) to the throne.

TABLE 13-10. TYPES OF *TOMANURUNG* EVENTS AND THEIR DATES FROM WRITTEN GENEALOGICAL RECORDS

Kingdom	*Tomanurung* Event	Date	Sources
	A. Male *Tomanurung* who descended and female *Tomanurung* who ascended		
CINA	Simpurasia descended (in the Cenrana region) and married Da La Akko who ascended in Luwuk.	c.1200	Caldwell, 1988: 92,98-9
LUWUK	Simpurasia descended from the upper world, married Patiakjala who arose from the foam of the waves, and became Luwuk's ruler. Their child married the granddaughter of the one who descended at Majapahit.	14th century (by association with Majapahit)	Caldwell, 1988: 42-4
WAJOK	La Matatikka descended at Buangkayang and married Lingekmanasa, daughter of she who had ascended at Sawitto.	c.1240	Noorduyn, 1955: 155,Figures
AJATTA-PARRENG	La Bangengnge, who descended at and ruled Bacukiki, married We Tepulinge who ascended at Lawamparang and ruled Suppak (and Sidenreng in one story).	c.1440	Caldwell, 1988: 148,153,156-7
	B. Other coupled *Tomanurung*		
SUPPAK/WEST SOPPENG	La Temmammala descended at Sekkanili and went to marry at Suppak with We Mappupu (Suppak's *Tomanurung*).	c.1285	Caldwell, 1988: 122,128-9,166
EAST SOPPENG	East Soppeng's (female) *Tomanurung*, Manurungnge ri Gowarie, descended shortly after La Temmammala's descent	c.1285	Kallupa et al., 1989:11,14
BONE	Mata Sellompokė appeared at Matajang and married the *Tomanurung* of Torok (both within four km of Watampone).	c.1353	Macknight and Mukhlis, in prep.
MAROS	Marriage of Tumanurunga ri Pasada (local *Tomanurung*) with Tumanurunga ri Luwuk (both *Tomanurung* unsexed).	c.1440	Figure 4-12
	C. Single *Tomanurung*		
GOWA	Heavenly nymph descended at Tamalate and married Karaeng Bayo (apparently Sanrabone's Karaeng Lolo Bayo).	c.1300	Figure 2-2
SIANG	Female Tumanurunga ri Siang descended and became Kg Siang.	Undated	Pelras, 1977

TABLE 13-11. DATES FOR EARLY RULERS OF BUGIS-MAKASSAR KINGDOMS ESTIMABLE FROM WRITTEN RECORDS

Kingdom	Reign commencement details for rulers described in detail in a local text			Earliest backdated ruler			Sources
		Reign	Birth		Reign	Birth	
SANRABONE	Tumenanga ri Campagana	c.1566-90	c.1515	Karaeng Pancabelong	[c.1450]+	c.1425	Figure 4-10
GOWA	Tumapakrisik Kallona	1511-47	c.1485	Massalangga Barayang	[c.1330]+	c.1305	Figures 2-2 and 4-1; Table 2-2
TALLOK	Tunipasukruk	c.1525-47	c.1500	Karaengloe ri Sero	c.1475-1500	c.1455	Figure 4-8
MAROS	Karaengloe ri Pakerek	c.1470-1515	c.1450	Karaengloe ri Pakerek	c.1470-1515	c.1450	Figure 4-12.
AJATTA-PARRENG	Datu Suppak La Patebulu	By 1544	c.1475	La Bangengnge; We Tepulinge	[c.1440]	c.1415	Caldwell, 1988: 148,153-7
SUPPAK (WEST SOPPENG)	We Tekkewanua	c.1375-1400	c.1345	We Mapupu	[c.1280]	c.1255	Caldwell, 1988: 122,128-9,186; Kallupa et al., 1989
WEST SOPPENG	We Tekkewanua	c.1375-1400	c.1345	La Temmammala	[c.1280]		Caldwell, 1988: 122,128-9,186
EAST SOPPENG	La Makkaroda	Early 16th century		Manurungne ri Gowarie	[c.1280]		Kallupa et al., 1989:14
WAJOK	La Tanamparek	c.1495+	[c.1470]	La Palewo (1st Arung Matoa)	c.1420-45	c.1385	Noorduyn, 1955
BONE	La Saliu Kerrampéluak	c.1410-82	[c.1385]	Mata Sellompokė	c.1353-85	c.1353	Macknight and Mukhlis, in prep.
CINA	La Panorangi	c.1435-55	c.1394	La Sengngeng	c.1330-55	c.1274	Caldwell,1988:98-9
LUWUK	Dewaraja	c.1500-25	[c.1475]	Tampobulusu	c.1425-50	c.1395	Caldwell,1988:166

1394 ± 10 for La Panorangi's birth. Both methods indicate that La Makkanengnga was a generation above his brother-in-law La Panorangi. Harmony within the figures is easily achieved by using two standard deviations on La Makkanengnga's birthyear to place it at c.1375, as used in Table 13-11.[44]

The other important event in calibrating the early genealogical data concerns the alliance between Luwuk's Dewaraja and Wajok's La Tanamparek against Sidenreng, followed two years later by a battle between Dewaraja and Bone's La Tenrisukkik over the Cenrana delta (Noorduyn, 1955:195-201). The intersection of Dewaraja's estimated reign and La Tenrisukkik's reign dates their battle between 1512 and 1525 (Caldwell, 1988), or 1518 as an average. Since the event occurred near the 20th year of La Tanamperek's reign (Noorduyn, 1955:203), we can date the commencement of his reign to c.1500. The best estimate I have of La Tanamperek's birthyear comes from assuming he was 25 years old when he began his reign (cf. Table 2-3). I have done the same to jump between other estimated birthyears and commencements of reigns, as indicated by square brackets in Table 13-11. My chronological estimates for the earliest rulers for whom significant historical detail is available, and the earliest rulers recorded in the genealogies, are either taken directly from the sources given in Table 13-11, or are calculated from the genealogical diagrams given by the sources.[45] The

[44] The information from generation lengths also allows us to resolve discrepancies in backdating reigns. For instance West Soppeng's first ruler La Temmammala, and Suppak's first ruler We Mapupu, married and ruled together. But using reign lengths alone we would estimate La Temmammala's reign as 1300-1325, and We Mapupu's as 1275-1300, because their third generation descendant, We Tekkewanua (r.1375-1400), was West Soppeng's fourth ruler but Suppak's fifth. But including generation length we can estimate La Temmammala's year of birth as 1255, allowing us to date the beginning of his reign (and We Mapupuu's) to c.1280.

[45] Note that the earliest back-dated rulers in Table 13-10 exclude the incommensurable dates suggested for some earlier rulers of Cina and Luwuk. If we backdate by the Cina kinglist, the first person associated with Cina's (Pammana's) regalia, La Balaoni, would have ruled c.1280-1305, while Cina's first ruler Simpurusia would have ruled c.1155-80 (cf. Caldwell, 1988:81-2). But following the Royal Genealogy of Cina we would estimate Simpurusia's "birth" at c.1184 and

estimates are of course rubbery to the tune of decades, but the apparent antiquity of the various kingdoms varies in terms of centuries.

Let us first consider the earliest rulers for whom significant historical detail is available. West Soppeng's ruler, who then also ruled Suppak (Kallupa et al., 1989), is the earliest at 1375, preceding even Cina by 60 years. Their analogues in the adjacent Bugis kingdoms are terminal 15th to early 16th century figures, while those in the peninsula's southwest are primarily 16th century figures (Figure 13-13). Given that Caldwell (1988) dates the development of a Bugis script to c.1400 (2.1), we can even tentatively attribute the innovation to West Soppeng which then enjoyed coastal access via its port of Suppak. A comparable situation occurs in the peninsula's southwest, where the reigns of the first rulers for whom significant historical detail is available correspond to Gowa's apparent development of the Makassar script (2.1).

Let us now turn to the question of earliest rulers and *Tomanurung* events as they would be dated by the available genealogies. These often involve the same figures or parent-offspring relationships, although gaps of several generations between the *Tomanurung* and the earliest ruler also occur, as do inaugural rulers unrelated to *Tomanurung*, and *Tomanurung* without recorded early rulers (Tables 13-10 and 13-11).[46] If we temporarily skip over the question of

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fail to find La Baloani. The same source indentifies Simpurusia's wife Da La Akko, and their daughter Bataritoja, as Luwuk's first two rulers (cf. Caldwell, 1988:92,98-9). Yet the Royal Geneaology of Luwuk claims Simpurusia as Luwuk's first ruler with a reign that would be dated c.1375-1400 (cf. Caldwell, 1988:56). The association of Luwuk's mythological origins with Majapahit further confirms Luwuk's apparent claim for a 14th century origin (Table 14-9). Evidently both Cina and Luwuk claim the major mythological figure Simpurusia as their inaugurator, with Cina's claim referring to an era approximately two centuries earlier than Luwuk's.

Note also that my estimates for Bone's 16th century and earlier rulers use the estimated 25-year average reign length for those reign lengths not specified in the chronicle.

[46] e.g. no known texts deal with East Soppeng whose first known ruler surfaces in the context of East Soppeng's unification with West Soppeng. The story of East Soppeng's *Tomanurung* is associated with the same event, so the two Soppeng *Tomanurung* are symbolically coupled. Archaeological

what the estimated dates actually mean for reconstructing history, what emerges is a striking parallel with the geographical pattern of earliest solid historical rulers. Claims for 13th century origins are restricted to the lower Walanae and the Cenrana, surrounded by claims for 14th-15th century origins in Luwuk and Bone, and with only one claim for an origin earlier than the 15th century along the west coast south of Suppak (Tables 13-10 and 13-11; Figure 13-13). Again the lower Walanae and the Cenrana stand out as the apparent hearth of Bugis-Makassar kingship.

Yet these kingdoms involved are conspicuously absent from the contemporary literature. The 14th century Javanese poem *Deśawarnana* (*Nagarakertagamana*) includes four identified South Sulawesi places in its list of Majapahit's "dependencies". Luwuk and Bantaeng are assigned to the same island of which Bantaeng was the principal place, while "Makasar" and Selayar are listed among the smaller islands in the eastern archipelago (Pigeaud, 1960:17), possibly indicating the route to the spice islands (Reid, 1983a:122,128). "Makasar" cannot be identified with any specific locality (11.8), but the context of the passage would locate it somewhere along or near the peninsula's south coast. The mention of Luwuk would have referred primarily to her role in exporting nickeliferous iron from the hinterland to Majapahit Java, although gold, slaves and forest produce were probably also part of the trade (Macknight, 1986:223; Caldwell, 1988:183-185). Bantaeng may have been Majapahit's principal "dependency" because of its strategic location on both trade routes.

Moreover, these locations show South Sulawesi's clearest evidence of Javanese influence. Not only do Luwuk's mythological origins invoke Majapahit (Table 13-10) but also Luwuk was unique in South Sulawesi for its use of Javanese-Sanskrit names to enhance the status of the elite (Caldwell, 1990). I am unaware of any local texts on Bantaeng or Selayar, but oral traditions and local venerated objects have strong references to Hindu Java (Reid, 1983a:123).

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data support a 13th-14th century origin for East Soppeng (Kallupa et al., 1989).

Furthermore the 19th century Dutch records describe a shivaistic *Karaeng loe* cult centred in Bantaeng and widespread along the south coast (Rössler 1987:74-75), and the toponym Sorobaya occurs twice along the south coast (Reid, 1983a:123). Moving west we have the written statement that Sanrabone's first king, Karaeng Pancabelong, originated from northern Majapahit (4.6), while Garassik and Jipang take their names from Majapahit ports. All these south coastal references come together in Gowa's first ruler, Massalangga Barayang, who supposedly could hear hair being cut in Java, smell a dead white buffalo in Selayar, and see a pigeon in Bantaeng (SG:10-11).

To summarise, we have two contrasting patterns for the origins of South Sulawesi kingdoms. One pattern concerns the coastal, trade-oriented kingdoms referred to in the Majapahit literature and showing the strongest evidence of Hindu-Javanese influences. The other concerns the agrarian Bugis kingdoms centred on the lower Walanae and the Cenrana where evidence of direct contacts with Majapahit Java is minimal. The latter, far from being a backwater, were apparently the first to use a local script,[47] and provide the earliest evidence of kingship in South Sulawesi.

13.4.2 Luwuk's place in South Sulawesi's early history

As noted by Caldwell (1988) we are still dealing with substantial kingdoms when the trail of Bugis history peters out. West Soppeng opens as a large agrarian polity which by the end of the 13th century ruled Suppak over 50 km away (Figure 13-12). Cina's status is harder to discern because the surrounding kingdoms had absorbed its associated territories by the 15th century. Possibly Cina had controlled the flow of goods into and from the Cenrana in prehistoric times before losing the strategic Cenrana delta to Luwuk in the 14th century. Afterwards Cina may have survived the rest of the century as a confederation of nascent agrarian

[47] Unfortunately, the specific relationship of the Sulawesi scripts to other Indic scripts in Java or Sumatra is probably irrecoverable, even though the general relationship is clear (Macknight, 1986).

chiefdoms in the western Cenrana region (Caldwell, 1988:207-211).[48]

Caldwell (1988:190-191) is disappointed with the shallow chronology reconstructible for Luwuk because, as noted by Dutch commentators writing as early as 1759, local legend portrays Luwuk as the oldest Bugis-Makassar kingdom. But the textual evidence would not date Luwuk's rise to any prominence before the 14th century, and another explanation must be sought for Luwuk's supposedly great antiquity. There is considerable evidence that Luwuk's heyday was late but indeed spectacular. Luwuk's early 16th century vassal list includes ten places situated around the head of the gulf of Bone and 13 places strung along the south coast.[49] Yet at the height of its power Luwuk apparently also ruled much of the land between Bone and Bantaeng (Caldwell, 1988:190), while the origins of Maros are tied to Luwuk in a 15th century context (Figure 13-12). All this indicates that, during the late 15th century, Luwuk could claim its vassals and dependencies over a vast area which included the Gulf of Bone from the Cenrana northwards, the peninsula's southeast corner and south coast, and possibly Maros. The subsequent expansion of the two major 16th century kingdoms, Bone and especially Gowa, cut into this vast area. Before Bone and Gowa there was Luwuk, which in the simplified chronological frameworks which characterise legendary history wherein Luwuk is enshrined, places Luwuk in the Bugis-Makassar dreamtime.

Given the low population densities and poor potential for wet rice in Kabupaten Luwu, Luwuk's ambitions probably depended on mastering South Sulawesi's long distance trade,

[48] In this case, Luwuk's expropriation of Cina's traditional centre would parallel Luwuk's apparent usurpation of Cina's origin story.

[49] I date Luwuk's vassal list to the early 16th century because it mirrors a geopolitical situation which had apparently occurred during Dewaraja's early 16th century reign. The vassal list includes Sidenreng but nothing else between Luwuk and the south coast (Caldwell, 1988:79). Wajok had assisted Dewaraja's victory over Sidenreng, but in exchange for territory along the western Cenrana which Luwuk had previously superintended, and shortly afterwards Dewaraja lost the Cenrana delta to Bone (Caldwell, 1988:191-194). The implied early 16th century date for the Luwuk vassal list is acceptable to Caldwell on other criteria (pers. comm. 28-6-90).

presumably supported by a special relationship with the ports, along Java's north coast, aligned with Majapahit. Hence Luwuk apparently emerged, during the 15th century, as the first South Sulawesi kingdom to mount major military campaigns on a maritime rather than a terrestrial basis. Very significantly, Luwuk apparently did not conquer the two nearby areas which witnessed major agrarian expansions during the 15th century. One was Bone, which expanded across the coastal plain and foothills surrounding Watampone (Macknight, 1983). The other was Sidenreng which aligned with the small kingdoms to its west and pushed back West Soppeng south from the Tempe depression (Caldwell 1988). It may be no coincidence that Dewaraja's conflicts were with Sidenreng and Bone, or that the final demise of Majapahit as a source of authority in the late 15th century (Hall, 1985) was soon followed by Luwuk's own eclipse.

13.4.3 Implications for early state formation in Indonesia

A major theme in South Sulawesi's early history concerned well-populated agrarian polities, based on the rice bowls, dominating the small river mouth polities with direct access to long distance trade. Examples detailed in this thesis include Tallok's establishment when a displaced agrarian faction overran a suitable port (12.4), and the intense competition which followed to secure control over Garassik (4.3). Cases reviewed above include Bone's absorption of the Cenrana delta[50] and the establishment of the Ajattaparreng confederation in which the coastal members - Sawitto, Suppak and Bacukiki - were subservient with respect to the hinterland members Rappang and especially Sidenreng (Caldwell, 1988). These examples cover a small geographical scale compared to the earliest example which can be detected, West Soppeng's 13th-14th century rule over the port of Suppak 50 km away. In this context Luwuk's development as a significant maritime power was possible because it was isolated from the agrarian polities. Moreover Luwuk's

[50] Not to mention Bone's subsequent, long-running conflict with Wajok over this area (Macknight, 1983).

expansion, though dramatic, appears anomalous, specialised, late and, indeed, short-lived.

According to Gibson's (1990) model of predatory island southeast Asian states, the area consisted of a mosaic of societies with very different levels of political power and highly varied economic skills. Consequently, political expansion and economic diversification were best achieved by direct political control (including slavery) over other societies' labour. The emphasis on political technique and violence account for the hybrid ideology which combined competitive social ranking with the ascription of mystical power to the ruler (Gibson, 1990).

Most of these points do not hold in the Bugis-Makassar context. The changes in pre-Islamic burial traditions suggest that the expansion of wet rice, fostered by the superbly suitable conditions of the peninsula lowlands (1.2), had begun to marginalise collectors of forest produce and other small-scale societies to the cordilleras by the 13th-14th centuries. By this stage the lowlands supported agrarian polities often directly contiguous with the coastal trading and fishing polities, and at least the first trends towards hereditary strata (13.2). Continued expansion of the lands under intensive wet rice cultivation during the 15th century is suggested by SSPHAP's survey of the Tallok headwaters. More dramatically, Macknight (1983) demonstrates that the 15th century expansion of Wajok and Bone was directly related to the realisation of those areas' agricultural potential. Within this cultural matrix the predators were generally the agrarian polities. Their texts commend particular rulers for their military accomplishments, others for the expansion of agricultural land, and yet others in both regards (Noorduyn, 1955; ST; Caldwell, 1988; Macknight and Mukhlis, in prep.). These were two sides of the same coin because local population increase was crucially important in offence and defence, and in control over strategic places such as the entrepôts. Hence protection was the dominant concern in political alliances (e.g. Andaya, 1981), and Gowa's marriage strategies which cemented the alliances were a double-edged ploughshare backed by the sword (see 4.12.2).

Pursuit of luxury goods and high-status items can be detected as far back as the archaeological record, which is fortunately supplied with an abundance of tradewares from the 13th-14th centuries, and the internal historical records allow us to go (e.g. Kallupa et al., 1989; Bulbeck, in press). The more agrarian polities may well have obtained large shares of the long-distance exchange items through trading agricultural surplus (Caldwell, 1988), but political domination provided less arduous access. Political domination of neighbouring polities appears to have been fostered by a social organisation which at any time entailed the strict hierarchy which ensured orders were obeyed, yet which also promoted initiative by rewarding achievement. As the system was in theory strictly hereditary, heredity was literally re-assessed through achievement and, especially, the rise of new apical aristocrats (Chapters 3 and 4).

Such an interpretation of the Bugis-Makassar kingdoms would be impossible but for the detailed internal records. Place ourselves in a comparable position to the historians interpreting the sketchy Indian and Chinese records, dating to the middle 1st millennium AD, on political developments in the western archipelago, i.e. Sumatra, Java and the Malay peninsula (see Wheatley, 1983 and Leong, 1990). If we had to rely on the *Deśawarṇana* to interpret the first South Sulawesi kingdoms, we would infer four farflung coastal polities, none of much substance. Not only that, but the area we would place these earliest polities is mutually exclusive with the apparent hearth of Bugis-Makassar kingship. The total mismatch in the case of South Sulawesi may be an extreme example, but it certainly demonstrates how totally unreliable foreign records may be (as noted by Leong, 1990).

Yet so committed are historians to using foreign visitors as the track to complex polities that they misrepresent the cautionary tales. Thus when Paiva explains that the place he barely visited (Makassar) was a large city - a level of description he did not apply to Siang, where he stayed (see Jacobs, 1966) - then the slightest clue of a former victory by Siang is sufficient to ascribe Siang several centuries of

preceding suzerainty (Pelras, 1977; Villiers, 1990), despite all the contrary evidence (4.3).[51]

The archaeological evidence would probably have stood us in no better stead. In the South Sulawesi case, the enormous quantities of tradewares exhumed from graves in recent times cover the same area as the *Deśawarṇana* toponyms - "Makasar", Bantaeng, Selayar and Luwuk (13.2.2). Evidence that similar quantities were reaching hinterland stations is available primarily in the sherdage scatters at historical sites (Kallupa et al., 1989; Bulbeck, in press). But consider our likely interpretations if a much sparser range of non-perishable goods had been imported, as indeed was the case in the western archipelago during the 1st millennium AD. The scattering of relics along the coast would "confirm" the historical "evidence" of complex developments along the coast. The few stray inland finds could be interpreted as local trading links or even as coastal domination of the interior (cf. Hall, 1985:79-80; Bellwood, 1985:280-281; Leong, 1990:23; Rahman, 1990:41). And as the only identified cohesive groups include the foreign traders and other visitors, the apparent precipitation of "states" out of the anonymous matrix of "tribal societies" would naturally be ascribed to foreigners' direct influence (cf. Wolters, 1982; Fagan, 1989:572-573; Rahman, 1990:64).

As discussed by Wheatley (1983) and Hall (1985), limited epigraphic evidence of mid-1st millennium AD antiquity, recovered from the western archipelago, allows a partial improvement on the dreadfully simple models which would otherwise be available. Nonetheless these writers still trace the origins of local kingship to maritime trade and Indian influences. By analogy with South Sulawesi, this could well reflect the poverty of the internal sources. Ardika (1989; Ardika and Bellwood, 1991) has excavated the substantial entrepôt site of Sembiran in northeast Bali, recovering strong evidence of visitors by Indian traders at the very

[51] As a further example of the potential uselessness of foreign records, even those as detailed as the 16th century Portuguese records on South Sulawesi, the first external references to Bone and Wajok date no earlier than the 17th century (see Pelras, 1977).

beginning of the 1st millennium AD. However, it has not been possible to correlate the site with coeval hinterland archaeological remains. Indeed, as pointed out by Miksic (1990), the main impediment to understanding the formation of island Southeast Asia's earliest states is the lack of evidence on settlement hierarchies. This information has become available for mainland Southeast Asia and indeed demonstrated the chronological precedence of large agrarian chiefdoms over their coastal maritime counterparts (Higham, 1989; Miksic, 1990).

As a result of its rich and accessible textual and archaeological records, South Sulawesi may be unique in the archipelago in the precision with which early agrarian developments can be traced and tied to the rise of Gowa, the peninsula's first true state. South Sulawesi in general presents itself as an obvious analogy for the early Javanese states. South Sulawesi's special case, Luwuk, looks like a suitable analogue for Srivijaya and the early port-polities along the Malay peninsula. In that case these early Malay kingdoms might have flourished largely because of their isolation from more densely populated, agrarian areas. We may never enjoy detail of the same scale for the first states of the western archipelago, but until archaeologists working in the region learn to recognise the coeval settlement hierarchies, the agrarian sector, probably co-dominant and possibly even dominant, will remain anonymous.

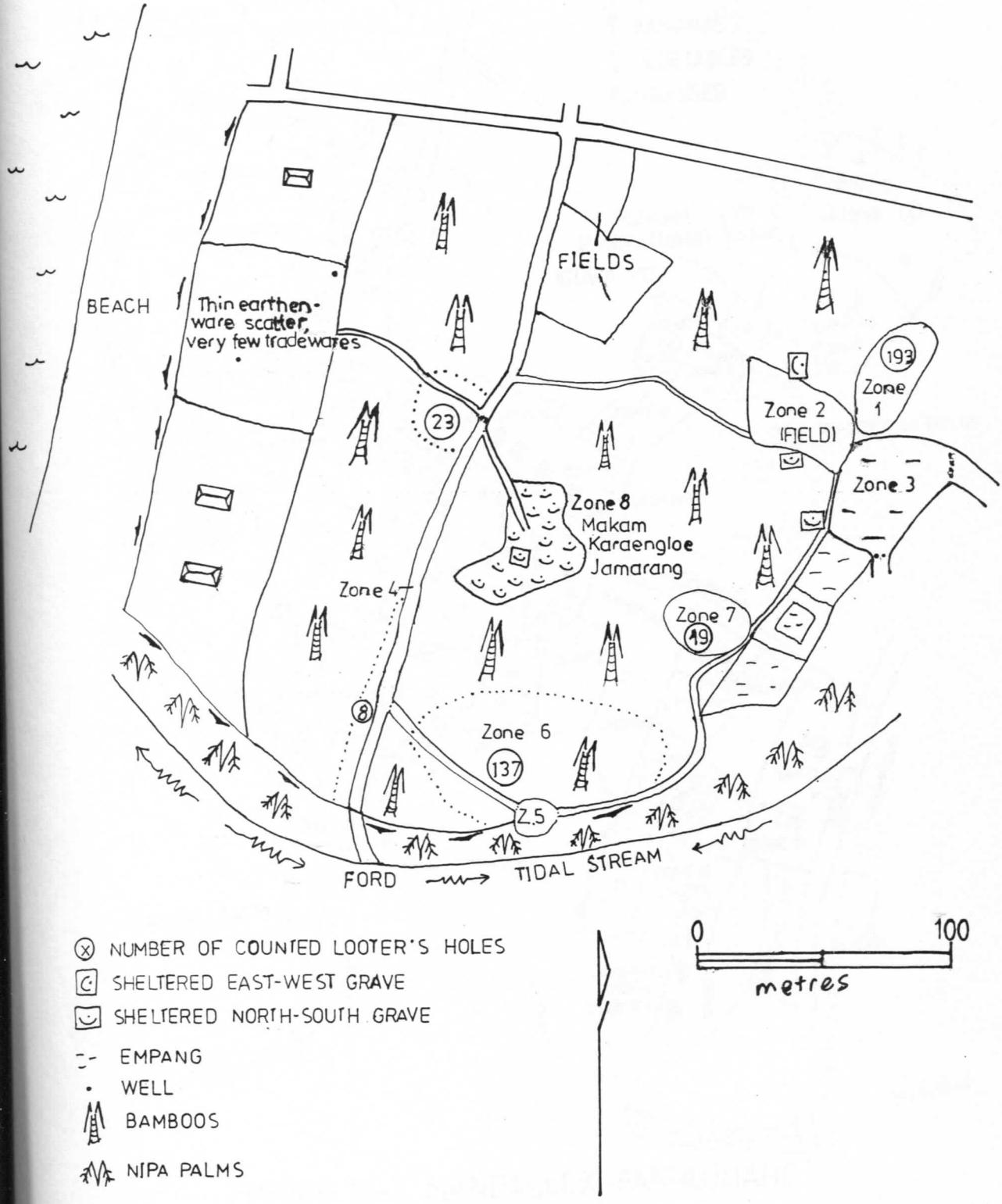


FIGURE 13-1. JAMARANG TUA

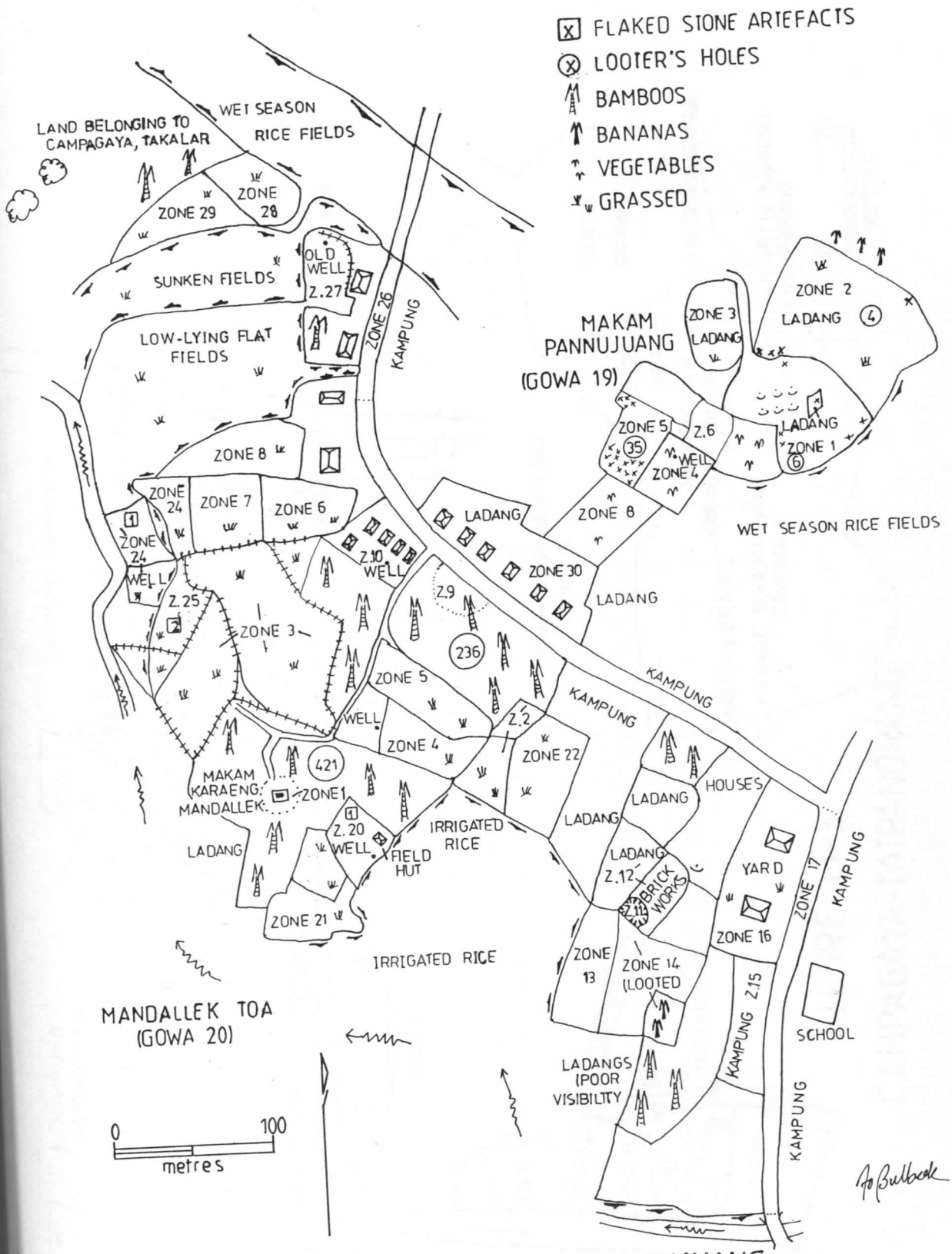


FIGURE 13-2. MANDALLEK-PANNUJUANG

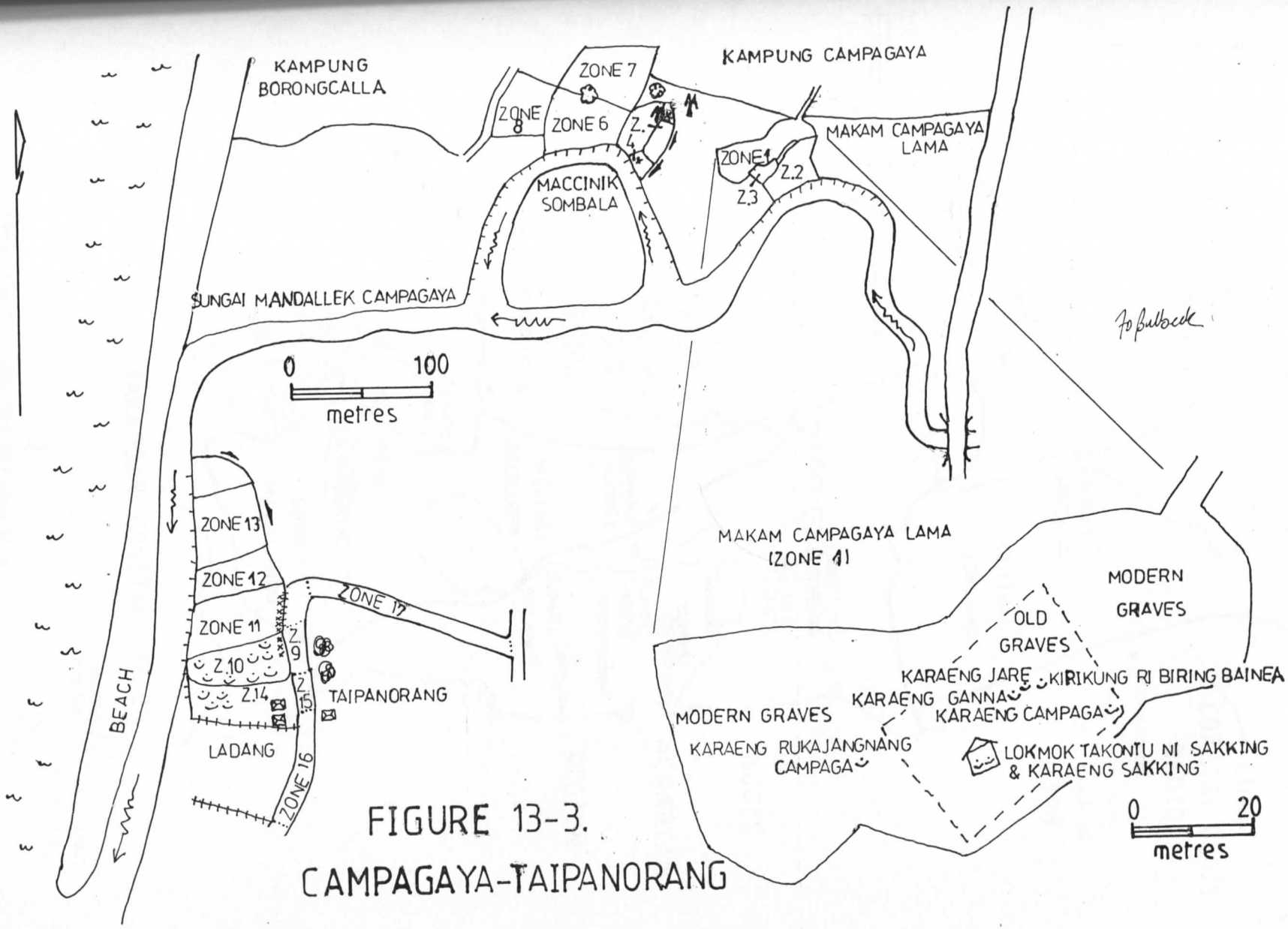


FIGURE 13-3.

CAMPAGAYA-TAIPANORANG

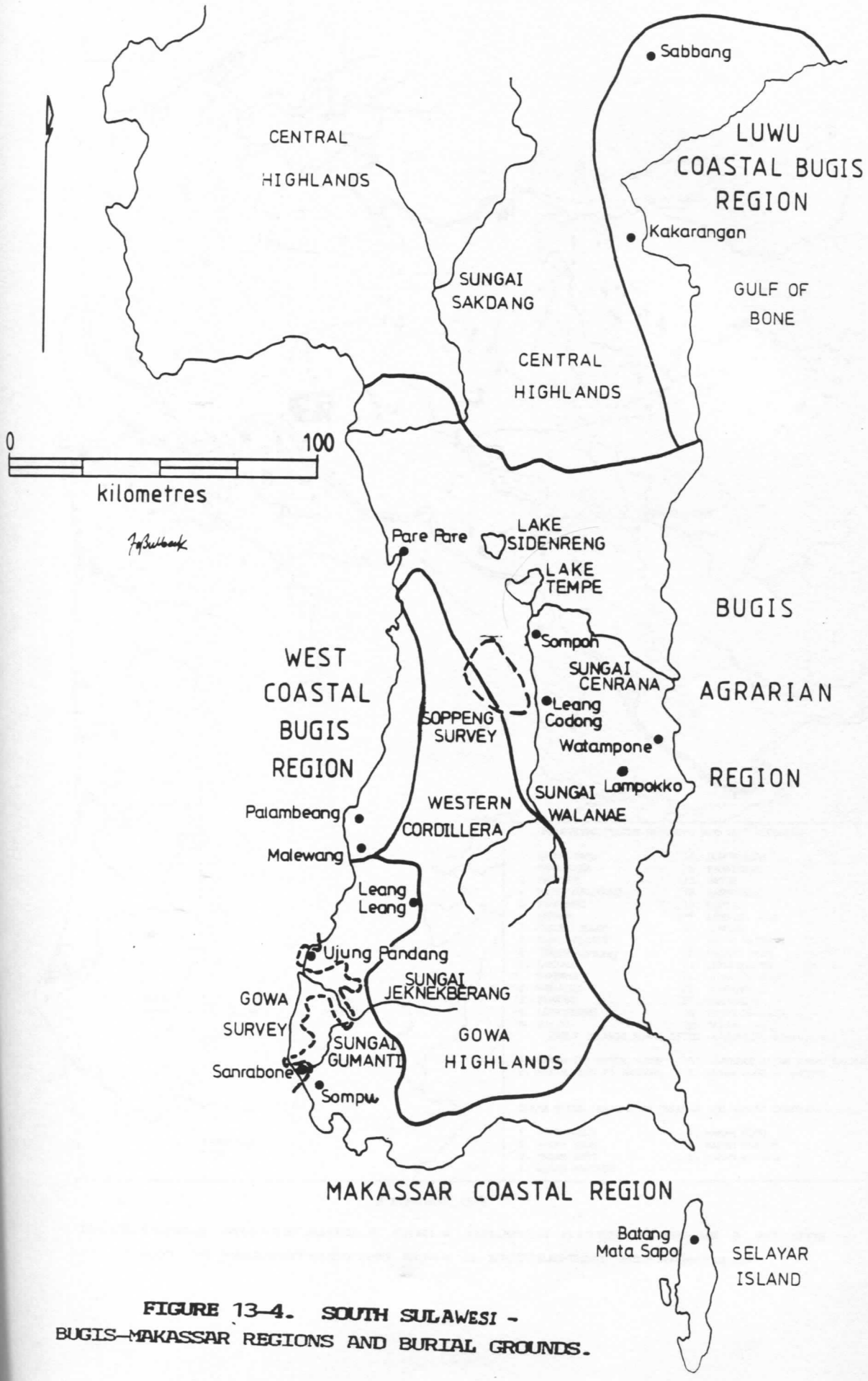


FIGURE 13-4. SOUTH SULAWESI - BUGIS-MAKASSAR REGIONS AND BURIAL GROUNDS.

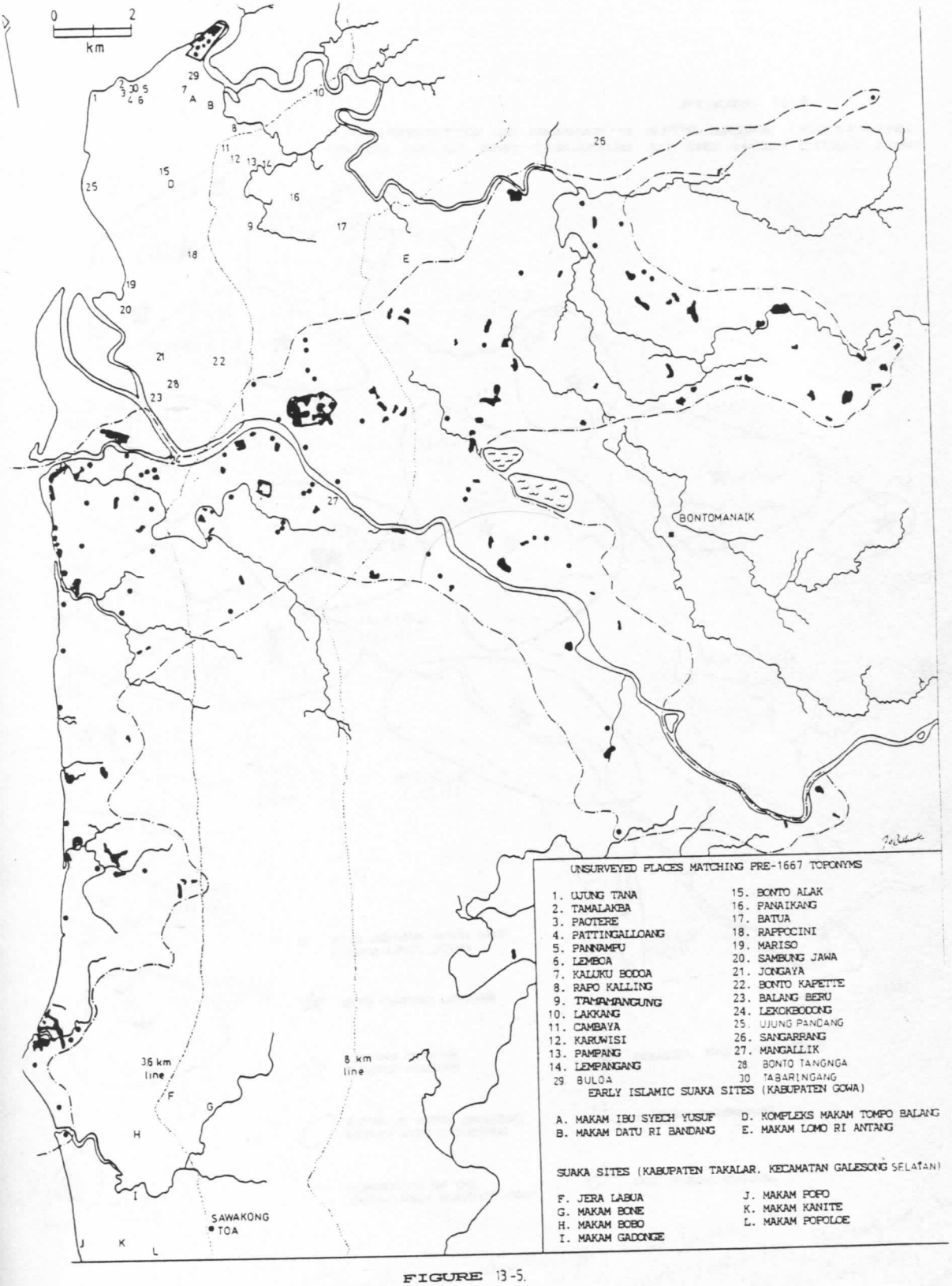
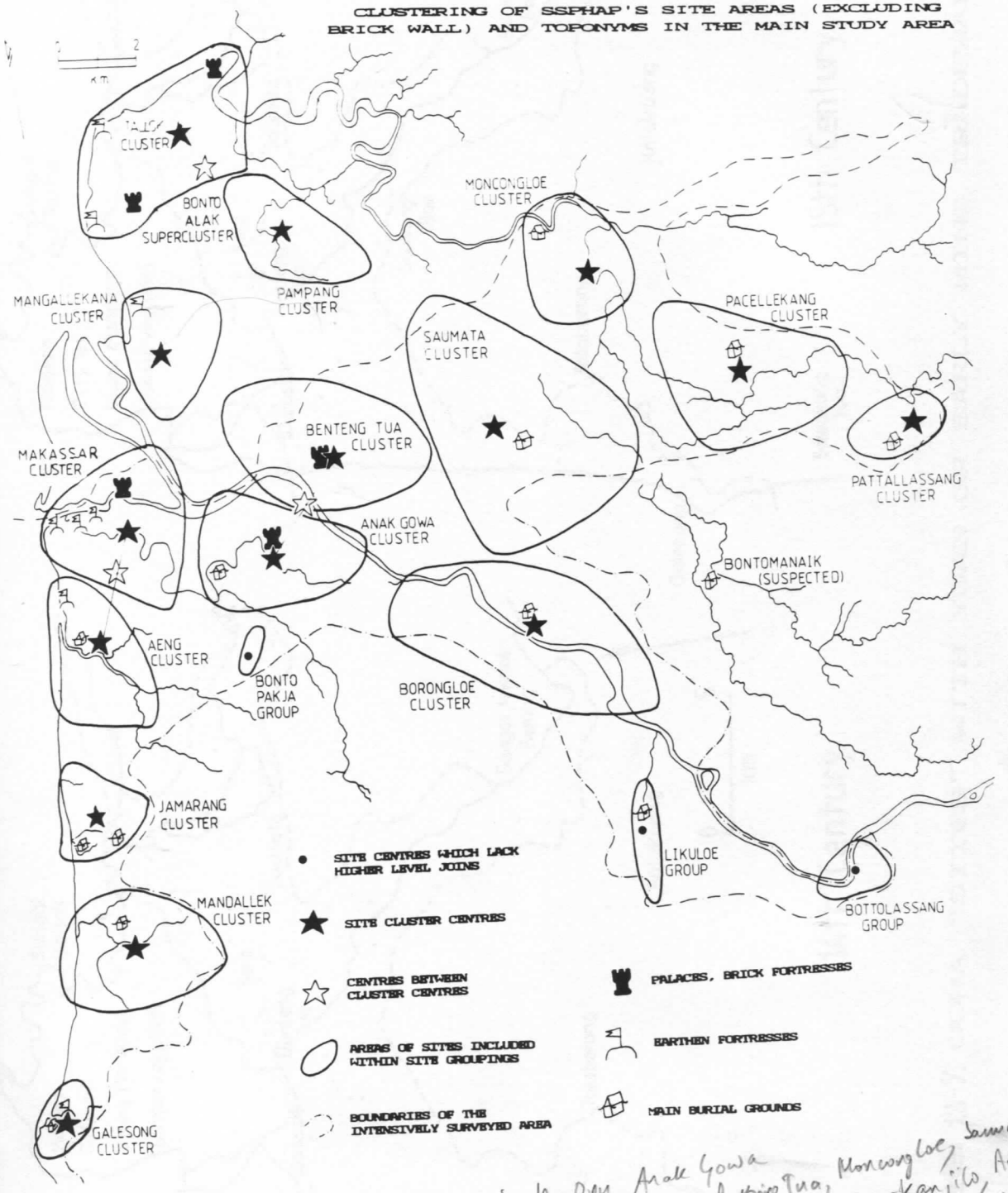


FIGURE 13-5.

IMMEDIATELY PRE-ISLAMIC & EARLY ISLAMIC SITES - AREAS & POINTS - USED IN RECONSTRUCTING GOWA'S SETTLEMENT HIERARCHIES

FIGURE 13-6.

CLUSTERING OF SSPHAP'S SITE AREAS (EXCLUDING BRICK WALL) AND TOPONYMS IN THE MAIN STUDY AREA



~~Pamp~~ Palaces – Kale Gowa, Somba Opu, Anak Gowa

Indary centres: burial grounds – Pattallassang, Pattiro Tua, Moncongloe, Saumata, Borongloe, Bonto Ramba Tua, Kanjilo, Aengtoa, Jamarang, Bonto lebang, Mandallek, Campagaya Tua, Galesong

~~earth forts~~

earth forts – Garassik, Bayan 1, Paknakkukang, Barombong

lower level – everything else

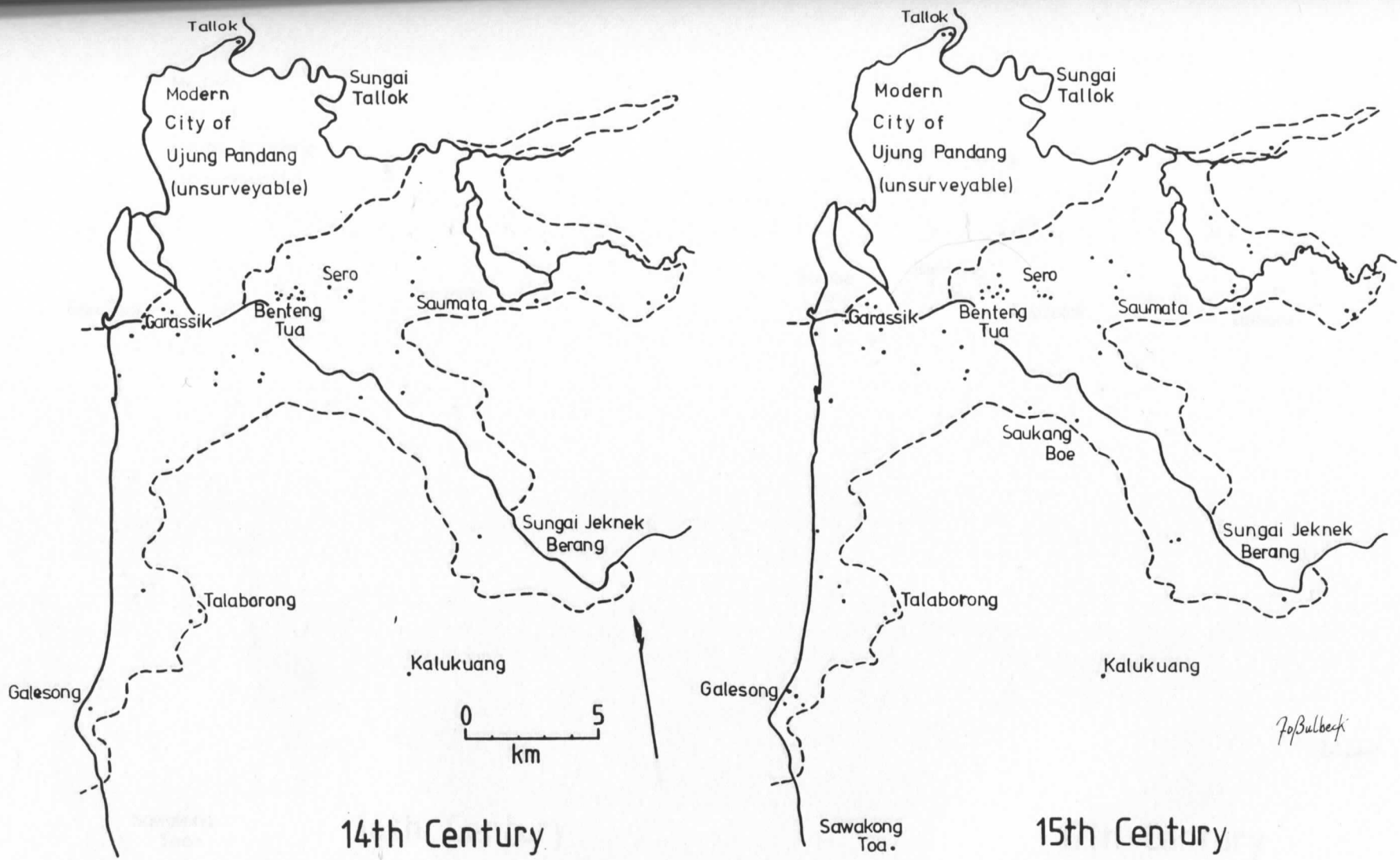


FIGURE 13-7. GOWA "SITES" WITH YUAN OR EARLY MING TRADEWARES

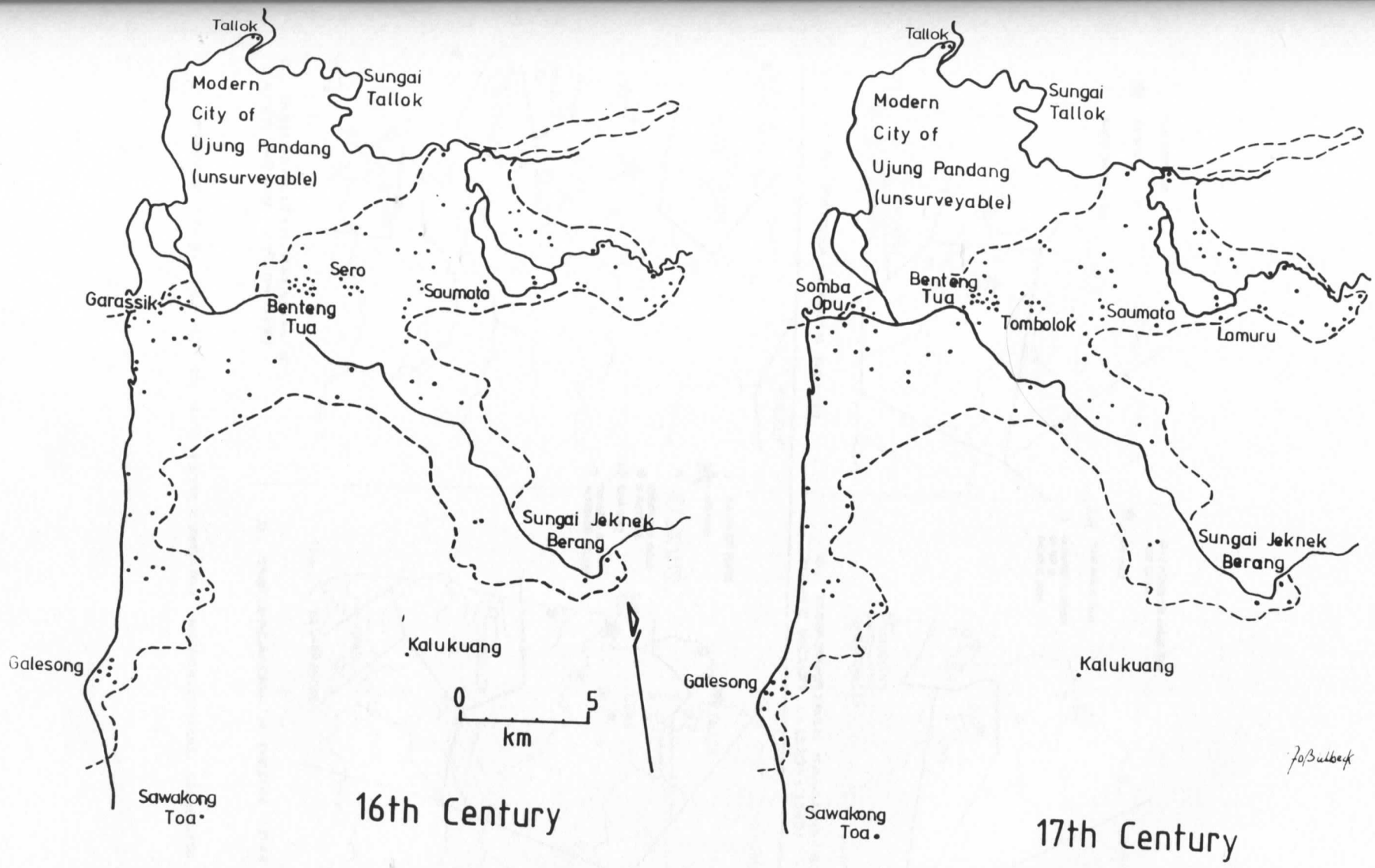


FIGURE 13-8. GOWA "SITES" WITH MIDDLE TO LATE MING TRADEWARES

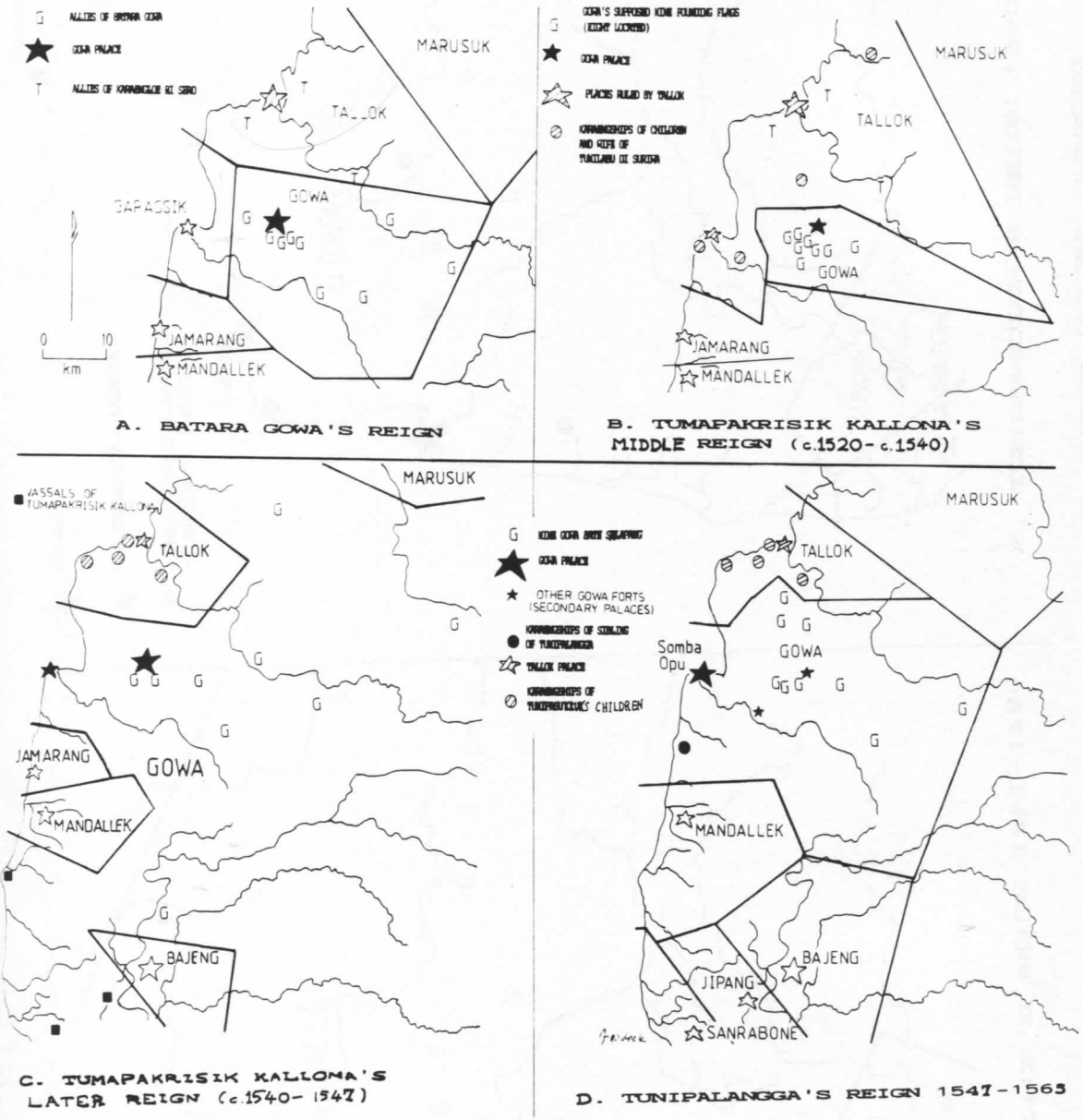
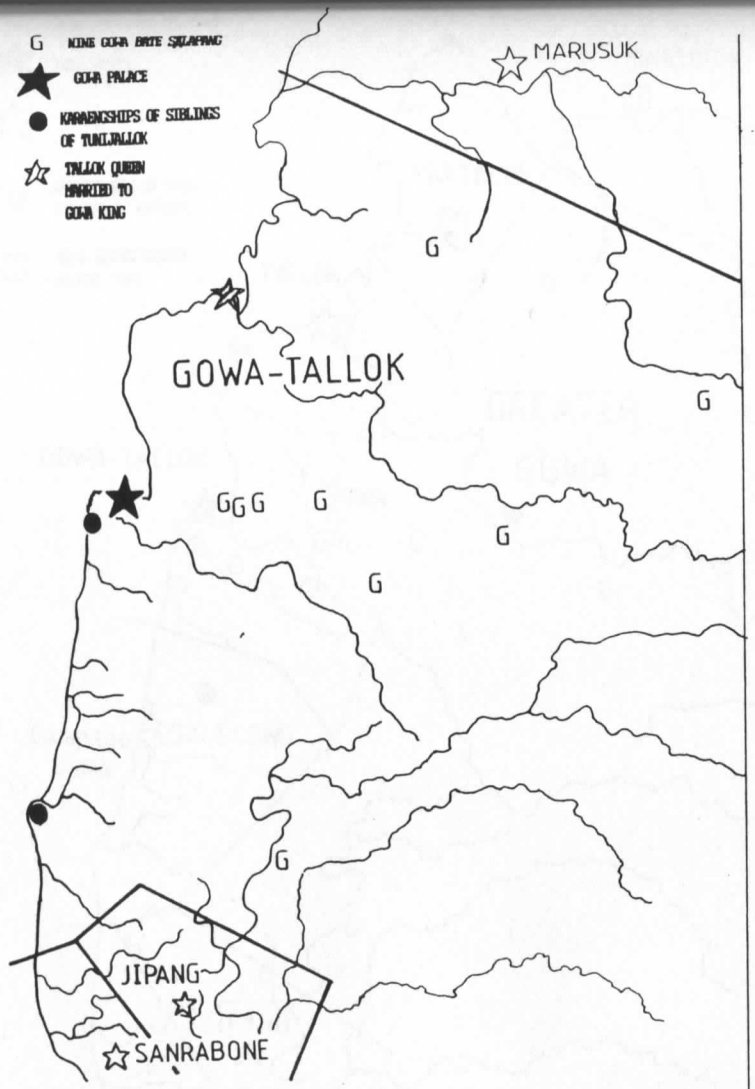
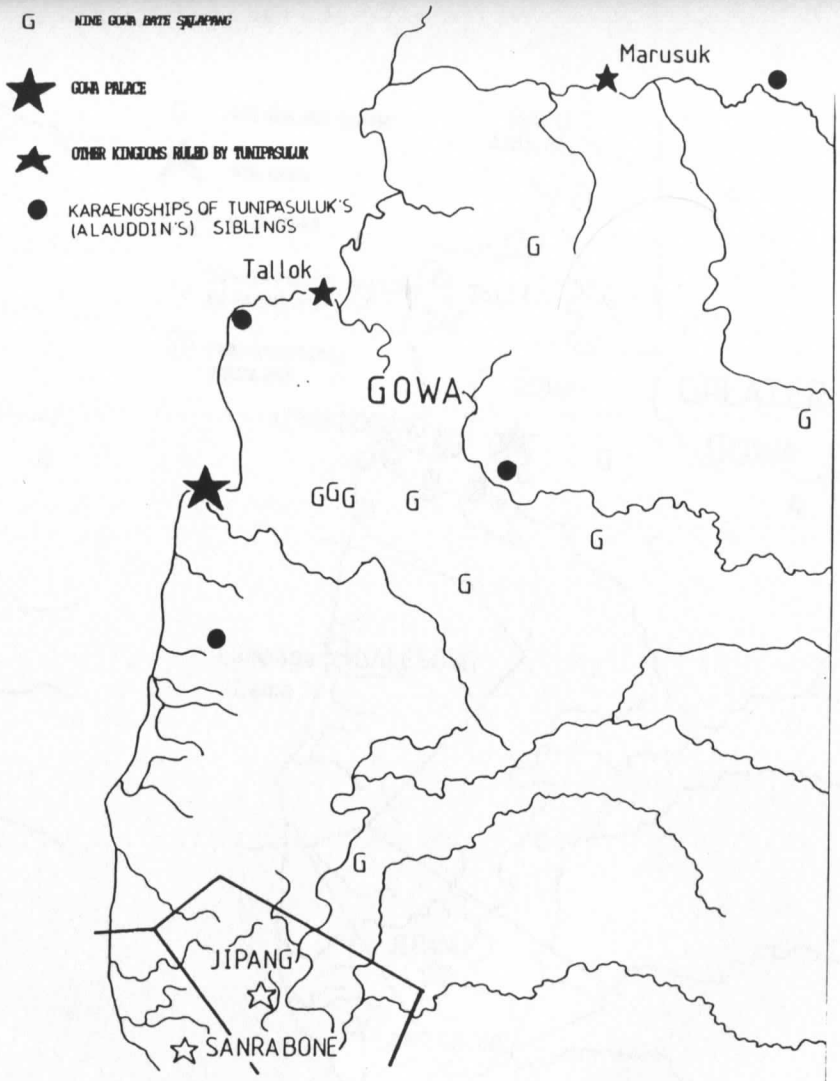


FIGURE 13-9. EARLY TO MID-16TH CENTURY GEOPOLITICAL CHANGES.

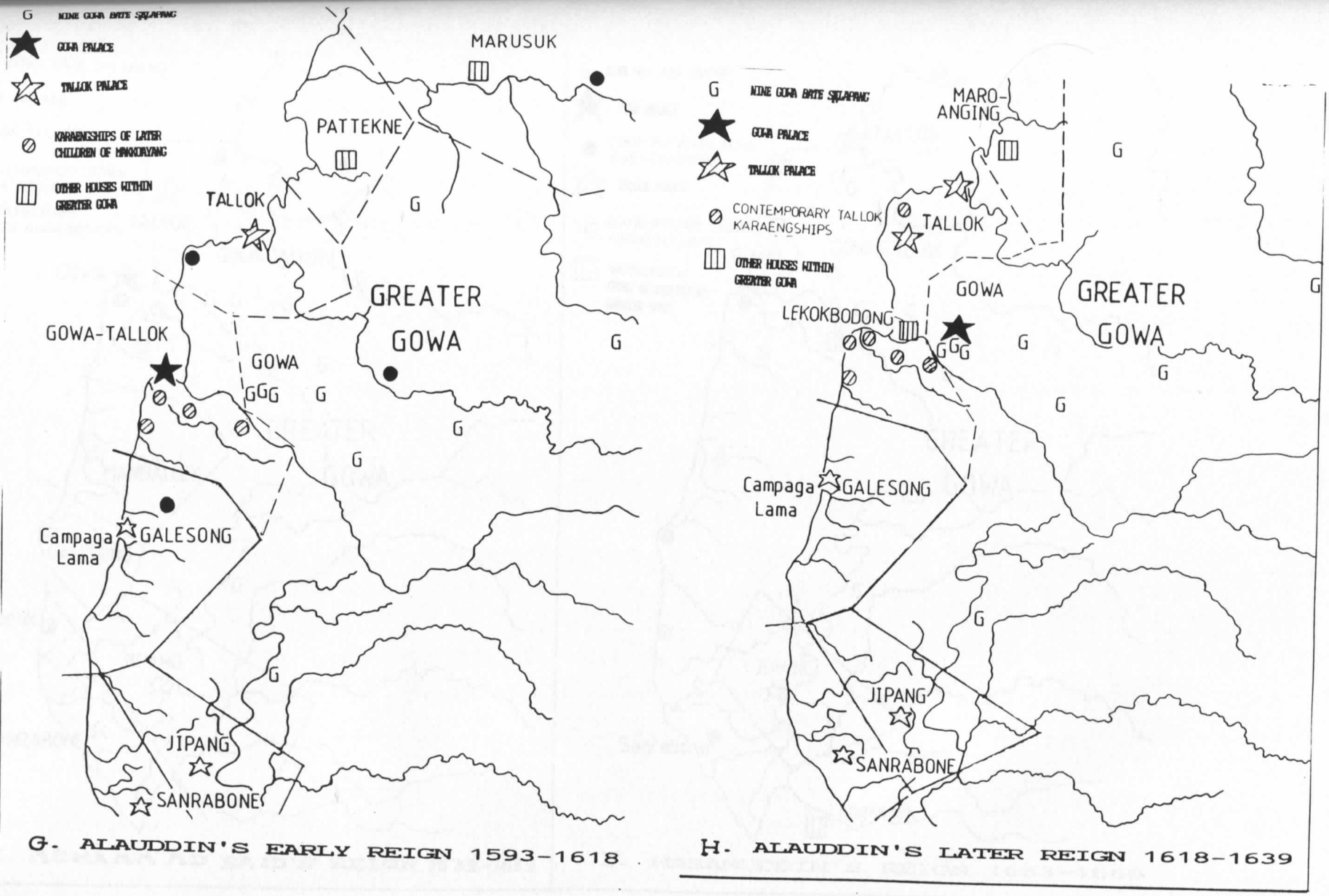


E. TUNIJALLOK'S REIGN 1565-1590



F. TUNIPASULUK'S REIGN 1590-1593

FIGURE 13-10. LATE 16TH CENTURY GEOPOLITICAL CHANGES



G. ALAUDDIN'S EARLY REIGN 1593–1618

H. ALAUDDIN'S LATER REIGN 1618–1639

FIGURE 13-11. EARLY 17TH CENTURY GEOPOLITICAL CHANGES

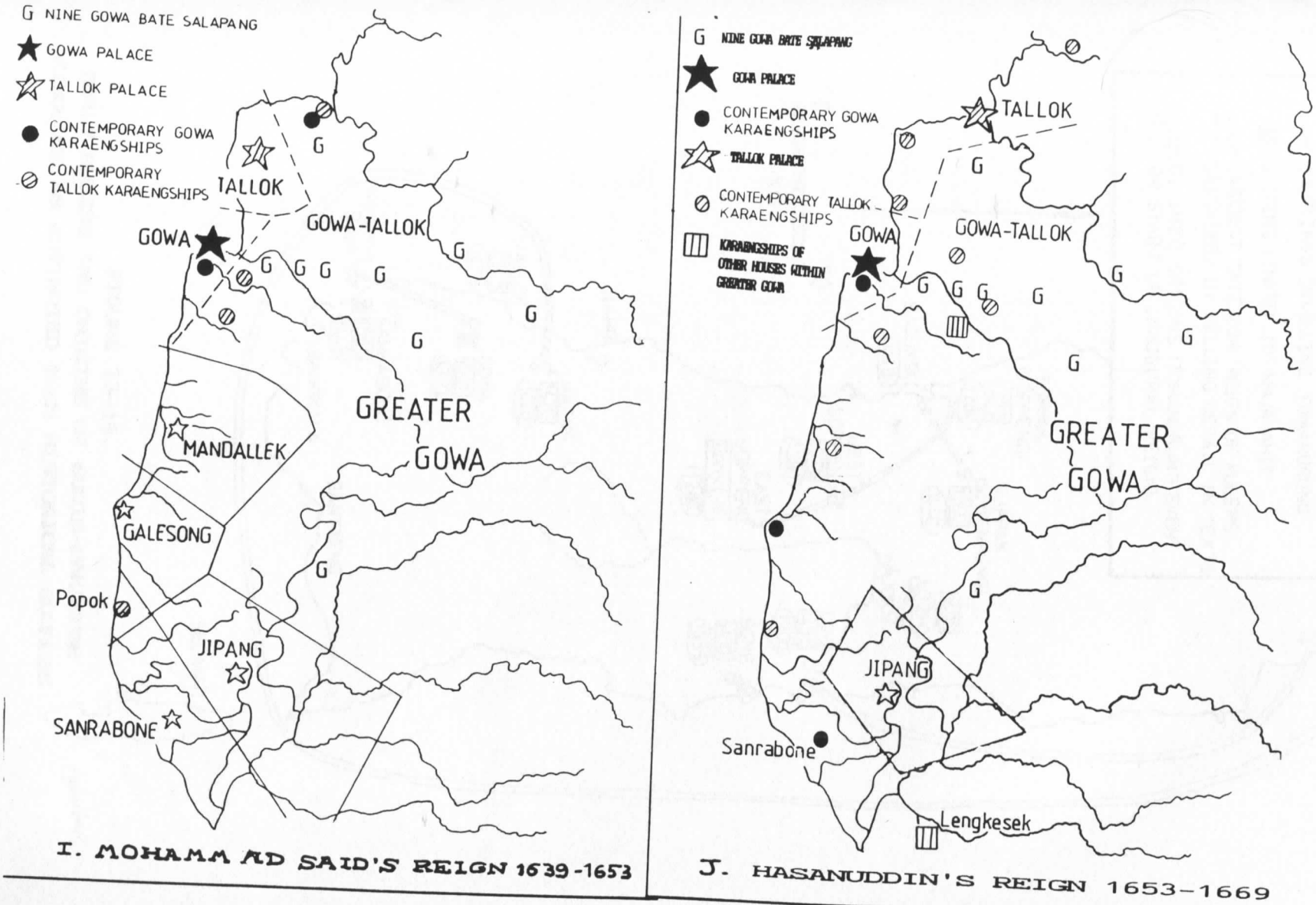


FIGURE 13-12. MIDDLE 17TH CENTURY GEOPOLITICAL CHANGES

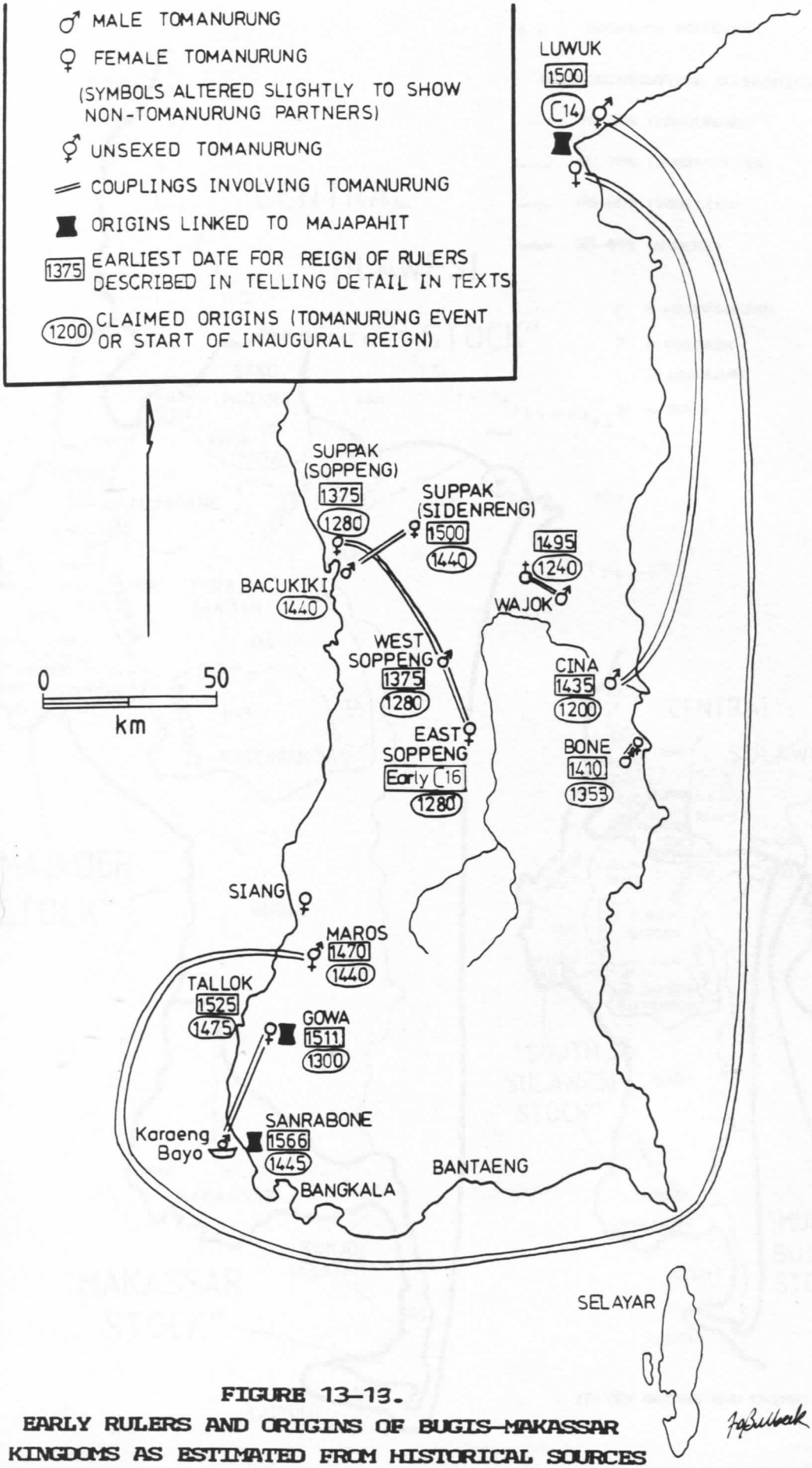


FIGURE 13-13.

EARLY RULERS AND ORIGINS OF BUGIS-MAKASSAR KINGDOMS AS ESTIMATED FROM HISTORICAL SOURCES

Photo 13-1.
The *duni* (wooden coffin) from Bayoa, Galesong, photographed behind the office of the Department of Culture and Education, Kota Galesong.

Photo 13-2.
The *duni* (wooden coffin) from Bayoa, Sanrabone, photographed after its excavation by Suaka.

Photo 13-3.
The exposure of the *duni* at Bayoa, Sanrabone, from where the sample of wood for radiocarbon dating was taken.







Photos 13-4 to 13-6.

Human bone observed in the office of the Department of Culture and Education, Kota Galesong.

Photo 13-4: two pairs of matching femora, representing a female or sub-adult at the top and an adult male below.

Photo 13-5: clavicle, ulna, radius, rib, metatarsal, distal humerus, and vertebral fragments.

Photo 13-6: detached humerus head top left;
two non-human fragments of bone, bottom left;
three fragments of posterior neurocranium, showing the unclosed sagittal and lambdoid sutures, at right.





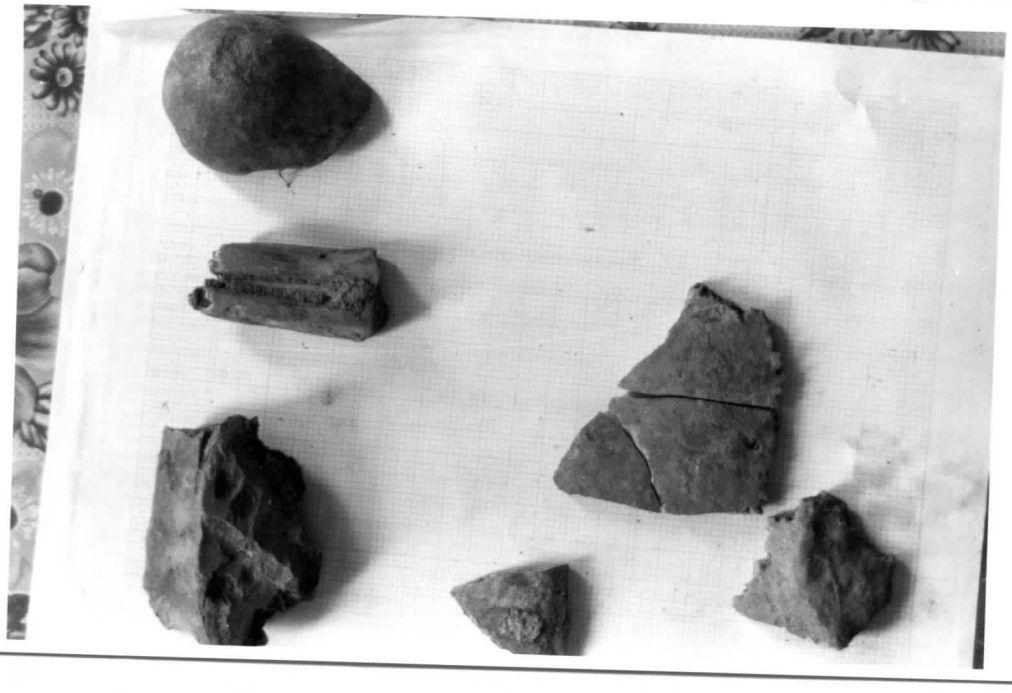
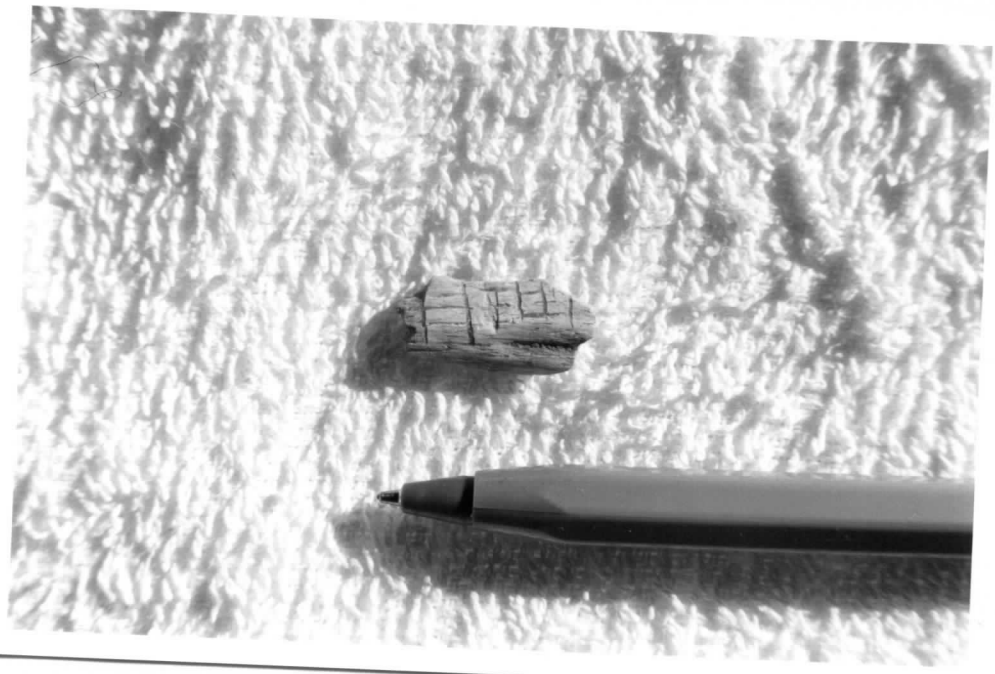


Photo 13-7.
The sheltered grave, further protected by a locked gate, of Karaeng Lolo Bayo, Bayoa, Benteng Sanrabone.

Photo 13-8.
The fragment of arm bone from Talaborong, G.24.2.24, showing transverse fracture lines which indicate cremation in the flesh.

Photo 13-9.
G.24.2.1, a possible radius fragment from Talaborong, showing apparent warping which indicates cremation in the flesh.






13 14 15 16 17 18 19 20 21

Photos 13-10 to 13-12.
The possibly 15th century tradeware pieces from mainland Southeast Asia, reportedly recovered along with the human bones and *duni* at Bayoa, Galesong. Three separate Swankhalok underglaze-iron covered bowls, and sherds from a Vietnamese blue-and-white jarlet in Photo 13-12.





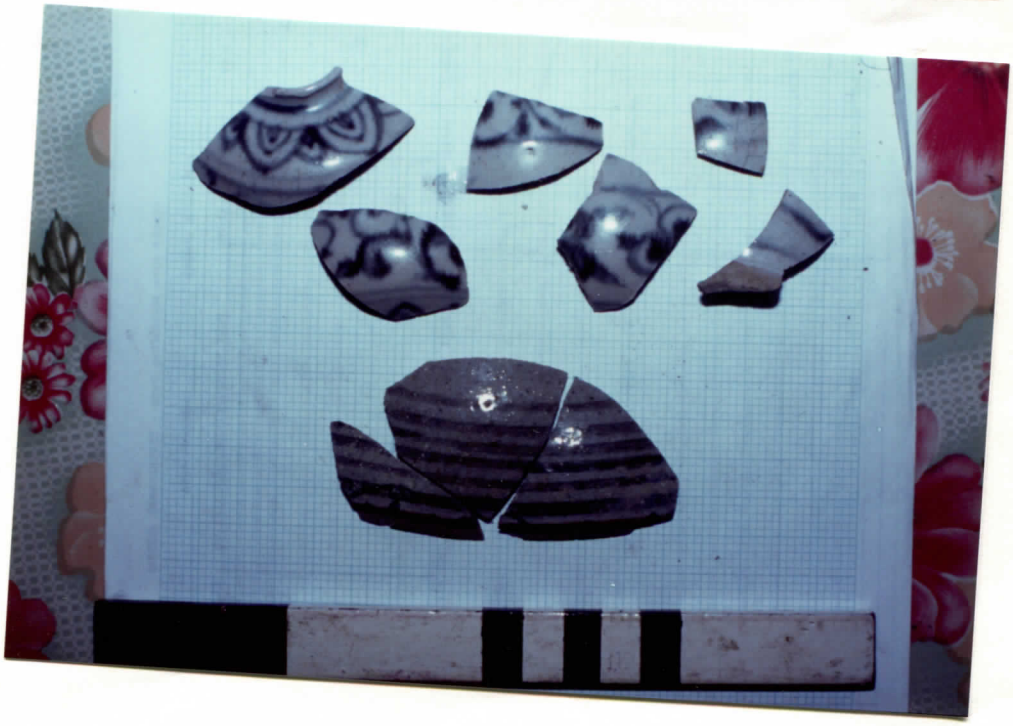
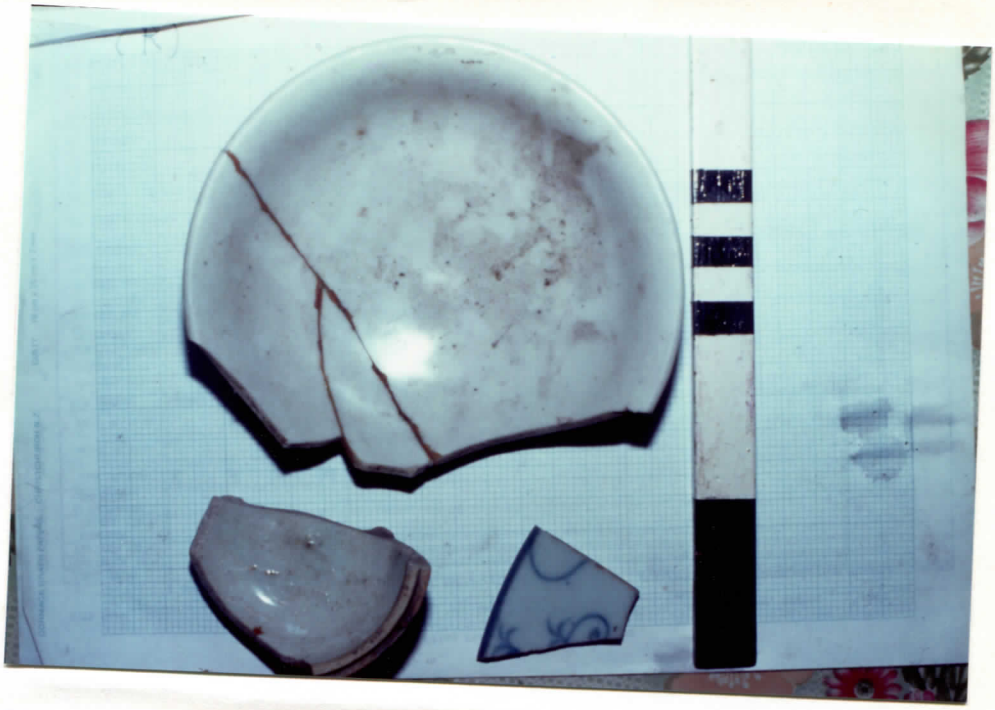


Photo 13-13.
16th-18th century Chinese tradewares reportedly recovered along with the human bones and *duni* at Bayoa, Galesong.

Top: Wanli BW plate (reverse base has a Chinese character).
Bottom left: Late Ming BW base to a covered bowl (emblem of one of the Eight Immortals on reverse).
Bottom right: (early?) Qing BW fragment.

Photo 13-15.
Qingbai bowl with thickened rim, G.24.1.6, Talaborong.
Datable to the Song dynasty, cf. Lam, 1985 (5).

Photo 13-16.
Early monochrome pieces from Talaborong, Gowa 24.

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APPENDIX A. THE SOUTH SULAWESI LANGUAGE GROUP

A.1 Introduction

The concept of a South Sulawesi language group, introduced by Esser's (1938) broad classificatory maps of Netherlands Indies languages, has survived the advent of modern comparative linguistic studies initiated by Mills (1975a, 1975b). Its justification lies in a suite of generally shared qualitative characters, some of which are unique to the group, rather than in the lexicostatistical data which in fact would tend to remove the Makassar languages from the group (Sirk, 1989). Small bodies of lexicostatistical data may be found in several works (e.g. Mills, 1975a; Sirk, 1989) but none approaches the comprehensiveness of Grimes and Grimes (1987). Their study has since been constructively reviewed by Friberg and Laskowske (1989) who proposed several revisions (A.6) including alternative names to be preferred for some of the speech communities. However, because my primary original contribution will be to explore the implications of the Grimes' lexicostatistical data, I will review their scheme directly and retain their names for the speech communities.

Their database consists of a standardised 202-word list, slightly modified from the Swadesh 200-word list, recorded from 39 dialects and languages in South Sulawesi, with standard Indonesian as the 40th comparative group. Using the Grimes' abbreviations as spelled out in my later figures, the large map in Figure A-1 locates the 39 South Sulawesi speech communities based on the distribution maps of Grimes and Grimes (1987: Maps 2 and 7 to 11). Grimes and Grimes inspected the word lists to ascertain the percentages of words which appeared similar between each two speech communities. Following the guidelines of Simons (1977a), they presented these percentages in a 40 by 40 half-matrix sorted so as to place (i) the highest percentages of similar words along the diagonal, and (ii) the speech communities with the highest average lexicostatistical similarity (compared against the other speech communities) closest to the centre of the assortment. The half-matrix allowed them to classify

the speech communities into languages, subfamilies, families and stocks, i.e. groups whose members respectively show around 75-80%, 60-75%, 45-60% and 25-45% lexicostatistical similarity.

The two maps in Figure A-1 compare the Grimes' classification with the one suggested here by my formal statistical analysis. Note that the lexicostatistical boundaries can be read both externally and internally. For instance, in the Grimes' classification (the smaller map) the Makassar languages comprise a family when compared against the other families in the South Sulawesi stock, but internally they comprise a subfamily because the Grimes recognised languages as the highest internal division.[1] The differences between the two schemes will be reviewed in Sections A.4 and A.6.

A.2 Scatter Analysis of the Lexicostatistical Data

As a first analysis, let us disregard the issue of which speech communities group together so as to obtain a global picture. Here I chose multidimensional scaling with the similarities between the speech communities (hereafter, "operational taxonomic units" or OTUs) displayed on two-dimensional Euclidean space. I entered the half-matrix of similarities published by Grimes and Grimes into the OSIRIS MDSCAL package on the VAX computer at the Australian National University, and chose the appropriate options. The analysis juggled the OTUs until they found the configuration in which the closest OTUs are those with the highest similarity coefficients, and the most distant OTUs are those with the lowest similarity coefficients. That is, the rank order of Euclidean distances most fully reverses the rank order of inter-OTU similarities (Kruskal, 1964a), and the extent of mismatch from a perfect reversal can be measured as a percentage in "stress" (Kruskal, 1964b). The resulting configuration has 18.2% stress which, though technically verging towards poor, is in my experience a remarkably good

[1] In my formal analysis shown in the larger map, Makassar would be a stock when compared externally but a family when compared internally.

result considering the number of OTUs involved (cf. Bulbeck, 1981). Although the choice of three or more Euclidean dimensions would have resolved much of the stress, the results would have been harder to visualise, nor would it be possible to compare the configuration with the geographical distribution of the speech communities.

This is done in Figure A-2 which not only shows the two-dimensionally scaled configuration of the speech communities, but also fits a contorted map of South Sulawesi over the configuration. The exercise clearly shows the very strong influence of geography over lexicostatistical variation because, were these phenomena not strongly related, the large number of OTUs involved would render futile any map-fitting attempt. It is even possible to draw in *kabupaten* boundaries such that only one community, Mambi, cannot be placed in the correct *kabupaten*. Even though Kabupaten Luwu has speech communities from three "stocks" in Grimes and Grimes' classification, and Selayar and Mamuju each have representatives from two stocks, all three *kabupaten* retain their convex integrity in the map-fitting exercise (cf. Figure A-1).

Of course geography is not exercising direct control over lexicostatistical patterns so much as indirect control through its influence over population densities and avenues of communication. Thus the boundary between the Makassar and Bugis languages essentially follows the spine of the highest mountains of the western cordillera, while Bugis is demarcated from the languages of the "Northern South Sulawesi family" by a line running along the transition from prevailing lowlands to prevailing highlands (cf. Figures A-1 and 1-4). The main body of the South Sulawesi peninsula, a large area of well-populated lowlands inhabited by the Bugis (Figure A-1), has become greatly reduced in the "language map" (Figure A-2). Conversely the most sparsely populated region of South Sulawesi, corresponding to my "Northern Central Highlands" (Figure 1-4), has become grossly enlarged, except for a specific restriction corresponding to the Palu-Koro fault which is the main corridor through the region (Figure A-2).

All in all, the exercise highlights the point made by Grimes and Grimes (1987:11,13-14) - exchange of lexical items between communities in contact is a ubiquitous and constant process, regardless of the level of taxonomic distinctiveness between the speeches involved. Moreover the distortions to physical space themselves usefully highlight specific linguistic relationships. For instance, Campalagian sits on an imaginary peninsula jutting towards the Bugis dialects, with which Campalagian is most closely related, and away from the contiguous Mandar dialects. Selayar island has been "dragged" into the Gulf of Bone as a correct reflection of Laiyolo's specifically close relationships with Pamona, Padoe and especially Wotu.

A.3 Hierarchical Seriations and Lexicostatistical Data

Hierarchical seriations (or seriated dendrograms) represent a means of combining the best aspects of two important branches of statistical analysis, seriations and hierarchical clusters, in order to counteract weaknesses in either method used alone. Although seriation is most widely used to detect chronological ordering, what the exercise actually does is order items into a one-dimensional series, along a scale which need not be time (Irwin, 1985:122-125) and in this case will be social space. Hierarchical clustering, on the other hand, joins up OTUs into clusters via one of a variety of clustering algorithms (e.g. Sneath and Sokal, 1973; Kronenfeld, 1985). As usually applied, a weakness of hierarchical clustering is that, once an OTU joins a particular cluster, any specific relationships of the OTU with individual OTUs in other clusters is lost. This is because people believe that the sister branches of a hierarchical dendrogam can be twiddled at will without altering the significance of the results (e.g. Sneath and Sokal, 1973). However, here I will argue that the sister branches should be twiddled to reflect a seriated order.

The extra information available in the seriated dendrogam, compared to its unseriated counterpart, is the representation of the wider relationships of an OTU beyond those within its cluster. So for instance when two OTUs are similar, but one

(or both) has still closer links with a cluster which locks out the other OTU, the seriation may refind the temporarily lost inter-OTU similarity by placing the two OTUs next to each other at the adjacent peripheries of their respective clusters.

The extra information available for the seriation is that we have a structure for the OTUs over and above their ordering along a single dimension. It would of course be possible to produce the seriation first and then seek out the structure within the seriated OTUs, as for instance in the sorted and shaded matrices produced by Irwin (1985:125ff.) - a comparison which illustrates the point that seriations are clustered strings of clustered OTUs. In this respect the novelty of the present approach is that it produces the seriation from the structure rather than *vice versa*.

A further advantage of using hierarchical clustering to produce the seriation is the computational utility. Whereas the number of possible orders rapidly approaches a huge number as the number of OTUs increases, the superimposition of a hierarchical dendrogram drastically decreases the number of possible orders, and also allows whole suites of possible orders to be rejected merely by analysing how the higher-level blocks of OTUs relate to each other. True, given the size of the half-matrices with which I am dealing, up to 40 by 40, enough feasible orders still remain such that demonstration of the best order would require a specially written computer program. My efforts in computerisation do not go beyond writing a formula, using the Borland/Analytica (1987) "Reflex: The Analyst" PC programme, to assist in calculating the "goodness of fit" as measured here. However, applying this measure will show, at least for the data considered here, the degree to which seriated orders can vary with almost equally good results as long as the main axis of variation is observed.

As a final introductory point, I will cluster using the average linkage technique 'whereby admission of an item into a cluster is based on the average of the similarity of the item (or lot) with the other items in a cluster' (Irwin, 1985:131). Since our original coefficients of similarity are

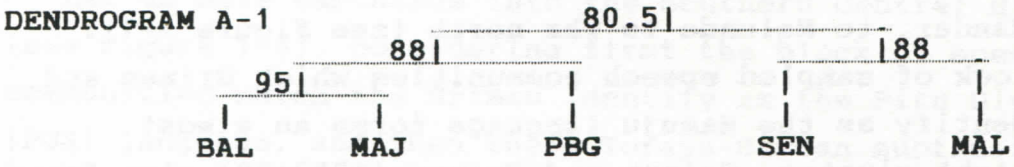
a simple additive variable, i.e. the number of lexically similar items expressed as a percentage, the estimate of average similarity (as derived from average linkage clustering) equals the average percentage of similar words which the word lists in one cluster share with the word lists in the other cluster as would have been deduced from comparing the original word lists. For example, say one cluster has two word lists and the other has three, so that in comparing the clusters we are actually comparing two times three equals six word lists, then both average linkage clustering and comparing the original word lists use the same formula - (number of similar items across the word lists [first word] plus number of similar items across the word lists [second word]...plus number of similar items across the word lists [202nd word]) divided by (six [word lists] times 202 [words]) multiplied by 100 (to obtain a percentage). I raise the point because it is generally overlooked that once two OTUs join into a common stem in a dendrogram, it is the common stem which behaves thereafter, and logically the analysis should proceed as though the two OTUs had been pooled. The statistical relationships which prevail after the clustered OTUs are treated as a pooled sample need not always be accurately predictable from the relationships which had prevailed beforehand (B.4.1). However, this equivalence does hold true in the present case where (i) every original OTU has the same sample size, here 202 words, (ii) the mathematical relationship is expressed by a simple additive variable, and (iii) average linkage clustering is used.

Grimes and Grimes (1987) themselves combined variants of seriation and hierarchical clustering but in the reverse order from that applied here. After sorting their half-matrix (A.1) they followed the guidelines of Simons (1977b) to identify cases of "successive divergence", where values away from the diagonal decrease down the columns but not along the rows; "sporadic convergence", where a cell has an anomalously high value compared to the cells around it; and "chaining", where the values away from the diagonal decrease along the rows as well as down the columns. From their inspection they carved the sorted half-matrix into blocks, and represented

the inter-relationships with dendrograms in which the branches diverge to show successive divergence, converge to show sporadic convergence, and criss-cross to show chaining (Grimes and Grimes, 1987:10-11ff.). In my terms successive divergence is the classical hierarchical dendrogram where the ordering of the OTUs is of no significance; chaining is a hierarchical dendrogram whose OTUs need to be seriated to bring out the full relationships; and sporadic convergence represents cases where two OTUs show a specifically close relationship which cannot however be produced from seriating the dendrogram. These points will become clear by following the order in which the OTUs would cluster together.

A.4 Hierarchical Seriation of the Data From South Sulawesi

Let us start with what is the most tightly clustered block of OTUs, the "Mandar language" of Grimes and Grimes. The seriated dendrogram appears as given below, with the values at which the OTUs cluster by average linkage shown at the point of joining:



The sorted half-matrix of lexicostatistical similarities is:

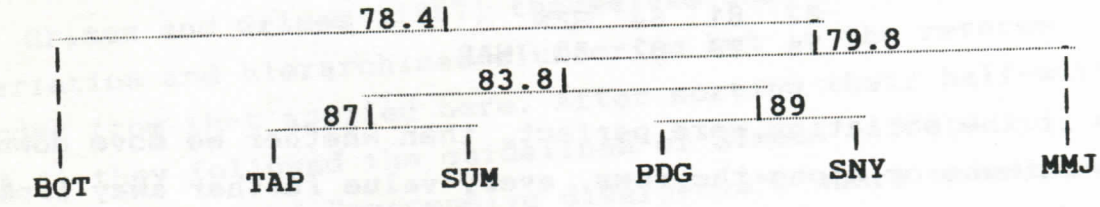
BAL				
95	MAJ			
88	88	PBG		
82	81	84	SEN	
76	78	82	88	MAL

Now if the seriation were perfect, then whether we move down the columns or along the rows, every value further away from the diagonal should become smaller or at least stay the same. All cases of larger values further away from the diagonal than smaller values represent stress in the seriation. Hence we consider the sum of all the possible differences between any cell closer to the diagonal and any cell further away, and the sum of all these possible differences but ignoring

the sign of the difference. Considering the first value as the numerator and the second as the denominator, and expressing the result as a percentage, measures the "goodness of fit" of the seriation compared against a perfect seriation. In this case, (95-88) + (95-82) + (95-76) + (88-82) + (88-76) + (82-76) + (88-88) + (88-81) + (88-78) + (81-78) + (84-81) + (84-82) + (81-82) + (84-82) + (88-82) + (88-78) + (88-76) + (82-78) + (82-76) + (78-76), all divided by the sum |95-88| + |95-82| + |95-76| + |88-82| + |88-76| + |82-76| + |88-88| + |88-81| + |88-78| + |81-78| + |84-81| + |84-82| + |81-82| + |84-82| + |88-82| + |88-78| + |88-76| + |82-78| + |82-76| + |78-76| (where |x| signifies sign ignored), equals 129/131 or 98.5%. This order, also found by Grimes and Grimes, is easily spotted as the best, although Sendana (SEN) and Malunda (MAL) could have been reversed with almost equally satisfactory results. Mandar is however a clear case of a dialect chain (Grimes and Grimes, 1987:36) with, as shown here, the two subgroupings of Balanipa/Majene/Pamboang (BAL/MAJ/PBG) and SEN/MAL. Geographically speaking we are looking at a steady transition along the Mandar Peninsula coastline, from Balanipa in the Gulf of Mandar, to Malunda to the north (see Figure A-1).

The block of sampled speech communities which Grimes and Grimes identify as the Mamuju language forms an almost equally tight cluster. Grimes and Grimes (1987:39) also found the best order for this dialect chain whose goodness of fit is 158/186 or 85.0%:

DENDROGRAM A-2

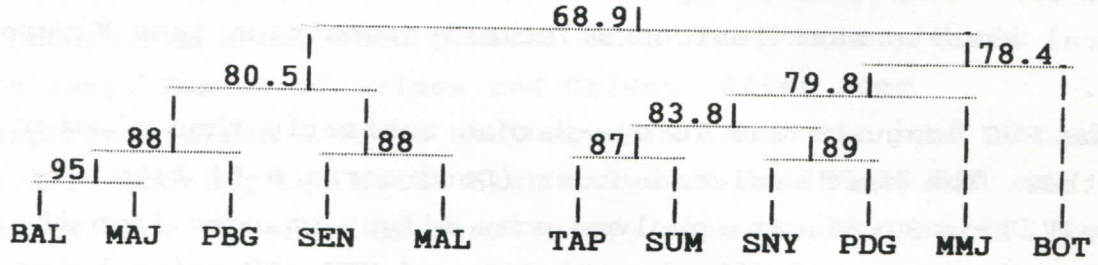


As represented here we are looking at a south-to-north lexicostatistical transition along the Mandar Peninsula north of the Mandar language area, although with Botteng (BOT) an isolate to some degree (see Figure A-1). As with Dendrogram A-1, and Dendrogram A-4 which follows, Grimes and Grimes give

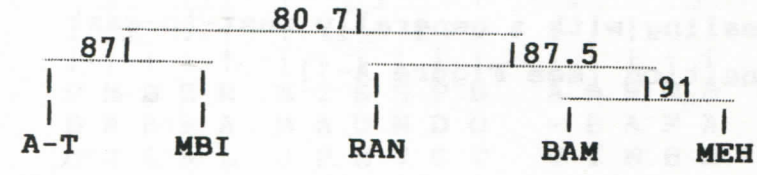
a counterpart dendrogram which contains very much the same information, but using the conventions proposed by Simons (1977b).

Botteng acts as an isolate in the wider context as well, as seen in the cluster formed by the Mandar and Mamuju languages. The best possible order is obtained by simply juxtaposing the two clusters as given above, except that Botteng swings around to fall beyond Mamuju (MMJ). This order which, excluding Botteng, suggests a south-to-north dialectical transition encompassing both languages from Balanipa to Mamuju, scores a goodness of fit of 2511/2751 or 91.3%.

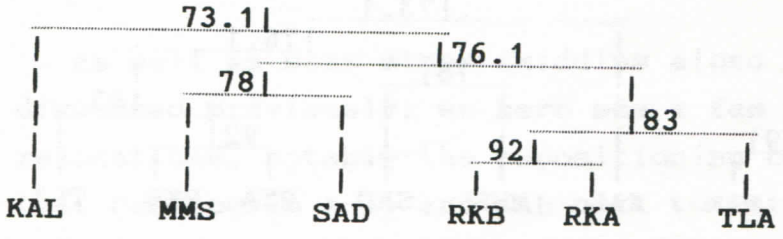
DENDROGRAM A-3



Let us move eastwards into the Southern Central Highlands (see Figure 1-4), considering first the block of speech communities which the Grimes identify as the Pitu Uluna Salu (PUS) language, and then their Toraja-Sakdan subfamily.



DENDROGRAM A-4
PUS language
"Fit":
114/116 = 98.3%



DENDROGRAM A-5
Toraja-Sakdan
subfamily
"Fit":
247/279 = 88.5%

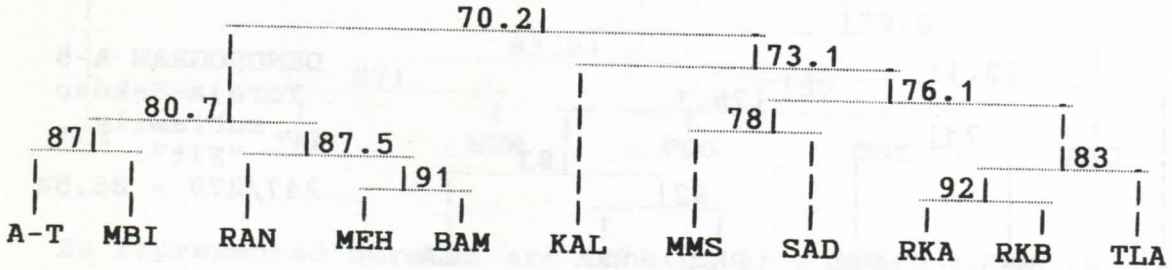
The PUS dialect chain as shown here was also identified by Grimes and Grimes (1987:42) and shows a south-to-north transition except that Bambang (BAM), which is located north

of Mambi (MBI), shows a specific affinity with Mehalakan (MEH) to the south (see Figure A-1).

As regards the Toraja-Sakdan subfamily, Grimes and Grimes (1987:46) placed Rongkong, i.e. Rongkong Bawah (RKB) and Rongkong Atas (RKA) treated as a single entity, between Mamasa (MMS) and Sakdan (SAD), and identified a sporadic convergence involving Rongkong and Toala. If we keep RKB and RKA separate then the Grimes' order can score no better than 205/269 = 76.2%. In the half-matrix which treats Rongkong as a single entity (Grimes and Grimes 1987:46), the counterpart to the order given here scores 129/141 = 91.5%, while the Grimes' order scores 115/141 = 81.6%. Clearly the former is more satisfactory, even though Kalumpang (KAL) and Rongkong would show a slight sporadic convergence, and indicates a general west-to-east lexicostatistical transition (see Figure A-1).

The PUS language and Toraja-Sakdan subfamily then cluster together. The best seriated order (Dendrogram A-6) fits at 2533/2727 or 92.9%. It involves some slight changes from the orders shown above, with the RKA-RKB and MEH-BAM pairs being twiddled around, in both cases involving small and quite insignificant improvements to the seriated order. Further, the placement of RAN (Rantebulahan) with respect to the MEH-BAM pair is also of little significance. For instance, if we changed the RAN-MEH-BAM order given below to MEH-BAM-RAN, the goodness of fit would be measured as 2478/2670 or 92.8%. In all cases we are dealing with a generally west-to-east lexicostatistical transition (see Figure A-1).

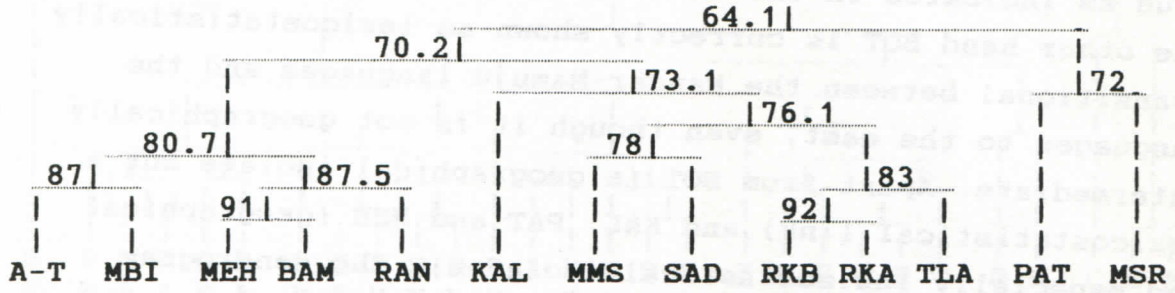
DENDROGRAM A-6



The next event involves Pattaek (PAT) clustering with Masenrempulu (MSR) and their common stem joining Dendrogram A-6 to the right-hand side of Toala (TLA). The best seriated

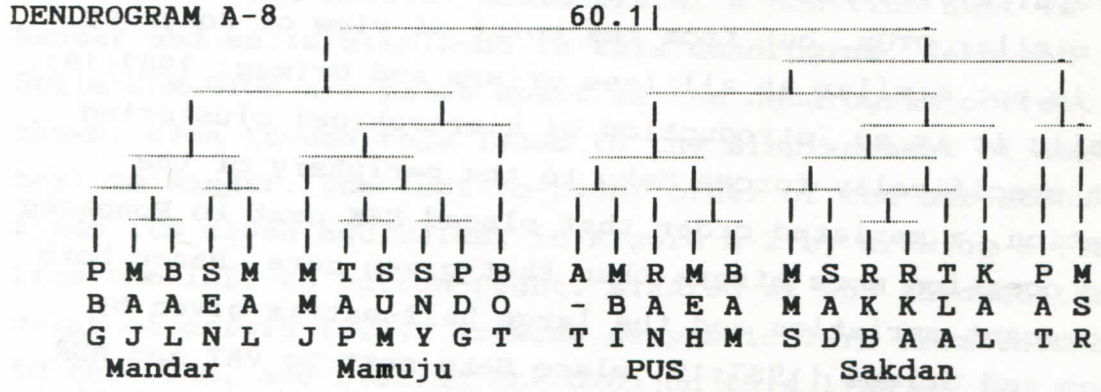
order, which also involves some fiddling with RAN-MEH-BAM and RKA-RKB, scores 4537/4845 or 93.6%, and places PAT and MSR in a position homologous to that in the sorted half-matrix of Grimes and Grimes (1987:19).

DENDROGRAM A-7



This cluster, and the Mandar-Mamuju cluster given above (Dendrogram A-2), then cluster into the Northern South Sulawesi Family of Grimes and Grimes. After some experimentation I found what appears to be the best seriated order, scoring the still high value of 34,887/38,523 or 90.6%. For the sake of simplicity, this dendrogram and most of those which follow will dispense with the values for the lower-level joins.

DENDROGRAM A-8



As well as some minor twiddles along the same lines discussed previously, we here see a few more prominent relocations, notably the repositioning of MMJ next to Mandar (cf. Dendrogram A-3) and KAL next to Pattaek (cf. Dendrogram A-7). These switches have occurred because both MMJ and KAL are to some degree isolates which do not fit in with the wider lexicostatistical patterns. They have been pushed to the furthest peripheries which the higher-level structure of

the seriated dendrogram allows because this involves the smallest possible stress in the overall seriation, at least as gauged here. It would however be quite wrong to read this diagram as implying that MMJ is close to Mandar and KAL is close to Pattaek-Masenrumpulu, because quite the reverse is true as indicated in the dendrograms given previously.[2] On the other hand BOT is correctly shown as lexicostatistically transitional between the Mandar-Mamuju languages and the languages to the east, even though it is not geographically intermediate. Apart from BOT (a geographical isolate but a lexicostatistical link) and KAL, PAT and MSR (geographical and especially lexicostastical isolates), the dendrogram shows a clear west-to-east transition (see Figure A-1). The great separation between Mandar and PAT in the dendrogram, even though they are geographically adjacent, points to a sharp distinction at their border.

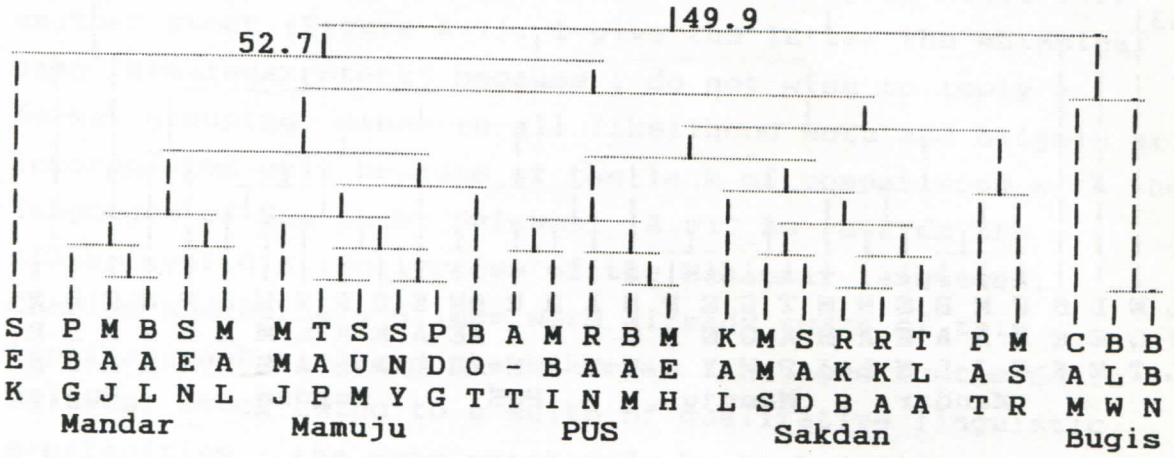
Seko Tengah (SEK) then joins Dendrogram A-8 with an average 52.7% lexicostatistical similarity. It falls to the far right of MSR, leaving the rest of the dendrogram's order unchanged, but lowering the goodness of slightly, to 40,195/44,432 or 90.5%. From the point of view of Seko the geographically close RKA and RKB (see Figure A-1) are the most similar OTUs, but from the point of view of Rongkong, Seko is not similar at all (see Grimes and Grimes, 1987:19). So while it is my introduction of hierarchical clustering which specifically forces Seko to the periphery of the seriation, a seriated order that placed SEK next to Rongkong would occasion more stress than that given here. Hence both the present seriation and the large half-matrix given by Grimes and Grimes (1987:19) place Seko next to PAT and MSR, even though Seko is specifically dissimilar from the latter OTUs, as a compromise towards bringing Seko as close as reasonable to Rongkong and the other Toraja-Sakdan OTUs.

Our next cluster consists of Bugis, represented by the two dialects Luwuk Bugis (BLW) and Bone Bugis (BBN), plus Campalagian (CAM) which joins the Bugis even though its highest individual similarities are with contiguous Mandar

[2] One of the advantages of building up the dendrogram in the step-wise procedure followed here is that it pre-empts these sorts of erroneous misreadings.

dialects. This cluster joins the main dendrogram after Seko had joined. After some experimentation the best order appeared to be:

DENDROGRAM A-9

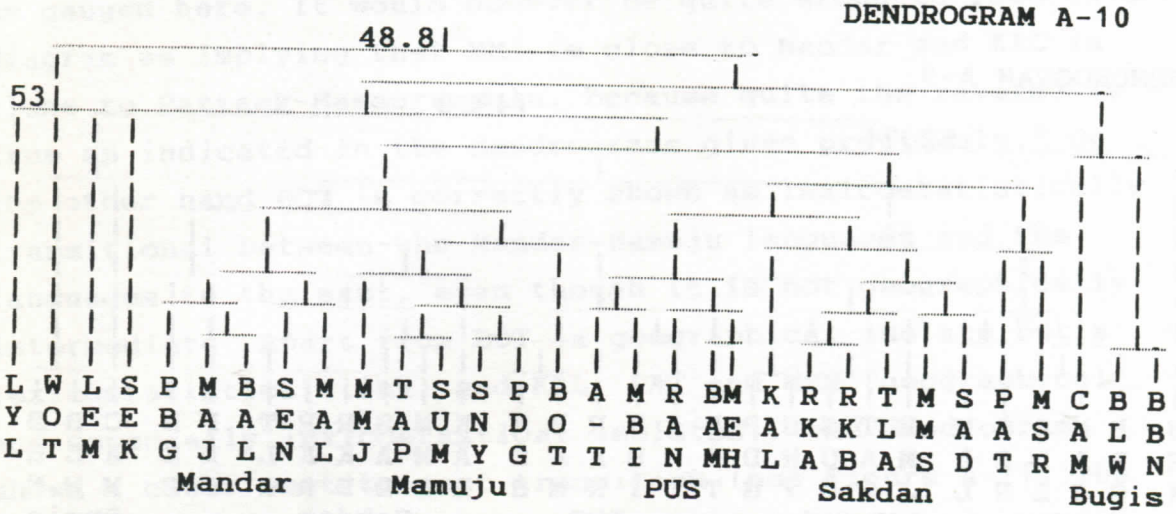


The dendrogram's goodness of fit, 53,302/62,957 or 84.7%, shows that adding the Bugis Family creates considerable stress. Bone and especially Luwuk Bugis show quite strong lexicostatistical similiarities with Pattaek (PAT) and Toala (TLA), and to a lesser degree with MSR, Rongkong and Sakdan (SAD), causing the Bugis Family to fall at the right of the dendrogram. CAM however would prefer a position next to Mandar and so is misplaced in this dendrogram. Seko and the Bugis-CAM OTUs are poles apart as the dendrogram correctly shows, even though this leads to the misplacement of Seko next to Mandar. The leFt-to-right order of the seriation finds its close equivalent in Figure A-2 by drawing a line from top-left to bottom-right, slanted at 45° through the point of origin (0,0), drawing perpendiculars from this line to the OTUs, and placing the OTUs on this line at the base of the perpendiculars. Finally, note that the isolate KAL, which is lexicostatistically dissimilar from the Bugis OTUs, has been switched back towards PUS (cf. Dendrogram A-8).

The next cluster to join the main cluster is the triplet which includes Lemolang, Wotu and Laiyolo (LEM-WOT-LYL). Wotu

shares 53% lexicostatistical similarity with both LEM and LYL, hence we are dealing with a three-way join at 53%.[3]

DENDROGRAM A-10



The goodness of fit of this order is 76,646/91,075 or 84.2%, showing that the placement of LYL-WOT-LEM at the Mandar end of the seriation adds yet further stress, because they (like Seko) would prefer the Toraja-Sakdan end of the seriation which has been pre-empted by the Bugis Family. Note that switching the extremes would create further stress, e.g. the order BBN-BLW-CAM-MSR-PAT-PBG-MAJ-BAL-SEN-MAL-MMJ-TAP-SUM-SNY-PDG-BOT-A-T-MBI-RAN-MEH-BAM-RKB-RKA-TLA-MMS-SAD-KAL-SEK-LEM-WOT-LYL scores 73,146/92,130 or 79.4%. Also note that the Grimes, and by Friberg and Laskowske (1989), place Wotu and Laiyolo in the Muna-Buton stock, whereas they place the speech communities from LEM to Bugis in the South Sulawesi stock.

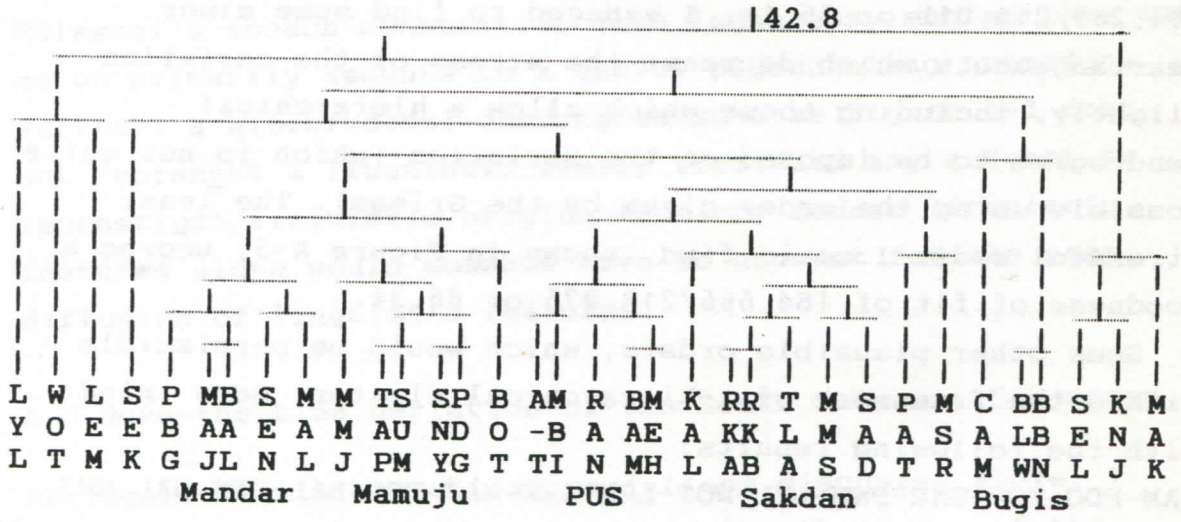
Our next addition to the main dendrogram involves the Makassar subfamily of Grimes and Grimes (1987), represented by Lakiung Makassar (MAK), Coastal Konjo (KNJ) and Selayar (SEL). Even though the Grimes (see Figure A-1) and Friberg and Laskowske (1989) place the Makassar languages in the South Sulawesi stock, the present analysis shows that they cluster with the other OTUs belonging to the South Sulawesi stock only after Wotu and Laiyolo (Muna-Buton stock) had joined the main cluster. All three Makassar languages,

[3] In the next two dendrograms, no space will be allowed between some lexicostatistically similar OTUs, so that the whole dendrogram can fit on the page.

especially MAK, are lexicostatistically aberrant within the South Sulawesi context. If we rigidly apply the Grimes' lexicostatistical classifications then their data would have the Makassar languages form their own stock, while the other peninsular languages including Wotu and Laiyolo would form another stock (Figure A-1). I give the latter the whimsical name "Remainder Stock" because I do not wish to imply a formal grouping, since in all likelihood Wotu and Laiyolo are incorporated only because of the lack of comparisons with the languages of Southeast Sulawesi (A.6). As regards the stock-level distinctiveness of the Makassar languages, Charles and Barbara Grimes were already aware of this implication but placed the Makassar languages in the South Sulawesi stock owing to a suite of qualitative linguistic similarities - the same point made by Sirk (1989) and others.

Joining the Makassar stem with the main cluster places it to the far right, beyond the Bugis. The fit of the seriation, 105,563/125,044 or 84.4%, is a slight improvement over the previous dendrogram, as a reflection of the great lexicostatistical dissimilarity between LYL-WOT-LEM-SEK and the Makassar languages.

DENDROGRAM A-11



At this stage it is worth pointing out two "sporadic convergences", one involving LYL and SEL, and the other involving WOT and BLW (respectively, 54% and 56% lexicostatistical similarity). LYL shows only a low lexicostatistical similarity with the non-SEL Makassar

languages, as does WOT with respect to BBN and CAM, resulting in the placement of LYL and WOT at the other extreme from BLW and SEL in all the seriated dendrograms which involve these OTUs. The extreme placement of these OTUs should not be regarded as a shortcoming of the seriated order, rather the concept of "sporadic convergence" usefully emphasises that certain individual similarities are anomalous within the context of overarching trends.

The sporadic convergences considered here would reflect lexical hybridisation resulting from the geographical proximity of SEL with LYL, and BLW with WOT and the other languages of the Luwuk Coastal Plain (see Figures 1-4 and A-1). Accordingly, the Selayar language might have resulted from a fairly recent expansion of a Makassar language (Konjong) on to Selayar island, and the Luwuk dialect of Bugis might represent a fairly recent expansion of Bugis into the Gulf of Bone.

To complete the exercise, standard Indonesian then joins the main cluster, to be followed by the five languages of the Central Sulawesi stock included by the Grimes in their large half-matrix. The order given by Grimes and Grimes (1987:19) is close to the best, with its goodness of fit calculable as 184,289/214,015 or 86.1%. I managed to find some minor rearrangements which decrease the stress of the seriation slightly, including those which allow a hierarchical dendrogram to be imposed on the seriation (which is not quite possible using the order given by the Grimes). The least stressful order I could find, shown in Figure A-3, scores a goodness of fit of 184,666/213,876 or 86.3%.

Some other plausible orders, which would be permissible within the framework of a hierarchical cluster, were tried with the following results:
RAM-PDO-TOP-SAR-PMN-LYL-WOT-LEM-SEK-MAJ-PBG-BAL-SEN-MAL-MMJ-SUM-TAP-SNY-PDG-BOT-A-T-MBI-RAN-BAM-MEH-RKB-RKA-TLA-MMS-SAD-KAL-PAT-MSR-CAM-BLW-BBN-SEL-KNJ-MAK-BI (i.e. an extension of what had been the best order before Indonesian and the Central Sulawesi languages joined): goodness of fit 182,502/213,082 or 85.6%;

BI-MAK-KNJ-SEL-BBN-BLW-CAM-PBG-MAJ-BAL-SEN-MAL-MMJ-SNY-PDG-SUM-TAP-BOT-MSR-PAT-A-T-MBI-MEH-BAM-RAN-MMS-SAD-RKB-RKA-TLA-KAL-SEK-LEM-WOT-LYL-PMN-SAR-TOP-PDO-RAM (i.e. the best order I could find which placed MSR and PAT centrally within the Northern South Sulawesi language family): goodness of fit 183,506/215,320 or 85.2%.

These involve radical rearrangements of the Northern South Sulawesi OTUs compared to the order shown in Figure A-3, yet the seriation's goodness of fit changes by 1.1% or less. All three seriations correctly strike the main axis of variation which, as shown in Figure A-2, places the block of primarily southern OTUs (Indonesian, Makassar, Bugis) at one extreme, the block of primarily northern OTUs (Seko, Lemolang, Wotu, Laiyolo, Central Sulawesi languages) at the other extreme, and the OTUs of the Northern South Sulawesi family in the middle. By recognising this main axis of north-to-south variation, and sensibly arranging the OTUs within the three main blocks, 85 to 86% of the variation in the original 40 by 40 half-matrix can be correctly represented in a suite of seriations. This point highlights the ubiquitous diffusion of lexical items across South Sulawesi's landscape, and suggests that the use of lexicostatistical data to classify South Sulawesi's speech communities into languages, subfamilies and so on primarily amounts to a useful pigeonholing procedure. Further, a hierarchical dendrogram such as Figure A-3 does not represent a linguistic family tree, and any attempt to reconstruct linguistic origins from any modern linguistic features alone would somehow have to account for the past diffusion of linguistic features.

A.5 Down-the-Line Seriation of the South Sulawesi Languages

As regards the hierarchical seriations discussed above, I have found guidelines to help determine the order of the branches, but no hard and fast rules, except the *post hoc* rule that the order should maximise goodness of fit. Appendix B, which deals with the tradewares, uses a rule-bound seriating procedure which can be called "down-the-line" seriation. The procedure is designed specifically for those clustering exercises where the relationships of a common stem

cannot be accurately predicted from the relationships which the member OTUs had before they clustered. In these cases the original half-matrix of coefficients need not be an accurate guide to how the OTUs should cluster, and so they do not provide a fair test of the validity of the seriated order which results. However, as explained above (A.3), lexicostatistical data are one of the few data sets where the correct hierarchical clustering can be deduced from the original coefficients with perfect accuracy. So it is of some methodological interest to investigate whether down-the-line seriation is applicable to lexicostatistical data.

We will first try out "nearest next-to-sister" seriation. Here the argument runs as follows: if hierarchical clustering always places sister stems adjacent (at their level in the dendrogram), then the stems should be twiddled such that the nearest next-to-sister stems are also adjacent. The seriation proceeds in the reverse order of the linkages, from the top of the page down (see Figure A-4). The last two clusters to join, the "Central Sulawesi stock" and "Other", are the first to split. The second-to-last join, Rampi with the other Central Sulawesi languages, becomes the second split in the seriation. At this point Rampi is lexicostatistically the less like "Other" languages, so the common stem of the non-Rampi Central Sulawesi languages is placed next to the "Other" common stem, and Rampi is placed at an extreme. The third-to-last join, Padoe (PDO) with Saruda-Topoiyo-Pamona (STP), becomes the third split. At this stage the clustering half-matrix was:

"Other"			
34.77	Padoe		
38.25	40.33	STP	
35.89	36	40	Rampi

Excluding the 40.33 value at which Padoe and STP joined, the highest lexicostatistical similarity is between STP and Rampi. Hence STP is placed next to Rampi as a reflection of their next-to-sister relationship.

With Padoe now fixed as the left-hand member of the Central Sulawesi languages, the next split, BI from "Other", is gauged with respect to Padoe. At this stage the relevant

lexicostatistical similarities were "Other":PDO = 34.8 and BI:PDO = 33. BI's lower similarity results in BI taking an extreme position to the left hand of the dendrogram (Figure A-4). Hence the next split, between the Makassar languages (MKL) and my "Remainder stock", is gauged with respect to the immediate outliers, BI and Padoe. At this stage the relevant half-matrix used during the clustering procedure was:

BI			
40.8	"Remainder"		
38.67	42.78	MKL	
33	35.13	31.67	Padoe

The "Remainder stock" is positioned next to BI, because they share the highest lexical similarity after that which had clustered MKL and the "Remainder stock", so the Makassar stem swings over towards Padoe. And so on, with the seriating decisions shown in small figures in Figure A-4.

The resulting order differs radically from those considered previously.[4] The comparison cited immediately above causes the whole block of Sulawesi languages not belonging to the Central Sulawesi stock, from Laiyolo to Makassar, to be reversed with respect to the outliers Indonesian (BI) and the Central Sulawesi languages. As shown by comparison with Figure A-2, this is a less satisfactory order, and the goodness of fit comes to 157,912/207,183 or only 76.2%.

Although "nearest next-to-sister" analysis produces a comparatively poor seriation, it does highlight two connected points which are disguised in the main seriations. Firstly, it is the "Remainder stock" rather than the "Makassar stock" which is lexicostatistically closer to Indonesian. Indeed, the "Remainder stock" relates more to Indonesian than to the Central Sulawesi languages despite the diffusion of lexical items between the "Remainder" and Central Sulawesi stocks.

[4] Note that the method would have produced the same result even if one of the Central Sulawesi languages other than Padoe had taken up the left-hand position. This is because the highest average lexicostatistical similarity which the "Remainder stock" shares with any Central Sulawesi language, 40.23% (with Saruda), falls below the 40.8% average lexicostatistical similarity recorded between Indonesian and the "Remainder stock".

Secondly, the aberrant lexicon of the Makassar languages within the South Sulawesi context cannot be attributed to borrowings from Malay (Indonesian), nor have any other specific relationships between Makassar and any non-South Sulawesi language been seriously proposed.

A variant which I tried on the above procedure involves seriating by the least stress within the immediate comparisons. For instance, in the comparison involving "Other", Padoe, STP and Rampi, some stress is clearly involved because Padoe (compared against STP) is the less like both of the outliers (i.e. "Other" and Rampi). We might argue that Padoe should be placed next to "Other", since its lexicostatistical similarity with "Other" is only 3.48% less than the comparable value of STP, as opposed to 4% when Padoe and STP are compared against Rampi. At this stage, and the stage where Indonesian hives off from "Other", the same order results as in the "nearest next-to-sister" seriation. But when we come to placing the Makassar and "Remainder" stocks with respect to Indonesian and Padoe, less stress (40.8 minus 38.67 or 1.13%) results from placing the Makassar stem next to Indonesian than from placing it next to Padoe (35.13 minus 31.67 or 3.46%). That is, the procedure correctly picks up the point that, although the Makassar languages are generally aberrant, they are less so with respect to Indonesian than with respect to the Central Sulawesi languages. However, lower in the dendrogram the procedure reverses the order of the PUS, Toraja-Sakdan and MSR-PAT blocks of OTUs compared to the best seriations (cf. Figures A-3 and A-5). This reversal lowers the goodness of fit slightly to 178,111/213,965 or 83.2%, even though the fit with the main axis of variation in Figure A-2 appears equally good or even slightly better.

Down-the-line seriation disconsiders relationships beyond the immediate comparisons and so, not surprisingly, fails to produce the best fitted order overall. By the same token it is more sensitive to immediate relationships. For instance, the within-ordering of the Central Sulawesi languages suggested by Figure A-2 is better represented by down-the-line seriation (Figures A-4 and A-5) than in the seriations which in effect order the Central Sulawesi

languages with respect to those further south (e.g. Figure A-3). However, one problem with down-the-line seriation is that OTUs which are anomalous within a cluster fall to the extremities of the cluster, even if they are generally anomalous rather than representive of a transition towards a sister cluster. For instance, Saruda or Pamona would appear to be a better candidate than Padoe as the Central Sulawesi language by which to seriate the other languages (see Figure A-2). This potential weakness is not counteracted at all by "nearest next-to-sister" seriation and so would appear to explain its poor performance. In contrast, "least neighbours' tension" seriation overrules the main anomalies and so appears to perform quite well.

A.6 Other Reviews of the Languages of South Sulawesi

The Summer Institute of Linguistics, which undertook the survey of South Sulawesi speech communities studied by Grimes and Grimes (1987), has since carried out further surveys. Based on the results, Friberg and Laskowske (1989:2ff.) suggested various revisions to the Grimes' distribution map and classification of South Sulawesi's languages, principally involving the fringes of the Northern South Sulawesi family. However, since Friberg and Laskowske substantiate their argument with only a selection of immediate lexicostatistical comparisons, which falls far short of the 40-by-40 half-matrix provided by Grimes and Grimes (1987:19), their suggestions cannot be rigorously tested here.

For instance Ulumanduk, which the Grimes could not include in their study, proved to be lexicostatistically (and geographically) central within the Mandar Peninsula speech communities, and apparently also extensive. Thus Friberg and Laskowske reclassify Tappalang (TAP), Botteng (BOT) and Sondoang as dialects of Ulumanduk rather than dialects of Mamuju, and find that much of the northern Mandar-speaking area (in the Grimes' study) is really Ulumanduk territory. Ulumanduk belongs to a Pitu Uluna Salu subfamily, so compared to the situation shown in Figures A-1 to A-5, PUS would cut in between Mandar and Mamuju (Friberg and Laskowske, 1989). This significant rearrangement may be correct, because the

relations shown between groups depend on which particular OTUs are sampled, but Friberg and Laskowske nowhere provide a half-matrix comparing all the Mandar, Mamuju and PUS OTUs whereby the breakup into particular groups could be formally demonstrated. Their point that Mamasa, PUS, Ulumanduk, Mamuju and Mandar form one linguistic continuum, on account of the ubiquity of transitional dialects (Friberg and Laskowske, 1989:6), would certainly be supported by the present study (e.g. Figure A-3), or even extended to include almost the entire Northern South Sulawesi family (cf. Friberg and Laskowske, 1989:8-9).

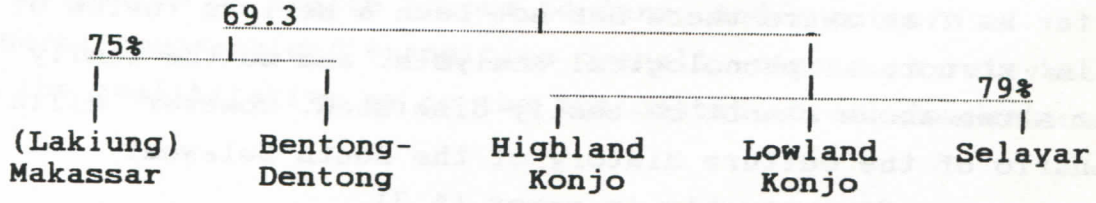
Friberg and Laskowske (1989:8-9) further propose the following minor amendments to the Northern South Sulawesi family: reclassification of Pattaek as a dialect of Mamasa; recognition of Rongkong and Luwuk (Toalak) as dialects of the same language rather than as separate languages; and relabelling the Grimes' three dialects of the Masenrempulu language - Enrekang, Maiwa and Duri - as the three languages of the Masenrempulu subfamily (while the Grimes' other Masenrempulu language, Pattinjo, becomes a dialect of Enrekang). Friberg and Laskowske's second point is strictly correct (cf. Dendrogram A-5); they may also have enjoyed the advantage of sounder information in proposing their first and third points, but they do not provide any supporting data.

As regards the Muna-Buton stock, specifically the Grimes' finding of a 53% lexicostatistical similarity between the Barang-Barang dialect of Laiyolo (LYL) and Wotu, Friberg and Laskowske (1989:13) relate a Barang-Barang folk history in which a Barang-Barang prince sailed away to settle in Wotu. If this passage is meant to imply a relationship of sporadic convergence between LYL and Wotu, it would do so misleadingly, because LYL shows comparable lexicostatistical similarities (38-50%) with the Central Sulawesi languages sampled by Grimes and Grimes (1987:19), similarities which are consistently higher than those involving Wotu. Further, the relationships extend to Sulawesi's southeast tip given the 58% lexicostatistical similarity between LYL and Buton (Grimes and Grimes, 1987:63). Sirk (1988:11) confirms the last point to the extent of showing that Wolio, a dialect of

Buton, shares a 76% similarity with LYL and a 56% similarity with Wotu, as calculated from a 100-item Swadesh word list. In the terminology of Grimes and Grimes, Wotu, Laiyolo and Buton would comprise a family, one which would belong in the same stock with Muna based on the lexicostatistical comparisons given by Sirk (1988:11). In his study of Muna, Van den Berg (1989:8) also accepts a Muna-Buton grouping and points out the need to investigate its wider relationships with the languages of Central and Southeast Sulawesi.

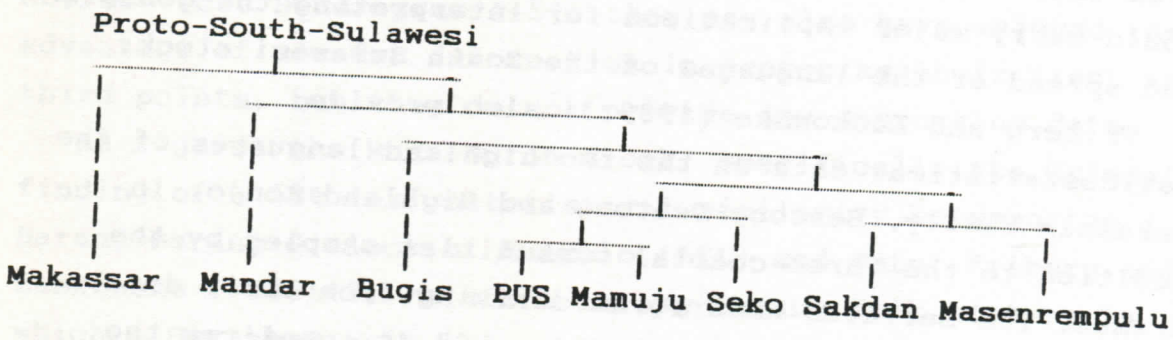
The above paragraph might be interpreted to suggest that LYL, and the related Kalao language on Kalao island near Selayar, represent a linguistic continuum once widespread in South Sulawesi, stretching from Selayar across the Gulf of Bone, and then further east to Sulawesi's southeastern tip. In this scenario the South Sulawesi segment of the continuum has been interrupted by the impingement of the Makassar, Bugis and Toraja-Sakdan languages. As another possible interpretation, LYL and Kalao could have derived from the coasts of the Gulf of Bone or Sulawesi's southeast tip, or at least have been heavily influenced by thoroughgoing contact from these regions. Choosing between these interpretations could carry major implications for interpreting the genesis and spread of the languages of the South Sulawesi stock.

Friberg and Laskowske (1989:3) also provide lexicostatistical data on the two highland languages of the Makassar family, Bentong-Dentong and Highland Konjo, in addition to the three coastal communities sampled by the Grimes. The seriated dendrogram deriving from their data, with a goodness of fit of 147/151 or 97.4%, confirms the smooth, west-to-east lexicostatistical transition already suggested by the Grimes' smaller data set.



The linguists working with the Summer Institute of Linguistics' programme in South Sulawesi have desisted from

interpreting their classificatory system as a family tree. This is not the case with Mills (1975a, 1975b) whose goals were to reconstruct Proto-South-Sulawesi through a structural phonological analysis and to suggest a family tree for the South Sulawesi languages. Two difficulties with Mills' work, noted by Sirk (1989:55-56), are the poor quality of his word lists (compiled either from dictionaries or largely by informants familiar with the orthography of Bahasa Indonesia), and the numerous exceptions to his reconstruction of Proto-South-Sulawesi which Mills was unable to explain. A third difficulty is that Mills (1975a:497-498) claims to have considered his lexicostatistical evidence in reconstructing the two family trees he offers - yet not only is his evidence very incomplete, based on only nine OTUs (Mills, 1975a:490, 492), but also the implications support the Grimes' scheme (and hence Figure A-3) more than they support either family tree offered by Mills (cf. Grimes and Grimes, 1989:202-203). Given that his lexicostatistical efforts are demonstrably inadequate, his more critical family tree is the one which makes less recourse to lexicostatistics. It can be shown as follows:[5]



Mills' structural phonological analysis confirms the aberrance of Makassar but suggests that Mandar, rather than Bugis, was the next linguistic taxon to leave the main stem. As far as I am aware there has not been a serious review of Mills' structural phonological analysis, and so the family tree shown above cannot be easily dismissed. However, Mills' scenario of the culture history of the South Sulawesi languages is demonstrably in error (A.7).

[5] Note that the only difference between his family trees involves the position of Bugis and Mandar.

A very interesting and possibly crucial development within recent years is Adelaar's demonstration that the Tamanic languages, which are located almost centrally in the island of Kalimantan, also belong to the South Sulawesi group. Adelaar notes that the phonological evidence tends to relate Tamanic specifically with Bugis, even if the frequencies of shared lexical innovations would slightly favour a specific relationship between Tamanic and Toraja-Sakdan.[6] The nature of the phonological similarities and the geographical isolation of the Tamanic languages rule out the possibility of similarities through borrowing. Hence the possibilities boil down to whether Tamanic could have resulted from an ancient migration from South Sulawesi to Kalimantan, whether the South Sulawesi languages (excluding Tamanic) could have resulted from an ancient migration from Kalimantan, or whether there was some other, as yet unidentified homeland. Of these, the first scenario seems the most feasible (Adelaar, in press).

Finally, while Sirk (1989) concludes that the qualititative data support the concept of a South Sulawesi language group as conventionally understood to include Makassar, he also notes the existence of contrary trends. For instance the manner of forming the numeral "four hundred", and a few lexical roots, distinguish the non-Makassar languages of the South Sulawesi group from Makassar. Accentuation patterns, and the lowering of high vowels before *-q, are areal features also shown by the Badaic languages of Central Sulawesi province, while the lexical item *beluak unites the Central Sulawesi languages specifically with the non-Makassar members of the South Sulawesi language group (Sirk, 1989:74-75). So while different borders are suggested by the qualitative and the lexicostatistical data, the issue of diffusion of traits across borders, and a pattern of general geographical transition overall, remain as relevant to the qualititative as to the lexicostatistical comparisons.

[6] The specific relationships of Tamanic with both Bugis and Toraja-Sakdan recall Mills' suggestion (1975a:498) that Bugis must have passed through a Sakdan- or Masenrempulu-like stage.

A.7 A Tentative Overview

According to the dominant paradigm in island Southeast Asia's later Holocene prehistory, the colonisation of the archipelago by Austronesian speakers is related to the appearance of a Neolithic assemblage - especially pottery - in the archaeological record (Bellwood, 1985, 1988; Spriggs, 1989). Recalibration of the radiocarbon dates which Glover (1978) associates with a ceramic Toalean phase at Ulu Leang 1 would date the arrival of Austronesian speakers at Leang-Leang, Maros, to approximately 5000 years ago (Spriggs, 1989). However, my understanding of the Leang-Leang sites would date the initial appearance of pottery to less than 3500 years ago (Bulbeck, in prep. a). This would seem to be rather late given the overall chronology, as currently understood, of the expansion of Austronesian within the Indo-Malaysian archipelago (e.g. Blust, 1988). It would imply a back-migration into South Sulawesi from further west, as assumed by Mills (1975a), and possibly supported by the lexicostatistical data (especially Figure A-4). Given the demonstration by SSPHAP's survey of Toalean sites in open (non-cave) contexts (e.g. Chapters 7 and 10), and the assumption that the "Toaleans" were hunter-gatherers who did not speak an Austronesian language, it is possible that the Toaleans had occupied the South Sulawesi peninsula at sufficiently high densities to resist substantial Austronesian colonisation for centuries or millennia.

A point of almost universal agreement is the relatively great distinctiveness of the Makassar languages from those surrounding it. Probably this does not merely reflect the comparative geographical isolation of the Makassar languages, nor the possible replacement of former intervening languages owing to the expansion of Bugis and Makassar. It probably also implies that "proto-Makassar" was the first language to split off the main line of descent of the South Sulawesi languages (e.g. Mills' family tree depicted above). To help explain the lexical aberrance of Makassar, Mills (1975a:513-514) suggests that Makassar may have mixed with an indigenous substratum related to the Central Sulawesi languages. However, as shown above, the Makassar languages

are lexically aberrant not only with respect to the other languages belonging to the South Sulawesi group, but also the Central Sulawesi languages, Wotu and Laiyolo (apart from the sporadic convergence between Selayar and Laiyolo), and even standard Indonesian. If the lexical aberrance of Makassar is to be accounted for by the inclusion of a substratum, on current evidence that substratum could have been provided by the original, "Toalean" inhabitants.

Leaving aside that speculation for other speculations, we can note that the seriated dendrograms of the languages of the "South Sulawesi stock" read like a succession of splits involving Makassar first, then Lemolang, then Bugis, then Seko, then the languages of the Northern South Sulawesi family (Figures A-3 to A-5). Given that Lemolang and Seko are so clearly transitional towards other "stocks", we can ignore them and simplify the structure to a successive three-step ramification - Makassar, then Bugis, then the Northern South Sulawesi family. Interpreting this structure as a family tree - it is in essence the family tree of Mills (1975a) which he did not prefer - strikes an appealing correspondence with South Sulawesi's rural population statistics which show the highest densities in the Makassar strongholds, intermediate densities in the Bugis strongholds, and the lowest densities to the north (Figure 1-3). The comparison lends some support to the model of a Proto-South-Sulawesi "homeland" on or near the peninsula's south coast, followed by a northwards colonisation as population densities built up.

However, we have Mills' preferred family tree, based on his structural phonological analysis, where Mandar, not Bugis, is the next stem after Makassar to split off the common line of descent. In this case our scenario would have to be adjusted to show an early branch colonising the Mandar coastline prior to the general northwards thrust during which the Bugis and Northern South Sulawesi (barring Mandar) stems divided. We also have Adelaar's reconstruction of a specific link between Tamanic and Bugis (and possibly Toraja-Sakdan), suggesting a migration to Kalimantan from the Bugis heartland after the Mandar stem had split off. This scenario would indicate that a major linguistic expansion, resulting not

only in the most numerous and geographically extensive of the South Sulawesi languages (Bugis), and not only in the majority of these languages within South Sulawesi and the colonisation of most of the province, but also in a migration to central Kalimantan, had occurred in comparatively recent times. Be that as it may, the presence of Austronesian languages in South Sulawesi since at least 3000 years ago, and our virtual ignorance of events until the last 800 years or so, obviously leave ample scope to postulate a range of possible scenarios.

Nonetheless at least one scenario, Mills', can be rejected. Spurred on by his structural phonological analysis which suggested that the Mandar stem had split off the main line of descent before the Bugis stem, Mills posited that the Proto-South-Sulawesi homeland was close to the Mandar area, and more specifically at the mouth of the Sungai Sakdang. He hypothesised that the prospects for trade might have drawn these Proto-South-Sulawesi speakers to an area already inhabited by people speaking languages related to the Central Sulawesi languages. To get the South Sulawesi languages to their present-day positions, Mills developed an elaborate migratory scenario. Firstly, proto-Makassar split off and colonised the Sakdan valley, then migrated to the Luwuk Coastal Plain and thence to the main body of the peninsula, finally pitching a last stand on the peninsula's south coast - pursued all the time by the proto-Bugis. Before proto-Bugis split off, proto-Mandar had split off and migrated westwards. After proto-Bugis split off, the PUS, Mamuju, Seko, Toraja-Sakdan and Masenrempulu language stems ramified and colonised the Central Highlands and Mamuju area (Mills, 1975a, 1975b).

This scenario seems to be unnecessarily defiant of the principle of parsimony (e.g. Blust, 1988:47), involving as it does long and complex migrations by proto-Makassar and proto-Bugis, and a succession of language replacements. In addition it is difficult to see how the mouth of the Sungai Sakdang could have held such extraordinary benefits for population growth that it remained the static centre for four successive migratory waves. Moreover Mills (1975a:500) makes

the extraordinary claim that South Sulawesi lacks suitable harbours south of the Sakdang delta (see Allied Geographical Section [1945] for example). He also invokes an inland sea separating the southwest peninsula from the Central Highlands during the period in question (Mills, 1975a:502-503,533-534), which is now known to have existed only between 7100 and 2600 years ago, and even then extended only from the mouth of the Sungai Cenrana to the ridge of Celebes molasse immediately east of the Tempe Depression (Gremmen, 1990). Then there is Mills' strange argument that the Central Highlands would have been cooler and therefore more densely populated than the southwest peninsula (Mills, 1975a:500-501), even though pleasantness of climate to a westerner is not usually invoked by human geographers as a factor influencing carrying capacity. Mills' argument further involves the presence of a few Makassar toponyms in the area now inhabited by the Bugis, explaining away the Makassar toponym of Majene which does not fit his scenario (Mills, 1975a:502,534), and ignoring the comparable presence of Bugis toponyms (e.g. Sanrabone, Bone-Bone, Pattiro - see Chapters 6 to 10) in the area now inhabited by the Makassar. Finally there is Mills' fanciful conflation of isolated statements in the Bugis chronicles and local origin myths into an undated scenario - at least one of these folk stories, Luwuk's reputation as the oldest Bugis kingdom, is almost certainly false (13.4.2).

If we accept Mills' family tree based on structural phonological analysis, the most parsimonious scenario would posit a Proto-South-Sulawesi homeland on or near the peninsula's south coast, and a general north-to-south colonisation thrust preceded by Mandar as a precocious offshoot. The other main scenarios would also suggest a homeland within the southwest peninsula. From the point of view of the present thesis, the fugitive status which Mills would ascribe to the Bugis and especially the Makassar can be safely ignored. The linguistic line leading to modern Bugis would appear to have been based in the present Bugis heartland for several thousand years, and the counterpart propositions for the Makassar is even more certain.

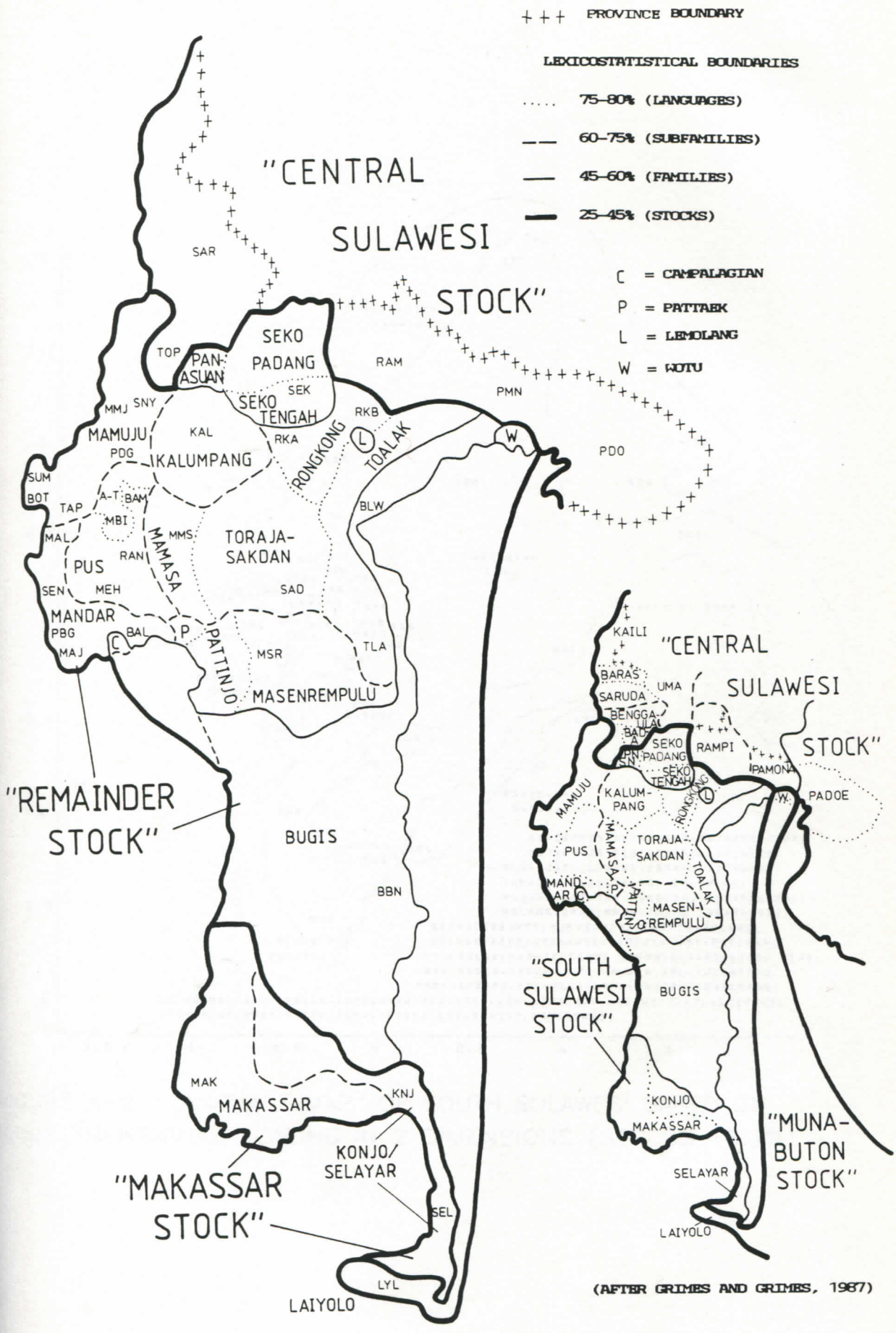


FIGURE A-1. FORMAL LEXICOSTATISTICAL RELATIONSHIPS OF SOUTH SULAWESI LANGUAGES

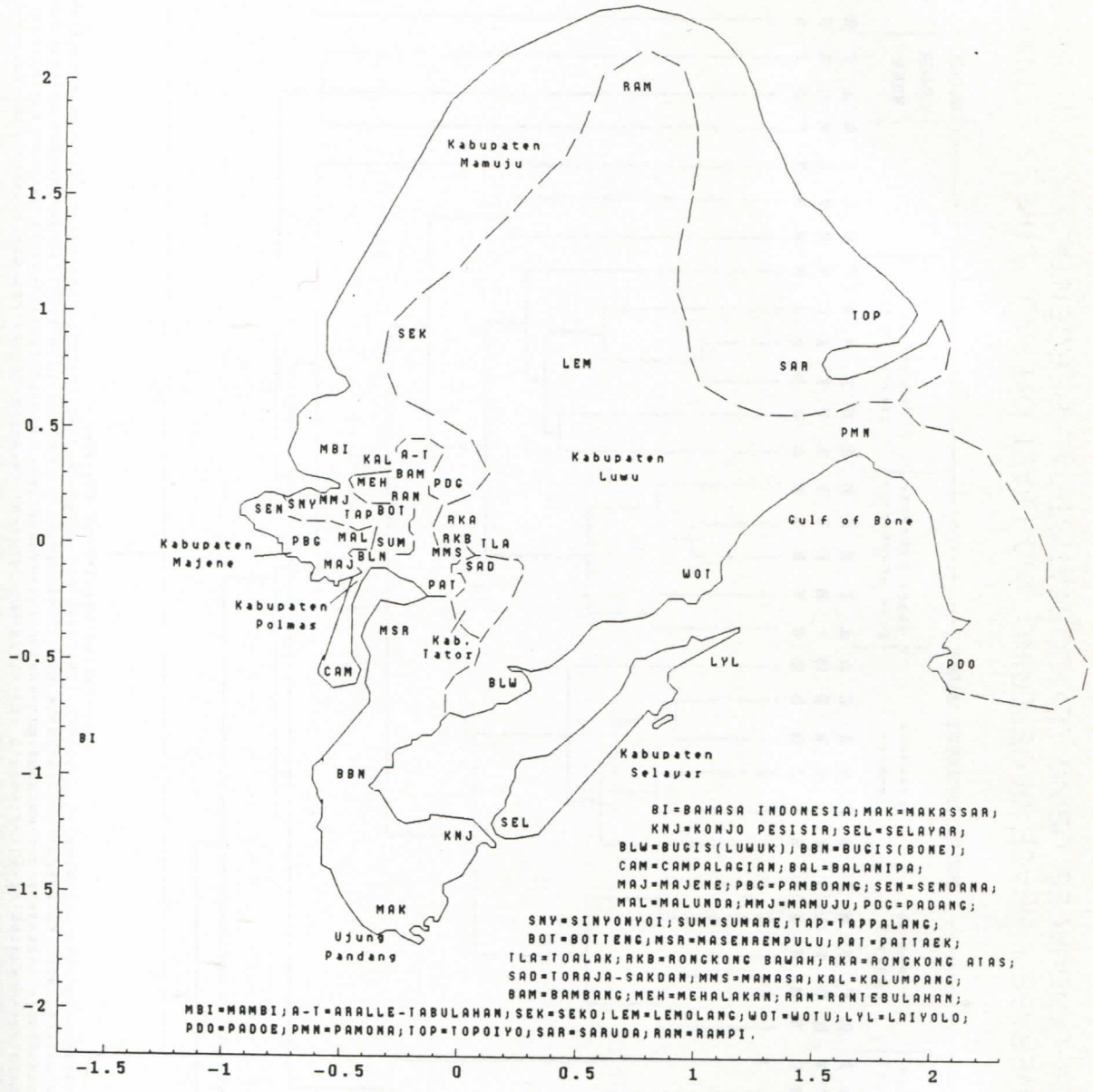


FIGURE A–2. "LANGUAGE MAP" OF SOUTH SULAWESI BASED ON MULTIDIMENSIONAL SCALING IN 2 DIMENSIONS (STRESS 18.2%)

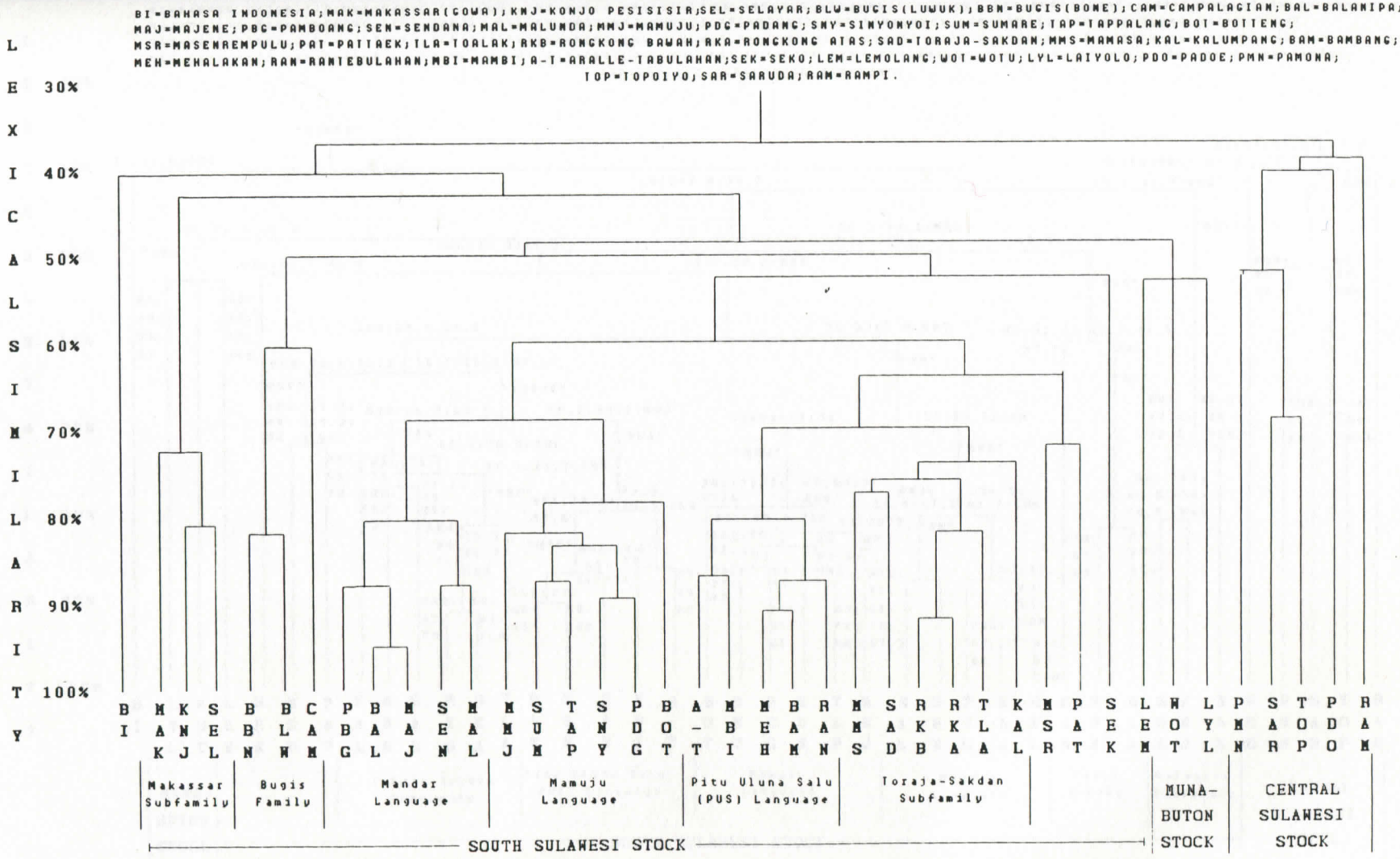


FIGURE A–3. AVERAGE LINKAGE CLUSTERING AND LEAST OVERALL STRESS SERIATION OF SOUTH SULAWESI LANGUAGES USING LEXICOSTATISTICAL PERCENTAGES. FIT: 86.3%.

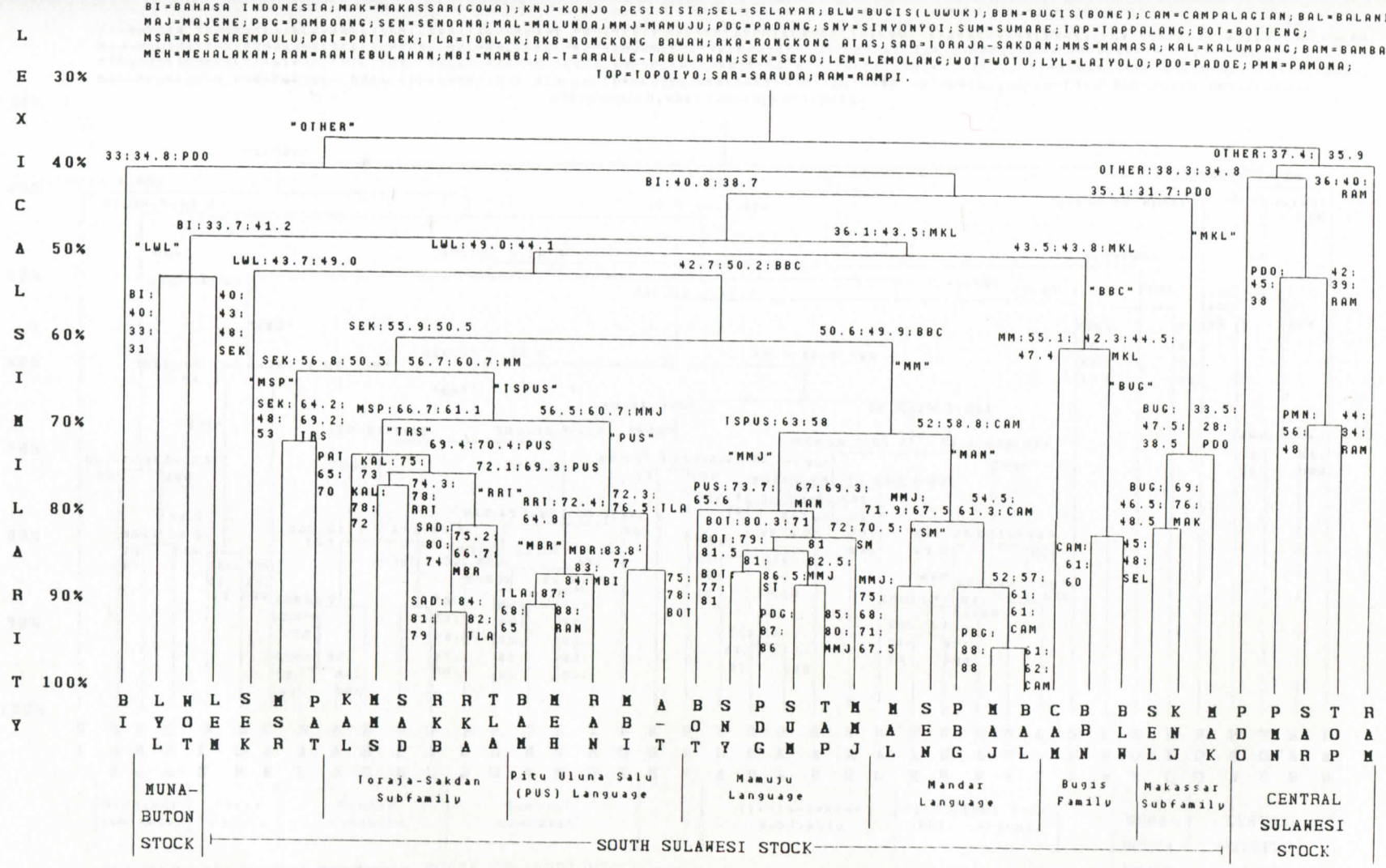


FIGURE A-4. AVERAGE LINKAGE CLUSTERING AND NEAREST NEXT-TO-SISTER SERIATION OF SOUTH SULAWESI LANGUAGES USING LEXICOSTATISTICAL PERCENTAGES. FIT: 76.2%.

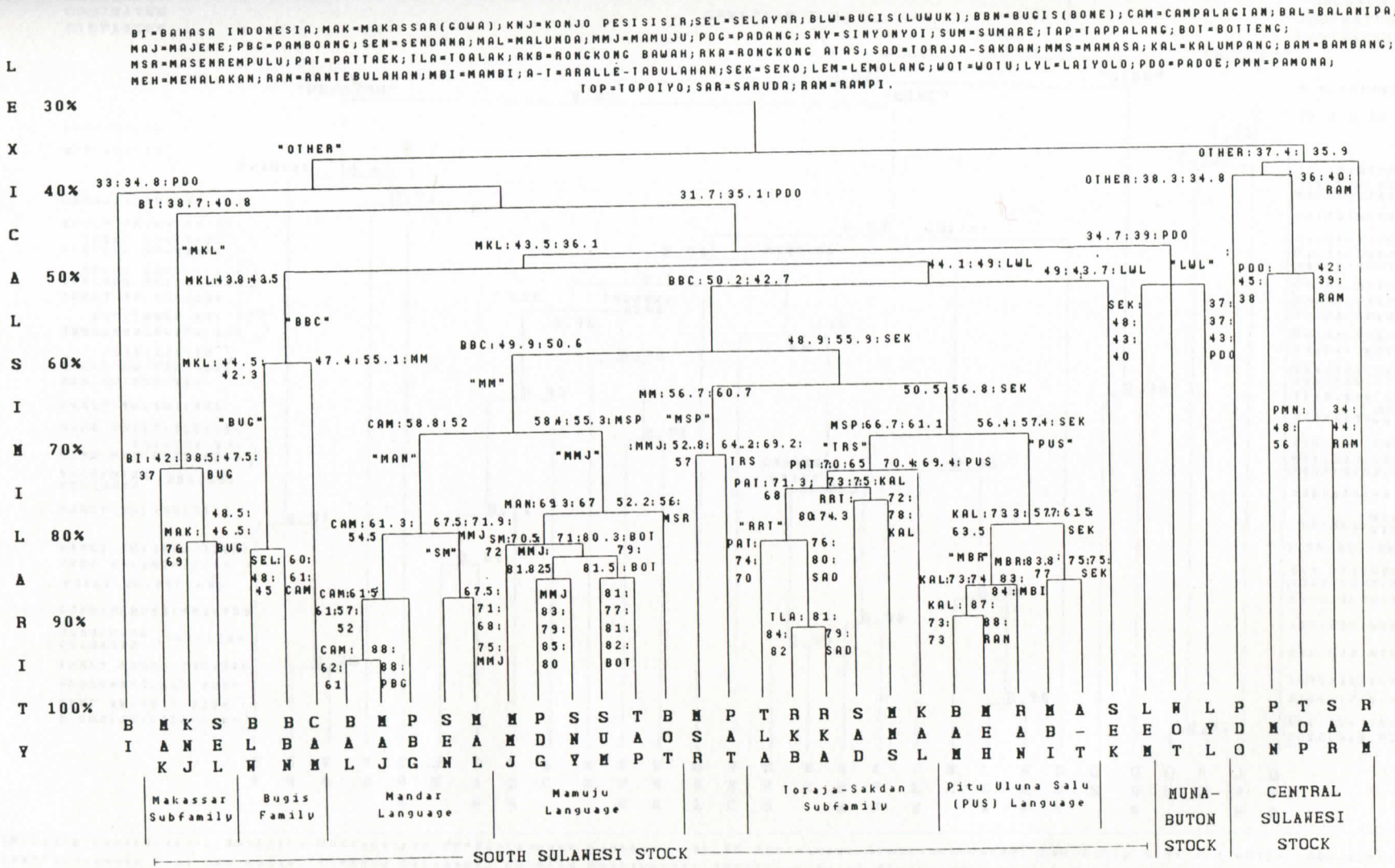


FIGURE A-5. AVERAGE LINKAGE CLUSTERING AND LEAST NEIGHBOURS' TENSION SERIATION OF SOUTH SULAWESI LANGUAGES USING LEXICOSTATISTICAL PERCENTAGES. FIT: 83.2%.

APPENDIX B. TRADEWARES DESCRIPTION AND DATING

B.1 Introduction

The revision of greater Gowa's history advanced in this thesis relies heavily on SSPHAP's method of drawing very precise chronological implications from the high-fired ceramics identified at site exposures (Chapters 6 to 12). This appendix will explain the procedures by which the identifications were made, describe the tradeware classes, and apply seriation theory to illustrate their relative chronology. Conversion of the relative chronology into an absolute chronology depends primarily on a review of the literature on tradewares, although the available radiocarbon dates (Tables 13-4 and 13-5) support the scheme. Finally, the great majority of the collected specimens have been deposited with Suaka's museum in Ujung Pandang, so SSPHAP's identifications are amenable to investigation by other ceramic experts.[1]

During SSPHAP's fieldwork a grand total of 42,980 tradeware pieces were identified and provenanced by site and zone - 5351 during the Soppeng survey (Kallupa et al., 1989) and 37,629 during the Gowa survey. These pieces are generally represented by single sherds although a small proportion are represented by two or more matching sherds, and a still smaller proportion are complete vessels. 40,156 or 93.4% were given identifications in the field and of these, 3905 or 9.1% were collected for follow-up study in the laboratory. 6.6% of the grand total were either collected but not identified at the sites or already present within Suaka's museum collections.[2] In all, identifications made under laboratory conditions are available for 6754 pieces, 15.7% of the grand

[1] I brought back a small proportion to Canberra for further examination. 87 of these were later sent to the Research Centre for Southeast Asian Ceramics in Adelaide for physical and chemical analysis. The remainder will be returned to Suaka, along with a hard copy of the computer files listing the collected tradewares, after completion of this thesis.

[2] The vast majority of this 6.6% was collected either at the very outset of the survey, whilst I was still formulating an appropriate survey strategy, or during SSPHAP's last two completed surveys at Benteng Tallok and along the Paknakkukang-Barombong coastal wall.

total (Table B-41). Identifications made in the field are used for the remainder.

B.2 Background to SSPHAP's Classificatory System

The tradewares which commonly occur in Indonesian archaeological contexts consist of high-fired ceramics produced in China, Japan, mainland Southeast Asia and Europe. Classifying the tradewares by country of origin and period assumes, as it were, all the manufacturing sites have been located, their products securely dated, and appropriate classes erected on the basis of defining visual or chemical characteristics. But the advances which have been made along these lines (e.g. Palmgren et al., 1963; Guy, 1989) prefigure more than bridge the vast lacunae in the ideal database. Moreover the ideal database, were it attainable, would not necessarily advance far beyond the skills of practising ceramic experts in terms of accurate and precise tradeware identifications. There is not and may never be a scientifically rigorous, "correct" classificatory system; systems must be assessed on softer critera such as utility and appropriateness.

The systematic scholarly study of Oriental ceramics has had a long history (e.g. Hobson, 1915) in which to build a general framework on unshakeable foundations. Nonetheless the mainstream literature betrays its antiquarian bias through an emphasis on highest quality wares and a penchant for "understanding" culture by its finest artefacts. The minority interest in commonplace wares, sherdage collections and general trade patterns can be largely attributed to the scholars who, in the middle decades of this century, pioneered the study of high-fired ceramics found in Southeast Asia. Important as this step was, it did tend to involve a merely partial understanding of the international ceramics literature which was itself of only oblique relevance.[3] On top of that, different systems took root under the various

[3] For instance, as noted by Fox (1979:186-187), the most impressive Chinese celadons found in island Southeast Asia have usually been ascribed automatically to the Song dynasty, whereas the majority are Yuan or even early Ming.

colonial administrations and have projected their shadow into the corresponding national archaeological bodies following independence.[4] In Indonesia's case the standards were set by de Flines who classified primarily by Chinese dynasty or non-Chinese place of manufacture. Regrettably most Indonesian archaeological reports dispense with the supplementary information which de Flines used to give on the type of ware involved - information of great relevance in documenting the likely reliability of the identifications.[5]

Although South Sulawesi is one of the world's great ceramics troves, a permanent archaeological presence was established only in 1973, well after most of the richest sites had been plundered. Two of the functions of Suaka Peninggalan Sejarah dan Purbakala Sulawesi Selatan (Suaka) have been the documentation of privately held collections and the inspection of antiques registered for legal export, including the right to request donations and the power to appropriate antiques under certain circumstances (Hadimuljono and Macknight, 1983). The two officers mainly responsible for this work, Hadimuljono and Karaeng Demmanari, studied tradewares under the tutelage of co-operative antique dealers (Demmanari, pers. comm.). While dealers have undoubtedly played a major part in shaping the systems used elsewhere in Southeast Asia, their influence in South Sulawesi appears to have been particularly pronounced.

The foregoing explains much about the system in use in South Sulawesi, when I began fieldwork there, as already applied to 14,611 tradewares recorded by Suaka up to 1977 (Hadimuljono and Macknight, 1983). On the one hand it followed the standard Indonesian practice of classifying by Chinese dynasty or non-Chinese place of manufacture. On the other hand the influence of antique dealers is apparent in the preponderance of "Song" wares[6] and the construction of

[4] For example, the quite sophisticated systems developed in Sarawak for certain groups of wares (Zainie and Harrisson, 1967; Moore, 1968, 1970) have not been applied beyond Malaysia and Brunei.

[5] Not surprisingly, one of the tasks which the SEAMO Project in Archaeology and Fine Arts (SPAFA) has set itself is to standardise the classification and reporting of high-fired ceramics.

[6] More than ten times the number of wares classified as Yuan.

three idiosyncratic categories. One of these, "Korean", had already been reinterpreted as Vietnamese before I arrived, while the "Siam" category was soon recast as Qing-period monochromes during fieldwork (B.3.7). The well represented "Swatow" category merited deliberation because it signalled a welcome relief from the usual tyranny of the imperial dynasties in the classification of Chinese tradewares. What was unusual in South Sulawesi was the relegation of nondescript monochromes to the "Swatow" class, and the recognition of "Ming Swatow" and "Qing Swatow" as related classes.[7] Of course local ceramic experts also entertained a complex subsidiary nomenclature, e.g. Wanli, Qianlong, even *Qing dapur* (Kitchen Qing) by the time I left; there is after all a lot of interest in ceramics in South Sulawesi.

Nonetheless the system which SSPHAP took to the field was essentially an elaboration on that published in Hadimuljono and Macknight (1983). I was fortunate to have Karaeng Demmanari as a linchpin in SSPHAP's survey team and the bulk of the tradeware identification naturally fell on his shoulders. That meant Demmanari's standards had to be understood by the other team members, myself especially.

I tackled this issue as part of my broader campaign to compile a statistically useful database on the characters shown by sherds from high-fired ceramics. Despite the voluminous literature on Oriental ceramics and the various attempts to pigeonhole the salient characters of particular classes, precise quantified data are virtually non-existent. Where one might want to know the Munsell colours of the bodies of Vietnamese wares, for instance, one reads that 'The body is ... pale beige or grey-white' (Guy, 1986:105) or of a '... hard gray, beige or cream ... [or] putty coloured, pale beige, or gray paste' (Fraschė, 1976:97). Even Harrisson's quite unique attempt to compile a system for martavans based on the sherds' characteristics employs descriptive terms which are impressionistic and so not always repeatable by other observers (Harrisson, 1986:35-43).

[7] These last classes are not cited in Hadimuljono and Macknight (1983) and may have been derived since 1979, either from the "Swatow" or from the "Ming" and "Qing" classes.

Hence I used my "rest days" during fieldwork to build up the missing arsenal of observations from approximately 2000 specimens selected from the collections. A section of the wall was broken off at a point which did not carry decorations or other diagnostic features. This fresh cross-section and the interior and exterior surfaces of the sherd were examined macroscopically and with a 30X hand lens.[8] The sherd was described in terms of its weight, thickness of vessel parts, translucency, slipping, type of wall fracture, decorations (including the shadows of now lost overglaze enamels), wheel lines and spur marks or other evidence of manufacture, well-known diagnostic characters such as chocolate bases or dirty feet, and rim diameter or foot diameter using a plastic diameter template. Cross-sections and faces were drawn where these assisted the documentation, and many of the sherds were photographed. Munsell colour values were recorded of the body, not only at the fresh cross-section but also on the weathered walls and on any unglazed surfaces. Glaze and decoration colours were also recorded by the closest Munsell value, or by the closest colour on the *Pottery Colour Chart*[9] in cases of the richer celadon glazes and the more earthy decoration colours. As regards the better oxidised cobalt decorations, however, I described them using the sorts of impressionistic classes found in the ceramics literature ("silvery blue", "Mohammedan blue" etc.), since at the time I had neither a complete colour chart nor knowledge of the ISCC-NBS names for blues (see Agoston, 1987). I also examined the fresh cross-section microscopically to describe body texture, percentage of the body made up by inclusions, form and colour of the inclusions, body porosity, thickness of the glaze and number of glaze applications. Body hardness was determined by an adapted Moh's scale scratch test on the fresh cross-section, while glaze bubbles, crackling and irregularities were determined by macroscopic and microscopic inspection of the

[8] The 30X level of magnification was recommended by Dick Richards, Curator of Antiques at Adelaide Museum.
[9] Published by The Study Group for Romano-British Pottery, n.d. I thank Peter Bellwood who loaned me his copy of what proved to be a valuable supplementary standard.

glazed surfaces. Using the above observations I also typed the glaze according to transparency, reflectance and colour saturation, and classified the body into broad fabrication types. Comparisons were then made with specimens and descriptions published in the literature.

Originally I had hoped to codify the observations into a format whereby distances could be calculated between the sherds for the purposes of clustering them into a mathematically based typology. However, my early forays soon brought out methodological problems[10] which could have been surmounted only by engulfing the time available for preparing the thesis. Still the time spent scrutinising my notebooks allowed me to standardise the identifications I had made during the period of observation and to pick out the sets of observations which appeared both reliable and useful (B.3). In particular it increased my general confidence in the main body of SSPHAP's identifications in a laboratory setting, carried out in Ujung Pandang after I had already spent a lot of time documenting sherds in detail.

Between June and August of 1987 Karaeng Demmanari and myself classified all the collected tradeware sherds which I had not yet studied in detail. We exposed a fresh cross-section of the wall and examined the section and the faces both macroscopically and with a 30X hand lens. We discussed possibilities, referring to the literature at hand and SSPHAP's other tradeware specimens, until we agreed on the most likely identification. Karaeng Demmanari had had enormous experience in classifying tradewares previously and rapidly absorbed the new information available from a microscopic perspective. We tried to make our laboratory identifications as discrete as possible, e.g. a plain white sherd similar in body and glaze to specimens which we had identified as Kangxi blue-and-white would accordingly be identified as "Kangxi white". The main methodological

[10] e.g., variability in my criteria as my observations became more sophisticated during the process, variability related to different parts (e.g. bases and rims) of the same vessel, variability as it related to different vessels (e.g. tempayan and cups) within the same type of ware, and difficulties in using very different types of data to arrive at a single measure of distance.

justification for driving the identifications to their most discrete level possible is that classes can be pooled if so desired, but a class treated as undifferentiated can never be split up. Since returning to Australia I have reclassified a small proportion of these specimens as prompted by recently available information and allowed by my documentation of the specimens in question. Nonetheless the core of the identifications made under laboratory conditions, by which the reliability of the identifications made in the field can be tested, resides in the work co-executed by Demmanari and myself in Ujung Pandang.

B.3 Description of SSPHAP's Tradeware Classes

B.3.1 Introductory points

The data compiled and analysed in this appendix have been entered into three Reflex PC files (Borland/Analytica, 1987). Hard copies will be deposited with Suaka after completion of this thesis, and either PC disc or hard copies are available from me on request. The specimens are identified by site, zone, and specimen number within the zone (5.5.3).[11] The files also give those identification made in the field on the specimens. This section reports the descriptive data made under laboratory conditions.

In the laboratory work Demmanari and I strove after a chronology of far finer grain than would be possible in any system to be applied in the field. Obviously, to bring all of SSPHAP's identifications together, the main headings must be those which were applied in the field, or at the very least to be found among the tradeware classes regularly collected during fieldwork (B.5.1). 31 main classes can be recognised, most of them represented by photographed specimens in the main text (Chapters 6 to 11). This section describes these main classes, not only in terms of their overall characters

[11] A slight exception involves the complete collections made at Benteng Tallok, Paknakkukang and Barombong, where the specimens which received the same identification in the same zone were simply gathered together into the same sample bag and not individually numbered.

but also as constituted by the finer categories recognised during laboratory work.[12]

One set of descriptions comprises the identifications of tradeware category, vessel form and distinguishing characters made by Demmanari and me. The second set is the discrete observations (excluding those I had already winnowed out as unreliable or unmanageable before compiling the database) which I made on a selection of the pieces. In the tables which follow, traits are usually presented as percentage frequencies for the finer categories, but as raw frequencies (in brackets) and as percentage frequencies for the 31 main classes.

Particular conventions adopted in the tables should be spelled out as a prelude to the descriptions. (i) As the observed colours frequently fell between the Munsell (1975) shades, especially as regards the white to light grey spectrum in which fine determinations can be mandatory, I frequently recorded the colours as whiter than (<) or darker than (>) the closest Munsell reading. (ii) Glaze colours usually fell within or near the range of Munsell's (1975) "Colour Chart for Gley". The notations can usually be identified in my tables by the letters G (greenish) and B (bluish). There is however a potential source of confusion in that notations at the yellow end of the scale occur also in the "Soil Colour Charts" where they describe a different colour. To sidestep any confusion, I will use "y" when gley colours are involved and "Y" when soil colours are involved. (iii) Glaze colours spelled out fully are from the *Pottery Colour Chart*. (iv) Glaze thickness are ranked as "1" for vestigial glazes; "2" for glazes applied as a thin even sliver; "3" for glazes clearly visible as a macroscopic band in cross-section; "4" when the glaze becomes thick in places, e.g. at an inflexion; "5" for moderately thick glazes; and "6" for very thick glazes. (v) Body hardness follows the Moh scale up to "6". However, "7" signifies harder than iron but

[12] A fine-grained description is desirable for a number of reasons, e.g. as part of the description of the main classes, as an aid to their dating, and because SSPHAP's standardised chronological histograms which use the fine classes (B.4) take whichever is the finest chronological determination which can be sustained.

softer than quartz, "8" signifies quartz hardness, and "9" signifies harder than quartz. (vi) Translucency was determined by shining a small torch with a concentrated light through the sherd's wall. "Y" means clearly translucent, "F" means faintly translucent, and "N" means opaque. (vii) Body type is categorised into five main ideal types. "China porcelains" (CP) are white, hard, free of inclusions and translucent. "Semi-porcelains" (SP) approach china porcelains, but appear sugary with glassy splinters when viewed at 30X. "Stonewares" (SW) are hard and opaque, but otherwise variable. "Proto-porcelains" (PP) are a type of homogeneous stoneware which appears chalky at 30X. "Earthenwares" (EW) are soft (hardness less than 7), porous, opaque, and usually rich in inclusions.

B.3.2 Early whitewares (Chinese)

119 early whitewares were recognised in the laboratory, and as a group compare well with the A.1 and A.2 categories of Zainie and Harrisson (1967).[13] "*Qingbai*" is the best known category (e.g. Addis, 1968c) and the one which dominates SSPHAP's early whitewares (Table B-1). One example included here apparently combined a spot of iron decoration beneath the *qingbai* glaze (cf. Wiesner, n.d.). The other well represented category comprises early tradewares from Dehua (Locsin, 1968b). A residue of similar pieces could not be assigned to these categories but could be comfortably placed among Lam's (1985) Guangdong whitewares.

My criteria for identifying early whitewares came from detailed study of the whitewares in the few assemblages free of the usually dominant strains of blue-and-white wares. As these whitewares could be confidently dated pre-Ming, the range of characters they showed could be used to identify early whitewares mixed among predominantly blue-and-white assemblages. However, the logic broke down with one particular category of early whitewares. The "Shufu" early whitewares are distinguished from their *Qingbai* counterparts

[13] I am grateful to Peter Bellwood for lending me his photographs of key examples, on display in the Sarawak Museum, of the categories of Zainie and Harrisson.

by a thicker and more opaque glaze (Addis, 1968b; Medley, 1974:16; Guy, 1986:73), but so are Ming whitewares (Dick Richards, pers. comm.; cf. Medley, 1974:20). Hence I have come to shift the burden of proof with these specimens and reclassify as Ming all but eight of the pieces I had first identified as "Shufu"; bowls with an unglazed stacking ring in the centre (Bulbeck, in press: Figure 2-d) are a good example.

TABLE B-1. COMPOSITION OF SSPHAP'S EARLY WHITEWARES

	Qingbai	Dehua	Guangdong	Shufu	Total
Bowls	34	5	2	5	46
Small bowls	7	0	0	0	7
Cups	2	0	0	0	2
Plates	13	1	1	3	18
"Open"	3	0	1	0	4
Boxes	8	25	0	0	33
Kendis	2	0	1	0	3
Vases	4	0	0	0	4
Jars	2	0	0	0	2
Total	75	31	5	8	119

B.3.3 Early monochromes (Chinese)

At the finer end of its range SSPHAP's category of early monochromes overlaps with early whitewares. To sort out the (literally) grey area, the pale-glazed pieces which did not conform to a recognised whiteware category were generally consigned to the monochromes. At the coarser end SSPHAP's early monochromes overlap with the older "coarse stonewares" (B.3.5). Here, borderline cases were placed among the early monochromes via a combination of finer body, less earthy glazes and smaller, open vessel form - e.g. the bowls but not the jars of Adhyatman's (1983) "early olivegreen wares", and the smaller and more olive-glazed examples of Grau-Abaya's "brownwares" (see also Sorsby Ltd, 1974:44). In all 291 early monochromes were identified in the laboratory, roughly corresponding as a group to the B.1, C.1 and C.2 categories of Zainie and Harrisson (1967).

Demmanari and I usually classified the glaze colours as "celadon" or *abu-abu* (grey). The word "celadon" has come into abuse for its apparent etymological impropriety (Willetts,

TABLE B-2. EARLY WHITEWARE GLAZE CHARACTERS (PERCENTAGES)

	Exterior Glaze						Interior Glaze					
Colour	*Qingbai*	Dehua	Guangdong	Shufu	Total		*Qingbai*	Dehua	Guangdong	Shufu	Total	
N8/-	1.8	0	0	0	1.2	(1)	1.9	15.4	0	0	4.1	(3)
> N8/-	0	5.3	0	0	1.2	(1)	0	0	0	0	0	
Green/Brown A5	0	5.3	0	0	1.2	(1)	0	7.7	0	0	1.4	(1)
Green/Brown A6	3.6	0	0	60.0	6.0	(5)	1.9	0	0	60.0	5.5	(4)
Green/Brown A7	5.5	0	0	0	3.6	(3)	7.7	0	0	0	5.5	(4)
< 5B 7/1	7.3	0	0	0	4.8	(4)	5.8	0	0	0	4.1	(3)
5BG 6/1	1.8	0	0	0	1.2	(1)	0	0	0	0	0	
5BG 7/1	5.5	0	0	0	3.6	(3)	3.8	0	0	0	2.7	(2)
< 5BG 7/1	10.9	0	0	0	7.1	(6)	13.5	0	0	0	9.6	(7)
5G 7/1	16.4	10.5	20.0	0	14.3	(12)	13.5	0	0	0	9.6	(7)
< 5G 7/1	9.1	0	0	0	6.0	(5)	11.5	0	0	0	8.2	(6)
5Gy 7/1	12.7	5.3	0	40.0	11.9	(10)	7.7	0	0	40.0	8.2	(6)
< 5Gy 7/1	5.5	5.3	0	0	4.8	(4)	7.7	0	0	0	5.5	(4)
5y 6/1	1.8	0	0	0	1.2	(1)	0	0	0	0	0	
5y 7/1	5.5	5.3	20.0	0	6.0	(5)	7.7	0	33.3	0	6.8	(5)
5Y 8/1	1.8	5.3	0	0	2.4	(2)	1.9	15.4	0	0	4.1	(3)
<5Y 7/1	0	5.3	0	0	1.2	(1)	1.9	0	0	0	1.4	(1)
5Y 7/1	0	10.5	0	0	2.4	(2)	0	7.7	0	0	1.4	(1)
5Y 7/2	1.8	5.3	0	0	2.4	(2)	1.9	0	0	0	1.4	(1)
5Y 7/3	0	5.3	0	0	1.2	(1)	0	0	0	0	0	
5Y 6/2	0	0	0	0	0		0	7.7	0	0	1.4	(1)
5Y 6/3	0	5.3	0	0	1.2	(1)	0	7.7	0	0	1.4	(1)
10YR 8/1	0	5.3	0	0	1.2	(1)	0	7.7	33.3	0	2.7	(2)
10YR 8/2	0	5.3	0	0	1.2	(1)	0	7.7	0	0	1.4	(1)
10YR 7/2	1.8	0	0	0	1.2	(1)	1.9	0	0	0	1.4	(1)
7.5YR 8/2	0	5.3	0	0	1.2	(1)	0	7.7	0	0	1.4	(1)
5YR 8/1	1.8	10.5	20.0	0	4.8	(4)	1.9	15.4	33.3	0	5.5	(4)
5YR 8/2	0	0	40.0	0	2.4	(2)	0	0	0	0	0	
YR5 7/1	3.6	0	0	0	2.4	(2)	5.8	0	0	0	4.1	(3)
YR5 7/2	1.8	0	0	0	1.2	(1)	1.9	0	0	0	1.4	(1)
Total	(55)	(19)	(5)	(5)	(84)		(52)	(13)	(3)	(5)	(73)	
Glaze Thickness												
1	5.4	10.5	0	0	5.9	(5)	1.9	0	0	0	1.4	(1)
2	53.6	47.4	40.0	40.0	50.6	(43)	57.7	57.1	33.3	40.0	55.4	(41)
3	35.7	31.6	60.0	60.0	37.6	(32)	40.4	42.9	66.7	60.0	43.2	(32)
4	5.4	10.5	0	0	5.9	(5)	0	0	0	0	0	
Total	(56)	(19)	(5)	(5)	(85)		(52)	(14)	(3)	(5)	(74)	

Glaze Number: one Shufu piece showed two glaze layers interiorly and exteriorly (20%); otherwise single glaze layers only.

TABLE B-3. EARLY WHITEWARE BODY CHARACTERS (PERCENTAGES)

Colour at Fresh Cross-section

	Qingbai	Dehua	Guangdong	Shufu	Total
N8/-	17.9	36.8	0	20.0	21.2 (18)
> N8/-	21.4	5.3	0	0	15.3 (13)
< N7/-	8.9	5.3	20.0	20.0	0.4 (8)
N7/-	5.4	0	0	40.0	5.9 (5)
5YR 8/1	16.1	0	40.0	0	12.9 (11)
> 5YR8/1	17.9	0	20.0	0	2.4 (2)
< 5YR7/1	1.8	0	0	0	1.2 (1)
5YR 7/1	12.5	15.8	20.0	20.0	14.1 (12)
5YR 8/2	5.4	0	0	0	3.5 (3)
5YR 7/2	1.8	0	0	0	1.2 (1)
5YR 7/3	0	5.3	0	0	1.2 (1)
7.5YR8/2	0	10.5	0	0	2.4 (2)
7.5YR7/2	1.8	0	0	0	1.2 (1)
7.5YR 6/2	1.8	0	0	0	1.2 (1)
10YR 8/1	1.8	5.3	0	0	2.4 (2)
10YR 7/1	0	5.3	0	0	1.2 (1)
10YR 7/2	1.8	0	0	0	1.2 (1)
2.5YR8/2	0	5.3	0	0	1.2 (1)
5Y 8/1	0	5.3	0	0	1.2 (1)
Total	(56)	(19)	(5)	(5)	(85)

Translucency

	Qingbai	Dehua	Guangdong	Shufu	Total
Y	19.6	38.9	0	20.0	22.6 (19)
F	8.9	0	0	20.0	7.1 (6)
N	71.4	61.1	100.0	60.0	70.2 (59)
	(56)	(18)	(5)	(5)	(84)

Hardness

6	0	0	20.0	0	1.2 (1)
7	42.9	36.8	60.0	0	40.0 (34)
8	33.9	26.3	0	60.0	31.8 (27)
9	23.2	36.8	20.0	40.0	27.1 (23)
	(56)	(19)	(5)	(5)	(85)

Body Type

CP	5.4	26.3	0	20.0	10.6 (9)
Almost CP	10.7	5.3	0	20.0	9.4 (8)
SP	46.4	10.5	40.0	20.0	36.5 (31)
PP	7.1	31.6	20.0	0	12.9 (11)
SW	30.3	26.3	40.0	40.0	30.6 (26)
Total	(56)	(19)	(5)	(5)	(85)

% of Body Inclusions

1	37.5	52.6	40.0	40.0	41.1 (35)
3	41.1	26.3	20.0	60.0	37.6 (32)
5	12.5	10.5	40.0	0	12.9 (11)
10	5.4	5.3	0	0	4.7 (4)
20	1.8	0	0	0	1.2 (1)
30	0	5.3	0	0	1.2 (1)
40	1.8	0	0	0	1.2 (1)
	(56)	(19)	(5)	(5)	(85)

Slipping

	Qingbai (56)	Dehua (19)	Guangdong (5)	Shufu (5)	Total (85)
Unslipped	73.2	73.7	20.0	100.0	71.8 (61)
Slipped only on exterior face	1.8	0	40.0	0	3.5 (3)
Slipped only on interior face	7.1	5.3	40.0	0	8.2 (7)
Slipped on both faces	17.9	21.1	0	0	16.5 (14)

Basal Glazing Characters

	Qingbai (12)	Dehua (1)	Guangdong (1)	Shufu (1)	Total (15)
Glazed base and foot	16.7	0	0	0	13.3 (2)
Glaze-splashed base	8.3	100.0	0	0	13.3 (2)
Unglazed base and foot	41.7	0	100.0	100.0	46.7 (7)
Glaze does not reach non-extant foot	33.3	0	0	0	26.7 (4)

1979) and "greenwares" is often the preferred term now (e.g. Guy, 1986). However, "celadon" is widely understood to indicate only thicker, richer glazes which are furthermore generally browner than the specifically excluded green lead glazes. In my opinion, etymological niceties do not provide adequate grounds to jettison a useful term for a misleading one, and hence I retain the original term. Abu-abu can then be translated as "subceladons", excluding a few examples which can be better typed as olivegreenwares (cf. Adhyatman, 1983) and olivewares (Table B-4).

In the laboratory a distinction was made between apparent Song examples (41) and c. Yuan examples (250), but the pieces are hard enough to identify as "early" without needing to say how early (Footnote 3). In particular, the production of similar sorts of monochromes clearly continued into the Ming dynasty (e.g. Palmgren et al., 1963). To identify the pre-Ming examples, I relied on the range of variability shown among the specimens in clearly pre-Ming assemblages, and classified as "early" any others which could not be clearly distinguished. Hence SSPHAP's "early monochromes" in part constitute a default classification which accordingly is somewhat broader than if the burden of proof had been placed on making a positive identification.[14]

TABLE B-4. COMPOSITION OF SSPHAP'S EARLY MONOCHROMES

	Celadons	Sub-celadons	Olive-wares	Olivegreen wares	Total
Plates	113	17	5	0	135
Conical forms	10	7	5	0	22
Bowls	60	24	10	2	96
Shallow bowls	4	0	0	0	4
Small bowls	4	3	0	0	7
"Open"	3	0	1	0	4
Boxes	3	0	0	0	3
Jarlets	5	1	0	0	6
Vases	2	0	0	0	2
Jars/*Tempayan*	9	1	2	0	12
Total	213	53	23	2	291

[14] Note that the class "early monochromes", as understood here, is narrower than I have used it elsewhere (Bulbeck, in press) where it included early whitewares, earlier examples of Vietnamese monochromes, and "Yuan-like Ming celadons" (B.3.8).

TABLE B-5. EARLY MONOCHROME GLAZE CHARACTERS (PERCENTAGES)

Colour	Exterior Glaze					Interior Glaze				
	Celadon	Sub-celadon	Olive	Olive-green	Total	Celadon	Sub-celadon	Olive	Olive-green	Total
Green/Brown A1	0	0	0	0	0	0.9	0	0	0	0.6 (1)
Green/Brown A2	3.7	0	0	0	2.5 (4)	3.5	0	0	0	2.3 (4)
Green/Brown A3	4.6	0	0	100.0	3.7 (6)	3.5	0	0	0	2.3 (4)
Green/Brown A4	31.2	2.9	0	0	21.7 (35)	31.3	5.4	0	0	22.2 (38)
Green/Brown A5	10.1	2.9	0	0	7.5 (12)	11.3	2.7	0	0	8.2 (14)
Green/Brown A6	0.9	0	0	0	0.6 (1)	0.9	0	0	0	0.6 (1)
Green/Brown A7	0.9	0	0	0	0.6 (1)	0.9	0	0	0	0.6 (1)
Brown/Green A5	0.9	0	0	0	0.6 (1)	0	0	0	0	0
Blue/Green A3	0.9	0	0	0	0.6 (1)	1.7	0	0	0	1.2 (2)
Blue/Green A4	0.9	0	0	0	0.6 (1)	0.9	0	0	0	0.6 (1)
Blue/Green A5	0.9	0	0	0	0.6 (1)	0	0	0	0	0
Blue/Green A6	4.6	0	0	0	3.1 (5)	5.2	0	0	0	3.5 (6)
5BG 6/1	0.9	0	0	0	0.6 (1)	0	0	0	0	0
5G 4/2	0.9	0	0	0	0.6 (1)	0.9	0	0	0	0.6 (1)
5G 4/1	0.9	0	0	0	0.6 (1)	0	0	0	0	0
5G 5/1	0	0	0	0	0	0.9	0	0	0	0.6 (1)
5G 6/2	3.7	0	0	0	2.5 (4)	3.5	0	0	0	2.3 (4)
5G 6/1	3.7	2.9	0	0	3.1 (5)	3.5	2.7	0	0	2.9 (5)
5G 7/1	3.7	0	0	0	2.5 (4)	4.3	2.7	0	0	3.5 (6)
5Gy 4/1	0.9	0	0	0	0.6 (1)	0	0	0	0	0
5Gy 5/1	3.7	2.9	0	0	3.1 (5)	2.6	2.7	0	0	2.3 (4)
5Gy 6/1	13.8	8.6	0	0	11.2 (18)	14.8	8.1	0	0	11.7 (20)
5Gy 7/1	5.5	0	6.3	0	4.3 (7)	7.0	0	0	0	4.7 (8)
5y 4/1	0	5.7	0	0	1.2 (2)	0	5.4	0	0	1.2 (2)
5y 5/1	0.9	14.3	0	0	3.7 (6)	0.9	13.5	0	0	3.5 (6)
5y 6/1	0	8.6	0	0	1.9 (3)	0	8.1	0	0	1.8 (3)
5y 7/1	0.9	2.9	0	0	1.2 (2)	0	2.7	0	0	0.6 (1)
5Y 4/4	0	0	6.3	0	0.6 (1)	0	0	5.6	0	0.6 (1)
5Y 4/3	0	0	0	0	0	0	0	5.6	0	0.6 (1)
5Y 5/4	0	0	6.3	0	0.6 (1)	0	0	11.1	0	1.2 (2)
5Y 5/3	0	0	12.5	0	1.2 (2)	0.9	0	16.7	100.0	2.9 (5)
5Y 5/2	0	0	0	0	0	0	0	11.1	0	1.2 (2)
5Y 6/4	0	0	6.3	0	0.6 (1)	0	0	5.6	0	0.6 (1)
5Y 6/3	0	0	0	0	0	0	2.7	5.6	0	1.2 (2)
5Y 6/2	0	0	31.3	0	3.1 (5)	0	0	16.7	0	1.8 (3)
5Y 7/2	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
5Y 7/1	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
5Y 8/3	0	0	0	0	0	0	2.7	0	0	0.6 (1)
2.5Y 4/3	0	0	6.3	0	0.6 (1)	0	0	0	0	0
2.5Y 5/4	0	0	6.3	0	0.6 (1)	0	0	0	0	0
2.5Y 6/2	0	2.9	6.3	0	1.2 (2)	0	2.7	5.6	0	1.2 (2)
2.5Y 7/2	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
2.5Y 8/2	0	0	0	0	0	0.9	0	0	0	0.6 (1)

TABLE B-5. EARLY MONOCHROME GLAZE CHARACTERS (CONT.)

Colour	Celadon	Sub-celadon	Olive	Olive-green	Total	Celadon	Sub-celadon	Olive	Olive-green	Total
10YR 5/4	0	0	6.3	0	0.6 (1)	0	2.7	0	0	0.6 (1)
10YR 5/3	0	0	0	0	0	0	2.7	0	0	0.6 (1)
10YR 6/3	0	5.7	0	0	1.2 (2)	0	2.7	0	0	0.6 (1)
10YR 6/2	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
10YR 7/4	0	5.7	0	0	1.2 (2)	0	5.4	0	0	1.2 (2)
10YR 7/3	0	0	0	0	0	0	2.7	0	0	0.6 (1)
10YR 7/2	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
10YR 8/3	0	2.9	0	0	0.6 (1)	0	0	0	0	0
7.5YR 7/2	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
5YR 3/4	0.9	0	0	0	0.6 (1)	0	0	0	0	0
5YR 5/6	0.9	0	0	0	0.6 (1)	0	0	0	0	0
5YR 5/4	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
5YR 5/3	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
5YR 6/2	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
5YR 7/1	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
Total	(109)	(35)	(16)	(1)	(161)	(115)	(37)	(18)	(1)	(171)
Glaze Thickness										
1	2.7	23.5	0	0	4.3 (7)	0.9	2.7	0	0	1.2 (2)
2	17.3	34.3	58.8	100.0	25.8 (42)	21.7	40.5	50.0	100.0	29.2 (50)
3	42.7	45.7	41.2	0	42.9 (70)	48.7	48.6	50.0	0	48.5 (83)
4	13.6	2.9	0	0	9.8 (16)	7.8	2.7	0	0	5.8 (10)
5	20.0	5.7	0	0	14.7 (24)	20.9	5.4	0	0	15.2 (26)
6	3.6	0	0	0	2.5 (4)	0	0	0	0	0
Total	(110)	(35)	(17)	(1)	(163)	(115)	(37)	(18)	(1)	(171)
Glaze Number										
1 layer	91.9	97.1	100.0	100.0	93.9 (154)	93.0	97.3	100.0	100.0	94.7(162)
2 layers	7.2	2.9	0	0	5.5 (9)	6.1	2.7	0	0	4.7 (8)
4 layers	0.9	0	0	0	0.6 (1)	0.9	0	0	0	0.6 (1)
Total	(111)	(35)	(17)	(1)	(164)	(115)	(37)	(18)	(1)	(171)

Slipping	Celadon (118)	Subcel. (37)	Olive (18)	Olivegreen (1)	Total (174)
Unslipped	75.4	83.8	66.7	0	75.9 (132)
Slipped only on exterior face	0.8	2.7	0	0	1.1 (2)
Slipped only on interior face	5.1	5.4	11.1	0	5.7 (10)
Slipped on both faces	18.6	8.1	22.2	100.0	17.2 (30)

Basal Glazing Characters	Celadon (29)	Subceladon (8)	Oliveware (2)	Total (39)
Glazed base	27.6	12.5	50.0	25.6 (10)
Glaze-splashed base and foot	6.9	12.5	0	7.7 (3)
Unglazed base, glaze-splashed foot	6.9	0	0	5.1 (2)
Unglazed base, foot not extant	6.9	0	0	5.1 (2)
Unglazed base and foot	27.6	62.5	50.0	35.9 (13)
Glaze does not reach non-extant foot	24.1	12.5	0	20.5 (8)

TABLE B-6. EARLY MONOCHROME BODY CHARACTERS (PERCENTAGES)

Main Colour at Fresh Cross-section

	Celadon	Sub-celadon	Olive	Olive-green	Total
N4/-	2.6	2.6	0	0	2.3 (4)
N5/-	7.8	2.6	5.6	0	6.4 (11)
N6/-	5.2	5.3	5.6	0	5.2 (9)
< N6/-	5.2	5.3	5.6	0	5.2 (9)
N7/-	42.6	26.3	0	100.0	34.9 (60)
< N7/-	3.5	2.6	5.6	0	3.5 (6)
> N8/-	0.9	5.3	0	0	1.7 (3)
N8/-	0.9	0	0	0	0.6 (1)
2.5YR 4/8	1.7	0	0	0	1.2 (2)
2.5YR 6/6	0	0	5.6	0	0.6 (1)
2.5YR 5/4	0.9	0	0	0	0.6 (1)
5YR 3/2	0.9	0	0	0	0.6 (1)
5YR 5/6	0.9	0	0	0	0.6 (1)
5YR 6/4	0.9	2.6	0	0	1.2 (2)
5YR 7/4	0.9	0	0	0	0.6 (1)
5YR 8/4	0	0	5.6	0	0.6 (1)
5YR 7/3	1.7	2.6	5.6	0	2.3 (4)
5YR 8/3	0	2.6	0	0	0.6 (1)
5YR 6/2	0.9	0	5.6	0	1.2 (2)
5YR 7/2	2.6	5.3	0	0	2.9 (5)
5YR 8/2	0.9	5.3	0	0	1.7 (3)
5YR 4/1	0.9	0	0	0	0.6 (1)
5YR 5/1	0.9	0	0	0	0.6 (1)
5YR 6/1	1.7	5.3	5.6	0	2.9 (5)
< 5YR 6/1	0.9	0	0	0	0.6 (1)
5YR 7/1	7.8	2.6	16.7	0	7.6 (13)
< 5YR 7/1	0.9	2.6	0	0	1.2 (2)
5YR 8/1	0.9	2.6	5.6	0	1.7 (3)
7.5YR 7/4	0	0	5.6	0	0.6 (1)
7.5YR 8/4	0.9	0	0	0	0.6 (1)
7.5YR 7/2	0	0	5.6	0	0.6 (1)
7.5YR 8/2	0	2.6	0	0	0.6 (1)
7.5YR 4/1	0.9	0	0	0	0.6 (1)
7.5YR 6/1	1.7	0	0	0	1.2 (2)
7.5YR 7/1	0	0	5.6	0	0.6 (1)
10YR 4/3	0	0	5.6	0	0.6 (1)
10YR 3/1	0.9	0	0	0	0.6 (1)
10YR 8/3	0	2.6	0	0	0.6 (1)
10YR 6/2	0.9	0	0	0	0.6 (1)
10YR 6/1	1.7	0	0	0	1.2 (2)
< 10YR6/1	0	2.6	0	0	0.6 (1)
10YR 7/1	0.9	10.5	5.6	0	3.5 (6)
	(115)	(38)	(18)	(1)	(172)

Translucency

	Celadon	Sub-celadon	Olive	Olive-green	Total
N	100.0	100.0	100.0	100.0	100.0
	(116)	(38)	(18)	(1)	(173)

Hardness

5	4.2	7.9	16.7	0	6.3 (11)
6	0.8	0	11.1	0	1.7 (3)
7	36.4	52.6	38.9	0	40.0 (70)
8	46.6	23.7	27.8	100.0	40.0 (70)
9	11.9	15.8	5.6	0	12.0 (21)
	(118)	(38)	(18)	(1)	(175)

% of Body Inclusions

0	0.8	0	0	0	0.6 (1)
1	30.5	16.2	11.8	0	25.4 (44)
2-3	20.3	29.7	23.5	0	22.5 (39)
5	22.9	29.7	29.4	100.0	25.4 (44)
10	15.3	13.5	23.5	0	15.6 (27)
15	5.9	5.4	0	0	5.2 (7)
20	1.7	5.4	5.9	0	2.9 (5)
25	0.8	0	5.9	0	1.2 (2)
30	0.8	0	0	0	0.6 (1)
40	0.8	0	0	0	0.6 (1)
	(118)	(37)	(17)	(1)	(173)

Body Type

SP	2.5	0	0	0	1.7 (3)
PP	5.1	21.1	16.7	0	9.7 (17)
SW	89.0	73.7	72.2	100.0	83.8 (147)
EW	3.4	5.3	11.1	0	4.6 (8)
	(118)	(38)	(18)	(1)	(175)

N.B. Nine variably coloured bodies were observed: (celadons) core N5/-, walls N4/-; core 5YR 5/2, walls N4/-; core N7/-, walls 5YR 6/4; core 7.5YR 6/2, walls 5YR 4/1; outer wall N5/-, inner wall 2.5YR 5/2; outer wall 2.5YR 4/8, inner wall 5YR 7/1; outer wall 10YR 3/1, inner wall 7.5YR6/2; (subceladon) outer wall N6/-, inner wall 10R 8/3; (oliveware) outer wall 2.5YR 6/6, inner wall 5YR 7/2. A central stacking ring was observed on 2 celadons and 1 subceladon.

B.3.4 Early Chinese polychromes (four classes)

Some early tradeware assemblages in the Philippines contain a distinctive class of usually miniature wares with blue cobalt decorations under a *qingbai* glaze, closely matched by a rarer variant with underglaze decorations in copper red (Addis, 1968d, 1968e; Sorsby Ltd, 1974). I have not found any evidence that these wares reached South Sulawesi in any number. The decorations found on the standard Ming BW wares, which China exported in bulk from the late 15th century onwards (e.g. Joseph, 1979; Carswell, 1985), also characterise the oldest detectable blue-and-white presence among SSPHAP's pieces. However, I date a small proportion to the late 14th and early 15th centuries on the basis of apparently older characters such as unglazed bases, "heaped and piled" cobalt decorations, a *qingbai* glaze, and the occasional archaic motif (cf. Medley, 1974; Macintosh, 1977). Three pieces also appeared to have underglaze copper decorations. These "early BW wares" (Table B-7) do not constitute a well defined class and any particular identification might be in error, although there is little doubt that some BW wares from China would have been reaching South Sulawesi by c.1400.

As with the early BW wares, "early overglaze-decorated wares" were identifed as pieces exhibiting apparently older characters than usually found on their Swatow and Ming counterparts. These older traits include unusual decorations with a Yuan echo to them, richer glazes like those usually found on early monochromes, and slipping beneath the glaze. As might be expected if the pieces' considerable antiquity is correctly inferred, the enamel decorations were rarely preserved. Rather, they were usually represented by shadows which flashed on the glaze surface when the sherd was viewed at different angles. When enamel decorations remained they were most often red but also occasionally black or green. The 17 pieces identified (Tables B-8 and B-9) conform reasonably well with the descriptions given by Medley (1974:107) and Mao (1979) of enamel-decorated wares from the Yuan dynasty.

TABLE B-7. SSPHAP'S SAMPLE OF EARLY BLUE-AND-WHITE WARES

	1. Yuan BW	2. Yuan BW with underglaze red	3. Yuan underglaze red	4. Yuan/early 15th century BW	5. Early 15th century BW	Total
Plates	0	1	1	2	6	10
Bowls	2	0	1	2	5	10
Boxes	0	0	0	1	2	3
Jarlets	0	0	0	0	1	1
Jars	0	0	0	0	1	1
Total	2	1	2	5	15	25

Exterior Glaze

Colour	1.	2.	3.	4.	5.	Total
5BG 7/1	0	0	0	1	1	2 (10.0%)
< 5BG 7/1	1	0	0	0	1	2 (10.0%)
5G 7/1	0	0	1	0	3	4 (20.0%)
< 5G 7/1	0	0	0	1	2	3 (15.0%)
5Gy 7/1	0	0	0	0	2	2 (10.0%)
10YR 8/1	0	0	0	0	2	2 (10.0%)
7.5YR 8/2	0	0	1	1	0	2 (10.0%)
10YR 8/3	0	0	0	1	0	1 (5.0%)
10YR 7/2	0	0	0	1	0	1 (5.0%)
10YR 7/41	0	1	0	0	0	1 (5.0%)
7.5YR 7/41	0	0	0	0	0	0
Glaze T.						
2	1	0	1	4	1	7 (35.0%)
3	0	1	1	1	8	11 (55.0%)
5	0	0	0	0	2	2 (10.0%)
Glaze No.						
1	1	1	2	4	11	19 (95.0%)
2	0	0	0	1	0	1 (5.0%)
Total	(1)	(1)	(2)	(5)	(11)	(20)

Interior Glaze

	1.	2.	3.	4.	5.	Total
5BG 7/1	0	0	0	1	2	3 (14.3%)
< 5BG 7/1	1	0	0	0	1	2 (9.5%)
5G 7/1	0	0	1	0	4	5 (23.8%)
< 5G 7/1	0	0	0	1	2	3 (14.3%)
5Gy 7/1	0	0	0	0	2	2 (9.5%)
10YR 8/1	0	0	0	0	1	1 (4.8%)
7.5YR 8/2	0	0	1	1	0	2 (9.5%)
10YR 8/3	0	0	0	1	0	1 (4.8%)
10YR 7/2	0	0	0	1	0	1 (4.8%)
10YR 7/41	0	0	0	0	0	0
7.5YR 7/41	0	1	0	0	0	1 (4.8%)
Glaze T.						
2	1	0	1	4	2	8 (38.1%)
3	0	1	1	1	8	11 (52.4%)
5	0	0	0	0	2	2 (9.5%)
Glaze No.						
1	1	1	2	4	12	20 (95.2%)
2	0	0	0	1	0	1 (4.8%)
Total	(1)	(1)	(2)	(5)	(12)	(21)

Main Colour at Fresh Cross-section

N8/-	1	0	1	0	2	4 (25.0%)
> N8/-	0	0	0	0	1	1 (5.0%)
< N7/-	0	0	0	2	0	2 (10.0%)
N7/-	0	1	0	0	2	3 (15.0%)
5YR 8/1	0	0	0	0	2	2 (10.0%)
10YR 8/1	0	0	0	1	0	1 (5.0%)
10YR 8/2	0	0	0	0	1	1 (5.0%)
< 5YR 7/1	0	0	0	0	1	1 (5.0%)
5YR 7/1	0	0	1	0	0	2 (10.0%)
10YR 7/1	0	0	0	0	1	1 (5.0%)
5YR 7/2	0	0	0	1	0	1 (5.0%)
5YR 7/4	0	0	0	0	1	1 (5.0%)
5YR 5/1	0	0	0	1	0	1 (5.0%)
	(1)	(1)	(2)	(5)	(11)	(20)

Translucency

Y	0	0	0	0	0	1 (5.3%)
F	0	0	1	0	0	1 (5.3%)
N	0	1	1	5	10	17 (89.5%)
	(0)	(1)	(2)	(5)	(10)	(19)

Hardness

5	0	0	0	0	1	1 (4.8%)
7	0	1	1	1	5	8 (38.1%)
8	1	0	0	4	5	10 (47.6%)
9	0	0	1	0	1	2 (9.5%)
	(1)	(1)	(2)	(5)	(12)	(21)

Body Type

Almost CP	0	0	0	0	1	1 (4.8%)
SP	1	0	1	0	7	9 (42.9%)
PP	0	0	0	1	1	2 (9.5%)
SW	0	1	1	4	3	9 (42.9%)
	(1)	(1)	(2)	(5)	(12)	(21)

% of Body Inclusions

1	1	0	1	0	5	7 (35.0%)
3	0	0	1	2	5	8 (40.0%)
5	0	0	0	2	0	2 (10.0%)
10	0	1	0	0	1	2 (10.0%)
25	0	0	0	1	0	1 (5.0%)
	(1)	(1)	(2)	(5)	(11)	(20)

Basal Glazing Characters	1. Yuan BW	4. Yuan/early 15th century BW	5. Early 15th century BW	Total (9)
Glazed base and foot	0	1	2	3 (33.3%)
Unglazed base and foot	1	3	2	6 (66.7%)

N.B. Slipping absent. The early 15th century BW 5YR 7/4 on its outer wall was N 7/- on its inner wall.

TABLE B-8. EARLY OVERGLAZE, JIZHOU AND SANCAI: BODIES

	Early Overglaze			Jizhou	Sancai			
	13th-14th centuries	14th-15th centuries	Total		13th-14th centuries	15th century	"Looked latish"	Total
Tempayan	0	0	0	7	0	9	0	8
Jars	0	0	0	0	0	1	0	1
Vases	0	0	0	0	0	1	1	2
Jarlets	0	0	0	0	1	0	0	1
Boxes	1	0	1	0	0	1	0	1
Bowls	6	2	8	0	0	1	0	1
Plates	6	2	8	0	0	0	0	0
Not determined	0	0	0	0	1	0	0	2
Total	13	4	17	7	2	13	1	16

Main Colour at Fresh Cross-section

	Early Overglaze				
	13th-14th centuries	14th-15th centuries	Total	Jizhou	Sancai
> N8/-	1	1	2 (14%)	0	0
< N7/-	1	0	1 (7%)	0	0
N7/-	1	0	1 (7%)	0	0
N6/-	0	1	1 (7%)	0	1 (11%)
N5/-	0	0	0	0	1 (11%)
5YR 8/1	1	0	1 (7%)	0	0
7.5YR 8/1	0	1	1 (7%)	0	0
7.5YR 8/2	0	0	0	2 (50%)	1 (11%)
5YR 8/3	0	0	0	0	1 (11%)
10YR 8/3	1	0	1 (7%)	0	0
5YR 8/4	1	0	1 (7%)	0	0
7.5YR 8/4	0	0	0	0	1 (11%)
5YR 7/1	0	1	1 (7%)	1 (25%)	0
5YR 7/2	0	0	0	1 (25%)	0
5YR 7/3	0	0	0	0	1 (11%)
5YR 7/4	1	0	1 (7%)	0	2 (22%)
10YR 7/1	1	0	1 (7%)	0	0
5YR 6/2	1	0	1 (7%)	0	0
5YR 5/2	0	0	0	0	1 (11%)
2.5YR 5/4	1	0	1 (7%)	0	0
	(10)	(4)	(14)	(4)	(9)

Hardness

	Early Overglaze				
	13th-14th centuries	14th-15th centuries	Total	Jizhou	Sancai
5	2	0	2 (14%)	1 (25%)	3 (38%)
6	1	0	1 (7%)	2 (50%)	0
7	4	2	6 (43%)	1 (25%)	4 (50%)
8	2	2	4 (29%)	0	1 (13%)
9	1	0	1 (7%)	0	0

% of Body Inclusions

1	1	0	1 (7%)	0	0
3	6	3	9 (64%)	2 (50%)	1 (13%)
5	2	1	3 (21%)	0	1 (13%)
15	1	0	1 (7%)	2 (30%)	5 (63%)
30	0	0	0	0	1 (13%)
	(10)	(4)	(14)	(4)	(8)

Body Type

SP	1	0	1 (7%)	0	0
PP	1	1	2 (14%)	0	0
SW	6	3	9 (64%)	4	6 (67%)
EW	2	0	2 (14%)	0	3 (33%)
	(10)	(4)	(14)	(4)	(9)

Slipping	Early overglaze 13th-14th c's	14th-15th c's	Total (14)	Jizhou (4)	Sancai (9)
Unslipped	5	3	8 (57%)	0	4 (44%)
Slipped only on exterior face	0	0	0	1 (25%)	3 (33%)
Slipped only on interior face	2	0	2 (14%)	0	0
Slipped on both faces	3	1	4 (29%)	3 (75%)	2 (22%)

N.B. One of the Sancai specimens, and the early overglaze-decorated specimen, coloured 5YR 7/4 on the outer wall were respectively coloured 2.5YR 6/6 and 5YR 7/1 on the inner wall.

TABLE B-9. EARLY OVERGLAZE, JIZHOU AND SANCAI: GLAZES

	Exterior Glaze					Interior Glaze				
	--- Early Overglaze ---					--- Early Overglaze ---				
Colour	13th-14th centuries	14th-15th centuries	Total	Jizhou	Sancai	13th-14th centuries	14th-15th centuries	Total	Jizhou	Sancai
10YR 8/2	0	0	0	1 (25%)	0	0	0	0	0	1 (17%)
10YR 8/3	0	0	0	1 (25%)	0	0	0	0	0	0
10YR 8/4	0	0	0	1 (25%)	0	0	0	0	0	0
10YR 7/2	1	0	1 (8%)	0	0	1	0	1 (7%)	0	0
10YR 7/3	0	0	0	0	0	1	0	1 (7%)	0	0
5Y 6/3	1	0	1 (8%)	0	0	1	0	1 (7%)	0	0
5Y 5/3	0	0	0	0	1 (6%)	0	0	0	0	0
5YR 6/2	0	0	0	0	1 (6%)	0	0	0	0	0
5YR 6/3	0	0	0	0	1 (6%)	0	0	0	0	0
10YR 7/6	0	0	0	0	1 (6%)	0	0	0	0	0
7.5YR 6/6	0	0	0	0	1 (6%)	0	0	0	0	0
7.5YR 7/8	0	0	0	0	2 (11%)	0	0	0	0	0
5YR 6/8	0	0	0	0	1 (6%)	0	0	0	0	0
5YR 5/6	0	0	0	0	1 (6%)	0	0	0	0	1 (17%)
5YR 3/2	0	0	0	0	0	0	0	0	0	1 (17%)
Yellow/Brown A4	0	0	0	0	1 (6%)	0	0	0	0	1 (17%)
5y 6/1	1	0	1 (8%)	0	0	1	0	1 (7%)	0	0
5Gy 7/1	3	0	3 (23%)	1 (25%)	0	2	0	2 (14%)	1	0
5Gy 6/1	0	2	2 (15%)	0	0	0	1	1 (7%)	0	0
5G 7/1	1	1	2 (15%)	0	0	2	1	3 (21%)	0	0
5G 6/2	0	0	0	0	1 (6%)	0	0	0	0	1 (17%)
5BG 5/1	0	0	0	0	1 (6%)	0	0	0	0	0
Green/Brown A6	1	1	2 (15%)	0	0	1	1	2 (14%)	0	0
Green/Brown A4	0	0	0	0	0	1	0	1 (7%)	0	0
Green/Brown A2	1	0	1 (8%)	0	0	0	0	0	0	0
Brown/Green A7	0	0	0	0	0	1	0	1 (7%)	0	0
Brown/Green A6	0	0	0	0	1 (6%)	0	0	0	0	0
Brown/Green A5	0	0	0	0	1 (6%)	0	0	0	0	1 (17%)
Brown/Green A4	0	0	0	0	2 (11%)	0	0	0	0	0
Green A3	0	0	0	0	1 (6%)	0	0	0	0	0
Total	(9)	(4)	(13)	(4)	(18)	(10)	(4)	(14)	(1)	(6)
Glaze Thickness										
1	0	0	0	1 (25%)	0	0	0	0	0	2 (40%)
2	1	0	1 (8%)	2 (50%)	8 (89%)	1	0	1 (7%)	0	3 (60%)
3	5	3	8 (62%)	1 (25%)	1 (11%)	6	2	8 (57%)	1	0
4	1	0	1 (8%)	0	0	0	0	0	0	0
5	2	1	3 (23%)	0	0	3	2	5 (36%)	0	0
Glaze Number										
1 layer	8	2	10 (77%)	4	9	9	2	11 (79%)	1	5
2 layers	1	2	3 (23%)	0	0	1	2	3 (21%)	0	0
Total	(9)	(4)	(13)	(4)	(9)	(10)	(4)	(14)	(1)	(5)

Basal Glazing Characters	Early overglaze 13th-14th c's	14th-15th c's	Total (3)	Sancai (2)
Glazed base	1	0	1 (33%)	0
Glaze-splashed base	1	0	1 (33%)	0
Unglazed base	1	0	1 (33%)	2 (100%)

N.B. Only the Sancai pieces attributed a 15th century were studied in detail. The number of recorded glaze colours exceeds the number of glazes studied, as the name "three-coloured" wares might suggest.

While some Jizhou pieces may be present in the class just described, the best known Jizhou wares have black underglaze decorations painted in iron oxides. Wirgin (1970:89ff.) and Medley (1974:103 ff.) describe the range of examples collected from China, while examples from archaeological sites in the Philippines ("Chi-chou wares") and Sarawak are described by Locsin (1968a) and Zainie and Harrisson (1967) respectively. These sources show that a reasonable variety of the tremendous range of forms made in China were exported to island Southeast Asia, but only *tempayan* (large jars) were represented among the seven pieces recorded by SSPHAP (Tables B-8 and B-9).[15] The Sukothai wares produced in Thailand often have strongly reminiscent decorations, but close scrutiny of the body allows an unequivocal identification.[16]

The so-called "Sancai" or three-coloured wares included lead in the glaze which allowed the potters to achieve striking colour combinations such as the renowned "eggs and spinach effect". They have been produced in China from the 1st millennium AD (Medley, 1981) through to the Qing dynasty (e.g. Harrisson, 1986), but current opinion holds that the majority exported to island Southeast Asia were Ming period wares (e.g. Guy, 1986:102-103). Correspondingly, the 16 pieces identified by Demmanari and myself were tentatively given a wide chronological distribution with a 15th century mode (Tables B-8 and B-9).

B.3.5 Coarse stonewares

Following advice from Campbell Macknight that sherds from large jars (*tempayan*) would resist accurate dating, I allowed a column specifically for coarse stonewares when I designed SSPHAP's site recording forms. During the fieldwork, more often than not their frequency was simply counted and the sherds replaced, but the specimens which were collected led to an attempted classification of 400 under laboratory

[15] Another example of a piece from a Jizhou iron-decorated *tempayan* is kept at the site museum of the Watanglamuru royal Islamic cemetery, Bone.

[16] Prior to SSPHAP's fieldwork, Jizhou iron-decorated pieces were not recognised in South Sulawesi but rather were included with the Sukothai class.

conditions. The primary references available to Demmanari and me in Ujung Pandang were Adhyatman and Ridho (1984) and Guy (1986), plus the warning by Richards et al. (1984) that large Sawankhalok storage jars had not yet been reported from Southeast Asian export sites. We assumed a Chinese source unless the piece could be clearly identified as something else, or was so perplexing that any suggestion of its origins appeared to be speculative. We also assigned dates which usually spanned two centuries, and characterised the type of glaze (although without reference to the Munsell colour chart).

After I returned to Canberra, Campbell Macknight acquainted me with Harrisson's (1986) major study on *tempayan*. Essentially the book adumbrates two classificatory systems which only partially overlap. One system is based on sherds from Brunei's 16th century capital, Kota Batu, in which Harrisson avoids giving the full time range of the described categories.[17] The second system describes a chronological framework based on complete specimens generally devoid of any archaeological context. I have compared the complete jars figured by Harrisson with the identical jars or close counterparts in Adhyatman and Ridho (1984), and found that the two sources provide very comparable dates, although Harrisson's catalogue is much ampler. The point of interest, however, is Harrisson's system based on sherds. Considering SSPHAP's coarse stonewares which I had documented in sufficient detail to allow direct comparison with Harrisson's criteria, I have matched them to her categories whenever the descriptions fitted. But as Harrisson's categories (other than Sawankhalok) are undated I have usually had to retain the chronological identifications given in Ujung Pandang.

The re-analysis indicated that the work in Ujung Pandang had been myopic towards large Sawankhalok jars which, as Harrisson documents at Kota Batu, was probably the major Ming period *tempayan* transported in Southeast Asian waters. A second problem in SSPHAP'S identifications is revealed after removal of the Sawankhalok pieces from the re-analysed

[17] With the partial exception of the Sawankhalok sherds most of which had been produced at a known kiln site of known chronology.

sample. Considering only the pieces dated between the 14th-15th and the 16th-17th centuries, we see that they are outnumbered by more recent as well as by older pieces, even in the group of categories recognised by Harrisson at Kota Batu (Table B-10b). Hence the reliability of SSPHAP's general identifications of coarse stonewares appears in doubt, both in terms of place of manufacture and chronological determination, for want of Harrisson's crucial study.

Table B-10a shows the relationship between vessel form and coarse stoneware category, using a corrected classification where available but otherwise following the Ujung Pandang classifications. At over 75% of all cases *tempayan* clearly dominate, and the great majority of other pieces represent smaller closed vessels. However, a small proportion consists of vessel forms generally assigned to other classes, which raises the question of how coarse should a stoneware be to qualify. With the *tempayan* and jars I included them here unless there were clear signs of a preferable identification elsewhere, e.g. a Sancai or celadon (not subceladon) glaze, or underglaze decorations. But sherds from small stoneware vessels were placed among the coarse stonewares only if they bore not a trace of glaze (which obviously prevents any classification based on glaze colour) or if the glazes fell among the strong reds, browns and blacks which usually characterise *tempayan*.

The identifications which could be corrected into Harrisson's categories are probably quite reliable, while the few pieces identified as Vietnamese or Cambodian would at least belong to the tips of their respective icebergs. But the remaining identifications of even the pieces studied in detail are not reliable and so are pooled in the description (Tables B-11 and B-12). The coarse stonewares evince an extraordinary range of glaze and body colours, not only as a class but also within individual categories, and hence the recorded Munsell colours are merged under the Munsell colour names for the sake of some manageability.

TABLE B-10. COMPOSITION OF SSPHAP'S COARSE STONEWARES

TABLE B-10A. VESSELS

	Tempayan	Jars	Vases	Bottles	Kendis	Teapots	Flower pots	Jarlets	Boxes	Bowls	Basins	Cups	Total
Coarse Red	9	2	0	0	0	0	0	0	0	0	0	0	11
Brittleware	21	5	0	0	0	0	0	1	0	1	0	0	28
Guangdong	26	6	0	1	0	0	0	0	0	0	0	0	33
Miscellaneous pre-Ming	1	18*	2	0	0	0	1	1	0	0	0	0	1
Miscellaneous Ming	196	4	1	0	0	0	0	0	1	0	0	0	234
Miscellaneous Qing	1	9	2	0	0	2	0	1	0	1	0	0	1
Miscellaneous Chinese	11	4	0	0	1	0	0	0	0	1	0	0	22
Sawankhalok	24	11	0	0	0	0	0	0	1	0	0	1	37
Sawank. unglazed	2	5	0	0	0	0	0	0	0	0	0	0	7
Coarse Brown	7	0	0	0	0	0	0	0	0	0	1	0	8
Wavyline	8	0	0	0	0	0	0	0	0	0	0	0	8
Vietnamese	1	2	0	0	0	0	0	1	0	0	0	0	4
Cambodian	0	2	1	0	0	0	0	0	0	0	0	0	3
Unidentified	2	3	0	0	0	0	0	0	0	0	0	0	5
Total	307	71	6	1	1	2	1	4	2	3	1	1	400

* Include one spouted jar.

TABLE B-10B. CENTURIES

	10th-12th	12th-13th	13th-14th	14th	14th-15th	15th-16th	16th	16th-17th	17th	17th-18th	18th	18th-19th	Not dated	Total
Coarse Brown	0	1	2	0	0	0	0	1	0	0	0	0	4	8
Coarse Red	0	0	4	0	0	1	0	2	0	0	0	0	4	11
Brittleware	0	1	4	0	2	3	1	2	1	2	3	0	9	28
Guangdong	3	4	7	1	2	4	0	2	1	4	1	0	4	33
Wavyline	0	0	1	0	0	1	0	1	0	0	0	0	5	8
Brownwares	1	2	2	0	0	0	0	0	0	0	0	2	3	10
Oliveware	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Redware	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Greywares	0	0	1	0	0	0	0	0	0	0	0	0	1	2
Blackwares	0	0	0	0	1	0	0	0	0	1	0	1	2	5
Unglazed	0	1	1	0	0	0	0	0	0	0	0	1	2	5
Vietnamese	0	0	1	0	1	1	0	0	0	0	0	0	1	4
Total	4	9	23	1	6	10	1	8	2	9	4	4	35	116

TABLE B-11. COARSE STONEWARES EXTERIOR GLAZE CHARACTERS (PERCENTAGES)

Colour	Coarse Brown	Coarse Red	Brittleware	Guangdong	Wavyline	Sawankhalok	Vietnam	Other	Total
Green/Brown A1	0	0	0	0	0	0	0	5.6	1 (0.8%)
Green/Brown A3	0	0	0	0	0	4.2	0	0	1 (0.8%)
Very Dusky Red	12.5	0	4.3	0	0	0	0	0	2 (1.7%)
Dusky Red	12.5	0	0	0	0	0	0	0	1 (0.8%)
Light Red	0	11.1	0	0	0	0	0	0	1 (0.8%)
Yellowish Red	0	0	0	0	0	4.2	0	5.6	2 (1.7%)
Dark Reddish Brown	12.5	22.2	17.4	27.3	0	16.7	0	5.6	21 (17.8%)
Reddish Brown	12.5	11.1	4.3	12.1	0	8.3	50.0	0	10 (9.3%)
Light Reddish Brown	0	0	0	3.0	0	0	0	0	1 (0.8%)

TABLE B-11. COARSE STONEWARES EXTERIOR GLAZE CHARACTERS (CONT.)

Colour	Coarse Brown	Coarse Red	Brittle-ware	Guang-dong	Wavy-line	Sawank-halok	Vietnam	Other	Total
Very Dark Brown	12.5	0	17.4	3.0	0	4.2	0	5.6	8 (6.8%)
Dark Brown	12.5	0	17.4	12.1	0	20.8	0	22.2	18 (15.3%)
Brown/Dark Brown	0	22.2	13.0	3.0	0	0	50.0	5.6	8 (6.8%)
Brown	0	0	0	0	100.0	4.2	0	0	2 (1.7%)
Strong Brown	0	0	4.3	0	0	0	0	0	1 (0.8%)
Dark Yellow Brown	0	33.3	4.3	6.1	0	4.2	0	5.6	8 (6.8%)
Olive Brown	0	0	4.3	9.1	0	0	0	5.6	5 (4.2%)
Very Dark Grey Brown	0	0	0	0	0	8.3	0	0	2 (1.7%)
Dark Greyish Brown	0	0	0	3.0	0	0	0	0	1 (1.7%)
Olive	0	0	0	3.0	0	0	0	0	1 (0.8%)
Dark Reddish Grey	0	0	0	0	0	0	0	5.6	1 (0.8%)
Reddish Grey	12.5	0	0	0	0	0	0	0	1 (0.8%)
Light Brownish Grey	0	0	0	0	0	0	0	5.6	1 (0.8%)
Light Grey	0	0	0	3.0	0	4.2	0	0	2 (1.7%)
Very Dark Grey	0	0	4.3	0	0	0	0	5.6	2 (1.7%)
Black	12.5	0	8.7	15.2	0	20.8	0	22.2	17 (14.4%)
Total	(8)	(9)	(23)	(33)	(1)	(24)	(2)	(18)	(118)
Thickness									
1	28.6	11.1	28.0	37.0	100.0	12.0	100.0	33.3	32 (28.1%)
2	57.1	55.5	24.0	37.0	0	52.0	0	27.8	43 (37.7%)
3	14.3	33.3	48.0	18.5	0	36.0	0	27.8	35 (30.7%)
4	0	0	0	7.4	0	0	0	11.1	4 (3.5%)
	(7)	(9)	(25)	(27)	(1)	(25)	(2)	(18)	(114)

TABLE B-12. COARSE STONEWARE BODY CHARACTERS (PERCENTAGES)

Colours	Coarse Brown	Coarse Red	Brittle-ware	Guang-dong	Wavy-line	Sawank-halok	Unglazed Sawankhalok	Viet-nam	Cambo-dian	Other	Total
N7/-	0	0	4.2	0	0	8.3	20.0	0	0	3.6	5 (3.8%)
N6/-	0	0	0	7.4	0	4.2	0	0	0	3.6	4 (3.0%)
N5/-	0	0	0	7.4	0	0	0	0	0	3.6	3 (2.3%)
N4/-	25.0	0	0	0	0	8.3	0	0	0	7.1	6 (4.5%)
N3/-	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Light Grey	12.5	0	16.7	14.8	0	4.2	0	0	0	7.1	13 (9.8%)
Light Grey/Grey	0	0	12.5	0	0	12.5	0	0	0	3.6	7 (5.3%)
Grey	0	0	4.2	7.4	0	4.2	0	0	0	10.7	7 (5.3%)
Dark Grey	0	0	0	0	0	4.2	0	0	0	0	1 (0.8%)
Very Dark Grey	12.5	0	0	3.7	0	0	0	0	0	0	2 (1.5%)
Pinkish Grey	0	0	4.2	3.7	0	12.5	0	100.0	0	0	6 (4.5%)
Light Brown Grey	0	0	4.2	0	0	0	0	0	0	0	1 (0.8%)
Reddish Grey	0	0	4.2	3.7	0	4.2	0	0	0	3.6	4 (3.0%)
Dark Red Grey	0	9.1	8.3	3.7	0	0	0	0	0	7.1	6 (4.5%)
(Off-)White	0	0	0	0	0	4.2	0	0	0	0	1 (0.9%)
Pinkish White	0	18.2	0	0	0	0	0	0	0	7.1	4 (3.0%)
Pink	0	9.1	0	11.1	12.5	4.2	0	0	0	3.6	7 (5.3%)
Very Pale Brown	0	0	4.2	7.4	0	0	0	0	0	7.1	5 (3.8%)
Yellow	0	0	4.2	0	0	0	0	0	0	0	1 (0.8%)
Light Red Brown	0	0	0	0	0	4.2	0	0	0	3.6	2 (1.5%)
Reddish Brown	0	0	0	0	12.5	0	0	0	33.3	0	2 (1.5%)
Brown	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)

TABLE B-12. COARSE STONEWARE BODY CHARACTERS (CONT.)

Colours	Coarse Brown	Coarse Red	Brittle-ware	Guang-dong	Wavy-line	Sawank-halok	Unglazed Sawankhalok	Viet-nam	Cambo-dian	Other	Total
Light Red	0	9.1	0	0	0	0	0	0	0	0	1 (0.8%)
Pale Red	0	9.1	0	0	0	0	0	0	0	3.6	2 (1.5%)
Weak Red	25.0	9.1	4.2	0	12.5	0	0	0	33.3	0	6 (4.5%)
Red	0	18.2	4.2	0	0	0	0	0	0	0	3 (2.3%)
Dark Red	0	9.1	0	0	0	0	0	0	0	0	1 (0.8%)
Dusky Red	0	9.1	0	0	0	4.2	0	0	0	3.6	3 (2.3%)
2 shades of Light Grey/Grey X & I	0	0	0	0	0	4.2	0	0	0	0	1 (0.8%)
Light Grey/Grey X, Grey I	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Very Pale Brown X, Light Grey/Grey I	0	0	4.2	3.7	0	0	0	0	0	0	2 (1.5%)
Pink X, Pinkish Grey I	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)
Light Brown X, Pinkish Grey I	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Grey X, Very Pale Brown I	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)
Grey X, Pink I	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)
Dark Grey X, Pink I	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Dark Grey X, Pinkish Grey I	0	0	0	0	0	4.2	0	0	0	0	1 (0.8%)
Dark Grey X, Reddish Brown I	12.5	0	0	0	0	0	0	0	0	0	1 (0.8%)
Dark Grey X, Light Grey/Grey I	0	0	8.3	0	0	0	0	0	0	0	2 (1.5%)
Very Dark Grey X, Grey I	0	0	0	0	12.5	0	0	0	0	0	1 (0.8%)
Black X, Very Dark Grey I	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Core & Walls 2 shades of Light Grey/Grey	0	0	0	0	0	4.2	20.0	0	0	0	2 (1.5%)
Walls Light Grey/Grey, Core Pinkish Grey	0	0	4.2	0	0	4.2	0	0	0	0	2 (1.5%)
Walls Grey, Core Light Grey/Grey	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)
Walls Grey, Core Pink	0	0	0	0	0	0	20.0	0	0	0	1 (0.8%)
Walls Light Grey/Grey, Core Light Reddish Brown	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Walls Light Grey/Grey, Core Dark Reddish Brown	0	0	0	0	12.5	0	0	0	0	0	1 (0.8%)
Walls Light Red, Core Red	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)
Walls Red Brown, Core Dusky Red	12.5	0	0	0	0	0	0	0	0	0	1 (0.8%)
Walls Very Dark Grey, Core Light Grey/Grey	0	0	0	0	12.5	0	0	0	0	0	1 (0.8%)
Walls Grey, Core Dark Grey	0	0	0	0	0	4.2	0	0	0	0	1 (0.8%)
Walls Dark Grey, Core Dark Reddish Grey	0	0	0	0	12.5	0	0	0	0	0	1 (0.8%)

TABLE B-12. COARSE STONEWARE BODY CHARACTERS (CONT.)

Colours	Coarse Brown	Coarse Red	Brittle-ware	Guang-dong	Wavy-line	Sawank-halok	Unglazed Sawankhalok	Viet-nam	Cambo-dian	Other	Total
Light Grey/Grey X, Core Pink, Light Brown I	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)
Light Grey/Grey X, Core Red, Pink I	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Greyish Brown X, Core Yellowish Red, Pink I	0	0	0	0	0	0	20.0	0	0	0	1 (0.8%)
Dark Grey X, Core Pinkish Grey, Light Brown I	0	0	0	0	0	0	20.0	0	0	0	1 (0.8%)
Grey X, Core Yellow Red, Very Pale Brown I	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)
Pink X, Core Dark Red Brown, Grey I	0	0	4.2	0	0	0	0	0	0	0	1 (0.8%)
Light Red Brown X, Core Dark Red Grey, Red I	0	0	0	0	12.5	0	0	0	0	0	1 (0.8%)
Very Dark Grey X, Core Light Red Brown, Pink I	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Black X, Core Dusky Red, Red Brown I	0	0	0	0	0	0	0	0	33.3	0	1 (0.8%)
Total	(8)	(11)	(24)	(27)	(8)	(24)	(5)	(1)	(3)	(28)	(133)
Hardness											
2	14.3	0	0	0	0	0	0	0	0	0	1 (0.7%)
3	0	0	3.7	0	0	0	0	0	0	0	1 (0.7%)
4	0	10.0	7.4	10.0	0	0	0	0	0	6.9	8 (5.5%)
5	0	50.0	40.7	16.7	42.9	12.0	20.0	0	0	37.9	39 (26.9%)
6	28.6	20.0	18.5	10.0	14.3	8.0	20.0	0	100.0	10.3	22 (15.2%)
7	42.9	20.0	14.8	46.7	28.6	36.0	40.0	100.0	0	41.4	50 (34.5%)
8	14.3	0	7.4	10.0	14.3	44.0	20.0	0	0	3.4	20 (13.8%)
9	0	0	7.4	6.7	0	0	0	0	0	0	4 (2.8%)
% Inclusions											
1	0	0	0	10.0	0	0	0	0	0	0	3 (2.1%)
2-3	0	0	11.1	23.3	0	7.7	20.0	0	33.3	17.2	19 (13.1%)
4-5	0	30.0	48.1	26.7	28.6	23.1	20.0	100.0	33.3	37.9	46 (31.7%)
10-15	28.6	40.0	33.3	26.7	28.6	30.8	40.0	0	0	34.5	45 (31.0%)
20-30	71.4	30.0	7.4	13.3	42.9	38.5	20.0	0	33.3	10.3	32 (22.1%)
Total	(7)	(10)	(27)	(30)	(7)	(25-26)	(5)	(1-2)	(3)	(29)	(145)
Body Type											
PP	0	0	0	0	0	0	0	50.0	0	3.3	2 (1.4%)
SW	71.4	50.0	44.4	76.7	57.1	92.3	80.0	50.0	33.3	53.3	95 (64.6%)
EW	26.4	50.0	55.5	23.3	42.9	7.7	20.0	0	66.7	43.3	50 (34.0%)
Total	(7)	(10)	(27)	(30)	(7)	(26)	(5)	(2)	(3)	(30)	(147)
Slipping											
None	100.0	30.0	85.7	55.2	62.5	76.0	100.0	100.0	100.0	89.3	109 (75.2%)
X	0	60.0	7.1	17.2	12.5	12.0	0	0	0	7.1	19 (13.1%)
I	0	10.0	3.6	10.3	0	12.0	0	0	0	3.6	9 (6.2%)
X and I	0	0	3.6	17.2	25.0	0	0	0	0	0	8 (5.5%)
Total	(8)	(10)	(28)	(29)	(8)	(25)	(5)	(1)	(3)	(28)	(145)

B.3.6 Ming celadons (including Yuan-like Ming celadons)

These two classes include celadons which we dated between the 14th and the 16th centuries, including pieces we called "*Qingbai* celadons". The celadons dated to the 14th or the 14th-15th centuries, the "Yuan-like Ming celadons", resembled the celadons of the early monochrome class in overall appearance, but also exhibited certain features usually regarded as "late". These features include fully glazed base, thinner or more watery glaze, a tendency to a more porcellanous body, conspicuous brown or yellow miscolorations of the glaze, and a tendency to crowded and "artificial" decorations (Gompertz, 1980:164,182; Zainie and Harrisson, 1967:70; Sorsby Ltd, 1974:14; Lu Yaw, 1979). We dated the celadons with a whitish porcellanous body and a uniform, depthless glaze to the 15th and 16th centuries.[18] The middle ground of variation between the latter pieces and the "*Qingbai*" early whitewares was reserved for the "*Qingbai* celadons". These were distinguished by their incised, moulded or gouged decorations which lacked the vigour of their *Qingbai* whiteware counterparts, and their greener glaze which lacked the greasy sheen of the classical *Qingbai* glaze. I have decided to treat the *Qingbai* celadons as nothing more than one variant of the Ming celadons, in view of the general similarities and the absence of *Qingbai* celadons from

TABLE B-13. SSPHAP'S MING (INC. YUAN-LIKE) CELADONS

	--- Yuan-like ---		---- Ming celadon ----			--- *Qingbai* celadon ---			
	"14th century"	"14th-15th centuries"	15th century	15th-16th centuries	16th century	15th century	15th-16th centuries	16th century	Total
Plates	8	29	13	10	13	17	1	1	92
Bowls	0	10	2	2	3	5	0	0	22
"Open"	0	1	0	0	1	0	0	0	2
Boxes	0	0	1	0	0	1	0	0	2
Jarlets	0	0	1	0	1	0	0	0	2
Vases	0	0	2	0	2	0	0	0	4
Jars/*Tempayan*	3	2	0	1	1	0	0	0	7
Total	11	42	19	13	21	23	1	1	131

[18] It is possible that some Japanese celadons (cf. Kallupa et al., 1989:Plates) have been mixed in here as well.

TABLE B-13. SSPHAP'S MING (INC. YUAN-LIKE) CELADONS (CONT.)

	---- Yuan-like ----			------- Ming celadons -------				
Exterior Glaze Colour	"14th century"	"14th-15th centuries"	Total	15th century	15th-16th centuries	16th century	*Qingbai*	Total
Blue/Green A3	0	5.3	1 (4.0%)	0	0	0	0	0
Green/Brown A4	50.0	21.1	7 (28.0%)	0	0	0	0	0
Green/Brown A5	16.7	5.3	2 (8.0%)	0	0	0	0	0
Green/Brown A6	0	5.3	1 (4.0%)	0	0	0	12.5	1 (6.3%)
5G 6/2	0	10.5	2 (8.0%)	0	0	0	0	0
5G 7/1	0	0	0	0	0	0	50.0	4 (25.0%)
5Gy 5/2	16.7	0	1 (4.0%)	0	0	0	0	0
5Gy 5/1	0	15.8	3 (12.0%)	0	0	33.3	0	1 (6.3%)
5Gy 6/1	16.7	26.3	6 (24.0%)	33.3	0	66.7	0	3 (18.8%)
5Gy 7/1	0	5.3	1 (4.0%)	33.3	100.0	0	25.0	5 (31.3%)
< 5Gy 7/1	0	0	0	0	0	0	12.5	1 (6.3%)
5y 7/1	0	5.3	1 (4.0%)	33.3	0	0	0	1 (6.3%)
X Glaze Thickness								
2	0	5.3	1 (4.0%)	33.3	0	0	25.0	3 (18.8%)
3	33.3	42.1	10 (40.0%)	66.7	50.0	33.3	37.5	7 (43.8%)
4	50.0	10.5	6 (24.0%)	0	0	33.3	25.0	3 (18.8%)
5	16.7	36.8	8 (32.0%)	0	50.0	33.3	12.5	3 (18.8%)
X Glaze Number								
1 layer	83.3	94.7	23 (92.0%)	100.0	100.0	100.0	87.5	15 (93.8%)
2 layers	16.7	5.3	2 (8.0%)	0	0	0	12.5	1 (6.3%)
Total	(6)	(19)	(25)	(3)	(2)	(3)	(8)	(16)
I Glaze Colour								
Green/Brown A4	42.9	25.0	8 (29.6%)	0	0	0	0	0
Green/Brown A5	0	5.0	1 (3.7%)	0	0	0	0	0
Green/Brown A6	0	0	0	0	0	0	12.5	1 (6.3%)
5G 6/2	0	10.0	2 (7.4%)	0	0	0	0	0
5G 7/1	0	0	0	0	0	0	50.0	4 (25.0%)
5Gy 5/1	0	10.0	2 (7.4%)	0	0	0	0	0
5Gy 6/1	57.1	35.0	11 (40.7%)	33.3	0	66.7	12.5	4 (25.0%)
5Gy 7/1	0	10.0	2 (7.4%)	33.3	100.0	33.3	25.0	6 (37.5%)
5y 7/1	0	0	0	33.3	0	0	0	1 (6.3%)
5Y 5/3	0	5.0	1 (3.7%)	0	0	0	0	0
I Glaze Thickness								
1	12.5	0	1 (3.6%)	0	0	0	0	0
2	12.5	5.0	2 (7.1%)	0	0	33.3	25.0	3 (18.8%)
3	50.0	40.0	12 (42.9%)	66.7	50.0	33.3	25.0	6 (37.5%)
4	12.5	25.0	6 (21.4%)	33.3	0	0	25.0	3 (18.8%)
5	12.5	30.0	7 (25.0%)	0	50.0	33.3	25.0	4 (25.0%)
I Glaze Number								
1 layer	100.0	95.0	27 (96.4%)	100.0	100.0	100.0	87.5	15 (93.8%)
2 layers	0	5.0	1 (5.6%)	0	0	0	12.5	1 (6.3%)
Total	(7-8)	(20)	(27-28)	(3)	(2)	(3)	(8)	(16)

TABLE B-13. SSPHAP'S MING (INC. YUAN-LIKE) CELADONS (CONT.)

	---- Yuan-like ----			------- Ming celadons -------				
Interior Body Colour	"14th century"	"14th-15th centuries"	Total	15th century	15th-16th centuries	16th century	*Qingbai*	Total
N5/-	0	11.8	2 (8.7%)	0	0	0	0	0
N6/-	0	5.9	1 (4.3%)	0	0	0	0	0
N7/-	83.3	41.2	12 (52.2%)	33.3	50.0	100.0	25.0	7 (43.8%)
< N7/-	0	29.4	5 (21.7%)	33.3	50.0	0	25.0	4 (25.0%)
> N8/-	0	5.9	1 (4.3%)	33.3	0	0	25.0	3 (18.8%)
5YR 5/4	0	5.9	1 (4.3%)	0	0	0	0	0
5YR 7/1	16.7	0	1 (4.3%)	0	0	0	12.5	1 (6.3%)
5YR 8/1	0	0	0	0	0	0	12.5	1 (6.3%)
Total	(6)	(17)	(23)	(3)	(2)	(3)	(8)	(16)
Translucency								
Faint (F)	0	0	0	33.3	0	100.0	25.0	6 (37.5%)
No (N)	100.0	100.0	27 (100%)	66.7	100.0	0	75.0	10 (62.5%)
Hardness								
6	0	5.0	1 (3.7%)	0	0	0	0	0
7	0	25.0	5 (18.5%)	0	50.0	0	25.0	3 (18.8%)
8	85.7	45.0	15 (55.6%)	33.3	50.0	100.0	50.0	9 (56.3%)
9	14.3	25.0	6 (22.2%)	66.7	0	0	25.0	4 (25.0%)
% Inclusions								
1	57.1	55.0	15 (55.6%)	66.7	0	33.3	62.5	8 (50.0%)
3	42.9	15.0	6 (22.2%)	0	50.0	0	25.0	3 (18.8%)
5	0	20.0	4 (14.8%)	0	0	66.7	12.5	3 (18.8%)
10	0	10.0	2 (7.4%)	33.3	0	0	0	1 (6.3%)
15	0	0	0	0	50.0	0	0	1 (6.3%)
Body Type								
Almost China P.	0	5.0	1 (3.7%)	0	0	33.3	25.0	3 (18.8%)
Semi-porcelain	0	0	0	0	50.0	0	25.0	3 (18.8%)
Stoneware	100.0	95.0	26 (96.3%)	100.0	50.0	66.7	50.0	10 (62.5%)
Slipping								
None	100.0	90.0	25 (92.6%)	100.0	100.0	100.0	87.5	15 (93.8%)
X and I	0	10.0	2 (7.4%)	0	0	0	12.5	1 (6.3%)
Total	(7)	(20)	(27)	(3)	(2)	(3)	(8)	(16)

	------- Yuan-like -------					*Qing-*	
Basal Glazing Characters	"14th c."	"14th-15th c."	Total (8)	15th c.	16th c.	*bai*	Total (4)
Ordinarily glazed base	3	3	6 (66.7%)	0	1	0	1 (25.0%)
Red-glazed base	0	0	0	1	0	0	1 (25.0%)
Glaze-splashed base	1	0	1 (33.3%)	0	0	2	2 (50.0%)
Unglazed base	0	1	1 (33.3%)	0	0	0	0
Glaze does not reach to foot	0	1	1 (33.3%)	0	0	0	0

N.B. One celadon dated "14th century" had an unglazed central stacking ring, but the three *Qingbai* celadons with the relevant part extant lacked the stacking ring.

SSPHAP's clearly pre-Ming assemblages.[19]

The composition of the Ming celadon classes shows a dominance of plates to an even greater extent than with the early monochromes. So few pieces had a subceladon (*abu-abu*) glaze that I have not bothered to distinguish them from the celadons (Table B-13).

B.3.7 Qing monochromes

This class, which broadly equates with the local "Siam" class (Hadimuljono and Macknight, 1983), includes the monochromes which Demmanari and I dated to between the 17th and 20th centuries. The majority were from stoneware bowls with a strong green glaze which we dated to the 18th-19th centuries. The class also includes early Qing celadons which exceeded even the Ming celadons in transparency of the glaze (cf. Gompertz, 1980:202); apparent Qing-period imitations of earlier Chinese wares, which we usually attributed to the Qianlong reign when the Chinese potters were responding to a wave of antiquarianism (Macintosh, 1977:83; Medley, 1980:258);[20] and some fine brownwares (Table B-14). This last group constitutes the closest approximations we found to the wide range of exquisite Qing monochromes with subtle or bright glazes described by Tam (1977) and Medley (1980:250-259). I did not record many of the pieces in detail because their dates fall later than SSPHAP's period of main interest, and the pieces which were recorded (Table B-17) may not be particularly representative of the class.

B.3.8 Wares blue or white

12 pieces were identified as bluewares in the laboratory (Table B-15). A few are possibly doubtful inclusions, either because the piece is small or, in one case (T.30.1.48),

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[19] Note that in an earlier report I treated both the "14th century celadons" and the *Qingbai* celadons as early or pre-Ming Chinese wares (Bulbeck, in press). Review of the pieces, and especially the results of seriation (Bulbeck, 1989), have convinced me to treat them as Ming.

[20] A good example is provided by the greyish green wares with heavily crackled glaze, locally called *pecah seribu (a thousand pieces)*.

because the obverse contained blue-and-white decorations. In terms of the ISCC-NBS colour names (Agoston, 1987), the observed colours would have ranged between light blues, vivid blues and violets. The three pieces observed in detail are described in Table B-18. The Gowa survey did not come upon any evidence of blueware antiques looted from the pre-Islamic burial grounds, but three bowls with very dark blue glazes, which appeared to be of Qing antiquity, are held in the *kabupaten* head office of the Department of Education in Soppeng.

As regards the whitewares, we felt confident in dating them prior to the Qing dynasty only if the glaze had a conspicuous richness about it, or if an archaic feature such as an unglazed base was present, or if the vessel form fell in particular categories. Those considered Ming whitewares tended to be, as it were, rejects from the early whiteware class - pieces with an opaque but otherwise *qingbai*-like glaze, or pieces which looked like early whitewares but failed to match any recognised category. The 36 recognised Wanli whitewares tended to consist of small open forms - cups, bowls with slender graceful profiles, and plates with foliated edges - further characterised by an icey, pink or cream glaze (see Photo 10-24 and Table B-16). Descriptive characters of the Ming whitewares and single Wanli whiteware studied in detail are given in Table B-18.

B.3.9 Ming blue-and-white and *Ming merah* (Ming red)

The Ming blue-and-white class is here taken to cover a well-defined group of Chinese BW wares which excludes older looking pieces (those we dated to the early 15th century or earlier), Wanli and later pieces, and members of the Swatow family (B.3.11). The class includes a small number of pieces whose decorations combined red overglaze enamels with the underglaze cobalt blue (Table B-19). The range of decorations overlaps with the repertoire found on the high-quality, "imperial" Ming BW wares, as described particularly well by Macintosh (1977), but centres on a group of standard motifs which would appear to have been the specialisation of the Chinese provincial kilns. The wares produced in these kilns,

which occur in numerous Southeast Asian sites as a distinct late 15th to 16th century horizon, are treated by Addis (1968a), Sorsby Ltd (1974), McElney (1979) and Guy (1986:94-97). A particularly common example in South Sulawesi involves bowls whose exterior cavetto is covered with a lattice of hexagonal diapers enclosing dots inside the hexagons.[21] For the purposes of initial seriation (B.4) I treat these "Ming BW hexagonal wares" as a separate class because the identification is unequivocal as long as part of the cavetto is extant. Nonetheless the "hexagonal wares" evince very similar characters to the other Ming BW pieces, including the tendency to a porcellanous body but the rarity of true porcelains (Table B-19).

Demmanari and I dated the Ming BW pieces to the 16th century except for a small number whose specific motifs or fabrication techniques indicated a slightly earlier date, according to the sources just cited. Plates and bowls vied for equal prominence among the SSPHAP's sample of Ming BW wares, with *balubu* (the porcellanous equivalent to *tempayan*) and jars constituting the majority of the remainder (Table B-19). The types of wares recorded during laboratory study of the assemblages specifically associated with greater Gowa's palaces (G.1.107-108, G.3.3, U.25.1) differed markedly from the general ruck. For instance, the palatial assemblages contained the majority of the recorded *balubu* but not one of the "hexagonal wares".

Related to the Ming BW class is the class called *Ming merah* in South Sulawesi ("Ming red"), which differs in having enamel overglaze decorations usually restricted to a few standard floral motifs. An alternative label is provided by adapting the terminology used for the earlier class of Qing overglaze-decorated wares and calling the class, or at least those pieces whose extant decorations include green enamels, Ming *famille verte*. Only 27 pieces were identified in the laboratory, and these proved to be either plates or bowls, the majority lacking green enamels (Table B-20). The single piece I recorded in detail (Photo 10-24; Table B-21) has some

[21] An example is figured in Carswell (1985).

TABLE B-14. COMPOSITION OF SSPHAP'S QING MONOCHROMES

	17th		Kangxi	17-18th		--- 18th ---				Qianlong		18-19th			19th	19-20	20th	Qing	
	C	S	P	C	S	C	S	B	P	C	S	C	S	P	S	C	P	C	Sum
Bowls	7	3	3	17	1	2	0	0	1	1	10	150	5	1	2	4	1	1	209
Plates	0	1	0	1	1	0	2	0	0	1	1	2	1	0	2	0	0	1	13
Cups	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Boxes	0	0	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	5
Bottle	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Vases	0	0	0	2	0	0	0	0	0	1	6	2	0	0	0	0	0	0	11
Jars	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2
Tempayan	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	9	4	4	23	2	2	3	1	1	3	18	156	6	1	4	4	1	2	244

N.B. In the column headings, the numbers refer to the century or centuries to which the pieces were dated; C stands for celadons, S for subceladons, B for the brown-glazed stoneware, and P for brown-glazed porcelains.

TABLE B-15. COMPOSITION OF SSPHAP'S BLUEWARES

	16th century	16th-17th centuries	17th century	17th-18th centuries	18th century	Total
Bowls	0	0	1#	1^	2	4
Plates	0	0	0	1	0	1
Boxes	0	0	0	1	1	2
Jars	1	1*	0	0	0	2
Vases	2	0	1	0	0	3
Totals	3	1	2	3	3	12

* Navy blue exterior glaze (2 layers, "5" thickness).
\# Deep purplish exterior glaze (1 layer, "3" thickness).
^ Pale azure exterior glaze (1 layer, "3" thickness).

TABLE B-16. COMPOSITION OF SSPHAP'S MING/WANLI WHITEWARES

	---------- Ming Whitewares ----------						---- Wanli Whitewares ----		
	Dehua 14th-15th centuries	Other 14th-15th centuries	15th century	16th century	Other	Total	Dehua 16th-17th centuries	Other	Total
Bowls	0	1	3	3	3	11	0	19	19
Plates	0	0	0	3	2	4	0	9	9
Cups	0	0	0	0	0	0	0	4	4
"Open"	0	1	0	0	0	1	0	0	0
Boxes	0	0	1	1	1	3	1	1	2
Jarlets	0	0	0	0	0	0	0	1	1
Vases	0	0	0	0	2	2	0	0	0
Kendis	2	0	0	0	0	2	0	0	0
Jars	1	0	0	0	0	1	0	0	0
Figurette (human head)	0	0	0	0	0	0	1	0	1
Total	3	2	4	7	8	25	2	34	36

TABLE B-17. SSPHAP'S SAMPLE OF QING MONOCHROMES

	Exterior Glaze				Interior Glaze			
Colour	Celadons	Subceladons	Brownware	Total	Celadons	Subceladons	Brownware	Total
Blue/Green A4	1	0	0	1 (7.1%)	1	0	0	1 (7.1%)
Blue/Green A5	2	0	0	2 (14.3%)	2	0	0	2 (14.3%)
Blue/Green A6	3	0	0	3 (21.4%)	3	0	0	3 (21.4%)
5G 6/2	1	0	0	1 (7.1%)	1	0	0	1 (7.1%)
5G 7/1	0	1	0	1 (7.1%)	0	1	0	1 (7.1%)
5Gy 4/1	1	0	0	1 (7.1%)	1	0	0	1 (7.1%)
5y 6/1	0	0	0	0	0	1	0	1 (7.1%)
5y 7/1	0	1	0	1 (7.1%)	0	1	0	1 (7.1%)
5Y 7/2	0	1	0	1 (7.1%)	0	1	0	1 (7.1%)
5YR 5/1	0	1	0	1 (7.1%)	0	1	0	1 (7.1%)
5YR 6/1	0	1	0	1 (7.1%)	0	0	0	0
7.5YR 5/4	0	0	1	1 (7.1%)	0	0	0	0
7.5YR 4/4	0	0	0	0	0	0	1	1 (7.1%)
Glaze Thickness								
2	4	0	1	5 (35.7%)	4	0	0	4 (28.6%)
3	3	5	0	8 (57.1%)	3	5	0	8 (57.1%)
4	0	0	0	0	0	0	1	1 (7.1%)
5	1	0	0	1 (7.1%)	1	0	0	1 (7.1%)
Body Colour					**Hardness**			
10YR 8/2	0	2	0	2 (14.3%)	5	0	0	1 (7.1%)
10YR 8/3	1	0	0	1 (7.1%)	6	1	1	0 2 (14.3%)
5YR 8/4	1	0	0	1 (7.1%)	7	4	3	0 7 (50.0%)
5YR 7/1	1	1	0	2 (14.3%)	8	2	0	0 2 (14.3%)
10YR 7/2	1	0	0	1 (7.1%)	9	1	1	0 2 (14.3%)
7.5YR 7/2	1	0	0	1 (7.1%)				
10YR 7/3	1	0	0	1 (7.1%)	**% Incs**			
5YR 6/1	1	0	0	1 (7.1%)				
5YR 6/2	1	0	0	1 (7.1%)	1	1	0	0 1 (7.1%)
10YR 6/3	0	0	1	1 (7.1%)	3	1	4	0 5 (35.7%)
2.5YR 5/6	0	1	0	1 (7.1%)	5	1	1	1 3 (21.4%)
2.5YR 5/8	0	1	0	1 (7.1%)	10	3	0	0 3 (21.4%)
					15	2	0	0 2 (14.3%)
Body Type					**Slip**			
Semi-porcelain	0	1	0	1 (7.1%)				
Stoneware	8	4	0	12 (85.7%)	None	5	5	1 11 (78.6%)
Earthenware	0	0	1	1 (7.1%)	X & I	3	0	0 3 (21.4%)
	(8)	(5)	(1)	(14)		(8)	(5)	(1) (14)

Basal Glazing Characters	Celadons (2)	Subceladons (4)	Brownware (1)	Total (7)
Glazed base	2	2	0	4 (57.1%)
Unglazed base	0	2	0	2 (28.6%)
Glaze stops short of non-extant foot	0	0	1	1 (14.3%)

N.B. The celadons include specimens dated between the 17th and the 18th centuries, and the subceladons specimens dated between the 17th and the 19th centuries. All specimens had only a single layer of glaze and an opaque body. Unglazed central stacking rings were present on one of the two celadons, and on all five subceladons, which preserved the relevant area.

TABLE B-18. SSPHAP'S SAMPLE OF BLUE OR WHITE WARES

Exterior Glaze

Colour	Blue-wares	--- Ming Whitewares --- 14th-15th centuries	15th/16th centuries	Total	Wanli White
< 5BG 7/1	0	0	3	3 (23.1%)	0
5G 7/1	0	0	1	1 (7.7%)	0
< 5G 7/1	0	0	0	0	0
5Gy 7/1	0	0	1	1 (7.7%)	0
< 5Gy 7/1	0	0	1	1 (7.7%)	0
5y 7/1	0	0	0	0	1
N8/-	0	1	0	1 (7.7%)	0
5YR 8/2	0	0	1	1 (7.7%)	0
7.5YR 8/2	0	3	0	3 (23.1%)	0
10YR 8/2	0	1	0	1 (7.7%)	0
N7/-	0	0	0	0	0
5YR 7/2	0	1	0	1 (7.7%)	0
Glaze Thick.					
2	0	3	1	4 (30.8%)	1
3	2	3	5	8 (61.5%)	0
4	0	0	1	1 (7.7%)	0
5	1	0	0	0	0
	(3)	(6)	(7)	(13)	(1)

Interior Glaze

	Blue-wares	--- Ming Whitewares --- 14th-15th centuries	15th/16th centuries	Total	Wanli White
< 5BG 7/1	0	0	3	3 (30.0%)	0
5G 7/1	0	1	0	1 (10.0%)	0
< 5G 7/1	1	0	0	0	0
5Gy 7/1	0	1	0	1 (10.0%)	0
< 5Gy 7/1	1	0	1	1 (10.0%)	0
5y 7/1	0	0	0	0	1
N8/-	0	2	0	2 (20.0%)	0
5YR 8/2	0	0	1	1 (10.0%)	0
7.5YR 8/2	0	0	0	0	0
10YR 8/2	0	0	0	0	0
N7/-	0	0	1	1 (10.0%)	0
5YR 7/2	0	0	0	0	0
Glaze Thick.					
2	0	2	2	4 (40.0%)	1
3	2	2	4	6 (60.0%)	0
4	0	0	0	0	0
5	0	0	0	0	0
	(2)	(4)	(6)	(10)	(1)

Body Colour

	Blue-wares	--- Ming Whitewares --- 14th-15th centuries	15th/16th centuries	Total	Wanli White
N8/-	2	1	2	3 (23.1%)	1
> N8/-	0	0	2	2 (15.4%)	0
< N7/-	0	0	2	2 (15.4%)	0
N7/-	1	0	0	0	0
5YR 8/1	0	1	0	1 (7.7%)	0
10YR 8/1	0	1	0	1 (7.7%)	0
5YR 8/2	0	0	1	1 (7.7%)	0
5YR 7/4	0	1	0	1 (7.7%)	0
5YR 7/6	1	2	0	2 (15.4%)	0
	(3)	(6)	(7)	(13)	(1)

Hardness

	Blue-wares	--- Ming Whitewares --- 14th-15th centuries	15th/16th centuries	Total	Wanli White
"7"	0	1	2	3 (23.1%)	0
"8"	1	3	4	7 (53.8%)	1
"9"	2	2	1	3 (23.1%)	0

% of Body Inclusions

	Blue-wares	--- Ming Whitewares --- 14th-15th centuries	15th/16th centuries	Total	Wanli White
"0"	0	1	2	3 (23.1%)	0
"1"	1	4	3	7 (53.8%)	1
"3"	2	1	1	2 (15.4%)	0
"15"	0	0	1	1 (7.7%)	0
	(3)	(6)	(7)	(13)	(1)

Translucency

	Blue-wares	--- Ming Whitewares --- 14th-15th centuries	15th/16th centuries	Total	Wanli White
Y	2	0	4	4 (33.3%)	1
F	0	0	2	2 (16.7%)	0
N	1	5	1	6 (50.0%)	0

Body Type

	Blue-wares	--- Ming Whitewares --- 14th-15th centuries	15th/16th centuries	Total	Wanli White
CP	2	0	5	5 (38.5%)	1
Near CP	1	0	1	1 (7.7%)	0
SP	0	4	1	5 (38.5%)	0
SW	0	2	0	2 (15.4%)	0
	(3)	(6)	(7)	(13)	(1)

Slipping

	Blue-wares	--- Ming Whitewares --- 14th-15th centuries	15th/16th centuries	Total	Wanli White
None	2	4	6	10 (83.3%)	1
Exterior	0	0	1	1 (8.3%)	0
Interior	1	0	0	0	0
X and I	0	1	0	1 (8.3%)	0
	(3)	(5)	(7)	(12)	(1)

Basal Glazing Characters Ming White	14th-15th centuries	15th-16th centuries	Total
Regularly glazed base	0	2 (50.0%)	2 (40%)
Irregularly glazed base	0	1 (25.0%)	1 (20%)
Unglazed base	0	1 (25.0%)	1 (20%)
Glaze does not reach non-extant foot	1 (100%)	0	1 (20%)
Unglazed central stacking ring present	1 (100%)	3 (100%)	4 (100%)

N.B. Only one glaze layer present in all cases except for one blue glaze (Table B-15).

TABLE B-19. SSPHAP'S MING BW (INC. HEXAGONAL) WARES

	15th century	Late 15th century	Late 15th-early 16th century	15th-16th centuries	"Ming BW"	BW/Red 16th century	16th century	Total	Hexagonal Ming BW
Plates	0	3	5	0	10	292	0	310	0
Bowls	2	7	2	3	11	233	2	260	75
Dishes	0	0	0	0	0	2	0	2	0
Cups	0	0	0	1	0	0	0	1	0
"Open"	0	0	0	0	0	2	0	2	0
Boxes	0	1	1	1	0	12	1	16	0
Jarlets	0	0	0	0	0	3	0	3	0
Vases	0	0	0	0	0	8	0	8	0
Jars	0	0	0	0	0	42	0	42	0
Balubu	0	0	2	0	0	97	2	101	0
Total	2	11	10	5	21	691	5	745	75

N.B. Jars and *balubu* include 50 pieces from Tallok's royal cemetery (U.25.1), identified only as Jars/*balubu*, divided up according the the recorded frequencies of the jars and *balubu* at other sites.

X Glaze Colour	Late 15th century	Late 15th-early 16th century	15th-16th centuries	BW/Red 16th century	16th century	Total	Hexagonal Ming BW
< 5B 7/1	0	0	0	0	1.3	1 (1.1%)	0
5BG 7/1	100.0	11.1	0	0	8.7	9 (9.9%)	1 (8.3%)
5G 7/1	0	33.3	25.0	0	13.2	14 (15.4%)	4 (33.3%)
< 5G 7/1	0	0	0	100.0	11.8	10 (11.0%)	1 (8.3%)
5Gy 6/1	0	11.1	0	0	0	1 (1.1%)	0
5Gy 7/1	0	11.1	25.0	0	27.6	23 (25.3%)	2 (16.7%)
< 5Gy 7/1	0	11.1	25.0	0	18.4	16 (17.6%)	2 (16.7%)
5y 6/1	0	0	0	0	1.3	1 (1.1%)	0
5y 7/1	0	0	0	0	1.3	1 (1.1%)	0
< 5y 7/1	0	11.1	0	0	3.9	4 (4.4%)	0
N8/-	0	0	0	0	5.3	4 (4.4%)	0
> N8/-	0	0	0	0	1.3	1 (1.1%)	0
< N7/-	0	0	0	0	0	0	1 (8.3%)
10YR 8/1	0	11.1	0	0	2.6	3 (3.3%)	0
7.5YR 8/2	0	0	0	0	1.3	1 (1.1%)	0
5Y 8/2	0	0	0	0	0	0	1 (8.3%)
5Y 7/1	0	0	25.0	0	1.3	1 (1.1%)	0
5Y 7/2	0	0	0	0	1.3	1 (1.1%)	0
X Glaze Thickness							
2	0	0	25.0	0	5.3	5 (5.5%)	0
3	100.0	77.8	75.0	100.0	78.9	72 (79.1%)	11 (91.7%)
4	0	0	0	0	7.9	6 (6.6%)	0
5	0	22.2	0	0	7.9	8 (8.8%)	1 (8.3%)
Slipping							
None	100.0	88.9	100.0	100.0	100.0	90 (98.9%)	12 (100%)
X and I	0	11.1	0	0	0	1 (1.1%)	0
	(1)	(9)	(4)	(1)	(76)	(91)	(12)

TABLE B-19. SSPHAP'S MING BW (INC. HEXAGONAL) WARES (CONT.)

I Glaze Colour	Late 15th century	Late 15th-early 16th century	15th-16th centuries	BW/Red 16th century	16th century	Total	Hexagonal Ming BW
5BG 7/1	100.0	0	0	0	6.8	6 (6.7%)	1 (9.1%)
< 5BG 7/1	0	0	0	0	1.4	1 (1.1%)	0
5G 7/1	0	44.4	25.0	100.0	13.5	16 (18.0%)	3 (27.3%)
< 5G 7/1	0	0	0	0	10.8	8 (9.0%)	1 (9.1%)
5Gy 6/1	0	11.1	0	0	1.4	2 (2.2%)	0
5Gy 7/1	0	11.1	25.0	0	25.7	21 (23.6%)	2 (18.2%)
< 5Gy 7/1	0	11.1	25.0	0	20.3	17 (19.1%)	2 (18.2%)
5y 7/1	0	0	0	0	1.4	1 (1.1%)	0
< 5y 7/1	0	11.1	0	0	5.4	5 (5.6%)	0
N8/-	0	0	0	0	5.4	4 (4.5%)	0
> N8/-	0	0	0	0	1.4	1 (1.1%)	0
< N7/-	0	0	0	0	0	0	1 (9.1%)
10YR 8/1	0	11.1	0	0	2.7	3 (3.4%)	0
< 5Y 8/2	0	0	0	0	0	0	1 (9.1%)
10YR 7/1	0	0	0	0	1.4	1 (1.1%)	0
5Y 7/1	0	0	25.0	0	0	1 (1.1%)	0
5Y 7/2	0	0	0	0	1.4	1 (1.1%)	0
10YR 6/3	0	0	0	0	1.4	1 (1.1%)	0
	(1)	(9)	(4)	(1)	(74)	(89)	(11)
I Glaze Thick.							Ming BW
1	0	0	25.0	0	0	1 (1.1%)	0
2	0	0	0	0	17.6	13 (14.6%)	0
3	100.0	77.8	75.0	100.0	68.9	64 (71.9%)	11 (100%)
4	0	0	0	0	6.8	5 (5.6%)	
5	0	22.2	0	0	6.8	6 (6.7%)	0
	(1)	(9)	(4)	(1)	(74)	(89)	(11)
Body Type							
China Porcelain	0	12.5	20.0	0	20.5	18 (19.4%)	1 (8.3%)
Almost CP	0	25.0	0	100.0	10.3	11 (11.8%)	1 (8.3%)
Semi-porcelain	100.0	37.5	40.0	0	41.0	37 (40.0%)	6 (50.0%)
Protoporcelain	0	12.5	0	0	1.3	2 (2.2%)	3 (25.0%)
Stoneware	0	12.5	40.0	0	26.9	25 (26.9%)	1 (8.3%)
	(1)	(8)	(5)	(1)	(78)	(93)	(12)
Translucency							Hexagonal
Not translucent	-	100.0	80.0	0	79.6	53 (80.3%)	6 (60.0%)
Faintly	-	0	0	0	11.1	6 (9.1%)	3 (30.0%)
Translucent (Y)	-	0	20.0	100.0	9.3	7 (10.6%)	1 (10.0%)
	(0)	(6)	(5)	(1)	(54)	(66)	(10)

TABLE B-19. SSPHAP'S MING BW (INC. HEXAGONAL) WARES (CONT.)

Body Colour							
N8/-	100.0	12.5	0	0	14.1	13 (14.1%)	1 (8.3%)
> N8/-	0	25.0	0	0	17.9	16 (17.4%)	1 (8.3%)
< N7/-	0	25.0	25.0	0	14.1	14 (15.2%)	2 (16.7%)
N7/-	0	0	0	0	16.7	13 (14.1%)	0
> N7/-	0	0	0	0	1.3	1 (1.1%)	0
5YR 8/1	0	12.5	0	0	11.5	10 (10.9%)	2 (16.7%)
10YR 8/1	0	0	0	0	1.3	1 (1.1%)	0
5YR 8/2	0	0	25.0	0	1.3	2 (2.2%)	3 (25.0%)
7.5YR 8/2	0	12.5	0	0	0	1 (1.1%)	0
10YR 8/3	0	0	0	0	1.3	1 (1.1%)	0
5YR 7/1	0	12.5	25.0	100.0	11.5	12 (13.0%)	2 (16.7%)
10YR 7/1	0	0	0	0	2.6	2 (2.2%)	0
5Y 7/1	0	0	0	0	1.3	1 (1.1%)	0
5YR 7/2	0	0	0	0	1.3	1 (1.1%)	1 (8.3%)
5YR 6/1	0	0	0	0	2.6	2 (2.2%)	0
10YR 6/1	0	0	0	0	1.3	1 (1.1%)	0
5YR 6/2	0	0	25.0	0	0	1 (1.1%)	0
	(1)	(8)	(4)	(1)	(78)	(92)	(12)
Hardness							
5	0	0	0	0	1.3	1 (1.1%)	0
7	0	50.0	40.0	100.0	21.8	24 (25.8%)	6 (50.0%)
8	100.0	37.5	60.0	0	59.0	53 (57.0%)	6 (50.0%)
9	0	12.5	0	0	17.9	15 (16.1%)	0
% Inclusions							
0	0	0	20.0	0	6.4	6 (6.5%)	1 (8.3%)
1	0	50.0	20.0	0	61.5	53 (57.0%)	7 (58.3%)
3	100.0	25.0	0	100.0	20.5	20 (21.5%)	1 (8.3%)
5	0	12.5	40.0	0	7.7	9 (9.7%)	1 (8.3%)
10-15	0	12.5	20.0	0	2.6	4 (4.3%)	1 (8.3%)
30	0	0	0	0	1.3	1 (1.1%)	0
40	0	0	0	0	0	0	1 (8.3%)
	(1)	(8)	(5)	(1)	(78)	(93)	(12)

Basal Glazing Characters	Late 15th century (5)	Late 15th-early 16th century (2)	16th century (34)	Total (41)	Hexagonal Ming BW (3)
Regularly glazed base	4 (80%)	2 (100%)	33 (97.1%)	39 (95.1%)	3 (100%)
Dirty base	0	0	1 (2.9%)	1 (2.4%)	0
Unglazed base	1 (20%)	0	0	1 (2.4%)	0

N.B. One piece dated to the late 15th-early 16th century had two layers of glaze on both faces, but all other observed glazes had only one layer.

TABLE B-20. MING *MERAH*, WANLI BW AND LATE MING BW WARES

	Overglaze *Famille verte*	Over-glaze Red	Total Ming *Merah*	Wanli BW	Wanli BW/ overglaze *F.verte*	Wanli Red/ *F.verte*	Total Wanli BW	Late Ming BW	Late BW/ red	Late Ming Red/ *F. verte*	Total Late Ming BW
Plates	6	13	19	50	0	1	51	133	1	9	143
Bowls	1	7	8	153	1	1	155	203	0	1	204
Small bowls	0	0	0	15	0	0	15	5	0	0	5
Cups	0	0	0	25	0	1	26	2	0	1*	3
Ashtray	0	0	0	1	0	0	1	0	0	0	0
"Open"	0	0	0	0	0	0	0	2	0	0	2
Boxes	0	0	0	19	0	0	19	12	0	2	14
Jarlets	0	0	0	2	0	0	2	7	0	1	8
Vases	0	0	0	10	0	0	10	13	0	0	13
Jars	0	0	0	8	0	1	9	12	0	0	12
Balubu	0	0	0	2	0	0	2	11	0	0	11
Figure (duck)	0	0	0	0	0	0	0	1	0	0	1
Total	7	20	27	285	1	4	290	401	1	14	416

* Identified as a stem-cup.

TABLE B-21. MING RED AND LATER BW TRAITS (PERCENTAGES)

	Exterior Glaze								Interior Glaze						
Colour	Wanli BW	Wanli *Merah*		Total Wanli BW	Late Ming BW	Late Ming Red		Total Late Ming BW	Ming *F. verte*	Wanli BW	Wanli *Merah*		Total Wanli BW	Late Ming BW	Late Ming Red	Total Late Ming BW
5B 7/1	3.8	0	1	(3.6)	2.2	0	1	(2.2)	0	0	0		0	2.2	0	1 (2.2)
<5B 7/1	0	0		0	0	0		0	0	0	0		0	0	0	0
5BG 7/1	0	0		0	4.4	0	2	(4.3)	0	0	0		0	4.4	0	2 (4.3)
<5BG7/1	3.8	0	1	(3.6)	6.7	0	3	(6.5)	0	4.2	0	1	(3.8)	6.7	0	3 (6.5)
5G 7/1	11.5	50	4	(14.3)	26.7	0	12	(26.1)	1	16.7	0	4	(15.4)	31.1	0	14 (30.4)
<5G 7/1	23.1	0	6	(21.4)	11.1	100	6	(13.0)	0	20.8	0	5	(19.2)	6.7	100	4 (8.7)
5Gy 6/1	0	0		0	2.2	0	1	(2.2)	0	0	0		0	2.2	0	1 (2.2)
5Gy 7/1	15.4	0	4	(14.3)	8.9	0	4	(8.7)	0	16.7	50	5	(19.2)	11.1	0	5 (10.9)
<5Gy7/1	11.5	50	4	(14.3)	15.6	0	7	(15.2)	0	8.3	50	3	(11.5)	17.8	0	8 (17.4)
5y 7/1	7.7	0	2	(7.1)	4.4	0	2	(4.4)	0	12.5	0	3	(11.5)	2.2	0	1 (2.2)
<5y 7/1	15.4	0	4	(14.3)	2.2	0	1	(2.2)	0	8.3	0	2	(7.7)	2.2	0	1 (2.2)
N8/-	7.7	0	2	(7.1)	8.9	0	4	(8.7)	0	12.5	0	3	(11.5)	6.7	0	3 (6.5)
> N8/-	0	0		0	2.2	0	1	(2.2)	0	0	0		0	2.2	0	1 (2.2)
< N7/-	0	0		0	2.2	0	1	(2.2)	0	0	0		0	2.2	0	1 (2.2)
5Y 7/1	0	0		0	2.2	0	1	(2.2)	0	0	0		0	2.2	0	1 (2.2)
Thickness																
1	0	0		0	0	0		0	0	4.2	0	1	(3.8)	0	0	0
2	15.4	50	5	(17.9)	8.0	100	5	(10.9)	1	20.8	50	6	(23.1)	6.7	100	4 (8.7)
3	73.1	50	20	(71.4)	80.0	0	36	(78.3)	0	66.7	50	17	(65.4)	86.7	0	39 (84.8)
4	7.7	0	2	(7.1)	4.4	0	2	(4.3)	0	4.2	0	1	(3.8)	2.2	0	1 (2.2)
5	3.8	0	1	(3.6)	4.4	0	2	(4.3)	0	4.2	0	1	(3.8)	2.2	0	1 (2.2)
6	0	0		0	2.2	0	1	(2.2)	0	0	0		0	2.2	0	1 (2.2)
Number																
1 layer	100	100	28	(100)	97.8	100	45	(97.8)	1	100	100	26	(100)	97.8	100	45 (97.8)
2 layers	0	0		0	0	0		0	0	0	0		0	2.2	0	1 (2.2)
3 layers	0	0		0	2.2	0	1	(2.2)	0	0	0		0	0	0	0
	(26)	(2)		(28)	(45)	(1)		(46)	(1)	(24)	(2)		(26)	(45)	(1)	(46)

TABLE B-21. MING RED AND LATER BW TRAITS (CONT.)

Body Colour	Ming *F. verte* (1)	Wanli BW	Wanli *F. verte*/Red	Total Wanli BW (28)	Late Ming BW	Late Ming Red	Total Late Ming BW (46)
N8/-	0	38.5	0	10 (35.7%)	24.4	0	11 (23.9%)
> N8/-	0	23.1	50.0	7 (25.0%)	26.7	0	12 (26.1%)
< N7/-	0	15.4	50.0	5 (17.9%)	13.3	0	6 (13.0%)
N7/-	0	3.8	0	1 (3.6%)	22.2	0	10 (21.7%)
5YR 8/1	0	7.7	0	2 (7.1%)	2.2	0	1 (2.2%)
5YR 7/1	0	7.7	0	2 (7.1%)	4.4	100.0	3 (6.5%)
5YR 8/2	0	0	0	0	2.2	0	1 (2.2%)
7.5YR 8/2	0	0	0	0	2.2	0	1 (2.2%)
10YR 8/2	0	3.8	0	1 (3.6%)	2.2	0	1 (2.2%)
5YR 8/3	100.0	0	0	0	0	0	0
Hardness							
7	100.0	11.5	50.0	4 (14.3%)	31.1	0	14 (30.4%)
8	0	61.5	50.0	17 (60.7%)	48.9	0	22 (47.8%)
9	0	26.9	0	7 (25.0%)	20.0	100.0	10 (21.7%)
% Inclusions							
0	0	42.3	0	11 (39.3%)	4.4	0	2 (4.3%)
1	0	26.9	100.0	9 (32.1%)	64.4	100.0	30 (65.2%)
2-3	0	19.2	0	6 (17.9%)	22.2	0	10 (21.7%)
5	100.0	7.7	0	2 (7.1%)	4.4	0	2 (4.3%)
10	0	3.8	0	1 (3.6%)	2.2	0	1 (2.2%)
20	0	0	0	0	2.2	0	1 (2.2%)
Body Type							
China Porcelain	0	46.2	50.0	13 (46.4%)	33.3	0	15 (32.6%)
Almost CP	0	3.8	0	1 (3.6%)	11.1	0	5 (10.9%)
Semi-porcelain	0	42.3	50.0	12 (42.9%)	24.4	0	11 (23.9%)
Stoneware	100.0	7.7	0	2 (7.1%)	31.1	100.0	15 (32.6%)
Slipping							
No	0	100.0	100.0	28 (100.0%)	100.0	100.0	46 (100.0%)
Interior face	100.0	0	0	0	0	0	0

Translucency	Ming *F. verte* (1)	Wanli BW (None *Merah*) (15)	Late Ming BW	Late Ming Red	Total Late Ming BW (40)
Not translucent	100.0	4 (26.7%)	64.1	100.0	26 (65.0%)
Faintly translucent	0	1 (6.7%)	17.9	0	7 (17.5%)
Clearly translucent (Y)	0	10 (66.7%)	17.9	0	7 (17.5%)

Basal glazing Characters	Ming *F. verte* (1)	Wanli BW (6)	Late Ming BW (23)
Fully glazed base	0	100.0	22 (95.7%)
Unglazed base	100.0	0	1 (4.3%)

Swatow-like characters and may not be fully representative of the *Ming merah* class.

B.3.10 Wanli blue-and-white and late Ming BW

Demmanari and I identified Wanli blue-and-white wares mainly through their delicacy which included a soft clear glaze, whitish porcelain to porcellanous body (Table B-21), and silvery blue decorations executed with care (Macintosh, 1977:60). The dominant vessel form was bowls, notably examples with slender graceful cavettos, while smaller vessels such as cups and small bowls were also prominent. One piece combined red enamels with the underglaze decorations, and four pieces were decorated only with red or famille verte enamels (Table B-20).22

As understood by McElney (1979) *Kraak porselein*, which was given its name by the Dutch to commemorate their seizure of a Portuguese carrack laden with the wares in 1603, is almost synonymous with SSPHAP's Wanli class. McElney draws attention to the delicate potting and silvery blue decorations. He further outlines a chronology between 1550 and 1640 based on precisely the decorative repertoire Demmanari and I associated with Wanli - e.g. animals and humans depicted as central emblems, animals and subtle floral motifs in vertical panels (e.g. Photos 10-24 and 10-25), and the "eight precious things". On the other hand, Medley (1980:225-229) asserts that Kraak wares were exported to Southeast Asia and thence to Europe throughout the 17th century, while Kwan and Martin (1985:131) extend the temporal range of Kraak to the early 18th century. The repertoire Medley describes includes open vessels with complex landscapes, which we would have classified as Swatow (B.3.11), and she notes a specifically 17th century tendency towards "moth-eaten" or flaky glaze along the rims, which would also have struck us as a Swatow characteristic. In addition SSPHAP's Wanli class includes some large closed vessels (Table B-20) which would not be matched among the range of Kraak forms described in the

[22] These overglaze-decorated Wanli wares were too rare to constitute their own class and so are pooled into the Wanli BW class.

literature, probably because *Kraak porselein* refers primarily to the export wares marketed to meet European tastes.

By the latter stages of fieldwork recording sites, and certainly in the laboratory, SSPHAP followed the lead of Medley (1980:230-232) in recognising a "Transitional (Ming-Qing) BW" class. In practice Demmanari and I also used it as a pigeonhole for pieces combining Ming with early Qing traits. The pieces were not always clearly distinct from Wanli (cf. Medley, 1980:229), and we tended to prefer the "Transitional" classification in the absence of the Wanli specialisations, e.g. tendencies to a stronger or more irregular glaze, coarser body (Table B-21), larger vessel form (Table B-20) or decorations in stronger blues. I renamed the class "late Ming blue-and-white" after seriation appeared to demonstrate its contemporaneity with Wanli wares (Bulbeck, 1989). The class includes one piece with overglaze red decorations complementing the underglaze blue, and 14 pieces decorated only with overglaze enamels, usually red (Table B-20).

B.3.11 The Swatow family

Swatow, a major South China port close to the presumed kilns, has given its name to a variable group of wares produced mainly for the Japanese and Southeast Asian markets between the 16th and 17th centuries (Medley, 1980:234-236). The primary reference on Swatow catalogues five main groups: BW pieces painted in a "Simple" style and monochromes, both produced mainly during the middle 16th century decades; and BW pieces and enamelled polychromes decorated in a "Complex" style, as well as slip-decorated wares, produced mainly during the reign of Wanli (Harrisson, 1979).

Except for the slip-decorated wares, all of Harrisson's main groups were recorded among SSPHAP's assemblages. Furthermore, "Swatow" in South Sulawesi also covers miscellaneous monochromes which cannot be readily classified elsewhere, and Qing period vessels whose decorations hearken after the Swatow style. A three-stage chronology of "Ming Swatow", "Swatow" and "Qing Swatow" has become entrenched in the local classificatory system. Recognising the importance

of these abundantly represented classes for my chronological determinations, I embarked on a sustained project to systematise the variation among these wares. After studying hundreds of pieces in detail I developed a brief way of codifying the body, glaze and decorative style, which I then also applied during the laboratory work carried out jointly with Karaeng Demmanari (detailed below).

Body Type

1. Usual Qing porcelain, such as that found in modern Chinese wares. The body was dead white, clearly translucent, and very low in impurities.

2. "Soft paste" bodies. Here I had attempted to recognise an innovation of the Kangxi reign described by Macintosh (1977:74). Indeed, it seemed that wares which we identified as Kangxi often had a body subtly different from the usual Qing porcelain in being harder, less translucent, and of slightly coarser crystallisation. Possibly I was recognising an older type of Qing porcelain body, but its relation to the rare "soft paste" body would be oblique at best.

3. "Semiporcelain"-type bodies, showing both porcelain and stoneware characteristics, plus a sugary appearance when viewed at 30X.

4. Usual Swatow stoneware bodies. These bodies tended to be hard and well-fired, comparatively free of impurities and white to light grey in colour (Table B-26).

5. Poorer Swatow stoneware bodies. These tended to be low on Moh's hardness scale, lower fired, fuller of inclusions and more earthy in colour. Occasionally they qualified as earthenwares (Table B-25).

Glaze Type

A. Nearly perfect Qing-type glazes. Colourless glazes with virtually no traces of macroscopic defects, nor muffling of the decorations owing to microscopic defects.

B. Imperfect Qing-type glazes. Distinguished from the "A" glazes by slight muffling of the decorations owing to sheeny specks and other microscopic defects within the glaze. These

glazes also occasionally contained inclusions or other macroscopic defects.

C. Usual Swatow-type glaze. In microscopic view these glazes looked full of bubbles and showed numerous sheeny specks and other defects. Macroscopically they corresponded to the greyer Munsell light gley colours, appeared flakey at the edges of the sherd and often had pronounced crackling.

D. Poor Swatow-type glazes. Microscopically they were crowded with bubbles and defects. Macroscopically they tended to be heavily crackled, slightly earthy in colour, and covered with small holes where glaze bubbles had exploded at the glaze surface. Usually the glaze was in the process of flaking off the sherd.

E. Oily Swatow-type glazes. These were distinguished from the "D" and poorer "C" types by their pronounced brownish tinge, and a greasey consistency when viewed at 30X.

F. Ghostly Swatow-type glazes. Here the defects within the glaze were so pronounced that the decorations were heavily muffled and only irregularly visible.

G. Celadon Swatow-type glaze. Particularly rich and lustrous by Swatow standards, these glazes usually corresponded to the greener Munsell light gley colours. They were more characteristic of enamelled wares, where the glaze provided a pleasant backdrop to the decorations, than on the BW wares when the glaze would have obscured the motifs.

Decorative Type

I. Very fine decorations with clean tones and fine outlines; similar in theme to miniature versions of the Swatow motifs.

II. Devolved Swatow-type decorations. One group of these fell along the path of devolution, driven by repeated copying over the generations, which can be traced through wares 3201-3241 of the 1760s "Geldermalsen" cargo (van der Waal and Sheaf, 1986) to the Fu and related plates within Willetts' (1981) "Kitchen Ch'ing" wares. The other group consisted of cases where a single Swatow rim motif was repeated as a lattice decoration. The most common example, which I call roundelwares and which Macknight (1976:Figure 29[b]) calls

"Kellor" decoration, concerns bowls and plates whose interior face is covered with roundels similar to the classical Swatow roundels.

III. "Classical" Swatow decorations, corresponding to the "Complex" style described by Harrisson (1979).

IV. 16th century Ming-type decorations. Here I exclude the standardised Ming motifs such as conch shells, double *vajra* and hexagons, and instead refer to a medley of landscape and figurative motifs which can be found on similarly potted wares. Any particular motif occurred rarely but collectively they constituted a common decorative substratum. Classification of pieces bearing these designs depended on whether the body and glaze conformed to Ming BW or to Swatow standards.

V. Decorations corresponding to Harrisson's (1979) "Simple" style. Emphasis is on large motifs, often a single emblem in the centre such as a flower. Decorations tended to be poorly oxidised and muddy greyish blue owing to the weak dilutions of cobalt applied as thick lines and broad sheets. Harrisson and Shariffuddin (1969:Plate 18) show some of the examples excavated at Sungai Lumut in Brunei,[23] while a 16th century shipwreck excavated in the Philippines also contained numerous specimens (Goddio, 1988).

VI. Pieces which are either undecorated or carry extant decorations too miniscule or generalised to indicate membership in any of types "I" to "V".

As shown by cross-tabulation, the frequencies of body, glaze and decorative types systematically vary across the Qing Swatow, Swatow and Ming Swatow classes as identified by Demmanari and myself (Table B-22). The patterns of co-variation are particularly clear by the cross-tabulation of body, glaze and decorative types shown in Table B-23. To read the table, imagine that the five two-way comparisons are stacked on top of each other in three-dimensional space, starting at body type "2" at the top and ending at body type "5". One could then see that vast majority of the observed combinations of characters fall along an axis from

[23] The excavators dated the site to the 15th century, but the figured examples clearly span the 14th to 16th centuries.

top-top-left to bottom-bottom-right. Most of the Qing Swatow pieces - identified by their porcellanous body, Qing-type glaze and devolved Swatow decorations - sit at the top-top-left; the Swatow pieces tend to occupy the centre of the cube; and at the bottom-bottom-right come the Ming Swatow pieces with their coarse bodies and glazes and 16th century decorative styles. By this analysis the three Swatow classes represent nodes along a continuum, which would legitimise the practice in South Sulawesi of treating them as related.

I have also drawn lines in Table B-23 to section off the cells dominated by the Qing Swatow, Swatow and Ming Swatow classes. In cases where equal numbers of two classes are present, the cell is attributed to the class less well represented in the total sample (i.e., not Swatow). More

TABLE B-22. PERCENTAGES OF THE BODY, GLAZE AND DECORATIVE TYPES AMONG THE SWATOW CLASSES IDENTIFIED IN UJUNG PANDANG

Body Type	Number	Qing Swatow	Swatow	Ming Swatow
"2"	139	96.4%	3.6%	0%
"1"	29	89.7%	10.3%	0%
"3"	207	24.6%	72.0%	3.4%
"4"	581	1.5%	82.6%	15.8%
"5"	419	0%	8.1%	91.9%
Glaze Type				
"A"	33	97.0%	3.0%	0%
"B"	257	54.1%	45.1%	0.8%
"C"	484	8.1%	76.9%	15.1%
"G"	110	8.2%	74.5%	17.3%
"F"	45	2.2%	44.4%	53.3%
"D"	289	0%	18.7%	81.3%
"E"	157	0%	16.6%	83.4%
Decorative Type				
"I"	56	91.1%	7.1%	1.8%
"II"	159	70.4%	22.6%	0%
"III"	602	7.5%	69.9%	22.6%
"VI"	208	4.8%	53.4%	41.8%
"IV"	250	0.8%	33.2%	66.0%
"V"	100	0%	5.0%	95.0%
Total pieces	(1375)	(220)	(671)	(484)

TABLE B-23. LOCATION OF THE IDENTIFICATIONS IN TABLE B-22 BY COMBINATIONS OF BODY, GLAZE AND DECORATIVE TYPES

	"I"	"II"	"III"	"VI"	"IV"	"V"
"2A"	9QS	7QS	4QS			
"2B"	21QS	45QS	14QS;3S	2QS	2QS	
"2C"		15QS	12QS			
"2G"		1QS	2QS			
"2F"		2S		(Swatow)		
"2E"						
"2D"						

	"I"	"II"	"III"	"VI"	"IV"	"V"
"1A"	4QS	1QS		1QS		
"1B"	8QS;1S	8QS	3QS;1S			
"1C"	1QS;1S					
"1G"	(Qing Swatow)					
"1F"				(Swatow)		
"1E"						
"1D"						

	"I"	"II"	"III"	"VI"	"IV"	"V"
"3A"	4QS		1QS	1QS		
"3B"	2QS	22QS;4S	3QS;24S	2QS;1S		1S
"3C"	1QS	7QS;7S	2QS;55S;2MS	14S	7S	1S
"3G"	(Qing Swatow)		3QS;3S	1QS;5S	1S	
"3F"			3S	1QS;2S	1S	
"3E"		1S	3S	1S	2S;1MS	1MS
"3D"	(Swatow)		6S;1MS	2S	5S;2MS	

	"I"	"II"	"III"	"VI"	"IV"	"V"
"4A"			1S			
"4B"	1QS;1S	4QS;19S	1QS;40S	1QS;8S	9S;1MS	
"4C"	1S	1QS;9S	186S;8MS	30S	40S;7MS	8MS
"4G"			39S	1QS;33S;2MS	1MS	
"4F"	(Swatow)		7S	1S	1S	1MS
"4E"		1S	8S;1MS	4S;1MS	2S	1S;3MS
"4D"		1S	19S;5MS	4S;11MS	15S;16MS	27MS

	"I"	"II"	"III"	"VI"	"IV"	"V"
"5A"						(Ming
"5B"		1S	2S	1S	1MS	Swatow)
"5C"		2S	15S;21MS	4S;4MS	19MS	4MS
"5G"			1S;7MS	8MS	1MS	
"5F"	(Swatow)		2S;10MS	1S;6MS	4MS	3MS
"5E"			1S;34MS	33MS	24MS	2S;33MS
"5D"	1MS		2S;47MS	31MS	79MS	15MS

N.B. QS stands for Qing Swatow pieces, S for Swatow pieces and MS for Ming Swatow pieces.

precisely, two cells which would scrape in as Qing Swatow by this procedure ("3BVI" and "3GIII"), but which protrude into a space of cells otherwise dominated by Swatow, are treated as Swatow cells because we are dealing with a continuum in variation.[24] After the three dimensions of variation are carved up into Qing Swatow, Swatow and Ming Swatow spaces, we see that less than ten percent of the pieces as identified by Demmanari and myself occur in the wrong space. Clearly our laboratory identifications were by and large consistent, and the minor inconsistencies reflect the point that the three classes fall along a single range of continuous variation. To enhance the degree of consistency I have reclassified the pieces falling in the wrong space according to Table B-23, which involves 9.1% of the original Qing Swatow pieces becoming Swatow, 9.8% of the original Swatow pieces becoming Ming Swatow, and 6.6% of the original Ming Swatow pieces becoming Swatow.[25] These figures exclude the pieces whose body, glaze and decorative type I did not note, and hence whose original classification made by Demmanari and myself is simply retained.[26]

Table B-24 shows the composition of the three Swatow classes by decorative style, or glaze type when no decorations were extant, and by vessel form. The Ming Swatow and Swatow classes show remarkably comparable proportions of vessel forms, apart from the declining frequency of *balubu* in the Swatow class.[27] There is however a clear trend towards greater use of overglaze enamels with the Swatow class, in line with Harrisson's (1979) notes on chronological changes. The Qing Swatow wares differ from the Swatow class by a clear shift towards smaller vessels, including the loss of *balubu*;

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[24] The choice of where to draw the lines through the empty spaces of unfilled cells is of course largely arbitrary.
[25] In my PC tradewares file, these pieces are tagged by showing the original classification in brackets after the reclassification.
[26] Involving 42 Qing Swatow pieces, 180 Swatow pieces and 276 Ming Swatow pieces, most of them from the site museum collection at Tallok's royal graveyard (U.25.1).
[27] As with the Ming BW wares, the majority of the Ming Swatow and Swatow *balubu* were also recorded within assemblages associated with Makassar palaces.

TABLE B-24. COMPOSITION OF THE SWATOW FAMILY CLASSES

Ming Swatow	Plates	Bowls	Small Bowls	Dishes	"Open"	Boxes	Jar-lets	Vases	Jars	*Balubu*	Total
Blue-and-white	465	100	2	3	1	8	8	3	15	84	689
BW/enamelled	2	0	0	0	0	0	0	0	0	0	2
Overglaze enamels	31	5	0	0	1	1	0	1	0	0	39
Subceladons	1	1	0	0	0	0	0	0	1	0	3
Whitewares	1	0	0	0	0	0	0	0	0	0	1
Plain	17	5	0	1	1	1	0	0	1	0	26
Total Ming Swatow	517	111	2	4	3	10	8	4	17	84	760

Swatow	Plates	Bowls	Small Bowls	Dishes	"Open"	Boxes	Jar-lets	Vases	Jars	*Balubu*	Total
Blue-and-white	485	126	4	2	3	9	3	2	16	28	678
BW/enamelled	2	1	0	0	0	0	0	0	0	0	3
Overglaze enamels	75	21	2	0	1	6	0	2	2	0	109
Celadons	5	1	0	0	0	0	0	0	0	0	6
Subceladons	12	7	0	0	0	0	2	0	0	0	21
Whitewares	4	6	0	0	0	0	0	0	0	0	10
Plain	15	6	1	0	0	0	0	0	2	0	24
Total Swatow	598	168	7	2	4	15	5	4	20	28	851

Qing Swatow	Plates	Bowls	Small Bowls	Cups	Boxes	Jar-lets	Vases	Jars	Spoons	Total
Blue-and-white	113	83	8	1	7	3	4	3	1	223
BW/enamelled	3	1	1	0	0	1	0	0	0	6
Overglaze enamels	14	12	1	0	3	0	4	0	0	34
Total Qing Swatow	130	96	10	1	10	4	8	3	1	263

N.B. Qing Swatow pieces lacking traces of decoration would have been classified with the "Qing white" pieces.

TABLE B-25. CHARACTERS OF MING SWATOW WARES (PERCENTAGES)

Basal glazing Traits	Ming Swatow BW (36)	Ming Swatow *Merah* (2)	Plain Ming Swatow (3)	Total (41)
Ordinarily glazed base	61.1%	50.0%	0%	23 (56.1%)
Red-glazed base	2.8%	0%	0%	1 (2.4%)
Glaze-splashed base	11.1%	50.0%	0%	5 (12.2%)
Dirty glazed base	11.1%	0%	0%	4 (9.8%)
Unglazed base	13.9%	0%	100.0%	8 (19.5%)

TABLE B-25. CHARACTERS OF MING SWATOW WARES (CONT.)

	Exterior Glaze						Exterior Glaze					
Colour	Ming Swatow BW	Ming Swatow BW/Merah	Ming Swatow Merah	Plain Ming Swatow	Total Ming Swatow		Ming Swatow BW	Ming Swatow BW/Merah	Ming Swatow Merah	Plain Ming Swatow	Total Ming Swatow	
Green/Brown A5	0	0	0	9.1	1	(0.7%)	0	0	0	7.7	1	(0.7%)
Green/Brown A6	0	0	0	0	0		0	0	0	7.7	1	(0.7%)
5BG 6/1	0.8	0	0	0	1	(0.7%)	0	0	0	0	0	
5BG 7/1	0.8	0	0	0	1	(0.7%)	1.6	0	0	0	2	(1.4%)
5G 6/1	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
5G 7/1	3.3	0	0	0	4	(2.9%)	4.0	0	0	0	5	(3.5%)
< 5G 7/1	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
5Gy 5/1	0	0	0	0	0		0.8	0	0	0	1	(0.7%)
5Gy 6/1	1.6	0	16.7	18.2	5	(3.6%)	2.4	0	16.7	15.4	6	(4.2%)
5Gy 7/1	28.7	100.0	0	45.5	41	(29.3%)	26.6	100.0	0	38.5	39	(27.1%)
< 5Gy 7/1	11.5	0	0	0	14	(10.0%)	11.3	0	0	0	14	(9.7%)
5y 7/1	9.8	0	50.0	0	15	(10.7%)	10.5	0	50.0	7.7	17	(11.8%)
< 5y 7/1	13.1	0	16.7	0	17	(12.1%)	12.9	0	16.7	7.7	18	(12.5%)
> N8/-	3.3	0	0	9.1	5	(3.6%)	1.6	0	0	0	2	(1.4%)
5Y 8/1	0.8	0	0	0	1	(0.7%)	1.6	0	0	0	2	(1.4%)
2.5Y 8/2	0.8	0	0	0	1	(0.7%)	1.6	0	0	0	2	(1.4%)
5Y 8/2	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
> 5Y 8/2	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
10YR 8/3	1.6	0	0	0	2	(1.4%)	1.6	0	0	0	2	(1.4%)
5Y 7/1	3.3	0	0	9.1	5	(3.6%)	4.0	0	0	7.7	6	(4.2%)
10Y 7/1	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
< 10YR 7/2	0.8	0	0	0	1	(0.7%)	1.6	0	0	0	2	(1.4%)
10YR 7/2	1.6	0	0	0	2	(1.4%)	2.4	0	0	0	3	(2.1%)
5Y 7/2	5.7	0	0	0	7	(5.0%)	4.0	0	0	0	5	(3.5%)
2.5Y 7/2	0	0	16.7	0	1	(0.7%)	0	0	16.7	0	1	(0.7%)
10YR 7/3	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
< 5Y 6/1	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
5Y 6/1	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
5Y 6/2	1.6	0	0	0	2	(1.4%)	2.4	0	0	0	3	(2.1%)
2.5Y 6/2	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
10YR 6/2	0.8	0	0	0	1	(0.7%)	0	0	0	0	0	
5Y 6/3	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
10YR 6/3	0	0	0	9.1	1	(0.7%)	0	0	0	7.7	1	(0.7%)
R10 6/2	0.8	0	0	0	1	(0.7%)	0	0	0	0	0	
5YR 6/4	0.8	0	0	0	1	(0.7%)	0	0	0	0	0	
5YR 7/6	0	0	0	0	0		0.8	0	0	0	1	(0.7%)
Thickness												
1	1.6	0	0	0	2	(1.4%)	0	0	0	7.7	1	(0.7%)
2	6.6	0	0	0	8	(5.7%)	8.1	0	0	0	10	(6.9%)
3	57.4	0	16.7	45.5	76	(54.3%)	56.5	0	33.3	61.5	80	(55.6%)
4	4.9	0	16.7	18.2	9	(6.4%)	4.0	0	0	7.7	6	(4.2%)
5	29.5	100.0	66.7	36.4	45	(32.1%)	31.5	100.0	66.7	23.1	47	(32.6%)
Number												
1 layer	78.7	0	66.7	81.8	109	(77.9%)	80.6	0	66.7	84.6	115	(79.9%)
2 layers	18.0	100.0	33.3	18.2	27	(19.3%)	17.7	100.0	33.3	15.4	27	(18.8%)
3 layers	2.5	0	0	0	3	(2.1%)	1.6	0	0	0	2	(1.4%)
4 layers	0.8	0	0	0	1	(0.7%)	0	0	0	0	0	
Total	(122)	(1)	(6)	(11)	(140)		(124)	(1)	(6)	(13)	(144)	

TABLE B-25. CHARACTERS OF MING SWATOW WARES (CONT.)

Exterior Body Colour

	Ming Swatow BW	Ming Swatow BW/*Merah*	Ming Swatow *Merah*	Plain Ming Swatow	Total Ming Swatow	
> N8/-	1.6	0	0	7.7	3	(2.1%)
< N7/-	4.8	0	0	0	6	(4.2%)
N7/-	6.5	0	0	0	8	(5.6%)
< N6/-	0.8	0	0	0	1	(0.7%)
N6/-	0.8	0	0	0	1	(0.7%)
N5/-	0	0	16.7	0	1	(0.7%)
5YR 8/1	2.4	0	0	0	3	(2.1%)
7.5YR8/1	0.8	0	0	0	1	(0.7%)
10YR 8/1	2.4	0	0	0	1	(2.1%)
5Y 8/1	1.6	0	0	0	2	(1.4%)
5YR 8/2	2.4	0	16.7	7.7	5	(3.5%)
7.5YR8/2	1.6	0	0	7.7	3	(2.1%)
10YR 8/2	2.4	0	0	0	3	(2.1%)
5Y 8/2	0.8	0	0	0	1	(0.7%)
5YR 8/3	7.3	0	0	15.4	9	(6.3%)
10YR 8/3	4.8	0	16.7	0	7	(4.9%)
5Y 8/3	0.8	0	0	0	1	(0.7%)
5YR 8/4	0.8	0	0	7.7	2	(1.4%)
7.5YR8/4	2.4	0	0	0	3	(2.1%)
2.5Y 8/4	0.8	0	0	0	1	(0.7%)
<5YR 7/1	4.0	0	16.7	0	27	(18.8%)
5YR 7/1	21.8	0	0	0	27	(18.8%)
7.5YR7/1	1.6	0	0	0	2	(1.4%)
10YR 7/1	2.4	0	0	0	3	(2.1%)
5Y 7/1	0.8	0	0	0	1	(0.7%)
5YR 7/2	4.0	0	0	0	5	(3.5%)
7.5YR7/2	0.8	0	0	7.7	2	(1.4%)
10YR 7/2	0.8	0	0	0	1	(0.7%)
5YR 7/3	2.4	0	0	7.7	4	(2.8%)
5YR 7/4	0	0	0	7.7	1	(0.7%)
7.5YR7/4	0	0	0	7.7	1	(0.7%)
7.5YR7/6	1.6	0	0	0	2	(1.4%)
5YR 6/2	0	0	0	7.7	1	(0.7%)
7.5YR6/2	1.6	0	0	7.7	3	(2.1%)
10YR 6/2	0.8	0	0	0	1	(0.7%)
2.5Y 6/2	0	0	16.7	0	1	(0.7%)
10YR 6/3	0.8	0	0	0	1	(0.7%)
5YR 6/4	1.6	0	0	0	2	(1.4%)
5YR 6/6	2.4	0	0	0	3	(2.1%)
2.5YR6/8	0	0	0	7.7	1	(0.7%)
5YR 5/1	0.8	0	0	0	1	(0.7%)
2.5YR5/2	0.8	0	0	0	1	(0.7%)
2.5YR5/4	1.6	100.0	0	0	3	(2.1%)
5YR 4/2	0.8	0	0	0	1	(0.7%)
10R 5/6	0.8	0	0	0	1	(0.7%)
Total	(124)	(1)	(6)	(13)	(144)	

Hardness

	Ming Swatow BW	Ming Swatow BW/*Merah*	Ming Swatow *Merah*	Plain Ming Swatow	Total Ming Swatow	
3	0.8	0	0	0	1	(0.7%)
4	1.6	0	0	0	2	(1.4%)
5	12.1	0	16.7	23.1	19	(13.2%)
6	5.6	0	0	7.7	8	(5.6%)
7	62.9	100.0	83.3	61.5	92	(63.9%)
8	15.3	0	0	7.7	20	(13.9%)
9	1.6	0	0	0	2	(1.4%)

% of Body Inclusions

1	22.5	0	16.7	15.4	31	(21.5%)
3	37.1	100.0	16.7	30.8	52	(36.1%)
5	25.8	0	0	53.8	39	(27.1%)
8	0.8	0	0	0	1	(0.7%)
10	11.3	0	50.0	0	17	(11.8%)
15	0.8	0	16.7	0	2	(1.4%)
20	1.6	0	0	0	2	(1.4%)

Body Type

SP	0.8	0	0	0	1	(0.7%)
PP	1.6	0	0	0	2	(1.4%)
SW	92.7	100.0	100.0	84.6	133	(92.4%)
EW	4.8	0	0	15.4	8	(5.6%)
	(124)	(1)	(6)	(13)		(144)

Translucency

N	98.7	100.0	100.0	100.0	90	(98.9%)
F	1.3	0	0	0	1	(1.1%)
	(75)	(1)	(5)	(10)		(91)

Slipping

None	97.6	-	100.0	77.8	133	(96.4%)
X	0.8	-	0	0	1	(0.7%)
X & I	1.6	-	0	22.2	4	(2.9%)
	(125)	(0)	(4)	(9)		(138)

N.B. Ming Swatow *merah* sample includes three pieces with red enamel decorations and three with *famille verte* decorations. Plain Swatow sample includes three "subceladons" as well as outer wall 2.5YR 5/4 and inner wall 2.5YR 5/2 (both BW); outer wall 7.5YR 6/2 and inner wall 2.5YR 5/2 (subceladon). Unglazed central stacking rings were observed on one *famille verte* and four BW specimens; while two open BW vessels had unglazed centres.

TABLE B-26. SWATOW AND QING SWATOW TRAITS (PERCENTAGES)

Exterior Glaze Colour	Swatow BW	Swatow BW/Merah	Swatow Merah	Plain Swatow	Total Swatow	Qing Swatow BW	Qing Swatow Merah	Total Qing Swatow
Green/Brown A5	0	0	4.3	14.3	2 (1.2%)	0	0	0
< 5B 7/1	0	0	0	0	0	1.6	0	1 (1.6%)
5BG 7/1	0.8	0	0	0	1 (0.6%)	9.8	0	6 (9.4%)
< 5BG 7/1	0.8	0	0	0	1 (0.6%)	8.2	0	5 (7.8%)
5G 6/1	0.8	0	0	0	1 (0.6%)	0	0	0
5G 7/1	9.8	0	34.8	0	21 (12.7%)	16.4	0	10 (15.6%)
< 5G 7/1	4.5	0	8.7	0	8 (4.8%)	24.6	66.7	17 (26.6%)
5Gy 6/1	0	0	13.0	14.3	4 (2.4%)	0	0	0
5Gy 7/1	34.6	0	17.4	42.9	53 (32.1%)	4.9	0	3 (4.7%)
< 5Gy 7/1	16.5	0	4.3	0	23 (13.9%)	4.9	0	3 (4.7%)
5y 6/1	0.8	50.0	0	0	2 (1.2%)	0	0	0
5y 7/1	6.8	0	17.4	14.3	14 (8.5%)	0	0	0
< 5y 7/1	12.0	0	0	0	16 (9.7%)	4.9	0	3 (4.7%)
N8/-	3.8	0	0	0	5 (3.0%)	19.7	33.3	13 (20.3%)
> N8/-	2.3	0	0	0	3 (1.8%)	3.3	0	2 (3.1%)
< N7/-	1.5	0	0	0	2 (1.2%)	0	0	0
N7/-	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 8/1	0.8	0	0	0	1 (0.6%)	0	0	0
5Y 8/1	0.8	0	0	0	1 (0.6%)	0	0	0
7.5YR 8/2	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 8/2	0.8	0	0	14.3	2 (1.2%)	0	0	0
10YR 8/3	0.8	0	0	0	1 (0.6%)	0	0	0
5YR 7/1	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 7/1	0	0	0	0	0	1.6	0	1 (1.6%)
5Y 7/1	0	50.0	0	0	1 (0.6%)	0	0	0
Interior Glaze Colour								
Neutral 6	0.8	0	0	0	1 (0.6%)	0	0	0
Green/Brown A5	0	0	4.2	14.3	2 (1.2%)	0	0	0
< 5B 7/1	0	0	0	0	0	1.6	0	1 (1.6%)
5BG 6/1	0.8	0	0	0	1 (0.6%)	0	0	0
5BG 7/1	0.8	0	0	14.3	2 (1.2%)	11.5	0	7 (10.9%)
< 5BG 7/1	0.8	0	0	0	1 (0.6%)	6.6	0	4 (6.3%)
5G 6/1	1.5	0	4.2	0	3 (1.8%)	0	0	0
5G 7/1	6.8	0	29.2	0	16 (9.6%)	14.8	0	9 (14.1%)
< 5G 7/1	4.5	0	8.3	0	8 (4.8%)	26.2	66.7	18 (28.1%)
5Gy 6/1	0	0	12.5	14.3	4 (2.4%)	0	0	0
5Gy 7/1	34.6	0	25.0	42.9	55 (33.1%)	3.3	0	2 (3.1%)
< 5Gy 7/1	16.5	0	4.2	0	23 (13.9%)	4.9	0	3 (4.7%)
5y 6/1	0.8	50.0	0	0	2 (1.2%)	0	0	0
5y 7/1	6.0	0	12.5	0	11 (6.6%)	0	0	0
< 5y 7/1	10.5	0	0	0	14 (8.4%)	4.9	0	3 (4.7%)
N8/-	3.8	0	0	0	5 (3.0%)	21.3	33.3	14 (21.9%)
> N8/-	3.0	0	0	0	4 (2.4%)	3.3	0	2 (3.1%)
< N7/-	1.5	0	0	0	2 (1.2%)	0	0	0
N7/-	0.8	0	0	0	1 (0.6%)	0	0	0
5YR 8/1	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 8/1	1.5	0	0	0	2 (1.2%)	0	0	0
5Y 8/1	0.8	0	0	0	1 (0.6%)	0	0	0
7.5YR 8/2	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 8/2	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 8/3	0.8	0	0	0	1 (0.6%)	0	0	0
< 5YR 7/1	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 7/1	0	0	0	0	0	1.6	0	1 (1.6%)
10YR 7/2	0.8	0	0	14.3	2 (1.2%)	0	0	0
5Y 7/1	0	50.0	0	0	1 (0.6%)	0	0	0

TABLE B-26. SWATOW AND QING SWATOW TRAITS (PERCENTAGES)

Exterior Glaze Thickness								
2	6.8	0	17.4	14.3	14 (8.5%)	8.2	0	5 (7.8%)
3	57.9	100.0	60.9	57.1	97 (58.8%)	85.2	100.0	55 (85.9%)
4	2.3	0	0	0	3 (1.8%)	4.9	0	3 (4.7%)
5	33.1	0	21.7	28.6	51 (30.9%)	0	0	0
6	0	0	0	0	0	1.6	0	1 (1.6%)
Exterior Glaze Number								
1 layer	82.7	100.0	73.9	85.7	135 (81.8%)	98.4	100.0	63 (98.4%)
2 layers	16.5	0	21.7	14.3	28 (17.0%)	1.6	0	1 (1.6%)
3 layers	0	0	4.3	0	1 (0.6%)	0	0	0
4 layers	0.8	0	0	0	1 (0.6%)	0	0	0
Interior Glaze Thickness								
1	0.8	0	0	0	1 (0.6%)	0	0	0
2	6.0	0	8.3	0	10 (6.0%)	6.6	0	4 (6.3%)
3	63.2	100.0	66.7	85.7	108 (65.1%)	88.5	100.0	56 (87.5%)
4	0.8	0	0	0	1 (0.6%)	3.3	0	2 (3.1%)
5	29.3	0	25.0	14.3	46 (27.7%)	0	0	0
6	0	0	0	0	0	1.6	0	1 (1.6%)
Interior Glaze Number								
1 layer	83.5	100.0	75.0	85.7	137 (82.5%)	98.4	100.0	63 (98.4%)
2 layers	15.8	0	16.7	14.3	26 (15.7%)	1.6	0	1 (1.6%)
3 layers	0	0	4.2	0	1 (0.6%)	0	0	0
4 layers	0.8	0	4.2	0	2 (1.2%)	0	0	0
Total	(133)	(2)	(23-24)	(7)	(165-166)	(61)	(3)	(64)
Exterior Body Colour								
N8/-	1.5	0	0	12.5	3 (1.8%)	45.9	33.3	29 (45.3%)
> N8/-	7.5	0	8.3	0	12 (7.2%)	14.8	66.7	11 (17.2%)
< N7/-	24.8	0	12.5	0	36 (21.6%)	16.4	0	10 (15.6%)
N7/-	24.1	50.0	37.5	75.0	48 (28.7%)	6.6	0	4 (6.3%)
< N6/-	1.5	0	0	0	2 (1.2%)	0	0	0
N6/-	0	0	12.5	0	3 (1.8%)	0	0	0
5YR 8/1	1.5	0	4.2	0	3 (1.8%)	6.6	0	4 (6.3%)
10YR 8/1	1.5	0	0	0	2 (1.2%)	1.6	0	1 (1.6%)
5Y 8/1	0.8	0	4.2	0	2 (1.2%)	0	0	0
5YR 8/2	2.3	50.0	0	0	4 (2.4%)	0	0	0
10YR 8/2	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 8/3	0.8	0	0	0	1 (0.6%)	0	0	0
< 5YR 7/1	8.3	0	4.2	0	12 (7.2%)	0	0	0
5YR 7/1	14.3	0	0	0	19 (11.4%)	6.6	0	4 (1.6%)
7.5YR 7/1	0.8	0	0	0	1 (0.6%)	1.6	0	1 (1.6%)
10YR 7/1	2.3	0	12.5	12.5	7 (4.2%)	0	0	0
5YR 7/2	1.5	0	0	0	2 (1.2%)	0	0	0
7.5YR 7/2	1.5	0	0	0	2 (1.2%)	0	0	0
< 5YR 6/1	0.8	0	0	0	1 (0.6%)	0	0	0
5YR 6/1	1.5	0	0	0	2 (1.2%)	0	0	0
5YR 6/2	0	0	4.2	0	1 (0.6%)	0	0	0
7.5YR 6/2	1.5	0	0	0	2 (1.2%)	0	0	0
7.5YR 6/4	0.8	0	0	0	1 (0.6%)	0	0	0

TABLE B-26. SWATOW AND QING SWATOW TRAITS (CONT.)

Body Hardness								
5	0.8	0	0	0	1 (0.6%)	0	0	0
6	1.5	0	0	0	2 (1.2%)	0	0	0
7	40.9	0	41.7	25.0	66 (39.8%)	13.1	33.3	9 (14.1%)
8	43.2	50.0	54.2	75.0	77 (46.4%)	41.0	33.3	26 (40.6%)
9	13.6	50.0	4.2	0	20 (12.0%)	45.9	33.3	29 (45.3%)
% Inclusions								
0	0	0	0	0	0	6.6	33.3	5 (7.8%)
1	52.6	0	37.5	12.5	80 (47.9%)	77.0	66.7	49 (76.6%)
3	30.1	100.0	37.5	62.5	56 (33.5%)	11.5	0	7 (10.9%)
5	10.5	0	8.3	12.5	17 (10.2%)	4.9	0	3 (4.7%)
10	5.3	0	12.5	12.5	11 (6.6%)	0	0	0
15	0.8	0	4.2	0	2 (1.2%)	0	0	0
20	0.8	0	0	0	1 (0.6%)	0	0	0
Body Type								
China Porcelain	0	0	0	0	0	54.1	66.7	35 (54.7%)
Almost CP	3.1	0	0	0	4 (2.4%)	26.2	33.3	17 (26.6%)
Semi-porcelain	31.3	0	29.2	12.5	49 (29.7%)	13.1	0	8 (12.5%)
Stoneware	65.7	100.0	70.8	87.5	112 (67.9%)	6.6	0	4 (6.3%)
Slipping								
None	97.0	100.0	91.7	87.5	160 (95.8%)	100.0	100.0	64 (100%)
Interior only	0.8	0	0	0	1 (0.6%)	0	0	0
X and I	2.3	0	8.3	12.5	6 (3.6%)	0	0	0
Total	(131-133)	(2)	(24)	(8)	(165-167)	(61)	(3)	(64)
Translucency								
No	94.2	100.0	90.0	100.0	109 (94.0%)	27.7	33.3	14 (28.0%)
Faintly	4.7	0	10.0	0	6 (5.2%)	21.3	33.3	11 (22.0%)
Yes	1.2	0	0	0	1 (0.9%)	51.1	33.3	25 (50.0%)
Total	(86)	(2)	(20)	(8)	(116)	(47)	(3)	(50)

Basal Glazing Traits	Swatow BW	Swatow *Merah*	Plain Swatow	Total Swatow	Qing Swatow BW	Qing Swatow *Merah*	Total Qing Swatow
Ordinarily glazed base	28.1	37.5	0	12 (27.9%)	92.6	100.0	26 (92.9%)
Pink-glazed base	0	0	0	0	3.7	0	1 (3.6%)
Red-glazed base	15.6	0	33.3	6 (14.0%)	0	0	0
Glaze-splashed base	12.5	0	0	4 (9.3%)	0	0	0
Dirty glazed base	28.1	12.5	0	10 (23.3%)	3.7	0	1 (3.6%)
Chocolate base	3.1	0	0	1 (2.3%)	0	0	0
Unglazed base	12.5	50.0	66.7	10 (23.3%)	0	0	0
Total	(32)	(8)	(3)	(43)	(27)	(1)	(28)

N.B. The Swatow plain sample included four Swatow "subceladons" and four just plain pieces. One of the Swatow BW bodies coloured 5YR 7/1 exteriorly was coloured 2.5YR 4/4 on the interior wall. One of the Qing Swatow BW bases noted as ordinarily glazed had dirty feet as is typical of Ming Swatow and Swatow feet. Unglazed central stacking rings were observed on one Swatow BW vessel and one Swatow subceladon.

a trend away from plates towards bowls; and the greater occurrence of small bowls and even a cup and a spoon. A notable proportion of the Qing Swatow plates were also defined as small in our notes.

Tables B-25 and B-26 describe the variability within and between the Ming Swatow, Swatow and Qing Swatow classes, as summarised above.

B.3.12 Qing blue-and-white

SSPHAP's Qing blue-and-white category excludes pieces which looked modern (20th century) but includes enamelled wares, as well as BW wares, belonging to the previous centuries under Qing. The composition of the Qing BW sample studied in the laboratory (Table B-27) may not be fully representative of the general sherdage at the sites for three reasons. Firstly, much of the laboratory sample comes from collections made at sites which appear to have been abandoned by at least the 19th century because European sherdage was conspicuously rare. Hence the sample probably underrepresents the proportions of 18th and especially 19th century pieces. Secondly, some of the pieces dated to the Ming period in the field and collected for confirmation were demoted to the status of Qing BW, especially Kangxi BW, in the laboratory. Thirdly we tended to collect pieces which stood outside of the general ruck, notably those with a brown glaze on the exterior cavetto (called "Batavian wares" by Jakarta archaeologists) and spoon fragments.

The sample is nonetheless adequate to demonstrate certain general points. Large closed vessels were rare and bowls dominated over plates (many of which were small and hence more like saucers). Overglaze enamels constituted an important supplement to the dominant strains of cobalt blue. These included *famille verte* (i.e., including at least some green) and red enamels, mainly on the Kangxi pieces, and *famille rose* enamels on 18th to 19th century pieces (cf. Medley, 1980:242-250).

As regards the critical issue of dating the underglaze blue decorations, the most relevant general source was Macintosh (1977). His description of Kangxi glazes as thin

and tinged with a suspicion of bluish-green (see Table B-28), and his notes on the delicately graded, sapphire blue Kangxi decorations (Macintosh, 1977:73), directly applied to legions of SSPHAP's BW sherdage. We also followed Macintosh (1977:77,83) in expecting lavendar decorations with the early 18th century pieces, and almost blackish tones against a strongly white background (see Table B-28) with the Qianlong pieces. In addition, Qing tradewares embraced new decorative styles, as exemplified by the ceramics cargo salvaged from the "Geldermalsen" 1760s shipwreck (van der Waals and Sheaf, 1986): miniature landscapes such as those in the Chinese Imari style; panels of crosses along the rims, which distinguish the so-called Nanking wares; simplified and rather blobby versions of decorations as old as Chinese blue-and-white itself, such as the *lingchih* fungus and lotus sprays; and coarse calligraphic decorations. Other commonly occurring variants in South Sulawesi included "Kangxi birthday bowls", copied after the original plates made in 1713 (Medley, 1980:243); "wheelware" bowls (as I call them), as figured in Macknight (1976:Figure 29a), which were particularly prominent in the assemblages containing no or few European sherds; and "endless entrails" (cf. Macintosh, 1977:132).

We also partly followed Willetts (1981) in adapting his "Kitchen Ch'ing" (*Qing dapur*) category. Willetts proclaims a 19th to early 20th century date for all sorts of Qing tradewares including "Kangxi birthday bowls" (which were presumably copied from 1713 onwards) and precise counterparts to pieces from the "Geldermalsen" (mid-18th century). Indeed the only dated[28] pieces Willetts refers to, the Balambangan sherds from Malaysian Borneo, date either c.1770 or c.1800 (Willetts, 1981:1), and so refer specifically to the late 18th century. However, we found Willetts' general idea useful as a way of referring to the Qing BW pieces which looked the most recent (19th century): pieces with stamped or particularly devolved decorations; and the Fu and related plates.

[28] i.e. dated by criteria other than Willetts' intuitive judgment of how old the pieces are.

TABLE B-27. COMPOSITION OF SSPHAP'S QING BLUE-AND-WHITE WARES

	"Kangxi" Late 17th-early 18th centuries	"Yungzheng" Early 18th century	18th century	"Qianlong" Late 18th century	18th-19th centuries	"Kitchen Qing" 19th century	Total
Bowls	200#	110	93	61	13	44	527*
Small bowls	19	2	7	0	1	1	30
Plates	165	24	25	8	16	31	269
Cups	8	0	1	0	2	0	11
"Open"	3	0	1	0	0	0	5*
Boxes	14	3	5	0	1	0	23
Jarlets	2	2	1	0	0	0	5
Vases	8	1	1	3	0	1	14
Bottles	0	0	0	1	0	0	1
Jars	9	2	1	0	0	0	12
Balubu	3	0	0	0	0	0	3
Spoons	3	2	1	3	2	4	15
Total	434	146	136	76	35	82	915*

	"Kangxi"	"Yung-zheng"	18th century	"Qian-long"	18th-19th centuries	"Kitchen Qing"	Total
Blue-and-white decorations only	387	144	95^	73	9	72	780
With brown glaze exteriorly	0	0	10	0	0	0	10
In conjunction with underglaze black	0	0	0	1	0	0	1
In conjuction with red enamels	3	1	1	0	0	1	6
In conjuction with *famille verte*	11	0	1	0	0	0	12
In conjuction with *famille rose*	1	0	1	0	0	0	2
Total with BW decorations	402	145	108	74	9	73	811
Famille verte enamels only	25#	0	0	0	1	0	26
F. verte enamels on brown glaze	2	0	0	0	0	0	2
Red enamels only	5	0	0	0	0	0	5
Total with "*merah*" decorations	46	1	2	0	1	1	51
Famille rose enamels only	0	1	27	2	25	9	64
With brown glaze exteriorly	0	0	1	0	0	0	1
Total with *f. rose* decorations	1	1	29	2	25	9	67
Total with brown glazing	2	0	11	0	0	0	13

One specimen was identified as having come from a set of stacking bowls.
* Include a few pieces dated no more closely than as Qing.
^ Include three Nanking wares and one decorated in the "Imari" style.

TABLE B-28. QING BLUE-AND-WHITE TRAITS (PERCENTAGES)

Exterior Glaze Thickness	"Kangxi" Late 17th-early 18th centuries	"Yungzheng" Early 18th century	18th century	"Qianlong" Late 18th century	18th-19th centuries	"Kitchen Qing" 19th century	Total
2	0	9.5	15.2	0	25.0	18.2	11 (8.9%)
3	87.2	76.2	78.8	100.0	75.0	63.6	100 (80.6%)
4	6.4	9.5	3.0	0	0	9.1	7 (5.6%)
5	6.4	4.8	3.0	0	0	9.1	6 (4.8%)

TABLE B-28. QING BLUE-AND-WHITE TRAITS (CONT.)

Exterior Glaze Colour	"Kangxi" Late 17th-early 18th centuries	"Yungzheng" Early 18th century	18th century	"Qianlong" Late 18th century	"Kitchen Qing" 18th-19th centuries	19th century	Total
5B 7/1	0	9.5	0	0	0	0	2 (1.6%)
< 5B 7/1	6.4	9.5	0	0	12.5	0	6 (4.8%)
5BG 7/1	19.1	9.5	9.1	0	0	0	14 (11.3%)
< 5BG 7/1	4.3	0	6.1	0	0	0	4 (3.2%)
5G 7/1	12.8	23.8	6.1	0	0	18.2	15 (12.1%)
< 5G 7/1	25.5	4.8	21.2	0	25.0	18.2	24 (19.4%)
5Gy 7/1	2.1	4.8	18.2	0	0	9.1	9 (7.3%)
< 5Gy 7/1	10.6	9.5	15.2	0	0	9.1	13 (10.5%)
5y 7/1	0	9.5	0	50.0	12.5	9.1	5 (4.0%)
< 5y 7/1	2.1	4.8	6.1	0	0	0	4 (3.2%)
N8/-	14.9	4.8	6.1	50.0	25.0	18.2	17 (13.7%)
> N8/-	0	4.8	0	0	0	0	1 (0.8%)
< N7/-	2.1	0	0	0	0	0	1 (0.8%)
7.5YR 8/2	0	0	0	0	12.5	0	1 (0.8%)
5Y 7/1	0	4.8	0	0	12.5	0	2 (1.6%)
2.5Y 7/2	0	0	0	0	0	9.1	1 (0.8%)
5YR 6/2	0	0	0	0	0	9.1	1 (0.8%)
10YR 3/3	0	0	3.0	0	0	0	1 (0.8%)
10YR 4/3	0	0	3.0	0	0	0	1 (0.8%)
2.5YR 2.5/4	0	0	3.0	0	0	0	1 (0.8%)
7.5YR 5/6	0	0	3.0	0	0	0	1 (0.8%)
Total	(47)	(21)	(33)	(2)	(8)	(11)	(124)
X Glaze Number							
1	100.0	100.0	100.0	100.0	100.0	100.0	124 (100%)
Total	(47)	(21)	(33)	(2)	(8)	(11)	(124)
I Glaze Colour							
5B 7/1	0	4.8	0	0	0	0	1 (0.8%)
< 5B 7/1	6.4	9.5	0	0	12.5	0	6 (4.8%)
5BG 7/1	17.0	19.0	12.1	0	0	0	16 (12.8%)
< 5BG 7/1	4.3	0	6.1	0	0	0	4 (3.2%)
5G 7/1	14.9	19.0	6.1	0	0	36.4	17 (13.6%)
< 5G 7/1	29.8	4.8	21.2	0	25.0	18.2	26 (20.8%)
5Gy 7/1	0	4.8	18.2	0	0	9.1	8 (6.4%)
< 5Gy 7/1	8.5	9.5	24.2	0	0	9.1	15 (12.0%)
5y 7/1	0	9.5	0	33.3	12.5	9.1	5 (4.0%)
< 5y 7/1	2.1	4.8	6.1	0	0	0	4 (3.2%)
N8/-	14.9	4.8	6.1	33.3	25.0	9.1	16 (12.8%)
> N8/-	0	4.8	0	33.3	0	0	2 (1.6%)
< N7/-	2.1	0	0	0	0	0	1 (0.8%)
5Y 7/1	0	4.8	0	0	12.5	9.1	3 (2.4%)
7.5YR 8/3	0	0	0	0	12.5	0	1 (0.8%)
I Glaze Thickness							
2	6.4	9.5	12.1	0	12.5	9.1	11 (8.8%)
3	87.2	85.7	81.8	100.0	87.5	81.8	107 (85.6%)
4	0	0	3.0	0	0	0	1 (0.8%)
5	6.4	4.8	3.0	0	0	9.1	6 (4.8%)
I Glaze Number							
1	93.6	100.0	97.0	100.0	100.0	100.0	121 (96.8%)
2	4.3	0	3.0	0	0	0	3 (2.4%)
4	2.1	0	0	0	0	0	1 (0.8%)

TABLE B-28. QING BLUE-AND-WHITE TRAITS (CONT.)

Body Colour							
N8/-	29.8	33.3	39.4	0	50.0	27.3	43 (34.4%)
> N8/-	29.8	4.8	12.1	0	25.0	9.1	22 (17.6%)
< N7/-	14.9	14.3	0	33.3	0	0	11 (8.8%)
N7/-	10.6	4.8	24.2	33.3	0	18.2	17 (13.6%)
N6/-	0	0	3.0	0	0	0	1 (0.8%)
5YR 8/1	10.6	9.5	3.0	0	0	18.2	10 (8.0%)
5YR 8/2	0	9.5	9.1	33.3	12.5	0	7 (5.6%)
5YR 7/1	4.3	4.8	6.1	0	0	0	5 (4.0%)
5YR 7/2	0	14.3	0	0	0	9.1	4 (3.2%)
7.5YR 8/2	0	0	0	0	12.5	0	1 (0.8%)
7.5YR 7/2	0	4.8	0	0	0	0	1 (0.8%)
10YR 7/1	0	0	3.0	0	0	0	1 (0.8%)
2.5Y 8/2	0	0	0	0	0	9.1	1 (0.8%)
5Y 8/2	0	0	0	0	0	9.1	1 (0.8%)
Hardness							
7	12.8	33.3	30.3	33.3	25.0	45.5	31 (24.8%)
8	40.4	33.3	45.5	33.3	25.0	36.4	48 (38.4%)
9	46.8	33.3	24.2	33.3	50.0	18.2	46 (36.8%)
% Inclusions							
0	10.6	0	12.1	33.3	37.5	0	13 (10.4%)
1	63.8	71.4	48.5	0	37.5	45.5	71 (56.8%)
2-3	21.3	14.3	30.3	33.3	12.5	36.4	29 (23.2%)
4-5	2.1	9.5	9.1	0	0	9.1	7 (5.6%)
10	2.1	4.8	0	33.3	12.5	9.1	5 (4.0%)
Body Type							
China Porcelain	59.6	38.1	51.5	0	62.5	27.3	63 (50.4%)
Almost CP	14.9	19.0	6.1	0	0	0	13 (10.4%)
Semi-porcelain	17.0	4.8	12.1	33.3	12.5	9.1	16 (12.8%)
Protoporcelain	0	4.8	0	0	0	0	1 (0.8%)
Stoneware	8.5	33.3	30.3	66.7	25.0	63.6	32 (25.6%)
Slipping							
None	100.0	100.0	100.0	100.0	100.0	100.0	125 (100%)
Total	(47)	(21)	(33)	(3)	(8)	(11)	(125)
Translucency							
Not translucent	24.3	45.0	42.9	100.0	80.0	72.7	44 (41.9%)
Faintly	18.9	20.0	21.4	0	0	0	17 (16.2%)
Translucent (Y)	56.8	35.0	35.7	0	20.0	27.3	44 (41.9%)
	(37)	(20)	(28)	(2)	(5)	(11)	(105)
Basal glazing							
Ordinarily glazed	91.7	100.0	100.0	50.0	-	100.0	39 (95.1%)
Unglazed	8.3	0	0	50.0	-	0	2 (4.9%)
	(12)	(9)	(10)	(2)	(0)	(8)	(41)

N.B. Except for basal glazing, the total sample includes two pieces identified only as Qing blue-and-white. The "Yungzheng" sample includes one piece with BW/red enamel decorations and one piece with *famille rose* decorations; the 18th century sample one piece with BW/*famille verte* decorations and four Batavian wares, one with *famille rose* rather than BW decorations; the 18th-19th century sample includes one piece with *famille rose* decorations; otherwise BW decorations throughout. One of the ordinarily glazed Kangxi BW bases had a dirty foot. Unglazed central stacking rings were observed on one Yungzheng BW piece, one 18th century BW piece, two Qianlong BW pieces and four Kitchen Qing BW pieces.

B.3.13 White Qing or Recent

Most of the sites were sprinkled with a residue of nondescript porcellanous sherdage which SSPHAP dutifully recorded under the headings *Qing putih* (white Qing) or *Baru* (Recent). The class included small quantities of pieces with enamel decorations of very modern appearance (Table B-29), but even the most modern looking pieces decorated only in underglaze blue were classified as Qing BW (or Japanese [B.3.14]).

The theoretical legitimacy of the class is premised on the assumption that Bugis-Makassar villagers have used hardly any tradewares other than white porcelain during recent times. While I did not carry out any inventories of the crockery assemblages in people's houses or village tradestores, I can at least refer to my informal survey of the streets of Malino (founded 1923) where I saw only five of 130 tradeware sherds with visible traces of decoration. But as regards the complementary assumption, to the effect that the fragmentary remnants of older Qing and Ming assemblages would not contain the same nondescript sherdage, a brief glance at the expanses of white background found on many blue-and-white wares is enough to raise serious doubts. Hence Demmanari and I tried to date the collected examples identified to the class, based on subtle criteria such as the tints of white in the body and glaze, and microscopic clues. We were wary of identifying the pieces as Ming unless there were very good reasons, but we were prepared to opt for time slots as small as half-century intervals for the 17th century onwards (Table B-29). Our attribution of many of the pieces to the 17th to 19th centuries is undoubtedly correct, even if carefully sampled assemblages would have to be collected to know the exact proportions.[29] The preponderance of bowls over plates in the earlier Qing white pieces, and the resurgence of plates from around the 18th century, also match the results found with

[29] Most of the collections which included "Qing white" pieces were made at sites or subsites which appeared to have been abandoned by at least the 19th century. SSPHAP's only collections of Qing white pieces at sites known to be still under settlement occurred at Paknakkukang (UP2) and Barombong (UP3) at the very end of the field season.

TABLE B-29. COMPOSITION OF SSPHAP'S "RECENT" CLASS

	Bowls	Small Bowls	Plates	Cups	"Open"	Boxes	Jar- lets	Tea- pots	Vases	Jars	Spoons	Total
Dehua 17th century white	0	0	0	0	0	2	0	0	0	0	0	2
Other 17th century white	19	0	7	0	0	0	1	0	0	0	0	27
Kangxi white	2	1	3	0	0	0	0	0	1	1	0	8
17th-18th century white	17	2	11	0	0	0	0	0	0	0	1	31
Early 18th century white	0	0	2	0	0	0	0	0	0	0	0	2
Qianlong white	2	0	1	0	2	0	0	0	0	0	0	5
18th century white	1	0	1	0	0	0	0	0	0	0	0	2
18th-19th century white	4	0	4	0	0	1	0	0	1	0	0	10
18th-20th century white	0	0	0	1	0	0	0	0	0	0	0	1
19th century white	1	0	12	0	0	0	0	0	0	0	0	13
19th-20th century white	1	0	1	0	0	0	0	0	0	0	0	2
20th century white	18	0	34	1	33	1	0	1	2	0	1	91
"Qing white"	0	0	4	0	7	0	0	0	0	0	0	11
20th c. *famille verte*	1	0	0	0	0	0	0	0	0	0	0	1
20th c. *famille rose*	0	0	1	0	0	0	0	0	0	0	0	1
20th c. overglaze red	1	0	1	0	0	0	0	0	0	0	0	2
20th century "overglaze"	0	0	2	0	0	0	0	0	0	0	0	2
20th c. BW/overglaze red	1	0	0	0	0	0	0	0	0	0	0	1
"Recent"	7	0	41	3	60	0	0	0	0	0	0	111
Total	75	3	125	5	102	4	1	1	4	1	2	323

N.B.The figures exclude 8 pieces of unidentified form identified only as "Recent".

TABLE B-30. SSPHAP'S JAPANESE AND EUROPEAN CLASSES

Japanese BW	Bowls	Plates	Cups	"Open"	Boxes	Flower- pots	Vases	Bottles	Jars	Total
Fine wares	4	1	0	0	3	0	4	0	0	12
Flower wares	22	0	0	0	0	0	0	0	0	22
Total	26	1	0	0	3	0	4	0	0	34
European										
Whiteware	31	42	1	1	0	0	0	0	0	75
Pale brown ware	0	0	0	0	0	0	0	0	1	1
"Blue-and-white"	2	11	0	0	0	0	0	0	0	13
Blue transferware	9	24	0	0	0	0	0	0	0	33
Blue,green,red transfer	1	0	0	0	0	0	0	0	0	1
Green and red transfer	3	0	0	0	0	0	0	0	0	3
Green transferware	2	3	0	0	0	0	0	0	0	5
Red transferware	6	3	0	0	0	0	0	0	0	9
"European"	34	25	5	0	0	1	4	3	0	72
Total	88	108	6	1	0	1	4	3	1	212

N.B. The colour(s) before transfer(ware) indicates the colour(s) of the extant decorations. The pieces identified as "blue-and-white" were presumably also transferwares. The figures exclude 17 pieces of unidentified form identified only as European.

TABLE B-31. TRAITS OF "RECENT", JAPANESE AND EUROPEAN PIECES

X Glaze Colour	17th-18th century white	18th-20th century white	Overglaze 20th century	Total "Recent"	Japan Fine wares	Japan Flower wares	Total Japanese	European
5B 7/1	0	0	0	0	0	0	0	1 (11.1%)
5BG 7/1	0	0	0	0	0	1	1 (20.0%)	0
< 5BG 7/1	0	0	0	0	1	0	1 (20.0%)	0
5G 7/1	0	1	0	1 (5.9%)	0	0	0	0
< 5G 7/1	0	1	1	2 (11.8%)	0	0	0	0
5Gy 7/1	0	0	1	1 (5.9%)	0	0	0	0
< 5Gy 7/1	0	2	0	2 (11.8%)	0	0	0	0
5y 7/1	1	0	0	1 (5.9%)	0	0	0	0
N8/-	1	5	3	9 (52.9%)	0	1	1 (20.0%)	4 (44.4%)
< N7/-	0	0	0	0	1	0	1 (20.0%)	0
5YR 8/1	0	0	0	0	0	0	0	2 (22.2%)
10YR 8/1	1	0	0	1 (5.9%)	0	0	0	0
5Y 8/1	0	0	0	0	0	0	0	1 (11.1%)
10YR 8/2	0	0	0	0	0	0	0	1 (11.1%)
5YR 3/3	0	0	0	0	0	1	2 (20.0%)	0
X Glaze Thickness								
2	0	5	2	7 (41.2%)	0	1	1 (20.0%)	5 (55.6%)
3	3	4	3	10 (58.8%)	2	2	4 (80.0%)	4 (44.4%)
I Glaze Colour								
5B 7/1	0	0	0	0	0	1	1 (20.0%)	0
5BG 7/1	0	0	0	0	0	1	1 (20.0%)	0
< 5BG 7/1	0	0	0	0	1	0	1 (20.0%)	0
5G 7/1	0	1	0	1 (5.9%)	0	0	0	0
< 5G 7/1	0	1	0	1 (5.9%)	0	0	0	0
< 5Gy 7/1	0	2	1	3 (17.6%)	0	0	0	0
5y 7/1	1	0	0	1 (5.9%)	0	0	0	0
N8/-	1	5	4	10 (58.8%)	0	1	1 (20.0%)	4 (44.4%)
> N8/-	0	0	0	0	1	0	1 (20.0%)	0
5YR 8/1	0	0	0	0	0	0	0	2 (22.2%)
10YR 8/1	0	0	0	0	0	0	0	1 (11.1%)
5Y 8/1	0	0	0	0	0	0	0	1 (11.1%)
10YR 8/2	0	0	0	0	0	0	0	1 (11.1%)
7.5YR 7/2	1	0	0	1 (5.9%)	0	0	0	0
I Glaze Thickness								
1	0	0	0	0	0	0	0	1 (11.1%)
2	0	5	2	7 (41.2%)	1	1	2 (40.0%)	4 (44.4%)
3	3	4	3	10 (58.8%)	1	2	3 (60.0%)	4 (44.4%)
Hardness								
5	0	0	0	0	0	0	0	1 (11.1%)
6	0	0	0	0	0	0	0	1 (11.1%)
7	1	0	0	1 (5.9%)	1	0	1 (20.0%)	7 (77.8%)
8	0	4	3	7 (41.2%)	0	2	2 (40.0%)	0
9	2	5	2	9 (52.9%)	1	1	2 (40.0%)	0

TABLE B-31. TRAITS OF "RECENT", JAPANESE AND EUROPEAN PIECES (CONT.)

Body Colour								
N8/-	2	5	3	10 (58.8%)	2	1	3 (60.0%)	1 (11.1%)
> N8/-	0	0	1	1 (5.9%)	0	0	0	0
< N7/-	0	2	1	3 (17.6%)	0	0	0	0
5YR 8/1	0	0	0	0	0	1	1 (20.0%)	0
5YR 8/2	1	0	0	1 (5.9%)	0	0	0	1 (11.1%)
5YR 7/1	0	2	0	2 (11.8%)	0	1	1 (20.0%)	0
7.5YR 7/4	0	0	0	0	0	0	0	1 (11.1%)
10YR 8/1	0	0	0	0	0	0	0	1 (11.1%)
10YR 8/2	0	0	0	0	0	0	0	3 (33.3%)
5Y 8/1	0	0	0	0	0	0	0	2 (22.2%)
Translucency								
Not translucent	0	1	0	1 (5.9%)	0	2	2 (50.0%)	9 (100%)
Faintly	0	0	0	0	0	1	1 (25.0%)	0
Translucent (Y)	3	8	5	16 (94.1%)	1	0	1 (25.0%)	0
% Inclusions								
0	0	0	1	1 (5.9%)	0	0	0	0
1	1	7	3	11 (57.9%)	1	2	3 (60.0%)	5 (55.6%)
3	0	2	1	3 (17.6%)	0	0	0	4 (44.4%)
5	2	0	0	2 (11.8%)	1	1	2 (40.0%)	0
Body Type								
China Porcelain	1	8	5	14 (82.4%)	2	0	2 (40.0%)	0
Almost CP	1	0	0	1 (5.9%)	0	0	0	0
Semi-porcelain	1	0	0	1 (5.9%)	0	0	0	0
Protoporcelain	0	0	0	0	0	1	1 (20.0%)	0
Stoneware	0	1	0	1 (5.9%)	0	2	2 (40.0%)	9 (100%)
Total	(3)	(9)	(5)	(17)	(1-2)	(2)	(4-5)	(9)

N.B. None of the pieces showed slipping or more than one applied layer of glaze.

the Qing BW pieces (Table B-27), even if we sometimes dated the white pieces to an unsustainable degree of precision.

The small sample of 17 pieces studied in detail (Table B-31) shows proportions of pure white bodies and glazes, and fully porcelain bodies, unmatched by any other class. Hence there is some support for the general chronological distinctiveness, specifically a 20th century date, of the class as a whole.

B.3.14 The Japanese and European classes

Fine Japanese porcelains have been exported to Indonesia

since the 17th century (Adhyatman et al., 1984), and some examples are among the heirlooms of the Soppeng royal family (Kallupa et al., 1989), but we did not recognise any instances among the surface tradewares recorded at SSPHAP's sites. The South Sulawesi classificatory system recognises a Japanese class (Hadimuljono and Macknight) which is not among the wares looted at pre-Islamic burial grounds (*pace* Adhyatman et al., 1984:93). One category involves a group of very finely decorated blue-and-white wares which includes vases and boxes as well as open forms. The second category involves bowls decorated with stereotyped flowers created by repeated stamping of petal and sepal motifs (Table B-30).[30]

The very small sample I studied in detail suggests a few distinguishing traits. Pure white or light bluish glazes apparently characterise both categories, apart from the isolated instance of a brown-glazed exterior on one of the flowerwares. But the fine wares are porcelains whereas the flowerwares are either "protoporcelains" or stonewares (Table B-31). The fine wares are quite at home among the descriptions of later Japanese porcelain (e.g. Jenys, 1965), and the category possibly represents only the tip of the Japanese iceberg floating on the sea of "Qing Chinese" identifications. However, I know of no references in the literature that would prepare one for the flowerwares.

European sherdage was recorded in abundance but very rarely collected (see footnote 29). The 230 collected specimens reiterate the preponderance of plates, followed by bowls, noted for the Qing white pieces dated to the last few centuries. European transferwares of course tend to be very distinctive from Oriental ceramics, but as undecorated whitewares, possibly up to half the European pieces would have been identified in the field by glaze and body traits alone (Table B-30). In this regard the European pieces do present a distinctive constellation of characters, notwithstanding the small size of the sample I studied in detail. The distingushing traits include an often chalky stoneware body, soft yet comparatively free of inclusions,

[30] I thank Dick Richards for confirming the positive identification of these flowerwares as Japanese.

and generally coloured off-white; and a thin unblemished glaze, rather like a plastic film, which tends to pure white and off-white tones (see Table B-31).[31]

B.3.15 Vietnamese ceramics

219 Vietnamese pieces divided among three classes were recognised in the laboratory: 63 monochromes, eight pieces with underglaze black decorations, and 148 "blue-and-white" pieces. The last class also includes two pieces with only overglaze enamels and seven pieces which combined underglaze blue with overglaze enamels. Bowls, including conical bowls, were the main vessel form among the monochromes, black-and-white and calligraphic blue-and-white wares. With the non-calligraphic "blue-and-white" wares, plates, boxes and *balubu* were more frequent (Table B-32). Three-quarters of the *balubu* came from West Soppeng's former palace site of Tinco Tua (see Kallupa et al., 1989:25).

All but one of the Vietnamese black-and-white pieces showed calligraphic decorations, as described by Guy (1986) and Brown (1988).[32] The single exception involves specimen G.5.1.2, a base to a bowl decorated with a single solar motif (Photo 11-24). The motif occurs occasionally on Thai wares (e.g. Harper, n.d.:37; Brown, 1988:Plates XXXa and 50b) but G.5.1.2 is certainly not Sawankhalok or Sukothai.[33] A Vietnamese identification is likely because the piece's body and glaze traits are lost among the range of variability shown by the Vietnamese polychromes (see Table B-33), and a parallel decoration occurs on a cup identified as 11th-12th century Vietnamese (Frasché, 1976:106).

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[31] There is of course a tremendous range of European ceramics with their own specialist literature to match. Here my intention is nothing more than to characterise the probably Dutch products which found their way into the Bugis-Makassar countryside.

[32] Two of the pieces were also sent to Dick Richards who confirmed the identification.

[33] The piece's body could possible resemble the northern Thai Kalong bodies, which are desribed by Brown (1988:84) as fine-grained and whitish, but the piece's unglazed central stacking ring would seem to rule a Thai identification out of contention.

TABLE B-32. COMPOSITION OF SSPHAP'S VIETNAMESE CLASSES

	Bowls	Conical Bowls	Plates	Boxes	Jarlets	Vases	Jars	*Balubu*	Total
Underglaze iron black decorations	5	3	0	0	0	0	0	0	8
Blue-and-white calligraphic decs	6	0	1	1	0	0	0	0	8
Blue-and-white other decorations	18	0	50	29	4	2	5	23	131
BW/red overglaze enamels	1	0	1	1	0	1	0	0	4
BW/overglaze (colour not recorded)	1	0	1	0	0	0	0	1	3
Green overglaze enamels	0	0	1	0	0	0	0	0	1
Red and green overglaze enamels	0	0	0	0	1	0	0	0	1
Total "Vietnam Blue-and-white"	26	0	54	31	5	3	5	24	148
Celadon "13th-14th centuries"	1	0	0	0	0	0	0	0	1
Celadon "15th-16th centuries"	4	1	2	1	1	0	1	0	10
Celadon "16th century"	2	0	0	0	0	0	0	0	2
Subceladon "12th-13th centuries"	0	0	0	0	1	0	0	0	1
Subceladon "14th century"	1	0	1	0	0	0	0	0	2
Subceladon "14th-15th centuries"	1	0	1	0	0	1	0	0	3
Subceladon "15th-16th centuries"	8	3	2	0	0	0	0	0	13
Oliveware "13th-14th centuries"	1	0	0	0	0	0	1	0	2
Oliveware "14th-15th centuries"	0	0	0	1	0	0	0	0	1
Oliveware "15th-16th centuries"	3	0	0	1	0	0	0	0	4
Brownware "14th-15th centuries"	1	0	0	0	0	0	0	0	1
Brownware "15th-16th centuries"	1	0	0	0	0	0	0	0	1
Whiteware "13th-14th centuries"	0	1	0	0	0	0	0	0	1
Whiteware "14th-15th centuries"	0	0	0	1	0	0	0	0	1
Whiteware "15th century"	1	0	0	0	0	0	0	0	1
Whiteware "15th-16th centuries"	4	1	1	1	0	0	0	0	6
"Monochrome 15th-16th centuries"	8	0	4	0	0	0	0	0	12
Total Vietnam Monochromes	36	6	11	5	2	1	2	0	63
Total Vietnamese ceramics	67	9	65	36	7	4	7	24	219

N.B. Figures exclude Vietnamese "coarse stoneware" jars (Table B-10).

TABLE B-34. CHARACTERS OF VIETNAMESE MONOCHROMES (PERCENTAGES)

	Exterior Glaze					Interior Glaze				
Glaze Thick.	Celadon	Sub-celadon	Olive wares	White wares	Total	Celadon	Sub-celadon	Olive wares	White wares	Total
1	0	0	28.6	0	2 (5.9%)	0	0	0	0	0
2	33.3	61.5	42.9	62.5	18 (52.9%)	0	64.3	80.0	66.7	18 (58.1%)
3	50.0	38.5	28.6	25.0	12 (35.3%)	100.0	35.7	20.0	33.3	13 (41.9%)
5	16.7	0	0	12.5	2 (5.9%)	0	0	0	0	0
Total	(6)	(13)	(7)	(8)	(34)	(5)	(14)	(5)	(7)	(31)

	Slipping						Unglazed base and foot (UB)/Glaze does not reach non-extant foot (ULC)					
None	16.7	57.1	71.4	50.0	18 (51.4%)							
Exteriorly	0	0	14.3	12.5	2 (5.7%)							
Interiorly	33.3	7.1	0	0	3 (8.6%)	UB	100.0	40.0	0	100.0	4 (50.0%)	
X and I	50.0	35.7	14.3	37.5	12 (34.3%)	ULC	0	60.0	100.0	0	4 (50.0%)	
	(6)	(14)	(7)	(8)	(35)		(1)	(5)	(1)	(1)	(8)	

TABLE B-34. CHARACTERS OF VIETNAMESE MONOCHROMES (CONT.)

Exterior Glaze

Colour	Celadon	Sub-celadon	Olive wares	White wares	Total
Green/Brown A4	33.3	15.4	0	0	4 (11.8%)
Green/Brown A5	16.7	0	0	0	1 (2.9%)
Green/Brown A6	0	23.1	0	0	3 (8.8%)
Green/Brown A7	0	7.7	0	0	1 (2.9%)
5G 5/1	0	0	0	0	0
5G 6/1	16.7	0	0	0	1 (2.9%)
5Gy 4/1	16.7	0	0	0	1 (2.9%)
5Gy 6/1	16.7	0	0	0	1 (2.9%)
5Gy 7/1	0	7.7	0	0	1 (2.9%)
5y 6/1	0	7.7	0	0	1 (2.9%)
5y 7/1	0	7.7	0	0	1 (2.9%)
5YR 8/1	0	0	0	37.5	3 (8.8%)
7.5YR 8/2	0	0	0	25.0	2 (5.9%)
10YR 8/3	0	0	0	12.5	1 (2.9%)
10YR 7/2	0	0	0	12.5	1 (2.9%)
10YR 7/3	0	15.4	0	0	2 (5.9%)
5Y 7/2	0	7.7	0	0	1 (2.9%)
5Y 7/3	0	0	0	0	0
5Y 6/2	0	7.7	0	0	1 (2.9%)
5Y 6/3	0	0	42.9	12.5	4 (11.8%)
5Y 5/2	0	0	42.9	0	3 (8.8%)
2.5Y 5/4	0	0	14.3	0	1 (2.9%)
Total	(6)	(13)	(7)	(8)	(34)

Interior Glaze

Colour	Celadon	Sub-celadon	Olive wares	White wares	Total
Green/Brown A4	20.0	14.3	0	0	3 (9.7%)
Green/Brown A5	20.0	7.1	0	0	2 (6.5%)
Green/Brown A6	0	21.4	0	0	3 (9.7%)
Green/Brown A7	0	0	0	0	0
5G 5/1	20.0	0	0	0	1 (3.2%)
5G 6/1	20.0	0	0	0	1 (3.2%)
5Gy 4/1	0	0	0	0	0
5Gy 6/1	20.0	0	0	0	1 (3.2%)
5Gy 7/1	0	7.1	0	0	1 (3.2%)
5y 6/1	0	0	0	0	0
5y 7/1	0	14.3	0	0	2 (6.5%)
5YR 8/1	0	0	0	28.6	2 (6.5%)
7.5YR 8/2	0	0	0	28.6	2 (6.5%)
10YR 8/3	0	0	0	14.3	1 (3.2%)
10YR 7/2	0	0	0	14.3	1 (3.2%)
10YR 7/3	0	21.4	0	0	3 (9.7%)
5Y 7/2	0	7.1	0	14.3	2 (6.5%)
5Y 7/3	0	0	20.0	0	1 (3.2%)
5Y 6/2	0	7.1	0	0	1 (3.2%)
5Y 6/3	0	0	40.0	0	2 (6.5%)
5Y 5/2	0	0	40.0	0	2 (6.5%)
2.5Y 5/4	0	0	0	0	0
Total	(5)	(14)	(5)	(7)	(31)

Body Colour

	Celadon	Sub-celadon	Olive wares	White wares	Total
> N8/-	0	7.1	0	0	1 (2.9%)
N7/-	33.3	7.1	0	0	3 (8.6%)
5YR 8/1	0	0	0	37.5	3 (8.6%)
5YR 8/2	0	0	0	12.5	1 (2.9%)
5YR 8/3	0	7.1	0	12.5	2 (5.7%)
7.5YR 8/2	0	7.1	14.3	0	2 (5.7%)
10YR 8/1	0	7.1	0	0	1 (2.9%)
10YR 8/2	16.7	0	0	25.0	3 (8.6%)
> 5Y 8/1	0	7.1	0	0	1 (2.9%)
5YR 7/1	33.3	14.3	14.3	0	5 (14.3%)
5YR 7/2	0	7.1	14.3	0	2 (5.7%)
7.5YR 7/2	0	0	0	12.5	1 (2.9%)
10YR 7/1	0	14.3	0	0	2 (5.7%)
10YR 7/2	0	0	14.3	0	1 (2.9%)
5YR 6/1	16.7	0	0	0	1 (2.9%)
5YR 6/2	0	7.1	14.3	0	2 (5.7%)
10YR 6/1	0	0	14.3	0	1 (2.9%)
> 10YR 6/1	0	7.1	0	0	1 (2.9%)
10YR 6/2	0	0	14.3	0	1 (2.9%)
7.5YR 4/2	0	7.1	0	0	1 (2.9%)
	(6)	(14)	(7)	(8)	(35)

Hardness

	Celadon	Sub-celadon	Olive wares	White wares	Total
5	0	7.1	0	0	1 (2.9%)
6	0	7.1	14.3	12.5	3 (8.6%)
7	50.0	64.3	71.4	37.5	21 (60.0%)
8	33.3	21.4	14.3	25.0	8 (22.9%)
9	16.7	0	0	12.5	2 (5.7%)

% of Body Inclusions

	Celadon	Sub-celadon	Olive wares	White wares	Total
0	16.7	7.1	0	0	2 (5.7%)
1	16.7	21.4	0	12.5	5 (14.3%)
3	0	14.3	0	37.5	5 (14.3%)
5	50.0	28.6	57.1	37.5	14 (40.0%)
10	16.7	21.4	28.6	12.5	7 (20.0%)
15	0	7.1	14.3	0	2 (5.7%)

Body Type

	Celadon	Sub-celadon	Olive wares	White wares	Total
PP	16.7	21.4	14.3	50.0	9 (25.7%)
SW	83.3	78.6	85.7	50.0	26 (74.3%)
	(6)	(14)	(7)	(8)	(35)

N.B. All glazes were applied in one layer only and all bodies are opaque. An unglazed central stacking ring was observed on one whiteware and one subceladon.

TABLE B-33. VIETNAMESE POLYCHROME TRAITS (PERCENTAGES)

Exterior Glaze Colour	Underglaze Iron	Calligraphic Blue-and-white	Other Blue-and-white	BW/overglaze enamels	Overglaze decorated	Total "Vietnam BW"
Green/Brown A6	0	0	9.1	0	0	1 (5.6%)
< 5G 7/1	0	0	9.1	0	50.0	2 (11.1%)
10YR 8/1	0	0	9.1	0	0	1 (5.6%)
5Y 8/1	1 (12.5%)	0	0	0	0	0
5YR 8/2	1 (12.5%)	33.3	0	0	0	1 (5.6%)
7.5YR 8/2	0	0	9.1	0	0	1 (5.6%)
10YR 7/1	2 (25.0%)	33.3	0	50.0	0	2 (11.1%)
5Y 7/1	0	0	9.1	0	0	1 (5.6%)
7.5YR 7/2	0	0	9.1	0	50.0	2 (11.1%)
10YR 7/2	1 (12.5%)	0	0	0	0	0
5Y 7/2	0	0	18.2	0	0	2 (11.1%)
5YR 7/3	0	0	0	50.0	0	1 (5.6%)
10YR 7/3	1 (12.5%)	0	9.1	0	0	1 (5.6%)
10YR 7/4	0	33.3	0	0	0	1 (5.6%)
5Y 6/2	0	0	9.1	0	0	1 (5.6%)
5Y 6/3	1 (12.5%)	0	0	0	0	0
7.5YR 6/4	1 (12.5%)	0	0	0	0	0
7.5YR 5/6	0	0	9.1	0	0	1 (5.6%)
X Glaze T						
1	0	33.3	0	0	0	1 (5.6%)
2	3 (37.5%)	66.7	36.4	0	50.0	7 (38.9%)
3	5 (62.5%)	0	63.6	100.0	50.0	10 (55.6%)
	(8)	(3)	(11)	(2)	(2)	(18)
I Glaze Colour						
Green/Brown A6	0	0	11.1	0	0	1 (5.9%)
5G 6/1	0	0	0	0	50.0	1 (5.9%)
< 5G 7/1	0	0	11.1	0	50.0	2 (11.8%)
5YR 8/2	1 (12.5%)	0	0	0	0	0
7.5YR 8/2	0	0	11.1	0	0	1 (5.9%)
10YR 7/1	2 (25.0%)	25.0	0	50.0	0	2 (11.8%)
5Y 7/1	1 (12.5%)	0	0	0	0	0
5YR 7/2	0	25.0	0	0	0	1 (5.9%)
7.5YR 7/2	0	0	11.1	0	0	1 (5.9%)
10YR 7/2	1 (12.5%)	0	0	0	0	0
5YR 7/3	0	0	0	50.0	0	1 (5.9%)
5Y 7/2	0	25.0	22.2	0	0	3 (17.6%)
10YR 7/3	1 (12.5%)	0	11.1	0	0	1 (5.9%)
10YR 7/4	0	25.0	0	0	0	1 (5.9%)
5Y 6/3	1 (12.5%)	0	0	0	0	0
10YR 6/2	0	0	11.1	0	0	1 (5.9%)
7.5YR 6/4	1 (12.5%)	0	0	0	0	0
7.5YR 5/6	0	0	11.1	0	0	1 (5.9%)
I Glaze T						
1	1 (12.5%)	0	0	0	0	0
2	2 (25.0%)	75.0	44.4	0	100.0	9 (52.9%)
3	5 (62.5%)	25.0	55.6	100.0	0	8 (47.1%)
	(8)	(4)	(9)	(2)	(2)	(17)

TABLE B-33. VIETNAMESE POLYCHROME TRAITS (CONT.)

Exterior Body Colour	Underglaze Iron	Calligraphic Blue-and-white	Other Blue-and-white	BW/overglaze enamels	Overglaze decorated	Total "Vietnam BW"
> N8/-	0	25.0	0	0	0	1 (5.3%)
N7/-	0	0	9.1	0	0	1 (5.3%)
10YR 8/1	0	25.0	0	0	50.0	2 (10.5%)
5Y 8/1	0	0	9.1	0	0	1 (5.3%)
5YR 8/2	2 (25.0%)	0	0	50.0	0	1 (5.3%)
7.5YR 8/2	1 (12.5%)	0	9.1	0	0	1 (5.3%)
5YR 7/1	3 (37.5%)	25.0	18.2	0	0	3 (15.8%)
7.5YR 7/1	1 (12.5%)	0	0	0	0	0
10YR 7/1	0	0	9.1	0	50.0	2 (10.5%)
5Y 7/1	0	0	9.1	0	0	1 (5.3%)
5YR 7/2	0	0	18.2	50.0	0	3 (15.8%)
7.5YR 7/2	0	0	9.1	0	0	1 (5.3%)
5YR 6/1	0	0	9.1	0	0	1 (5.3%)
5YR 6/3	0	25.0	0	0	0	1 (5.3%)
Hardness						
5	0	0	9.1	0	50.0	2 (10.5%)
6	2 (25.0%)	0	0	0	0	0
7	3 (37.5%)	75.0	63.6	0	50.0	11 (57.9%)
8	2 (25.0%)	25.0	18.2	50.0	0	4 (21.1%)
9	1 (12.5%)	0	9.1	50.0	0	2 (10.5%)
% Inclusions						
0	2 (25.0%)	0	0	50.0	0	1 (5.3%)
1	1 (12.5%)	0	36.4	0	0	4 (21.1%)
3	2 (25.0%)	25.0	18.2	0	50.0	4 (21.1%)
5	3 (37.5%)	50.0	36.4	50.0	0	7 (36.8%)
10	0	0	9.1	0	50.0	2 (10.5%)
15	0	25.0	0	0	0	1 (5.3%)
Body Type						
Protoporc.	1 (12.5%)	75.0	54.5	100.0	50.0	12 (63.2%)
Stoneware	7 (87.5%)	25.0	45.5	0	50.0	7 (36.8%)
Slipping						
None	6 (75.0%)	0	63.6	100.0	50.0	10 (52.6%)
Exterior	0	0	9.1	0	0	1 (5.3%)
Interior	0	50.0	0	0	0	2 (10.5%)
X and I	2 (25.0%)	50.0	27.3	0	50.0	6 (31.6%)

Basal Glazing Traits	Underglaze Iron (2-3)	Calligraphic Blue-and-white (3)	Other Blue-and-white (2)	Total "Vietnam BW" (5)
Chocolate base	0	0	100.0	2 (40.0%)
Glaze-splashed base and foot	0	33.3	0	1 (20.0%)
Unglazed base and foot	66.7	66.7	0	2 (40.0%)
Glaze does not reach to non-extant foot	33.3	0	0	0
Open vessel with unglazed centre	0	66.7	0	2 (40.0%)
Unglazed stacking ring	50.0	0	0	0

N.B. All glazes were applied in one layer only and all bodies are opaque. One of the iron-decorated wares has walls coloured 5YR 8/2 and a core coloured 5YR 6/1.

Rather than the Yuan-like decorations typical of the blue-and-white wares, eight of the pieces had calligraphic decorations in underglaze blue. The four pieces studied in detail showed the same sorts of characters - e.g. pinkish white to brownish white (straw-coloured) body and glaze, and a stoneware body which tended to be chalky (protoporcelain) - as the other polychromes, although two of the pieces were idiosyncratic in having unglazed centres. Guy (1986) argues that the tradewares with blue calligraphic decorations were coeval with the iron-painted tradewares, but here I do not recognise them as constituting their own blue-and-white class because they are not numerous, and identification of the extant decorations as calligraphic is not always clear. Although the Vietnamese polychromes show a distinctive accent in their traits when considered as a group (Table B-33), isolated examples may be difficult to distinguish from Chinese Ming period pieces when only a small amount of decoration is extant (cf. Chin, 1981).

Vietnamese monochromes can also be difficult to difficult to distinguish from coarser Chinese early monochromes, and Demmanari and I preferred a Chinese identification in ambiguous cases. The full range of glazes described by Brown (1988) for the monochrome tradewares was observed although we categorised them somewhat differently. The dates we ascribed to the pieces (Table B-32) essentially followed (Fraschè, 1976). The whitewares appear quite like the polychromes in their general characteristics, and only the "subceladons" and olivewares showed clearly darker bodies.

B.3.16 Thai ceramics

The recent surge of research in Thai high-fired ceramics has located several kiln sites in northern Thailand (e.g. Shaw, 1981; Brown, 1988; Rooney, 1989), and further provincial kilns formerly produced coarse stoneware jars too (Hein and Sangkhanukit, 1985; Harper, pers. comm. 1988). Wares from these kilns may well have reached South Sulawesi but Demmanari and I could not identify them. The only products we identified were from Sukothai and Sawankhalok (Si Satchanalai). The repertoire and chronology of Sawankhalok's

production is probably better understood than that of any other Oriental kiln site, owing to the research of the Thai-Australian Ceramics Project (e.g. Richards et al., 1984; Brown, 1988). Demmari and I recognised two Sawankhalok classes, wares decorated with iron oxides (black-and-white), and monochromes. We left the Sawankhalok wares glazed brown or black in the coarse stoneware class (B.3.5). Our primary source for identifying Sawankhalok wares was the South Australian Museum Catalogue (Richards, 1977).

The Sawankhalok iron-painted wares were almost entirely restricted to boxes (Table B-35) and readily assignable to the "mature export period" (Richards et al., 1984). Glaze colour usually varied between light greenish and light grey, and the bodies were generally light grey (Table B-34), just as Harper (n.d.) describes the sherds she collected at Si Satchanalai. Three bowl fragments with less standardised decorations and a celadon-like glaze might be slightly earlier than the others, but no cases were found of the apparently oldest category which features bold fish and floral designs (Richards et al., 1984; Brown, 1988:63-65).

The monochromes consisted mostly of the celebrated Sawankhalok celadons with their strongly green, transparent glazes, supplemented by nine pieces with murkier glazes ("subceladons"), and three jar fragments carrying a white glaze. Plates and bowls dominated the class but a wide range of other forms were also represented (Table B-35). Although the black speckled, light grey body is usually characteristic, there is some overlap with the highly variable Chinese celadons, and we tended to classify borderline cases as Chinese.

The Sukothai pieces generally stood out through the combination of a slip over a dark or reddish stoneware body generally full of ferruginous and quartz inclusions, and brownish to grey glaze colours (Table B-36). The Sukothai decorative repertoire is also distinctive, but most of SSPHAP's pieces carried only undiagnostic components. Examples of this trend are a Sukothai jar sherd (G.1.75.9) decorated only by the circumscribing lines found on Sukothai covered jars and closed vessels (see Brown, 1988:Plate 33),

and a small Sukothai plain sherd (G.62.13.49) which could well have originally come from a black-and-white rather than a whiteware. The great variety of SSPHAP's Sukothai bodies, notably the change between bodies largely free of inclusions (five percent) to bodies where inclusions and ground matrix appeared co-dominant at 50 percent (Table B-36), is a worry. Variability overlap between the Sukothai and Sawankhalok "mature export period" wares is negligible, but SSPHAP's Sukothai class possibly includes bits from the Sawankhalok "fish and flower" wares or from the northern Thai kilns.

B.4 Analysis With SSPHAP's Fine Tradeware Classes

B.4.1 Seriating the fine tradeware classes

Most seriation exercises involving ceramics use the proportions of ceramics recovered in excavated units from related sites to place all the excavated units along a single chronological scale (e.g. Irwin, 1985). The validity of the exercise is predicated on the chronological discreteness of the excavated units, and hence may not be applicable to surface assemblages which tend to be chronologically jumbled. To be sure, it might still be possible to seriate SSPHAP's assemblages of surface tradewares, aligning them according to whichever aggregation of tradewares dominates. However, this would restrict the interpretation of the sites to their apparent main phase of tradeware-related use, and ignore any formal demonstration of earlier origins or later use. Hence I prefer to seriate the tradeware classes so as to interpret all the chronological information contained in the assemblages.

SSPHAP's sample of 42,980 tradeware pieces includes around 84% identified only in the field and 16% with confirmed, corrected or original identifications made under laboratory conditions (B.1). Taken together, the 84% field identifications and 16% laboratory identifications are the most precise identifications available, and will be used in my first batch of seriation exercises. The possible logical inconsistencies in using identifications made under different

TABLE B-35. COMPOSITION OF SSPHAP'S THAI CLASSES

	Sawankhalok Black-and-white	Sawankhalok Monochromes — Sawankhalok Celadons	Sawankhalok Monochromes — Sawankhalok Subceladons	Sawankhalok Monochromes — Sawankhalok White	Sukothai — Sukothai Black-and-white	Sukothai — Sukothai Plain	Total Thai
Plates	0	60	0	0	12	1	73
Bowls	4	15	5	0	10	0	34
Dishes	0	1	0	0	0	0	1
"Open"	0	2	0	0	0	0	2
Boxes	164	2	2	0	0	0	168
Jarlets	2	5	0	0	0	0	7
Vases	1	6	0	0	0	0	7
Kendis	1	0	0	0	0	0	1
Bottles	0	1	0	0	0	0	1
Jars	0	2	2	3	0	1	8
Total	173	94	9	3	22	2	302

TABLE B-36. CHARACTERS OF THE THAI CLASSES (PERCENTAGES)

	Exterior Glaze			Interior Glaze		
Colour	Sawankhalok Black-and-white	Sawankhalok Celadons	Sukothai	Sawankhalok Black-and-white	Sawankhalok Celadons	Sukothai
5BG 7/1	0	1 (11.1%)	0	1 (6.7%)	1 (16.7%)	0
5G 5/2	0	1 (11.1%)	0	0	1 (16.7%)	0
5G 6/2	0	2 (22.2%)	0	0	1 (16.7%)	0
5G 6/1	2 (6.9%)	2 (22.2%)	0	0	1 (16.7%)	0
5G 7/1	7 (24.1%)	0	0	1 (6.7%)	0	0
5Gy 6/1	1 (3.4%)	3 (33.3%)	0	2 (13.3%)	2 (33.3%)	0
5Gy 7/1	12 (41.4%)	0	1 (5.3%)*	5 (33.3%)	0	0
< 5Gy 7/1	0	0	1 (5.3%)	0	0	0
5y 5/1	0	0	0	1 (6.7%)	0	0
5y 6/1	1 (3.4%)	0	0	0	0	0
5y 7/1	1 (3.4%)	0	0	0	0	0
< 5y 7/1	1 (3.4%)	0	0	0	0	0
5Y 8/2	0	0	1 (5.3%)	0	0	1 (5.6%)
7.5YR 8/2	0	0	1 (5.3%)	0	0	2 (11.1%)
10YR 8/2	0	0	1 (5.3%)	0	0	3 (16.7%)
5YR 8/3	0	0	2 (10.5%)	0	0	2 (11.1%)
10YR 8/3	0	0	1 (5.3%)	0	0	0
5YR 7/1	0	0	0	1 (6.7%)	0	0
10YR 7/1	0	0	0	1 (6.7%)	0	0
5Y 7/1	0	0	0	0	0	1 (5.6%)*
7.5YR 7/2	1 (3.4%)	0	1 (5.3%)	0	0	1 (5.6%)
10YR 7/2	0	0	1 (5.3%)	0	0	1 (5.6%)
2.5Y 7/2	1 (3.4%)	0	1 (5.3%)	1 (6.7%)	0	1 (5.6%)
5Y 7/2	0	0	2 (10.5%)	0	0	2 (11.1%)
5YR 7/3	0	0	1 (5.3%)	0	0	1 (5.6%)
10YR 7/3	0	0	2 (10.5%)	0	0	2 (11.1%)
5Y 6/1	2 (6.9%)	0	1 (5.3%)	1 (6.7%)	0	1 (5.6%)
5YR 6/3	0	0	1 (5.3%)	0	0	0
2.5Y 4/2	0	0	0	1 (6.7%)	0	0
5YR 2.5/1	0	0	1 (5.3%)#	0	0	0

TABLE B-36. CHARACTERS OF THE THAI CLASSES (CONT.)

	Exterior Glaze			Interior Glaze		
Thickness	Sawankhalok Black-and-white	Sawankhalok Celadons	Sukothai	Sawankhalok Black-and-white	Sawankhalok Celadons	Sukothai
1	1 (3.3%)	0	1 (5.3%)	1 (6.7%)	0	2 (11.1%)*
2	11 (36.7%)	0	13 (68.4%)*	11 (73.3%)	0	8 (44.4%)
3	15 (50.0%)	8 (88.9%)	5 (26.3%)#	3 (20.0%)	6 (100.0%)	8 (44.4%)
4	2 (6.7%)	1 (11.1%)	0	0	0	0
5	1 (3.3%)	0	0	0	0	0
Number						
1	30 (100.0%)	8 (88.9%)	19 (100.0%)*#	15 (100.0%)	5 (83.3%)	18 (100%)*#
2	0	1 (11.1%)	0	0	1 (16.7%)	0
	(29-30)	(9)	(19)	(15)	(6)	(18)

	Exterior Body Colour				Hardness		
> N8/-	1 (3.2%)	0	0	6	3 (9.7%)	0	2 (10.5%)
N7/-	14 (45.2%)	4 (44.4%)	0	7	12 (38.7%)	3 (33.3%)	7 (36.8%)
< N6/-	1 (3.2%)	0	0	8	13 (41.9%)	6 (66.7%)	9 (47.4%)*#
N6/-	5 (16.2%)	2 (22.2%)	0	9	3 (9.7%)	0	1 (5.3%)
N5/-	0	0	2 (10.5%)^				
N4/-	0	0	1 (5.3%)		% of Body Inclusions		
5YR 7/1	7 (22.6%)	3 (33.3%)	0				
7.5YR 7/1	1 (3.2%)	0	0	3	1 (3.2%)	0	0
10YR 7/1	1 (3.2%)	0	0	5	11 (35.5%)	5 (55.6%)	1 (5.3%)
5YR 7/2	0	0	1 (5.3%)	10	16 (51.6%)	2 (22.2%)	2 (10.5%)*#
5YR 7/4	0	0	1 (5.3%)	15	1 (3.2%)	2 (22.2%)	1 (5.3%)
7.5YR 6/2	1 (3.2%)	0	1 (5.3%)	20	2 (6.5%)	0	2 (10.5%)
5YR 6/3	0	0	1 (5.3%)	25	0	0	3 (15.8%)
10YR 6/3	0	0	1 (5.3%)#	30	0	0	8 (42.1%)
2.5YR 6/4	0	0	1 (5.3%)	35	0	0	1 (5.3%)
5YR 6/4	0	0	1 (5.3%)	50	0	0	1 (5.3%)
5YR 5/1	0	0	2 (10.5%)				
10YR 5/1	0	0	1 (5.3%)		Slipping		
10R 5/2	0	0	1 (5.3%)				
2.5YR 5/2	0	0	1 (5.3%)	None	31 (100%)	9 (100%)	0
5YR 5/2	0	0	2 (10.5%)	X & I	0	0	19 (100%)*#
5YR 5/4	0	0	1 (5.3%)				
5YR 4/1	0	0	1 (5.3%)		(31)	(9)	(19)
	(31)	(9)	(19)				

N.B. * tags the traits of the plain Sukothai piece and # tags the traits of the Sukothai jar. The Sawankhalok celadons include a "subceladon", none of whose traits distinguish it from the celadons. All bodies observed were opaque stonewares. The following variegated bodies were observed: one Sawankhalok celadon had outer and inner walls coloured N7/- and N5/- respectively; two Sukothai black-and-white wares had cores, one with its core 10YR 4/2 and its walls 10YR 5/1, and the other with its core 5YR 6/3 and its walls 5YR 7/4; the Sukothai jar had an outer wall coloured 10YR 6/3 and an inner wall coloured 10YR 6/1. The three studied bases of Sawankhalok black-and-white were unglazed. Two Sukothai black-and-white pieces had unglazed base and foot, while the glaze on a lower cavetto also stopped short of the foot; the Sukothai plain piece had glaze to its outer foot but unglazed base and inner foot; the glaze on the Sukothai jar stopped above the foot.

conditions, and the erection of broader, methodologically more robust classes, will be considered later (B.5.1). Seriation of the fine classes should be enacted first because the results will, among other effects, provide a guide on how classes should be pooled.

During fieldwork it was quite apparent that tradewares we believed to be of the same general antiquity tended to occur in the same surface assemblages. From the Law of Archaeological Association we would certainly expect pieces sharing the same stratified context to be of approximately the same age. By the same token those same relationships should be somewhat muffled in surface assemblages, owing to the noise introduced by the lack of stratigraphic control, for example the disturbance which must have occurred to bring buried artefacts to the surface. On top of that, further noise can be expected from factors which are independent of the lack of a statified context. Some classes are rare and so may show oddities in their associations; some classes were produced over several centuries; and the average time between production of the piece and its deposition in an archaeological context undoubtedly varied between the classes. In addition, socio-economic status of the original owners rather than simple chronological contemporaneity may be the main determinant behind some particular associations. Great care is obviously required to handle these sorts of obstacles effectively.

Now considering SSPHAP's available database (Appendix D), we see that the vast majority of SSPHAP's surveyed zones had low tradeware counts consisting of a depauperate selection of the 31 classes. To demonstrate patterns of mutual association we must accommodate technical difficulties such as the huge number of surveyed zones, the great range in the number of tradewares recorded per zone, and the dominance of "zero" as the recorded count. We could pool the zones into sites, but this would grant merely insubstantial relief, whilst ignoring the possibility that some sites (e.g. Benteng Tua) incorporate a mosaic of spatially and temporally discrete phases of use. Hence I follow another approach altogether, based on the point that all zones can be characterised either

as having or as lacking a particular tradeware class. If we take all the zones which have a particular tradeware class, and sum up the tradewares present in those zones, we have a precise calculation of the frequencies of the other tradewares associated with the tradeware class under consideration.

Table B-37 presents the results, to be read in the following way. The zones under consideration run along the rows, identified by the tradeware class whose acronym heads the row (i.e is shown in the first column). The tradewares present in those zones are shown in the other columns, as identified by the acronym which heads the column. The total tradewares present in those zones are shown in the last column. The total count of any particular tradeware class is, of course, the quantity found in those zones which include the tradeware class, as identified along the top-left to bottom-right diagonal. They are recited along the bottom row which also shows the total 42,980 pieces identified. For instance, in zones with early whitewares (top row) we find 120 early whiteware pieces, 181 early monochrome pieces, 28 Vietnamese monochrome pieces, and so on, with 5431 tradeware pieces in all.[34]

From inspecting the figures it is clear that the proportions of associated tradewares vary markedly with the tradeware class considered. To standardise this variation I use the "differences of proportions" statistic (Startup and Whittaker, 1982:110-112) to convert each and every cell in Table B-37 into a z-value. The positive z-values show that the tradeware class indicated by the column heading occurred at a greater than expected frequency in the zones having the tradeware class indicated by the row heading, and negative z-values show the reverse. Moreover the amplitude of the z-value shows the probability that the over-occurrence or under-occurrence was not due to chance. Hence it is possible to rank the z-values in the columns from "1" (the highest

[34] The frequencies given here differ slightly from those published previously (Bulbeck, 1989:87) where the early overglaze-decorated pieces were pooled with Ming Swatow, and where the Ming BW "hexagonal" wares had been left with the other Ming BW pieces.

TABLE B-37. FREQUENCIES OF TRADEWARES IN SSPHAP'S ZONES HAVING THE TRADEWARE SHOWN IN THE FIRST COLUMN

	EW	EM	VM	VH	EBW	EFV	JZ	SAN	VBW	MC	MW	SWH	SWM	SUK	YMC	SWR	MS	MBW	HEX	MFV	WLB	BL	LBW	WLW	SWT	QS	QBW	QC	ER	JPN	QPR	Sum
EW	120	181	28	3	7	6	3	6	58	13	8	32	21	7	21	229	487	228	10	7	117	3	100	4	679	477	1226	15	354	34	947	5431
EM	90	289	33	3	12	6	5	11	87	41	15	65	49	16	30	432	923	471	19	11	153	6	158	10	1380	879	2470	31	587	53	1652	9987
VM	40	110	63	3	9	5	1	5	54	17	9	29	18	11	12	204	497	210	12	7	109	3	87	4	559	450	1193	21	285	40	926	5093
VH	5	7	4	8	4	0	0	1	3	1	1	4	2	1	0	13	28	9	0	0	1	0	5	0	70	61	205	4	86	5	159	687
EBW	19	61	9	2	25	1	0	2	17	10	3	14	6	3	1	44	141	58	4	0	35	1	45	1	172	138	353	0	89	8	168	1430
EFV	21	31	10	0	1	17	1	2	23	2	9	12	2	1	6	133	316	159	4	5	106	3	50	4	284	229	542	7	232	20	296	2528
JZ	8	51	2	0	0	1	7	5	33	1	4	12	13	0	13	111	306	178	4	5	88	1	36	0	356	148	325	3	35	4	159	1909
SAN	8	52	5	1	2	1	3	16	40	8	6	33	18	2	5	121	373	192	5	5	93	1	57	2	377	164	481	5	53	4	238	2371
VBW	35	146	20	1	8	3	4	10	150	39	12	85	49	12	33	254	698	398	16	10	203	7	219	16	1020	656	1869	42	605	98	1362	8080
MC	14	76	12	1	4	2	1	5	54	90	9	47	38	11	27	203	479	252	7	7	39	2	117	12	904	700	1682	25	545	50	1149	6564
MW	8	29	9	2	3	4	1	3	30	14	30	31	11	2	9	136	347	189	3	5	112	2	74	6	349	239	665	7	348	20	476	3164
SWH	24	119	21	3	10	5	4	11	95	42	12	188	51	15	31	361	929	547	24	14	166	5	215	19	1348	912	2536	44	758	113	1846	10468
SWM	20	117	19	1	4	1	5	11	82	27	9	73	110	12	22	235	599	337	26	9	106	2	115	9	929	572	1505	26	490	38	1134	6645
SUK	8	30	12	1	2	1	0	2	22	13	5	29	15	24	7	69	136	61	3	3	26	1	53	7	229	104	310	7	83	3	150	1416
YMC	17	91	14	0	1	4	3	5	63	24	9	28	21	7	53	204	524	224	9	7	115	3	105	7	715	370	877	13	225	15	473	4226
SWR	83	237	39	5	16	10	7	14	111	57	16	110	65	17	38	755	1207	628	30	18	228	8	283	25	1983	1530	4390	99	1519	199	3750	17477
MS	47	192	39	6	16	7	7	15	122	72	19	125	82	16	41	590	1654	752	37	23	253	10	325	26	2432	2120	5485	131	2494	316	5697	23151
MBW	45	174	33	5	19	5	6	13	117	58	17	121	78	17	38	488	1253	921	41	19	254	9	326	30	2051	1612	4100	114	1830	171	4071	19135
HEX	10	46	11	0	3	3	1	3	28	12	4	27	22	7	6	59	185	70	75	8	11	1	41	6	410	337	741	20	467	46	771	3431
MFV	5	26	3	0	0	1	1	2	35	5	4	18	6	6	2	98	329	216	5	28	121	3	66	4	342	151	392	14	200	14	237	2334
WLB	24	77	10	1	11	4	2	7	58	19	15	68	23	5	13	233	624	390	11	15	299	7	220	18	826	483	1658	42	716	92	1337	7308
BL	17	52	6	0	2	3	1	2	30	2	7	14	4	1	5	127	319	197	1	7	148	13	111	9	343	131	403	15	116	8	393	2487
LBW	39	154	24	4	13	5	3	11	96	46	18	90	51	12	38	348	879	467	18	15	229	8	420	24	1444	1113	3558	94	1529	171	3115	13836
WLW	7	37	7	0	1	3	0	1	25	21	6	29	14	10	10	85	190	82	6	7	55	4	131	36	314	164	502	18	113	12	484	2374
SWT	60	201	44	5	15	12	7	16	129	79	23	159	87	20	48	659	1528	805	65	26	281	10	374	32	3250	2733	7791	241	4372	494	9529	33095
QS	45	181	41	6	16	9	7	14	123	72	23	113	69	18	48	601	1460	728	49	24	259	11	350	21	2703	3365	8099	241	4678	498	10287	34159
QBW	76	234	54	6	21	13	6	15	133	86	27	161	102	21	49	682	1539	813	62	27	274	12	400	33	3063	3240	9397	309	5899	627	13127	40508
QC	11	41	16	1	0	3	1	3	35	13	10	32	15	4	9	159	460	250	10	12	123	5	110	7	755	851	2448	324	2712	285	4569	13274
ER	56	177	45	6	13	9	6	10	109	47	21	98	66	14	39	494	1192	540	48	20	222	9	289	20	2339	2759	8039	306	6168	650	12679	36490
JPN	32	84	24	4	8	5	2	3	26	19	7	44	26	4	18	180	406	151	22	10	38	4	111	9	959	1477	4407	205	3559	689	7285	19818
QPR	86	222	50	7	14	11	6	14	123	67	25	130	76	19	48	628	1461	752	58	25	268	12	357	32	2832	3020	8641	297	5827	635	14396	40139
All	120	289	63	8	25	17	7	16	150	90	30	188	110	24	53	755	1654	921	75	28	299	13	420	36	3250	3365	9397	324	6168	689	14396	42980

EW = Early Whitewares; EM = Early Monochromes; VM = Vietnamese Monochromes; VH = Vietnamese Black-and-white; EBW = Early Blue-and-white; EFV = Early Overglaze-decorated; JZ = Jizhou; SAN = Sancai; VBW = Vietnamese Blue-and-white; MC = Ming Celadons; MW = Ming Whitewares; SWH = Sawankhalok Black-and-white; SWM = Sawankhalok Monochromes; SUK = Sukothai; YMC = Yuan-like Ming Celadons; SWR = Coarse Stonewares; MS = Ming Swatow; MBW = Ming Blue-and-white; HEX = Ming Blue-and-white "Hexagonal" Wares; MFV = Ming Red; WLB = Wanli Blue-and-white; BL = Bluewares; LBW = Late Ming Blue-and-white; WLW = Wanli Whitewares; SWT = Swatow; QS = Qing Swatow; QBW = Qing Blue-and-white; QC = Qing Monochromes; ER = European; JPN = Japanese; QPR = Qing White/Recent.

TABLE B-38. SPEARMAN'S RANK CORRELATION COEFFICIENTS (R_s) BETWEEN THE 31 TRADEWARE CLASSES

	EM	VM	VH	EBW	EFV	JZ	SAN	VBW	MC	MW	SWH	SWM	SUK	YMC	SWR	MS	MBW	HEX	MFV	WLB	BL	LBW	WLW	SWT	QS	QBW	QC	ER	JPN	QPR
EW	0.83	0.85	0.48	0.69	0.76	0.35	0.45	0.53	0.26	0.64	0.30	0.35	0.46	0.35	0.62	0.44	0.37	0.37	0.24	0.50	0.46	0.35	0.24	0.26	0.07	0.00	-0.42	-0.46	-0.39	-0.19
EM		0.76	0.44	0.66	0.59	0.57	0.75	0.80	0.54	0.63	0.57	0.66	0.65	0.65	0.72	0.63	0.70	0.42	0.31	0.52	0.43	0.62	0.35	0.57	0.13	0.16	-0.65	-0.77	-0.64	-0.48
VM			0.56	0.71	0.72	0.28	0.43	0.49	0.50	0.53	0.43	0.57	0.69	0.41	0.55	0.43	0.33	0.48	0.17	0.27	0.36	0.42	0.33	0.31	0.26	0.16	-0.51	-0.48	-0.44	-0.27
VH				0.76	0.23	0.12	0.37	0.23	0.30	0.19	0.35	0.33	0.34	0.21	0.26	0.25	0.22	0.12	-0.14	0.14	0.07	0.26	0.12	0.15	0.23	0.33	-0.49	-0.35	-0.30	-0.22
EBW					0.47	0.22	0.53	0.42	0.46	0.41	0.54	0.52	0.53	0.30	0.45	0.44	0.32	0.49	0.20	0.32	0.39	0.42	0.43	0.35	0.29	0.42	-0.45	-0.51	-0.31	-0.39
EFV						0.24	0.21	0.41	0.30	0.79	0.31	0.23	0.44	0.37	0.63	0.43	0.36	0.40	0.48	0.57	0.59	0.43	0.43	0.22	0.02	-0.13	-0.37	-0.33	-0.36	-0.15
JZ							0.81	0.77	0.25	0.28	0.41	0.53	0.25	0.62	0.79	0.81	0.78	0.36	0.48	0.55	0.30	0.36	0.17	0.78	0.33	0.08	-0.65	-0.78	-0.66	-0.72
SAN								0.85	0.51	0.34	0.68	0.80	0.49	0.70	0.71	0.77	0.71	0.53	0.55	0.46	0.26	0.47	0.35	0.82	0.38	0.33	-0.72	-0.89	-0.67	-0.78
VBW									0.51	0.55	0.66	0.74	0.63	0.75	0.78	0.81	0.82	0.53	0.66	0.70	0.50	0.61	0.43	0.72	0.16	0.04	-0.60	-0.82	-0.70	-0.63
MC										0.38	0.76	0.79	0.79	0.62	0.40	0.49	0.37	0.49	0.27	0.14	0.41	0.72	0.71	0.66	0.49	0.34	-0.51	-0.66	-0.49	-0.60
MW											0.50	0.35	0.38	0.46	0.59	0.52	0.46	0.32	0.52	0.75	0.70	0.53	0.57	0.29	-0.15	-0.20	-0.35	-0.35	-0.41	-0.21
SWH												0.85	0.70	0.58	0.43	0.53	0.54	0.65	0.53	0.39	0.44	0.68	0.78	0.65	0.19	0.28	-0.45	-0.37	-0.40	-0.55
SWM													0.75	0.73	0.51	0.60	0.59	0.60	0.42	0.22	0.27	0.58	0.63	0.75	0.43	0.35	-0.58	-0.68	-0.58	-0.60
SUK														0.56	0.43	0.48	0.42	0.67	0.39	0.18	0.42	0.61	0.59	0.54	0.34	0.27	-0.41	-0.59	-0.48	-0.43
YMC															0.69	0.67	0.60	0.32	0.36	0.43	0.42	0.62	0.51	0.78	0.44	0.29	-0.66	-0.79	-0.70	-0.71
SWR																0.89	0.80	0.35	0.54	0.70	0.54	0.53	0.41	0.71	0.31	0.12	-0.76	-0.84	-0.77	-0.69
MS																	0.89	0.45	0.64	0.71	0.61	0.61	0.47	0.81	0.37	0.21	-0.65	-0.66	-0.65	-0.73
MBW																		0.38	0.62	0.72	0.55	0.68	0.43	0.73	0.24	0.03	-0.57	-0.78	-0.66	-0.33
HEX																			0.53	0.31	0.32	0.33	0.49	0.54	0.28	0.19	-0.25	-0.48	-0.26	-0.43
MFV																				0.73	0.66	0.53	0.65	0.50	0.20	-0.17	-0.18	-0.47	-0.33	-0.36
WLB																					0.78	0.52	0.46	0.42	-0.12	-0.17	-0.33	-0.48	-0.40	-0.44
BL																						0.71	0.69	0.39	-0.05	-0.07	-0.19	-0.50	-0.30	-0.40
LBW																							0.79	0.60	0.20	0.17	-0.35	-0.67	-0.51	-0.53
WLW																								0.57	0.13	0.24	-0.21	-0.33	-0.32	-0.46
SWT																									0.52	0.43	-0.64	-0.88	-0.68	-0.89
QS																										0.77	-0.53	-0.46	-0.45	-0.51
QBW																											-0.22	-0.29	-0.07	-0.51
QC																												0.76	0.69	0.67
ER																													0.79	0.83
JPN																														0.63

EW = Early Whitewares; EM = Early Monochromes; VM = Vietnamese Monochromes; VH = Vietnamese Black-and-white; EBW = Early Blue-and-white; EFV = Early Overglaze-decorated; JZ = Jizhou; SAN = Sancai; VBW = Vietnamese Blue-and-white; MC = Ming Celadons; MW = Ming Whitewares; SWH = Sawankhalok Black-and-white; SWM = Sawankhalok Monochromes; SUK = Sukothai; YMC = Yuan-like Ming Celadons; SWR = Coarse Stonewares; MS = Ming Swatow; MBW = Ming Blue-and-white; HEX = Ming Blue-and-white "Hexagonal" Wares; MFV = Ming Red; WLB = Wanli Blue-and-white; BL = Bluewares; LBW = Late Ming Blue-and-white; WLW = Wanli Whitewares; SWT = Swatow; QS = Qing Swatow; QBW = Qing Blue-and-white; QC = Qing Monochromes; ER = European; JPN = Japanese; QPR = Qing White/Recent.

N.B. The two values of 0.89 to two decimal places are distinct at the third decimal place, showing that Coarse Stonewares and Ming Swatow are the closest classes.

probability that the column tradeware class occurred at above-expected frequencies in the zones with the row tradeware class)[35] to "31" (the highest probability that the column tradeware class occurred at below-expected frequencies in the zones with the row tradeware class). The data are then in a suitable form to apply the Spearman's r_s rank correlation coefficient and construct a half-matrix of the degree of similarity between each pair of tradeware classes, whereby a value approaching +1 shows that the tradeware classes share the same pattern of co-associations, and a value approaching -1 shows that the tradeware classes have opposite patterns of co-associations (Table B-39).[36]

The usual seriation procedure at this stage would simply use the measures in Table B-39, but it would be flawed on two counts. Firstly, leaving aside the coefficients in the last six columns, we can see that certain classes show generally high coefficients, in sharp contrast with other classes whose coefficients are low almost throughout. The classes with high coefficients (e.g. MS, MBW, SWR, EM) tend to be the more common ones, while the classes with low coefficients (e.g. VH, BL, JZ, MFV) tend to be the rare ones (Table B-38). This "normatising effect", which promotes the similarities of the common classes at the expense of the rarer ones, constitutes noise which muffles chronological similarities involving rarer classes.[37]

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[35] This of course usually occurred in cases involving the same tradeware class in both the column and the row heading. However, during the pooling process the most numerous of the "Ming" classes sometimes found their highest above-expected occurrence in zones defined on the basis of the presence of some other tradeware class, notably the early monochromes, than in zones defined on the basis of their own presence.

[36] For an example of the table of z-values leading to the Spearman's r_s distances, see my already published seriation based on 29 tradeware classes. The calculations discussed here were carried out using a Borland "Reflex" PC package.

[37] One of the reasons for my rather complex method of calculating measures of similarity is that it keeps the "normatising effect" in check to some degree. I have experimented with the computationally simpler Robinson coefficient, whose normatising properties are described by Irwin (1985:120) as a good quality, and found that the tendency of common classes to be similar with each other reaches tyrannical proportions.

Secondly, consider the main disturbances in the Bugis-Makassar countryside (antique looting; ploughing and tilling; sundry holes for wells, rubbish pits, building foundations and plants) which have brought buried artefacts to the surface. The passage of older, more deeply buried artefacts to the surface would have usually been accompanied by the passage of younger, stratigraphically higher artefacts, but the reverse obviously does not hold. Hence, as I show elsewhere from consideration of the z-values (Bulbeck, 1989:88,92), zones defined by the presence of some older tradeware class tend to have disproportionately large frequencies of later tradeware classes. As a result, older classes sometimes show spurious patterns of co-association with younger classes. However, the point specifically fails to apply to the "recent" classes, i.e. the Qing monochrome, Japanese, European and Qing white classes. In these cases it would seem that the majority had not been deposited long enough ago to have been buried over, except in disturbed areas where the disturbance would indeed act as a burying agent. Consequently "recent" pieces either dominate the surface assemblages in comparatively undisturbed zones or occur in specifically lower than expected frequencies in disturbed zones. Hence these classes show their strongest negative coefficients against the more common pre-Qing classes (e.g. MS, MBW, SWR, EM) rather than against those which are necessarily the oldest (Table B-38); partly as the statistical mirror image of the "normatising effect", partly because surface assemblages in disturbed zones will include the more common pre-Qing classes more often than the rarer classes.

Two procedures are mandatory to overcome these problems. Firstly, we have to pool tradeware classes to counteract the "normatising effect", and to abolish what we can of the spurious patterns of co-association between older and younger classes. Secondly, we have to seriate via immediate relationships rather than in terms of the total half-matrix of coefficients given in Table B-38. These procedures are reiterative clustering and down-the-line seriation.

As regards reiterative clustering, I hold that when any two "Operational Taxonomic Units" (OTUs) are joined in a hierarchical cluster, logically they become one pooled OTU. Not only might the general relationships of the new OTU differ significantly from the relationships shown by the original two OTUs, but also the the relationships among other OTUs might be affected. For instance, as shown in Table B-38, the first cluster involved Ming Swatow and coarse stonewares at 0.89. Hence I pooled them into a "Ming Swatow/coarse stoneware" class and recalculated Table B-38 on the basis of 30 classes. After that the highest coefficient, 0.89 again, occurred between "Ming Swatow/coarse stonewares" and Ming BW - an outcome which is not predictable from the original coefficients. After pooling them into a "Ming Swatow/coarse stoneware/Ming BW" class and recalculating the r_s coefficients based on 29 classes, early whitewares and Vietnamese monochromes joined at 0.86 - a slight improvement on their original 0.85 coefficient (Table B-38). And so on, in the order shown in Figure B-2. As also shown in Figure B-2, OTUs continued to cluster with coefficients greater than 0.8 right to the penultimate joins, involving classes which sometimes did not appear particularly similar in Table B-38. Analogously, the effects of pooling classes are generally most marked on the relationships involving rarer classes, thereby ameliorating the "normatising effect". Moreover, the procedure provides the statistical basis for choosing which classes to pool.

Down-the-line seriation utilises the sequence of half-matrices of r_s coefficients which had been steadily reduced to pool the classes, but in the reverse order. At the point when any two OTUs are pooled, they belong to a half-matrix which otherwise includes the OTUs depicted as stems at that level. For instance, when Qing Swatow (QS) joined the main cluster (labelled "B" for convenience) at rs=0.9, there were six OTUs in a 5 by 5 half-matrix. Consideration of the other rs values allows all the OTUs to be placed next to (and, where relevant, between) their most similar OTUs, producing the seriation "B":Qing Swatow:Qing BW:Japanese/Qing Monochrome:"A" (Figure B-2). With Qing

Swatow set next to the "B" cluster, the next split within "B" is seriated with respect to Qing Swatow; as further splits within "B" occur, so the seriations occur with respect to subsidiary stems within "B". The end result is the seriated order shown at the bottom of Figure B-2.

The advantages of seriated dendrograms over their unseriated counterparts are quite obvious, as also shown in my analysis of South Sulawesi lexicostatistical relationships (Appendix A). For instance, without seriation we might decide that Qing Swatow and Qing BW belonged to different clusters and hence were unrelated, whereas seriation proves their adjacency. However, a difficulty with down-the-line seriation is it tends to seriate with respect to marginal and hence rather anomalous OTUs (e.g. MFV and SUK in Figure B-2). To be sure, the anomaly becomes apparent because, at the point of splitting, both subsidiary OTUs would prefer to sit next to the same flanking OTU. With the lexicostatistics it was possible to resolve the tension by choosing the order which involved the least immediate stress, and the resulting seriation performed at almost maximum "goodness of fit" at the global level (A.5). But this option is not available with the tradewares because the rs coefficients are not Euclidean measures. Instead what we can do, when the flanking OTUs would produce different seriated orders, is to consider the next OTUs immediately beyond and see if they would prefer one seriated order over the other. Every seriation step (bar two; see below) in Figure B-2 could be resolved by working outwards until the majority of the neighbouring OTUs determined the order: the two flanking OTUs when they agreed on the order; otherwise two out of three, or three out of four of the neighbouring OTUs, when the two flanking OTUs came into conflict.

B.4.2 Other seriations involving the fine classes

The seriated order shown in Figure B-2 conforms quite well with the chronological order that would be expected from my understanding of the classes (B.3). The main cluster of pre-Qing classes divides roughly into "Early" and "Ming" clusters, while Qing Swatow and Qing BW sit between the

"Ming" and "Recent" clusters. However, there are some anomalies. Early overglaze-decorated (EFV) and Ming whitewares (MW) should not be the oldest classes; the four classes between Ming BW hexagonal (HEX) and Wanli BW wares (WLB) should be middle to late rather than early Ming; while the seven classes between early monochromes (EM) and Ming celadons (MC) should be pre-Ming to early Ming rather than late Ming.

These anomalies did not characterise my original published seriation (Figure B-1, slightly adapted from Bulbeck [1989:Figure 24]). To read the seriating decisions, note that I there used the distances which create the r_s coefficients rather than the r_s coefficients themselves; either may be used, but with the former we of course seriate by the smallest distances (rather than by the highest coefficients). Note also that there were two cases, indicated by asterisks, when it was not possible to secure a majority seriation from the four flanking OTUs, and hence I have seriated by the smallest of the compared distances.[38] The crucial point is that Figure B-1 seriated only 29 classes, because "early overglaze-decorated" pieces (EFV) had been pooled with Ming Swatow, and Ming BW hexagonal pieces (HEX) had been left in the Ming BW class. The seriated order conforms marvellously well with the expected chronological order of the tradeware classes, and the few unexpected results resolved uncertainties I personally had. Vietnamese monochromes (VM) and Vietnamese BW (VB), for instance, appeared earlier than Demmanari and I had allowed, which supported the earlier datings of these classes to be found in the literature (e.g. Brown, 1988) rather than the later datings (e.g. Fraschė, 1976). Jizhou wares, supposedly a Yuan class (Medley, 1977), instead appeared early Ming, which agreed with their absence from SSPHAP's few clearly pre-Ming assemblages. And the "Yuan-Ming" celadons Demmanari and I dated to the 14th or the 14th-15th centuries appeared clearly Ming.

Rather than immediately reject the EFV and HEX classes, I redid the larger analysis without, however, including the

[38] As a further stylistic difference, I tried to give characterising labels to the pooled classes rather than the arbitrary capital letters used in Figure B-2.

coarse stonewares. Coarse stonewares are not a good chronological marker of any sort, since their dates would span the 2nd millennium AD, and the alacrity with which they joined Ming Swatow and Ming BW in Figure B-2 would appear to reflect the "normatising effect". And indeed the resulting seriation (Figure B-3) does remove some of the anomalies present in Figure B-2. Early monochromes find their place with the other pre-Ming classes; what I take to be specifically late Ming classes (WLB, BL, MBL and WLW) bunch together, even if in a middle rather than a late Ming position; and Ming red (MFV) takes up a chronologically more acceptably position. On the other hand, the classes between Yuan-like Ming celadons (YMC) and Ming whitewares (MW) appear too late, while Sukothai (SUK) and especially the hexagonal BW wares (HEX) appear too early.

The HEX class worried me because, even though it occurred fairly commonly, it was specifically absent from the Makassar palace assemblages (B.3.9). Puzzling over my results I also noticed that HEX and MFV pieces occurred together in only one zone (T.27.1). Because there were three MFV pieces (a rare class) to the one HEX piece (a more common class), the HEX row ranked high in the MFV column but not vice versa, and consequently HEX and MFV could not cluster. Moreover, because the HEX row generally ranked low in the columns involving "Ming" classes, MFV could not cluster anywhere until after HEX, obviously an anomalous class, had clustered (Figures B-2 and B-3). Having worked out that one lonely statistical quirk was disrupting the general clustering procedure, I redid the larger analysis with HEX pooled with the other Ming BW pieces (MBW).

The resulting analysis (Figure B-4) incurred one case, indicated by a double asterisk, where I had to use the smallest coefficient (0.54, between the "K" and "I" stems) to seriate the cluster split, because there was no single largest distance (the coefficient of 0.84 occurred on both sides of the fence). By using the lowest coefficient as the "ultimate seriating clause", a seriation decision can be made in virtually all conceivable circumstances, except when a

symmetrical half-matrix prevents seriation until the next step in the splitting process (as in Figure B-2).

The Figure B-4 seriation correctly joins MFV and MBW at an early stage, but is generally rather disappointing. The specifically late Ming classes (BL, WLB, LMB and WLW) fall far apart; what I take to be early Ming classes (SAN, VBW, SWM, YMC, MC, SUK and SWH) are spread far and wide; "early blue-and-white" and Vietnamese black-and-white (EBW and VHP) appear far too late; Swatow (SWT) appears too early. These disruptions from more the sensible pattern shown in Figure B-1 can be attributed to my recognition of the EFV class.

Nonetheless, all four seriations show the same primary structural organisation into "early", "Ming" "Qing" and "recent" groups. They also agree on details such as the early dating of Vietnamese monochromes and early whitewares, and the status of QPR as the most recent class. Maybe it is not surprising that the least consistency involves the 22 classes which crowd the interval between the c.14th and 17th centuries, given that the seriation is based on surface assemblages, that the recognition of some of the classes is biased by the conditions under which identifications were made (B.5.1), plus the other difficulties mentioned above. I will follow Figure B-1 as the best seriation even if I must then admit a certain element of luck in its "rectitude". I will also accept the combined results of Figures B-2 to B-4 showing my EFV class as early, even if these seriations were unsatisfactory in other respects.

B.4.3 Dating the classes

The present thesis adopts a general chronological scheme rounded off to 50 year intervals, primarily to simplify my standardised interpretations of the tradeware frequencies (B.4.4).[39] Hence I do not accept the Chinese reigns and dynasties as a chronological straitjacket binding on the Chinese tradewares, but only as a useful notation by which to refer to particular periods. All datings posited for the

[39] Including the present century which, although it had lasted only until the survey, is treated as though 1986 were the year 2000.

tradeware classes and categories are best estimates of the main distribution of the total chronological range, just as the classes themselves were recognised on the basis of trying to wrap up the total ceramic variability into cohesive packages.

Early whitewares and early monochromes. Some of these are clearly Song, especially the *Qingbai* bowls with thickened rims (cf. Lam, 1985). Some proportion of the early monochromes has almost certainly been deposited in Ming contexts (cf. Figure B-2), even though the export of Chinese celadons appears to have been largely phased out by the early 15th century (Guy, 1986:34). Rather than indulge in speculative splitting I consign both classes to a "Yuan" time slot, i.e. 13th-14th centuries, particularly because these centuries mark the origins of Makassar protohistory.

Vietnamese monochromes. Backdated by one century from whatever date Demmanari and I gave them (Table B-32), except for the few pieces we dated between the 12th and 14th centuries which are here all consigned to the 13th-14th centuries.

Vietnamese black-and-white. Guy (1986:45-46,110-111) suggests the 14th to early 15th centuries. Here I simplify the estimate to the 14th century.[40]

Early blue-and-white. The seriations indicate that Demmanari and I had identified an early group of Chinese BW wares. The evidence now suggests that Chinese potters adopted the technology by the early 14th century, initially for the Middle East market, and by around 1350 were exporting substantial quantities of BW porcelain to at least some Indo-Malaysian "countries" (Guy, 1986:25-28). Presumably South Sulawesi was caught in the "trickle-down" effect. AD 1350-1450 if we identified a piece as "Yuan"; 1400-1450 if we identified it as "early 15th century" or "Yunglo"; 1350-1450 for the other pieces (see Table B-7).

Early overglaze-decorated. 13th-14th or 14th-15th centuries, as originally identified (Table B-8).

[40] Elsewhere Guy (1988:233) suggests 'no later than the mid-sixteenth century' for four Vietnamese iron-decorated pieces excavated from Agop Atas, Sarawak, which Bellwood (1988:231) interprets as no earlier than the 16th century.

Vietnamese blue-and-white. Figure B-2 strongly suggests a predominantly 15th century date, but the other seriations suggest that the major phase of the production of these wares for export lasted well into the 16th century (cf. Brown, 1988). For two reasons I will use a 15th century date. Firstly, the class was remarkably well represented at West Soppeng's original palace site of Tinco Tua (Kallupa et al., 1989) but very scarce at the Makassar palace sites. Secondly, the 16th century is well served by other classes, to be explained in due course.

Jizhou and Sancai. The Jizhou class consistently took up an early Ming, say 15th century, position in the seriations. The comments and dating outlined above for Vietnamese BW also apply to Sancai (cf. Guy, 1986).

Coarse stonewares. SSPHAP's identifications are not generally reliable, and even if they had been reliable the datings would have still been problematical (B.3.5). Attempting to date these pieces would only prejudice, distort or reify the dates derived from the other classes.

Sawankhalok and Sukothai. Figure B-1 strongly accords with the 15th-16th century date currently favoured by experts. These classes also enjoyed a more marked presence at Tinco Tua than at the Makassar palace sites. I do not believe the more recent dating for Sawankhalok suggested by Figures B-2 to B-4.

Ming whitewares and Ming celadons. Although Figure B-1 is our most reliable guide on these classes, it is interesting that Ming whitewares appeared "early Ming" or even "early" in the other seriations. There is no need to reject the dates assigned to these pieces, including the 14th-15th century date posited for some of the whitewares (Table B-13 and B-16). A default 15th-16th century date can be used when no finer estimate was ventured.

Yuan-like Ming celadons. The Ming credentials of this class appear unquestionable. Hence I bring the dates a century forward from whatever date Demmanari and I had preferred (cf. Table B-13). With this, I think the Chinese celadons as a whole are distributed fairly correctly through

time, with those dated too early or too late balancing each other out.

Ming Swatow. Approximately equivalent to Harrisson's (1979) "Simple" Swatow category, differing mainly by the inclusion of coarse examples of Harrisson's "Complex" Swatow category, and coarse pieces which Harrisson would presumably leave in undifferentiated Ming (B.3.11). So while Harrisson recommends a mid-16th century date for most "Simple" Swatow pieces, the dating of SSPHAP's "Ming Swatow" class can certainly be expanded to cover the whole 16th century. Some of the Ming Swatow pieces must be 15th century, but I cannot say which ones, and Ming Swatow pieces constitute inadequate grounds to infer use of a site before the 16th century.

Ming BW (including "hexagonal wares") and Ming Red. Remarks on chronology as with Ming Swatow, except that the monolithic 16th century date can be partly relieved by using the earlier dates sometimes suggested for the Ming BW pieces (see Table B-19).

Wanli. While Figure B-1 seriates the Wanli BW class according to prior expectations, the placement is unstable, and the class shifts to an "early Ming" position in the other seriations (cf. Bulbeck, 1989:94). The late Ming position of Wanli whitewares, at least, appears stable. Wanli's reign (1573-1619) is here interpreted as 1550-1650.

Bluewares. The dates we advanced for these pieces, ranging between the 16th and the 18th centuries (Table B-15), might as well be retained. The class is of no computational significance whatsoever.

Late Ming blue-and-white. The class consistently clusters with Wanli whitewares in a late Ming serial position.

Swatow. Approximately equivalent to Harrisson's (1979) "Complex" Swatow category, but also including finer wares decorated in the "Simple" style, and a reasonable proportion of monochrome pieces (B.3.11). Hence SSPHAP's Swatow class might appear at least no later than Harrisson's "Complex" Swatow category, which she dates to the reign of Wanli, except that it consistently seriates later than the classes SSPHAP associates with Wanli (Figures B-1 to B-3). Following Medley's dating of "Swatow" to cover the 16th and 17th

centuries, and noting that the 16th century is already well represented by SSPHAP's Ming Swatow class, we can date SSPHAP's Swatow class to the 17th century.

Qing Swatow. The seriations demonstrate the very early Qing affinities of the class. Given the tremendous popularity of Swatow-type wares leading into the Qing dynasty, it would indeed be most surprising if the tradition had not cast its shadow further forward in time. SSPHAP's Qing Swatow class probably also includes some late *Kraak porselein* wares (as conventionally understood). AD 1650-1750 is consistent with all these points.

Qing blue-and-white. The r_s coefficients (Table B-38) and seriations indicate very little chronological overlap between this class and the "recent" classes. This supports our finer classifications in which only around ten percent of Qing BW pieces were assigned to the 19th century (Table B-27). 19th century "Kitchen Ch'ing" wares were apparently a minor tradeware to South Sulawesi, compared to the earlier Qing BW categories, and (*pace* Kwan and Martin, 1985:79-80) a 19th century date for the class needs to be positively identified rather than assumed by default. Moreover, evidence for the continuity of the use of a site after the 18th century should be based on the presence of the "recent" classes rather than Qing BW pieces. Accordingly we can date Qing BW pieces (no closer identified) to 1650-1800; 1650-1750 if identified as Kangxi; 1700-1750 if identified as Yungzheng; 1750-1800 if identified as Qianlong; century datings if identified that way; and 1800-1900 for the few specimens identified as "Kitchen Ch'ing".

Qing monochromes. Demmanari and I posited a wide range of dates spanning the 17th to the 20th centuries, although with most dated to the 18th-19th centuries (Table B-14). Our estimates appear slightly too early and need to be generally brought forward. 1700-1800 if we identified a piece as 17th century; 1750-1800 if we identified it as Qianlong; 1700-1900 if we dated it to the 17th, 17th-18th or 18th centuries; 1800-1900 if we dated it to the 18th-19th or 19th centuries; 1900-1986 if we dated it to the 19th-20th or 20th centuries.

European. Kwan and Martin (1985:80) give good reasons for dating most of the European pieces found on Tioman island to the 19th and initial 20th centuries. Similarly, between the mid-19th and initial 20th centuries, the Netherlands Indies colonial government consistently expended more on its tradewares imported from Holland than from all other places combined (see the *Koloniale Verslagen*). As the 20th century is more than amply represented by the Qing white/recent class, we can restrict the European pieces to 1800-1900.

Japanese. Based on the same reasoning used to date the European pieces, I had previously dated the Japanese pieces found in South Sulawesi to the 19th century (Bulbeck, 1989:94). However, the Netherlands Indies' government survey of Chinese economic activity, undertaken in the early 20th century, singles out for comment the mass quantities of Japanese tradewares imported to Makassar (Ujung Pandang) by local Chinese traders (Vleming, 1926:274). Even if this reference also betokens whitewares, quite a few of the Japanese flowerwares we recorded were almost entire, suggesting very recent disposal. Hence I now apply a 19th-20th century date to the class.

Qing white/recent. All the seriations confirm a 20th century default dating for this class. However, I will retain earlier dates when these were posited (Table B-29), as these earlier dated pieces were collected mainly from sites which had been abandoned before the Dutch land-use maps were produced in the early 20th century.

Table B-39 shows how the 36,996 tradeware pieces identified during the Gowa survey are distributed by tradeware class and by 50- or 100-year interval. As often as not the number of tradewares in a class assigned to a particular interval include a fraction, reflecting the point that the recognised intervals cut across the dates posited for the tradewares. The cross-tabulated assignments are, after all, estimates of probability, no less than the posited datings are. To take one example, a single early whiteware piece is considered to have a probability of 0.5 that it dates to the interval 1200-1300, a probability of 0.25 that

TABLE B-39. FREQUENCIES OF THE 31 TRADEWARE CLASSES FROM THE GOWA SURVEY ASSIGNED BY 50 OR 100-YEAR PERIODS

	1200-1300	1300-1350	1350-1400	1400-1450	1450-1500	1500-1550	1550-1600	1600-1650	1650-1700	1700-1750	1750-1800	1800-1900	1900-1986	Total
EW	52	26	26	0	0	0	0	0	0	0	0	0	0	104
EM	96	48	48	0	0	0	0	0	0	0	0	0	0	192
VM	5	13.5	13.5	11.5	11.5	0	0	0	0	0	0	0	0	55
EFV	6.5	4.25	4.25	1	1	0	0	0	0	0	0	0	0	17
VH	0	3.5	3.5	0	0	0	0	0	0	0	0	0	0	7
EBW	0	0	5.5	15.5	0	0	0	0	0	0	0	0	0	21
MW	0	1.5	1.5	6	6	5	5	0	0	0	0	0	0	25
JZ	0	0	0	2	2	0	0	0	0	0	0	0	0	4
SAN	0	0	0	4.5	4.5	0	0	0	0	0	0	0	0	9
VBW	0	0	0	44	44	0	0	0	0	0	0	0	0	88
MC	0	0	0	12.5	12.5	9	9	0	0	0	0	0	0	43
YMC	0	0	0	6.75	6.75	4.25	4.25	0	0	0	0	0	0	22
SWH	0	0	0	36.5	36.5	36.5	36.5	0	0	0	0	0	0	146
SWM	0	0	0	16	16	16	16	0	0	0	0	0	0	64
SUK	0	0	0	3.75	3.75	3.75	3.75	0	0	0	0	0	0	15
MBW	0	0	0	2.25	15.75	391.25	386.75	0	0	0	0	0	0	796
HEX	0	0	0	0	0	32	32	0	0	0	0	0	0	64
MFV	0	0	0	0	0	12.5	12.5	0	0	0	0	0	0	25
MS	0	0	0	0	0	681	681	0	0	0	0	0	0	1362
BL	0	0	0	0	0	2	2	2.25	2.25	2.25	2.25	0	0	13
WLB	0	0	0	0	0	0	143.5	143.5	0	0	0	0	0	287
WLW	0	0	0	0	0	0	13	13	0	0	0	0	0	26
LBW	0	0	0	0	0	0	161.5	161.5	0	0	0	0	0	323
SWT	0	0	0	0	0	0	0	1305	1305	0	0	0	0	2610
QS	0	0	0	0	0	0	0	0	1484.5	1484.5	0	0	0	2969
QBW	0	0	0	0	0	0	0	0	2678.2	2888.95	2645.5	93.5	0	8306
QC	0	0	0	0	0	0	0	0	2	15.25	34.25	246.25	3	301
ER	0	0	0	0	0	0	0	0	0	0	0	5900	0	5900
JPN	0	0	0	0	0	0	0	0	0	0	0	332.5	332.5	665
QPR	0	0	0	0	0	0	0	22	25.5	14.5	14	19	12442	12537
Sum	159.5	96.75	102.25	162.25	160.25	1193.25	1506.75	1647.25	5497.45	4405.45	2695.95	6591.5	12777.5	36996

EW = Early Whitewares; EM = Early Monochromes; VM = Vietnam Monochromes; EFV = Early Overglaze; VH = Vietnamese Black-and-white; EBW = Early Blue-and-white; MW = Ming Whitewares; JZ = Jizhou; SAN = Sancai; VBW = Vietnamese Blue-and-white; MC = Ming Celadons; YMC = Yuan-like Ming Celadons; SWH = Sawankhalok Black-and-white; SWM = Sawankhalok Monochromes; SUK = Sukothai; MBW = Ming Blue-and-white; HEX = Ming Blue-and-white "Hexagonal" Wares; MFV = Ming Red; MS = Ming Swatow; BL = Bluewares; WLB = Wanli Blue-and-white; WLW = Wanli Whitewares; LBW = Late Ming Blue-and-white; SWT = Swatow; QS = Qing Swatow; QBW = Qing Blue-and-white; QC = Qing Monochromes; ER = European; JPN = Japanese; QPR = Qing White/Recent.

it dates to the interval 1300-1350, and the same probability as regards the interval 1350-1400.

B.4.4 Standardising the tradeware frequencies

Table B-39 shows very clearly that the various intervals are represented by wildly different numbers of pieces. Generally speaking the later the interval, the greater its representation, although the order is essentially reversed with the four intervals between 1650-1700 and 1800-1900.[41] The general pattern reflects some combination of (i) growing availability of tradeware over time; (ii) expanding population leading to a larger number of "target sites" (5.5.1) over time; (iii) systematic underrepresentation of the earlier classes still buried underground (B.4.1); and (iv) the datings I use for the classes, e.g. that the interval 1650-1700 happens to fall in the overlap between the three common classes Swatow, Qing Swatow and Qing BW.

Regardless of the precise factors responsible, use of the raw frequencies per interval is likely to lead to peculiar results. For instance, the almost ten-fold increase in the number of pieces assigned 16th century dates as opposed to 15th century dates would make detection of a predominantly 15th century site virtually impossible. In the report of the Soppeng sites (Kallupa et al., 1989) I used raw frequencies to construct "chronological histograms" of the sites, and only the most patently obvious inferences could be drawn, because the overall raw frequencies forced the histograms into a small number of basic shapes. Finer inferences, at the level which is conceivable given the fineness of the "Ming" datings, and certainly at the level which is desirable if the archaeology is to tell us anything about the history, were available only after standardising the histograms (Kallupa et al., 1989). Hence the present thesis uses only "standardised chronological histograms", also referred to as "tradeware profiles" for convenience.

[41] The period 1800-1900 has had more pieces assigned to it than to the three preceding intervals, but it represents 100 years whereas the three previous intervals only represent 50 years.

The standardisation procedure can be explained with a simple example, Pakkala Toa or "Takalar site 4" (11.7.4). 18 pieces were recorded but the two coarse stoneware pieces are excluded from the exercise. The other 16 pieces were identified as shown in the bottom row in Table B-40, and disributed across the various time intervals as shown in the columns. The number of pieces per time interval is summed up along the rows. These sums are then divided by the respective total frequencies shown in the bottom row of Table B-39, to standardise them, and expressed as a percentage (Table B-40; Figure 11-24).[42]

TABLE B-40. STANDARDISATION OF THE TRADEWARES AT PAKKALA TOA

	EW	MC	MBW	MS	SWT	QBW	ER	QPR	Sum	%
1200-1300	0.5								0.5	0.31
1300-1350	0.25								0.25	0.26
1350-1400	0.25								0.25	0.24
1400-1450		0.25							0.25	0.15
1450-1500		0.25							0.25	0.16
1500-1550		0.25	0.5	0.5					1.25	0.10
1550-1600		0.25	0.5	0.5					1.25	0.08
1600-1650					1				1	0.06
1650-1700					1	1.33			2.33	0.04
1700-1750						1.33			1.33	0.03
1750-1800						0.33			0.33	0.01
1800-1900							4		4	0.06
1900-1986								3	3	0.02
Total	1	1	1	1	2	3	4	3	16	0.04

N.B. Tradeware class acronyms as in previous tables. The Ming celadon piece was not dated specifically and so receives the default "15th-16th century" dating. The Ming BW piece was dated as 16th century. Two of the Qing BW pieces were identified as "Kangxi", i.e. 1650-1750, and the other merely as "Qing BW" (1650-1800). The Qing whiteware pieces receive the default dating 1900-1986.

B.4.5 Issues in interpreting the standardised histograms

The Pakkala Toa example brings out strengths and weaknesses in the technique, both generally speaking and particularly as

[42] Note that I standardise against all the tradewares recorded during the Gowa survey, even though the sites recorded during the south coastal survey, and along the Jeknekberang upstream from Bontona Songkolo, are not described in this thesis.

applied to a site with only a small tradeware sample. The single early whiteware piece can scarcely be used to prove two centuries of use of the site, but I have no particular grounds for preferring any point within the period 1200-1400. In the same vein 16 pieces can scarcely indicate 726 years of constant human presence, but it would be fair to say that the pieces have been dated to all ages, and there is no indication of any particular break. The raw frequencies generally increase from "early" (1) to "Ming" (5) to "Qing" (3) to "recent" (7), but the standardised frequencies generally decrease with less age. Assuming the identifications are correct, we can indeed say that the single early piece would appear to be more significant than the seven recent pieces, but we would be hard pressed to infer it is six times more significant than the European pieces and 15 times more significant than the Qing whiteware pieces.

Hence the apparent precision contained in the standardised chronological histograms does not imply that the site's history of tradeware-related use has been precisely captured. Rather it implies that if the identifications are correct and also representative of their dating (e.g. that the "early whiteware piece" correctly represents a larger population of pieces brought to the site throughout the 13th and 14th centuries), and if the Gowa survey's overall tradeware identifications and datings are also valid, then the standardised chronological histogram portrays the history of Pakkala Toa's share of tradeware-related activities by the standards of the other Gowa sites. As so few tradeware were recorded at Pakkala Toa, not a great deal of faith should be attached to the first assumptions, and the site interpretation is accordingly scaled back to a very general statement (11.7.4). However, we are obviously in a much better position to qualify our inferences on the site if we first understand what those inferences might be.

On the topic of inferences, the exercise of standardisation encompasses several conceptual difficulties which resist ready formulation. "Tradeware-related activities" in the Gowa survey area certainly include the

burial of tradewares as gravegoods and the use of tradewares in domestic contexts. The average period in circulation of the former may have differed from the average period in circulation of the latter, but the possible factors involved are imponderable. Given also that the various contexts cannot always be distinguished, Pakkala Toa being a case in point, I assume comparability whatever the context. I further assume that tradewares *per se* not only date human presence in the immediate vicinity, but have also been luxury items and thus represent wealth and status. But I have not factored in variable "status-loadings" for want of reasonable controls. The issues touched on here are addressed in many of the site descriptions in an impressionistic fashion, but against the backdrop of the general validity of my two general assumptions.

Population and wealth undoubtedly followed a trajectory of general increase between the origins of Makassar protohistory in the 13th-14th centuries, and the survey area's incorporation within the state of greater Gowa during the 17th century. However, I standardise against the same figure (100%) on every chronological interval. Therefore a real growth in tradeware-related activities during the period is likely to be dampened, nullified or even reversed in the tradeware profiles. A key examples is Gowa's core palace centre of Benteng Tua whose flat standardised chronological histogram during the period disguises what must have been a dramatic population increase (Chapter 6). For instance, in estimating population growth I used the number of sites with tradewares dated to a particular interval as a proxy for population size, which suggested a three-fold increase in population between the 14th and 17th centuries (13.3.2). Hence it would be possible to factor estimated general growth into the chronological histograms. e.g. if the 13th-14th century frequencies are standardised against 100%, then the 17th century frequencies could be standardised against 300%, thus suggesting a three-fold population increase at Benteng Tua during the period. However, I have not had time to experiment with the exercise or tackle whatever methodological difficulties might be involved.

In addition, an exercise like that would feed in interpretation at the level of data presentation, and so obstruct interpretation through the informal considerations which survey archaeology, and especially survey historical archaeology, regularly deals. On top of that, I would then have found myself removing or otherwise compensating for the data transformations fed into the histograms, so as to portray wider intersite patterns based on the relative proportions of the tradewares. For instance, Benteng Tua's flat tradeware profile between the 13th-14th and 16th-17th centuries stands beside an overall profile, shown by the other sites along the middle Jeknekberang, which dips over time (Chapters 7 to 9). Hence I was able to interpret Benteng Tua's flat histogram as signifying centralisation of population and wealth within the site's immediate social landscape. All in all, I doubt if my site interpretations could have proceeded without the standardised chronological histograms used in Chapters 6 to 12, and the inclusion of yet further, "transformed standardised chronological histograms" might have been excessive for writer and reader alike.

The histogram segments which are standardised against 18th to 20th century tradeware totals are less complex in their interpretation. Firstly, the pre-Islamic burial traditions which involved gravegoods had probably ceased by this juncture, and so tradeware pieces can be interpreted to represent occupation. Secondly, interpretation is assisted by the 20th century land-use maps (5.4.2). In particular, I am interested in whether the sites were occupied between the 18th and 20th centuries because of the possible consequences for understanding earlier use of the sites, not because I want to reconstruct 18th to 20th century settlement patterns, and so representativeness is a lesser concern.

B.5 Analysis With SSPHAP's Broad Tradeware Classes

B.5.1 Erection of broad tradeware classes

Around 84% of SSPHAP's tradeware pieces only have field identifications (FIs) by which they are assigned to field identification classes (FICs), and only 16% have laboratory

Table B-41. Composition of the Laboratory Identifications by Fieldwork Identifications

Field Identification Classes (FICs)	Laboraty Identification Classes (LICs)																																
	JPN	SWH	SWR	QC	SWM	MC	YMC	SUK	VM	EW	EM	HEX	MBW	MS	SWT	VH	VBW	JZ	SAN	EBW	BL	MFV	MW	WLW	EFV	QBW	QS	LBW	WLB	QPR	ER	Sum
Japanese (JPN)	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Sawankhalok Black-and-white (SWH)	0	131	0	0	0	0	0	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	137
Coarse Stonewares (SWR)	0	2	246	2	2	0	0	0	0	0	7	0	0	0	2	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	264
Qing Monochromes (QC)	0	0	0	190	4	1	0	0	6	0	13	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0	0	1	0	0	219
Sawankhalok Monochromes (SWM)	0	1	2	2	76	0	1	0	14	2	47	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	147
Ming Celadons (MC)	0	0	0	7	2	46	38	0	3	9	78	0	0	1	4	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	193
Yuan-like Ming Celadons (YMC)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sukothai (SUK)	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Vietnamese Monochromes (VM)	0	0	0	2	2	0	0	0	23	8	16	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	52
Early Whitewares (EW)	0	0	0	0	0	3	0	0	2	67	3	0	1	0	0	0	0	0	0	0	0	0	2	1	0	1	0	0	0	2	0	0	82
Early Monochromes (EM)	0	0	2	0	1	1	0	0	1	2	55	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	64
Ming BW "Hexagonal" Wares (HEX)	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Ming Blue-and-white (MBW)	0	1	0	0	0	0	0	0	0	0	0	66	367	11	30	1	11	0	0	11	0	0	0	0	0	72	17	121	29	0	0	0	737
Ming Swatow (MS)	0	0	0	4	0	0	4	0	0	2	1	0	44	314	156	1	10	0	1	2	0	0	1	0	5	35	9	24	3	0	0	0	619
Swatow (SWT)	0	1	2	3	2	3	1	1	3	4	4	0	24	45	223	0	6	0	0	0	0	0	2	0	0	37	12	33	6	2	0	0	415
Vietnamese Black-and-white (VBW)	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Vietnamese Blue-and-white (VH)	0	2	0	0	0	0	0	0	0	0	0	0	1	0	1	0	73	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	78
Jizhou (JZ)	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	9
Sancai (SAN)	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	13
Early Blue-and-white (EBW)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Bluewares (BL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	6
Ming Red (MFV)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	6	0	0	0	3	0	0	0	0	0	0	11
Ming Whitewares (MW)	0	0	0	2	0	2	0	0	0	1	0	0	0	0	4	0	0	0	0	0	0	4	5	14	0	1	0	3	1	4	0	0	41

TABLE B-41. COMPOSITION OF THE LABORATORY IDENTIFICATIONS BY FIELDWORK IDENTIFICATIONS (CONT.)

Laboraty Identification Classes (LICs)

	JPN	SWH	SWR	QC	SWM	MC	YMC	SUK	VM	EW	EM	HEX	MBW	MS	SWT	VH	VBW	JZ	SAN	EBW	BL	MFV	MW	WLW	EFV	QBW	QS	LBW	WLB	QPR	ER	Sum
Wanli Whitewares (WLW)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
Early Overglaze-decorated (EFV)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Qing Blue-and-white (QBW)	0	0	0	1	0	0	0	0	0	0	1	1	5	0	14	0	2	0	0	1	2	0	0	6	0	148	33	43	38	13	0	308
Qing Swatow (QS)	0	0	0	0	0	0	0	0	0	1	0	0	12	2	29	0	1	0	0	1	0	0	0	2	0	77	61	34	16	1	0	237
Late Ming Blue-and-white (LBW)	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	2	0	0	0	0	0	0	0	0	41	3	38	14	0	0	106
Wanli Blue-and-white (WBW)	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	4	1	1	24	0	0	33
Qing White/Recent (QPR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	0	4	2	0	0	34	1	47
European (ER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	13	19
Total LICs given determinate FICs	11	140	252	213	89	56	44	22	52	96	227	74	461	374	472	7	107	6	12	17	8	14	10	28	14	431	139	297	131	57	15	3876
LICs given indeterminate FIs	0	0	1	3	1	1	0	0	3	5	8	1	0	0	0	0	0	0	0	0	0	0	4	0	1	1	0	0	0	0	0	29
Identified in field as earthenwares	0	0	21	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
Collected without any FI given	23	33	126	28	16	20	9	2	7	18	54	0	284	386	379	1	41	1	4	8	4	13	11	8	2	483	124	117	159	266	197	2827
Total identified in the laboratory	34	173	400	244	106	77	53	24	63	119	289	75	745	760	851	8	148	7	16	25	12	27	25	36	17	915	263	416	290	323	212	6754
Total (LICs + unchecked FICs)	635	188	755	324	110	90	53	24	63	120	289	75	921	1654	3250	8	150	7	16	25	13	28	30	36	17	9397	3365	420	299	14396	6168	42980

N.B. The small number of tradewares identified in the field as earthenwares were collected as decorated or otherwise unusual earthenwares. I have not done the necessary work to have any notion of how many further tradewares might lie among uncollected sherds identified in the field as earthenwares and so I will not consider that particular problem further.

identifications (LIs) by which they are assigned to laboratory identification classes (LICs). The reliability or otherwise of the former identifications is testable only by reference to those specimens identified under both circumstances.

Ideally, the test would proceed with collected examples drawn representatively from the population given FIs. However, SSPHAP's general policy on collecting focussed on items of highest perceived archaeological value and critical nature in substantiating the field records of the sites. Hence only the pieces given indeterminate FIs (e.g. "?"), assigned to the FICs considered diagnostic (e.g. Ming BW), or considered a likely source of confusion with diagnostic FICs (e.g. Qing monochromes) were regularly collected. They were otherwise supplemented by pieces which appeared valuable for their completeness or unusual appearance. Sometimes, also, the total tradeware assemblage from a site or subsite was collected as diagnostic when it provoked the hypothesis of abandonment during historical times, but these are obviously not representative of the general ruck of less interesting assemblages. To be sure, SSPHAP did make complete collections of several zones with the specific intention of testing general identifications made in the field, but these "grab samples" were not selected on a controlled basis. Notwithstanding the foregoing, the pieces assigned to a particular FIC and then collected remain my best guide to the likely behaviour of the total population of pieces given that particular FIC.

Table B-41 shows how the collected FICs were distributed across the various LICs. In all only 2196/3877 or 56.6% of the FIs remained unchanged when identified in the laboratory. However, the apparent reliability of the FIs varies greatly depending on the FIC considered, e.g. no Japanese FIs needed to be re-assigned, whereas nearly 90% of the Ming Whiteware FIs were re-assigned. In addition, the Japanese LIC seems to be very reliable because no non-Japanese FIs were assigned to it, whereas the Wanli Whiteware LIC is constituted primarily by FIs re-assigned from other FICs, notably Ming Whitewares.

This consideration introduces the simplest measure of performance:

Percentage of LIs correctly identified (%COR) - the number of pieces in the LIC also given the same FI, divided by the number of pieces in the LIC which were given an FI whether correct or not; expressed as a percentage.

Now unreliability of an FIC is not necessarily a problem in itself, as long as the FIC was regularly collected. For instance, from the bottom two rows we can work out that only five Ming Whitewares have been accepted on the basis of their FI alone. Scanning further up we see that 36/41 of the collected pieces within the Ming Whiteware FIC had been incorrectly identified. Hence our best estimate of the number of Ming Whitewares incorrectly accepted is 5 times (36/41) or 4.4 pieces, i.e. 14.6% of the total 30 accepted Ming Whitewares. Turning that into a measure of positive performance, 85.4% have probably been correctly assigned.

But a major difficulty arises with those FICs which were very rarely collected and not, apparently, very reliable. For instance, performing the same exercise on Qing Swatow pieces we calculate that of the 3102 pieces accepted on the basis of their FI alone, 74.3% (2304 pieces) have been incorrectly identified (as our best estimate). Hence of the total 3365 accepted as Qing Swatow, only 3365 minus 2304 or 31.6% have probably been correctly assigned. This then leads to our second measure of performance:

Percentage probably correctly assigned (%PCR) - the total number assigned to a class, minus the best estimate of the number of pieces incorrectly assigned to a class on the basis of a faulty FI, divided by the total number assigned to that class; expressed as a percentage.

As shown in Table B-42, the percentage of FICs checked (%CH) varies between 100% and 0.3%. In essence, the rarer FICs were collected more than 70% of the time; the middlingly common FICs (Ming Swatow and Coarse Stonewares) were collected approximately 40% of the time; Swatow FIs were collected 15% of the time; the late BW FICs (Qing Swatow, Qing BW and Japanese) 2-7% of the time; and European and Qing white/recent FIs less than 1% of the time. Here our enquiry

looks at the possible effects of allowing the unchecked FICs to be re-assigned to other classes on the basis of how the checked FICs were re-assigned.

Consider the case where we decide to re-assign uncollected FIs belonging to the rarer FICs which were collected at least 70% of the time. After the re-assignment, the effects on the estimated composition of the classes can be investigated in two ways.

Firstly, the unchecked re-assigned FIs represent a best estimate but one which is uncontrolled (owing to the lack of representative sampling). In contrast, the checked re-assigned FIs belonging to the same FICs are controlled since they have been positively identified in the laboratory. Considering any class, we can calculate the proportion of controlled identifications as the number of correctly identified LIs (see above) plus the number of controlled re-assigned FIs, divided by that sum plus the number of uncontrolled re-assigned FIs. Express this measure of performance as a percentage and call it % Controlled.

Secondly, after the redistribution we tally the number of pieces in the class and use it as the quotient by which to divide the number of pieces originally accepted in the class (as shown along the bottom row of Table B-41), and express the result as a percentage. This "% Correspondence" shows the degree to which the quantity used in the seriation exercise corresponds to the quantity we would estimate the class to have.[43]

Having done that we decide to continue re-assigning the uncollected examples of the less rare FICs, and carry out the above calculations. These results are then added to our table of performance measures (Table B-42). Specifically, the effects of re-assigning the rarer FICs are flagged as "70%", re-assigning them plus Ming Swatow plus Coarse Stonewares as

[43] Note that in the case of classes represented by FICs collected at least 70% of the time, the tally excludes the FIs now re-assigned to other classes, as well as including the FIs now re-assigned to the class under consideration from other classes. But as regards the classes represented by FICs collected less than 70% of the time, the tally is either augmented by the re-assigned FIs, or stays the same if no re-assigned FIs are re-assigned to it.

"40%", re-assigning them plus Swatow as "15%", re-assigning them plus the late BW FICs as "1%", and re-assigning the whole lot as "0.1%".

In Table B-42 the classes are arranged in approximate descending order of estimated reliability based on the performance criteria, exluding %COR which is a simple but not a useful measure. The three classes at the top appear very reliable by any perceptible standards, and a further 12 classes show percentages which hover around 80% or above. Below that the reliability of the classes drops steeply, especially when we consider the possible consequences of re-assigning the late BW, European and Qing white pieces left uncollected in the field. This particularly affects the Wanli classes whose LIs contain significant proportions of re-assigned Qing FIs.

To handle the unreliable classes, we pool the classes based on the criteria of (i) likely sources of confusion between FICs and LICs, based on the cross-tabulation in Table B-41, and (ii) approximate contemporaneity, based on the seriation exercises (B.4.1 and B.4.2).[44] To take an obvious example, join Qing Swatow and Qing BW into a pooled class with 12,762 pieces (cf. bottom row of Table B-41). What had previously been reclassifications, made in the laboratory, across the two former classes now become correct classifications made in the field, i.e. 319 of the 545 collected FIs (58.5%) conform to their LIs, and 319 of the 570 LIs (56.0%) were spotted in the field. Recalculating our performance measures demonstrates a marked improvement in the reliability of the pooled class, but still at unacceptable levels, so we look for other classes to join.

It is unneccesary to pool the most reliable classes (those scoring around 80% or better on all criteria) so these remain unchanged, apart from pooling the two conceptually similar Ming celadon classes, and also sinking "early overglaze enamelled" wares into early monochromes (Table B-43). The less reliable classes can be pooled into "Ming" and

[44] Note also that pooling rarely collected FICs should also improve the general reliability of our estimates of how the unchecked FIs would have been re-assigned during laboratory checking.

TABLE B-42. PERFORMANCE MEASURES OF THE UNPOOLED CLASSES

	% CH	% COR	% PCR	--- % Controlled--- 70%	40%	15%	1%	0.1%	- % Correspondence- 70%	40%	15%	1%	0.1%
JPN	2	100	100	100	100	100	100	100	100	100	100	100	100
SWR	43	90	96	99	99	95	95	95	103	103	102	102	102
SWH	91	94	100	98	97	94	94	94	101	99	96	96	96
JZ	100	57	100	83	86	86	86	86	100	88	88	88	88
SAN	93	75	100	83	86	86	86	86	100	89	89	89	89
VH	100	57	100	86	88	88	88	88	100	89	89	89	89
SWM	98	84	99	92	94	85	85	85	98	97	88	88	88
QC	73	88	96	95	95	89	80	80	104	101	96	89	89
SUK	100	50	100	91	91	77	77	77	96	96	79	79	79
MC	94	81	95	95	95	77	77	77	113	113	93	93	93
EM	98	23	100	90	89	83	76	76	96	93	86	80	80
VM	100	41	100	91	91	75	75	75	97	97	77	77	77
EW	99	66	100	91	91	77	77	72	99	97	82	75	75
YMC	-	-	100	83	81	75	75	75	95	85	78	78	78
ER	0.3	87	68	93	93	93	93	5	100	100	100	100	136
EFV	100	7	100	67	68	68	68	68	100	71	71	71	71
HEX	100	91	100	76	76	76	60	60	76	76	76	60	60
MFV	85	43	100	67	68	56	56	56	97	85	72	72	72
MS	41	84	71	87	87	58	56	56	100	135	111	109	109
MBW	75	80	92	95	92	67	47	47	106	99	86	86	86
VBW	98	68	100	78	77	64	47	47	97	88	73	55	55
MW	85	36	85	79	80	52	52	52	125	120	81	81	81
EBW	100	6	100	62	63	63	26	26	86	78	78	34	34
SWT	15	47	61	55	60	60	41	20	100	93	137	110	80
QBW	4	34	50	59	60	43	38	13	100	99	97	104	118
LBW	85	13	93	49	56	42	14	14	103	95	66	19	19
QPR	0.3	60	72	71	71	61	13	13	100	100	100	132	132
BL	86	75	100	75	75	75	13	13	100	100	100	19	19
QS	7	44	31	56	65	45	25	7	100	99	97	107	114
WLB	77	18	93	46	48	42	9	9	97	96	86	19	19
WLW	100	6	100	57	57	57	49	3	95	95	95	78	3

N.B. Acronyms as per Table B-41. Percentages, expressed to round figures, calculable from figures in Table B-41. Yuan-Ming celadons (YMC) is not a category recognised in the field.

TABLE B-43. PERFORMANCE MEASURES POOLED AND UNPOOLED CLASSES

	% PCR	--- % Controlled--- 70%	40%	15%	1%	0.1%	- % Correspondence- 70%	40%	15%	1%	0.1%
Japanese	100	100	100	100	100	100	100	100	100	100	100
Coarse Stone.	96	99	99	95	95	95	103	103	102	102	102
Swank H.	100	98	97	94	94	94	101	99	96	96	96
Jizhou	100	83	86	86	86	86	100	88	88	88	88
Sancai	100	83	86	86	86	86	100	89	89	89	89
Vietnam H.	100	86	88	88	88	88	100	89	89	89	89
Swank Monc.	99	92	94	85	85	85	98	97	88	88	88
Qing Monc.	96	95	95	89	80	80	104	101	96	89	89
Sukothai	100	91	91	77	77	77	96	96	79	79	79
"Ming Celadon" (MC/YMC)	96	92	91	78	78	78	105	101	87	87	87
"Early Monc." (EM/EFV)	100	88	88	82	75	75	97	91	85	79	79
Viet Monc.	100	91	91	75	75	75	97	97	77	77	77
Early White	100	91	91	77	77	72	99	97	82	75	75
"Ming" (MFV/ MW/MS/VBW/ MBW/HEX/EBW)	88	90	90	68	56	56	101	115	97	84	84
"Aggregate" (QBW/QS/WLW/ QPR/WLB/LBW/BL)	90	80	80	61	61	38	100	100	98	98	104
Swatow	61	55	50	60	41	20	100	93	137	110	80
European	68	93	93	93	93	5	100	100	100	100	136
Options											
"Ming"/Swatow	84	94	93	93	69	42	100	102	115	99	82
"Aggregate"/ Swatow	96	66	79	80	80	42	100	100	97	97	101
"Aggregate"/ European	90	80	81	62	62	62	100	100	100	100	109

N.B. Acronyms where used as in Table B-42. %CH and %COR not shown here as no longer relevant to the argument.

"Aggregate" megaclasses in which approximately 90% of the assigned specimens are correctly assigned, and the number recognised falls within 16% of the estimated probable number, even if our control over re-assigning the least collected FICs remains poor (Table B-43). Swatow and European are still quite unreliable, but it is not clear how they should be pooled. Pooling Swatow with "Aggregate" creates a reliable megaclass, although a pooled "Aggregate"/European megaclass would be nearly as reliable, and under tighter control overall. This would then allow Swatow to be pooled with "Ming", as would be the preferable course by comparison with the seriations, and create a "Ming"/Swatow megaclass with almost the same reliability that the "Ming" megaclass had shown (Table B-43).

As the best procedure of pooling is unclear, we take the 17 classes above "Options" in Table B-43 and subject them to reiterative clustering and down-the-line seriation, as described in section B.4.[45] Where comparable, the seriated order (Figure B-5) closely approximates the order in the main seriation with 31 classes (Figure B-1). Further, Swatow sits next to "Ming" and European sits next to "Aggregate", confirming that the pooling steps involving these respective pairs would have been more appropriate than pooling Swatow with "Aggregate". Indeed even these pooling steps are unnecessary because the seriation produces a comparable result. Hence the classes shown in Figure B-5 are recognised as SSPHAP's reliable "broad" classes.

[45] One adjustment, however, was necessary. Owing to the biasing effects of surface assemblages, or the small sample of Vietnamese black-and-white pieces, the "A" branch in Figure B-5 should strictly be placed next to Vietnamese black-and-white rather than next to Swatow, making the "A" branch appear very early rather than late (and having no effect on the order between Vietnamese black-and-white and Swatow). From our previous seriations we know that Swatow should be placed next to the post-Ming classes, and so the top three-way split is forced as shown in Figure B-5. The same effect could be achieved by simply sinking the Vietnamese black-and-white pieces into some other class, which I have not done because it is not clear how Vietnamese black-and-white should best be pooled.

B.5.2 Dating and standardising the broad tradeware classes

The unpooled pre-Qing "broad" or reliable classes can retain the same datings suggested previously (B.4.3). The pooled classes should be dated more generally than their individual constituents, and in a manner which reflects the seriated order in Figure B-5. Hence the early overglaze-decorated pieces are, like the early monochromes, all dated to the 13th-14th centuries; the "Ming celadons" (MC/YMC) are simply dated to the 15th-16th centuries; as indeed are the members of the "Ming" megaclass.

However, a problem arises with the "post-Ming" classes in that the expected order is more or less reversed, running from Japanese (19th-20th centuries), to Qing Monochromes (18th-19th centuries), to European (19th century) and on to "Aggregate" (which includes pieces dated to the 16th century onwards, even if 20th century pieces are in the majority). Now the pooling of pieces of such different ages into "Aggregate" expunges whatever controls we would have had to detect abandonment or main initial occupation of sites during the 18th to 20th centuries, which was the point behind trying to date the later pieces. Hence all the "post-Ming" classes can simply be dated to the 18th to 20th centuries. This procedure allows the relative proportions of the Swatow and "post-Ming" classes to act as a barometer of changes between the 17th and later centuries.

The 36,996 tradeware pieces identified during the Gowa survey and assigned to broad classes are distributed by 100-year intervals as shown in Table B-44. Standardisation of the frequencies at any particular site can then proceed as described for the fine classes (B.4.4).

Comparing the "standardised chronological histograms" for the fine classes and the broad classes (Chapters 6 to 12) produces the expected result that the latter are flatter, particularly during the middle-Ming (15th-16th) and post-Ming (18th to 20th) centuries. The latter tradeware profiles might appear sounder in the sense that I cannot really mark off the date of all the pieces to the degree that the fine tradeware profiles indicate. However, some major qualifications should be borne in mind.

Firstly, most of the confusion between FICs (as picked up by the LICs) was reciprocal (Table B-41) so that, as long as the FICs were collected at around the same regularity, the unchecked FIs should have swapped backwards and forwards. Hence our estimates of the performance of these classes (Table B-42) strongly overstates their unreliability, and indeed the seriations often demonstrate their distinctness (e.g. Swatow compared with Qing Swatow and Qing BW; or Qing Swatow and Qing BW compared with Qing white). Or to take the example of a poorly collected FIC which appears to include many pieces from another class according to Table B-41, e.g European compared against Qing Swatow and Qing BW, then the confusion of identifications should disguise a real chronological difference and not gratuitously create it. For these reasons I think that the seriated order of the Swatow and later classes shown in Figures B-1 to B-3 is correct.

Secondly, 15th century use of sites is difficult to detect by tradewares because the most numerous of the century's recognisable classes continued into the 16th century with an equal or greater emphasis (e.g. Watt, 1984:189). Undoubtedly SSPHAP's Ming Swatow and 16th century Ming BW pieces include a healthy proportion of 15th century pieces, but they are not identifiable. The only real control on distinguishing these centuries lies in the proportions of Vietnamese BW, Sancai, Jizhou, Ming celadon and Thai pieces (all comparatively rare) as compared with the proportions of Ming BW and Ming Swatow pieces. Greater than expected proportions of the former indicate a 15th century emphasis (e.g. Tinco Tua in Soppeng [Kallupa et al., 1989]), while greater than expected proportions of the latter indicate a 16th century emphasis (e.g. Somba Opu [11.3] and Benteng Tallok [12.2]). As long as large samples of tradewares are available at a site, the distinction is reliable. Indeed when the predominantly 15th century and predominantly 16th century BW/whiteware classes are bundled together, as with the reliable "Ming" megaclass, the tradeware profiles suggest patent nonsense, e.g. that Somba Opu's main period of occupation began in the 15th century (Figure 11-8).

Table B-44. FREQUENCIES OF THE 17 BROAD TRADEWARE CLASSES FROM THE GOWA SURVEY ASSIGNED BY 100-YEAR PERIOD

	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-1986	Total
Vietnamese Black-and-white	0	7	0	0	0	0	0	0	7
Vietnamese Monochromes	5	27	23	0	0	0	0	0	55
Early Whitewares	52	52	0	0	0	0	0	0	104
Early Monochromes/Overglaze	104.5	104.5	0	0	0	0	0	0	209
Sancai	0	0	9	0	0	0	0	0	9
Jizhou	0	0	4	0	0	0	0	0	4
Ming Celadons inc. Yuan-like	0	0	32.5	32.5	0	0	0	0	65
Sawankhalok Black-and-white	0	0	73	73	0	0	0	0	146
Sawankhalok Monochromes	0	0	32	32	0	0	0	0	64
Sukothai	0	0	7.5	7.5	0	0	0	0	15
"Ming" (MBW/MFV/MW/MS/HEX/VBW/EBW)	0	0	1190.5	1190.5	0	0	0	0	2381
Swatow	0	0	0	0	2610	0	0	0	2610
Japanese	0	0	0	0	0	221.67	221.67	221.67	665
Qing Monochromes	0	0	0	0	0	100.33	100.33	100.33	301
European	0	0	0	0	0	1966.67	1196.67	1196.67	5900
"Aggregate" (QPR/WLW/QBW/QS/BL/WBW/LBW)	0	0	0	0	0	8153.67	8153.67	8153.67	24461
Sum	161.5	190.5	1371.5	1335.5	2610	10442.33	10442.33	10442.33	36996

In summary, the broad tradeware classes and their standardised chronological histograms are useful particularly for sites with only a small sample of tradewares, either within a particular epoch or as a total sample, or for sites whose dating relies heavily on the most unreliable classes such as the Wanli classes. In other cases the fine tradeware classes are far superior.

B.6 Defining a "Historical Site" by Uncollected Tradewares

SSPHAP's self-imposed policy of regularly collecting only diagnostic tradeware classes, as identified in the field, would appear to have been misguided. I had been thinking along the lines of conserving cultural resources in the landscape, but my experience of revisiting tradeware-rich zones rather suggests that tradeware sherds in South Sulawesi are not a scarce resource. If there is indeed any danger of the sites being "picked over", which I doubt, then selecting only diagnostic classes not only removes the principal resources, but also leaves a biased record for posterity.

On the other hand, with 31 tradeware classes to choose from, and a reliability of identifications made in the field of just over 50 per cent (Table B-41), the fine chronological interpretations required for purposes of historical reconstruction are not always available from identifications made in the field. Representative sampling of the field identifications, e.g. collecting every tenth zone, would allow general data-fitting exercises but would probably still leave key questions of site interpretation hanging. These considerations suggest that, if at all possible, the tradeware contents of the sites should simply be collected in total. Of course, the 42,980 tradeware pieces recorded during SSPHAP's survey - maybe as much as a third of them of no apparent archaeological merit whatsoever - would impose a considerable strain on laboratory time and curation resources. But decisions on how to manage the tradeware identifications are best handled in the controlled atmosphere of the laboratory. And the tradeware pieces can always be returned to their original location at a later date. From the point of view of preserving an unbiased cultural resources

record at the sites, even a decision to throw out unwanted sherdage with the garbage would possibly be preferable to leaving that sherdage, robbed of its more diagnostic companions, clogging up historical sites.

I have argued that, even though tradeware pieces identified in the field were collected on an uncontrolled basis, the assumption of representativeness of those pieces paints too grim a picture of the reliability of the field identifications. The rarely collected fieldwork classes, which cause the most consternation in terms of conceivable re-identifications, are clearly distinguished chronologically by seriation (B.4 and B.5). Moreover, general collections made after field identifications had been assigned generally occurred when the assemblage suggested abandonment in historical times, with the consequence that the pieces identified as post-Ming in these assemblages are more likely to have been misidentified than would generally be the case. Hence the re-assignments which Table B-41 might indicate for uncollected pieces could well be a "worst case" scenario. Anyway, taking those as the only available standard, I wish to consider the probability that a piece given a particular identification in the field but not collected could represent a "historical site", where these are defined as sites containing Swatow or older sherdage (as per the seriations in Figures B-1 to B-3). Table B-45 lists the probabilities across the different classes as identified in the field.

In summary, the broad tradeware classes and their standardised chronological histograms are useful particularly for sites with only a small sample of tradewares, either within a particular epoch or as a total sample, or for sites whose dating relies heavily on the most unreliable classes such as the Wanli classes. In other cases the fine tradeware classes are far superior.

Checked field identifications, listed between Sawankhalok black-and-white and Ming whitewares, were identified to a Ming class more than 80% of the time. Hence a single piece given one of these classifications in the field can be taken

TABLE B-45. PROBABLE TYPE OF LABORATORY IDENTIFICATION RESULTING FROM A GIVEN FIELDWORK IDENTIFICATION

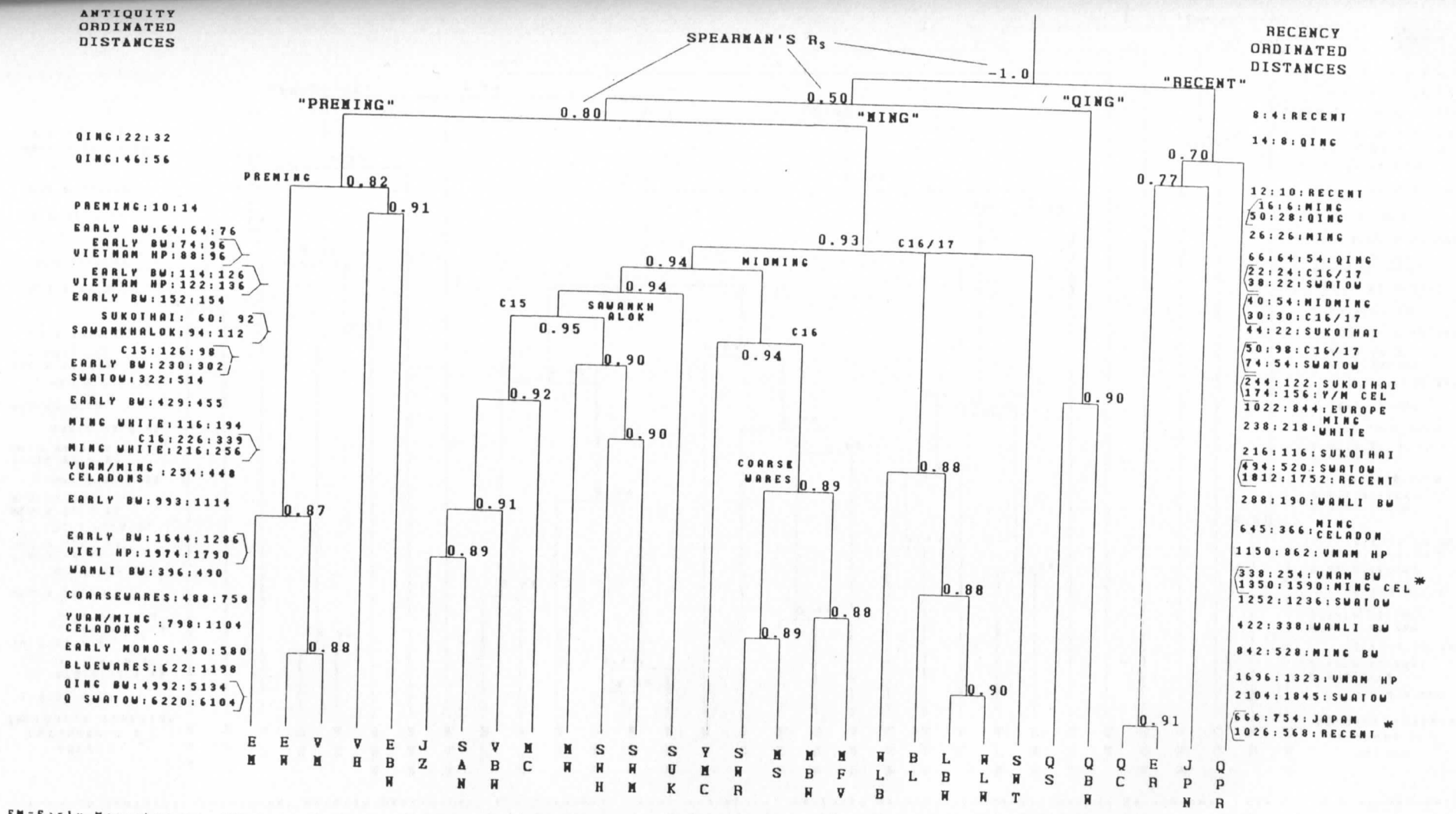
Field Identification	Expected Laboratory Identification "Pre-Qing" ("Historical")	"Post-Ming"	Coarse Stonewares
Sawankhalok Black-and-white (137)	100%	0%	0%
Vietnamese Blue-and-white (78)	100%	0%	0%
Sancai (13)	100%	0%	0%
Sukothai (11)	100%	0%	0%
Ming BW Hexagonal wares (7)	100%	0%	0%
Vietnamese Black-and-white (6)	100%	0%	0%
Bluewares (6)	100%	0%	0%
Wanli Whitewares (2)	100%	0%	0%
Early Blue-and-white (1)	100%	0%	0%
Early overglaze-enamelled	100%	0%	0%
Early Monochromes (64)	96.9%	0%	3.1%
Sawankhalok Monochromes (147)	96.6%	2.0%	1.4%
Ming Celadons (193)	96.4%	3.6%	0%
Early Whitewares (82)	96.3%	3.7%	0%
Vietnam Monochromes (52)	96.2%	3.8%	0%
Jizhou (9)	88.9%	1.1%	0%
Ming Swatow (619)	92.2%	7.8%	0%
Ming Blue-and-white (737)	87.9%	12.1%	0%
Swatow (415)	86.5%	13.0%	0.5%
Wanli Blue-and-white (33)	84.8%	15.2%	0%
Ming Whitewares (41)	83.0%	17.0%	0%
Ming Red (11)	72.7%	27.3%	0%
Late Ming Blue-and-white (106)	58.5%	41.5%	0%
Qing Swatow (237)	41.4%	58.6%	0%
Qing Blue-and-white (308)	37.7%	63.3%	0%
Qing white/Recent (47)	12.8%	87.2%	0%
Qing Monochromes (219)	11.9%	88.1%	0%
European (19)	0%	100%	0%
Japanese (11)	0%	100%	0%
Coarse Stonewares (264)	6.1%	0.8%	93.2%

N.B. Coarse stonewares are not considered datable as a class.

as reliable identification of a SSPHAP "historical site". However, a single piece identified in the field as Ming red or Late Ming BW (Transitional BW) appears less convincing and should not be considered diagnostic.

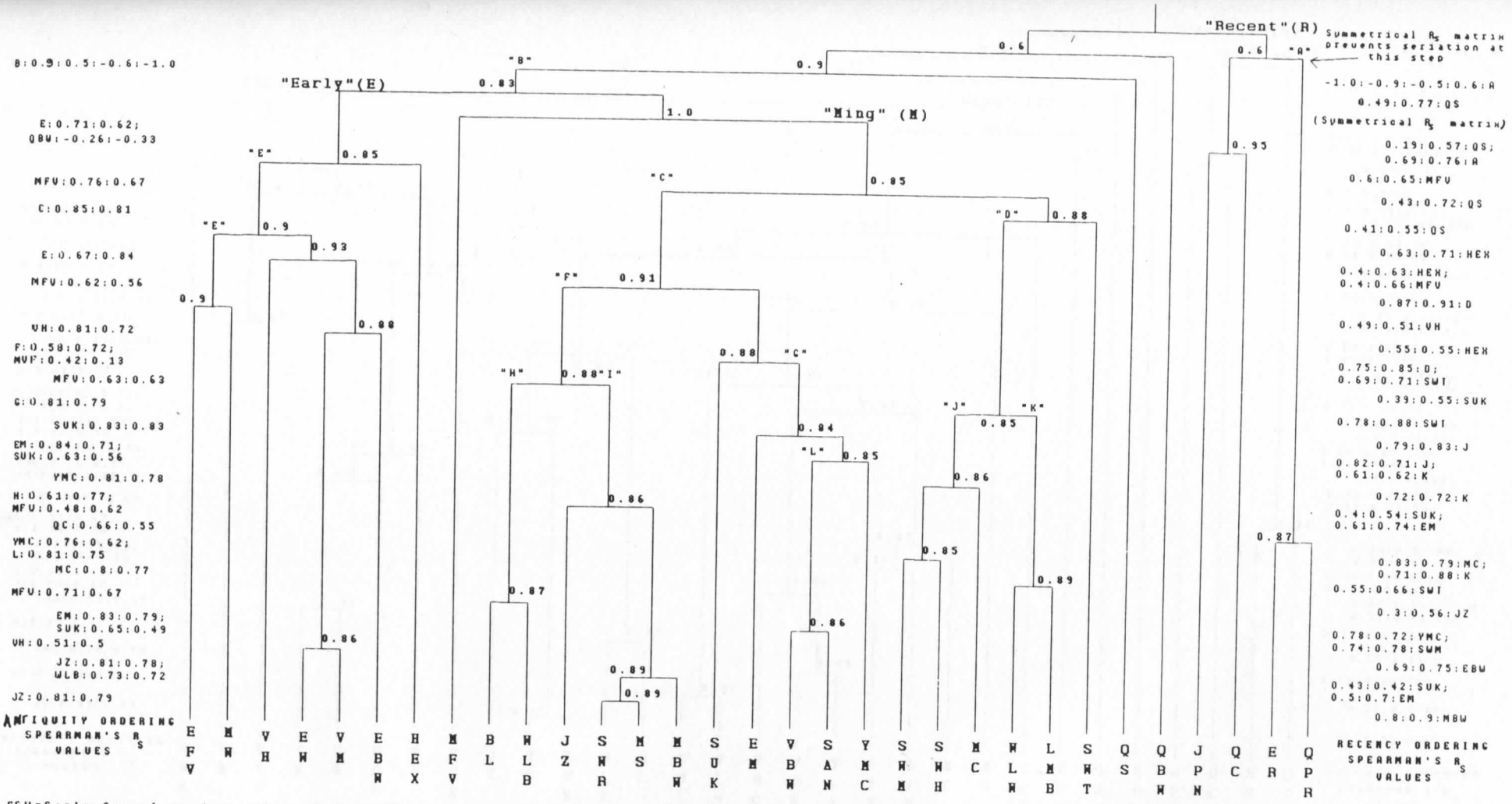
Some proportion of the pieces identified in the field as Qing Swatow, Qing BW or Qing white/recent clearly would have found a pre-Qing identification in the laboratory, even though retention of a Qing classification would have been the more likely outcome. As these classes were rarely collected, probably there are considerably more "pre-Qing" pieces on the ground than have been allowed for. However, without closer attention to sampling I cannot say whether these extra

"pre-Qing" pieces were essentially restricted to zones already characterised as containing pre-Qing pieces, or whether comprehensive collection of the surface tradewares would have revealed significantly more "historical" zones and sites than I have recognised. Hence unchecked field identifications listed between Qing Swatow and Qing white/recent must, like the European and Japanese identifications, be interpreted as failing to provide evidence of a SSPHAP "historical site".



EM=Early Monochromes; EW=Early Whitewares; VM=Vietnamese Monochromes; VH=Vietnamese Black-and-white; EBW=Early Blue-and-white; JZ=Jizhou; SAN=Sancai VBW=Vietnamese Blue-and-white; MC=Ming Celadons; MW=Ming Whitewares; SWH=Sawankhalok Black-and-white; SWM=Sawankhalok Monochromes; SUK=Sukothai; YMC=Yuan-like Ming Celadons; SWR=Coarse Stonewares; MS=Ming Swatow; MBW=Ming Blue-and-white; MFV=Ming Red; WLB=Wanli Blue-and-white; BL=Bluewares; LBW=Late Ming Blue-and-white; WLW=Wanli Whitewares; SWT=Swatow; QS=Qing Swatow; QBW=Qing Blue-and-white; QC=Qing Monochromes ER=European; JPN=Japanese; QPR=Qing White/Recent.

FIGURE B–1. CLUSTERING AND SERIATION OF 29 TRADEWARE CLASSES (AFTER BULBECK, 1989)



EFU=Early Overglaze-decorated; MW=Ming Whitewares; VH=Vietnamese Black-and-white; EW=Early Whitewares; VM=Vietnamese Monochromes; EBW=Early Blue-and-white; HEX=Ming Blue-and-white Hexagonal Wares; MFU=Ming Red; BL=Bluewares; WLB=Wanli Blue-and-white; JZ=Jizhou; SWR=Coarse Stonewares;MS=Ming Swatow; MBW=Ming Blue-and-white; SUK=Sukothai; EM=Early Monochromes; VBW=Vietnamese Blue-and-white; SAN=Sanoai; YMC=Yuan-Ming Celadons;SWM=Sawankhalok Monochromes; SWH=Sawankhalok Black-and-white; MC=Ming Celadons; WLW=Wanli Whitewares; LBW=Late Ming Blue-and-white; SWT=Swatow;QS=Qing Swatow; QBW=Qing Blue-and-white; JPN=Japanese; QC=Qing Monochromes; ER=European; QPR=Qing White/Recent.

FIGURE B-2. REITERATIVE CLUSTERING & DOWN-THE-LINE SERIATION OF 31 TRADEWARE CLASSES

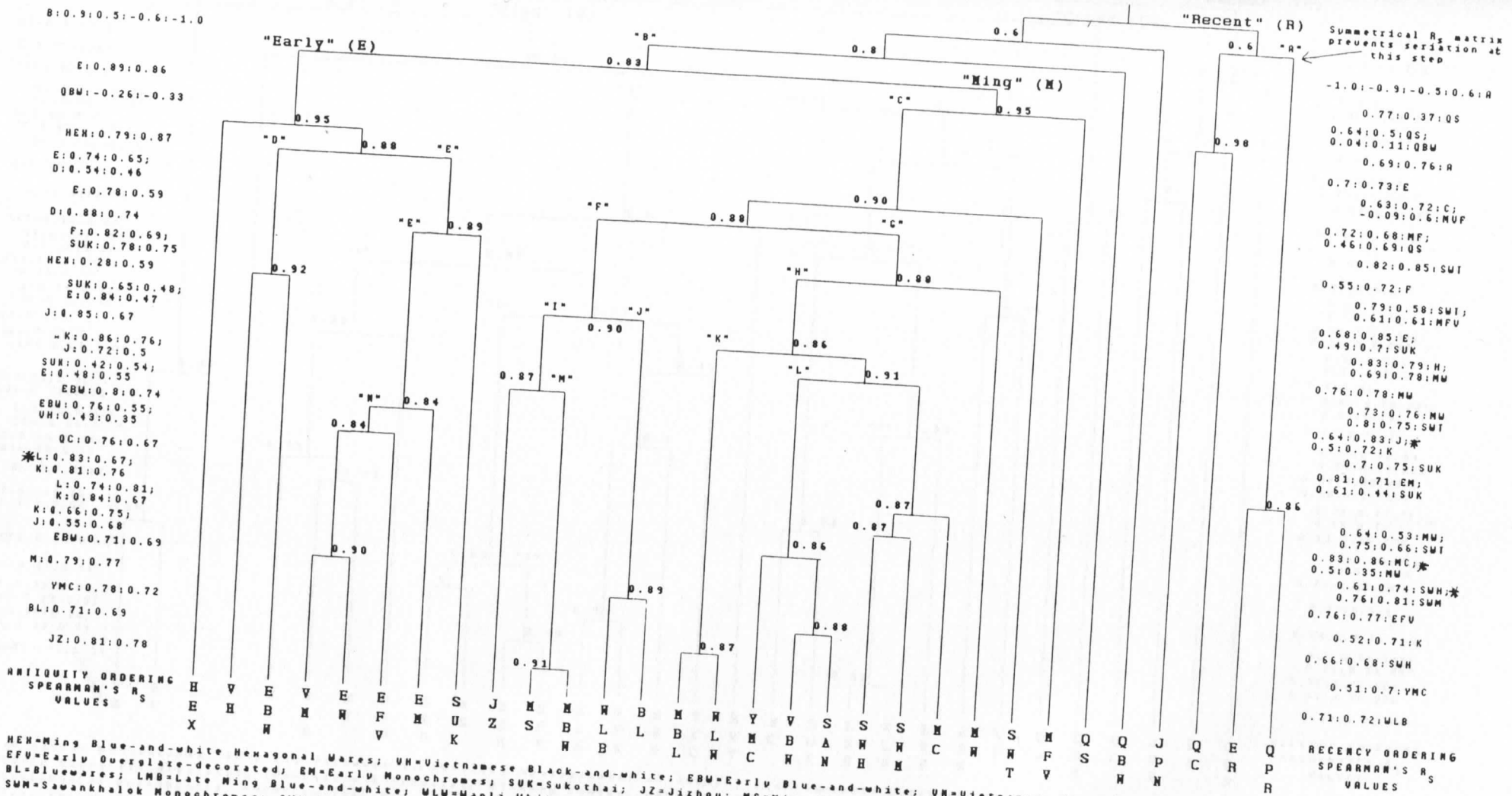


FIGURE B–3. CLUSTERING & SERIATION OF 30 TRADEWARE CLASSES (COARSE STONEWARES EXCLUDED)

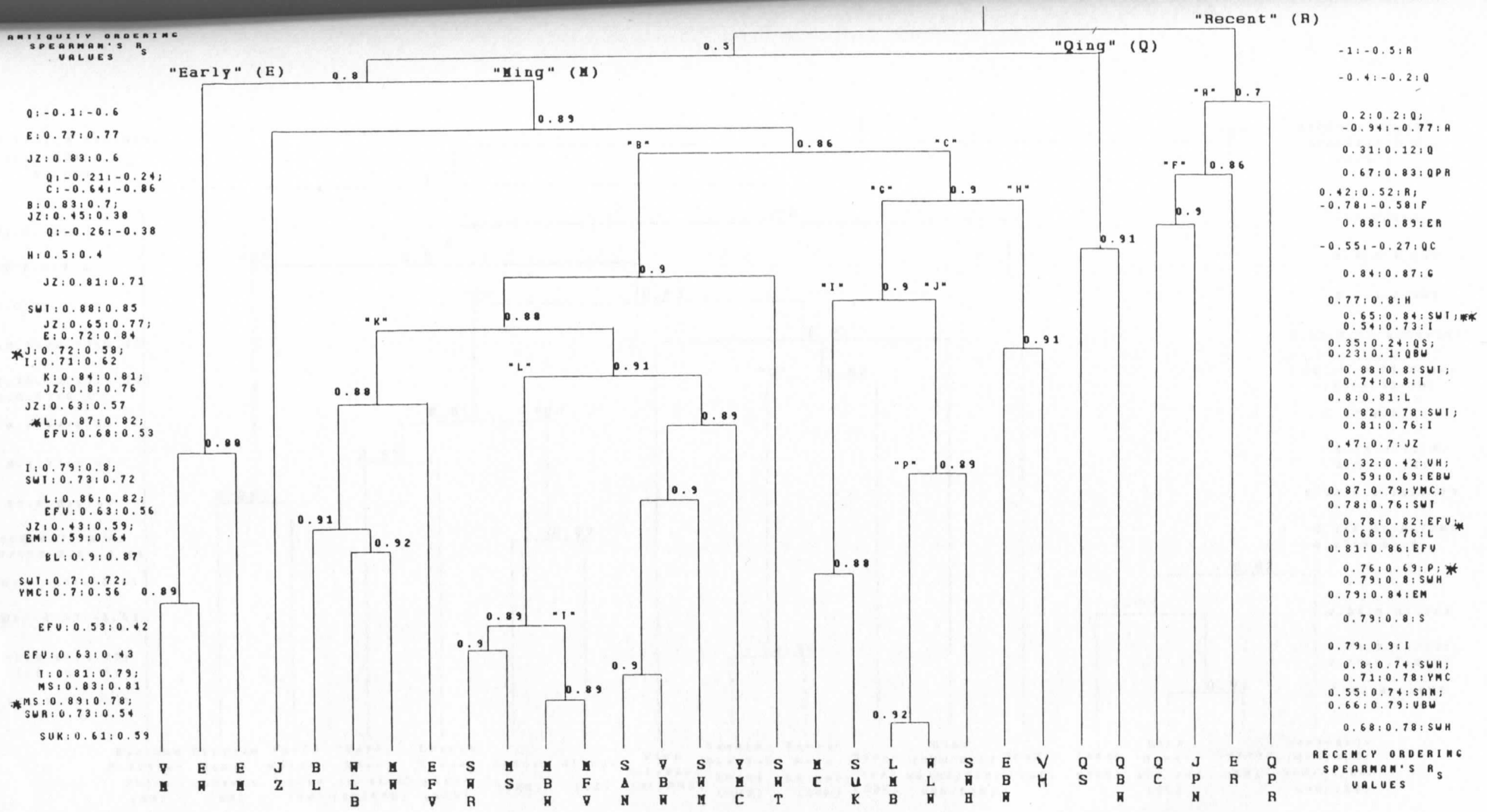


FIGURE B–4. CLUSTERING & SERIATION OF 30 TRADEWARE CLASSES (HEXAGONAL WARES POOLED IN MING BW)

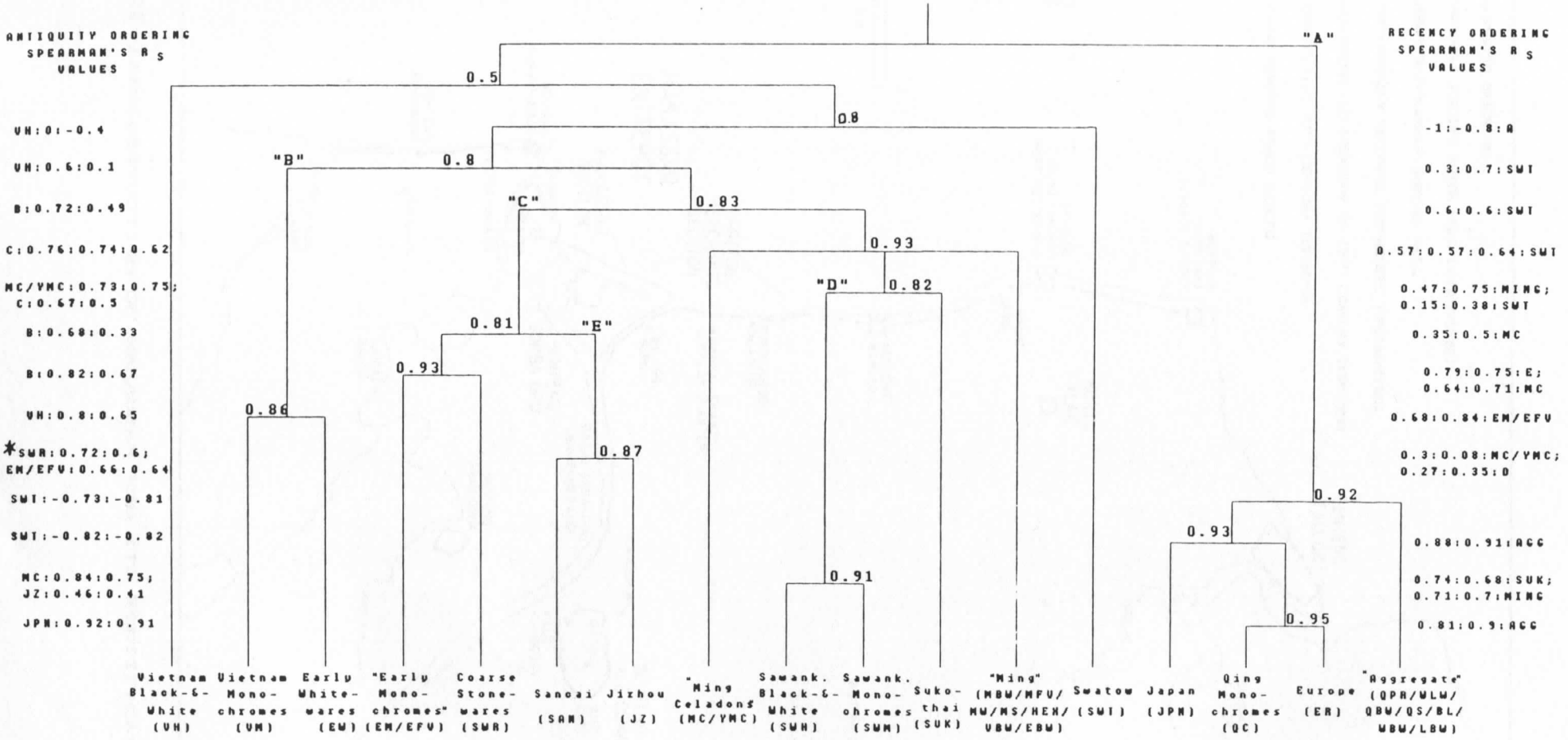


FIGURE B-5. REITERATIVE CLUSTERING & DOWN-THE-LINE SERIATION OF 17 TRADEWARE CLASSES

APPENDIX C. GAZETTEER OF SSPHAP'S SITES

During my fieldwork in South Sulawesi I provided my Indonesian sponsors with monthly reports. They summarised the state of progress of the investigations and included brief descriptions of the recorded sites, numbered consecutively by *kabupaten*. I now call this method of notation SSPHAP's "fieldwork sites", including the zones within them which pin-point the artefactual content recorded by SSPHAP (Appendix D).

Subsequent analysis of the results from the Gowa survey recommended a more thematic organisation of the historical sites into toponymic sites, point- and area-sites. Similarly the records of stone artefacts are organised into flaked stone sites, isolated flaked stone artefacts, and polished stone artefacts (Chapter 5). The purpose of this gazetteer is to cross-tabulate the types of sites according to the respective definitions used, while also summarising some key information relevant to the categories. For the sake of comparability, the fieldwork sites are here named as in my monthly fieldwork reports, the historical sites are named according to the associated kampung-like toponym, and the names of the point- and area-sites (used in the site hierarchy analyses) follow the figures in Chapters 6 to 12. The gazetteer concludes with a similar exercise for the Soppeng sites based on SSPHAP's final report (Kallupa et al., 1989).

To save space, certain contractions are used in the summary descriptions. "17B" refers to a burial ground with one or more Islamic grave markers apparently dating to the 17th century; "PIB" refers to a burial ground which apparently contained pre-Islamic burials; PIB/17B refers to a burial ground containing both. In cases of historical sites containing more than one example, the number will be shown in brackets behind "17B" or "PIB", whichever is relevant.[1] "M" indicates the remains of Makassar fortifications; "K"

[1] Note that the benchmark for recognising multiple Islamic burial grounds in close contiguity is that they carry different names, but since pre-Islamic burial grounds are not specifically named, I distinguish them on the criterion of association with a distinctive kampung-like toponym.

indicates *keramat* (holy) fixtures presumably in place by at least the 17th century; "T" indicates an identification with a pre-1667 toponym; while "E" indicates cases where identification as a SSPHAP historical site ultimately depnends on the presence of Swatow or earlier tradeware sherdage. "FS" designates the occurrence of two or more flaked stone artefacts all within 50 metres of another example, i.e. a "prehistoric site" by the definition of the New South Wales National Parks and Wildlife Service; "FI" designates an isolated flaked stone artefact; and "PI" designates a polished stone artefact. "?" will show cases where some legitimate doubt attaches to the above identifications, while "??" will refer to cases which appear possible but are rejected on the balance of probabilities.

Site locations are given in degrees of latitude and longitude. Most of the forts are entered twice in the gazetteer, i.e. both as a fort and as a constellation of toponymic, point- and area-sites. Usually the gazetteer only gives the location of the fort, because the sites inside it are best found by going to the fort and following my site maps. Otherwise I usually give a separate location for every site by whatever definition.

FIELDWORK SITE			HISTORICAL SITE			HISTORICAL AREA/POINT	STONE
Name	Kabupaten No.	Location	Toponym	Zones	Features	Name	ARTEFACTS
Benteng Tua	Gowa 1/ UP10	119° 26' 47" E 5° 11' 36" S	Gowa	Those along or inside walls	M;T; PIB/17B(5); PIB(6); 17B(2)	Benteng Tua	FI(4); FS(2); PI
Kale Gowa	Gowa 1/ UP10		Kaballokang	72-73,75-76, 78-79,133,170	M; T; PIB/17B; EB	Kaballokang/ Lakiung/ Mangasa/ Bone-Bone (KLMB)	
" "	Gowa 1/ UP10		Lakiung	1-14,66-71, 127-149	M; T; PIB; 17B??; 17B		
" "	Gowa 1		Mangasa	15-26,28-30	M; T; PIB; 17B	" "	FI
" "	Gowa 1	119° 26' 42" E 5° 11' 40" S	Bone-Bone	150-156, 172,174-177	T; PIB	" "	
" "	Gowa 1		Kale Gowa	104-109	M?; T?; K	Kale Gowa/ Tamalate/ Datak Toa/ Sulengkaya/ Allamoncong/ Lonjo Boko (KTDSAL)	FS
" "	Gowa 1		Tamalate	44-56,99-103	M; K; T; PIB/17B		FI (2)
" "	Gowa 1/ UP10	119° 26' 47" E 5° 11' 36" S	Datak Toa	91-98,123-126	K; T		
" "	Gowa 1		Sulengkaya	40-43,57-61	M; T; 17B?	" "	
" "	Gowa 1		Allamoncong	36-38	F; PIB/17B	" "	
" "	Gowa 1		Lonjo Boko	35	PIB	" "	
" "	Gowa 1/ UP10		Bisei	65,121-122,160-168,180-183	M; T; PIB/17B	Bisei	FI
" "	UP10		Katangka Toa	111-115, 178-179	M; T; PIB	Katangka Toa	FS; PI

FIELDWORK SITE				HISTORICAL SITE			HISTORICAL AREA/POINT	STONE ARTEFACTS
Name	Kabupaten	No.	Location	Toponym	Zones	Features	Name	
Benteng Anak Gowa	Gowa	2	119° 25' 59" E 5° 12' 36" S	Anak Gowa	Those along or inside walls	M; T; 17B??; PIB/17B	Benteng Anak Gowa	
Anak Gowa	Gowa	2		Anak Gowa	1,9,11,12	M; T; 17B??; PIB/17B	Anak Gowa Utara	
" "	Gowa	2		" "	15	M; T; E	Anak Gowa Selatan	
Benteng Somba Opu	Gowa	3	119° 24' 12" E 5° 11' 34" S	Somba Opu	Those along or inside walls	M; T; PIB; 17B	Somba Opu	
Somba Opu	Gowa	3	119° 24' 12" E 5° 11' 34" S	Sapirea	1-7	M; PIB; 17B	" "	
" "	Gowa	3	119° 23' 55" E 5° 11' 30" S	Sarombe	3,8-10	M; E	" "	
Kanjilo Lama	Gowa	6	119° 25' 12" E 5° 12' 44" S	Kanjilo	1	T; PIB	Kanjilo Lama Timur Laut	
" "	Gowa	6		" "	5	T; E	Kanjilo Lama Barat Laut	
" "	Gowa	6	119° 25' 04" E 5° 12' 50" S	Tangallak	15-25	T; PIB/17B	Kanjilo Lama Barat	
" "	Gowa	6	119° 25' 10" E 5° 12' 58" S	" "	6-14	T; PIB/17B	Kanjilo Lama Timur Daya	
" "	Gowa	6	119° 25' 07" E 5° 13' 05" S	" "	3	T; E	Kanjung Maek	

Pattung	Gowa	4	119° 24' 12" E 5° 11' 47" N	Pattung	1-3	T; PIB/17B	Pattung	
Garassik	Gowa	5	119° 23' 43" E 5° 11' 47" N	Garassik	1-6,8-10, 13-16	M; T; PIB; 17B	Garassik	FS
Kompleks Makam Gusung	Gowa	7	119° 25' 28" E 5° 11' 58" S	Gantarang	1-2	T; 17B; PIB?/17B	Gusung	
" "	Gowa	93	119° 25' 32" E 5° 11' 51" S	Kerasak (Mangasa??)	Not mapped	17B; T??	Makam Gelarang Mangasa	
Makam Campagaya	Gowa	8	119° 26' 15" E 5° 11' 57" S	Campagaya	1	T?; 17B?	Campagaya	
Bonto Tangnga	Gowa	9	119° 25' 28" E 5° 12' 13" S	Bonto Tangnga	2	PIB	Bonto Tangnga Utara	
Bonto Jalling	Gowa	10	119° 25' 38" E 5° 11' 53" S	Bonto Jalling	1-2	PIB/17B	Bonto Jalling	PI
Bilaya Lama	Gowa	11	119° 24' 15" E 5° 13' 08" S	Bilaya	5	PIB/17B	Bilaya	
Tombolok Tua	Gowa	12	119° 26' 01" E 5° 13' 05" S	Tombolok	1	17B?/PIB	Makam Takbakka	
" "	Gowa	12	119° 26' 00" E 5° 13' 08" S	Sanrangang	2	PIB	Tombolok	
" "	Gowa	12	119° 26' 07" E 5° 13' 11" S	Parang Bone	3	17B	Makam Kocci Borong	
Makam Manyampang	Gowa	13	119° 26' 38" E 5° 12' 57" S	Manyampang	1	T?; PIB??/17B	Manyampang	

FIELDWORK				HISTORICAL				
SITE				SITE				
Name	Kabupaten	No.	Location	Toponym	Zones	Features	HISTORICAL AREA/POINT Name	STONE ARTEFACTS
Bontoalak Complex	Gowa	14	119° 26' 38" E 5° 12' 38" S	Bonto Alak	1	PIB/17B	Lambengnge	
" "	Gowa	14	119° 26' 38" E 5° 12' 42" S	Lambengnge (Lembangi)	2	T; 17B	Dampang	
" "	Gowa	14	119° 26' 28" E 5° 12' 42" S	Gotong	3	PIB?	Gotong	
Makam Jingarak	Gowa	15	119° 25' 30" E 5° 12' 39" S	Jingarak	3-6	PIB/17B	Jingarak	
Pekallak Bua	Gowa	16	119° 27' 14" E 5° 14' 00" S	Pekallak Bua	1-2,4-5,9	PIB/17B	Pekallak Bua	
Bonto-manaik 2	Gowa	17	119° 25' 23" E 5° 13' 46" S	Bontomanaik	1	17B??/PIB	Bontomanaik 2	
Bonto Pakja	Gowa	18	119° 25' 10" E 5° 14' 10" S	Bonto Pakja	1	PIB	Bonto Pakja	
Pannu-juang	Gowa	19	119° 23' 08" E 5° 17' 09" S	Pannujuang	1-5,8	PIB	Mandallek/ Pannujuang	
Mandallek Toa	Gowa	20	119° 22' 52" E 5° 17' 14" S	Mandallek	1-10,12-14,16-17, 20-21,25,27	T; PIB	" "	FS; FI
Manjalling Lompoe/	Gowa	21	119° 23' 48" E 5° 17' 44" S	Manjalling	1-2	17B/PIB	Manjalling	
Borong Punaga	Gowa 21/ Gowa 23		119° 23' 41" E 5° 17' 54" S	Borong Punaga	G.21.12-13; G.23.1-11	PIB	Borong Punaga	
Kaledu Paya	Gowa	22	119° 26' 13" E 5° 12' 03" S	Kaledu Paya	4-10	PIB	Kaledu Paya	

Tala-borong	Gowa	24	119° 23' 57" E 5° 17' 44" S	Talaborong	1-8	PIB	Talaborong	
Bukit Bikuling	Gowa	25	119° 27' 46" E 5° 11' 36" S	Sero	3-5	K; PIB/17B	Sero	FS
Makam Kg Loe ri Sero	Gowa	26	119° 27' 43" E 5° 11' 31" S	" "	1,3-5,7-11	T; K; PIB/17B	" "	PI (2)
Makam Boccolaya	Gowa	27	119° 27' 44" E 5° 11' 33" S	" "	1,3	17B?; E	" "	
Makam Paccalaya	Gowa	28	119° 27' 30" E 5° 11' 52" S	Tombolok	1	17B	Paccalaya	FI
Makam Dg Bane	Gowa	36	119° 27' 46" E 5° 11' 41" S	" "	1-7	T; PIB/17B	Sampeang/ Tombolok	
Makam Sampeang	Gowa	37	119° 27' 49" E 5° 11' 45" S	Sampeang	1	17B	" "	
Bukit Manggarupi	Gowa	29	119° 27' 43" E 5° 12' 13" S	Not a Gowa historical site				FI (2); FS; PI
Saumata Lama	Gowa	30	119° 29' 23" E 5° 11' 48" S	Campaga Lomo	1-9, 27-28	PIB/17B	Saumata Lama	
Saumata Lama	Gowa	30	119° 29' 20" E 5° 12' 00" S	Saumata	10-26, 29-35	PIB; 17B (2)	" "	FI
Kuburan Romang Sapang	Gowa	31	119° 29' 04" E 5° 12' 13" S	Bontoa	1-2,6-7	PIB; 17B	Bontoa	
Kuburan Romang Polong	Gowa	32	119° 28' 56" E 5° 12' 22" S	Kadieng	2-7	PIB; 17B??	Kuburan Romang Polong	

FIELDWORK SITE				HISTORICAL SITE			HISTORICAL AREA/POINT	STONE ARTEFACTS
Name	Kabupaten	No.	Location	Toponym	Zones	Features	Name	
Bero-anging	Gowa	33	119° 28' 54" E 5° 12' 38" S	Beroanging	1-5	T; 17B	Cambang Beroanging	
" "	Gowa	33	119° 28' 56" E 5° 12' 32" S	" "	10	T; PIB/17B	Beroanging Utara	
Romang Polong Barat	Gowa	34	119° 28' 40" E 5° 12' 07" S	Romang Polong	1	E	Romang Polong Barat	
Kasom-berang	Gowa	35	119° 27' 49" E 5° 11' 54" S	Kasomberang (Pakbineang)	5-6	PIB/17B T?	Kasomberang	
Kuburan Pao-Pao	Gowa	38	119° 27' 59" E 5° 11' 45" S	Pao-Pao	1-4	T; 17B	Pao-Pao	
Kampung Pao-Pao	Gowa	39	119° 27' 56" E 5° 11' 50" S	" "	1-7	PIB	" "	
Bukit Sulenta	Gowa	40	119° 28' 06" E 5° 11' 49" S	Paccinongang	1-2,4	17B	Paccinongang	FS
Kampung Paccinongang	Gowa	41	119° 28' 04" E 5° 11' 51" S	" "	1	T; PIB	" "	FI
Kuburan Paccinongang	Gowa	42	119° 28' 00" E 5° 11' 56" S	" "	1	17B	" "	
Kuburan Matoanging	Gowa	43	119° 22' 57" E 5° 17' 26" S	Matoanging	1,3-6	PIB/17B	Maroanging	FS; FI
" "	Gowa	43	119° 23' 16" E 5° 17' 28" S	Maccinik Kondo	8	PIB?	Maccinik Kondo	

Kampung Parebalang	Gowa	44	119° 22' 41" E 5° 17' 18" S	Parebalang	1	E	Parebalang	
Makam Kg Sabeng	Gowa	45	119° 30' 27" E 5° 12' 31" S	Malaklang	1-6,8	PIB/17B	Sabeng	FS
Lamuru	Gowa	46	119° 31' 52" E 5° 12' 29" S	Lamuru	1-8,13,15	PIB	Lamuru	FS
Kuburan Lamuru	Gowa	47	119° 32' 03" E 5° 12' 23" S	" "	1	17B	Kuburan Islam Lamuru	
Makam Kg Tassili	Gowa	48	119° 32' 43" E 5° 12' 16" S	Tassili	1-3	PIB/17B	Tassili/ Ganrang Jawa	
Kuburan Ganrang Jawa	Gowa	49	119° 32' 52" E 5° 12' 21" S	Ganrang Jawa	1-5,7-10	PIB/17B	" "	FS; PI
Makam Kg Talla-Talla	Gowa	50	119° 33' 36" E 5° 12' 45" S	Talla-Talla	1-9	PIB/17B	Talla-Talla	FS
Kuburan Sawagi	Gowa	51	119° 33' 30" E 5° 12' 08" S	Sawagi	2-3,5	PIB/17B	Sawagi	FI
Pattal-lassang Toa	Gowa	52	119° 34' 07" E 5° 12' 52" S	Pattallassang	1-5,7-20	T; 17B (2)/PIB	Pattal-lassang Toa	FS; FI
Teamate Asli	Gowa	53	119° 33' 52" E 5° 13' 00" S	Teamate	1-4	PIB/17B	Teamate Asli	FS
Palacini Tua	Gowa	54	119° 34' 30" E 5° 12' 47" S	Palacini	1-3	PIB/17B	Palacini Tua	FS; FI
Soppeng/ Bonto-sunggu Asli	Gowa	55	119° 31' 45" E 5° 12' 08" S 119° 31' 47" E 5° 12' 00" S	Soppeng Bonto Sunggu	1-4 6-11	PIB PIB/17B	Soppeng/ Bonto Sunggu	FS FI (2)

FIELDWORK SITE				HISTORICAL SITE			HISTORICAL AREA/POINT	STONE ARTEFACTS
Name	Kabupaten	No.	Location	Toponym	Zones	Features	Name	
Moncong-Moncong Lama	Gowa	56	119° 31' 54" E 5° 11' 10" S	Moncong-Moncong	1,6-7	17B	Kuburan Moncong-Moncong	FS
" "	Gowa	56	119° 32' 01" E 5° 11' 03" S	" "	12-14,16	PIB	Moncong-Moncong Lama	FS
Moncong-Moncong Baru	Gowa	56	119° 32' 14" E 5° 11' 01" S	Not a Gowa historical site	0			FI
Paccel-lekang Lama	Gowa	57	119° 33' 10" E 5° 11' 41" S	Paccellekang	1-3,5-6,8	T; PIB/17B	Paccellekang	FS
Pabun-dukang Tua	Gowa	58	119° 33' 25" E 5° 11' 34" S	Pabundukang	1-8	T??; PIB/17B	Pabundukang	
Gentung	Gowa	59	119° 34' 40" E 5° 12' 37" S	Gentung	1-5	PIB/17B	Gentung	FS
Teko	Gowa	60	119° 34' 58" E 5° 12' 19" S	Teko	1-2	PIB/17B	Teko	
Bonto Lakja	Gowa	62	119° 24' 31" E 5° 12' 08" S	Bonto Lakja	2,5-6	PIB	Bonto Lakja Selatan	
" "	Gowa	62	119° 24' 31" E 5° 12' 03" S	" "	8-10	PIB/17B	Bonto Lakja Utara	
" "	Gowa	62	119° 24' 20" E 5° 12' 00" S	" "	12	17B	Kuburan Tuan Said	
" "	Gowa	62	119° 24' 26" E 5° 12' 04" S	" "	13,15	E	Bonto Lakja Barat	

Saile Tua	Gowa 61	119° 34' 22" E 5° 12' 26" S	Saile	1-2	PIB/17B	Saile Tua	
Pattiro Tua	Gowa 63	119° 32' 16" E 5° 11' 24" S	Balang Sari	1-5	PIB/17B	Pattiro Tua	FS (2); PI
" "	Gowa 63	119° 32' 15" E 5° 11' 18" S	Pattiro	6-15	PIB/17B	" "	FS (2)
Biring Balang Tua	Gowa 64	119° 31' 28" E 5° 10' 41" S	Biring Balang	2-5	PIB/17B	Biring Balang	FS
Bangkala Tua/	Gowa 65	119° 31' 42" E 5° 11' 05" S	Bangkala	1-10,15	T?; PIB/17B	Bangkala/ Palembang	FS
Palembang Tua		119° 31' 33" E 5° 10' 55" S	Palembang	11-14	T??; E	" "	
Pandang-Pandang	Gowa 66	119° 26' 40" E 5° 12' 06" S	Pandang-Pandang	1	T?; PIB	Pandang-Pandang	
Borongloe	Gowa 67	119° 28' 00" E 5° 14' 15" S	Borongloe	1-11	T; PIB/17B	Borongloe	
Bado-Bado Tua	Gowa 68	119° 31' 44" E 5° 10' 42" S	Bado-Bado	1-3	PIB/17B	Bado-Bado	
" "	Gowa 68	119° 31' 49" E 5° 10' 47" S	Parang Bambe	4	17B?	Parang Bambe	
Tamarunang Tua	Gowa 69	119° 28' 54" E 5° 13' 50" S	Tamarunang	1,5-12,14	PIB	Tamarunang Tua	
Kabal-lokang	Gowa 70	119° 29' 53" E 5° 14' 24" S	Kaballokang	2	PIB/17B	Kaballokang	
Buta Didia Asli	Gowa 71	119° 28' 52" E 5° 13' 02" S	Buta Didia	1-4	PIB/17B	Buta Didia Asli	

FIELDWORK SITE			HISTORICAL SITE			HISTORICAL AREA/POINT	STONE ARTEFACTS
Name	Kabupaten No.	Location	Toponym	Zones	Features	Name	
Bossolok	Gowa 72	119° 30' 45" E 5° 12' 03" S	Bossolok	2-4,6	PIB/17B	Bossolok	
Jeknek Madinging	Gowa 73/ UP 18	119° 30' 33" E 5° 10' 29" S	Jeknek Madinging	1-2,4	PIB/ 17B??	Jeknek Madinging	
Bonto Ramba	Gowa 74	119° 28' 41" E 5° 13' 13" S	Bonto Ramba	Not mapped	PIB/17B	Bonto Ramba	
Kuburan Takbakka	Gowa 75	119° 26' 56" E 5° 12' 39" S	Tompok Balang	Not mapped	17B	Tompok Balang	
Borong	Gowa 76	119° 29' 40" E 5° 14' 00" S	Borong	1-2,8	E	Borong Timur	FS
" "	Gowa 76		" "	5	17B?	Saukang Borong	
" "	Gowa 76	119° 29' 18" E 5° 14' 00" S	" "	9	E	Borong Barat	
Dampang	Gowa 77	119° 27' 39" E 5° 13' 24" S	Dampang	1-17	PIB/17B	Dampang	
Cellaya	Gowa 78	119° 28' 02" E 5° 13' 52" S	Cellaya	1	PIB	Cellaya	
Saukang Borong	Gowa 79	119° 28' 08" E 5° 14' 11" S	Borong	Not mapped	PIB	Saukang Borong	
Saukang Boe	Gowa 80	119° 28' 15" E 5° 14' 22" S	Biring Kalorok	1-4	PIB	Saukang Boe	FS
Patadang Toa	Gowa 81	119° 31' 08" E 5° 10' 11" S	Patadang	Not mapped	PIB/17B	Patadang Toa	

Kuburan Borong Parang	Gowa 82	119° 30' 06" E 5° 14' 50" S	Borong Parang	Not mapped	17B?; E	Borong Parang	
Songkolo Asli	Gowa 83	119° 30' 23" E 5° 15' 21" S	Songkolo	3	PIB	Songkolo Asli	
Pammang-kulang Batua	Gowa 84	119° 30' 35" E 5° 17' 07" S	Not a Gowa historical site				FS
Bonto Ramba	Gowa 85	119° 29' 50" E 5° 17' 02" S	Bonto Ramba	1-15	PIB/17B	Likuloe	FS
Likuloe	Gowa 86	119° 29' 58" E 5° 17' 00" S	Likuloe	1-5	PIB	" "	FI
Bungung Ejaya	Gowa 87	119° 30' 00" E 5° 16' 32" S	Bungung Ejaya	1-2	PIB	Bungung Ejaya	FS
Kuburan Bontona Songkolo	Gowa 88	119° 29' 41" E 5° 15' 29" S	Bontona Songkolo	1	PIB/17B (?)	Bontona Songkolo	
Galoggoro	Gowa 89	119° 30' 00" E 5° 18' 11" S	Galoggoro	1	PIB	Galoggoro	FI
Tassili Baru	Gowa 90	119° 32' 40" E 5° 12' 20" S	Not a Gowa historical site	1			FS
Moncong-Moncong	Gowa 91	119° 27' 19" E 5° 11' 51" S	Not convincingly a historical site	1	E??		
Bonto Pakja	Gowa 93	119° 29' 08" E 5° 13' 00" S	Bonto Pakja	Not zoned	17B	Bonto Pakja	
Embung	Gowa 94	119° 31' 41" E 5° 10' 05" S	Embung	Not zoned	PIB/17B	Embung	

FIELDWORK				HISTORICAL			HISTORICAL	STONE
SITE				SITE			AREA/POINT	ARTEFACTS
Name	Kabupaten	No.	Location	Toponym	Zones	Features	Name	
Bayoa 1	UP1		119° 23' 26" E 5° 11' 57" S	Bayoa	1-9,11-27, 29-30,32,34,36	M; PIB/17B	Bayoa	FS??; FI??
Benteng Paknakkukang	UP2		119° 23' 03" E 5° 11' 50" S	Paknakkukang	1-4	M; T; PIB/17B	Paknakkukang/ Pattukangang	
" "	UP2		119° 23' 08" E 5° 12' 18" S	Pattukangang	5-13	M; T; E	" "	
Benteng Barombong	UP3			Dinding Barombong	1-8	M; T; PIB; 17B	Barombong wall	
" "	UP3		119° 23' 02" E 5° 12' 26" S	Tangaya	6	M; T; E	Makam Tuan Biraeng	
" "	UP3		119° 23' 02" E 5° 12' 34" S	" "	1	PIB	Tangaya	
" "	UP3		119° 23' 01" E 5° 12' 39" S	Barombong	5	PIB	Patanna Parasangang	
" "	UP3		119° 23' 00" E 5° 12' 50" S	" "	2	17B	Barombong	
Kaccia Lama	UP4		119° 23' 55" E 5° 12' 21" S	Kaccia	1-3	PIB/17B	Kaccia	
Mamampang	UP5		119° 23' 31" E 5° 12' 16" S	Mamampang	1	T??; E	Mamampang	
Ujung Kassik	UP6		119° 23' 00" E 5° 13' 05" S	Ujung Kassik	1	PIB?	Ujung Kassik	
Bayoa 2	UP7		119° 24' 13" E 5° 12' 13" S	Bayoa	1	PIB	Bayoa	

Gotong	UP8	119° 24' 21" E 5° 12' 32" S	Gotong	1	PIB	Gotong	
Timbuseng	UP9	119° 24' 11" E 5° 12' 51" S	Timbuseng	1	E	Timbuseng	
" "	UP9	119° 24' 13" E 5° 12' 45" S	" "	2-3	17B	Makam Karaeng Papok	
Jipang Bidaraya	UP11	119° 26' 57" E 5° 11' 11" S	Bidaraya	1-3	PIB	Bidaraya	
Makam Jipang	UP12	119° 26' 54" E 5° 11' 05" S	Jipang	2,4	17B?; E	Jipang	
Karunrung	UP13	119° 26' 57" E 5° 10' 47" S	Karunrung	1,11-12	T; PIB/17B	Karunrung Selatan	FS; FI
" "	UP13	119° 26' 54" E 5° 10' 39" S	" "	4-5	T; 17B	Karunrung Utara	
Palampang Toa	UP14	119° 29' 41" E 5° 11' 34" S	Palampang	1-5,7	17B?/PIB	Palampang	
Kuburan Kassik Tengah	UP15	119° 29' 22" E 5° 11' 13" S	Kassik	1,3	PIB/17B	Kassik Tengah	
Kassik Utara	UP20	119° 29' 30" E 5° 10' 50" S	" "	2-15	PIB/17B	Kassik Utara	
Kajenjeng	UP16	119° 29' 38" E 5° 11' 15" S	Kajenjeng	1-9	PIB/17B	Kajenjeng	
Manggala Tua	UP17	119° 30' 03" E 5° 10' 21" S	Manggala	1-2	17B??; E	Manggala Tua	
Parinring	UP19	119° 28' 58" E 5° 11' 06" S	Parinring	1-3	PIB	Parinring	

FIELDWORK SITE				HISTORICAL SITE			HISTORICAL AREA/POINT	STONE ARTEFACTS
Name	Kabupaten	No.	Location	Toponym	Zones	Features	Name	
Benteng Tallok	UP25		119° 26' 25" E 5° 06' 20" S	Tallok	Those along or inside walls	M;T;PIB/17B(5); PIB(2);17B(1)	Benteng Tallok	
" "	UP25			Tallok Lama	Not zoned	PIB/17B	Makam Kg Katinting	
" "	UP25			" "	Not zoned	PIB/17B (2); T	Tallok Lama	
" "	UP25			" "	Not zoned	PIB/17B	" "	
" "	UP25			" "	Not zoned	K	Batu Pelantikan	
" "	UP25			Mangara Bombang	Not zoned	T; PIB/17B	Makam Mangara Bombang	
" "	UP25			Gampangcaya	1-2	PIB/17B	Tallok Utara	
" "	UP25			Agangpencara	Not zoned	PIB	" "	
" "	UP25			Makam Raja-Raja Tallok	3	K; 17B	" "	
" "	UP25			Bayoa	Not zoned	PIB	Bayoa	
Maccinik Sombala	UP23		119° 26' 05" E 5° 11' 28" S	Maccinik Sombala	1	PIB/17B?; E	Maccinik Sombala	
Bontomanaik	UP24		119° 26' 04" E 5° 11' 10" S	Bontomanaik (Barat ?)	Not mapped	T?; PIB/17B	Bontomanaik 1	

Bangkala	UP21	119° 28' 21" E 5° 10' 37" S	Ende	7-10	PIB/17B	Bangkala/ Ende	
" "	UP21	119° 28' 15" E 5° 10' 31" S	Bangkala	1-6	17B	" "	FI
" "	UP21	119° 28' 26" E 5° 10' 29" S	" "	12	17B	Kuburan Islam Bangkala	
Dampang Bira	UP22	119° 28' 08" E 5° 10' 29" S	Dampang Bira	2,4-11	PIB	Dampang Bira	FS (2)
Bontoa	UP26	119° 23' 25" E 5° 12' 41" S	Bungaya	Not mapped	T; 17B?	Bontoa	
Makam Bontolassang	Takalar 1	119° 32' 33" E 5° 18' 10" S	Bonto Lassang	1-7	PIB/17B	Bonto Lassang	FS; FI
Aengtoa	Takalar 2	119° 23' 10" E 5° 13' 24" S	Aengtoa	1-9	T; PIB/17B	Aengtoa	
Makam Pangkajeknek	Takalar 3	119° 23' 41" E 5° 13' 53" S	Pangka-jeknek	1	17B?	Pangka-jeknek	
Pakkala Toa	Takalar 4	119° 23' 57" E 5° 14' 18" S	Pakkala	1	17B?/K; E	Pakkala Timur	
" "	Takalar 4	119° 23' 50" E 5° 14' 16" S	" "	2,5	PIB(?)/ 17B	Pakkala Barat	
Jonggoa Batu-Batu	Takalar 5	119° 22' 51" E 5° 14' 02" S	Batu-Batu	Not mapped	T; 17B	Jonggoa Batu-Batu	
Makam Dengkang	Takalar 7	119° 22' 56" E 5° 25' 55" S	Dengkang	1-3,5	PIB/17B	Dengkang	

FIELDWORK SITE				HISTORICAL SITE			HISTORICAL AREA/POINT	STONE ARTEFACTS
Name	Kabupaten	No.	Location	Toponym	Zones	Features	Name	
Benteng Sanrabone	Takalar	6	119° 13' 16" E 5° 26' 04" S	Benteng Sanrabone	Those along or inside walls	M;T;17B(1); PIB/17B(4)	Sanrabone	
" "	Takalar	6		Banyua-nyarak	1-4,32	M; T; PIB/17B	Sanrabone	
" "	Takalar	6		Bayoa	5-7	M; T/K; PIB/17B	" "	
" "	Takalar	6		Sanrabone (Utara)	9-11,13-16, 19,21-24,26	M; T; 17B/K; PIB/17B/K; PIB/17B	" "	
Batu Pute	Takalar	8	119° 22' 42" E 5° 26' 04" S	Batu Pute	Not mapped	17B?	Batu Pute	
Jeknek	Takalar	9	119° 22' 22" E 5° 26' 03" S	Jeknek	1-5	PIB/17B	Jeknek	
Sampu-lungang 2	Takalar	10	119° 22' 34" E 5° 15' 05" S	Sampulungang	2-4	17B; E	Sampulungang	
Jamarang Tua	Takalar	11	119° 22' 31" E 5° 15' 56" S	Jamarang	1,3-8	T; PIB/17B	Jamarang	
Makam Datu Bontolebang	Takalar	12	119° 23' 02" E 5° 15' 58" S	Bonto Lebang	1,2	17B; E; T??	Bonto Lebang	FI
Tabarin-gang Barat	Takalar	13	119° 23' 29" E 5° 15' 35" S	Tabaringang	1-4	T?; PIB	Tabaringang Barat	
Sawakong Toa	Takalar	15	119° 23' 25" E 5° 22' 31" S	Sawakong	1-4,8-11	PIB/17B	Sawakong	

Campagaya Lama	Takalar 14	119° 22' 29" E 5° 16' 55" S	Campagaya	1-2,4-8	T?; PIB/17B	Campagaya	FI
" "	Takalar 14	119° 22' 20" E 5° 17' 08" S	Taipanorang	9-12,14-17	PIB/17B	Taipanorang	
Manjal-ling	Takalar 16	119° 21' 25" E 5° 19' 30" S	Manjalling	1,6-15,18	PIB/17B	Kota Galesong	FS
" "	Takalar 16	119° 21' 32" E 5° 19' 28" S	Pakka Mukang	16-17	17B	" "	FS
Kaluku Bodo	Takalar 17	119° 21' 19" E 5° 19' 35" S	Kaluku Bodo	2-4	PIB/17B	" "	
Bulaenna Burakne	Takalar 19	119° 21' 41" E 5° 19' 32" S	Bulaenna Burakne	23-28	17B; E	" "	
Tabbun-cinik	Takalar 21	119° 21' 41" E 5° 19' 21" S	Tabbuncinik	41-55	PIB/17B; PIB; M?	" "	
Makam Bojangngo	Takalar 22	119° 21' 49" E 5° 19' 09" S	Lanna	56-60	17B; E	" "	
Bayoa 3	Takalar 20	119° 21' 24" E 5° 19' 19" S	Bayoa	29-33, 39-40,55	PIB; 17B (2)	" "	
" "	Takalar 20		" "	36-37	E; 17B??	Matinroe ri Lanna	
Makam Bokdia	Takalar 18	119° 21' 15" E 5° 19' 46" S	Bokdia	19,21	17B; E	Bokdia	
Paklalla-kang	Takalar 32	119° 21' 45" E 5° 19' 02" S	Paklallakang	69	E	Paklallakang	

FIELDWORK SITE				HISTORICAL SITE			HISTORICAL AREA/POINT	STONE ARTEFACTS
Name	Kabupaten	No.	Location	Toponym	Zones	Features	Name	
Makam Saro	Takalar	23	119° 21' 23" E 5° 20' 08" S	Manyampang	1,3	PIB/17B	Kuburan Islam Saro	
Tabun-cinik Timur	Takalar	24	119° 21' 50" E 5° 19' 32" S	Punceka	1	17B	Punceka	
" "	Takalar	24	119° 21' 57" E 5° 19' 24" S	" "	3	17B; E	Kuburan Boe	
Kuburan Bontoa	Takalar	25	119° 23' 44" E 5° 25' 46" S	Bontoa	Not mapped	17B	Bontoa	
Gontong	Takalar	26	119° 23' 48" E 5° 26' 41" S	Gontong	Not mapped	PIB/17B	Gontong	
Empang Sidayu	Takalar	27	119° 23' 37" E 5° 26' 40" S	Ujung	Not mapped	PIB	Empang Sidayu	
Solokoa Na Lassang	Takalar	28	119° 32' 02" E 5° 18' 29" S	Salekowa	1-5,7	PIB/17B	Solokoa Na Lassang	FS
Toata	Takalar	29	119° 32' 47" E 5° 18' 36" S	Toata	Not mapped	17B?/PIB	Toata	FS
Kalukuang	Takalar	30	119° 28' 05" E 5° 19' 37" S	Kalukuang	2-8	PIB	Kalukuang	
" "	Takalar	30		" "	Not mapped	PIB	Kalukuang Atas	FI
Katinting	Takalar	31		Not a Gowa historical site	1	T??		
Summanak	Takalar	33	119° 23' 53" E 5° 13' 32" S	Summanak	Not mapped	T; 17B	Summanak	

Karama	Takalar 34	119° 22' 55" E 5° 13' 38" S	Karama	Not mapped	PIB; 17B	Karama		
Kuburan Dusun Beba	Takalar 35	119° 22' 22" E 5° 16' 34" S	Bebak	Not mapped	T; 17B	Bebak		
Kuburan Tamasongok	Takalar 36	119° 22' 12" E 5° 17' 47" S	Tamasongok	Not mapped	T; 17B	Tamasongok		
Guanya Sampeang	Maros 1	119° 38' 10" E 4° 49' 39" S	Not a Gowa historical site	1				
Moncongloe Lappara	Maros 2	119° 30' 12" E 5° 09' 15" S	Moncongloe Lappara	2-7,9-10,12-25, 28-30,36-39	PIB/17B	Moncongloe Lappara	FS (2); FI	
Manyempang Toa	Maros 3	119° 31' 00" E 5° 09' 50" S	Manyempang	1-4	PIB/17B	Manyempang		
Makam Balang Patti	Maros 4	119° 31' 03" E 5° 09' 30" S	Balang Patti	1	17B	Balang Patti		
Moncongloe Bulu Tua	Maros 5	119° 35' 17" E 5° 08' 56" S	Moncongloe Bulu	2-3	PIB/17B	Moncongloe Bulu	FI	
Kuburan Diccekang	Maros 6	119° 33' 00" E 5° 09' 26" S	Diccekang	1	PIB/17B	Diccekang		
Makam Petta Cenranae	Soppeng 1	120° 01' 40" E 4° 15' 44" S	Batu Tanre	Not mapped	PIB?; E	Batu Tanre		
Ujung	Soppeng 2	119° 53' 15" E 4° 21' 20" S	Appung	2-3,5	17B?; E; T	Appung		
" "	Soppeng 2		Ujung	10-12	T; E	Ujung	FI	

FIELDWORK SITE			HISTORICAL SITE			HISTORICAL AREA/POINT	STONE ARTEFACTS
Name	Kabupaten	No. Location	Toponym	Zones	Features	Name	
Botto	Soppeng	119° 53' 12" E 4° 21' 03" S	Botto	1-7	T; E	Botto	
Laleng Benteng	Soppeng	119° 53' 05" E 4° 21' 02" S	Laleng Benteng	1-6	K; T; E	Botto	
Petta Langkanae	Soppeng	119° 51' 07" E 4° 21' 38" S	Sewo Tua	1-5	PIB; K; T	Sewo Tua	
Kuburan Sewo Tua	Soppeng	119° 51' 07" E 4° 21' 38" S	" "	Not enumerated	17B	" "	
Batu Taneng	Soppeng	119° 51' 23" E 4° 21' 56" S	Batu Taneng	Not mapped	K??	Batu Taneng	
Megalit Lawo	Soppeng	119° 51' 40" E 4° 19' 48" S	Lawo Barat	1-7	K??	Lawo Barat	Prehistoric rock art?
Lawo Timur	Soppeng	119° 52' 01" E 4° 19' 49" S	Lawo Timur	1-15	17B??; K??; T; E	Lawo Timur	
Bila	Soppeng	119° 52' 14" E 4° 20' 57" S	Makam Tua Bila	7-8	17B?; E; T	Makam Tua Bila	
" "	Soppeng		Jera Lompoe	1,11-12	17B; E; T; K	Sekitar Jera Lompoe	
" "	Soppeng		Bila	14-16	T; E; K??	Mesjid Bila	
" "	Soppeng		Sumpang Bila	18-22	PIB?; T	Sumpang Bila	

Tinco Tua	Soppeng 10	119° 52' 01" E 4° 19' 49" S	Tinco Tua	1-11,15-26	PIB; 17B; K; T	Tinco Tua	FS
" "	Soppeng 10		" "	13	E	Tinco Sentral	
" "	Soppeng 10		" "	14	E	Tinco Barat	
" "	Soppeng 10	119° 52' 23" E 4° 19' 35" S	La Kelluaja	12	PIB/K (2); K	La Kelluaja	
" "	Soppeng 10		Tinco Baru	27	E	Tinco Baru	
Petta Balubue	Soppeng 12	119° 53' 30" E 4° 14' 03" S	Sekkangnyili	1-4	PIB/K (2); T	Petta Balubue	
Salotungo	Soppeng 13	119° 53' 42" E 4° 21' 41" S	Salotungo Tua	Not enumerated	PIB; 17B; T	Salotungo Tua	
Bulu Matanre	Soppeng 14	119° 49' 09" E 4° 23' 45" S	Bulu Matanre	1-10	17B?; K?; E	Bulu Matanre	
Situs La Mata Esso	Soppeng 15	119° 52' 55" E 4° 20' 58" S	Botto	1	PIB; K	Situs La Mata Esso	
Tomanurung ri Gowarie	Soppeng 16	119° 57' 45" E 4° 29' 44" S	Gowarie/ Gattareng	Not mapped	K; T	Gowarie	

APPENDIX D. ARTEFACTUAL CONTENTS RECORDED AT SSPHAP'S SITES

This pages which follow present the raw data recorded by the South Sulawesi Prehistorical and Historical Archaeology Project (SSPHAP) during the 1986-7 field season. The records are to be read across adjoining pages.

The first column (ZONE) identifies the zones and sites, labelled serially by *kabupaten*, whereby "G" stands for Gowa, "M" stands for Maros, "U" stands for Ujung Pandang (Kotamadya), "T" stands for Takalar and "S" stands for Soppeng. Hence "G.1.1" designates the first zone recorded in the first site (Benteng Tua) recorded in Kabupaten Gowa, "G.1.2" designates the second zone in the same site, etc. Appendix C matches the labels to site names. Maps of the sites relevant to the origins of Gowa and Tallok are given in Volume 3 of this thesis, and the descriptions are provided in Chapters 6 to 12. The corresponding information on the Soppeng sites is provided elsewhere (Kallupa et al., 1989), and the sites from the Gowa survey not reported here will be detailed elsewhere (Bulbeck, in prep. b).

The second column (AREA) shows the area within the zone in square metres, and the third column (VIS) shows the estimated proportion of the ground surface which the site recorder considered to be visible. The fourth column (EXPOS) shows the area of exposure per zone, in square metres, calculated from the preceding figures.

The fifth volume (EWARE) gives the number of earthenware sherds counted in the zone, unless it is left blank, in which case no effort was made to count the earthenwares. The sixth to tenth columns provide the corresponding information on flaked stone artefacts (FLK), polished stone artefacts (PL), iron fragments (FE), bronze pieces (CU), and coins ($).

The remaining columns detail the tradeware classifications, according to the acronyms used in Appendix B. These are: QPR (Qing whiteware/recent); ER (European); JPN (Japanese); QC (Qing monochromes); QBW (Qing blue-and-white); QS (Qing Swatow); WLB (Wanli blue-and-white); LBW (Late Ming blue-and-white); SWT (Swatow); MS (Ming Swatow); MFV (Ming overglaze-enamelled); MBW (Ming blue-and-white); HEX (Ming blue-and-white with hexagon patterns); EBW (early

blue-and-white); EFV (early overglaze-enamelled); SWR (coarse stonewares); BL (bluewares); VBW (Vietnamese blue-and-white); VM (Vietnamese monochromes); SWH (Sawankhalok black-and-white); SWM (Sawankhalok monochromes); MC (Ming celadons); YMC (Yuan-like Ming celadons); EM (early monochromes); EW (early whitewares); MW (Ming whitewares); WLW (Wanli whitewares); VH (Vietnamese black-and-white); SUK (Sukothai); JZ (Jizhou); SAN (Sancai).

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.1.1	364	1	364	18	0	0	0	0	0	5	9	0	0	2	0	0	0	0	0
G.1.2	364	0.8	291.2	98	0	0	0	0	0	24	2	0	0	3	1	0	0	0	0
G.1.3	377	1	377	12	0	0	0	0	0	2	6	0	0	7	1	0	0	0	0
G.1.4	397	1	397	14	0	0	0	0	0	5	3	0	0	3	0	0	0	0	0
G.1.5	315	0.2	63	7	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
G.1.8	476	0.7	333.2	14	0	0	0	0	0	3	0	0	0	2	0	0	0	0	0
U.10.72	713	0.8	570.4	5	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
G.1.71	1320	0.3	396	4	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
G.1.68	935	0.6	561	13	0	0	0	0	0	3	1	0	0	1	0	0	0	0	0
G.1.66	1748	0.6	1048.8	28	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0
G.1.9	358	0.7	250.6	16	0	0	0	0	0	0	0	0	0	3	3	0	0	2	0
G.1.11	300	0.6	180	8	0	0	0	0	0	2	0	0	0	0	3	0	0	2	0
G.1.12	507	0.6	304.2	31	0	0	0	0	0	21	4	1	0	9	5	0	0	0	0
G.1.14	308	0.6	184.8	15	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0
G.1.67	800	0.6	480	18	0	0	0	0	0	2	0	0	0	0	1	0	0	1	0
G.1.70	1474	0.5	737	0	0	0	0	0	0	2	1	0	0	8	7	0	0	2	0
G.1.69	1386	0.4	554.4	14	0	0	0	0	0	5	0	1	0	2	3	0	0	0	0
G.1.7	1176	0.5	588	36	0	0	0	0	0	12	0	0	0	6	0	0	0	3	0
G.1.146	572	0.3	171.6	112	0	0	0	0	0	17	23	0	0	2	2	0	0	2	1
G.1.145	777	0.9	699.3	253	0	0	0	0	0	7	0	0	0	23	10	0	0	3	1
G.1.142	600	0.7	420	18	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
G.1.143	587	1	587	128	0	0	0	0	0	1	0	1	0	12	3	0	0	4	0
G.G.144	408	1	408	63	0	0	0	0	0	14	3	0	0	11	0	0	0	1	0
G.1.10	528	0.9	475.2	137	0	0	0	0	0	21	4	1	1	11	2	0	0	1	1
G.1.147	720	0.3	216	98	0	0	0	0	0	24	1	0	0	10	3	0	0	2	0
G.1.137	191	1	191	181	0	0	0	0	0	8	5	0	2	38	12	0	0	7	3
G.1.136	924	0.7	646.8	209	0	0	0	0	0	24	3	0	0	27	7	1	0	5	0
G.1.135	425	0.8	340	134	0	0	0	0	0	9	4	0	0	19	7	0	0	3	0
G.1.134	265	0.8	212	145	0	0	0	0	0	4	4	0	0	15	6	2	0	4	0
G.1.138	1820	0.9	1638	336	0	0	1	0	0	8	7	0	0	37	6	0	1	2	2
G.1.139	2232	0.4	892.8	200	0	0	0	0	0	5	3	0	0	20	5	0	0	4	0
G.1.140	1505	1	1505	144	0	0	0	0	0	4	2	0	0	11	5	0	0	0	0
G.1.141	470	1	470	103	0	0	0	0	0	6	1	0	0	5	3	0	0	2	0
G.1.149	650	1	650	93	0	0	0	0	0	34	2	0	0	3	4	0	0	2	0
G.1.148	468	0.4	187.2	0	0	0	0	0	0	9	0	0	0	4	1	0	0	0	1
G.1.127	1015	0.9	913.5	182	0	0	0	0	0	7	2	2	0	4	1	0	1	0	1
G.1.129	285	1	285	189	0	0	0	0	0	25	0	3	0	10	6	0	0	0	1
G.1.128	545	1	545	103	0	0	0	0	0	19	1	1	2	16	4	0	0	8	1
G.1.130	671	1	671	244	0	0	0	0	0	60	28	4	1	33	9	0	0	6	2
G.1.131	2491	0.9	2241.9	191	0	0	0	0	0	12	8	1	0	18	6	0	0	2	0
G.1.132	532	1	532	162	0	0	0	0	0	26	21	0	2	29	4	0	1	5	0
G.1.18	2072	0.5	1036	89	0	0	0	0	0	27	6	1	0	17	8	0	0	0	2
G.1.17	3420	0.3	1026	15	0	0	0	0	0	14	4	1	1	9	6	0	1	0	0
G.1.28	3172	0.8	2537.6	8	0	0	0	0	0	22	2	0	0	5	0	0	0	0	0
G.1.13	260	0.4	104	8	0	0	0	0	0	4	0	0	0	5	0	0	0	1	0
G.1.15	2046	0.7	1432.2	24	0	0	0	0	0	23	1	0	1	3	2	0	0	1	1
G.1.16	2520	0.6	1512	49	0	0	0	0	0	0	12	1	0	6	6	0	0	0	0
G.1.19	1920	0.5	960	78	0	0	0	0	0	12	10	0	0	9	3	0	0	0	0
G.1.20	1485	0.5	742.5	18	0	0	0	0	0	17	4	1	0	2	2	0	0	1	0
G.1.21	1800	0.5	900	27	1	0	0	0	0	24	3	0	0	4	7	0	0	2	0
G.1.22	252	0.7	176.4	6	0	0	0	0	0	9	1	0	0	0	0	0	0	0	0
G.1.23	328	0.9	295.2	7	0	0	0	0	0	35	0	0	0	0	0	0	0	0	0
G.1.24	250	0.6	150	23	0	0	0	0	0	28	0	0	1	0	0	0	0	0	0
G.1.25	3150	0.9	2835	109	0	0	0	0	0	120	31	2	0	107	35	0	0	18	3
G.1.29	3192	0.8	2553.6	35	0	0	0	0	0	66	3	0	2	74	29	1	0	2	3
G.1.30	702	1	702	19	0	0	0	0	0	94	5	0	1	74	38	0	2	10	1

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
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0	0	0	0	0	0	0	0	0	1	0	0	0	3	2	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	3	0	0	0	3	0	1	2	1	0	0	0	0	1	0	0	0	0	0	0
0	1	0	0	0	2	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
	29	1			19															

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.1.26	1376	1	1376	21	0	0	0	0	0	1	1	0	1	15	3	0	1	4	0
G.1.27	1400	1	1400	11	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0
G.1.31	175	1	175	10	0	0	0	0	0	11	0	0	0	7	3	0	0	0	0
G.1.32	184	1	184	9	0	0	0	0	0	18	1	0	0	2	3	0	0	0	0
G.1.33	1365	1	1365	0	0	0	0	0	0	24	2	0	0	0	0	0	0	0	0
G.1.34	426	1	426	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.36	319	1	319	0	0	0	0	0	0	13	0	0	0	0	0	1	0	0	0
G.1.35	1856	0.7	1299.2	29	0	0	0	0	0	34	32	0	0	8	5	1	1	2	1
G.1.37	375	1	375	28	0	0	0	0	0	19	0	0	0	4	9	0	0	3	1
G.1.38	576	0.5	288	21	0	0	0	0	0	13	1	0	0	0	1	0	0	0	1
G.1.39	310	1	310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.40	1088	0.7	761.6	39	0	0	0	0	0	49	1	5	0	4	5	0	0	1	0
G.1.41	952	0.8	761.6	45	0	0	0	0	0	0	3	0	0	3	0	0	0	1	0
G,1.42	480	0.7	336	21	0	0	0	0	0	0	4	0	0	3	3	0	0	0	0
G.1.0			0	8	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
G.1.44	160	1	160	77	1	0	0	0	0	5	1	0	0	13	15	1	3	25	15
G.1.45	1404	1	1404	25	0	0	0	0	0	3	1	0	0	3	2	0	0	2	1
G.1.46	1075	1	1075	11	0	0	0	0	0	2	1	0	0	1	3	0	0	0	2
G.1.47	490	1	490	33	0	0	0	0	0	2	1	0	0	16	5	0	1	2	2
G.1.48	441	1	441	8	0	0	0	0	0	0	2	0	0	5	0	0	1	3	2
G.1.49	1315	1	1315	142	0	0	0	0	0	6	1	0	0	6	4	0	0	7	5
G.1.50	960	1	960	124	0	0	0	0	0	21	2	0	0	12	7	0	0	5	4
G.1.51	1568	1	1568	107	0	0	0	0	0	9	0	0	0	5	9	0	0	3	3
G.1.52	1044	1	1044	38	0	0	0	0	0	9	2	1	0	2	4	0	0	2	1
G.1.53	506	1	506	34	0	0	0	0	0	1	3	0	0	5	2	0	0	2	2
G.1.55	1632	0.4	652.8	38	0	0	0	0	0	9	3	3	0	5	10	0	0	2	4
G.1.56	580	1	580	0	0	0	0	0	0	15	0	2	0	0	4	0	0	2	2
G.1.54	2212	1	2212	55	0	0	0	0	0	11	4	1	0	9	9	0	0	2	3
G.1.102	4373	0.9	3935.7	17	0	0	0	0	0	6	2	0	1	3	0	0	0	6	3
G.1.43	1158	0.8	926.4	124	0	0	0	0	0	49	3	2	0	17	15	0	0	3	3
G.1.57	3500	0.9	3150	227	0	0	0	0	0	38	22	0	0	75	30	0	0	30	5
G.1.58	924	0.9	831.6	31	0	0	0	0	0	1	0	0	0	2	6	1	0	3	1
G.1.59	2176	0.8	1740.8	41	0	0	0	0	0	0	0	0	0	8	7	0	1	6	0
G.1.60	1035	0.7	724.5	0	0	0	0	0	0	2	0	0	0	2	4	0	0	0	0
G.1.61	1760	0.8	1408	42	0	0	0	0	0	21	5	3	1	20	15	0	1	7	3
G.1.65	630	0.4	252	29	0	0	0	0	0	32	0	0	0	9	6	0	0	1	0
G.1.181	1225	0.4	490	35	1	0	0	0	0	2	1	0	0	4	0	0	1	0	2
U.10.180	496	0.5	248	57	0	0	0	0	0	0	0	2	0	7	0	0	2	1	0
U.10.122	1348	0.4	539.2	33	0	0	0	0	0	11	0	0	0	0	2	0	0	0	0
U.10.166	930	0.9	837	46	0	0	0	0	0	12	6	0	0	16	5	0	0	3	0
U.10.167	544	0.9	489.6	146	0	0	0	0	0	13	6	0	0	27	9	0	0	6	1
U.10.121	925	0.7	647.5	9	0	0	0	0	0	1	2	0	0	1	2	0	0	4	0
U.10.165	350	0.9	315	116	0	0	0	0	0	27	6	0	0	28	8	0	0	3	0
U.10.163	624	0.8	499.2	54	0	0	0	0	0	17	1	0	1	17	3	0	0	0	0
U.10.162	318	1	318	61	0	0	0	0	0	31	10	0	0	37	15	1	0	4	2
U.10.161	396	1	396	73	0	0	0	0	0	31	0	1	0	19	4	0	0	4	1
G.1.160	926	1	926	111	0	0	0	0	0	14	3	1	0	15	7	0	0	7	0
U.10.164	475	1	475	124	0	0	0	0	0	15	12	0	0	25	6	0	0	4	0
U.10.182	2958	0.5	1479	114	0	0	0	0	0	50	10	1	0	22	2	1	3	4	0
0.10.183	1168	0.6	700.8	520	0	0	0	0	0	73	10	2	0	108	9	1	1	24	5
U.10.169	624	1	624	160	0	0	0	0	0	46	10	3	1	53	14	0	0	8	9
U.10.168	306	0.8	244.8	97	0	0	0	0	0	23	6	2	0	18	9	0	0	5	0
G.1.62	12500	0.8	10000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.10.118	2030	1	2030	3	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0
G.1.64	1827	0.4	730.8	46	0	0	0	0	0	28	3	0	0	6	4	0	0	0	0
G.1.63	630	0.7	441	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	1	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0
0	9	0	0	0	17	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0
0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	6	0	0	0	4	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
0	5	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0
0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	20	1	0	0	0	2	0	1	2	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0
0	1	0	0	0	1	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	1	3	0	0	0	4	0	0	0	0	0	0	0
0	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	2				68		(6)		(2)	(7)	(4)			1	3	0		0	3	

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
U.10.119	105	1	105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.157	1476	0.3	442.8	17	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
G.1.158	350	0.1	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.159	2460	0.4	984	43	0	0	0	0	0	5	1	0	0	2	0	0	0	0	0
U.10.120	414	0.6	248.4	5	0	0	0	0	0	9	1	0	0	4	0	0	0	0	0
U.10.117	295	1	295	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
U.10.116	355	1	355	13	0	0	0	0	0	14	2	0	0	6	0	0	0	0	0
G.1.126	296	0.9	266.4	23	0	0	0	0	0	16	2	1	0	2	2	0	0	0	0
U.10.81	1395	0.8	1116	80	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
U.10.80	1681	0.6	1008.6	24	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0
U.10.79	2400	0.7	1680	36	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0
U.10.78	1364	0.6	818.4	43	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0
G.1.87	950	0.6	570	28	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
G.1.88	1200	0.6	720	6	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.1.89	1088	0.6	652.8	5	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.1.86	408	0.6	244.8	31	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
G.1.84	468	0.6	280.8	12	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0
G.1.90	864	0.6	518.4	11	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
U.10.115	231	1	231	56	0	0	0	0	0	13	9	0	0	14	12	0	1	2	0
U.10.114	836	1	836	76	2	1	0	0	0	39	19	2	0	38	21	0	3	13	1
U.10.178	714	0.5	357	126	0	0	0	0	0	0	9	0	1	4	1	0	0	1	0
U.10.113	481	0.8	384.8	92	0	0	0	0	0	9	2	0	0	8	5	0	0	1	0
U.10.112	1440	0.8	1152	71	0	0	0	0	0	4	2	0	0	8	2	0	0	2	0
U.10.179	3000	0.3	900	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.1.76	1369	0.9	1232.1	42	0	0	0	0	0	0	0	0	0	20	8	0	0	7	1
G.1.75	1404	0.8	1123.2	185	0	0	0	0	0	0	0	0	0	13	11	0	0	3	0
G.1.170	1720	1	1720	30	0	0	0	0	0	1	1	0	0	1	1	0	0	2	1
G.1.171	1558	0.1	155.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.74	224	1	224	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.10.133			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
U.10.73	224	0.5	112	24	0	0	0	0	0	3	2	0	0	5	5	1	0	3	0
G.1.150	704	1	704	43	0	0	0	0	0	37	8	0	1	36	7	0	0	3	2
G.1.151	658	1	658	48	0	0	0	0	0	26	18	1	0	37	9	0	1	6	2
G.1.172	1260	1	1260	30	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.1.176	1295	0.1	129.5		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.173	924	1	924	17	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
G.1.174	952	1	952	43	0	0	0	0	0	1	0	0	0	4	0	0	0	0	0
G.1.175	714	0.3	214.2	31	0	0	0	0	0	0	0	0	0	3	1	0	0	1	0
G.1.177	1305	0.8	1044	238	0	0	0	0	0	73	20	0	0	24	11	0	0	6	1
G.1.155	863	0.5	431.5	96	0	0	0	0	0	7	4	0	0	20	4	0	0	1	0
G.1.154	840	1	840	241	0	0	0	0	0	39	21	0	0	66	7	0	1	4	3
G.1.153	276	0.9	248.4	113	0	0	0	0	0	9	3	1	0	23	6	0	0	2	0
G.1.152	312	0.3	93.6	103	0	0	0	0	0	12	3	1	0	31	4	0	0	2	0
G.1.156	713	0.1	71.3	0	0	0	0	0	0	0	1	0	0	3	3	1	0	4	0
G.1.94	462	1	462	19	0	0	0	0	0	19	2	0	1	7	4	0	0	3	1
G.1.93	1344	0.6	806.4	17	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
G.1.92	300	1	300	38	0	0	0	0	0	3	4	0	0	15	3	0	0	0	0
G.1.95	276	0.5	138	8	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0
G.1.96	962	0.6	577.2	32	0	0	0	0	0	3	8	0	0	19	8	0	0	2	0
G.1.97	612	0.5	306	15	0	0	0	0	0	3	1	0	0	7	3	0	0	0	0
G.1.98	1035	0.4	414	47	0	0	0	0	0	4	12	0	0	9	10	0	0	0	1
G.1.110	3276	0.3	982.8	32	0	0	0	0	0	8	2	0	0	6	2	0	0	3	0
G.1.99	1116	0.5	558	32	0	0	0	0	0	51	5	0	0	6	7	0	0	4	0
G.1.100	427	0.6	256.2	21	0	0	0	0	0	35	15	0	1	17	14	0	0	2	0
G.1.124	1755	0.8	1404	160	0	0	0	0	0	65	27	1	1	34	23	2	3	1	1
U.10.123	1300	0.7	910	0	0	0	0	0	0	5	4	1	0	2	3	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
U.10.125	1034	0.6	620.4	30	0	0	0	0	0	17	6	0	0	6	5	0	0	0	1
U.10.91	3452	0.7	2416.4	17	0	0	0	0	0	0	1	0	0	3	2	0	0	0	0
G.1.101	1070	1	1070	127	1	0	0	0	0	54	12	0	0	83	33	0	0	39	32
G.1.103	144	1	144	59	0	0	0	0	0	33	18	1	0	35	28	0	0	28	5
G.1.104	422	1	422	6	0	0	0	0	0	28	7	1	0	16	11	0	1	10	3
G.1.105	200	1	200	75	0	0	0	0	0	35	4	0	0	8	8	1	0	4	3
G.1.106	212	1	212	15	0	0	0	0	0	16	3	1	0	4	5	0	0	0	1
G.1.107	64	1	64	46	2	0	0	0	0	24	0	0	0	31	12	23	11	36	26
G.1.108	1652	0.2	330.4	226	0	0	0	0	1	42	1	0	0	31	4	25	15	17	9
G.1.109	984	0.8	787.2	12	0	0	0	0	0	7	0	0	0	5	4	0	1	3	0
G.1.6	595	0.6	357	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.111	1066	0.8	852.8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.10.83	1512	0.8	1209.6	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.10.82	2992	0.8	2393.6	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.10.77	868	0.3	260.4	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.85	1023	0.6	613.8	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.16	11780	0.6	7068	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.2	790	1	790	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.3	650	1	650	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.4	2350	1	2350	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.5	1740	1	1740	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.6	2010	1	2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.7	800	1	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.8	1020	1	1020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.1	2400	0.2	480	10	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0
G.2.9	12480	0.2	2496	26	0	0	0	0	0	1	1	0	0	8	20	0	0	1	0
G.2.10	4887	0.1	488.7	27	0	0	0	0	0	3	1	0	0	11	0	0	0	0	0
G.2.11	8625	0.8	6900	48	0	0	0	0	0	4	4	1	0	1	0	0	0	0	2
G.2.12	9687	0.1	968.7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.13	1170	0.9	1053	12	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
G.2.14	17953	0.6	10772	5	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
G.2.15	7500	0.8	6000	21	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
G.3.7	639	1	639		0	0	0	0	0	2	3	0	0	1	4	0	0	1	2
G.3.2			0		0	0	0	0	0	0	12	2	0	38	24	2	0	16	6
G.3.6			0		0	0	0	0	0	8	8	1	0	54	19	3	0	20	27
G.3.5			0		0	0	0	0	0	2	2	0	0	10	8	0	0	8	3
G.3.1	380	0.4	152	0	0	0	0	0	0	0	2	0	0	1	0	1	0	1	0
G.3.4	1740	1	1740	69	0	0	0	0	0	1	7	1	0	5	15	1	0	2	23
G.3.8	1094	0.8	875.2	265	0	0	0	0	0	4	4	0	0	19	20	0	0	33	27
G.3.3	1072	0.9	911.2	3149	0	0	0	0	0	21	0	0	0	155	74	0	0	182	123
G.3.3B			0	12	0	0	0	0	0	6	2	0	0	7	10	6	3	44	47
G.3.9	871	1	871	89	0	0	0	0	0	19	3	0	1	13	0	0	0	2	0
G.3.10	436	1	436	0	0	0	0	0	0	1	1	1	0	2	0	0	0	1	3
G.4.1	350	1	350	20	0	0	0	0	0	8	17	1	1	8	2	1	0	10	2
G.5.1			0	14	0	0	0	0	0	0	0	0	0	11	1	1	2	2	3
G.5.2	100	0.1	10	28	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0
G.5.4	800	0.5	400	212	2	0	0	0	0	19	2	0	0	28	1	0	0	15	17
G.5.5	250	1	250	292	1	0	0	0	0	20	4	0	0	32	10	0	0	13	13
G.5.6	2200	0.4	880	389	1	0	0	0	0	20	12	0	0	76	31	0	1	14	26
G.5.6B	2200	0.4	880		0	0	0	0	0	10	30	0	0	84	2	2	5	28	18
G.5.14	577	0.9	519.3	24	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.5.3	580	1	580	55	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
G.5.13	528	0.1	52.8	12	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
G.5.15	1196	0.1	119.6	56	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1
G.5.16	100	0.5	50	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
G.5.7	1508	0.1	150.8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	15	0	0	0	4	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0
0	8	0	0	0	7	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
2	33	0	0	0	6	2	2	0	2	0	0	0	3	0	0	0	0	0	0	0
0	16	0	1	0	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	1	0	4	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	1	1	1	1	4	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0
0	14	0	0	0	4	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0
0	95	0	0	0	58	0	0	0	1	0	5	0	1	0	0	0	0	0	0	0
0	20	0	0	0	18	0	0	0	1	0	0	3	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	3	0	5	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	2	0	0	0	8	0	2	0	2	1	0	0	3	0	0	0	0	0	0	0
0	0	0	0	0	7	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0
0	4	0	0	0	17	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
0	7	1	0	0	2	0	0	0	0	2	1	0	1	0	0	0	0	1	0	0
0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

22 2 162 (12) 4 4 (9) 2 1 0 2

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.5.8	1746	0.7	1222.2	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
G.5.9	782	1	782	8	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.5.17	100	0.7	70	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.5.10	528	1	528	38	0	0	0	0	0	0	1	0	0	0	3	0	0	1	2
G.5.11	2210	0.9	1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.5.12	2590	0.9	2331	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.1	5512	0.1	551.2	1	0	0	0	0	0	6	0	1	0	0	0	0	0	0	0
G.6.5	1760	0.1	176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.15	392	0.8	313.6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
G.6.16	4305	0.6	2583	4	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
G.6.17	180	1	180	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.18	546	0.1	54.6	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.19	4440	0.9	3996	7	0	0	0	0	0	4	0	0	0	1	0	0	0	1	1
G.6.23	5624	1	5624	48	0	0	0	0	0	3	0	1	0	0	1	0	0	0	0
G.6.20	5000	0.9	4500	21	0	0	0	0	0	0	2	0	0	0	4	1	0	4	4
G.6.21	10744	1	10744	69	0	0	0	0	0	0	0	0	0	1	3	0	0	0	1
G.6.22	650	0.8	520	8	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0
G.6.25			0	137	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
G.6.24	432	1	432	15	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
G.6.3	1522	0.8	1217.6	64	0	0	1	0	0	3	1	0	0	9	1	0	0	1	0
G.6.6	531	0.1	53.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.7	557	1	557	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.8	502	1	502	3	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0
G.6.9	706	1	706	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.10	370	1	370	7	0	0	0	0	0	1	0	0	0	1	1	1	0	0	0
G.6.11	1918	1	1918	67	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
G.6.12	1120	1	1120	4	0	0	0	0	0	1	1	0	0	2	2	0	0	1	0
G.6.13	1020	1	1020	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.14	1092	1	1092	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.7.1	420	0.1	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.7.2	1943	0.1	194.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.7.3	1490	0.2	298	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.7.4	971	1	971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.8.1	6420	0.3	1926	0	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0
G.9.1	10500	0.2	2100	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.10.1	4900	0.1	490	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.10.2	2077	1	2077	171	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0
G.11.1	1222	0.1	122.2	5	0	0	0	0	0	13	8	0	0	0	0	0	0	0	0
G.11.2	922	0.7	645.4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.11.3	600	0.7	420	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
G.11.4	1660	0.7	1162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.12.1	1412	0.1	141.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.12.4	1200	0.9	1080		0	0	0	0	0	5	2	0	0	1	1	0	0	0	0
G.12.2	2827	0.1	282.7		0	0	0	0	0	8	2	1	0	0	0	0	0	0	1
G.12.3	2300	0.1	230	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.13.1	1482	0.4	592.8	2	0	0	0	0	0	3	1	0	0	2	0	0	0	0	0
G.14.1	419	0.6	251.4		0	0	0	0	0	5	2	0	0	1	0	0	0	0	0
G.14.2			0		0	0	0	0	0	1	11	0	0	2	2	0	0	0	0
G.14.3			0		0	0	0	0	0	9	2	0	0	0	0	0	0	0	0
G.15.1	9343	1	9343	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.15.2	2835	0.8	2268	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.15.3	877	0.6	526.2	3	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
G.15.4	1099	0.8	879.2	18	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0
G.15.5	1970	1	1970	7	0	0	0	0	0	0	1	0	0	4	1	0	0	3	0
G.15.6	237	0.1	23.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.16.1/2	475	0.8	380	29	0	0	0	0	0	45	2	0	0	3	0	0	0	2	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

7 1 12 (3) 0 2 (2) 10 0 0 1

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.16.3	480	0.7	336	78	0	0	0	0	0	35	10	0	1	4	0	0	0	0	0
G.16.4	3515	0.1	351.5	7	0	0	0	0	0	1	2	0	0	1	0	0	0	0	0
G.16.5	1465	0.3	439.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.16.6	1009	0.1	100.9	14	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.16.7	1546	0.6	927.6	41	0	0	0	0	0	21	2	0	0	5	0	0	0	3	0
G.16.8	1346	0.5	673	76	0	0	0	0	0	35	3	0	0	1	0	0	0	0	0
G.16.9	757	0.7	529.9	214	0	0	0	0	0	37	15	2	0	10	1	0	0	3	0
G.17.1			0	31	0	0	0	0	0	0	1	0	0	0	1	0	0	0	4
G.18.1	314	1	314		0	0	0	0	0	20	2	0	0	0	1	0	0	0	1
G.18.2			0	5	0	0	0	0	0	0	4	1	1	2	0	0	0	0	0
G.19.1	3645	0.8	2916	15	0	0	0	0	0	1	2	2	0	3	0	0	0	5	1
G.19.2	6472	0.8	5177.6	91	0	0	0	0	0	4	1	0	0	6	4	0	0	2	0
G.19.7			0	0	0	0	0	0	0	0	0	1	0	5	0	0	0	0	0
G.19.3	2057	0.9	1851.3	0	0	0	0	0	0	4	2	0	0	0	1	0	0	2	0
G.19.4	1641	0.8	1312.8	28	0	0	0	0	0	3	1	0	0	11	3	0	0	11	0
G.19.5	1735	0.8	1388	5	0	0	0	0	0	2	1	0	0	1	1	0	0	1	0
G.19.6	838	0.8	670.4	79	0	0	0	0	0	1	0	0	0	4	5	0	0	0	0
G.19.8	2375	0.9	2137.5	10	0	0	0	0	0	3	10	0	0	1	3	0	0	1	0
G.20.01	500	0.5	250	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
G.20.02	1742	1	1742	60	0	0	0	0	0	7	0	0	0	8	5	0	0	13	2
G.20.04	1513	1	1513	37	0	0	0	0	0	0	2	0	0	0	1	0	0	1	1
G.20.05	1794	1	1794	58	0	0	0	0	0	5	0	0	0	5	5	1	0	5	1
G.20.19			0	0	0	0	0	0	0	5	2	2	0	2	0	0	0	0	0
G.20.09	821	0.1	82.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.20.20	1154	1	1154	417	1	0	0	0	0	3	3	0	0	7	2	1	0	13	4
G.20.21	1352	1	1352	136	0	0	0	0	0	1	0	0	0	1	0	1	1	0	0
G.20.06	1760	1	1760	10	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
G.20.07	2102	1	2102	77	0	0	0	0	0	2	0	0	0	2	1	0	0	1	0
G.20.08	1587	1	1587	71	0	0	0	0	0	4	2	0	0	1	8	0	0	3	1
G.20.23	793	1	793	24	0	0	0	0	0	0	2	0	0	3	1	0	0	0	0
G.20.24	1973	0.8	1578.4	29	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
G.20.25	2097	1	2097	1374	2	0	0	0	0	0	0	0	0	5	12	0	0	1	2
G.20.10	1602	0.7	1121.4	8	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
G.20.03	9553	1	9553	1402	0	0	0	0	0	29	2	1	2	34	27	0	1	31	22
G.20.11	149	1	149	0	0	0	0	0	0	0	0	0	0	13	11	0	0	0	0
G.20.12	2410	1	2410	216	0	0	0	0	0	58	63	0	3	48	49	0	0	8	1
G.20.13	1884	1	1884	17	0	0	0	0	0	14	13	0	0	8	3	0	0	2	0
G.20.14	3012	0.5	1506	124	0	0	0	0	0	0	38	3	1	20	25	0	0	0	1
G.20.16	4935	0.9	4441.5	0	0	0	0	0	0	0	3	2	0	0	6	0	0	0	1
G.20.15	2926	0.8	2340.8	41	0	0	0	0	0	12	2	1	0	2	0	0	0	0	0
G.20.17	2210	1	2210	11	0	0	0	0	0	52	29	2	0	9	16	0	0	2	0
G.20.22	1791	0.7	1253.7	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.20.30	4882	0.7	3417.4	15	0	0	0	0	0	26	15	2	0	0	6	0	0	0	0
G.20.26	826	1	826	16	0	0	0	0	0	14	18	0	1	5	11	0	0	0	0
G.20.27	1288	1	1288	9	0	0	0	0	0	18	20	0	2	3	8	0	0	3	0
G.20.28	1589	1	1589	5	0	0	0	0	0	2	1	2	0	5	4	0	0	0	0
G.20.29	1882	1	1882	14	0	0	0	0	0	5	6	1	0	9	8	0	0	0	0
G.43.7	1600	0.6	960	3	0	0	0	0	0	18	20	6	0	7	2	0	0	0	0
G.43.1	3220	0.7	2254	24	1	0	0	0	1	2	1	0	0	1	0	0	0	0	0
G.43.2	632	1	632	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.43.3	3244	0.7	2270.8	37	0	0	0	0	0	6	0	0	1	4	2	0	0	0	0
G.43.4	4360	0.9	3924	336	5	0	0	0	0	8	2	0	0	26	20	0	0	7	0
G.43.5	498	1	498	49	1	0	0	0	0	0	2	0	0	12	2	0	0	2	0
G.43.6	905	0.8	724	233	1	0	0	0	0	5	0	0	0	12	4	1	0	0	0
G.21.01	7865	0.5	3932.5	3	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0
G.21.02	7584	0.1	758.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.21.03	1505	0.8	1204	0	0	0	0	0	0	9	0	3	0	0	0	0	0	0	0
G.21.04	1786	0.7	1250.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.21.05	1156	0.9	1040.4	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0
G.21.06	2995	0.9	2695.5	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.21.07	2638	0.7	1846.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.21.11	3761	0.9	3384.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.21.08	2958	0.8	2366.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.21.10	642	1	642	1	0	0	0	0	0	1	0	0	0	2	0	0	1	0	0
G.21.12	1521	0.7	1064.7	2	0	0	0	0	0	8	3	0	0	3	5	0	1	1	0
G.21.13	1400	0.9	1260	1	0	0	0	0	0	11	23	0	0	12	18	0	1	3	0
G.23.01	4749	0.8	3799.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.23.02	2204	0.4	881.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.23.03	936	1	936	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.23.12	2121	0.9	1908.9	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
G.23.13	1600	0.6	960	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
G.23.14	936	1	936	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.23.04	2568	0.9	2311.2	48	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0
G.23.05	2240	0.8	1792	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.23.07	4180	0.8	3344	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.23.09	865	0.8	692	15	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0
G.23.08	3324	0.9	2991.6	11	0	0	1	0	0	2	0	0	0	0	4	1	0	1	0
G.23.06	900	0.5	450	14	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
G.23.10	1605	0.9	1444.5	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.23.11	452	0.9	406.8	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
G.22.01	1026	1	1026	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0
G.22.02	1446	1	1446	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0
G.22.03	323	0.9	290.7	41	0	0	0	0	0	1	0	0	0	7	4	0	0	0	0
G.22.04	407	0.8	325.6	21	0	0	0	0	0	4	3	0	0	10	9	0	0	0	0
G.22.05	200	0.9	180	24	0	0	0	0	0	16	2	0	0	7	3	0	0	0	0
G.22.06	369	0.9	332.1	57	0	0	0	0	0	31	6	0	0	14	4	0	0	1	0
G.22.07	177	0.9	159.3	170	0	0	0	0	0	23	10	0	0	14	4	0	0	2	0
G.22.08	617	0.9	555.3	74	0	0	0	0	0	53	6	2	2	22	9	0	1	1	0
G.22.09	259	1	259	26	0	0	0	0	0	15	5	0	0	4	3	0	0	1	0
G.22.10	1067	0.1	106.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.24.01	2019	0.9	1817.1	10	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0
G.24.02	1715	1	1715	8	0	0	0	0	0	4	0	0	0	1	0	0	0	0	0
G.24.03	2177	1	2177	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.24.05	1063	0.7	744.1	5	0	0	0	0	0	5	0	0	0	1	0	0	0	0	0
G.24.06	1680	1	1680	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.24.07	2989	0.9	2690.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.24.08	2132	0.9	1918.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.24.04	1396	0.7	977.2	11	0	0	0	0	0	9	1	0	0	0	0	0	0	0	0
G.24.09	2857	0.9	2571.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.24.10	2180	0.9	1962	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
G.25.1	57	1	57	0	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.25.2	145	0.9	130.5	0	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.25.3	338	0.6	202.8	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.25.4	450	0.7	315	25	1	0	0	0	0	0	0	0	0	0	0	2	8	2	2
G.25.5	1128	0.3	338.4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.26.05	736	1	736	336	0	1	0	0	0	1	1	0	0	3	1	0	0	8	1
G.26.06	796	0.2	159.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.26.07	2770	0.2	554	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.26.01	2109	0.2	421.8	54	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
G.26.02	1089	0.4	435.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.26.03	609	1	609	47	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
G.26.04	1107	1	1107	15	0	0	0	0	0	0	1	0	0	1	0	0	0	3	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.26.08	1205	1	1205	117	0	0	0	0	0	4	4	0	1	5	2	0	0	3	1
G.26.09	1308	0.4	523.2	70	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0
G.26.10	252	1	252	134	0	0	0	0	0	22	18	2	1	1	0	0	0	4	0
G.26.11	529	1	529	224	0	1	0	0	0	47	29	1	2	2	1	0	1	5	2
G.26.12	1206	0.5	603	13	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.27.1	319	0.6	191.4	53	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
G.27.2	1074	0.8	859.2	43	0	0	0	0	0	17	4	0	0	0	1	0	0	0	0
G.27.3	4900	0.9	4410	25	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0
G.28.1	4773	0.8	3818.4	10	1	0	0	0	0	5	9	1	0	3	0	1	0	0	0
G.91.1			0		0	0	0	0	0	4	0	0	0	4	5	0	1	0	0
G.29.01	550	0.9	495	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
G.29.02	450	0.6	270	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.29.03	1260	0.6	756	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
G.29.04	920	0.6	552	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.05	1400	0.6	840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.06	2620	0.6	1572	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.07	850	1	850	18	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.29.08	170	1	170	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.09	290	0.8	232	0	2	0	0	0	0	3	0	0	0	2	0	0	0	0	0
G.29.10	575	0.8	460	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.11	920	0.8	736	0	5	0	1	0	0	1	0	0	0	0	0	0	0	0	0
G.29.12	550	0.7	385	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.13	360	0.8	288	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.14	1130	0.8	904	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
G.29.15	1320	0.8	1056	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.16	1970	0.7	1379	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.17	760	0.9	684	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0
G.29.18	1650	0.6	990	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.19	970	0.7	679	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.29.20	1310	0.8	1048	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.29.21	1920	0.7	1344	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.22	2185	0.7	1529.5	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.23	750	0.8	600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.24	2040	1	2040	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.25	1320	0.6	792	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.26	4375	0.6	2625	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.27	2830	0.9	2547	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.29.28	1265	0.7	885.5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.29	3070	0.5	1535	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.30	1730	0.6	1038	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.31	3480	0.8	2784	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0
G.29.32	680	0.7	476	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.33	1970	0.2	394	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.30.01	3820	0.1	382	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.30.02	4210	0.7	2947	17	0	0	0	0	0	3	2	0	0	0	1	0	0	0	0
G.30.03	1700	0.9	1530	16	0	0	0	0	0	15	0	0	0	2	0	0	0	0	0
G.30.04	1260	0.9	1134	37	0	0	0	0	0	13	16	0	0	2	2	0	0	0	1
G.30.05	625	0.7	437.5	6	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
G.30.06	635	0.5	317.5	5	0	0	0	0	0	9	4	0	0	0	0	0	0	1	0
G.30.07	1665	0.5	832.5	43	0	0	0	0	0	8	8	0	0	2	3	0	0	0	0
G.30.08	1350	0.7	945	73	0	0	0	0	0	24	38	0	1	4	3	0	0	3	0
G.30.09	640	0.7	448	75	0	0	0	0	0	5	7	1	1	1	0	0	0	0	0
G.30.27	241	0.8	192.8	13	0	0	0	0	0	6	2	0	0	1	0	0	0	0	0
G.30.28	590	0.7	413	28	0	0	0	0	0	30	6	1	3	2	2	0	0	5	0
G.30.10	220	1	220	3	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
G.30.11	1100	0.7	770	121	0	0	0	0	0	35	2	0	0	2	0	0	0	1	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	S	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.30.12	3860	0.8	3088	6	0	0	0	0	0	5	0	1	0	0	0	0	0	0	0
G.30.36	1745	0.1	174.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.30.25	580	0.6	348	24	0	0	0	0	0	10	3	0	0	0	2	0	0	0	0
G.30.26	572	1	572	24	0	0	0	0	0	0	2	0	0	13	0	0	0	0	0
G.30.24	683	0.4	273.2	1	0	0	0	0	0	26	14	2	2	1	0	0	1	4	0
G.30.22	1234	0.6	740.4	49	1	0	0	0	0	35	2	0	1	2	1	0	0	1	0
G.30.23	609	0.6	365.4	22	0	0	0	0	0	11	4	4	0	0	2	0	0	3	0
G.30.13	333	1	333	16	0	0	0	0	0	12	9	1	2	0	1	0	0	0	0
G.30.21	3627	0.3	1088.1	41	0	0	0	0	0	24	2	0	0	0	1	0	0	3	0
G.30.14	195	1	195	13	0	0	0	0	0	21	0	0	0	1	0	0	0	7	0
G.30.15	710	0.7	497	28	0	0	0	0	0	24	0	0	0	0	0	0	0	5	0
G.30.16	185	1	185	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
G.30.20	1268	0.3	380.4	13	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
G.30.17	658	1	658	324	0	0	0	0	1	0	0	0	0	2	3	0	2	5	5
G.30.18	235	1	235	0	0	0	0	0	0	9	1	0	0	0	0	0	0	0	0
G.30.19	824	0.4	329.6	22	0	0	0	0	0	11	2	0	0	2	0	0	0	1	0
G.30.29	1028	0.8	822.4	71	0	0	0	0	0	5	1	0	0	1	0	0	0	1	0
G.30.30	265	0.8	212	10	0	0	0	0	0	11	0	0	0	0	2	0	0	0	0
G.30.31	274	0.8	219.2	8	0	0	0	0	0	6	2	0	0	0	0	0	0	0	0
G.30.32	164	0.8	131.2	8	0	0	0	0	0	11	2	0	0	0	0	0	1	0	1
G.30.33	1948	0.4	779.2	74	0	0	0	0	0	9	2	0	0	1	0	0	0	1	0
G.30.34	2327	0.6	1396.2	48	0	0	0	0	0	13	6	0	0	2	0	0	1	0	0
G.30.35	2257	0.6	1354.2	37	0	0	0	0	0	17	8	0	0	3	0	0	0	0	0
G.31.1	557	0.8	445.6	45	0	0	1	0	0	47	11	1	2	11	3	0	1	0	0
G.31.2	2518	0.1	251.8	31	0	0	0	0	0	19	1	0	0	2	0	0	1	0	0
G.31.3	1767	0.6	1060.2	86	0	0	0	0	0	28	5	0	0	7	2	0	0	0	0
G.31.4	1030	1	1030	22	0	0	0	0	0	53	13	1	0	1	2	0	0	0	0
G.31.5	1893	0.7	1325.1	99	0	0	0	0	0	57	12	1	0	1	2	0	0	0	0
G.31.6	3430	0.1	343	2	0	0	0	0	0	0	2	0	0	1	1	0	0	0	0
G.31.7	1587	0.6	952.2	174	0	0	0	0	0	82	20	1	0	1	4	0	0	0	1
G.32.1	2505	0.2	501	2	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0
G.32.2	390	0.7	273	3	0	0	0	0	0	3	0	0	0	5	4	0	0	0	0
G.32.3	330	0.7	231	39	0	0	0	0	0	8	6	0	0	4	2	0	0	0	0
G.32.4	1200	0.4	480	48	0	0	0	0	0	26	8	0	0	14	3	0	0	0	0
G.32.5	490	0.8	392	29	0	0	0	0	0	5	3	0	0	4	1	0	0	0	0
G.32.6	640	0.6	384	49	0	0	0	0	0	24	2	0	0	0	0	0	0	0	0
G.32.7	1020	0.4	408	110	0	0	0	0	0	13	12	1	1	6	2	0	0	0	0
G.33.01	380	1	380	92	0	0	0	0	0	0	18	1	0	3	5	0	0	4	0
G.33.02	800	1	800	103	0	0	0	0	0	15	9	0	0	10	12	0	0	2	0
G.33.03	1900	0.2	380	11	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
G.33.04	900	0.2	180	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.33.05	1050	0.3	315	92	0	0	0	0	0	41	14	0	0	16	5	0	0	4	0
G.33.06	325	0.7	227.5	0	0	0	0	0	0	23	9	0	0	2	1	0	0	0	0
G.33.07	60	1	60	16	0	0	0	0	0	66	8	1	0	1	0	0	0	0	0
G.33.08	450	1	450	91	0	0	0	0	0	25	10	0	1	3	2	0	0	0	0
G.33.09	500	0.6	300	15	0	0	0	0	0	9	3	0	0	5	0	0	0	0	0
G.33.10	910	0.1	91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.34.1	740	0.7	518	22	0	0	0	0	0	5	0	0	0	2	1	0	0	1	0
G.34.2			0	0	0	0	0	0	0	6	6	2	0	2	0	0	0	0	0
G.34.3	2700	0.7	1890	51	0	0	0	0	0	20	9	1	0	11	0	0	0	0	0
G.34.4	2700	0.7	1890	10	0	0	0	0	0	5	19	0	1	4	9	0	0	0	0
G.34.5			0	0	0	0	0	0	0	6	1	0	0	1	3	0	0	0	0
G.35.1	1790	0.3	537	19	0	0	0	0	0	5	1	0	0	3	2	0	1	0	0
G.35.2	480	0.6	288	7	0	0	0	0	0	9	0	0	0	3	1	0	0	0	0
G.35.3	1860	0.8	1488	70	0	0	0	0	0	17	5	0	0	3	1	0	0	1	1
G.35.4	1425	0.6	855	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	5	0	0	1	0	0	0	0	9	2	0	0	0	0	0	0
0	0	0	0	0	3	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	1	0	0	1	0	0	0	0	3	3	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.35.5	2440	0.7	1708	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.35.6	600	0.7	420	27	0	0	0	0	0	6	4	0	0	2	0	0	0	0	1
G.36.1	2850	0.7	1995	304	0	0	0	0	0	44	23	0	1	15	10	0	0	3	0
G.36.2	1880	0.7	1316	47	0	0	0	0	0	30	8	0	0	3	6	0	0	1	0
G.36.3	1150	1	1150	43	0	0	0	0	0	11	7	0	0	10	0	1	1	0	0
G.36.4	970	0.7	679	25	0	0	0	0	0	16	4	0	0	3	2	0	0	0	0
G.36.5	5900	0.7	4130	8	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0
G.36.6	1050	1	1050	25	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
G.37.0			0	1	0	0	0	0	0	3	193	23	8	124	66	0	1	24	12
G.37.1	2780	0.6	1668	77	0	0	0	0	0	16	0	2	0	7	3	0	0	0	0
G.37.2	1360	0.6	816	62	0	0	0	0	0	21	5	0	1	4	1	0	0	0	0
G.37.3	7310	0.4	2924	12	0	0	0	0	0	11	0	0	0	2	0	0	0	0	0
G.38.1	1800	0.7	1260	115	0	0	0	0	0	22	9	1	0	13	2	0	0	1	0
G.38.2	682	0.8	545.6	49	0	0	0	0	0	41	2	0	0	4	1	0	0	1	1
G.38.3	517	0.4	206.8	127	0	0	0	0	0	47	13	2	0	4	0	0	0	0	0
G.38.4	1480	0.7	1036	473	0	0	0	0	0	151	24	1	0	23	8	0	0	2	0
G.38.5	1515	0.6	909	137	0	0	0	0	0	37	7	0	0	8	2	0	0	0	0
G.38.6	1270	0.2	254	127	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.39.1	1175	0.8	940	617	0	0	0	0	0	42	24	1	4	21	6	0	0	5	2
G.39.2	605	0.6	363	239	0	0	0	0	0	18	13	1	1	10	3	0	0	1	0
G.39.3	320	0.8	256	62	0	0	0	0	0	6	2	0	0	4	1	0	0	0	0
G.39.4	570	0.7	399	27	0	0	0	0	0	15	8	0	0	11	4	0	0	2	0
G.39.5	810	0.6	486	45	0	0	0	0	0	6	24	2	0	15	2	0	1	0	0
G.39.6	900	0.6	540	47	0	0	0	0	0	5	0	0	0	3	0	0	0	4	2
G.39.7	700	0.6	420	171	0	0	0	0	0	21	6	0	0	19	8	0	0	4	0
G.39.8	1607	0.8	1285.6	26	0	0	0	0	0	10	3	1	0	1	1	0	0	1	0
G.40.1	247	0.7	172.9	11	1	0	0	0	0	2	5	0	0	0	3	0	0	0	0
G.40.2	534	0.4	213.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.40.3	283	1	283	13	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.40.4	190	0.9	171	12	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.40.5	185	0.9	166.5	14	2	0	0	0	0	0	1	0	0	1	0	0	0	0	0
G.40.6	554	0.9	498.6	8	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.40.7	180	0.6	108	5	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
G.40.8	490	0.4	196	3	0	0	0	0	0	17	0	0	0	0	0	0	0	0	0
G.41.1	7460	0.8	5968	537	1	0	0	0	0	156	39	1	0	34	7	0	0	5	2
G.42.1	2267	0.1	226.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.44.1			0	183	0	0	0	0	0	22	11	0	0	20	0	0	0	1	1
G.45.1	2250	0.8	1800	437	0	0	0	0	0	0	2	0	0	20	1	0	1	14	9
G.45.2	740	0.2	148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.45.3	2950	0.3	885	21	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
G.45.4	3625	0.9	3262.5	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
G.45.5	113	0.5	56.5	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.45.6	770	0.9	693	142	1	0	0	0	0	7	1	0	0	1	1	0	0	4	2
G.45.7	1340	0.9	1206	83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.45.8	620	0.9	558	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.46.01	500	0.7	350	24	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1
G.46.02	1030	0.9	927	32	0	0	0	0	0	8	0	1	0	0	0	2	0	0	0
G.46.04	1320	0.9	1188	73	1	0	0	0	0	31	6	3	0	0	1	1	0	1	3
G.46.03	1225	0.9	1102.5	77	1	0	0	0	0	26	3	0	0	2	0	0	0	2	1
G.46.07	1800	0.9	1620	378	0	0	0	0	0	16	6	0	0	4	0	0	0	8	1
G.46.08	1685	0.7	1179.5	223	0	0	0	0	0	5	0	0	0	4	3	0	0	1	2
G.46.13	1400	0.7	980	329	1	0	0	0	0	11	1	1	0	24	9	0	0	15	4
G.46.15	1200	0.7	840	115	1	0	0	0	0	10	3	0	0	4	0	0	0	1	1
G.46.09	1637	0.6	982.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.46.10	1250	0.8	1000	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.46.11	1910	0.5	955	23	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	7	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
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1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	3	1	0	0	4	0	0	1	0	1	0	0	1	0	0	1	0	0	0	0
0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0

33 2 10 (2) (5) 4 (2) 3 2 5 1

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.46.14	900	0.7	630	19	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
G.47.1	108	0.5	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.48.1	2026	1	2026	166	0	0	0	0	0	2	0	0	0	6	5	0	0	6	2
G.48.2	1100	0.2	220	15	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1
G.48.3	210	0.2	42	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.49.01	1180	0.5	590	47	0	0	0	0	1	11	9	0	1	16	6	1	0	5	1
G.49.02	729	1	729	127	0	1	0	1	0	33	73	8	4	32	7	0	1	10	0
G.49.03	230	1	230	63	2	0	0	0	0	6	11	0	0	8	4	0	0	3	0
G.49.04	671	0.2	134.2	7	0	0	0	0	0	6	5	0	0	2	0	0	0	1	0
G.49.05	526	1	526	105	0	0	0	0	0	13	12	1	0	21	6	0	1	4	0
G.49.07	629	0.9	566.1	83	0	0	0	0	0	12	9	2	0	10	3	0	0	1	0
G.49.06	595	0.8	476	18	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.49.12	695	1	695	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.49.08	2167	0.8	1733.6	57	0	0	0	0	0	3	6	0	0	2	0	0	0	1	0
G.49.09	138	1	138	37	0	0	0	0	0	0	0	0	0	2	3	0	0	2	0
G.49.10	795	0.1	79.5	0	0	0	0	0	0	1	0	0	0	3	0	0	0	1	0
G.49.11	660	0.1	66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.50.1	2050	0.6	1230	15	0	0	0	0	0	0	1	0	0	3	1	0	0	5	2
G.50.2	1434	0.7	1003.8	11	0	0	0	0	0	0	0	0	0	1	5	0	1	13	3
G.50.3	1026	0.7	718.2	6	1	0	0	0	0	0	0	0	0	0	1	0	0	2	0
G.50.4	968	0.7	677.6	9	5	0	0	0	0	1	0	0	0	0	0	0	0	4	1
G.50.5	818	0.6	490.8	12	0	0	0	0	0	2	0	0	0	0	0	1	0	1	1
G.50.8	935	0.7	654.5	124	2	0	0	0	0	4	10	0	0	9	1	0	0	5	2
G.50.9	2070	0.7	1449	39	0	0	0	0	0	1	0	0	0	4	0	0	0	4	0
G.50.6	1270	0.4	508	33	1	0	0	0	0	0	1	0	0	0	1	0	0	0	2
G.50.7	98	0.3	29.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
G.51.1	2261	0.6	1356.6	44	0	0	0	0	0	1	7	0	0	5	0	0	0	0	0
G.51.2	2020	0.7	1414	63	0	0	0	0	1	6	8	1	0	19	8	0	1	6	1
G.51.3	1716	0.3	514.8	8	1	0	0	0	0	2	3	0	0	7	0	0	0	0	0
G.51.4	3032	0.2	606.4	20	0	0	0	0	0	1	10	1	0	0	0	0	0	0	0
G.51.5	2240	0.5	1120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
G.52.01	465	0.5	232.5	869	1	0	0	0	2	9	81	0	6	31	12	0	0	3	0
G.52.02	1060	1	1060	347	0	0	0	0	0	23	54	0	3	18	7	0	1	3	0
G.52.03	1185	1	1185	236	0	0	0	0	0	26	35	0	0	18	3	0	0	1	0
G.52.04	470	1	470	394	0	0	0	0	0	30	37	5	3	9	4	0	0	4	0
G.52.05	610	0.9	549	289	1	0	0	0	0	24	39	3	2	11	5	2	0	6	2
G.52.06	395	1	395	327	0	0	0	0	0	19	61	0	2	20	6	0	0	0	0
G.52.07	750	0.2	150	35	0	0	0	0	0	22	31	0	0	5	0	0	0	3	1
G.52.10	360	0.1	36	7	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0
G.52.08	405	0.7	283.5	253	0	0	0	0	0	2	0	0	0	8	2	0	0	6	1
G.52.09	555	0.3	166.5	87	0	0	0	0	0	0	0	0	0	4	3	0	0	1	1
G.52.11	825	0.5	412.5	374	0	0	0	0	0	3	0	0	0	8	7	0	1	10	2
G.52.12	1625	0.3	487.5	203	0	0	0	0	0	0	2	0	0	2	4	0	0	4	0
G.52.13	646	1	646	40	0	0	0	0	0	1	0	0	0	0	0	1	0	5	0
G.52.14	655	1	655	89	1	0	0	0	0	0	0	0	0	1	2	0	1	4	4
G.52.15	335	0.2	67	33	0	0	0	0	0	0	0	0	0	0	2	0	0	6	1
G.52.16	341	1	341	274	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0
G.52.17	490	1	490	248	0	0	0	0	0	6	0	0	0	16	4	0	3	5	2
G.52.18	1558	0.8	1246.4	287	0	0	0	0	0	8	0	0	0	13	0	0	0	6	0
G.52.19	1855	0.8	1484	239	0	0	0	0	0	0	2	0	0	6	2	0	0	4	0
G.52.20	515	0.1	51.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.52.21			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.53.1	809	0.5	404.5	47	2	0	0	1	0	22	5	0	0	1	1	0	0	2	5
G.53.2	1493	0.4	597.2	25	1	0	0	0	0	8	0	1	1	3	1	0	1	0	0
G.53.3	407	0.3	122.1	17	1	0	0	0	0	8	0	0	0	0	0	0	0	0	0
G.53.4	1183	0.5	591.5	5	2	0	0	0	0	38	8	0	4	2	2	0	0	0	2

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	8	1	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	3	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
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0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	3	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	30	14			8		(1)		8	6	0			0	6	1		0		

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ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.54.1	2960	0.3	888	25	6	0	0	0	0	0	0	0	0	1	0	0	0	1	1
G.54.2	4265	0.2	853	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.54.3	260	0.1	26	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.54.4	130	0.1	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.55.01	8406	0.3	2521.8	24	0	0	0	0	0	1	0	0	0	4	0	0	1	10	0
G.55.02	595	0.5	297.5	67	2	0	0	0	0	1	0	0	0	3	0	0	2	8	2
G.55.03	4588	0.1	458.8	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.55.04	3440	0.4	1376	20	0	0	0	0	0	8	0	0	0	2	0	0	0	0	0
G.55.05	2473	0.1	247.3	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
G.55.09	2052	0.9	1846.8	251	1	0	0	0	0	12	0	0	0	117	24	1	1	7	0
G.55.10	1940	0.2	388	72	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
G.55.11	60	0.9	54	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.55.06	6654	0.4	2661.6	128	0	0	0	0	0	55	28	5	0	17	4	0	0	10	3
G.55.07	6996	0.3	2098.8	35	0	0	0	0	0	12	6	0	0	5	0	0	0	4	1
G.55.08	926	0.5	463	149	1	0	0	0	0	31	30	0	0	30	2	1	1	10	6
G.56.01	1760	0.2	352	12	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1
G.56.02	60	0.6	36	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.56.03	50	0.6	30	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.56.04	45	0.6	27	2	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
G.56.05	70	0.6	42	4	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0
G.56.06	70	0.6	42	23	1	0	0	0	0	4	9	0	0	7	6	0	0	1	0
G.56.07	78	0.6	46.8	12	0	0	0	0	0	1	1	1	0	2	1	0	0	1	0
G.56.08	78	0.6	46.8	4	0	0	0	0	0	1	8	0	0	0	0	0	0	0	0
G.56.09	106	0.6	63.6	11	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0
G.56.10	166	0.6	99.6	7	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
G.56.11	109	0.6	65.4	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.56.12	1520	0.2	304	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.56.15	922	0.6	553.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.56.13	1925	0.1	192.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.56.14	5238	0.7	3666.6	45	2	0	0	0	0	7	2	0	0	2	0	0	1	0	0
G.56.0			0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.57.1	800	0.5	400	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
G.57.2	1220	0.2	244	32	0	0	0	0	0	0	0	0	0	0	2	1	0	1	0
G.57.3	824	0.2	164.8	51	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
G.57.4	1070	0.2	214	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.57.5	1015	0.6	609	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
G.57.6	812	0.6	487.2	18	2	0	0	0	0	0	0	0	0	1	3	0	0	1	2
G.57.7	5030	0.8	4024	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.57.8	460	0.8	368	51	2	0	0	0	0	2	0	0	1	3	0	0	0	4	2
G.58.1	1153	0.4	461.2	33	0	0	0	0	0	0	0	0	0	2	1	0	0	2	1
G.58.2	1552	0.1	155.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.58.3	1457	0.1	145.7	0	0	0	0	0	0	2	0	0	0	1	0	0	1	0	0
G.58.4	2542	0.1	254.2	6	0	0	0	0	0	3	3	0	0	1	0	0	0	0	1
G.58.5	2995	0.1	299.5	26	0	0	0	0	0	11	11	0	1	9	0	0	0	0	0
G.58.6	726	1	726	8	0	0	0	0	0	6	6	1	0	3	0	0	0	0	0
G.58.7	2436	0.1	243.6	10	0	0	0	0	0	7	7	1	3	12	0	0	0	1	0
G.58.8	736	1	736	23	0	0	0	0	0	29	14	2	0	0	0	0	0	0	0
G.59.1	7490	0.1	749	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	0
G.59.2	4800	0.4	1920	6	17	0	0	0	0	8	0	0	0	5	3	0	4	3	0
G.59.3	3270	0.6	1962	0	25	0	0	0	0	0	0	0	0	0	1	0	1	1	0
G.59.4	3700	0.4	1480	0	4	0	0	0	0	0	0	0	0	0	0	0	0	2	0
G.59.5	2525	0.3	757.5	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0
G.60.1	4551	0.2	910.2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
G.60.2	4506	0.1	450.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.60.3	3247	0.2	649.4	8	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
G.61.1	1370	0.1	137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.61.2	9295	0.1	929.5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.61.3			0	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.62.04	8	1	8	27	0	0	1	0	0	7	0	0	0	0	0	0	0	0	0
G.62.05	427	0.6	256.2	89	0	0	0	0	0	30	3	0	0	2	0	0	0	1	0
G.62.06	3015	0.7	2110.5	202	0	0	0	0	0	45	5	1	3	2	0	0	0	0	0
G.62.03	204	0.9	183.6	3	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
G.62.02	4375	0.5	2187.5	224	0	0	0	0	0	36	18	5	3	10	0	0	0	3	0
G.62.01	755	0.1	75.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.62.07	983	0.1	98.3	4	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0
G.62.08	230	0.1	23	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0
G.62.09	277	0.1	27.7	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.62.10	1100	0.2	220	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	1
G.62.12	628	0.7	439.6	0	0	0	0	0	0	37	6	1	0	5	1	0	0	0	0
G.62.11			0	0	0	0	0	0	0	0	0	1	0	5	0	0	2	1	0
G.62.13	2523	1	2523	668	0	0	0	0	0	9	2	0	1	28	20	19	13	53	27
G.62.14	2408	0.1	240.8	24	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
G.62.15	1922	0.2	384.4	131	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0
G.63.01	1095	0.4	438	1035	44	0	0	0	0	2	0	0	0	4	0	3	4	3	5
G.63.02	3060	0.3	918	632	7	1	0	0	0	3	0	0	0	4	1	5	2	11	2
G.63.03	500	0.2	100	307	2	0	0	0	0	0	0	0	0	1	0	0	0	1	0
G.63.04	88	0.9	79.2	28	4	0	0	0	0	3	0	0	0	3	0	0	1	1	0
G.63.05	150	0.1	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.63.11	1906	0.2	381.2	6	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0
G.63.12	1102	0.1	110.2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
G.63.13	1471	0.2	294.2	150	4	0	0	0	0	0	0	0	0	0	0	0	1	2	0
G.63.14	846	0.8	676.8	30	2	0	0	0	0	2	0	0	0	0	0	0	0	3	1
G.63.15	1180	0.1	118	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.63.06	2259	0.8	1807.2	59	0	0	0	0	0	8	0	1	1	1	1	1	3	3	4
G.63.17	255	0.1	25.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.63.07	820	0.1	82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.63.08	818	0.2	163.6	165	10	0	0	0	0	1	0	3	0	0	0	0	0	1	1
G.63.09	1797	0.1	179.7	57	0	0	0	0	0	5	15	0	0	18	0	0	0	1	1
G.64.1	895	0.9	805.5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.64.2	401	0.9	360.9	14	0	0	0	0	0	0	1	0	0	4	0	1	0	2	1
G.64.3	466	1	466	2955	2	0	0	0	0	11	2	0	0	87	16	19	49	27	10
G.64.4	1510	0.1	151	1	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0
G.64.5	761	0.3	228.3	6	0	0	1	0	0	4	13	0	0	6	3	0	0	3	0
G.65.01	1049	0.7	734.3	19	3	0	0	0	0	2	0	0	0	3	0	0	0	2	0
G.65.02	1154	0.1	115.4	11	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
G.65.03	2790	0.1	279	13	0	0	0	0	0	11	0	0	0	4	0	0	0	0	0
G.65.04	1267	1	1267	204	0	0	0	0	0	95	56	3	0	109	31	0	1	30	5
G.65.05	5060	0.3	1518	138	0	0	0	0	0	26	28	1	0	35	4	0	0	0	0
G.65.06	922	0.3	276.6	69	0	0	0	0	0	22	21	0	0	42	8	1	0	11	0
G.65.07	1714	0.2	342.8	43	0	0	0	0	0	9	5	0	0	9	0	0	0	1	0
G.65.08	1450	0.1	145	5	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
G.65.09	1038	0.6	622.8	32	0	0	0	0	0	10	2	0	0	6	0	0	0	2	0
G.65.10	1034	0.4	413.6	17	0	0	0	0	0	7	4	0	0	4	0	0	0	0	0
G.65.15	1180	0.1	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.65.11	649	0.3	194.7	61	0	0	0	0	0	25	9	0	0	14	0	0	0	4	0
G.65.12	137	0.5	68.5	69	0	0	0	0	0	100	18	1	0	42	11	0	0	9	1
G.65.13	731	0.8	584.8	297	0	0	0	0	0	49	15	0	3	34	10	0	0	8	1
G.65.14	970	0.3	291	220	0	0	0	0	0	27	15	0	0	63	10	0	0	6	0
G.66.1	285	0.3	85.5		0	0	0	0	0	52	28	1	0	6	0	1	2	3	0
G.67.01	4608	0.1	460.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.67.02	596	0.6	357.6	225	0	0	0	0	0	9	0	0	0	3	0	0	0	0	0
G.67.03	1129	0.8	903.2	28	0	0	0	0	0	3	0	0	0	1	0	0	0	1	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	3	0	0	1	24	1	1	3	0	0	1	3	4	3	3	1	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1	10	1	0	0	4	0	1	0	5	1	1	0	1	0	0	1	0	2	0	0
0	6	0	0	0	5	0	1	0	3	0	0	0	0	1	0	0	0	0	0	0
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0	4	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
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0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

39 1 50 (9) 19 1 (3) 4 4 10 3

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.67.04	4869	0.1	486.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.67.05	1189	0.1	118.9	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.67.06	2450	0.1	245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.67.07	1130	0.5	565	26	0	0	0	0	0	19	12	0	1	8	0	0	0	6	0
G.67.08	979	1	979	37	0	0	0	0	0	11	6	0	0	8	0	0	0	7	0
G.67.09	2368	0.4	947.2	23	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0
G.67.10	1859	0.9	1673.1	216	0	0	0	0	0	3	0	0	0	1	0	0	0	2	0
G.67.11	2739	0.1	273.9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.67.12	740	1	740	113	0	0	1	0	0	11	22	0	1	12	0	0	0	3	0
G.67.13	205	1	205	19	0	0	0	0	0	0	0	0	0	9	10	0	0	3	0
G.68.1	1882	0.2	376.4	203	0	0	0	0	1	19	7	1	0	3	0	0	0	3	0
G.68.2	3156	0.2	631.2	79	0	0	0	0	0	56	49	1	0	23	0	0	0	4	0
G.68.3	2224	0.1	222.4	9	0	0	0	0	0	3	2	0	0	1	0	0	0	0	0
G.68.4	494	0.2	98.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.69.01	699	0.4	279.6	168	0	0	0	0	0	4	3	1	0	13	0	0	0	7	2
G.69.02	349	0.7	244.3	11	0	0	0	0	0	0	5	0	0	1	0	0	0	0	0
G.69.03	189	0.6	113.4	21	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0
G.69.04	712	0.1	71.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.69.05	1328	0.4	531.2	6	0	0	0	0	0	3	2	0	0	3	0	0	0	5	6
G.69.06	2308	0.9	2077.2	27	0	0	0	0	0	3	0	0	0	2	0	0	0	5	1
G.69.07	72	0.9	64.8	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.69.08	650	0.6	390	36	0	0	0	0	0	1	2	0	0	0	0	0	0	1	0
G.69.09	2857	0.1	285.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.69.10	228	1	228	267	0	0	0	0	0	0	1	0	0	6	0	0	0	6	4
G.69.11	1900	0.4	760	24	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0
G.69.12	456	1	456	164	0	0	0	0	0	7	0	0	0	2	0	0	0	1	0
G.69.13	2330	0.1	233	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.69.14	7875	0.1	787.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.70.2	1600	0.2	320		0	0	0	0	0	3	0	0	0	13	0	0	0	5	1
G.72.1	395	0.8	316	2	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0
G.72.2	515	0.3	154.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
G.72.3	334	1	334	33	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2
G.72.4	310	0.9	279	17	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
G.72.5	490	0.8	392	42	0	0	0	0	1	32	3	0	0	0	0	0	0	0	0
G.72.6	1270	0.1	127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.18.0	156	0.1	15.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.18.1	240	0.8	192	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
U.18.2	456	0.6	273.6	12	0	0	0	0	0	1	1	0	0	1	0	2	0	1	0
U.18.3	156	0.2	31.2	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
U.18.4	45	0.2	9	6	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
U.18.5	3835	0.9	3451.5	25	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0
U.18.6	240	0.6	144	9	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0
G.74.1	2127	0.8	1701.6	267	0	0	0	0	1	11	0	0	0	32	5	0	0	11	4
G.74.2	2200	0.5	1100	238	0	0	0	0	0	5	0	0	0	3	3	0	0	0	0
G.74.3	2210	0.1	221	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.74.4	71	0.1	7.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.75.1			0		0	0	0	0	0	58	7	0	0	4	0	0	0	0	0
G.76.01-	1257	0.5	628.5	18	7	0	0	0	0	10	4	1	0	0	0	0	0	1	0
G.76.08	260	0.6	156	16	0	0	0	0	0	30	6	0	0	6	0	0	0	3	0
G.76.07	245	0.5	122.5	18	0	0	0	0	0	31	13	0	0	16	0	0	0	0	0
G.76.06	218	0.1	21.8	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.76.04	386	1	386	34	0	0	0	0	0	37	7	1	0	1	0	0	0	0	0
G.76.03	66	0.5	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.76.09	231	0.5	115.5	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.76.10	1585	0.1	158.5	22	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.76.05	4900	0.9	4410	169	0	0	0	0	0	55	34	1	0	92	2	0	0	12	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	5	0			6		0		(1)	2	(1)			0	0	0		0		

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.77.01	0.2	1	0.2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.02	0.2	1	0.2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.03	0.3	1	0.3	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.04	0.1	1	0.1	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.05	0.7	1	0.7	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.06	0.3	1	0.3	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.07	0.2	1	0.2	53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.08	0.2	1	0.2	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.09	0.4	1	0.4	14	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
G.77.10	0.7	1	0.7	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.19	2.1	1	2.1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.11	13141	0.1	1314.1	6	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.77.12	6777	0.2	1355.4	0	0	0	0	0	0	2	2	1	0	0	0	0	0	1	0
G.77.13	4760	0.3	1428	14	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
G.77.14	1910	0.4	764	33	0	0	0	0	0	9	1	0	1	0	0	0	0	0	0
G.77.15	2050	0.9	1845	71	0	0	0	0	0	4	2	0	0	0	0	0	0	3	1
G.77.16	1075	1	1075	24	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
G.77.17	480	0.9	432	24	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.78.1	3147	1	3147	13	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
G.78.2	4243	1	4243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.78.3	970	1	970	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.78.4	3962	1	3962	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.80.1	7	1	7	65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.80.2	1470	0.5	735	65	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.80.3	1564	0.1	156.4	10	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0
G.80.4	1846	0.1	184.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.82.1	12500	0.1	1250	0	0	0	0	0	0	2	2	0	0	0	0	0	0	1	0
G.83.1	1440	0.6	864	4	0	0	0	0	0	21	1	0	1	1	0	0	0	0	0
G.83.2	488	0.7	341.6	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.83.3	2704	0.1	270.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.83.4	2790	0.1	279	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.84.01	1216	0.2	243.2	40	54	0	0	0	0	5	0	0	0	5	1	0	0	0	0
G.84.02	919	0.2	183.8	5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.84.03	716	0.1	71.6	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.84.04	940	0.8	752	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.84.05	585	0.9	526.5	6	14	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.84.06	219	1	219	0	42	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.84.07	300	1	300	0	105	0	0	0	0	2	1	0	0	0	0	0	0	0	0
G.84.08	679	0.4	271.6	3	118	0	0	0	0	8	0	0	0	0	0	0	0	0	0
G.84.09	398	0.8	318.4	3	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.84.10	873	0.2	174.6	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.84.11	805	0.7	563.5	0	26	0	0	0	0	3	0	0	0	0	0	0	0	0	0
G.84.12	896	0.5	448	0	15	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.84.13	347	1	347	0	12	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.84.14	787	1	787	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.84.15	331	1	331	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.85.10	144	1	144	262	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.85.01	4138	0.2	827.6	43	0	0	0	0	0	2	0	0	0	2	0	0	0	3	0
G.85.02	1550	0.9	1395	680	7	0	0	0	0	10	5	2	0	21	0	0	0	22	0
G.85.03	370	0.6	222	69	0	0	0	0	0	0	1	0	0	2	0	0	0	1	0
G.85.04	81	1	81	25	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
G.85.05	188	0.2	37.6	5	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0
G.85.06	324	0.3	97.2	0	0	0	0	0	0	5	3	0	0	2	0	0	0	0	0
G.85.07	239	0.8	191.2	7	0	0	0	0	0	12	2	1	4	7	0	0	0	1	0
G.85.08	112	1	112	10	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
G.85.09	151	1	151	52	0	0	0	0	0	11	11	0	0	3	0	0	0	1	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.85.11	1435	0.8	1148	186	0	0	0	1	0	3	6	0	1	5	0	0	0	0	0
G.85.12	1523	0.7	1066.1	797	0	0	0	0	0	26	15	0	3	7	0	1	0	2	0
G.85.13	213	0.9	191.7	185	0	0	0	0	0	20	5	1	1	0	0	0	0	2	0
G.85.14	247	0.6	148.2	879	0	0	0	0	0	29	15	1	2	7	0	0	0	3	0
G.85.17	576	0.3	172.8	42	0	0	0	0	0	15	2	0	0	2	0	0	0	0	0
G.85.15	924	0.5	462	108	0	0	0	0	0	6	5	3	0	0	0	0	0	0	0
G.85.16	1245	0.5	622.5	92	0	0	0	0	0	40	1	0	0	1	0	0	0	0	0
G.86.1	200	1	200	83	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
G.86.2-3	372	1	372	284	0	0	0	0	0	5	0	0	0	1	0	0	0	1	2
G.86.5	3860	0.3	1158	507	1	0	0	0	0	4	2	1	0	3	0	0	0	3	0
G.86.4	1	1	1	256	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.87.1	4278	0.1	427.8	15	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.87.2	3320	0.4	1328	125	5	0	0	0	0	17	0	0	0	1	0	0	0	0	0
G.88.1	15400	0.1	1540	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.88.2	255	1	255	5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.88.3	591	1	591	14	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.89.1	1905	0.4	762	514	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.89.2	2124	0.2	424.8	116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.89.3	2068	0.3	620.4	48	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.89.4	1550	0.3	465	87	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.89.5	1225	0.7	857.5	115	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.89.6	1550	0.6	930	139	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.90.1			0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.29	13	1	13	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
M.2.30	2130	0.6	1278	80	0	0	1	0	0	27	6	0	0	16	2	1	0	7	0
M.2.28	442	0.6	265.2	8	0	0	0	0	0	1	2	0	0	2	0	0	1	0	0
M.2.31	185	0.9	166.5	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.32	668	0.6	400.8	10	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0
M.2.33	922	0.5	461	48	0	0	2	0	0	23	2	0	0	2	0	0	0	0	0
M.2.34	1548	0.5	774	25	0	0	0	0	0	9	0	0	0	1	0	0	0	0	0
M.2.35	44	1	44	2	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
M.2.40	358	0.5	179	52	0	0	0	0	1	11	0	0	0	0	0	0	0	0	0
M.2.41	175	0.3	52.5	21	0	0	0	0	0	5	0	0	0	0	1	0	0	0	0
M.2.42	2342	0.3	702.6	14	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0
M.2.36	85	1	85	7	0	0	0	0	0	4	2	0	1	0	0	1	0	0	0
M.2.37	528	0.9	475.2	30	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
M.2.24	186	0.9	167.4	4	9	0	0	0	0	9	1	0	0	5	0	1	0	3	0
M.2.01	190	0.9	171	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.39	703	0.8	562.4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.38	862	0.3	258.6	5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
M.2.02	127	0.9	114.3	6	0	0	0	0	0	1	0	0	0	0	0	0	0	2	1
M.2.03	91	0.7	63.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
M.2.04	88	0.1	8.8	5	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
M.2.05	1498	0.1	149.8	4	0	0	0	0	0	2	1	0	0	1	0	0	0	0	0
M.2.15	231	0.1	23.1	16	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
M.2.06	663	0.5	331.5	364	1	0	0	0	0	0	2	0	0	3	0	0	0	14	1
M.2.08	787	0.9	708.3	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.07	812	0.6	487.2	45	1	0	0	0	0	0	0	0	0	3	0	0	0	2	0
M.2.11	626	0.7	438.2	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.10	663	0.3	198.9	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.09	491	0.4	196.4	142	2	0	0	0	0	0	0	0	0	6	0	0	0	4	0
M.2.12	316	0.3	94.8	37	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0
M.2.13	474	0.4	189.6	23	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
M.2.14	850	0.4	340	67	0	0	0	0	0	1	2	0	0	3	0	0	0	3	1
M.2.21	1177	0.2	235.4	70	0	0	0	0	0	3	2	0	0	5	0	0	0	8	3
M.2.22	92	1	92	186	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	8	0	1	0	1	0	1	1	1	0	0	0	1	0	0	0	0	2	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	20	0																		
					9	(3)			(5)	1	(1)			0	0	0		2		

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
M.2.23	64	1	64	454	0	0	0	0	0	0	0	0	0	7	0	0	0	6	0
M.2.25	142	0.4	56.8	46	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3
M.2.27	210	0.9	189	15	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0
M.2.26	316	0.3	94.8	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.17	152	0.5	76	8	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
M.2.20	143	0.5	71.5	18	0	0	0	0	0	3	0	0	0	0	0	0	0	1	1
M.2.16	136	0.8	108.8	57	0	0	0	0	0	0	0	0	0	1	1	0	0	3	2
M.2.18	97	0.6	58.2	12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
M.2.19	142	0.5	71	49	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0
M.3.1	847	0.1	84.7	17	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0
M.3.2	1622	0.1	162.2	14	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0
M.3.3	1573	0.1	157.3	34	0	0	0	0	0	6	12	0	0	24	3	3	1	16	0
M.3.4	568	0.1	56.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0
M.4.1	1500	0.1	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.4.2			0	3	0	0	0	0	0	0	3	0	0	0	2	0	0	3	0
M.5.1	600	0.8	480	106	1	0	0	0	0	0	3	0	0	32	3	0	0	0	0
M.5.2	2828	0.1	282.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.5.3	50	0.3	15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
M.5.4	50	1	50	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.6.1	6032	0.1	603.2	9	0	0	0	0	0	12	11	0	0	12	5	0	0	0	0
U.1.34	624	0.2	124.8	9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
U.1.35	2629	0.7	1840.3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.1.33	4650	0.9	4185	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
U.1.14	7882	0.7	5517.4	0	0	0	0	0	0	7	1	0	0	0	0	0	0	2	0
U.1.10	2422	0.9	2179.8	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
U.1.42	2086	0.7	1460.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.1.37	200	0.5	100	194	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
U.1.7	210	0.5	105	117	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
U.1.6	52	1	52	205	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
U.1.5	36	1	36	353	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0
U.1.4	45	1	45	326	0	0	0	1	0	0	0	0	0	2	0	0	0	2	1
U.1.3	54	1	54	313	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
U.1.2	8	1	8	228	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
U.1.1	12	1	12	178	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
U.1.16	838	0.6	502.8	10	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
U.1.27	724	0.9	651.6	42	0	0	0	0	0	4	0	0	0	6	1	0	1	5	0
U.1.17	200	1	200	2	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
U.1.15	1370	0.2	274	22	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
U.1.22	1285	0.3	385.5	2	0	0	0	0	0	2	0	0	0	1	0	0	0	1	0
U.1.18	1123	0.8	898.4	30	0	0	0	0	0	0	1	0	0	6	2	0	0	2	4
U.1.21	760	0.9	684	13	0	0	0	0	0	0	1	0	0	2	0	0	1	2	0
U.1.19	839	0.8	671.2	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1
U.1.30	1100	0.2	220	3	0	0	0	0	0	1	1	0	0	3	0	0	0	0	1
U.1.26	1395	0.9	1255.5	9	0	0	0	0	0	6	0	0	0	1	0	0	0	1	0
U.1.20	933	0.4	373.2	4	0	0	0	0	0	10	2	0	0	1	1	0	0	0	2
U.1.29	1457	0.8	1165.6	32	0	0	0	0	0	14	2	0	1	4	5	0	0	8	6
U.1.23	2047	0.7	1432.9	9	0	0	0	0	0	10	0	0	0	1	1	0	0	3	0
U.1.25	1585	0.9	1426.5	2	0	0	0	0	0	7	0	0	0	1	1	0	0	0	1
U.1.12	858	0.9	772.2	8	0	0	0	0	0	24	5	0	0	6	4	0	0	9	3
U.1.11	1042	1	1042	3	0	0	0	0	0	3	0	0	0	3	1	0	0	0	0
U.1.9	675	0.9	607.5	45	0	0	0	0	0	9	3	0	0	0	4	0	0	4	7
U.1.36	260	1	260	10	0	0	0	0	0	5	2	0	0	4	0	0	0	0	1
U.1.40	218	0.8	174.4	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3
U.1.32	1936	0.9	1742.4	3	0	0	0	0	0	30	1	0	0	6	4	0	0	6	5
U.1.31	2564	0.6	1538.4	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.1.28	959	0.9	863.1	11	0	0	0	0	0	11	0	0	0	2	2	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	8	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
34 0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 37 0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
7 0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6 0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
4 0	1	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
3 0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
16 0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
17 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36 0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
40 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11	1			34	(2)			7	0	(1)			0	1	0		0		

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
U.1.24	1997	0.9	1797.3	3	0	0	0	0	0	4	1	0	0	0	0	0	0	0	1
U.1.13	900	0.9	810	52	0	0	0	0	0	13	1	0	0	0	2	0	0	1	2
U.1.8	2417	0.7	1691.9	27	0	0	0	0	0	3	3	0	0	2	0	0	0	3	1
U.2.1	9480	0.5	4740	36	0	0	0	0	0	23	8	2	3	11	3	0	2	2	1
U.2.2	3240	0.7	2268	81	0	0	0	0	0	22	10	1	1	66	11	0	4	3	0
U.2.4	10310	0.1	1031	9	0	0	0	0	0	0	0	0	0	0	2	0	1	1	0
U.2.3	19995	0.1	1999.5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
U.2.6	2587	1	2587	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
U.2.7	1308	1	1308	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
U.2.12	4189	1	4189	454	0	0	0	0	0	7	0	0	0	18	9	0	1	3	1
U.2.13	2957	1	2957	167	0	0	0	0	0	6	0	0	0	8	6	0	0	0	0
U.2.5			0	34	0	0	0	0	0	0	3	0	0	1	1	0	0	0	0
U.2.8	620	1	620	104	0	0	0	0	0	0	18	0	2	2	4	0	0	0	2
U.2.9	1836	1	1836	79	0	0	2	0	0	8	31	1	0	12	3	0	0	0	0
U.2.10	2350	1	2350	29	0	0	0	0	0	0	6	0	0	2	1	0	0	2	1
U.2.11	838	1	838	81	0	0	0	0	0	0	1	0	0	5	0	0	0	0	1
U.3.8	1600	0.5	800	52	0	0	0	0	0	5	5	0	0	1	4	0	0	0	0
U.3.6	2125	0.8	1700	97	0	0	0	0	0	36	15	1	0	6	1	0	1	1	0
U.3.7	883	0.5	441.5	172	0	0	0	0	0	17	22	1	0	10	0	0	0	4	0
U.3.5	1902	0.8	1521.6	430	0	0	0	0	1	78	38	6	7	37	7	1	5	1	1
U.3.4	3180	0.7	2226	684	0	0	0	0	0	44	24	3	3	32	1	0	0	0	0
U.3.2	2065	0.5	1032.5	41	0	0	0	0	0	183	25	3	6	14	1	0	2	1	0
U.4.1	1100	0.8	880	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
U.4.3	50	1	50	1	0	0	0	0	0	0	4	1	0	9	1	0	0	2	1
U.4.2	1200	0.7	840		0	0	0	0	0	6	25	3	0	23	11	1	0	5	0
U.5.1	10000	0.5	5000	39	0	0	0	0	0	1	2	1	0	0	0	0	0	2	0
U.6.1	2000	0.9	1800	0	0	0	0	0	0	1	5	0	0	3	0	0	0	0	0
U.6.2	1500	1	1500	86	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0
U.7.1	1530	0.9	1377		0	0	0	0	0	0	3	1	0	3	0	0	0	1	0
U.8.1	5000	1	5000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.8.2	500	1	500	10	0	0	0	0	0	4	2	0	0	6	9	0	0	0	1
U.9.1	800	0.4	320		0	0	0	0	0	6	3	0	0	12	4	0	0	1	0
U.9.2	1600	0.7	1120		0	0	0	0	0	0	5	0	0	6	5	0	0	0	0
U.9.3	1200	1	1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.11.1	3351	0.1	335.1	52	0	0	0	0	0	22	13	0	0	2	0	0	0	0	0
U.12.1	1215	1	1215	0	0	0	0	0	0	4	3	0	0	1	1	0	0	0	0
U.12.2	4356	0.4	1742.4	8	0	0	0	0	0	13	14	0	0	8	3	0	0	1	0
U.12.3	1080	0.8	864	71	0	0	0	0	0	49	15	0	1	16	5	0	0	0	0
U.12.4	351	1	351	0	0	0	0	0	0	6	0	0	0	1	1	0	0	0	0
U.13.03	1070	0.3	321	1	3	0	0	0	0	2	0	0	0	0	1	0	0	0	0
U.13.01	2704	0.6	1622.4	52	0	0	0	0	0	18	12	1	1	4	4	0	0	3	1
U.13.02	800	0.7	560	46	0	0	0	0	0	22	24	0	2	9	4	0	0	0	0
U.13.11	3334	0.6	2000.4	53	0	0	0	0	0	4	3	0	1	6	3	0	0	5	0
U.13.12	495	0.7	346.5	58	1	0	0	0	0	12	10	0	0	0	2	0	0	0	0
U.13.10	68	1	68	0	0	0	0	0	0	8	0	0	0	2	0	0	0	0	0
U.13.09	65	1	65	13	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0
U.13.08	33	1	33	9	0	0	0	0	0	3	2	1	0	1	0	0	0	0	0
U.13.07	69	1	69	28	0	0	0	0	0	7	1	2	0	2	3	0	0	0	0
U.13.06	61	1	61	10	0	0	0	0	0	17	6	1	0	0	0	0	0	0	0
U.13.05			0	0	0	0	0	0	0	0	1	1	0	3	1	0	0	0	0
U.13.04	1071	0.4	428.4	12	0	0	0	0	0	9	1	0	0	0	1	0	0	0	0
U.14.7	903	0.6	541.8	27	0	0	0	0	0	14	3	1	0	1	0	0	1	0	0
U.14.1	243	1	243	124	0	0	0	0	1	9	25	0	2	16	9	0	0	2	0
U.14.2	1641	0.8	1312.8	103	0	0	0	0	0	29	32	2	0	8	3	0	0	0	0
U.14.3	948	0.8	758.4	56	0	0	0	0	0	7	9	0	0	15	6	0	0	0	0
U.14.4	379	0.6	227.4	30	0	0	0	0	0	3	0	0	0	0	1	0	0	2	0
U.14.5	1096	0.7	767.2	118	0	0	0	0	0	11	9	3	0	4	3	0	1	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VH	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	2	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	1	0	0	0	0	0	0	2	1	0	0	0	0	1	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	3			16	24	1		6	1	2			1	2	1		0		

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
U.14.6	1372	0.7	960.4	56	0	0	0	0	0	10	4	0	0	0	0	0	0	0	0
U.15.1-2	995	0.5	497.5	73	0	0	0	0	0	20	1	0	1	1	0	0	0	0	0
U.15.3-4	480	0.1	48	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
U.15.5	1330	0.4	532	18	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
U.16.07	960	0.7	672	41	0	0	0	0	0	14	1	0	0	2	0	0	0	0	0
U.16.08	1424	0.7	996.8	81	0	0	0	0	0	15	4	2	2	5	2	0	0	1	0
U.16.06	2151	0.6	1290.6	59	0	0	0	0	0	36	24	3	3	24	5	0	0	8	2
U.16.05	1619	0.6	971.4	170	0	0	0	0	0	38	10	1	0	16	7	0	0	0	3
U.16.09	938	0.6	562.8	115	0	0	0	0	0	39	3	1	0	9	2	0	0	0	1
U.16.04	1037	0.7	725.9	128	0	0	0	0	0	33	2	1	2	6	0	0	0	0	0
U.16.10	1434	0.7	1003.8	72	0	0	0	0	0	24	7	0	0	3	3	0	0	0	0
U.16.03	259	1	259	46	0	0	0	0	0	17	4	0	1	3	1	0	0	0	0
U.16.02	1739	0.8	1391.2	93	0	0	0	0	0	6	2	0	2	6	0	0	1	2	1
U.16.11	1418	0.7	992.6	83	0	0	0	0	0	40	5	0	0	1	1	0	0	0	0
U.16.12	1058	0.7	740.6	63	0	0	0	0	0	25	3	2	3	3	1	0	0	0	0
U.16.13	1667	0.4	666.8	70	0	0	0	0	0	40	2	0	0	1	0	0	0	0	0
U.16.01	3164	0.7	2214.8	512	0	0	0	0	0	56	19	3	2	26	14	1	3	5	2
U.17.01	2270	0.8	1816	122	0	0	0	0	0	0	18	0	1	38	5	0	1	11	5
U.17.02	870	0.8	696	48	0	0	0	0	0	0	4	0	0	6	0	0	0	3	1
U.19.1	506	0.7	354.2	39	0	0	0	0	0	7	1	3	0	0	0	0	0	2	0
U.19.2	602	0.8	481.6	18	0	0	0	0	0	5	1	2	0	1	0	0	0	0	0
U.19.3	832	0.6	499.2	62	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
U.20.01	1330	0.1	133	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.20.02	620	0.7	434	45	0	0	0	0	0	5	1	0	0	2	1	0	0	0	0
U.20.03	2770	0.9	2493	59	0	0	0	0	0	26	8	2	1	6	0	0	0	4	0
U.20.04	1761	0.9	1584.9	127	0	0	0	0	0	39	25	5	1	13	4	0	0	2	0
U.20.05	1998	0.5	999	15	0	0	0	0	0	6	0	0	1	0	0	0	0	0	0
U.20.06	1927	0.9	1734.3	49	0	0	0	0	0	39	9	3	2	6	0	0	0	3	1
U.20.07	1600	0.7	1120	61	0	0	0	0	0	11	1	0	0	3	0	0	0	0	0
U.20.08	367	1	367	42	0	0	0	0	0	12	10	1	0	9	0	0	0	3	0
U.20.09	2312	0.6	1387.2	121	0	0	0	0	0	25	8	1	0	14	2	0	0	3	0
U.20.10	2623	0.3	786.9	141	0	0	0	0	0	7	10	0	0	3	0	0	0	0	1
U.20.15	557	1	557	136	0	0	0	0	0	15	6	0	0	16	7	0	0	9	4
U.20.14	1994	0.3	598.2	26	0	0	0	0	0	5	1	0	0	2	0	0	1	0	0
U.20.13	1533	0.3	459.9	47	0	0	0	0	0	15	3	0	0	5	0	0	0	2	1
U.20.12	2278	0.4	911.2	31	0	0	0	0	0	1	0	0	0	4	1	0	0	2	1
U.20.11	1426	0.4	570.4	84	0	0	0	0	0	3	0	0	0	3	0	0	0	8	6
U.21.07	635	0.3	190.5	24	0	0	0	0	0	24	23	1	2	7	0	0	4	0	0
U.21.09	588	0.3	176.4	13	0	0	0	0	0	5	2	0	0	0	1	0	0	0	0
U.21.08	290	0.4	116	0	0	0	0	0	0	3	0	1	0	5	1	1	0	0	0
U.21.06			0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0
U.21.03-5	1537	0.7	1075.9	89	1	0	0	0	0	154	108	0	3	57	6	0	2	33	0
U.21.02	2027	0.5	1013.5	2	0	0	0	0	0	30	26	0	1	10	0	0	0	2	0
U.22.01	307	0.9	276.3	18	2	0	0	0	0	35	12	0	1	6	0	0	0	0	0
U.22.02	255	0.5	127.5	73	1	0	0	0	0	34	14	1	0	8	0	0	0	0	0
U.22.03	328	0.5	164	65	2	0	0	0	0	29	18	0	1	7	0	0	0	0	0
U.22.04	410	0.6	246	127	0	0	0	0	0	22	13	4	0	6	0	0	0	2	0
U.22.05	515	0.5	257.5	85	0	0	0	0	0	71	39	4	0	13	0	0	0	5	0
U.22.06	87	0.4	34.8	20	0	0	0	0	0	16	1	1	0	1	0	0	0	0	0
U.22.07	358	0.3	107.4	14	0	0	0	0	0	44	9	3	1	2	0	0	0	0	0
U.22.08	446	0.5	223	59	0	0	0	0	0	24	9	0	0	0	0	0	0	3	0
U.22.09	1150	0.6	690	122	2	0	0	0	0	50	52	2	2	9	0	0	0	0	0
U.22.10	1631	0.5	815.5	176	0	0	1	0	0	41	31	3	4	12	4	0	0	4	0
U.22.11	2168	0.4	867.2	204	0	0	0	0	0	78	13	3	3	29	6	0	1	5	0
U.23.1			0		0	0	0	0	0	19	17	2	0	5	1	0	0	1	0
U.25.1	7723	1	7723		0	0	0	0	0	18	23	0	3	100	21	85	31	179	246
U.25.2	1900	0.8	1520	574	0	0	0	0	0	27	24	3	4	60	7	5	8	24	21

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
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0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	150	0	0	1	69	1	21	2	8	2	0	1	18	3	4	0	0	0	1	2
3	8	0	0	0	8	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
	175	5			83		21		10	8	(1)			4	4	3		0		

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
U.25.3	2100	0.6	1260	24	0	0	0	0	0	0	5	0	0	7	0	0	1	1	0
T.1.8			0		1	0	0	0	0	0	0	1	0	3	0	0	0	1	0
T.1.7	132	0.2	26.4	17	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
T.1.4	298	0.1	29.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.1.2	238	0.1	23.8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.1.1	269	0.6	161.4	48	3	0	0	0	0	1	0	0	0	0	0	1	1	2	14
T.1.3	590	0.1	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.1.5	67	0.2	13.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.1.6	1312	0.3	393.6	16	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
T.2.9	3900	0.1	390	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.2.1	440	1	440		0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
T.2.2	2017	0.9	1815.3	30	0	0	1	0	0	17	2	0	1	12	9	0	0	1	7
T.2.3	1250	1	1250		0	0	0	0	0	2	14	2	0	15	13	0	1	0	11
T.2.5	4405	0.5	2202.5		0	0	0	0	0	8	9	1	0	11	0	0	0	0	0
T.2.4	1378	0.9	1240.2	153	0	0	0	0	1	23	48	0	1	28	6	0	0	8	2
T.2.8	434	1	434	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
T.2.6	200	0.8	160		0	0	0	0	0	4	8	1	1	10	6	0	0	0	0
T.2.7	1414	0.5	707		0	0	0	0	0	10	0	1	0	7	0	0	0	2	3
T.3.1	2500	0.3	750	8	0	0	0	0	0	3	3	0	0	1	0	0	0	0	0
T.4.1	2000	0.8	1600	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
T.4.4	690	1	690	10	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
T.4.5	4800	0.8	3840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.4.2	1200	1	1200	13	0	0	0	0	0	0	0	0	0	2	0	0	0	1	1
T.4.3	640	0.2	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.4.6	3840	0.7	2688	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.5.1			0		0	0	0	0	0	4	3	2	1	3	0	0	0	0	0
T.6.1	2400	0.7	1680		0	0	0	0	0	3	0	0	0	6	7	0	0	4	8
T.6.2	2040	0.7	1428		0	0	0	0	0	5	6	4	0	15	10	1	0	1	2
T.6.32	6360	0.5	3180	86	0	0	0	0	0	37	10	7	0	20	5	0	0	1	0
T.6.3	8709	0.6	5225.4		0	0	0	0	0	20	11	8	0	37	33	0	1	3	1
T.6.4	5217	0.8	4173.6		0	0	0	0	0	18	8	6	0	14	11	0	0	1	0
T.6.7	60	1	60	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
T.6.5	7848	1	7848		0	0	0	0	0	9	2	1	0	30	16	1	9	4	3
T.6.6	2080	1	2080		0	0	0	0	0	5	0	0	0	9	6	0	0	1	6
T.6.8	1000	0.6	600	154	0	0	0	0	0	1	0	0	0	4	4	1	1	5	1
T.6.20	4324	1	4324	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.6.36	9600	1	9600	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.6.34	11260	1	11260	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
T.6.27	1520	0.6	912	15	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0
T.6.12	5080	0.7	3556	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.6.9	1840	1	1840	12	0	0	0	0	0	1	0	0	0	1	2	0	0	0	0
T.6.10	10000	1	10000	36	0	0	0	0	0	9	6	0	1	2	0	0	0	1	1
T.6.29	2793	0.5	1396.5	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
T.6.30	4550	0.7	3185	60	0	0	0	0	0	7	7	1	0	9	4	0	0	0	0
T.6.31	5382	0.9	4843.8	76	0	0	0	0	0	0	4	0	0	8	4	0	0	0	0
T.6.24	950	0.5	475	25	0	0	0	0	0	19	4	0	0	7	0	0	0	0	0
T.6.11	960	1	960	441	0	0	0	0	0	65	18	2	0	119	10	1	1	10	7
T.6.28	5166	0.6	3099.6	107	0	0	0	0	0	32	20	4	0	30	10	0	0	0	0
T.6.23	780	0.5	390	13	0	0	0	0	0	0	10	4	0	12	9	0	0	0	1
T.6.21	5684	0.4	2273.6	76	0	0	0	0	0	37	5	0	0	23	11	0	0	2	0
T.6.22	1345	0.7	941.5	33	0	0	0	0	0	36	29	10	0	47	5	0	4	1	0
T.6.14	1257	0.3	377.1	3	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0
T.6.16	5654	0.5	2827	156	0	0	0	0	0	128	49	14	0	42	7	0	1	1	2
T.6.15	2133	0.8	1706.4	15	0	0	0	0	0	9	5	1	0	0	3	0	0	0	2
T.6.13	1404	0.7	982.8	136	0	0	0	0	0	30	14	14	0	35	1	0	2	2	1
T.6.26	5653	0.7	3957.1	332	0	0	0	0	0	65	44	10	0	91	15	0	0	4	1
T.6.25	8900	0.7	6230	101	0	0	0	0	0	22	6	1	0	24	12	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	4	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	6	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	1	0	0	0	2	0	1	0	0	0	0	0	0	0	0	1
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	2	0	0	0	2	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	23	1			27		(1)		7	1	(4)				1	1	0		1	

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
T.6.19	2870	0.5	1435	52	0	0	0	0	0	5	1	4	0	12	4	0	0	1	2
T.6.18	6724	1	6724	15	0	0	1	0	0	4	1	1	0	5	0	0	0	0	0
T.6.17	1290	0.5	645	29	0	0	0	0	0	5	7	0	0	9	1	0	0	0	0
T.7.1	362	0.8	289.6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
T.7.2	1143	0.6	685.8	11	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
T.7.3	2630	0.8	2104	25	0	0	0	0	0	0	1	2	0	4	1	0	0	1	0
T.7.4	362	0.8	289.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.7.5	808	1	808	113	0	0	1	0	0	15	0	0	0	4	0	0	0	0	0
T.8.1			0		0	0	0	0	0	26	5	3	0	19	6	0	0	0	0
T.9.1	360	1	360		0	0	0	0	0	8	1	2	0	0	0	0	1	0	0
T.9.3	1058	0.6	634.8		0	0	0	0	0	28	3	1	0	6	0	0	0	0	0
T.9.4	400	0.8	320		0	0	0	0	0	0	2	0	0	1	0	0	0	0	0
T.9.2	4025	0.8	3220		0	0	0	0	0	30	3	1	0	11	1	1	0	1	2
T.10.1			0		0	0	0	0	0	9	2	0	1	2	1	0	0	0	0
T.10.2			0		0	0	0	0	0	4	0	0	0	2	0	0	0	0	0
T.10.3	300	1	300	5	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0
T.10.4	100	1	100	26	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
T.11.1	770	0.3	231	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
T.11.2	1021	1	1021	15	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0
T.11.3	1237	1	1237	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.11.7	480	1	480	20	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
T.11.8	1230	0.2	246	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.11.6	3175	0.1	317.5	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.11.5	174	1	174	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.11.4	675	1	675	18	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
T.12.3	90	1	90	0	0	0	0	0	0	2	2	0	0	2	0	0	0	0	0
T.12.1	8625	0.7	6037.5	4	1	0	0	0	0	5	5	0	0	6	0	0	0	0	0
T.12.2	300	0.7	210	4	0	0	0	0	0	0	1	0	0	12	1	1	2	1	1
T.13.1	1867	1	1867	63	0	0	0	0	0	63	13	3	0	3	1	1	0	0	0
T.13.2	3060	0.7	2142	48	0	0	0	0	0	24	2	3	0	0	1	0	1	1	1
T.13.3	1248	0.4	499.2	23	0	0	0	0	0	21	3	5	1	0	0	0	0	0	1
T.13.4	2137	0.3	641.1	34	0	0	0	0	0	31	4	0	0	2	1	0	0	0	0
T.14.03	3330	1	3330	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
T.14.01	3188	0.6	1912.8	7	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
T.14.02	500	1	500	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0
T.14.04	3238	0.8	2590.4	33	0	0	0	0	1	1	0	0	0	2	2	1	0	3	0
T.14.05	650	1	650	7	0	0	0	0	0	3	0	0	0	1	0	0	0	0	4
T.14.06	3145	1	3145	12	0	0	0	0	0	11	1	1	1	11	5	0	0	3	1
T.14.07	4209	1	4209	21	0	0	0	0	0	7	0	0	0	4	0	0	0	0	1
T.14.08	2845	1	2845	8	0	0	0	0	0	12	0	0	0	2	0	0	0	0	0
T.14.17	1115	1	1115	6	0	0	0	0	0	3	1	0	0	0	4	0	0	3	1
T.14.09	148	1	148	143	0	0	0	0	0	4	3	0	1	5	8	0	1	2	2
T.14.15	169	1	169	51	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
T.14.16	906	1	906	16	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
T.14.14	1000	1	1000	33	0	0	0	0	0	13	0	0	0	3	5	1	0	6	1
T.14.10	900	1	900	87	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
T.14.11	1828	1	1828	84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.14.12	1668	1	1668	33	0	0	0	0	0	13	1	0	0	2	0	0	0	1	0
T.14.13	2896	1	2896	40	0	0	0	0	0	0	3	2	0	2	0	0	0	0	0
T.15.15	3243	1	3243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.15.11	1090	1	1090	25	0	0	0	0	0	4	0	0	0	1	1	0	0	3	6
T.15.14	2750	0.8	2200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.15.01	2930	0.6	1758	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
T.15.03	2170	1	2170	4	0	0	0	0	0	2	0	0	0	1	1	0	0	2	1
T.15.02	1460	1	1460	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.15.04	9458	0.4	3783.2	31	0	0	0	0	0	1	1	0	0	3	0	0	0	7	1
T.15.05	1642	0.9	1477.8	10	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
T.15.06	1885	0.9	1696.5	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
T.15.07	2030	0.8	1624	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
T.15.08	1522	0.8	1217.6	11	0	0	0	0	0	1	0	0	0	2	3	1	1	2	1
T.15.09	2315	1	2315	1	0	0	0	0	0	0	0	0	0	1	2	0	0	1	0
T.15.10	4419	0.3	1325.7	19	0	0	0	0	0	0	5	0	0	1	1	0	0	0	0
T.15.12	5418	0.4	2167.2	13	0	0	0	0	0	3	6	2	0	3	0	0	0	0	0
T.16.16	1760	0.7	1232	103	1	0	0	0	0	0	1	0	0	6	3	0	0	5	0
T.16.17	3686	1	3686	861	281	0	0	0	0	208	147	13	0	319	117	0	0	21	13
T.16.01	7140	0.9	6426	92	2	0	0	0	0	2	0	1	0	1	1	0	0	0	0
T.16.18	1615	0.8	1292	343	0	0	0	0	0	63	35	6	4	11	14	0	0	2	2
T.16.15	317	1	317	30	0	0	0	0	0	8	4	0	2	5	4	0	0	1	0
T.16.14	1514	0.9	1362.6	44	0	0	0	0	0	9	3	0	0	4	1	0	0	0	0
T.16.13	544	1	544	31	0	0	0	0	0	0	2	2	0	4	3	0	0	0	0
T.16.12	4630	0.2	926	33	0	0	0	0	0	8	6	1	0	4	4	0	0	0	0
T.16.10	1746	0.8	1396.8	11	0	0	0	0	0	51	16	3	1	13	6	0	1	0	0
T.16.08	768	0.1	76.8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.16.11	2082	0.4	832.8	8	0	0	0	0	0	3	0	0	0	0	4	0	0	0	0
T.16.07	1640	0.6	984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.16.06	2968	1	2968	29	0	0	0	0	0	8	3	0	0	4	7	0	1	0	0
T.16.09	2032	1	2032	36	0	0	0	0	0	11	30	1	0	31	20	0	0	0	0
T.17.02	3976	0.6	2385.6	607	0	0	0	0	0	3	0	0	0	2	1	0	0	0	1
T.17.03	1660	0.8	1328	47	0	0	0	0	0	17	6	0	1	7	4	1	0	1	0
T.17.04	1930	0.6	1158	24	0	0	0	0	0	2	2	0	0	1	1	0	0	0	0
T.17.05	4528	1	4528	5	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0
T.18.19	1690	0.9	1521	5	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
T.18.21	1200	0.9	1080	8	0	0	0	0	0	0	3	6	0	22	8	0	0	1	0
T.18.20	1125	0.9	1012.5	7	0	0	0	0	0	4	12	6	0	3	0	0	0	0	0
T.18.22	1075	0.9	967.5	4	0	0	0	0	0	5	1	0	0	1	0	0	0	0	0
T.19.25	1330	0.9	1197		0	0	0	0	0	3	10	0	0	9	4	0	0	1	1
T.19.23	3070	0.8	2456		0	0	0	0	0	20	4	0	0	14	2	0	0	2	1
T.19.24	1050	1	1050		0	0	0	0	0	66	13	0	0	17	7	0	0	1	0
T.19.26	798	1	798		0	0	0	0	0	61	12	2	0	14	4	0	0	7	0
T.19.28	462	1	462	11	0	0	0	0	0	29	9	4	0	13	1	0	0	6	4
T.19.27	1141	1	1141		0	0	0	0	0	12	9	0	0	7	0	0	1	0	0
T.20.73	200	1	200	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0
T.20.29	2200	1	2200	15	0	0	0	0	0	6	1	1	1	3	1	0	0	0	2
T.20.30	205	1	205	38	0	0	0	0	0	12	0	0	0	3	4	0	0	1	0
T.20.31	1895	1	1895	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
T.20.32	3395	1	3395	227	0	0	0	0	0	97	30	3	2	50	19	0	1	14	1
T.20.33	2880	1	2880	217	0	0	0	0	0	30	21	4	4	39	11	0	0	9	1
T.20.38	1920	1	1920	32	0	0	0	0	0	0	25	7	3	37	28	0	0	7	10
T.20.34	513	1	513	21	0	0	0	0	0	3	1	1	0	2	1	0	0	0	0
T.20.35	507	1	507	17	0	0	0	0	0	4	0	0	0	1	0	0	0	0	0
T.20.36	390	0.9	351	790	0	0	0	0	0	0	8	2	10	7	6	0	1	1	2
T.20.37	189	1	189	68	0	0	0	0	0	13	2	1	0	3	0	0	0	0	0
T.20.40	735	1	735	500	0	0	0	0	0	104	68	8	20	51	6	0	0	9	0
T.20.39	532	0.6	319.2	227	0	0	0	0	0	22	13	2	2	17	4	0	0	4	0
T.32.69	3638	1	3638	944	0	0	0	0	0	265	120	38	4	50	3	0	0	7	1
T.21.48	2204	0.4	881.6		0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
T.21.50	4069	0.5	2034.5	16	0	0	0	0	0	48	31	3	2	36	6	0	0	0	1
T.21.49	2282	0.7	1597.4		0	0	0	0	0	36	30	3	0	12	11	0	0	0	0
T.21.47	2339	0.8	1871.2		0	0	0	0	0	27	3	1	0	3	2	0	0	0	0
T.21.46	1465	1	1465		0	0	0	0	0	30	27	3	0	11	8	0	2	0	0
T.21.44	3470	1	3470	12	0	0	0	0	0	0	2	1	0	1	0	0	0	1	3
T.21.43	3984	1	3984	27	0	0	0	0	0	31	7	7	1	8	6	0	0	4	2
T.21.45	2475	1	2475		0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
T.21.42	2477	1	2477		0	0	0	0	0	0	0	0	0	1	0	0	0	2	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	24	0	0	3	0	0	0	0	2	2	1	0	0	0	0	0
0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
T.21.41	1080	0.7	756		0	0	0	0	0	7	0	0	0	0	5	0	0	0	0
T.21.52	3806	1	3806	3	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
T.21.51	2970	0.1	297	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
T.21.53	3470	0.8	2776	97	0	0	0	0	0	5	5	2	1	3	7	0	2	0	4
T.21.55	3638	0.9	3274.2	23	0	0	0	0	0	8	19	3	0	25	8	3	0	10	8
T.21.54	1000	1	1000	80	0	0	1	0	0	4	0	0	0	3	3	0	1	4	0
T.22.56	2108	1	2108	61	0	0	0	0	0	1	1	1	0	4	0	0	0	1	0
T.22.60	2825	1	2825	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
T.22.57	3345	0.9	3010.5	8	0	0	0	0	0	2	1	0	0	0	0	0	0	1	3
T.22.58	2456	0.4	982.4	27	0	0	0	0	0	1	2	1	0	2	0	0	0	1	0
T.22.59	1702	1	1702	24	0	0	0	0	0	38	20	4	2	32	9	0	0	3	1
T.24.1	2800	1	2800	52	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
T.24.2	138	0.5	69	30	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
T.23.1	4650	0.1	465	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.23.2	1426	0.4	570.4	32	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
T.23.3	1080	0.2	216	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.25.1	5360	0.4	2144		0	0	0	0	0	38	11	6	0	5	2	0	0	1	0
T.26.1	15000	0.5	7500		0	0	0	0	0	44	128	41	12	37	0	1	0	1	0
T.27.1	300	1	300		0	0	0	0	0	11	11	5	0	16	8	0	0	2	0
T.28.6	275	0.2	55	0	1	0	0	0	0	8	1	0	0	0	0	0	0	0	0
T.28.5	365	1	365	228	14	0	0	0	0	14	47	2	2	27	0	0	0	15	3
T.28.7	3690	0.1	369	131	0	0	0	0	0	0	3	0	0	0	0	0	0	2	0
T.28.4	174	1	174	61	30	0	0	0	1	44	10	1	2	12	0	0	0	4	0
T.28.1	172	1	172	28	504	0	0	0	1	34	4	0	0	6	0	1	0	3	3
T.28.2	164	1	164	15	100	0	0	0	0	13	1	0	0	2	0	0	0	3	0
T.28.3	867	0.8	693.6	0	9	0	0	0	0	3	0	0	0	0	1	0	0	0	0
T.29.1			0		0	0	0	0	0	0	0	0	0	3	0	1	0	7	1
T.29.2			0		2	0	0	0	0	3	2	0	0	2	0	0	0	0	0
T.30.01			0	16	1	0	0	0	0	10	3	2	0	12	0	1	2	0	1
T.30.02	2079	0.4	831.6	255	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
T.30.03	1090	0.5	545	496	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0
T.30.04	540	0.3	162	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.30.05	1290	0.8	1032	157	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
T.30.06	600	0.6	360	178	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
T.30.07	3050	0.3	915	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.30.08	139	0.5	69.5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.30.09	2025	0.1	202.5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.30.10	1228	1	1228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.31.1			0		0	0	0	0	0	35	32	0	0	1	3	0	0	0	0
S.2.1	459	1	459	126	0	0	0	0	0	13	4	2	0	6	0	0	0	0	0
S.2.2	1107	0.7	774.9	161	0	0	0	0	0	140	9	1	0	46	15	0	1	5	2
S.2.3	582	0.5	291	47	0	0	0	0	0	39	2	2	0	11	3	0	1	2	0
S.2.13	172	0.8	137.6	19	0	0	0	0	0	9	2	0	0	1	0	0	0	0	0
S.2.4	1320	0.1	132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.2.5	1908	0.1	190.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.2.6	191	0.6	114.6	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
S.2.8	6	1	6	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.2.7	1943	0.1	194.3	4	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
S.2.9	2310	0.2	462	0	1	0	0	0	0	9	4	0	0	1	0	0	0	0	0
S.2.10	1365	0.4	546	0	0	0	0	0	0	12	0	0	0	2	0	0	0	1	1
S.2.11	490	0.7	343	0	0	0	0	0	0	0	1	0	0	4	0	0	2	5	0
S.2.12	340	0.1	34	0	0	0	0	0	0	0	0	0	0	3	1	0	1	1	0
S.3.1	1375	0.9	1237.5	137	0	0	0	0	0	46	12	0	0	21	7	0	0	4	0
S.3.2	735	0.4	294	48	0	0	0	0	0	15	0	0	0	2	0	0	0	0	0
S.3.3	780	0.1	78	26	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0
S.3.4	974	0.5	487	67	0	0	0	0	0	11	0	0	0	5	0	0	1	3	0
S.3.5	890	0.2	178	12	0	0	0	0	0	7	0	0	0	1	0	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0
3	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	2	0	3	1	1	1	0	0	0	0	25	11	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	4	3	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0
0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0
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0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

18 1 3 (2) 10 6 (2) 24 1 1 0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
S.3.6	79	0.4	31.6	59	0	0	0	0	0	0	0	0	0	5	3	0	0	3	0
S.3.7	400	0.5	200	25	0	0	0	0	0	11	1	0	0	2	0	0	1	0	0
S.3.8	1315	0.4	526	20	0	0	0	0	0	6	2	0	0	13	0	0	0	0	0
S.3.9	260	0.2	52	4	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0
S.4.2	120	0.2	24	6	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
S.4.3	706	0.4	282.4	43	0	0	0	0	0	27	0	0	0	23	3	0	0	8	1
S.4.4	142	0.9	127.8	159	0	0	0	0	0	15	0	0	0	28	9	0	1	12	4
S.4.5	91	1	91	49	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0
S.4.6	910	0.7	637	58	0	0	0	0	0	29	0	0	0	11	3	0	0	4	0
S.4.7	135	0.9	121.5	23	0	0	0	0	0	5	2	1	0	1	0	0	0	0	0
S.4.1	226	1	226	61	0	0	0	0	0	42	5	0	1	5	2	0	0	0	0
S.5.1	127	0.1	12.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.5.2	750	1	750	31	0	0	1	0	0	2	0	0	0	4	4	0	3	5	3
S.5.3	115	0.6	69	38	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1
S.5.4	1634	0.8	1307.2	343	0	0	0	0	0	8	0	0	0	22	9	3	12	19	12
S.5.5	262	1	262	216	0	0	0	0	0	9	0	0	0	11	13	0	7	10	3
S.5.6	240	0.1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.7.1	200	0.5	100	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
S.8.1	906	0.4	362.4	24	0	0	0	0	0	13	0	0	0	1	0	0	0	0	0
S.8.2	498	0.5	249	45	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
S.8.3	466	0.3	139.8	20	0	0	0	0	0	3	0	0	0	1	0	0	0	1	0
S.8.4	1075	0.2	215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.8.5	720	0.4	288	50	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0
S.8.6	1883	0.6	1129.8	39	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0
S.8.7	2083	0.3	624.9	33	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
S.8.8	910	0.5	455	2	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
S.8.9	3650	0.1	365	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
S.8.10	1306	0.5	653	6	0	0	0	0	0	36	0	0	0	2	0	0	0	0	0
S.9.1	613	0.5	306.5	17	0	0	0	0	0	9	1	0	0	5	3	0	0	0	0
S.9.2	400	0.5	200	16	0	0	0	0	0	19	3	0	0	2	0	0	0	0	0
S.9.3	552	0.3	165.6	12	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
S.9.4	494	0.4	197.6	44	0	0	0	0	0	40	2	0	0	5	2	0	0	4	0
S.9.5	477	0.1	47.7	3	0	0	0	0	0	4	2	0	0	1	0	0	0	0	0
S.9.6	929	0.7	650.3	89	0	0	0	1	0	39	1	0	1	3	2	0	0	0	0
S.9.7	245	1	245	22	0	0	0	0	0	50	6	0	1	16	7	0	1	6	0
S.9.8	575	0.8	460	137	0	0	0	0	0	39	13	1	1	24	10	0	0	9	2
S.9.9	345	0.9	310.5	139	0	0	0	0	0	44	6	0	0	14	3	0	1	4	1
S.9.10	86	1	86	35	0	0	0	0	0	30	8	1	0	14	2	0	0	5	1
S.9.11	463	0.5	231.5	65	0	0	0	0	0	17	4	0	0	2	2	0	0	2	0
S.9.12	772	0.8	617.6	70	0	0	0	0	0	21	5	0	0	13	4	0	0	1	0
S.9.13	324	1	324	15	0	0	0	0	0	5	4	0	0	4	0	0	0	1	0
S.9.14	323	0.8	258.4	21	0	0	0	0	0	5	5	0	0	3	1	0	0	1	0
S.9.15	844	0.3	253.2	36	0	0	0	0	0	5	0	0	0	0	1	0	0	0	0
S.10.11	3164	0.9	2847.6	5450	1	0	0	0	0	44	4	2	0	152	84	0	3	111	24
S.10.09	1465	0.9	1318.5	1477	0	0	0	0	0	2	0	0	0	11	8	1	1	21	11
S.10.15	561	0.9	504.9	2130	0	0	0	0	0	44	1	0	0	48	23	0	2	40	23
S.10.18	617	0.9	555.3	2773	0	0	0	0	0	31	6	1	0	105	33	0	7	57	46
S.10.16	285	0.9	256.5	809	0	0	0	0	0	3	0	0	0	8	2	0	0	14	5
S.10.19	401	0.9	360.9	1016	1	0	0	2	0	31	2	0	0	42	16	0	5	32	25
S.10.17	374	0.7	261.8	1489	0	0	0	0	0	1	2	0	0	13	6	0	1	6	2
S.10.20	428	0.9	385.2	1056	0	0	0	0	0	0	3	0	1	10	2	0	1	6	5
S.10.07	729	0.9	656.1	403	0	0	1	0	0	10	2	0	0	62	22	0	2	33	17
S.10.08	329	0.9	296.1	192	0	0	0	0	0	3	0	0	0	11	2	0	0	5	2
S.10.22	2435	0.6	1461	3718	0	0	0	0	0	4	0	0	0	20	8	0	7	18	30
S.10.06	1178	0.9	1060.2	862	1	0	0	0	0	1	2	0	0	44	14	0	10	35	13
S.10.05	885	0.5	442.5	305	0	0	0	0	0	0	1	0	0	3	0	0	1	3	1
S.10.04	1307	0.6	784.2	264	0	0	0	0	0	3	0	0	0	7	3	0	0	2	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN	
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	S	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
S.10.03	853	0.6	511.8	258	0	0	0	0	0	9	0	0	0	14	11	0	0	12	2
S.10.02	731	0.8	584.8	369	0	0	0	0	0	3	0	0	0	11	5	0	2	10	4
S.10.01	411	0.8	328.8	461	0	0	0	0	0	2	5	0	0	3	1	0	2	6	3
S.10.23	1080	0.1	108	297	0	0	0	0	0	1	1	0	2	0	1	0	1	4	0
S.10.24	1686	0.9	1517.4	789	0	0	0	0	0	0	0	0	0	4	0	1	2	1	1
S.10.21	942	0.5	471	66	0	0	1	0	0	11	0	0	5	4	1	0	0	0	0
S.10.25	47	1	47	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
S.10.26	381	0.1	38.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.10.13	763	0.7	534.1	340	0	0	0	0	2	64	16	2	3	3	1	0	0	0	0
S.10.14	365	0.3	109.5	161	0	0	0	0	0	55	1	0	1	0	0	0	0	2	0
S.10.27			0		0	0	0	0	0	37	4	3	0	2	0	0	0	1	0
S.10.12	531	0.4	212.4	44	0	0	0	0	0	0	0	0	0	0	1	3	0	19	7
S.11.08	172	1	172	106	0	0	0	0	0	55	19	0	1	9	0	0	0	2	0
S.11.07	826	0.5	413	59	0	0	0	0	0	9	9	0	2	6	0	0	0	0	0
S.11.06	866	0.8	692.8	78	0	0	0	0	0	47	10	1	0	4	0	0	0	0	0
S.11.05	270	0.7	189	25	0	0	0	0	0	26	1	0	0	3	0	0	0	0	0
S.11.04	155	0.5	77.5	71	0	0	0	0	1	14	4	0	0	6	1	0	0	0	0
S.11.03	183	0.4	73.2	80	0	0	1	0	0	9	2	0	0	0	0	0	0	0	0
S.11.02	494	0.3	148.2	2	0	0	0	0	0	5	1	0	0	1	0	0	0	0	0
S.11.01	193	1	193	47	0	0	0	0	0	20	0	1	0	1	2	0	0	0	1
S.11.09	506	0.2	101.2	8	0	0	0	0	0	26	2	1	0	1	0	0	0	0	0
S.11.10	128	1	128	0	0	0	0	0	0	24	4	2	0	10	0	0	0	0	0
S.11.11	506	0.9	455.4	117	0	0	0	0	0	24	32	2	2	21	1	0	1	5	2
S.11.12	219	1	219	0	0	0	0	0	0	2	6	0	0	3	2	0	0	1	0
S.11.13	107	1	107	24	0	0	0	0	0	8	1	0	0	2	0	0	0	0	0
S.11.17	127	0.3	38.1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.11.14	1706	0.5	853	73	0	0	0	0	0	32	6	0	0	10	2	0	0	1	0
S.11.15	436	0.5	218	60	0	0	0	0	0	52	8	1	0	9	1	0	0	1	3
S.11.18	566	0.9	509.4	18	0	0	0	0	0	25	3	0	0	7	1	0	0	3	0
S.11.16	1080	0.4	432	120	0	0	0	0	0	91	0	0	1	11	4	0	0	7	2
S.11.19	155	0.8	124	22	0	0	0	0	0	9	3	0	0	8	1	0	0	2	1
S.11.20	694	0.4	277.6	12	0	0	0	0	0	28	0	0	0	4	0	0	0	0	2
S.11.21	882	0.5	441	15	0	0	0	0	0	15	0	0	0	7	1	0	0	0	0
S.11.22	848	0.9	763.2	28	0	0	0	0	0	29	0	0	0	12	3	0	0	2	2
S.15.1	446	0.5	223	0	0	0	0	0	0	0	0	0	0	5	2	0	4	5	3
S.12.1	17	1	17	7	0	0	0	2	0	0	1	0	0	0	0	0	0	0	2
S.12.2	9	1	9	5	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
S.12.3	358	0.9	322.2	278	0	0	0	0	0	1	0	0	0	2	0	0	0	3	2
S.12.4	162	0.9	145.8	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.13.1	1782	0.3	534.6	7	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
S.13.2	559	0.6	335.4	9	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
S.13.3	617	0.5	308.5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.13.4	1632	0.9	1468.8	11	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
S.13.5	2082	0.2	416.4	13	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0
S.13.6	412	0.7	288.4	59	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0
S.14.06	1197	0.4	478.8	5	0	0	0	0	0	0	0	0	1	2	2	0	2	1	2
S.14.05	254	0.4	101.6	0	0	0	0	0	0	0	0	0	0	4	4	1	1	9	2
S.14.04	95	0.4	38	4	0	0	0	0	0	0	0	0	0	1	1	1	1	6	1
S.14.03	397	0.4	158.8	16	0	0	0	0	0	0	0	0	0	15	5	0	4	16	3
S.14.02	1025	0.1	102.5	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
S.14.01	216	0.1	21.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.14.07	425	0.4	170	3	0	0	0	0	0	0	0	0	0	1	7	0	0	0	1
S.14.08	491	0.4	196.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
S.14.09	94	0.3	28.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
S.14.10	652	0.5	326	0	0	0	0	0	0	0	0	0	0	1	1	0	0	5	2
S.14.11	372	0.1	37.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.16			0	1	0	0	0	1	0	0	0	0	0	2	0	2	5	6	6

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	1	0	0	0	0	1	0	0	1	2	0	1	1	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0
0	3	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
0	0	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	1	0	0	2	0	0	1	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	14	0	0	0	7	0	3	0	1	2	0	0	2	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX E. OVERVIEW OF THE BRICK AND MASONRY BLOCK DATA

E.1 Background

E.1.1 Scope of the work

Originally, SSPHAP's research grant from the Australian Myer Foundation was to be spent on a sub-project, co-ordinated with Sonny Wibisono of the Indonesian National Research Centre for Archaeology, dealing with the coastal fortifications defending Makassar entrepôt (Figure E-1). Following the return of Drs Wibisono to Jakarta, SSPHAP's regular team surveyed further coastal and hinterland fortifications, measured bricks at unfortified sites, and recorded masonry quarrying at Pammangkulang Batua (Photo E-1), thus paving the way for SSPHAP's review of greater Gowa's late 17th century fortifications (Bulbeck, 1990). In all, 1381 bricks and brick fragments were measured from nine fortified sites and twelve non-fortified sites. 90 masoned stones were measured at Tallok and seven partly masoned blocks were measured at Pammangkulang Batua. In addition, signs of earthen fortifications were recorded at four sites (Bayoa 1, Garassik, Paknakkukang, and Kota Galesong).

The individual sites which provided SSPHAP's brick and masonry samples are depicted in Figure E-2. The samples north of Sampulungang are documented in the chapters dealing with the Gowa-Tallok sites (Chapters 6 to 12). Measurements of the brick samples from the sites between Sampulungang and Sanrabone are given in Table E-1. Of these sites, Sanrabone (E.1.3) and Galesong (E.1.4) were fortified.

E.1.2 Methodological considerations in measuring the bricks

The Makassar texts (Chapter 2) provide an incomplete record of the chronology of construction and, after the 1667 Makassar War, demolition of greater Gowa's fortifications. The fortifications themselves range from the almost undisturbed fortress of Anak Gowa, to sites where virtually no original brickworks remain intact. Especially in the more disturbed sites there has been considerable recycling of

bricks, while several of the fortified sites enclose structures made from 18th century and later bricks. One isuue, then, is whether certain metrical parameters can distinguish the fortification bricks from later bricks. The second issue is whether patterns in brick size open a window on the sequence of Gowa fortifications.

To answer these questions, controlled probabilistic samples would have obviously been preferable, but SSPHAP's sampling procedures were necessarily opportunistic owing to the highly variable availability of loose bricks and measurable *in situ* bricks. Except at Somba Opu and to a lesser degree at Sanrabone, which were recorded while I was still in the process of formulating an appropriate sampling procedure, we documented the variability of brick size by taking samples spaced along the remnant walls, giving particular attention to any loci where a change in construction style was evident. Bricks from other structures such as graves and wells were also measured at the fortified sites and a sample of unfortified sites. Where a large number of bricks occurred at a locus, a sample size of 30 bricks was considered adequate (cf. Constandse-Westermann, 1972), selected on the basis of completeness and accessibility. However, smaller sample sizes frequently had to be accepted.

The bricks were measured with a three-metre metal tape by placing the tip at one end and measuring to the nearest 0.5 cm mark at the other end. The only exceptions were six bricks from Bayoa measured using sliding callipers with one mm gradations. Analysing the data I have noticed that the 0.5 cm gradients were faithfully observed for the thicknesses, especially with the thinner bricks up to about 5 cm thick. However, the lengths and the breadths are strongly biased towards whole numbers, suggesting that a fractional value was recorded only when the measurement landed on the 0.5 cm mark. My analysis retains the fractional values except in the graphic cross-tabulations where, to condense the data, lengths and breadths with a 0.5 cm fraction (or higher, at Bayoa) are converted to the next whole centimetre.

The original data were entered into the Borland/Analytica (1987) "Reflex: The Analyst" PC programme. A hard copy has

been sent to Sonny Wibisono as well as to Bahru Kallupa of Suaka, amd is available from me on request.

E.1.3 Benteng Sanrabone (Takalar 6)

Benteng Sanrabone has approximately 2.2 km of brick wall enclosing 21 hectares (Figure E-3). Evidently the fort had not been built by 1667, as Andaya (1981) does not mention Sanrabone in his comprehensive account of the Makassar War and the Bungaya Treaty which followed. But according to Ibrahim (1985:47), in 1668 the kingdom of Sanrabone was obliged to sign a renewed version of the Bungaya Treaty which included a provision demanding the demolition of Benteng Sanrabone (which may or may not have been carried out). Sanrabone had been without a raja since 1658, and it was only in 1668 that Hasanuddin's son Kg Campagaya (later Sultan Abdul Jalil) was installed (4.6). Hence we can infer that he built his Sanrabone palace in 1668, and that it immediately came to the attention of the Dutch.

Note that even after being installed as Gowa's sultan, Abdul Jalil (r. 1677-1709) initially kept the Gowa regalia at Sanrabone, and his land holdings (at least as recognised by the Dutch) remained confined to Sanrabone as late as 1688 (Andaya, 1981:199,264). The later report by Stavorinus (1798:211), that Sanrabone had been built at around the same time as Tallok and Somba Opu, could be interpreted as support for a 17th century construction date, and need not imply exact contemporaneity of the three forts.

The archaeological evidence confirms a c.1668 construction date. The brick samples around the fortress walls show very little metrical variation (Table E-1), indicating a single event of construction by specialists with considerable prior experience in building brick walls. As observed at several points (e.g. Photo E-2), the walls were built with two vertically standing lines of brick, plus earth packed between the brick lines and on either side. This construction method of "double brick-walls" also characterises most of Benteng Tua's walls (6.4). In addition, Sanrabone's tradeware profile shows a pronounced emphasis on pieces dated to the late 17th and 18th centuries (Bulbeck, in prep. b).

TABLE E-1. FURTHER BRICK SAMPLES NOT DESCRIBED IN CHAPTERS 6 TO 12 (MEASUREMENTS IN CM)

BENTENG SANRABONE	Inner Wall				Outer Wall				Total Bricks			
	(n)	Mean	S.D.	Range	(n)	Mean	S.D.	Range	(n)	Mean	S.D.	Range
Station I												
Length	10	24.80	0.98	(24-26)	10	25.30	0.68	(24.5-26)	20	25.05	0.88	(24-26)
Breadth	10	14.75	0.75	(14-16)	10	15.60	0.88	(14-16)	20	15.18	0.93	(14-16)
Thickness	10	3.50	0.0	(3.5)	10	3.50	0.24	(3-4)	20	3.5	0.16	(3-4)
Station II												
Length					3	24.33	0.47	(24-25)	3	24.33	0.47	(24-25)
Breadth					3	13.67	0.47	(13-14)	3	13.67	0.47	(13-14)
Thickness					3	3.67	0.24	(3.5-4)	3	3.67	0.24	(3.5-4)
Station III												
Length	8	25.64	1.08	(23-26.5)	10	26.00	0.22	(25.5-26.5)	18	25.64	1.08	(23-26.5)
Breadth	8	14.63	1.05	(13-16)	10	14.60	1.28	(12-16)	18	14.61	1.19	(12-16)
Thickness	10	3.30	0.33	(3-4)	10	3.75	0.25	(3.5-4)	20	3.53	0.37	(3-4)
Fortress Wall												
Length	18	24.97	1.24	(23-26.5)	23	25.48	0.74	(24-26.5)	41	25.26	0.96	(23-26.5)
Breadth	18	14.69	0.90	(13-16)	23	14.91	1.23	(12-17)	41	14.81	1.09	(12-17)
Thickness	20	3.40	0.25	(3-4)	23	3.63	0.27	(3-4)	43	3.52	0.26	(3-4)
	Wall Surrounding Gaddonga Graveyard				Makam Datu Paddada				Sanrabone Old Well			
Length	10	24.90	0.73	(24-26)	10	26.20	0.46	(25.5-27)	4	23.89	1.34	(22.5-26)
Breadth	10	14.10	0.44	(13-14.5)	10	16.85	0.55	(15.5-17.5)	9	15.61	3.44	(12.5-24)
Thickness	10	3.25	0.34	(3-4)	10	5.40	0.49	(4.5-6)	10	4.50	1.11	(3.5-6.5)
	East Royal Kobang				West Royal Kobang				Total Sanrabone Royal Graves			
Length	10	24.25	0.51	(23-25)	20	25.23	0.54	(24-26.5)	30	24.90	0.79	(23-26.5)
Breadth	10	12.75	0.40	(12.5-13)	20	12.68	0.40	(12-13.5)	30	12.70	0.40	(12-13.5)
Thickness	10	4.35	0.23	(4-4.5)	20	3.90	0.37	(3.5-4.5)	30	4.05	0.34	(3.5-4.5)

TABLE E-1. FURTHER BRICK SAMPLES NOT DESCRIBED IN CHAPTERS 6 TO 12 (CONT.)

BRICKS LACKING MODERN DIMENSIONS

	Manjalling graves, Galesong				Sampulungang large bricks				Jamarang broad bricks			
	(n)	Mean	S.D.	Range	(n)	Mean	S.D.	Range	(n)	Mean	S.D.	Range
Length	9	28.00	0.88	(26.5-29)	5	28.30	0.60	(27.5-29)	31	26.77	2.84	(22-33)
Breadth	18	17.22	1.50	(14-19.5)	14	17.39	1.06	(15-20)	34	16.43	0.74	(15-17.5)
Thickness	18	4.75	0.73	(3.5-6)	14	5.07	0.56	(4.5-6.5)	31	5.32	1.00	(4-9)

BRICKS WITH MODERN DIMENSIONS

	(n)	Mean	S.D.	Range	(n)	Mean	S.D.	Range	(n)	Mean	S.D.	Range
	Bungung Barania, Galesong				Sampulungang small bricks				Jamarang thin bricks			
Length	10	23.45	0.47	(22.5-24)	5	23.30	0.75	(22-24)	34	26.44	0.42	(26-27.5)
Breadth	15	10.77	0.60	(9.5-11.5)	6	12.25	0.25	(12-12.5)	34	12.04	0.32	(11-12.5)
Thickness	15	4.67	0.24	(4.5-5)	6	4.67	0.24	(4.5-5)	34	5.15	0.44	(4.5-6.5)
	Makam Datu Bonto Lebang				Campagaya Lama				Jeknek well			
Length	24	25.27	1.31	(21.5-26.5)	15	25.80	0.95	(24.5-27.5)	2	23.75	-	(23,24.5)
Breadth	28	11.94	0.60	(10.5-13)	15	12.73	0.57	(12-14)	2	11.75	-	(11,12.5)
Thickness	23	5.15	0.27	(4.5-5.5)	15	7.77	0.73	(6-9)	1	4.5	-	(4.5)

N.B. Three rounded bricks were also recorded in the Jeknek well, with an average length of 16.3cm, average breadth of 7.7 cm, and average thickness of 5.2cm. Presumably they are modern bricks shaped to fit the well's contours, resulting in their diminished breadth. They are included in the total brick sample (Table E-2) but are excluded from any groups broken down during analysis.

The other brick structures at Sanrabone have bricks with quite different dimensions from those of the fortress bricks (Table E-1), except for the low wall built around the Gaddonga Graveyard Complex (Photo E-7). All the marked graves and tombs in the complex belong to old styles, notably that of Labbu Kopo which is oriented east-west (Table F-1). Although the names now ascribed to the graves (Table F-1) fail to match the names recorded for Sanrabone's rajas (4.6), it is hard to interpret the complex as anything other than Sanrabone's royal cemetery up to when Kg Campagaya (Abdul Jalil) ascended Sanrabone's throne. As the wall around the complex was apparently built at the same time as the fortress walls, its function was probably to mark off the burial ground associated with Sanrabone's former rulers.

In the early 18th century Abdul Jalil was succeeded as Sanrabone's raja by another Gowa aristocrat, Bahauddin Kg Mamampang, who in turn was succeeded by his son Kg Barombong. In 1734 local rule appears to have been restored with the installation of Salahuddin Kg Alluk (4.6). Although the royal brick *kobang* (Photo E-3; Table F-1) were probably built after Kg Alluk's installation, their association with a mosque in the heart of the fortress (Figure E-3) follows the same plan as Abdul Jalil's Datak palace in Benteng Tua (6.7), reflecting Gowa's profound influence on Sanrabone.

E.1.4 Kota Galesong fortifications

Historical evidence of fortification works at Kota Galesong comes only from the records on Galesong's capture by the Dutch and Arung Palakka (Sahaduddin) during the Makassar War. Summarising the records, Andaya (1981:87-89) describes it as a 'fortified city' and makes it clear that there were numerous "forts". Matching archaeological evidence, however, is slight (see Figure E-4).

Zone 14 in Manjalling contains five rectangular, razed brick structures (Photo E-4), whose north-south orientation and lack of connecting brickworks suggest that they used to be grave markers. Indeed in terms of average size and shape, the Manjalling bricks compare slightly better with old bricks from unfortified sites, such as Sampulungang and Jamarang

(Table E-1), than with known fortification bricks (Tables E-23 to E-26). We also observed patches of brick rubble along the road at the north of Kota Galesong (Photo E-5). But they occur at a peripheral location of Galesong, and are moreover suspiciously close to a former Islamic cemetery (Kompleks Makam Matinroe ri Suli) which has been largely demolished during housing developments (Bulbeck, in prep. b). So these also would appear to have been brick grave markers.

However, Kota Galesong is centred on a series of raised earthen features parallel with the coastline (Figure E-4). Their natural defensive potential could have been readily enhanced by the construction of timber palisades, earthworks or the like. A good example is Makam Takbakka whose original surface has been incised by the passing road. The banks reveal brick and stone rubble which could well have been included as support for an earthen wall (Photo E-6). So the defensive works at Galesong were probably restricted to a network of palisades and stockades.

E.2 Analysis of the Brick Measurements

E.2.1 "Brick Standards" and "Brick Seriation Types"

The total sample of measured bricks and fragments shows great variability in size and shape (Table E-2). However, most of the variability can be accommodated by positing two distinct ways in which particular bricks are related to each other.

TABLE E-2. MEASUREMENTS IN CM OF ALL MEASURED BRICKS (n=1381)

	(n)	Mean	S.D.	Range
Length	782	27.14	6.42	(16-49)
Breadth	1212	15.20	3.47	(7.5-26)
Thickness	1236	4.68	1.51	(2-10)
Breadth/Length	687	56.66%	8.35	(38.5-92.4%)
Thickness/Length	641	17.59%	4.44	(8.0-37.5%)
Thickness/Breadth	1068	31.02%	8.30	(14.3-80.0%)

Breadth:Length Correlation Coefficient Pearson's r = 0.75
Thickness:Length Correlation Coefficient Pearson's r = 0.66
Thickness:Breadth Correlation Coefficient Pearson's r = 0.64

The first relationship involves "brick standards" which can be defined as any group of bricks of similar manufacture and dimensions. Their metrical variation should be due to slight straying from the standard, leading to small standard deviations for the dimensions and shape indices, but moderate to low correlation coefficients between dimensions.

The second relationship involves "brick seriation types", i.e. groups of bricks of similar manufacture and shape but variable size. Standard deviations are large for the dimensions but small for the shape indices, while the correlation coefficients between dimensions are high. Moreover, a brick seriation type should itself be divisible into several groups of similarly size bricks which will behave mathematically like brick standards.

Preliminary study of the data suggested that the original database covers brick standards which are unrelated to the fortification bricks, and that the latter constitute a brick seriation type. To demonstrate the point, it should be possible to identify the extraneous brick standards and remove them from the database whose remaining bricks should then show greater standardisation in shape.

At the Islamic graveyards of Datu Bonto Lebang and Campagaya Lama we observed only one type of brick (Table E-1) and noted that it appeared to have the same fabric as the bricks used in Ujung Pandang's modern housing developments. The very standardised dimensions of these bricks are virtually indistinguishable from those of the bricks assembled in "Kale Kundrulu's grave", Benteng Tua, even though the latter were reportedly produced by the first Dutch brickworks in Makassar (Photo 6-7). The smaller bricks at Sampulungang, Jamarang (Table E-1) and Moncongloe Lappara (10.6.3) have similar dimensions, as do the bricks from the well at Jeknek and the supposedly old well called Bungung Barania at Bayoa, Galesong (Figure E-4; Table E-1).

Altogether these bricks show greatly reduced size and shape variability compared with the total sample, and considerably lower inter-measurement correlation coefficients, indicating that they can be assigned to a "brick standard" (Table E-3). I call it the "Dutch brick

standard" as the available clues point to its introduction by the Dutch. Removing them from the database leaves a remainder of "other bricks" (Table E-4) which, compared to the original total sample (Table E-2), are if anything more variable in size, but more standardised in shape as shown by the reduced ratio standard deviations and the higher correlation coefficients. Note also that the "other bricks" are rather longer and notably less thick than the "Dutch standard bricks", as shown by the shape ratios.

TABLE E-3. SIZE IN CM OF "DUTCH STANDARD BRICKS" (n=112)

	(n)	Mean	S.D.	Range
Length	90	25.22	1.46	(21-27.5)
Breadth	112	11.90	0.82	(9.5-13.5)
Thickness	107	5.04	0.47	(4-7)
Breadth/Length	90	47.57%	2.86	(42.3-54.5%)
Thickness/Length	86	21.12%	1.89	(17.0-29.2%)
Thickness/Breadth	108	42.55%	3.84	(32.0-53.8%)

Breadth:Length Correlation Coefficient Pearson's r = 0.60
Thickness:Length Correlation Coefficient Pearson's r = 0.35
Thickness:Breadth Correlation Coefficient Pearson's r = 0.39

TABLE E-4. MEASUREMENTS IN CM OF "OTHER BRICKS" (n=1269)

	(n)	Mean	S.D.	Range
Length	692	27.39	6.77	(16-49)
Breadth	1100	15.55	3.46	(7.5-26)
Thickness	1129	4.64	1.57	(2-10)
Breadth/Length	593	57.99%	8.04	(38.5-92.3%)
Thickness/Length	555	17.20%	4.59	(8.0-37.6%)
Thickness/Breadth	957	29.60%	7.34	(14.3-72.0%)

Breadth:Length Correlation Coefficient Pearson's r = 0.78
Thickness:Length Correlation Coefficient Pearson's r = 0.68
Thickness:Breadth Correlation Coefficient Pearson's r = 0.71

The "other bricks" include not only fortification bricks but also bricks used in various *keramat* (holy) structures and at Sanrabone's "old well". Wherever I noted the fabric, it appeared to be redder and fired at a lower temperature compared to the "Dutch standard bricks". At the fortified sites, only Sanrabone's *in situ* wall bricks (including those from the wall built around the Gaddonga Graveyard Complex)

had such small dimensional variation that they could be readily distinguished on the basis of size alone from the old-style bricks used in the graves and wells (Table E-1). Elsewhere there was total overlap, either because the other structures and the fortress were built at the same time, such as the Hasanuddin Complex remnant brickworks and the lining to the Bissu's Well at Benteng Tua (6.4), or because the fortress bricks have been recycled. Apart from Sanrabone, then, I identify old-style fortification bricks (Table E-6) as those found at the fortified sites, and the other old-style bricks (Table E-5) as those at the unfortified sites. Admittedly, my sample of fortification bricks possibly includes some old-style bricks postdating the fortifications, while some of the unfortified sites, particularly those close to the forts, probably include bricks made during the defense works and subsequently recycled from the fortifications. However, if the point of the exercise is to distinguish between these two groups of bricks by their metrical patterns, then it would be circular reasoning to classify them in the first place on the basis of measurements rather than location.

The "other old-style bricks" constitute neither a "brick standard" nor a "brick seriation type". Although the standard deviations on the measurements are less than shown by the total "other bricks" (Table E-4), the ratios show high standard deviations and the correlation coefficients are low. Their ratios which involve breadth are similar to the ratios of the Gowa fortification bricks, but their thickness:length ratio resembles the "Dutch standard". These patterns probably represent some combination of (i) inclusion of at least some fortification bricks, (ii) some influence of the "Dutch standard" on the later manufactured examples, (iii) the bricks' use in a variety of structures, and (iv) a lengthy period of manufacture within communities operating in comparative isolation from one another.

The Gowa fortification bricks, compared with the total "other bricks" (Table E-4), have slightly larger standard deviations on the measurements, but considerably reduced standard deviations on the ratios and higher correlation

TABLE E-5. SIZE IN CM OF OTHER OLD STYLE BRICKS (n=212)

Site and Structure	Reference	Apparent Age
Bukit Bikuling brick sepulchre	7.1.2	17th century?*
Makam Karaeng Campagaya *kobang*	7.3.1	17th century?#
Makam Kg Tompok Balang platform	8.5.3	Undated
Moncongloe Lappara grave platform	10.6.3	Modern; restored?*
Bonto Lakja grave platform	11.4.3	17-18th centuries
Sampulungang old brick graves	Photo E-8	17-18th centuries
Jamarang old grave brick props	Photo E-9	17-19th centuries
Manjalling old brick graves	Photo E-4	17-18th centuries
Sanrabone *kobang*	Photo E-3	18th century
Makam Datu Paddada, Gaddonga	Table E-1	17-18th centuries
Sanrabone "old well"	Table E-1	Undated

* Cases where at least some of the bricks have similar dimensions to bricks at nearby fortifications.

\# Variably sized owing to construction requirements, but with a usual type similar to Benteng Tua's "smaller bricks".

	(n)	Mean	S.D.	Range
Length	161	26.46	3.16	(20.5-45)
Breadth	201	15.97	2.84	(9.5-24)
Thickness	191	5.18	1.30	(3-9)
Breadth/Length	156	59.87%	10.83	(43.2-92.3%)
Thickness/Length	145	20.42%	5.57	(12.5-37.5%)
Thickness/Breadth	178	33.29%	9.56	(18.9-72.0%)

Breadth:Length Correlation Coefficient Pearson's r = 0.42
Thickness:Length Correlation Coefficient Pearson's r = 0.31
Thickness:Breadth Correlation Coefficient Pearson's r = 0.36

Table E-6. SIZE IN CM OF FORTIFICATION BRICKS (n=1053)

	(n)	Mean	S.D.	Range
Length	527	27.75	7.48	(17-49)
Breadth	895	15.48	3.56	(7.5-26)
Thickness	934	4.53	1.60	(2-10)
Breadth/Length	432	57.31%	6.65	(38.5-81.3%)
Thickness/Length	406	16.09%	3.55	(8.0-31.8%)
Thickness/Breadth	772	28.76%	6.43	(14.3-54.5%)

Breadth:Length Correlation Coefficient Pearson's r = 0.86
Thickness:Length Correlation Coefficient Pearson's r = 0.81
Thickness:Breadth Correlation Coefficient Pearson's r = 0.78

coefficients. These points indicate that they indeed constitute a "brick seriation type", with the production of similarly shaped bricks having been maintained by a co-ordinating authority.

E.2.2 Large bricks and smaller fortification bricks

The available measurements of the Gowa fortification bricks essentially fall into a bimodal distribution involving large and smaller bricks. For instance, a length of 34 cm was not recorded once, and lengths between 31 and 37 cm occurred very infrequently. Hence when length is available, 34 cm can be used as an unambiguous sectioning point between the large and the smaller bricks.

To see whether other measurements similarly divide the brick sample, consider those 365 fortification bricks for which all three dimensions were measured, plotting the measurements two at a time (Tables E-7 to E-9). The bottom rows in Tables E-8 and E-9 demonstrate a bimodal distribution in the breadths and thicknesses corresponding to the more strongly bimodal distribution of the lengths.[1] Since these bricks have already been classified as "large" or "smaller", based on their length, we can test whether definitions which exclude length arrive at a comparable classification.

Classifying on the basis of breadth alone, the most satisfactory result comes from defining smaller bricks as those less than 17.5 cm broad. This definition correctly classifies 318/329 (96.7%) of the smaller bricks and 34/36 (94.4%) of the large bricks, or 352/365 (96.4%) of the total (Table E-7). When thickness alone is considered, the best result comes from defining smaller bricks as those 6 cm or thinner (Table E-8). While this definition correctly classifies 325/329 (98.8%) of the smaller bricks and 352/365 (96.4%) of the total, it appears less than satisfactory with the larger bricks, correctly classifying only 27/36 (75%).

[1] Quite an expectable result given that the total sample of Gowa fortification bricks showed high correlation coefficients between the dimensions (Table E-6). Indeed the few bricks which lie well off the main axes of covariation (e.g. Tables E-7 to E-9) may reflect errors in measurement and transcription rather than anomalous products.

But when both breadth and thickness are available we achieve excellent discrimination by classifying smaller bricks as those below the stepped line shown in Table E-9. 326/329 (99.1%) of the smaller bricks are correctly identified, as are 34/36 (94.4%) of the large bricks and 360/365 (99.4%) of the total.

These then are our definitions. Large bricks are those longer than 34 cm, or above the stepped line shown in Table E-9 if length is the only measurement missing, or broader than 17 cm or thicker than 6 cm if only breadth or thickness is available. The rest are smaller bricks. The large bricks, whose statistics are given in Table E-10, behave mathematically like a "brick standard". The smaller bricks,

TABLE E-7. LENGTH AND BREADTH OF FORTIFICATION BRICKS WITH THREE MEASUREMENTS

LENGTH	BREADTH															
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM
45 cm												1	1	1		3
44 cm												1	1	1		3
43 cm												3	2	1		6
42 cm									1	1				2		4
41 cm										1	1		1			3
40 cm								1		1	1	5				8
39 cm									1		1	2			1	5
38 cm								1	1				1			3
37 cm												1				1
36 cm																
35 cm																
34 cm																
33 cm							1	1					1			3
32 cm								1			1					2
31 cm							2									2
30 cm							1	2		2	1			1		6
29 cm						1	4	3								8
28 cm				2			4	4								10
27 cm			2	4	4	8	5	12	1							36
26 cm			2	13	9	13	16	5	3			1				62
25 cm		2	3	18	10	4	8	2								48
24 cm		2	6	11	11	9	3									42
23 cm		1	5	13	10	4										33
22 cm	1	4	6	4	10	2										27
21 cm	1	4	11	3	2	1										22
20 cm		3	12	3		1										19
19 cm	1	2	2	1		1										7
18 cm		1														1
17 cm				1												1
SUM	3	19	49	73	56	44	44	32	7	5	5	14	7	6	1	365

TABLE E-8. LENGTH AND THICKNESS OF FORTIFICATION BRICKS WITH THREE MEASUREMENTS

LENGTH	THICKNESS															
	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	SUM
45 cm										1		2				3
44 cm										1	1	1				3
43 cm							1		1	1	2				1	6
42 cm													2	2		4
41 cm												1	2			3
40 cm						1			1		2	3		1		8
39 cm						1			1	1	1			1		5
38 cm							1		1						1	3
37 cm			1													1
36 cm																
35 cm																
34 cm																
33 cm						1	1		1							3
32 cm						1	1									2
31 cm					1	1										2
30 cm			1	1	2		3									7
29 cm				2	2	2		1	1							8
28 cm			1	3	1	1	3		1							10
27 cm			4	4	8	9	4	6	1							36
26 cm			6	16	14	5	3	10	5		2	1				62
25 cm	1		4	15	12	6	7	1	1							47
24 cm	2	2	7	20	5	3	2	1								42
23 cm	3	2	15	8	1	1	2	1								33
22 cm	1	1	4	13	4	1	1		1		1					27
21 cm		5	9	5	2	1										22
20 cm		5	10	2	1		1									19
19 cm		2	4			1										7
18 cm			1													1
17 cm				1												1
SUM	7	17	67	90	53	35	30	20	15	4	9	8	4	4	2	335

TABLE E-9. BREADTH AND THICKNESS OF FORTIFICATION BRICKS WITH THREE MEASUREMENTS

BREADTH	THICKNESS															
	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	SUM
24 cm						1										1
23 cm				1						1		1		2	1	5
22 cm									1	1	2	1	1		1	7
21 cm			1			1	1		2	2	2	4		1		14
20 cm							2		1		1	1				5
19 cm							2				1		2			5
18 cm						2	1	2					1	1		7
17 cm			2	3	7	4	3	5	6		1	1				32
16 cm			4	17	6	8	6		2		1					44
15 cm		1	8	11	10	4	7	2			1					44
14 cm	1	1	11	26	8	2	3	3	1							57
13 cm	2	4	15	19	15	9	2	7								73
12 cm	4	7	17	10	5	2	3		1							49
11 cm		4	7	2	2	2		1	1							19
10 cm			2	1												3
SUM	7	17	67	90	53	35	30	20	15	4	9	8	4	4	2	365

which are relatively broader than the large bricks and indeed show the lowest thickness:breadth ratio of any category (Table E-11), behave more like a "brick seriation type".

These two sizes of bricks were unevenly distributed across the five types of brick wall recognised by SSPHAP's survey (cf. Figure E-1). The demonstration considers those *in situ* bricks for which at least two dimensions are available - so their size can be classified by the breath-thickness definition (Table E-9) if length was not measured - and calculates the percentage frequency of large and smaller bricks in each type of wall (Table E-12). "Single wall" refers to the walls of Benteng Anak Gowa which were made of a single central line of bricks supported on each side by heaped earth. "Central wall" differs in that the central line was flanked on both sides by lateral lines of brick, here

TABLE E-10. SIZE IN CM OF LARGE FORTIFICATION BRICKS (n=229)

	(n)	Mean	S.D.	Range
Length	111	41.12	2.84	(35-49)
Breadth	176	21.05	1.70	(16.5-26)
Thickness	196	7.09	1.08	(3-10)
Breadth/Length	67	50.48%	4.42	(42.5-64.9%)
Thickness/Length	77	16.93%	8.61	(8.1-22.9%)
Thickness/Breadth	134	34.08%	4.67	(24.4-47.2%)

Breadth:Length Correlation Coefficient Pearson's r = 0.33
Thickness:Length Correlation Coefficient Pearson's r = 0.29
Thickness:Breadth Correlation Coefficient Pearson's r = 0.12

TABLE E-11. SIZE (CM) OF SMALLER FORTIFICATION BRICKS (n=824)

	(n)	Mean	S.D.	Range
Length	414	24.16	2.87	(17-33)
Breadth	717	14.09	2.34	(7.5-23)
Thickness	736	3.84	0.83	(2-7.5)
Breadth/Length	364	58.57%	6.22	(38.5-81.3%)
Thickness/Length	328	15.87%	3.68	(8.0-31.8%)
Thickness/Breadth	636	27.62%	6.01	(14.8-54.5%)

Breadth:Length Correlation Coefficient Pearson's r = 0.73
Thickness:Length Correlation Coefficient Pearson's r = 0.40
Thickness:Breadth Correlation Coefficient Pearson's r = 0.41

called "side wall", in addition to the earth fill. This type of brick wall was found along certain sections of Benteng Tua. "Double wall", found at Sanrabone (Photo E-2) and Tallok, has two lines of bricks with earth between them and on either side.[2] "Coastal wall" refers to the brick wall built along the coastline, which would have stretched almost continuously from Ujung Tana to Barombong according to my reconstruction of Makassar, but which was amenable to survey only between Garassik and Barombong.

TABLE E-12. BRICK SIZE TYPES AND WALL TYPES

	Large Bricks >34 cm long, or B-T large	Smaller Bricks <34 cm long, or B-T small
Single Wall	100%	0%
Central Wall	98.8, 100%	0, 1.2%
Side Wall	0%	100%
Double Wall	1.3, 4.3%	95.7, 98.7%
Coastal Wall	5.8, 15.0%	85.0, 94.2%

N.B. Two values are presented in those cells where the two definitions of brick size used here yield different results.

Large bricks were used for the single and central walls. The single apparent exception, from Benteng Tua, is only just excluded from the large bricks by the breadth-thickness definition. Smaller bricks were used in making the side and double walls, except for a small number at Tallok. The coastal wall bricks were also usually short (< 34 cm) but, suspiciously, included a comparatively high proportion of large bricks by the breadth-thickness definition. This last point leads naturally to a more detailed consideration of the southern fortifications which used to guard Makassar entrepôt (see Figure 11-1).

E.2.3 Somba Opu and the coastal wall

Somba Opu was the fortress least well documented by SSPHAP's survey for two reasons. Firstly, our direct observations on

[2] As discussed in E.2.3, the type of wall at Benteng Somba Opu is not fully clear and so the fortress is excluded from this comparison.

the site finished on 14 November 1986, before we were aware of the issues (posed by our later investigations at Benteng Tua) of multiple events in wall construction, and the use of variable brick sizes in the same fortress. Secondly, the visible wall line consisted of either a linear scatter of brick rubble or the half-demolished wall at the west, neither offering any readily available sections. The one small section we could clear at the outer west wall showed the construction method as "one-on-two"[3] and provided some measurements of *in situ* bricks, which appeared to constitute adequate documentation then. Suaka's (1986/87) survey of Somba Opu, which confirmed SSPHAP's site plan (Figure 11-9), seemed at the time to wrap the matter up.

The fortress walls have since been subjected to major excavations by Suaka and reconstruction led by Mukhlis (Hasanuddin University). I imagine that one or more reports have resulted from this work, but I have been unable to track any down either as copies or as titles. Personal communications from Peter Spillett and Anthony Reid, who have visited the site recently, indicate that the fortress wall consisted of a single brick wall. All the photographic evidence I have seen (Photos 11-4 to 11-6) also suggests a single brick wall, one of several metres thickness which would have obviated the need for subsidiary wall lines or additions of heaped earth. A journalist's report (*Minggu*, 13-9-89) describes fully vertical faces for the walls inside and outside, except on the west and south walls whose interior faces slope at 75°-80° from the horizontal. The description possibly suggests two or more lines of brick, at least within the west and south walls, but is inconclusive. Ian Caldwell (as reported in Reid and Caldwell, 1990:89) mentions a single brick-wall around the fortress except along the north which had a single central line of large bricks, two less solid lateral lines of smaller bricks and packed earth fill. The latter method of construction would intriguingly recall Benteng Tua's major walls (6.4). Although the article by Reid and Caldwell (1990) is not designed to

[3] i.e. each brick was laid transversely across the two bricks in the course below.

handle the full complexities of the fortification archaeology, I will follow it as the only published description to which I have access. In any case, all the Somba Opu bricks measured by SSPHAP were found at the southern and western walls which, according to the evidence available to me, apparently had single brick-walls.[4]

By the definitions given in E.2.2, 11 of the 12 *in situ* Somba Opu bricks measured at the outer west wall are "smaller" and only one is "large". Superficially, this might seem to go against the pattern at Benteng Anak Gowa whose single brick-wall (Figure 8-2) had been built of large bricks (Table E-12). However, it is possible that the appropriate analogy for Somba Opu's very thick walls of brick along its western face is the triple brick-wall along the fort's northern face. That is, Somba Opu's west wall might also be made up of lateral additions of wall made of smaller bricks and a central line made of large bricks. But in this particular case the lateral lines had been built to touch the central line, rather than having remained separated by packed earth fill.

As a further complication, all eight of the 12 bricks which could be measured for both breadth and thickness fall very close to the stepped line separating "large" and "smaller" bricks in Table E-9. The same is true of the larger two of the ten Somba Opu bricks measured by Sonny Wibisono.[5] Moreover, one of the two larger bricks reported by Nurhadi et al. (1980:10) measured 34 cm long - the very length SSPHAP failed to record - while the other, 22 cm broad by 6 cm thick, would scrape in as a "large" brick (cf. Table E-9). These points suggest that the larger type of brick used at Somba Opu was intermediate in size between the "large" and the "smaller" bricks as used at the other palaces.[6] The summary statistics of SSPHAP's sample of Somba Opu's

[4] Note that my computerised database, compiled before any descriptions of the excavations at Somba Opu had appeared, classifies the Somba Opu bricks as "double-wall" bricks.
[5] Included in SSPHAP's database of brick sizes on a data-sharing arrangement.
[6] Indeed, the main reason why SSPHAP's sample of fortification bricks shows such a clear bimodal distribution may well be SSPHAP's poor sampling of Somba Opu with its intermediate-sized bricks.

TABLE E-13. SIZE (CM) OF SOMBA OPU INTERMEDIATE BRICKS (n=14)

	(n)	Mean	S.D.	Range
Length	6	29.83	0.41	(29-30)
Breadth	11	19.50	0.58	(19-20.5)
Thickness	14	4.96	0.50	(4-6)
Breadth/Length	2	65.00%	-	(63.3,66.7%)
Thickness/Length	3	17.22%	1.00	(16.7-18.3%)
Thickness/Breadth	10	25.38%	2.67	(21.1-30.0%)

Breadth:Length Correlation Coefficient Pearson's r = 0.35

N.B. In this table and those that followm where we are often dealing with small sample sizes, inter-measurement correlation coefficients will be shown only when there are at least ten specimens measured for both dimensions.

"intermediate" bricks, given in Table E-13, clearly suggest a "brick standard", notwithstanding the small sample size.

As these "intermediate" bricks overlap in size with the largest "smaller" bricks at Benteng Tua (Table 6-1) and Tallok (Table 14-1), the Somba Opu examples are clearly distinct only because they alone constitute a solid cluster of data. Further, their shorter length alone clearly distinguishes them from the "large" fortification bricks; breadths are particularly inadequate in this regard (cf. Table E-10).[7] Hence to recognise the smae brick standard at another fortified site, it must be represented by a distinct cluster of bricks scarcely straying from 30 X 19.5 X 5 cm. This condition is met by four bricks at Garassik whose lengths, 32 to 33 cm, fall well beyond the range of lengths of Garassik's other bricks (Table E-14).[8] A few bricks of the required specifications also occur at Paknakkukang, and may represent the same type, but at that site are interpreted more parsimoniously as the big end of the range of "smaller" bricks (see below). Only Garassik clearly shares the Somba Opu brick standard, just as Garassik is closest to Somba Opu.

[7] Accordingly, the derived breadth:length index also usefully distinguishes the "intermediate" and "large" bricks.
[8] These four bricks include four of the five previously classified as the longest within the range of "smaller" bricks in the bivariate plots (Tables E-7 and E-8), further confirming their intermediate size.

TABLE E-14. SIZE IN CM OF GARASSIK INTERMEDIATE BRICKS (n=4)

	(n)	Mean	S.D.	Range
Length	4	32.63	0.48	(32-33)
Breadth	4	18.50	2.80	(16-22)
Thickness	4	5.13	0.63	(4.5-6)
Breadth/Length	4	56.71%	8.56	(48.5-66.7%)
Thickness/Length	4	15.71%	1.87	(13.6-18.2%)
Thickness/Breadth	4	27.84%	1.94	(25.6-30.3%)

TABLE E-15. SIZE IN CM OF SOMBA OPU SMALLER BRICKS (n=8)

	(n)	Mean	S.D.	Range
Length	6	23.83	1.60	(21-25)
Breadth	8	15.19	1.93	(11-17)
Thickness	7	3.43	0.53	(3-4.5)
Breadth/Length	6	61.65%	5.24	(62.4-68.0%)
Thickness/Length	6	14.84%	3.36	(12.0-21.4%)
Thickness/Breadth	7	25.38%	7.71	(18.8-40.9%)

Table E-16. SIZE IN CM OF GARASSIK SMALLER BRICKS (n=42)

In situ wall	(n)	Mean	S.D.	Range
Length	1	23	-	(23)
Breadth	13	13.77	2.67	(7.5-17)
Thickness	17	3.56	0.48	(3-4.5)
Breadth/Length	1	65.20%	-	(65.2%)
Thickness/Length	1	13.00%	-	(13.0%)
Thickness/Breadth	13	26.78%	7.90	(19.4-46.7%)

Thickness:Breadth Correlation Coefficient Pearson's r = 0.21

Ex situ bricks	(n)	Mean	S.D.	Range
Length	13	24.00	2.47	(20-28)
Breadth	25	13.02	2.13	(11-17)
Thickness	25	4.25	1.23	(3-7)
Breadth/Length	13	55.58%	9.50	(44.0-75.0%)
Thickness/Length	13	18.70%	5.72	(11.1-31.8%)
Thickness/Breadth	25	33.46%	8.99	(17.6-54.5%)

Breadth:Length Correlation Coefficient Pearson's r = -0.03
Thickness:Length Correlation Coefficient Pearson's r = -0.20
Thickness:Breadth Correlation Coefficient Pearson's r = 0.01

Total sample	(n)	Mean	S.D.	Range
Length	14	23.93	2.35	(20-28)
Breadth	14	13.28	2.31	(7.5-17)
Thickness	42	3.97	0.93	(3-7)
Breadth/Length	14	56.27%	9.75	(44.0-75.0%)
Thickness/Length	14	18.29%	6.03	(11.1-31.8%)
Thickness/Breadth	38	31.17%	8.62	(17.6-54.5%)

Breadth:Length Correlation Coefficient Pearson's r = -0.06
Thickness:Length Correlation Coefficient Pearson's r = -0.15
Thickness:Breadth Correlation Coefficient Pearson's r = -0.02

"Smaller" bricks are also recognisable at both sites. SSPHAP's sample of Somba Opu smaller bricks (Table E-15) appears typical of the smaller fortification bricks in general (Table E-10). As regards Garassik's smaller bricks, no self-evident pattern of bimodality or multimodality in dimensions presents itself, but a contextual distinction can be made between those *in situ* along the stretch of coastal wall passing the site (Figure 11-3a), and those *ex situ* present as rubble or recycled in other contexts. The *in situ* bricks have average dimensions and shape indices similar to those of the smaller bricks in general, whereas the *ex situ* bricks appear on average to be distinctly narrower and thicker (cf. Tables E-16 and E-10). Moreover the Garassik *ex situ* bricks show very low inter-measurement correlation coefficients or, indeed, a pattern in which the longer bricks are the less thick (Table E-16). Let us entertain the hypothesis that Garassik's *in situ* and *ex situ* bricks might somehow represent different types, whilst noting that should we later attribute the metrical contrasts to sampling error, then the total sample of Garassik's "smaller" bricks would generally resemble the *ex situ* "smaller" bricks (Table E-16).

The next closest samples of bricks is from Bayoa, presumed to represent the coastal wall which had run through the site, but comparable to Garassik's *ex situ* bricks as none of the Bayoa bricks was measured *in situ*. And indeed the average dimensions and shape indices at Bayoa (Table E-17) are very similar to those of Garassik's *ex situ* bricks. The Bayoa correlation coefficients are also unusual inasmuch as the broader bricks tend to be the thinner.

Table E-17. Bayoa Bricks: All *Ex Situ* and "Smaller" (n=26)

	(n)	Mean	S.D.	Range
Length	10	24.27	2.52	(19-28)
Breadth	25	14.04	2.56	(10.3-18)
Thickness	26	4.45	0.71	(3-5.5)
Breadth/Length	9	55.27%	8.43	(42.2-64.1%)
Thickness/Length	10	18.34%	2.86	(13.0-21.7%)
Thickness/Breadth	25	32.64%	9.11	(17.6-51.4%)

Thickness:Length Correlation Coefficient Pearson's r = 0.63
Thickness:Breadth Correlation Coefficient Pearson's r = -0.18

The next site to consider is Paknakkukang at the mouth of the Sungai Garassik (Jeknekberang). Here SSPHAP's survey recorded a line of brick wall, which I interpret as coastal wall, terminating at Paknakkukang's earthen enceinte (Figure 11-3b). In addition to a sample of *in situ* bricks along this wall, we measured 31 bricks from a *saukang* platform which have presumably been recycled from the coastal wall.

The Paknakkukang bricks are unusual; despite an apparent bimodality between long (37-39 cm) and shorter (19-31 cm) bricks, these two groups overlap indiscriminately in their breadths and thicknesses. On top of that, the bricks with lengths around 30 cm cannot be consigned to the Somba Opu "intermediate" type because the great majority are narrower and less thin than would be required. After having experimented with the data from various angles, I can see no parsimonious procedure other than to apply the definitions of "large" and "smaller" bricks given above (E.2.2), even though the action effectively draws a sectioning line through what is a cloud of data points. As a result the sample of "large" Paknakkukang bricks is rather small by general standards whilst the "smaller" Paknakkukang bricks are rather large by general standards (cf. Tables E-18 and E-10, Tables E-19 and E-11). The "large" bricks, moreover, are highly variable in shape, with a tendency for the broader examples to be the thinner ones (Table E-18).

As regards Paknakkukang's "smaller" bricks, when treated individually the *saukang* sample and the *in situ* sample appear different from each other or from any other sample yet considered (Table E-19). However, the overriding observation would seem to be the contrast beween the *ex situ* bricks, where breadth and thickness are correlated, and the *in situ* bricks whose thicknesses fail to correlate with either length or breadth (Table E-19). As this pattern precisely reverses the cotnrast between Garassik's "smaller" *ex situ* and *in situ* bricks (Table E-16), any justification for using context as a classificatory criterion for the "smaller", coastal wall bricks is shattered. Rather, the alternative procedure which ascribes the apparent differences to sampling error receives additional support from the combined sample of Paknakkukang's

"smaller" bricks (Table E-19). Their mean dimensions and sahpe indices do not differ clearly from those of the Bayoa (Table E-17) and combined Garassik samples (Table E-16), and the Paknakkukang examples highlight the trend for thickness to be negatively correlated with length and breadth. Hence all the Paknakkukang, Garassik and Bayoa "smaller" bricks are most parsimoniously cast in the same light.[9]

TABLE E-18. SIZE IN CM OF PAKNAKKUKANG LARGE BRICKS (n=13)

In situ wall	(n)	Mean	S.D.	Range
Length	2	37.50	-	(37,38)
Breadth	3	19.50	1.79	(17-21)
Thickness	4	5.75	0.43	(5-6)
Saukang platform	**(n)**	**Mean**	**S.D.**	**Range**
Length	2	39.00	-	(39)
Breadth	9	20.94	0.68	(20-22)
Thickness	9	5.94	0.44	(5-6.5)
Total sample	**(n)**	**Mean**	**S.D.**	**Range**
Length	4	38.25	0.96	(37-39)
Breadth	12	20.58	0.96	(17-22)
Thickness	13	5.88	0.44	(5-6.5)
Breadth/Length	3	50.81%	5.26	(44.7-53.8%)
Thickness/Length	4	16.01%	0.56	(15.4-16.7%)
Thickness/Breadth	12	28.68%	3.29	(22.7-35.3%)

Thickness:Breadth Correlation Coefficient Pearson's r = -0.16

TABLE E-19. SIZE IN CM OF PAKNAKKUKANG SMALLER BRICKS (n=63)

In situ wall	(n)	Mean	S.D.	Range
Length	16	24.41	2.31	(19-30)
Breadth	25	16.06	1.28	(13-19)
Thickness	34	4.66	0.63	(4-6)
Breadth/Length	5	63.14%	5.55	(57.6-72.3%)
Thickness/Length	13	20.52%	3.59	(13.6-26.3%)
Thickness/Breadth	22	28.81%	5.32	(21.0-42.9%)

Thickness:Length Correlation Coefficient Pearson's r = 0.12
Thickness:Breadth Correlation Coefficient Pearson's r = -0.04

[9] Some of the Paknakkukang bricks here classified as "large" may belong to this group as well.

TABLE E-19. SIZE IN CM OF PAKNAKKUKANG SMALLER BRICKS (CONT.)

Saukang platform	(n)	Mean	S.D.	Range
Length	3	30.33	0.94	(29-31)
Breadth	22	16.86	1.86	(14.5-20)
Thickness	22	4.52	0.38	(4-5)
Breadth/Length	3	52.26%	2.65	(50.0-55.2%)
Thickness/Length	3	14.31%	1.32	(12.9-15.5%)
Thickness/Breadth	22	27.03%	2.99	(22.5-33.3%)

Thickness:Breadth Correlation Coefficient Pearson's r = 0.43

Total sample	(n)	Mean	S.D.	Range
Length	19	25.34	2.09	(19-31)
Breadth	47	16.43	1.55	(13-20)
Thickness	56	4.61	0.53	(4-6)
Breadth/Length	8	59.06%	7.16	(50.0-72.3%)
Thickness/Length	16	19.36%	4.10	(12.9-26.3%)
Thickness/Breadth	44	27.92%	4.41	(21.0-42.9%)

Thickness:Length Correlation Coefficient Pearson's r = -0.12
Thickness:Breadth Correlation Coefficient Pearson's r = -0.34

TABLE E-20. SIZE (CM) OF BAROMBONG BRICKS: ALL SMALLER (n=84)

Bastion	(n)	Mean	S.D.	Range
Length	6	27.00	1.26	(26-29)
Breadth	27	15.60	2.42	(11-19.5)
Thickness	30	4.40	0.57	(3-5)
Breadth/Length	4	58.47%	8.09	(48.1-67.3%)
Thickness/Length	6	16.67%	2.11	(13.5-19.2%)
Thickness/Breadth	27	28.80%	6.34	(19.4-40.9%)

Thickness:Breadth Correlation Coefficient Pearson's r = -0.06

Wall	(n)	Mean	S.D.	Range
Length	3	21.83	4.07	(19-26.5)
Breadth	31	13.60	1.44	(11.5-18)
Thickness	54	4.07	0.78	(3-6)
Breadth/Length	2	57.20%	-	(45.3,69.1%)
Thickness/Length	3	22.33%	5.77	(18.9-28.9%)
Thickness/Breadth	30	29.37%	8.20	(19.4-48.0%)

Thickness:Breadth Correlation Coefficient Pearson's r = -0.02

Total sample	(n)	Mean	S.D.	Range
Length	9	25.39	3.07	(19-29)
Breadth	58	14.54	4.35	(11-19.5)
Thickness	84	4.20	0.72	(3-6)
Breadth/Length	6	58.04%	9.81	(45.3-69.0%)
Thickness/Length	9	18.55%	4.35	(13.5-28.9%)
Thickness/Breadth	57	29.10%	7.32	(19.4-48.0%)

Thickness:Breadth Correlation Coefficient Pearson's r = 0.09

Skipping over Pattukangang temporarily brings our focus to Barombong. Here is no need to distinguish between the *in situ* and *ex situ* bricks because both were restricted to the line of wall rubble. A slight difference can be discerned between the bricks from the apparent bastion at the far south of the wall, and the bricks to the bastion's north, in that the former are significantly larger on all dimensions (Table E-20).[10] But the differences are small and involve no perceptible effects on shape, so the Barombong bricks can be analysed as a single sample.

These Barombong bricks do more than simple resemble their Bayoa, Paknakkukang and Garassik counterparts in terms of mean dimensions and shape indices; they bridge the interval between the Paknakkukang and Bayoa/Garassik examples. The lack of a clear correlation between breadth and thickness carries the same import. Hence it may be inferred that the Garassik, Bayoa, Paknakkukang and Barombong "smaller" bricks, all ascribable to wall built between 1634 and 1635 (Table E-28), can be pooled into a single sample of usual coastal wall bricks.

Returning to the Pattukangang wall (as I label it), which appears in the records as the wall built south of Benteng Paknakkukang in 1661 after the Dutch had temporarily occupied the fort (LB:124), we have a very sparse documentation which covers only nine brick pieces.[11] Nonetheless they include the single thickest brick measured during the fieldwork and three other very thick bricks, and show the thickest shape indices of any of the samples. They also seem to be anomalously broad for their length (Table E-21). Thus the Pattukangang bricks appear set apart, which accords with the isolation of the wall's construction within the chronology of greater Gowa's fortifications programme, and may also reflect the haste with which this wall had to be erected.

[10] Student's t-test for small samples $p < 0.1$ to $p < 0.005$.
[11] Including three measured by Sonny Wibisono.

TABLE E-21. SIZE IN CM OF PATTUKANGANG BRICKS (n=9)

	(n)	Mean	S.D.	Range
Length	5	25.60	1.96	(22-28)
Breadth	7	17.64	3.23	(11-21)
Thickness	7	7.07	2.21	(4-10)
Breadth/Length	5	67.55%	12.68	(50.0-80.8%)
Thickness/Length	3	21.63%	6.25	(17.9-28.8%)
Thickness/Breadth	5	35.51%	5.40	(30.3-43.9%)

TABLE E-22. SIZE IN CM OF LARGE FORTIFICATION BRICKS (n=223)

	(n)	Mean	S.D.	Range
Length	111	41.12	2.84	(35-49)
Breadth	170	21.08	1.74	(16.5-26)
Thickness	190	7.09	1.04	(3-9)
Breadth/Length	67	50.48%	4.42	(42.5-64.9%)
Thickness/Length	77	16.93%	8.61	(8.1-22.9%)
Thickness/Breadth	130	34.24%	4.53	(24.4-47.2%)

Breadth:Length Correlation Coefficient Pearson's r = 0.33
Thickness:Length Correlation Coefficient Pearson's r = 0.29
Thickness:Breadth Correlation Coefficient Pearson's r = 0.21

TABLE E-23. SIZE OF INTERMEDIATE FORTIFICATION BRICKS (n=18)

	(n)	Mean	S.D.	Range
Length	10	30.95	1.50	(29-33)
Breadth	14	19.21	1.50	(16-22)
Thickness	18	5.00	0.51	(4-6)
Breadth/Length	6	59.48%	7.96	(48.5-66.7%)
Thickness/Length	10	16.34%	1.45	(13.6-18.3%)
Thickness/Breadth	14	26.08%	2.67	(19.4-46.7%)

Thickness:Length Correlation Coefficient Pearson's r = 0.18
Thickness:Breadth Correlation Coefficient Pearson's r = 0.48

TABLE E-24. SIZE IN CM OF SMALLER PALACE BRICKS (n=606)

	(n)	Mean	S.D.	Range
Length	347	23.86	2.99	(17-32)
Breadth	536	13.80	2.43	(7.5-23)
Thickness	512	3.61	0.88	(2-7)
Breadth/Length	316	58.60%	5.77	(38.5-81.3%)
Thickness/Length	266	15.27%	3.59	(8.0-29.6%)
Thickness/Breadth	456	26.76%	5.66	(14.8-51.5%)

Breadth:Length Correlation Coefficient Pearson's r = 0.78
Thickness:Length Correlation Coefficient Pearson's r = 0.47
Thickness:Breadth Correlation Coefficient Pearson's r = 0.41

TABLE E-25. SIZE IN CM OF USUAL COASTAL WALL BRICKS (n=209)

	(n)	Mean	S.D.	Range
Length	52	24.76	2.41	(19-31)
Breadth	168	14.71	2.08	(7.5-20)
Thickness	208	4.30	0.71	(3-7)
Breadth/Length	37	56.92%	8.88	(42.2-75.0%)
Thickness/Length	49	18.70%	4.44	(11.1-31.8%)
Thickness/Breadth	165	30.04%	7.19	(17.6-54.5%)

Breadth:Length Correlation Coefficient Pearson's r = 0.52
Thickness:Length Correlation Coefficient Pearson's r = 0.09
Thickness:Breadth Correlation Coefficient Pearson's r = 0.02

E.2.4 Overall appreciation of the Gowa fortification bricks

The foregoing discussion distils three new brick classes: an intermediate-sized brick, recognised only at Somba Opu and Garassik; the usual coastal-wall brick; and the anomalously short, fat bricks at Pattukangang. Our subdivision of the "smaller" bricks into those along the coastal wall and those at the palaces suggests that Paknakkukang's large bricks should also be treated separately from the large palace-bricks. But the Pattukangang examples presumably represent stray imports, and in any case only a small sample is involved. Thus a final appreciation of the fortification bricks divides them into the five classes shown in Tables E-21 (Pattukangang) to E-25.

The statistics of the "large fortification bricks" are affected only slightly as few bricks were reclassified. The main change involves the breadth:thickness relationship whose index variability is now reduced and whose correlation coefficient now resembles the other two (Table E-22; cf. Table E-10). Like the large bricks, the "intermediate" bricks also conform well with the expectations of a "brick standard" (Table E-23).

As regards the "smaller fortification bricks" (Table E-11), their subdivision into palace and coastal-wall specimens brings out several subtle distinctions. The palace bricks are smaller and, in particular, thinner than the coastal-wall examples (cf. Tables E-24 and E-25). Moerover

the palace "smaller" bricks retain and indeed enhance the "brick seriation type" traits of the larger sample from which they were drawn. This last point may support the historical evidence that they were produced over a period lasting more than half a century (E.4). On the other hand the coastal-wall examples, when treated as a single sample, stand out convincingly as a "brick standard".

The preferential use of particular brick types in designated construction works stands out almost as clearly as in the earlier comparison (Table E-12). My interpretation of SSPHAP's sample of Somba Opu bricks as single-wall bricks lends the single-wall bricks a variable composition, but as explained above I am unsure about Somba Opu's brickworks. And the unruly metrics of the coastal-wall bricks, noted previously, becomes explicable in light of the four classes of brick represented (Table E-26).

TABLE E-26. COMPOSITION OF THE FORTIFICATION STRUCTURES BY BRICK TYPE (n=1053)

	Large Bricks	Inter-mediate Bricks	Palace Smaller Bricks	Usual Coastal Bricks	Pattu-kangang Bricks
Central Wall	146	0	3	0	0
Single Wall	50	14	8	0	0
Double Wall	12	0	456	0	0
Side Wall	0	0	94	0	0
Coastal Wall	13	4	0	209	9
Internal Structures	2	0	45	0	0

E.3 Masonry Measurements

SSPHAP recorded stone masonry measurements only at Benteng Tallok, in a context which suggests an early 17th century construction date (12.2.3). Otherwise, the Dutch rebuilt Fort Rotterdam (as Speelman rechristened the earlier Makassar fort of Ujung Pandang) with masonry walls, beginning in 1673 (Reid and Reid, 1988:45). Even though Maros is widely reputed as the source of Fort Rotterdam's stone (e.g. Reid, 1990:68), the information we received at Pammangkulang Batua, *kampung* Bonto Ramba, was that it had been quarried to build Fort Rotterdam. At this Karaeng Demmanari affirmed that Bonto Ramba was indeed reputed as one source of Fort Rotterdam's

stone. He was presumably thinking of the rumour which identifies this rôle with Balang Mawang near Bonto Ramba on the Ujung Pandand-Malino highway (Pabbitei, 1976:2). If in fact Pammangkulang Batua had provided some of Fort Rotterdam's stone, then the two Bonto Ramba kampung could have easily become confused over time; but since SSPHAP's survey merely touched on one shore of Balang Mawang (Chapter 9), I cannot dismiss the possibility that a suitable quarry could lie there.

The only published data on the size of Fort Rotterdam's stone are the measurements reported by Pabbitei (1976:2) for its "largest" and "smallest" blocks.[12] The implied ranges fall well within the ranges of block size recorded by SSPHAP at Tallok. The midpoints between the Fort Rotterdam "extremes" hardly differ from the Tallok averages, and length:breadth:thickness proportions of around 3:1.7:1 appear to characterise both data sets (Table E-27). However, the strength of these comparisons is debilitated by Pabittei's scant documentation which does not show that more than two Fort Rotterdam blocks were necessarily measured.

The comparative data from Pammangkulang Batua (Photo E-1) are also very restricted as only seven almost completed blocks had been left at the quarry. These fall into two groups. The two shorter blocks have lengths and breadths similar to the Tallok means and within the reported range at Fort Rotterdam. The five larger blocks, however, are all longer than any block yet reported from a fortress. At the same time the shape indices of the Pammangkulang Batua blocks fall within the Tallok ranges; and the single Pammangkulang Batua block measured on three dimensions coincides in shape with that of Fort Rotterdam's reported midpoint (Table E-27). Nor is it that far-fetched to suggest that Pammangkulang Batua's remnant blocks might represent a larger pre-form which was subsequently whittled back for insertion in the fortress walls.

The suggestive echoes of comparability between these three data sets recommend further attention to the issue. A

[12] Pabittei unjustifiably ascribes this masonry work to Gowa's Sultan Alauddin.

statistically adequate record of Fort Rotterdam's masonry would be easily organised. More complex projects would include the identification and recording of the rumoured Maros quarry sites, and the compilation and analysis of the dimensions of the masonry blocks associated with Makassar graves dated to the 17th century. The project could investigate whether Fort Rotterdam's masonry conforms in its dimensions with greater Gowa's precolonial masonry works, with useful implications for understanding how the Dutch organised the Makassar masons in setting them to work.

TABLE E-27. SIZES IN CM OF RECORDED MASONRY BLOCKS

Fort Rotterdam	"Largest"	"Smallest"	Midpoint
Length	62	44	53
Breadth	34	21	27.5
Thickness	20	10	15
L:B:T ratio (T = 1)	3.1:1.7:1	4.4:2.1:1	3.5:1.8:1

Benteng Tallok	(n)	Mean	S.D.	Range
Length	90	48.60	11.80	(25-70)
Breadth	90	28.77	6.22	(12-48)
Thickness	67	18.87	4.72	(10-30)
Breadth/Length	90	57.70%	14.95	(35.7-100%)
Thickness/Length	67	38.08%	11.44	(17.9-76.9%)
Thickness/Breadth	67	62.28%	14.22	(39.5-100%)
L:B:T ratio (T = 1)		2.6:1.6:1		1.3:1:1 to 4.7:2.5:1 or 5.6:2.3:1

Pammangkulang Batua longer blocks	(n)	Mean	S.D.	Range
Length	5	76.00	2.45	(75-80)
Breadth	5	35.40	2.07	(32-37)
Thickness	1	20	-	(20)
Breadth/Length	5	46.90%	3.78	(42.0-51.3%)
L:B:T ratio (T = 1)		3.7:1.75:1		

Pammangkulang Batua small blocks	(n)	Mean	S.D.	Range
Length	2	49.50	-	(49,50)
Breadth	2	34.00	-	(34)
Breadth/Length	2	68.69%	-	(68.0,69.4%)

E.4 An Overview of Greater Gowa's Fortifications

The descriptions of the various fortification works given in the respective chapters and E.1.3, and the general review of the statistical data adumbrated above, are synthesised in Table E-28. Particular fragilities in the database should be admitted such as SSPHAP's lack of direct survey in Ujung Pandang's urbanised areas and SSPHAP's scant documentation of Somba Opu. As important data from Somba Opu have presumably been collected and may even be available within Ujung Pandang, the general scheme offered here may have to be corrected accordingly at some future date.

The technologically simplest fortification, walls of heaped earth, had appeared by the early 16th century, and continued to be practised into the early 17th century and beyond. During his mid-16th century reign Tunipalangga introduced the simplest form of brick wall consisting of a central line of bricks flanked by lateral additions of heaped earth (e.g. Figure 8-2). This design also appears to have characterised the long stretches of coastal wall built during the 1630s and 1660s. A more sophisticated fortress wall, consisting of two parallel lines of brick sandwiching earth fill and flanked bilaterally by heaped earth, appears to have been introduced by Abdullah at Tallok at around 1615 (Figure 12-3). Application of the new technology to walls previously strengthened by a central line of bricks resulted in triple brick-walls at Benteng Tua (Figure 6-8) and along Somba Opu's north face, although the effects at Somba Opu's south and west faces may have merely been a thickening of the single brick-wall. The most recent palace, Sanrabone, epitomises the technology of double brick-walls (Photo E-2).

Abdullah's other innovation at Tallok, masonry fortifications, does not appear to have been more widely applied until the Dutch built Fort Rotterdam's walls.

The bricks produced by greater Gowa generally decreased in size over the 120-year period involved. This trend did not occur isometrically with the changes in wall construction: as interpreted here, the transitional intermediate-sized bricks may have constituted Somba Opu's earliest brick walls; while

TABLE E-28. SUMMARY OF GREATER GOWA'S FORTIFICATION PROGRAMME

Fortification Work	Sponsoring Ruler	Date	Brick Type	Average Brick Dimensions		
				Length	Breadth	Thickness
Benteng Tua's earth walls	Tumapakrisik Kallona	Before 1547				
Benteng Tua's central brick-walls	Tunipalangga	c.1550	Large	42.7-40.5 (41.2)	21.1-20.2 (20.7)	7.0-6.9 (7.0)
Anak Gowa's central brick-walls	Tunipalangga	c.1550	Large	44.1	21.9	7.75
Somba Opu's central brick-walls	Tunipalangga	c.1550	Intermediate	29.8	19.5	5.0
Tallok's double brick-walls	Abdullah	1615	Large	39.2	22.1	6.25
" "	" "	" "	Smaller	26.4-20.8 (23.1)	16.9-11.7 (13.8)	5.2-3.3 (3.6)
Tallok's masonry superstructure	Abdullah	1615				
Benteng Tua's double and side brick-walls	Alauddin	1615-8	Smaller	25.0-21.1 (23.1)	14.9-12.5 (13.7)	3.9-3.4 (3.7)
Ujung Tana to Somba Opu brick wall	Abdullah	1634	Unknown			
Paknakkukang to Somba Opu brick wall	Abdullah	1634	Large	38.25	20.6	5.9
" "	" "	" "	Intermediate	32.6	18.5	5.1
" "	" "	" "	Coastal	25.3-23.9 (24.6)	16.4-13.3 (14.8)	4.5-4.0 (4.4)

TABLE E-28. SUMMARY OF GREATER GOWA'S FORTIFICATION PROGRAMME (CONT.)

Fortification Work	Sponsoring Ruler	Date	Brick Type	Average Brick Dimensions		
				Length	Breadth	Thickness
Benteng Ujung Pandang (probably earth)	Abdullah	1634				
Benteng Paknakkukang, Bayoa, Garassik (earth)	Alauddin (?)	c.1634				
Barombong coastal brick-wall	Alauddin (?)	1635	Coastal	25.4	14.5	4.2
Somba Opu town gate	Abdullah	1635	Not recorded			
Pattukangang coastal brick-wall	Hasanuddin	1661	Pattukangang	25.6	17.6	7.1
Barombong second wall	Hasanuddin	1662	Not recorded			
Sanrabone double brick-walls	Abdul Jalil	1668	Smaller	25.3	14.8	3.5

N.B. Where a range of brick sizes conforming to a clear directional trend was observed at a particular work, this table shows the range of means of the samples, and the means of the combined sample in brackets below.

a few large bricks were included in Tallok's double brick-walls. The general trend may have resulted from a growing realisation that smaller bricks were easier to work with, particularly in rounded structures such as bastions, or because detritus tended to adhere to the the sides of the molds. In any case, the trend matches the steadily decreasing size of Roman bricks observed by studies on Roman brickworks (Meiggs, 1973:542-543; Wilson, 1975:15).

My preferred scenarios of the construction sequences at Benteng Tua (6.4), Tallok (12.2.3), and to some degree the Paknakkukang-Somba Opu coastal wall (11.1.2), rely on the notion of gradual decrease in average brick size. However, when we consider the palace walls built of smaller bricks over the 50-year interval between Tallok and Sanrabone, scarcely any trend in average dimensions can be observed. Rather the oldest such walls, in Tallok, show the greatest variability in average brick dimensions at different stations along the wall; followed by Benteng Tua in this regard (Table E-28); while Sanrabone's bricks were very standardised (Table E-1). Presumably this pattern reflects some combination of fortress size, greater scope for renovations and additions at the older palaces, and improved technical standards. We may also infer that a conscious decision to produce the same size of bricks was made in each case, either by working from a mold which served as a blueprint for the molds used during construction, or by re-creating a mold of the same size from previously fabricated bricks. But these same points would also allow a reversal of my original notion to suggest that brick size gradually increased during any particular works. On balance I prefer my original inference, given the general trend towards smaller bricks, and the particular trend of the large bricks towards reduced size.

Rigorous application of this inference would suggest that the undated brickworks at Anak Gowa preceded even Benteng Tua's. I can see no good reason to dismiss this implication, particularly given the vulnerability of Gowa's southern flank during the mid-16th century (8.2.1).

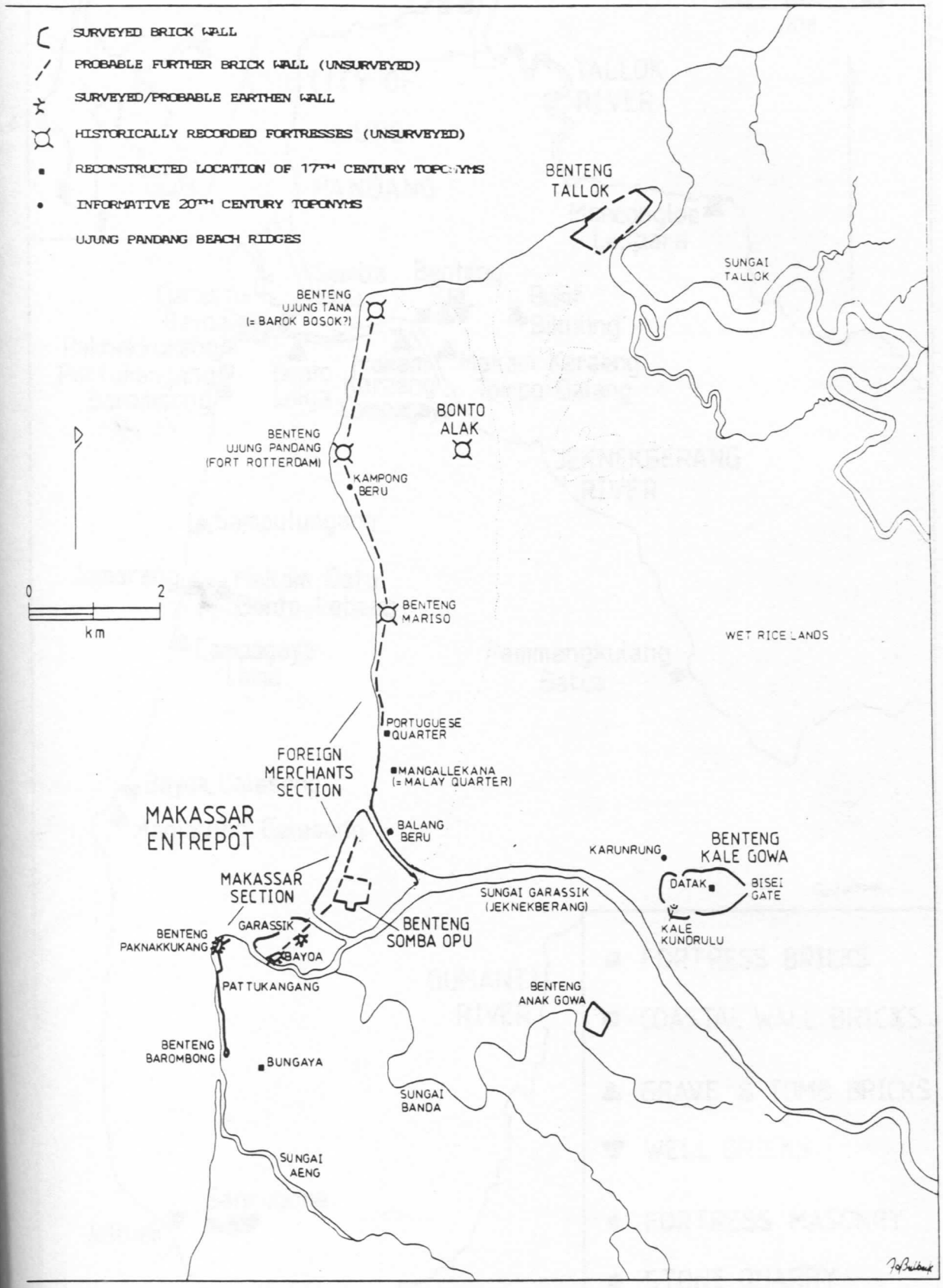


FIGURE E-1. RECONSTRUCTION OF MAKASSAR AND ITS FORTIFICATIONS 1667

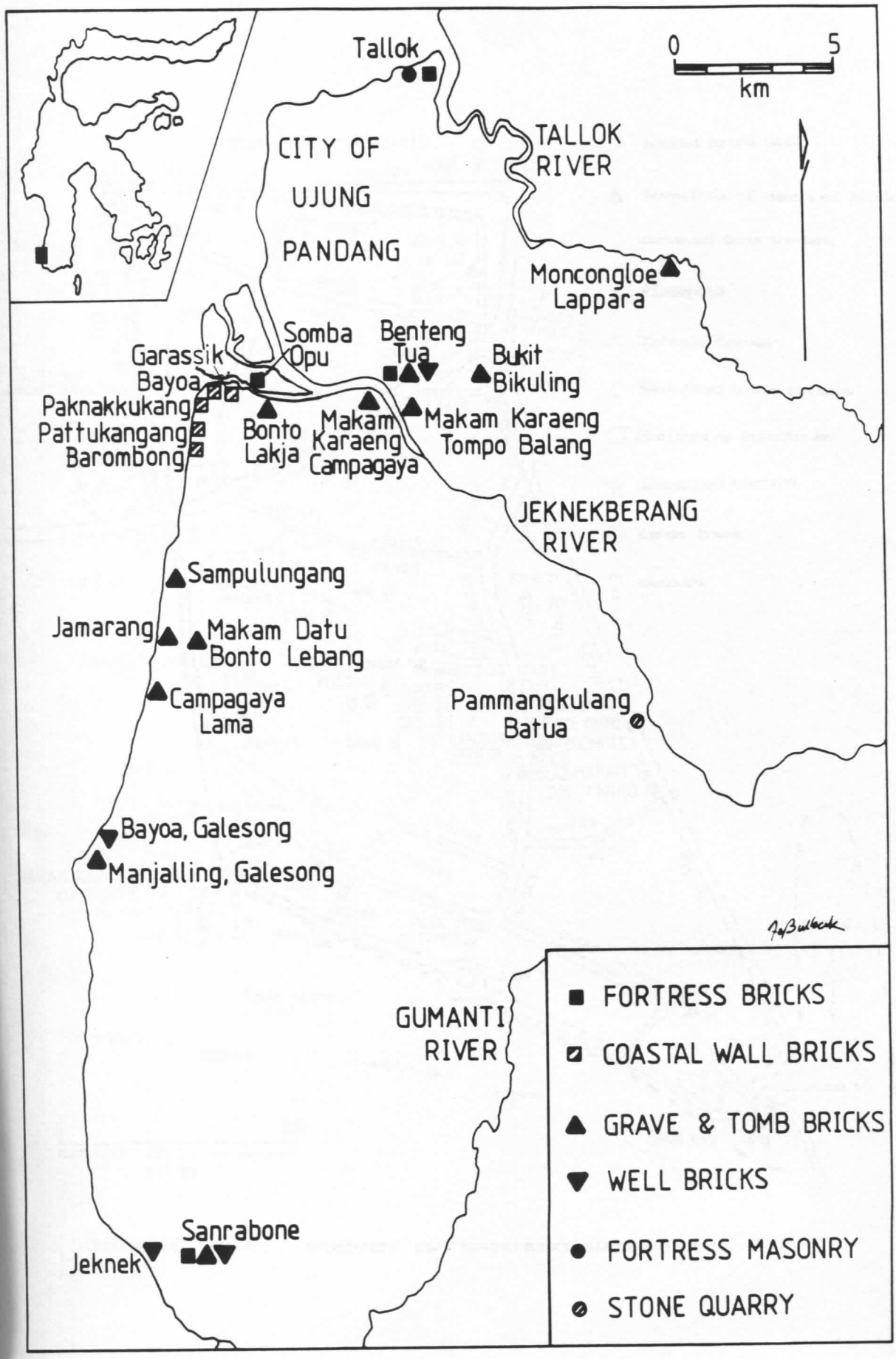


FIGURE E-2. LOCATIONS OF SSPHAP'S BRICK AND MASONRY SAMPLES

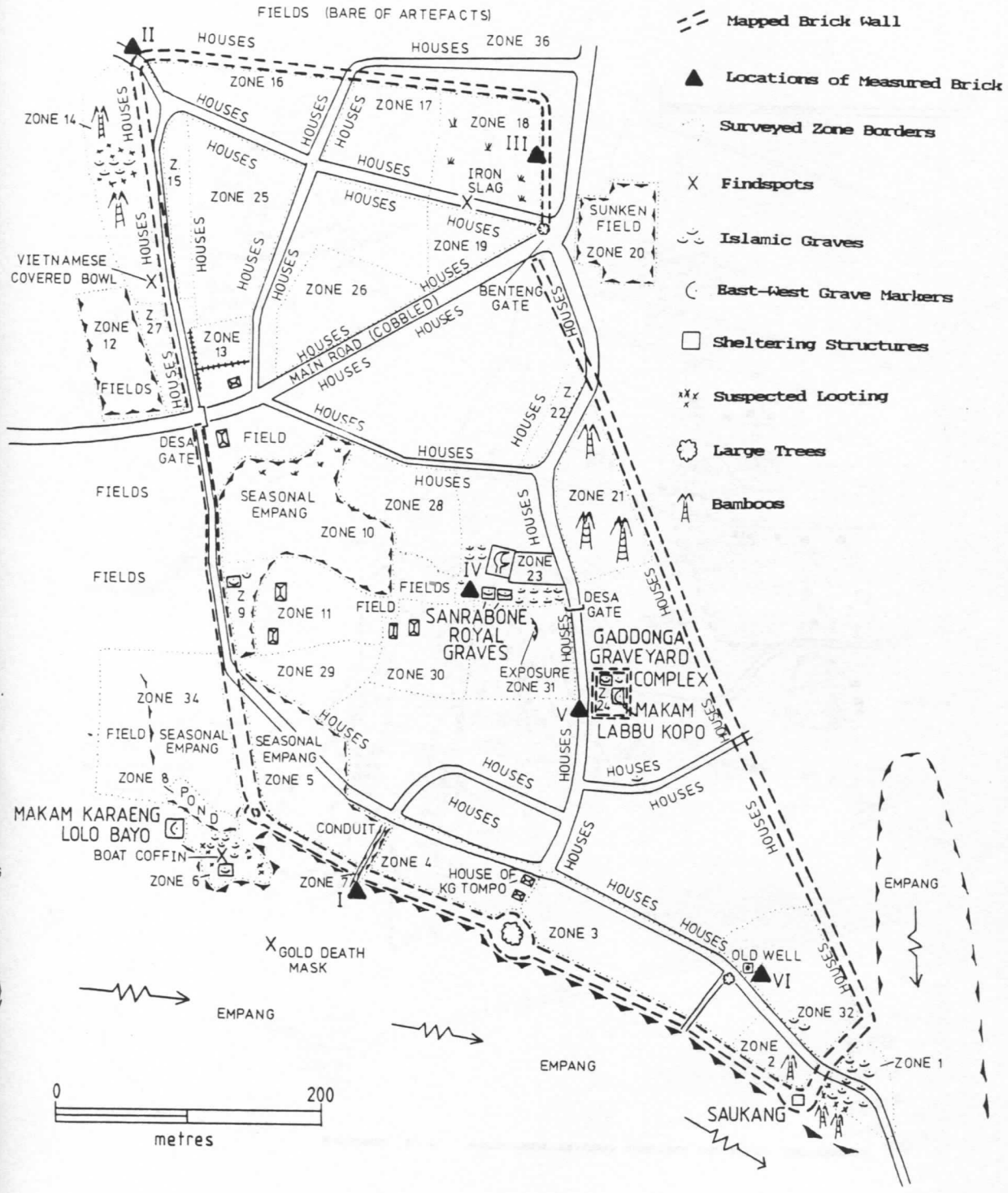


FIGURE E-3. SURVEY OF BENTENG SANRABONE

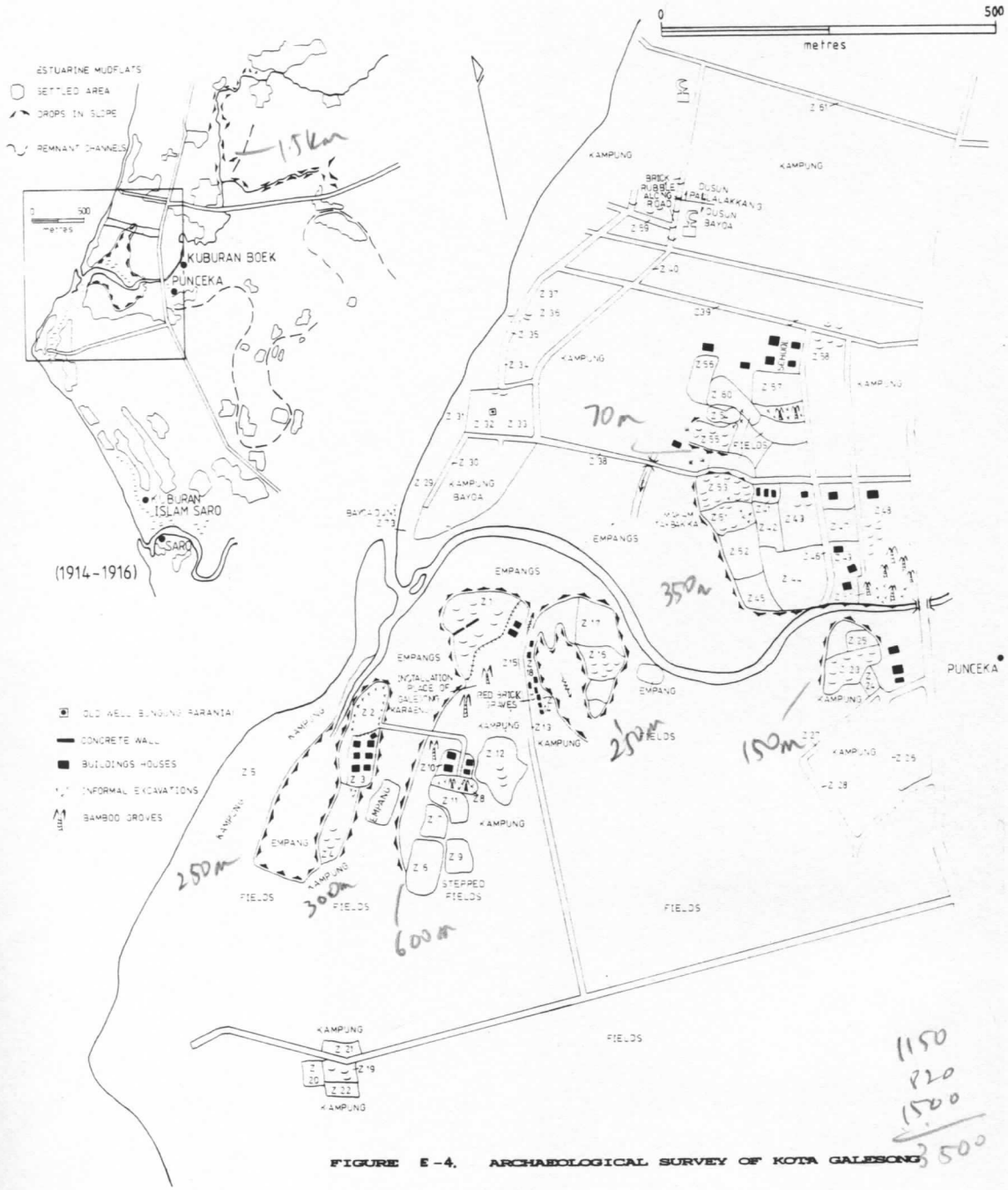


FIGURE E-4. ARCHAEOLOGICAL SURVEY OF KOTA GALESONG

Photo E-1.
The measurable masonry blocks left attached to their volcanic conglomerate matrix, Pammangkulang Batua (Gowa 84).

Photo E-2.
A section of the walls of Benteng Sanrabone exposed by a channel feeding a fish pond (Station I).
Note the layer of earth (now mixed with collapsed brick rubble) between the two lines of brick.

Photo E-3.
The 18th century brick *kobang* tombs, Benteng Sanrabone.







Photo E-4.
One of the square brick features, best interpreted as the brick foundation of an Islamic grave marker, Manjalling, Kota Galesong (T.16.14).

Photo E-5.
Line of brick rubble within dusun Bayoa running north into dusun Paklallakang, Kota Galesong.
Tentatively interpreted as brick grave foundations.

Photo E-6.
Makam Takbakka, Tabbuncinik, Kota Galesong.
Note its raised location with respect to the land below the ridge, and the apparent basal fill of brick and stone (to earthen walls?) where the road has cut into the side.





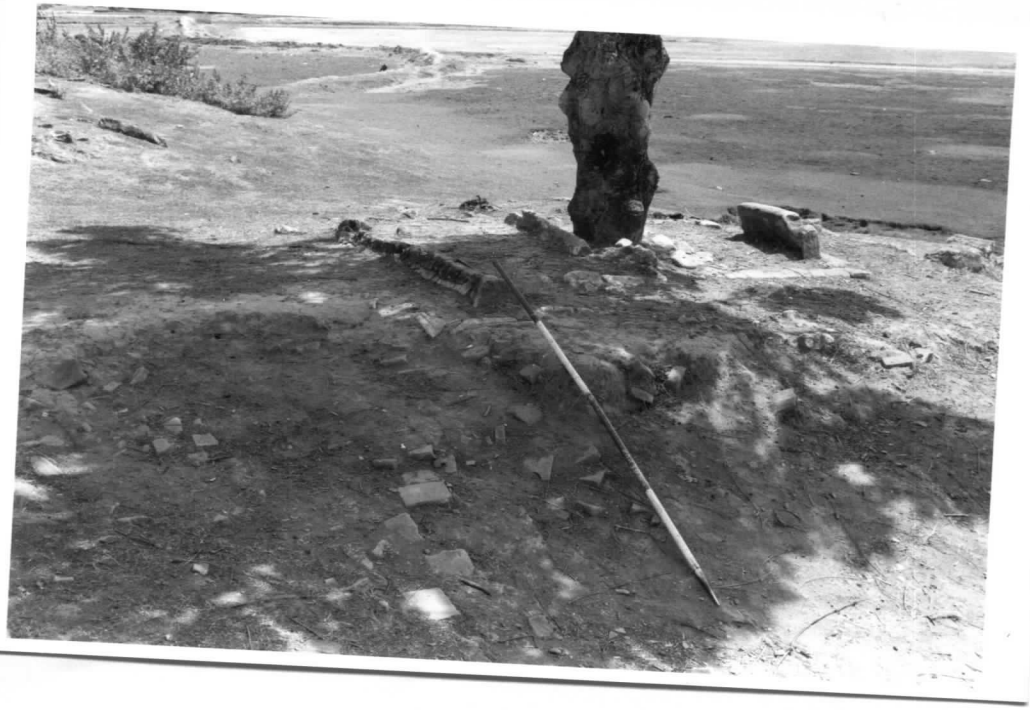


Photo E-7.
A partly intact, exposed segment of the brick wall around Kompleks Makam Gaddonga, Benteng Sanrabone.

Photo E-8.
Some of the grave foundations of large old bricks, Makam Sampulungang, exposed in the cliff face cut by the encroaching shoreline.

Photo E-9.
The grave of Karaengloe ri Jamarang, Jamarang Tua, showing the range of bricks arranged around the outline of the grave and into the surrounding brick platform.







APPENDIX F. INVENTORIES OF MARKED GRAVES AT GOWA-TALLOK SITES

Suaka's first chief, Hadimuljono, developed the typology of styles of Makassar Islamic graves which has since been followed in Suaka's cultural resource surveys. As reported by Kallupa (1985:49-50,59 and examples), the system recognises tombs (Type A), markers of masonry slabs (Type B), and markers which include curved surfaces as well as slabs (Type C). SSPHAP's typology covers these styles within a more complicated and comprehensive classificatory system. Further, the surveys by Suaka continue the tradition (inaugurated prior to Indonesian independence) of concentrating on the cemeteries of the high aristocracy. Most have accordingly been gazetted, described to varying degrees, and sometimes even treated to maintenance and restoration programs.[1] Hence I did not consider it as necessary, in my attempt to reconstruct the Makassar social landscape, to focus SSPHAP's attention on these best known complexes as on previously overlooked graveyards.

Ambary (1985) studied four cemeteries restored by Sauka (in Soppeng, Bone, Bantaeng and Jeknekponto), and analysed aristocratic Islamic grave styles in terms of concerns with pre-Islamic origins. A further result of this line of investigation has it that the main South Sulawesi styles were adopted in surrounding regions which came to fall under the sway of the various Bugis-Makassar sultanates (Ambary, pers. comm.). In contrast to Ambary's global perspectives, however, the counterpoints on SSPHAP's canvas are only local in scope. The issue of syncretist Islamic burial practices revolves around SSPHAP's attempt to trace continuities between pre-Islamic burial grounds (recognised primarily by evidence of looted antiques) and Islamic cemeteries (recognised primarily by marked graves). Similarly, style is related to

[1] For instance the Sultan Hasanuddin, Arung Palakka and royal Tallok complexes were first restored in part by the Dutch Oudheidkundige Dienst (1949:7), with major restorations commissioned by Suaka in recent decades. Nurhadi et al. (1980) give some descriptions of the tombs in the Sultan Hasanuddin and Arung Palakka complexes, used here in compiling Table F-1.

cultural influence mainly in terms of areal styles and local centre-periphery relationships.

Style is also the only usual means to date the Islamic graves, but here SSPHAP faced the following difficulties. (i) Particular styles, e.g. stone arrangements, have probably been employed for centuries. (ii) Inventorisation of the graves, and hence the available typology of styles, very much evolved as a process during fieldwork. Also, there was insufficient time to check the consistency of our classifications during any individual inventorisation or across graveyards. Given also that styles graduated and overlapped rather than conform to clear-cut types, SSPHAP's classifications may not be highly reliable. (iii) Many of the earlier marked graves, if not the vast majority, have survived steady deterioration over time only if they have been restored by the local community. These restorations may of course lend a spuriously modern appearance.

Given also spatial variability, any attempt to seriate grave styles would appear doomed at the outset. Rather I here try to tabulate my available information using flexible categories which circumvent as far as possible the uneven nature of the records (both written and photographic), as it were codifying their rather impressionistic composition. In the end, dating has to depend on comparisons with the rare cases of interred individuals of known year of death;[2] circumstantial evidence such as a spatial association with a pre-Islamic burial ground; unusual orientations, either badly astray from an accurate north-south axis, or clearly east-west; consistent relationships of major styles with particular building materials; and our on-site impressions of how old the marked graves looked.

As detailed below, the various styles can be shown by a combination of cardinal numerals standing for the type of material used, and capital letters standing for the style of marked grave. Main variations within particular styles are

[2] As implied by the site descriptions the errors which can result when information relies solely on oral transmission, including the effects of overlays of local interpretation, often obstruct the attempt to relate particular Makassar nobles mentioned in the historical texts to particular graves associated with a "known" (named) ancestral figure.

shown by Roman numerals in brackets, and additional descriptions are codified in small letters.

The code for the types of material used is:

0. "Modern" (i.e. graves noted as modern but no further described; presumably cement in most cases)
1. Masonry;
2. Unmasoned stone;
3. Brick;
4. Old-looking Cement;[3]
5. New-looking Cement;
6. Tiled (on a cement basis);
7. Wood or bamboo;
8. Earth (usually referring to recent graves which have not yet received any permanent marking; but also referring to baked clay and earthen matrix fabrics);
9. Iron.

A component containing two or more materials, or whose material was not clearly recorded as per the above, can be indicated with slashed categories. E.g. bricks plastered with modern cement can be expressed as 3/5; fabrics described merely as "cement" can be denoted as 4/5. Of course, many marked graves contain multiple components built with different materials, and these can be shown by alphanumerical combinations in which the letter symbolises the "style".

At the broadest level, style can be divided into structures marking the presence of a grave in the ground, above-surface structures containing a burial (here called sepulchres), and structures protecting a grave's location. The first category can be further divided into isolated

[3] I do not know precisely when cement was first produced in Makassar, but some clues in Seger (1987) suggest a date very early in the 20th century. Already manufactured in Java by 1889 (p.45), cement was imported into the other islands by 1901 (p.191), and its consumption exceeded its importation (i.e. it was locally manufactured) in the other islands by 1913 (p.193). While the early 20th century production outside of Java occurred primarily in Sumatra's West Coast (p.186), Makassar probably also played a part, given the comparatively advanced status of the manufacturing sector in "Celebes" by 1930 (employing 91,127 workers, i.e. the second highest figure for any residency in Netherlands India [pp.85-87]).

markers, arrangements and grave markers. Protective structures can be divided into tombs, shelters and corrals. The more elaborate graves contain all sorts of conceivable combinations of these basic elements, defined below.

Isolated markers. Single elements, or paired elements at the head and foot of the grave. The same letters are used when these elements occur enclosed in a structure. Their code is:

R: A single stone or clump of stones, usually at one end of the grave;
S: Paired stones or paired clumps of stones, at either end of the grave;
T: Isolated *nisan*;[4]
U: Paired *nisan* at either end of the grave.

Arrangements. Clusters of objects, usually natural stones but also possibly bricks or blocks of cement, which have not been bonded together. Designated by O, with two main variants:

O(i): Arrangement defining outline of grave, with no infill;
O(ii): Arrangement covering grave, or at least comprising a substantial pile of objects.

Grave markers. Surface structures, made in either one or a few pieces, or from components bonded together, marking where the corpse had been buried in the ground. Denoted P.

Sepulchres. Elevated structures, filled with earth, of sufficient dimensions and solidity to suggest that the corpse was interred above the prevailing ground level. Denoted Q.

The various styles of P and Q suggested a typological classification based on the shape when viewed from above and the degree of elaboration of the sides. These are:

Case-tops. Ground-level surface constructions, usually cement, enclosing a narrow rectangular space.

[4] *Nisan* could be loosely translated in English as "worked gravestone(s)", except that other materials besides stone can be employed. Most of the Makassar examples serve as architectural accoutrements to the marked grave.

Slabbed. Low structures enclosing a space which is broader than the side of the structure. The structure itself might have rounded or right-angled relief.

Boxes. Differ from the above by being taller and dominated by perpendicular angles. Also enclose a space broader than the side of the structure.

Slab-sided. Characterised by thin sides, usually tall, which enclose a space much broader than the width of the sides.

Cases. Structures of perpendicular angles which enclose an aperture more narrow than the side of the structure.

Simple. Unelaborated examples of the above.

Relieved. Examples of the above which contain bevelled edges, footings, concave silhouettes, or other minor elaborations.

Stepped. Examples of the above with a stepped silhouette leading up to the top aperture.

Combinations of the above are shown with capital letters:

	Case-tops	Slabbed	Boxes	Slab-sided	Cases
Simple	A	B	C	D	E
Relieved	-	F	G	H	I
Stepped	-	J	K	L	M

There are two additional types of marker not included in the above. One, denoted V, is ramped along its long axis, low at the foot but rising gradually or in steps towards the head. The other, denoted W, is a cuboid structure lacking any enclosed aperture.

Markers and sepulchres are often constructed as one piece with *nisan*, usually at head and foot but occasionally just at the head. Such cases are denoted by N.

Whether isolated, enclosed, or part of a structure, *nisan* show a basic range of forms, designated by Roman numerals.

(i) "Simple", recorded in the cemetery inventories as "*nisan umum*" (usual *nisan*). Most are pentagonal in shape, or roughly

semi-circular with basal studs or an apical stud, but others can rise in steps to an apex or incorporate slight crenulations. Very much a default class for unexceptional examples.

(ii) Crenulated. Triangular in general shape but with fancy relief along the sides leading to the apex.

(iii) Handle-shaped. Covers a wide range of tall *nisan* with a narrow stem supporting a complex head with a convex silhouette.

(iv) Sceptres. Tall, narrow-stemmed *nisan* gradually widening towards the top; either rounded or right-angled sides.

(v) Tablets and pegs. Cuboid *nisan*, including variants rounded at the edges. Usually a very simple *nisan*, further distinguished from (i) by being small. They grade into:

(vi) Staffs. Distinguished from standing stones by greater length and masonry work (e.g. polished finish). Either cylindrical or cuboid.

(vii) Dollop-shaped. A lone *nisan* at Benteng Tallok which cannot be grouped with the other forms. It is shaped like three slightly flattened balls placed on top of each other.

Types of protective structures can now be detailed.

Tombs. Grave shelters of very solid materials and construction presenting the main visual spectacle, shrouding the grave in darkness or even preventing a clear view. Designated as X, with nine variants recognised here.

(i) The variant with a multi-tiered slabbed roof, found at the Sultan Hasanuddin, Arung Palakka and Tallok Raja complexes (Table F-1) where it is associated with known dates of death between 1639 and 1724.

(ii) Similar to (i) but with less-developed tiering of the roof. Associated with a known date of death of 1650.

(iii) Similar to (ii) but with a true arch at the entrance rather than a corbel arch. Associated with a known date of death of 1742.

(iv) *Kobang* tombs - igloo-shaped domes with four externally visible arched trusses, atop a square- or rectangular-walled base, usually with prominent corner pillars. The word *kobang*, which would be related to Indonesian *kubah* (cupola, dome), appears to be a local term for this style, and was applied in the Dutch colonial reports (Oudheidkundinge Dienst, 1949:7). I very rarely investigated the interiors of these tombs. Associated with known post-Islamisation dates of death from 1654 onwards.

(v) A variant of the above in which the walls rise well above the junction with the cupola. Unique to or at least best developed with the tomb of Sultan Sahaduddin (died 1696) and his wife Daeng Talele (died 1725).

(vi) Mosque-like tombs, differing from the *kobang* owing to a fully rounded dome without externally visible arched trusses.

(vii) House-like tombs with architectural features stamping the construction as peculiarly South Sulawesi in style.

(viii) House-like tombs built in the European style.

(ix) Suspected or reported tomb but with only the vertical walls (including the prominent corner pillars) still extant.

Shelters. Designated Y. These grade into the tombs but as a class are distinguished by less solid construction and more open sides. Sometimes the roof is supported only by a frame.

Corrals. Designated Z. Distinguished by a lack of evidence of roofing.

Additional descriptions are shown with the following small letters:

ns: Grave oriented along a north-south axis.
ew: Grave oriented along an east-west axis.
c: Decorated with ceramics, either inset or perched on top.
d: Carved decorations not contributing to shape, e.g. floral panels, Makassar or Arabic script, vertical runnels. Not including attached plaques.
p: Platforms extending well beyond the precise location of the grave or its protective structure, even linking two or more graves or protective structures.

In the tables below, the cemetery, cemetery component or (occasionally) isolated grave is placed in a numbered column, and the styles are placed in lettered rows. Further notes to the descriptions, at the bottom of the tables, are identified by the respective numerical or alphanumerical designator. Specific counts are given where available; presence where noted but not counted is indicated by "x". Cases of possible presences of a grave style, e.g. in a poorly recorded cemetery, are indicated "?". "-" indicates that the category of grave style is irrelevant to the inventory, e.g. when a broad description (which cannot be refined for the more poorly recorded cemeteries included in the same table) is contained by a well-recorded cemetery but within more tightly defined descriptions. Summaries of the number of marked graves and probable dating are given in the main text.

TABLE F-1. GAZETTED ROYAL CEMETERIES

	Benteng Tua (Gowa 1)			(UP25)	Benteng Sanrabone (Tak6)	
	1. Kompleks Makam Sultan Hasanuddin	2. Kompleks Makam Arung Palakka	3. Kompleks Makam Katangka	4. Kompleks Makam Raja² Tallok	5. Kompleks Makam Gaddong	6. Kompleks Makam Raja² Sanrabone
a. Masonry tombs, vertical walls with arched ceiling, multi-tiered slab roofs.1BPUX(i)ns.	7	3	0	2 (1 "2p")	0	0
b. Masonry *kobang*. 1 X(iv) ns.	-	2	6 (1c)	-	0	0
c. Cement-plastered masonry *kobang*. 1/4/5 X(iv) ns.	1	0	0	2	0	0
d. Masonry *kobang* with raised walls. 1G(d)N(ii)U(iv)/4IQ/X(v) ns.	0	1	0	0	0	0
e. Brick *kobang*. 3 X(iv) ns.	0	1	0	1	0	2
f. Stepped brick tombs. 3X(iii) ns.	0	0	0	0	3	0
g. East-west oriented, footed modern cement box marker with simple *nisan*, enclosing paired stones, under shelter with wooden frame and tin roof.5GPN(i)2S 7/9Y ew.	0	0	0	0	1 (Makam Labbu Kopo Kg Jawaya)	0
h. Masonry slab-sided sepulchres enclosing paired *nisan*. 1HQU ns.	3	4	0	0	0	0
i. Masonry flanged box sepulchre enclosing paired *nisan*.1GQ(d)U ns.	0	1	0	0	0	0
j. Masonry platform under stepped masonry box sepulchre with decorated *nisan* enclosing handle-shaped *nisan*. 1KQN(ii)c U(iii) 1p ns.	0	0	0	1 (Tumenanga ri Jawaya)	0	0
k. Cobble platform under stepped and bevelled masonry sepulchre enclosing paired sceptre *nisan*. 1MQU(iv)2p ns.	0	0	0	1 (Duta ri Bima)	0	0
l. Stepped masonry sepulchres with paired *nisan*. 1 K/L/M QU ns.	0	0	?	5	0	0

TABLE F-1. GAZETTED ROYAL CEMETERIES (CONT.)

	Benteng Tua (Gowa 1)			(UP25)	Benteng Sanrabone (Tak6)	
	1. Kompleks Makam Sultan Hasanuddin	2. Kompleks Makam Arung Palakka	3. Kompleks Makam Katangka	4. Kompleks Makam Raja² Tallok	5. Kompleks Makam Gaddong	6. Kompleks Makam Raja² Sanrabone
m. Other stepped masonry sepulchres. 1 K/L/M Q ns.	0	0	?	x	0	0
n. Masonry slabbed markers.1B/FPns.	0	6	0	x	0	1
o. Footed box marker with crenulated *nisan* enclosing paired staff-like *nisan*. 1 GPN(ii,d) U(vi) ns.	0	0	0	1 (I Sawerannu)	0	0
p. Stepped box marker enclosing paired staff *nisan*. 1 KPU(vi) ns.	0	0	0	1	0	0
q. Stepped case marker enclosing paired sceptre *nisan*. 1 MPU(iv) ns.	0	0	0	1	0	0
r. Other masonry box markers with *nisan*. 1C/G/K PN ns.	0	18	x	x	0	x
s. Stepped, bevelled box marker enclosing standing stone. 1KP 2R ns.	0	0	0	0	1	0
t.Masonry slab-sided markers. 1DPns.	0	21	0	0	0	0
u. Masonry box markers. 1 C/K P ns.	0	-	?	x	6	?
v. Paired masonry *nisan*. 1U ns.	0	1	?	0	0	?
w. Flat brick grave structures. 3WP ns; one is 3WP 1U(v) ns.	0	0	0	0	11	0
x. "Old graves restored with cement". 4/5 ns.	0	2	0	0	0	?
y. Cement box sepulchres with simple *nisan*. 4/5 CQU(i) ns.	0	0	x	0	0	x
z. Cement box markers with simple or crenulated *nisan*.4/5CPU(i,ii)ns.	0	0	x	0	0	x

aa. Tiled cement box markers with simple nisan. 6CPU(i) ns.	0	0	x	0	0	?

1a. Roofs usually crowned with *nisan* at head and foot. Corbel arch entrance. Tombs house masonry slabbed markers enclosing finely masoned paired *nisan* which include handle (iii) and sceptre (iv) styles.

1c. Includes two north-south directed, masonry box markers with crenulated *nisan* enclosing stones at head and foot. The one ascribed to Tunibatta has floral decoration, hence TCN(ii) R(d) ns. The companion grave has a sloping ramp to the box marker, hence 2GN(ii) Rns.

1h. These include the sepulchre of the Bone noble Arung Lamoncong who reportedly brought Tunibatta's corpse back from Bone (Nurhadi et al., 1980:8).

2d. Walls rise above junction with cupola forming a cubicle shape, plus a walled-in annex. Housing two finely masoned crenulated *nisan*-box markers enclosing masonry head and foot stones atop cased cement sepulchres. Sceptre-style *nisan*.

2h. Further description: include square blocks at corners, possibly to form inset wedges to support a now-lost wooden or other superstructure.

2i. The strongly flanged rim singles this sepulchre out, possibly according with its imputed association with a foreigner "the man from Madura". Its superbly carved leafy decorations are elsewhere duplicated on a piece recovered by Nurhadi et al. (1980:41) from the Arung Palakka Complex, a *nisan* used as part of the doorstep for a house in zone 16 (Mangasa), and the decorated, slabbed marker at Kaballokang.

5f. The largest, ascribed to Data Paddada Tumenanga ri Ratekna, is crowned with masonry handle-shaped *nisan*, and protected by a shelter with wooden frame and tin (3 X[ii] 1U[iii]; 7/9Y ns). The other two are ascribed to Tumenanga ri Toabkna and Tumenanga ri Saluara Puena (Ibrahim, 1985:37).

6e. The fully intact *kobang* includes a masonry stepped and bevelled box marker with finely decorated, crenulated *nisan* (1 KN[ii,d]), ascribed to Tumenanga ri Masigina, an 18th century Sanrabone raja (Ibrahim, 1985:50).

TABLE F-2. CEMETERIES CONTAINING ISOLATED TOMBS LIKE THOSE IN THE ROYAL CEMETERIES

	1. Kompleks Syech Yusuf (G.1.67-69)	2. Makam Paccalaya (G.28)	3.Makam Tinggi Maek	4. Sitti Maemunah (G.35.5)	5. Makam Campagaya (G.8)	6. Makam Takbakka south (G.75)	7. Makam Kg Katinting (UP.25)
a. Masonry tomb, vertical walls with arched ceiling, corbel arch entrance, slab roofing. 1X(ii)/3p ns.	0	1	0	0	0	1	1 (7/9Y)
b. As above but true arch entrance. (Empty inside). 1X(iii).	0	0	0	1	0	0	0
c. Masonry *kobang*. 1X(iv).	2 (1c)	0	2	0	0	0	0

TABLE F-2. CEMETERIES CONTAINING ISOLATED TOMBS LIKE THOSE IN THE ROYAL CEMETERIES (CONT.)

	1. Kompleks Syech Yusuf (G.1.67-69)	2. Makam Paccalaya (G.28)	3.Makam Tinggi Maek	4. Sitti Maemunah (G.35.5)	5. Makam Campagaya (G.8)	6. Makam Takbakka south (G.75)	7. Makam Kg Katinting (UP.25)
d. Brick *kobang*. 3X(iv).	0	0	0	0	1	0	0
e. Cement-plastered brick mosque-shaped tomb. 3/5X(vi).	0	1	0	0	0	0	0
f. House-like tomb with concave wooden roof and crossing eaves.X(vii).	1	0	1	0	0	0	0
g. Stepped and bevelled box marker supporting vertical slab on top with bas-relief panels, enclosing paired standing stones. 1KPd 2S ns.	0	0	0	0	0	0	1
h. Masonry slabbed marker. 1BP ns.	x	0	1	0	1	1	0
i. Masonry slabs encasing stone arrangement covering grave, including rectangular outline of large stones enclosing a large stone at north; cement shelter.1E/2O(i,ii)PR ns/3p/4Y.	0	0	0	0	0	1	0
j. Masonry slab-sided marker enclosing paired standing stones. 1DP 2S ns.	0	0	0	0	0	0	x
k. Masonry slab-sided marker with some old-style (thin) bricks.1/3HP ns.	0	1	0	0	?	0	0
l. Masonry box markers enclosing paired standing stones. 1CP 2S ns.	0	0	0	0	0	0	x
m. Masonry box markers with simple paired *nisan*. 1CN(i)P ns.	?	0	?	0	?	x	x
n. Stone box markers with simple paired *nisan*. 2CN(i)P ns.	x	2	x	0	?	0	0
o. Markers of rectangles of arranged stones. 2 O ns.	?	15	?	0	?	0	0

p. Old cement case-marker with simple *nisan* enclosing standing stones at head and foot. 4IN(i)P 2S/7Y/ns.	0	0	0	0	1	0	0
q. Masonry case sepulchres with *nisan* enclosing paired masonry *nisan*. 1MNQ 1U ns.	?	0	x	0	0	0	0
r. Slab-sided sepulchre with nisan enclosing paired stone *nisan*. DNQ 1U ns.	x	0	x	0	0	0	0
s. Cement box sepulchres with paired simple *nisan*. 4CN(i)Q ns.	?	0	x	0	0	0	0
t. Cement and tile stepped-box sepulchres with paired simple *nisan* decorated with plates. 6KN4/5Qc ns.	x	0	0	0	0	0	0
u. Box sepulchres with crenulated, paired stone *nisan*. G2N(ii)P ns.	x	0	?	0	?	0	0
v. Cement stepped-case sepulchre with simple paired *nisan*. 4MN(i)Q ns.	?	0	?	0	0	x	0
w. Brick markers. 3P ns.	?	0	?	0	?	x	0
x. Cemented-over brick markers with paired cement simple *nisan*. 3/4N(i)P ns.	?	0	?	0	?	x	0
y. Cement box markers with simple paired *nisan*. 4/5 C/G N(ii)Q ns.	x	3	x	0	?	0	0

2a. Houses masonry slabbed marker with simple *nisan*: 1BN(i) ns.

2e. Houses a cement case marker with simple *nisan* enclosing paired wooden *nisan* (5IN(i)P 7U(v) ns), and a cement box marker with paired simple nisan (5CN(i)P ns). Cement plastering on tomb provided by Suaka.

5. Other marked graves in Makam Campagaya were recorded only as a further 18 being "old" and 12 as "new".

6a and 6i. The graves of "Kg Tompok Balang" and "Minassa Dg Sunggu", both connected by the same platform of old red bricks.

TABLE F-3. OTHER CEMETERIES, BENTENG TUA

	1. Along south edge of Arung Palakka Complex (G.1.17)	2. Makam Kale Kundrulu (G.1.13)	3. Makam Kg Alla-moncong (G.1.38)	4. Graves opposite Katangka (G.1.123)	5. Makam Tompo Bataya (G.1.9,10, 147,148)	6. Kuburan Islam Kaballokang (U.10.73)
a. Old cement box marker with simple *nisan* enclosing 3 head and 2 foot stones; brick platform and remnant shelter. 4GN(i)P/2R/Y/3p ns.	0	1	0	0	0	0
b. Cement box markers with simple *nisan* enclosing single stone at head and foot. 4GN(i)P/2R 3/5p ns.	0	0	6 (3X)	0	0	0
c. Cement box marker with simple *nisan* enclosing masonry *nisan* at head and foot. 4GN(i)P/1U(iv) 3/5p ns.	0	0	1(X)	0	0	0
d. Masonry slabbed markers. 1BP ns.	0	1	0	0	0	1
e. Masonry slabbed marker with fine carved decorations. 1FP(d) ns.	0	0	0	0	0	1
f. Masonry case-top markers. 1AP ns.	0	0	0	0	4	0
g. Stepped masonry case marker. 1MPns.	0	0	0	0	1	0
h. Masonry slabbed marker with low triangular *nisan*. 2FN(i)P ns.	0	0	1	0	0	0
i. Finely crenulated masonry *nisan* joined by pebble lines. 1U(ii)/2O(i)ns.	0	0	2	0	0	0
j. Masonry box marker enclosing paired masonry *nisan*. 1CPU(iii) ns.	0	0	0	0	1	0
k. Masonry box markers with simple *nisan*. 1CPN(i) ns.	7	0	0	x	x	0

l. Masonry paired nisan. 1U ns.	0	0	0	0	x	0
m. Arranged pebble markers. 2O(i) ns.	0	0	0	0	0	10
n. "Stone graves". 1/2P ns.	13	-	-	-	-	-
o. "Piles of bricks". 3PU.	0	2	0	0	0	0
p. Cement-plastered brick box markers enclosing *nisan*. 3/5PU ns.	0	0	0	0	5	0
q. Tomb with only vertical walls still extant. X(ix) ns.	0	0	0	1	0	0
r. Old-cement box with Makassar script at south. 4C(d)P ns.	0	0	0	0	1	0
s. "Old cement". 4P ns.	-	3	-	-	-	3
t. New cement box markers with simple *nisan*. 5CN(ii)P ns.	0	0	0	x	x	28
u. Modern cement. 5P ns.	8	0	0	-	-	0
v. Markers with wooden *nisan*. 7NP ns.	0	0	0	x	x	9
w. "Modern". 0P ns.	4	0	0	-	-	-

3b and 3c. Cement-plastered brick house-like tomb, corrugated iron roof with four straight trusses rising from corners to a central point, houses four of these graves; reportedly, there used to be a celadon plate on the apex (3/5/9X[viii]c). All seven graves on a cement-plastered brick platform.

5p. More precisely, constituting a small family graveyard within the family's yard which is flanked by Makam Tompo Bataya, along with a similar grave marker of only cement. Modern.

5r. Not observed in more detail, and northern part of box removed by the passing road.

TABLE F-4A. OTHER CEMETERIES, CHAPTER 7 OF MAIN TEXT

	1. Makam Kgloeri Sero (G.26)	2. Makam Boccolaya (G.27)	3. Bukit Bikuling (G.25)	4. Makam Dg Bane (G.36)	5. Makam Nakku Dekda (G.36)	6. Makam Sampeang (G.37)	7. Makam Kasom-berang
a. Tiled cement box with paired simple *nisan*, enclosing single stone at north. 5/6 CN(i)P 2R ns/5Y.	1	0	0	0	0	0	0
b. Old cement boxes with paired simple *nisan*, enclosing paired wooden *nisan*. 4CN(i)P 7U(iv) ns/5Y.	2	0	0	0	0	0	0
c. Old-cement box with paired simple *nisan*, around two slab-sided masonry sepulchres enclosing stones at head and foot.4CN(i) 1DQ 2S ew(4/5Y).	0	0	0	0	0	2	0
d. Slabbed and box masonry markers lacking *nisan*. 1C/DP ns.	20	7	5	0	9	11	0
e. Box masonry markers with simple *nisan*. 1C/KN(i)P ns.	0	0	2 (stepped - K)	0	2 (normal - C)	1 (C)	0
f. Rectangular markers of arranged stones enclosing paired sceptre-style masonry *nisan*. 2 O(i) 1U(iv) ns.	0	0	0	0	0	0	3
g. Rectangular markers of arranged stones. 2 O(i/ii) ns.	22	52	21	5	17	59	56
h. Stepped-box brick sepulchre enclosing masonry *nisan* in "handle" and "tablet" styles. 3KQU(iii,v)ns.	0	0	1	0	0	0	0

	1. Makam Kgloeri Sero (G.26)	2. Makam Boccolaya (G.27)	3. Bukit Bikuling (G.25)	4. Makam Dg Bane (G.36)	5. Makam Nakku Dekda (G.36)	6. Makam Sampeang (G.37)	7. Makam Kasomberang (G.35.2)
i. Brick markers. 3P ns.	5	0	0	3 ("3/5Y")	1	0	3
j. Old cement box markers lacking *nisan*. 4CP ns.	29	0	0	0	0	0	1
k. Old cement box markers enclosing stone *nisan*. 4CP(N?) 2S ns.	14	0	0	0	0	0	1
l. Old cemented-over brick box-markers with simple paired cement *nisan*. 3/4CP 4N ns.	0	0	0	6	0	0	0
m. Old cement box markers with paired simple *nisan*. 4CNP ns.	22	18	0	4 (3 "3/5/9Y")	4	24 (1c)	13
n. Modern cement. 5P ns.	84	6	0	3 (1 "3/5/9Y")	2	21	14
o. Wooden *nisan*. 7U ns.	18	0	0	0	0	0	8

4i, 4m and 4n. "3/5/9Y" refers to a shelter with a brick basis, cement floor, and cement pillars supporting a tin roof. The sheltered graves are slightly above the prevailing ground surface and so should possibly be classified as sepulchres.

TABLE F-4B. OTHER CEMETERIES, CHAPTER 7 OF MAIN TEXT (CONT.)

	1. Makam Pao-Pao (G.38.6) (north group)	2. Makam Pao-Pao (G.38.6) (east group)	3. Small graveyard, Pao-Pao (G.38.3)	4. Bukit Sulenta (G.40)	5. Makam Pacci-nongang (G.42)	6. Kampung Pacci-nongang (G.41)	7. Bukit Mangga-rupi (G.29)
a. Rectangular markers of arranged stones enclosing head and foot stones. 2 O(i) S ns.	1 (7Y)	41	36	1	0	0	0
b. North-south rectangular markers of arranged stones. 2 O(i) ns.	3			4	51	0	0
c. East-west rectangular markers of arranged stones. 2 O(i) ew.	0	0	1	0	0	0	0
d. Paired standing stones. 2S ew.	0	0	1	0	0	0	0
e. Paired standing stones. 2S ns.	1	0	1	2	0	0	0
f. Isolated standing stone. 2R.	3	0	0	0	12	0	0
g. Masonry slabbed marker enclosing single standing stone. 1BP 2R ns.	0	0	1	0	0	0	0
h. Masonry slabbed marker. 1BP ns.	0	2	2	1	27	0	0
i. Masonry box. 1CP ns.	0	0	2			0	0
j. Masonry slab-sided marker.1DPns.	0	0	0	1	0	0	0
k. Masonry box with paired simple *nisan*. 1CN(i)P ns.	25	5	10	0	155	0	0
l. Isolated masonry *nisan*. 1T.	0	0	0	2	1	0	0
m. Paired masonry *nisan* in "Aceh" (handle) style. 1U(iii) ns.	0	0	0	0	0	0	0
n. Long east-west cement case-top markers connecting paired simpled masonry *nisan*. 5AP 1U(i) ew: 7/9Y.	0	0	0	0	2	0	0

o. Rectangular marker of arranged stones and bricks. 2/3 P ns.	0	0	0	2	0	0	0
p. Brick arrangement. 3 O/P ns.	1	0	0	1	3	0	0
q. Stone arrangement enclosing wooden *nisan*. 2 O/7U ns.	0	5	0	0	0	0	0
r. Wooden *nisan*. 7T/U.	8	4	0	0	39	0	0
s. Modern cement box marker with simple *nisan* enclosing paired wooden *nisan*. 5CN(i)P 7U ns: 7/9Y.	0	0	0	1	0	0	0
t. Isolated old cement *nisan*. 5T ns.	0	0	1	0	0	0	0
u. Old cement slabbed marker. 4BPns.	0	0	0	0	1	2	0
v. Old cement box or case with simple paired *nisan*. 4C/EN(i) P ns.	5	9	0	0	176	0	x
w. Modern cement. 5P ns.	21	19	0	0	124 (5Y)	0	x
x. Box markers with simple *nisan*, of very white stone - soapstone? 1GN(i)P ns (modern).	0	0	0	0	1	0	1

1v. The cement of one of these is speckled with numerous tradeware pottery sherds.

4s. Makam Tu Baranae. The shelter is metal sheets on a wooden frame and has a carved wooden water buffalo head above the entrance.

5b. Include six "piles of stones" which are presumably deranged examples.

5n. Both shelters have a wooden frame covered mostly or entirely with metal sheeting.

5v. One of these bears the date 1953.

7w. Includes three cement case markers with simple *nisan* (5EN(i) ns) beneath Japanese World War 2 shelter.

TABLE F-4C. OTHER CEMETERIES, CHAPTER 7 OF MAIN TEXT (CONT.)

	1. Makam Jipang (U.12.2)	2. Makam Karunrung (U.13.11)	3. Makam Sanro Karunrung (U.13.1)	4. Bonto-manaik 1 (U.24)	5. Makam Karaeng Bungaya (G.7.1)	6. Makam Karaeng Mangasa (G.93)	7. Makam Bonto Jalling (G.10)	8. Taeng Sundry
a. Old cement tombs with only pillars and vertical walls extant. 4X(ix).	3	0	0	0	0	0	0	0
b. Wooden boxes with double paired *nisan* on cement sepulchre. 5IQ/7GN(ii,d)P 7U(iv) ns/Y.	0	0	0	0	2	0	0	0
c. Masonry stepped-box sepulchre with crenulated *nisan* enclosing paired sceptre-like *nisan*, atop a modern cement sepulchral case. 5EQ/1KQN(ii)/1T(iv)ns.	0	0	0	0	0	1 (Kg Mangasa II)	0	0
d. Masonry slabbed marker with crenulated *nisan* enclosing masonry handle-shaped *nisan*. 1BN(ii)P 1U(iii) ns.	0	0	0	0	1 (Kg Bontojai)	0	0	0
e. Masonry box marker with crenulated *nisan*. 1CN(ii)P ns.	0	0	0	0	1 (Kg Gantarang)	?	?	?
f. Masonry slabbed markers. 1B/FN(i)P ns.	0	5	0	0	0	?	?	1
g. Masonry slabbed markers with simple *nisan*. 1B/FN(i)P ns.	5	0	2	0	0	?	?	?
h. Masonry box markers with simple *nisan*. 1CN(i)P ns.	21	2	3	0	x	?	?	?
i. Isolated masonry *nisan*. 1T.	1	0	0	0	?	?	?	?
j. Rectangle of arranged stones with roughly masoned table-like *nisan* at north. 2O/1T(v) ns/7Y.	0	0	0	1	0	?	?	?
k. Rectangular marker of arranged stones. 2 O ns.	0	1	0	0	?	?	?	?

l. Modern cement box-marker enclosing stone arrangement and wooden *nisan*, enclosing paired stones. 5C/7T/20Sns: 7/9Y.	0	0	1 (Sanro Karunrung)	0	0	0	0	0
m. Brick structure forming isolated *nisan*. 3T.	1	0	0	0	?	?	?	?
n. Rubble piles/arrangements (mainly bricks). 3 0/P ns.	0	3	1	0	?	1	?	1
o. Brick sepulchres cases cemented over, one with simple old cement *nisan*. 3/4IQ ns.	0	2 (1 N[i])	0	0	0	0	0	0
p. Old cement slabbed markers with simple *nisan*. 4FN(i)P ns.	5	0	0	0	|	?	?	?
q. Old cement box markers with simple *nisan*. 4CN(i)P ns.	1	|	0	0	x	?	?	?
r. Cement stepped cases.4/5PMns.	0	9 |	0	0	|	?	x	?
s. Cement box markers with crenulated *nisan*. 4/5N(ii)P ns.	0	0	0	0	0	x (2 d)	x (1 cd)	?
t. Modern cement case sepulchres with simple *nisan* enclosing wooden *nisan* or paired stones. 5IQN(i) 2S/7U ns/(several c).	0	0	0	0	0	0	x	0
u. Modern cement, ramped box marker bearing plaque at north. 5VP ns.	0	0	0	0	0	0	1 (Kg Mangasa I)	0
v. Modern cement. 5P ns.	12	21	46	0	x	?	?	0
w. Wooden *nisan*. 7U ns.	14	4	8	0	?	?	x	?
x. Box marker with simple *nisan*, of very white stone (soapstone?).	0	0	0	0	1	?	?	0

TABLE F-4C. OTHER CEMETERIES, CHAPTER 7 OF MAIN TEXT (CONT.): NOTES

3v. Some are of cement which looks "slightly old".

5b. Makam Kg Bungaya. Mainly iron shelter on modern-cement sepulchral encasement built up to two wooden box markers with crenulated *nisan* and carved with Makassar script, enclosing paired sceptre-style wooden *nisan*. The markers and nisan are presumable restorations imitating the original masonry.

5x. Encloses stones at head and foot. 1CN(i)P 2S ns (modern or recently restored).

6s and 7s. Decorations are pattern like veins of a leaf on inside of *nisan*, plus the remnant hole of where a plate had been with the Bonto Jalling example.

8f. "Makam Tua Gantarang". My records give no further details except that it was not far from Makam Kg Mangasa. Apparently an old (17th-18th century?) style.

8n. The marker of old bricks at Makam Tompok Balang (Photo 7-39). The location of this cemetery's other marked graves was mapped but no further details recorded other than the cemetery has been abandoned.

TABLE F-5A. OTHER CEMETERIES, CHAPTER 8 OF MAIN TEXT

	1. Anak Gowa northeast cemetery (G.2.9)	2. Makam Jingarak (G.15.6)	3. Bonto Tangnga Utara (G.9)	4. Kanjilo Timur Daya (G.6.6)	5. Makam Karaengta Jawa (G.12.1)	6. Makam Kocci Borong (G.12.3)
a. Stone-marked, raised earthen feature. 2P 8Q ns.	0	0	1	0	0	0
b. Masonry slab-sided marker enclosing paired stones. 1HP 2S ns.	0	0	0	2	0	x
c. Box-marker of piled masonry slabs enclosing sceptre-like *nisan* at north. 1CPT(iv): 3Z 7/9Ynns.	0	0	0	1	0	0
d. Slabbed marker of old bricks, some wedged upright, enclosing masonry *nisan* of a decorated sceptre-style at south and a tablet-style at north. 3BP 2U(iv,d;v) ns.	0	1	0	0	0	0

e. Paired masonry *nisan* in wooden corral. 1U/7Z ns.	0	0	0	1	0	0
f. Masonry case markers.1EP ns.	0	0	0	0	0	x
g. Miscellaneous masonry markers. 1P/U ns.	0	-	0	-	x	x
h. Sepulchre case of old bricks, crowned by masonry box marker with crenulated *nisan*. (Kgta Jawa). 3IQ 2CN(ii)P ns.	0	0	0	0	1	0
i. Rectangular stone arrangements enclosing paired stones. 2O(i)S ns.	0	0	0	0	0	x
j. Rectangular markers of arranged, old bricks. 3CP ns.	0	0	0	4	0	?
k. Brick arrangement over grave.3O(ii) ns.	0	0	0	0	0	1
l. Old cement box markers with simple *nisan* enclosing paired stones. 4CN(i)P 1S ns.	x	0	0	0	0	x
m. Old cement box markers with simple *nisan*. 4CN(i)P ns.	-	14	0	17	0	x
n. Old cement sepulchral case with simple *nisan*. 4E/IN(i)Q ns.	0	1	0	2	0	?
o. Modern cement. 5P ns.	-	1	0	0	0	x
p. Wooden *nisan*. 7U(i) ns.	-	0	1	0	x	x

4c. Brick-and-mortar corral is ruined, and may have been the walls to a shelter. Present shelter is a peaked roof of corrugated iron supported on a skeletal wooden frame.

1l. Observed as the predominant style; presumably other styles also present. One example had the cement speckled with tradeware fragments, and a ceramic plate decorating the *nisan* (c). Strongly different orientations among the graves (noted but not measured) indicates fair longevity of the cemetery's use.

3p. Marking the child of the site's single occupant. The child had died two years before our survey.

TABLE F-5B. OTHER CEMETERIES, CHAPTER 8 OF MAIN TEXT (CONT.)

	1. Makam Manyampang (G.13)	2. Makam Tua Labengnge (G.14.1)	3. Makam Karaeng Dampang (G.14.2)	4. Gotong (G.14.3)	5. Kuburan Takbakka, north area (G.75)	6. Bonto-manaik 2, near holes	7. Bonto Pakja (G.18)
a. Modern cement and brick tomb with tin roof on a platform of old bricks, sheltering a cement box with simple *nisan* enclosing paired standing stones. 5CN(i)P 2S ns:3/4/9X(viii)/3p.	0	1	0	0	0	0	0
b. Modern cement and brick tomb with tin roof, sheltering a cement box with *nisan*, one simple and one crenulated, enclosing paired handle-shaped masonry *nisan*.4CN(i,ii)P 1U(iii)ns:3/4/9X(viii).	0	0	1	0	0	0	0
c. Raised earthen feature, some large stones present. 2O 8Q (?).	0	0	0	2	0	0	0
d. Ramped box marker of plastered-over bricks with one simple cement nisan enclosing a stone. 3/4VN(i)P R ew.	0	0	0	0	1	0	0
e. Ramped box marker of bricks with cement casing. 3/4VP ew.	0	0	0	0	2	0	0
f. Stones arranged into a rectangular marker. 2O(i) ns.	3	0	0	0	0	0	5
g. Cement atop stones arranged into a rectangular marker. 2O(i) 4/5P ns.	1	0	0	0	0	0	0
h. Pile of cobbles. 2 O(ii) ns.	0	0	0	0	1	0	?
i. Standing single stone. 2R.	0	0	0	0	x	0	?
j. Masonry stepped box marker with paired simple *nisan*, under a crude wooden-frame shelter with tin roof. 1KN(i)P ns/7Y.	0	0	0	0	0	1	0
k. Masonry block marker. 1P ns.	1	0	0	0	0	1	?

l. Brick foundation with masonry step. 1/3M(?)P ns.	1	0	0	0	0	0	0
m. Stepped bricks with masonry step, cemented-over, encasing cement slab marker with simple *nisan*. 1/3/4MP 4BN(i)P ns.	1	0	0	0	0	0	0
n. Brick markers. 3P ns.	5	0	0	0	x	2	?
o. Piles of cadged bricks. 3O(ii) ns.	3	0	0	0	0	0	?
p. Marker with old cement over brick. 3/4P ns.	?	0	0	0	x	0	?
q. Sheltered, cemented sepulchre encasing two stepped cement boxes with simple *nisan*. 4IQ/4KN(i)ns:4/7Y.	1	0	0	0	0	0	0
r. Old cement slabbed marker with paired simple *nisan* under wooden shelter. 4FN(i)P ns/7Y.	1	0	0	0	0	0	0
s. Old cement box markers with simple *nisan*. 4C/G N(i)P ns.	x	0	x	0	x (1d)	0	x
t. Old cement cases. 4EP ns.	?	0	0	0	x	0	x
u. Old cement sepulchres encasing old cement box markers with simple *nisan*. 4IQ 4C/GN(i)P ns.	x	0	2	0	0	0	0
v. Modern cement sepulchres encasing lime-plastered cement box markers with simple *nisan*. 5MQ 5CN(i)P ns.	x	0	0	0	0	0	0
w. Modern cement ramped marker. 5V ns.	0	0	0	0	x	0	0
x. Tiled cement, ramped marker. 5/6Vns.	0	0	1	0	0	0	0
y. Modern cement cuboid. 5W ns.	1	0	0	0	0	0	0
z. Miscellaneous modern cement. 5Pns.	x	0	x	0	x	0	x
aa. Sunken earth feature, i.e. a grave as yet unmarked. 8 ns.	1	0	1	0	0	0	?

TABLE F-5B. OTHER CEMETERIES, CHAPTER 8 OF MAIN TEXT (CONT.): NOTES

1n. Two were recorded as "old bricks", one with a stone at the north (3P 2R). Three recorded as more modern bricks: one with a baked-clay, simple *nisan* enclosed by cement *nisan*, 3P 8U(i) 4/5N(i)P; another of a similar style but the baked-clay *nisan* was of a handle style, 3P 8U(iii) 4/5N(i)P.

1q. Makam Kg Barombong. Fabric of sepulchre beneath cement restoration, and contents within the cement boxes, not investigated. Shelter has cement pillars, wooden frame, wooden water buffalo carving at entrance, thatchwork walls and corrugated iron roof.

1r. The venerated grave around 60 metres north of the main graveyard, presumably a restoration of a possibly very old grave.

4c. Possibly a grave style, by analogy with the clearer example at Bonto Tangnga Utara (G.9).

6n. Heavily disturbed through use of the track passing over them.

7f. Immediately north of reportedly looted area; main cemetery lies across the road.

TABLE F-6A. CEMETERIES, CHAPTER 9 OF MAIN TEXT

	---- Saumata Lama (Gowa 30) ----				--Bonto Ramba Tua (Gowa 74)--		
	1. Zones 12 and 36	2. Makam Takbakka	3. Campaga Lomo (Z.1)	4. Private graveyard (Z.27)	5. South graveyard	6. Just north of sunken fields	7. North cemetery
a. Rectangular arrangements of stones. 2 O(i,ii) ns.	51	1	34	0	x	2	0
b. Rectangular arrangements of stones enclosing paired standing stones. 2 O(i)S ns.		6		0		0	0
c. Rectangular stone arrangement enclosing paired sceptre-like iron *nisan*. 2 O(i) 9U(iv)ns.	0	1	0	0	0	0	0
d. Pile of stones and some bricks. 2/3 O(ii) ns.	0	1	0	0	0	0	0
e. Slabbed masonry marker.1BPns.	0	0	5	0	0	0	0

f. Rectangular stone arrangement enclosing slabbed marker with crenulated *nisan* enclosing paired roughly-masoned stones. 2 O(i) 1BN(ii)P 1S ns.	0	0	1	0	0	0	0
g. Slabbed masonry marker enclosing paired standing stones. 1BPS ns.	0	0	2	0	0	0	0
h. Stepped masonry box markers with single or paired, simple *nisan*. 1KN(i)P ns.	0	0	0	0	x	0	6
i. Masonry box markers with simple *nisan*. 1CN(i)P ns.	0	2	0	0	x	0	0
j. Sheltered brick sepulchre encasing three old-cement case-markers with simple *nisan*. 3EQ 4EN(i)P 7/9Y ns.	0	1	0	0	0	0	0
k. Old cement box marker with handle-shaped *nisan*. 4CN(iii)Pns.	0	1	0	0	0	0	0
l. Old cement box marker with simple *nisan*. 4CN(i)P ns.	0	1	107	x	x	0	5
m. Modern cement stepped-case marker with simple or crenulated *nisan*. 5MN(i/ii)P ns.	0	2	|	2	-	0	-
n. Modern cement cases. 5EP ns.	0	0	176	0	-	0	-
o. Miscellaneous modern cement. 5 P/Q ns.	0	0	|	0	x	0	36
p. Modern cement box marker with simple *nisan* under cement shelter with wooden and tin roofing. 5CN(i)P ns: 5/7/9Y.	0	0	1	0	0	0	0
q. Wooden *nisan*. 7P/U ns.	0	0	14	0	?	0	0

TABLE F-6A. CEMETERIES, CHAPTER 9 OF MAIN TEXT (CONT.): NOTES

2d. The grave of the medecine-woman, next to the mosque.

3p. The restoration of the grave of "Karaeng Samata".

4l. These are enclosed within solid cement walls with a triangular prominence along the east wall, as though to take roofing. Apparently a cement-walled tomb in construction, 5X(viii).

TABLE F-6B. CEMETERIES, CHAPTER 9 OF MAIN TEXT (CONT.)

	Beroanging (Gowa 33)							
	1. Small graveyard (Z.1)	2. Cambang Beroanging and family (Z.3)	3.At north of Cambang Beroanging (Z.3)	4.Makam Parang (Z.3)	5.Makam Balang Tonjong (Z.3)	6.Makam Bero-anging (Z.4)	7.Bero-anging Utara (Z.10)	8. Bonto Pakja (G.93)
a. Pile of stones and cement blocks. 2/4O(ii) ns.	0	0	1	0	0	0	0	0
b. Stone pile. 2 O(ii) ns.	0	0	5	6	4	38	0	x
c. Rectangular arrangements of stones. 2 O(i,ii) ns.	3	2	29				15	x
d. Rectangular arrangements of stones enclosing standing stones. 2 O(i) R/S ns.	0	0		0	0	0		?
e. Paired standing stones. 2Sns.	0	0	0	0	0	0	1	x
f. Paired stones inside slabbed masonry marker. 1FP 2S ns.	0	0	0	0	0	1	0	?
g. Slabbed masonry marker. 1B/FP ns.	0	0	1	0	0	1	0	x
h. Paired stones inside restored cement marker. 4/5P 2S ns.	3	0	0	0	0	0	0	0

i. Paired stones inside masonry marker on flat surface of large masonry blocks, within cement modern-style tomb. 1P2Sns/4Y.	0	0	0	0	0	0	0	1
j. Paired stones inside modern cement box-sepulchres with simple *nisan*. 5GN(i)Q 2S ns.	0	2	0	0	0	0	0	0
k. Masonry box markers with simple or peg-like nisan. 1CN(i,v)P ns.	0	3	0	2	0	4	0	0
l. Old cement box markers with simple *nisan*. 4CN(i)P ns.	0	0	0	4	4	8	0	0
m. Box markers of bricks covered with old cement, supplied with simple *nisan*. 3/4 C/G N(i)P ns.	0	7	0	2	0	23	0	0
n. Modern cement boxes and cases, markers and sepulchres, with simple nisan.5C/G E/I N(i)P/Q ns.	0	25 (1c)	0	32	13	42	0	0
o. Modern masonry markers of speckled stone (soapstone?).1Pns.	0	0	0	1	0	5	0	0
p. Wooden nisan. 7U ns.	0	0	0	3	1	5	0	0
q.Earth heap in bamboo corral (not yet permanently marked). 8ns/7Z.	0	0	0	0	0	1	0	0

2j. The sepulchres of Cambang Beroanging and his wife.

2n. One example decorated with a "willow-pattern" plate (1c). All of the *nisan* in rows m and n are strikingly similar, as per the *nisan* of Cambang Beroanging and his wife (Photo 9-13).

8i. The tomb of Karaeng Bonto Pakja (poorly recorded), which includes a rectangle of arranged cobbles marking the burial of Kg Bonto Pakja's companion.

TABLE F-6C. CEMETERIES, CHAPTER 9 OF MAIN TEXT (CONT.)

	1. Kuburan Romang Sapang (G.31.6)	2. Kuburan Romang Polong (G.32.1)	3. Makam Palampang Toa (U.14.2)	4. Makam Daeng Kajenjeng (U.16.1)	5. Makam Kassik Tengah (U.15.3-5)	6. Makam Kassik Utara (U.20.5,11)	7. Kuburan Islam Tamangapa (U.20.1)
a. Paired stones. 2S ew.	0	0	0	0	0	1 (zone 2)	0
b. Cement case-top in locked cement tomb. 5A 1R 7U(v) ew: 7/9X(viii).	0	0	0	0	0	1	0
c. Cement box enclosing fine masonry sceptre-style *nisan* in a cemented-over brick shelter with tin roof. 4GP 1U(iv) ns 3/4/9Y.	0	0	0	1 (Daeng Kajenjeng)	0	0	0
d. Rectangular arrangements of stones. 2 O(i,ii) ns.	30	212	0	0	26	>> 9	12
e. Paired stones. 2S ns.	5	4	0	0	1	1	27
f. Slabbed masonry marker enclosing standing stone. 1BP 2R ns.	1	0	0	0	0	0	0
g. Ridged masonry cases. 1IP ns.	0	1	0	0	0	0	0
h. Ridged masonry case with simple *nisan*. 1IN(i)P ns.	1	1	0	0	0	0	0
i. Slab-sided markers. 1DP ns.	0	0	0	0	0	0	2
j. Masonry box markers. 1CP ns.	1	10	0	2	5	0	0
k. Masonry boxes with simple *nisan*. 1CN(i)P ns.	1	0	7	20	78	0	0
l. Masonry case-top marker. 1AP ns.	0	0	0	1	0	0	0
m. Brick markers. 3P ns.	0	28	0	0	3	0	0

n.Cement box markers enclosing simple masonry *nisan*. 4/5CP 1T/U(i) ns.	0	12	0	2	?	16	5
o. Old cement box markers with simple *nisan*. 4CN(i)P ns.	-	32	0	0	?	20	32
p. Modern cement sepulchral boxes enclosing single or paired stones. 5CN(i)Q 2R/S ns.	0	0	2	0	0	0	0
q. Cement markers. 4/5P ns.	6	-	-	-	124	-	-
r. Modern cement box markers and sepulchres with simple *nisan*. 5 C/G/K N(i) P/Q ns.	-	208	0	3	|	?	?
s. Modern cement markers lacking *nisan*. 5P ns.	-	0	0	0	0	48	-
t. Modern cement markers enclosing wooden *nisan*. 5P 7U ns.	0	0	0	0	0	4	0
u. Wooden *nisan*. 7 P/U ns.	0	36	0	0	9	0	2
v. Modern. 0P ns.	0	-	0	-	-	-	28

5d. Most of these incorporated prominent stones at head and foot. Presumably the same condition also occurred among the 1d and 2d marked graves.

5i and 5l. Restricted to zones 3 and 4 respectively. Zone 3 otherwise had one of the 5d marked graves, and zones 3 and 4 together apparently constituted one of the oldest parts of the cemetery.

5k. 19 of these appeared "old" and 59 appeared "*umum*" (usual).

6b. Makam Karaeng Kassik. Full description: cement case-top enclosing single stone at west, plus two wooden pegs at east and one wooden peg at west concreted into the cement.

6s. As recorded, although the description might have meant without enclosed *nisan*.

7d. 11 of these enclosed stones at head and foot: 2 O(i,ii)S ns.

TABLE F-6D. CEMETERIES, CHAPTER 9 OF MAIN TEXT (CONT.)

	1. Ende (U.21.7)	2. Makam Karaeng Bangkala (U.21.2)	3. Kuburan Islam Bangkala (U.21.1)	4. Bossolok (G.72.2)	5. Makam Karaeng Sabeng (G.45.2)	6. Kuburan Islam Borongloe (G.67)	7. Kabal-lokang (G.70)
a. East-west rectangular arrangement of stones. 2 O(i) ew.	1	0	0	0	0	0	0
b. North-south rectangular arrangement of stones.2 O(i,ii)ns.	4	1	| 129	16	0	| x	x
c. Rectangular stone arrangement enclosing paired stones.2 O(i)S ns.	0	0	|	6	0	|	?
d. Rectangular stone arrangement enclosing wooden *nisan*.2 O(i)7U ns.	0	0	0	1	0	0	0
e. Rectangular stone arrangement enclosing stone on cobble-enclosed square earth heap; wood & tin-roof shelter. 2O(i)R 2O/8Q ns: 7/9Y.	0	1 (Kg Bangkala)	0	0	0	0	0
f. Isolated or paired standing stones. 2R/ Sns.	0	0	21	0	1 (?) (possible S ns)	?	x
g. Paired standing stones inside cemented-over brick box with simple cement nisan, enclosed by brick platform cemented-over, tin-roof shelter. 3/4C4N(i)P 2S ns 3/4p 7/9Y.	0	0	0	0	0 (Kg Sabeng)	0	0
h. Masonry slabbed markers enclosing paired standing stones. 1BPS ns.	0	0	2	0	0	?	?
i. Masonry slabbed markers, some with simple *nisan*. 1BP ns [/U(i)].	0	0	14	0	0	?	x

j. Slabbed masonry marker inside masonry box marker, brick shelter. 1BN(ii,iii)P 1GN(iii)P ns 3Y.	0	0	0	0	0	1 (Karaeng Borongloe III)	0
k. Masonry box markers. 1CP ns.	0	0	9	0	0	?	x
l. Masonry box markers with simple *nisan*. 1CN(i)P ns.	0	0	8	0	0	?	?
m. Stepped masonry box markers with simple *nisan*. 1KN(i)P ns.	0	2	5	0	0	?	0
n. Stepped masonry cases. 1MP ns.	0	0	4	0	0	?	0
o. Masonry cases with ridged top, some with single peg-like nisan. 1IP ns (T[v]).	0	0	0	0	0	x	0
p. Decorated masonry cuboid.1W d,ns.	0	0	1	0	0	0	0
q. Isolated masonry *nisan*. 1T(i).	0	0	1	0	0	?	0
r. Paired masonry *nisan*. 1U(i) ns.	0	0	1	0	0	?	0
s. Old cement box markers with simple *nisan*. 4CN(i)P ns.	0	0	5	0	0	?	0
t. Old-cement stepped case.4MP ns.	0	0	1	0	0	?	0
u. Modern cement markers. 5P ns.	0	0	21	0	0	x	0
v. Wooden *nisan*. 7U ns.	0	0	10	0	0	?	0
w. Earth heap, i.e. not yet permanently marked. 8P ns.	0	0	1	0	0	1 (7Z)	0

6j. Full description: Marker of arranged masonry slabs with crenulated *nisan* and handle-shaped *nisan*, within bordered masonry box marker with crenulated *nisan*, beneath brick shelter (roofing not recorded).

TABLE F-6E. CEMETERIES, CHAPTER 9 OF MAIN TEXT (CONT.)

	1. Makam Borong Parang (G.82.1)	2. Makam Songkolo Asli (G.83.4)	3. Makam Bontona Songkolo (G.86.1)	4. Saukang Boe (G.80.3)	5. Makam Garassik (G.16.1)	6. Makam Pekallak Bua (G.16.4)	7. Dampang (G.77)
a. Asymmetrical case of old cement enclosing rounded boulder at east, inside brick corral. 4EP/2Rew 3Z.	0	0	0	2	0	0	0
b. Single standing stone. 2R.	11	1w	0	0	0	0	1 (4/7/9Y)
c. Paired standing stones. 2Sns.	1	0	0	0	0	62	0
d. Rectangular arrangements of stones. 2 O(i,ii) ns.	28	3w	6a, 118b	0	18	12 (1 "7/9Y 7Z")	0
e. Rectangular stone arrangement enclosing wooden *nisan*. 2 O(i)7U ns.	0	1w	0	0	0	0	0
f. Stone arrangement border enclosing ridged masonry box marker with decorated crenulated *nisan*. 2 O(i) 1GN(ii,d) P ns.	0	0	1a	0	0	0	0
g. East-west slabbed masonry marker with triangular *nisan*. 1BN(i)P ew.	0	0	1a	0	0	0	0
h. Slabbed masonry marker with crenulated *nisan*. 1BN(ii)P ns.	0	0	4a (1d)	0	0	0	0
i. Slabbed masonry marker, decorated with crosses, inside slabbed masonry marker. 1B(d) 1BP ns.	0	0	3a	0	0	0	0
j.Other slabbed masonry markers.1BPns.	0	0	9a	0	0	0	0
k. Masonry box markers. 1 C/G P ns.	5	1w	0	0	2	4	0
l. Slab-sided masonry markers.1DP ns.	1	0	0	0	0	1	0
m. Slab-sided masonry marker with crenulated *nisan*. 1D N(ii)P ns.	0	1w	0	0	0	0	0
n.Paired cylindrical *nisan*.1U(vi) ns.	0	0	0	0	1	0	0

o. Masonry cases with ridged top and usually paired simple *nisan*. 1IN(i)P ns.	123	61e	1a, 91b	0	0	4	0
p. Brick markers. 3P ns.	2	0	0	0	0	0	0
q. Markers of pebbles embedded into an earth matrix. 2/8P ns.	0	93e	0	0	0	0	0
r. Old cement box markers with simple *nisan*. 4 C/G/K N(i)P ns.	13	37e	204b	0	0	93	0
s. Modern cement. 5P ns.	103			0	0	142	0
t. Modern markers. 0P ns.		-	-	0	0	-	x
u. Wooden *nisan*. 7T/U ns.	23	0	0	0	0	16	0
v. Heaped earth marker, i.e. not yet permanently marked. 8P ns.	0	3e	0	0	0	0	0

1o. A wide range of nisan, including faintly crenulated examples (N[ii]) and a circum-incised peg-style (N[v,d]) which we did not record elsewhere.

2. The apparently older marked graves in the western section are suffixed with "w", and the apparently more modern marked graves in the eastern section are suffixed with "e".

3. Graves in the central, elite section of the cemetery are suffixed with "a", and the others with "b".

4a. Makam Karaeng Boe is somewhat more elaborate, with a flat boulder on top of the cement case and two rounded boulders at the east (2R 4EP/2Rew 3Z). These marked graves accentuate the possibility that some number of the similar east-west stone arrangements at Borongloe, Tamarunang Tua, Borong and Saukang Borong could also mark graves.

5d. Western group oriented 330° to 340° from north; eastern group oriented 305° to 320° from north.

5k, 6c, 6k-l and 6o. Generally oriented around 330o from north.

5n. Oriented 315° from north.

6d. Include the sheltered grave, Makam Toa Makni. Generally oriented around 330° from north.

6r, 6s and 6u. Oriented almost precisely north-south, up to 20° from north.

TABLE F-7A. CEMETERIES, CHAPTER 10 OF MAIN TEXT

	1.Palacini Tua (G.54.4)	2.Gentung (G.59)	3.Saile Tua (G.61.2)	-- Pattallassang Tua (G.52) -- 4. Dg Malotteng (Z.20)	5. East, abandoned graveyard near Z.19	6.West graveyard still in use (Z.9 and 10)	(west of Z.10)	-Teamate Asli- 7. On hilltop (G.51.1)	8. Near sawah (G.51.3)	9. Makam Karaeng Talla[2] (G.50.7)
a. Rectangular arrangements of stones. 2 O(i) ns.	9+	18	2+	0	67	82	x (1 "7/9Y")	9	10	0
b. Isolated or paired stones. 2 R/S ns.	0		0	0	0	0	?			1
c. Rectangular arrangements of stones enclosing a single or paired stones. 2 O(i)R/Sns.	0	0	0	0	54	50	x	0	0	10
d. Rectangular arrangements of stones enclosing a wooden nisan.2 O(i) 7T/Uns.	0	0	0	0	0	0	0	0	0	
e. Arranged rectangle of masonry blocks enclosing triangular nisan, under shelter. 1 O(i) T(i) ns: 7/9Y.	0	0	0	1 (Dg Malotteng)	0	0	0	0	0	0
f. Arranged rectangle of masonry blocks. 1 O(i) ns.	0	0	0	1	0	0	0	0	0	0

g. Arranged rectangle of masonry slabs and blocks, enclosing a stone, under shelter. 1 O(i)/B R ns: 7/9Y.	0	0	0	0	0	0	2	0	0	0
h. Masonry slabbed marker enclosing paired standing stones. 1BPS ns.	0	0	0	0	0	0	0	0	0	1
i. Masonry slabbed markers. 1BP ns.	0	0	0	0	0	0	0	0	0	2
j. Masonry box markers with simple nisan. 1CPN(i) ns.	0	0	0	0	0	0	0	0	0	1
k. Brick box sepulchre crowned by a brick box marker enclosing simple masonry nisan. 3GQ 3CP 1N(i) ns.	0	0	0	0	0	0	1	0	0	0
l. Cement markers with simple nisan. 4/5PN(i) ns.	0	0	0	0	4	19	x	0	0	0
m. Wooden nisan.7P/U ns.	0	0	0	0	0	1	?	0	0	0

5. Only half of the area of this graveyard was sufficiently untramelled by regrowth for inventorisation.

7g. The conjoined, marked graves of Tetta Rulcha and Tetta Rulcha and Tetta Bolong.

9i. Include the grave of Karaeng Talla-Talla.

TABLE F-7B. CEMETERIES, CHAPTER 10 OF MAIN TEXT

	1.Makam Karaeng Tassili (G.48.2)	2.Makam Ganrang Jawa (G.49.11) North body	2.Makam Ganrang Jawa (G.49.11) South extension	3.Makam Sawagi (G.51.5)	--- Paccellekang Lama --- 4.Makam Paccel-lekang (G.57.1)	5.Unnamed graveyard (G.57.5)	6.Unnamed graveyard (G.57.6)	-- Pabundukang Tua -- 7.Makam Pabun-dukang (G.58.2)	8.Other graves (G.58.3,5 8;sawah)
a. East-west masonry box marker with simple nisan enclosing paired stones. 1 CN(i) 2S ew.	1	0	0	0	0	0	0	0	0
b. Paired standing stones inside rectangular arrangement of large old bricks, side by side under wooden shelter with tin roof. 2Sns/3 O(i): 7/9Y.	2	0	0	0	0	0	0	0	0
c. Other pairs of standing stones. 2S ns.	0	0	0	6	4	0	2	0	0
d.Isolated standing stones.2R.	0	1	1	0	0	0	0	0	0
e. East-west rectangles of arranged stones. 2 O(i)ew.	0	0	0	0	1	0	1	2?	0
f. Rectangular stone arrangement under wooden shelter with tin roof.2 O(ii)ns:7/9Y.	1	0	0	0	0	0	0	0	0
g. Rectangular stone arrangements enclosing one or paired standing stones.2 O(i)R/S ns.	66	19	5	110	48	8	4	42	x
h. Other rectangular stone arrangements. 2 O(i) ns.						0	0	0	0
i. Stone arrangements over grave with one or paired standing stones.2 O(ii)R/Sns.	47	7	0		0	0	0	0	0

j. Other stone arrangements covering grave. 2 O(ii) ns.	77	7	4		0	0	0	6	x
k. Isolated masonry staff-like *nisan*. 1T (vi).	0	0	0	0	0	0	0	0	1
l.Slabbed masonry marker with a masonry staff-like *nisan* under shelter.1BPT(vi) ns/7Y.	0	0	0	0	0	0	0	0	1
m. Slabbed masonry marker enclosing rectangular stone arrangement and two large headstones. 1BP 2O(i) ns 2R.	0	0	0	0	1	0	0	0	0
n. Slabbed masonry markers. 1BP ns.	6	0	0	0	0	0	0	0	0
o. Masonry box markers with simple *nisan*. 1CPN(i) ns.	0	0	0	5	0	0	0	10	0
p. Small masonry case marker enclosing single headstone. 1EP 2R ns.	0	1	0	0	0	0	0	0	0
q. Ridge-topped masonry case enclosing two simple cement *nisan*. 1IP 5U(i) ns.	0	0	0	2	0	0	0	0	0
r.Arrangement of loose bricks covering grave. 3 O(ii) ns.	0	0	0	1	0	0	0	0	0
s.Painted carved wooden *nisan* under carved wooden shelter with tin roof inside corral of arranged stones. 7T(vi)d:7(d)/9Y;2Z.	0	0	0	1 (Jerak Lompo)	0	0	0	0	0

TABLE F-7B. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.)

		--- Paccellekang Lama ---					-- Pabundukang Tua --		
	1.Makam Karaeng Tassili (G.48.2)	2.Makam Ganrang Jawa (G.49.11) North body	South extension	3.Makam Sawagi (G.51.5)	4.Makam Paccel-lekang (G.57.1)	5.Unnamed graveyard (G.57.5)	6.Unnamed graveyard (G.57.6)	7.Makam Pabun-dukang (G.58.2)	8.Other graves (G.58.3,5 8;sawah)
t. Raised earth feature with rectangular stone arrangement enclosing peg nisan, one of wood and one of masonry. 8P/20(i) 1/7U(v) ns: 7/9Y.	1	0	0	0	0	0	0	0	0
u. Other wooden nisan. 7 T/U.	x	2	0	1	6	0	0	0	1
v. Brick sepulchres. 3Q.	1	0	0	4	0	0	0	0	0
w. Brick marker with simple, cement nisan. 3P 5N(i) ns.	0	0	0	0	0	0	0	3	0
x. Brick marker covered with old cement. 3/4P ns.	0	1	0	2	0	0	0	0	0
y. Other old cement stepped box markers with simple nisan. 4KP N(i) ns.	20	0	0	22	9	0	0	32	0
z. New cement stepped boxes with simple nisan.5KPN(i)ns.	19	6	1	17	26	0	0	6	0
aa.Raised earth feature.8Pns.	-	1	0	0	0	0	0	0	0

1b. Karaeng Tassili and his wife. 1f. Daeng Tallo. 1t. Under same shelter with Daeng Tallo.

1 and 2. Probably further examples, beyond those accounted for here, hidden among the regrowth.

3q. One of these, ascribed to Daeng Sekre, is reportedly the oldest grave here, but does not look particularly old.

4e and 5e. Only the due east-west example is counted here, although five others were closer to an east-west than to a north-south orientation.

4m. Reportedly the oldest grave here, ascribed to an unknown karaeng (Photo 10-18).

8u. Paired metre-high posts under a wooden shelter. 7U(vi) 7Y ns.

TABLE F-7C. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.)

				----- Balang Sari/Pattiro Tua (Gowa 63) -----			
	1. Lamuru (G.46.3)	2. Makam Tua Lamuru (G.47)	3. Bonto Sunggu (G.55.11)	4. Makam Pallapa Barambang (G.63.3)	5. Makam Pattiro (around zone 12)	6. Northeast graves (near zone 6)	7. North graves (G.63.15)	8. North-west graves (G.63.7)
a. East-west rectangle of arranged stones covering grave. 2 O(ii) ew.	0	0	0	1	0	0	0	0
b. Other stone arrangements covering grave. 2 O(ii) ns.	0	4	0	0	0	0	0	0
c. East-west rectangles of arranged stones. 2 O(i) ew.	0	0	0	0	2	0	0	0
d. Simple rectangles of arranged stones. 2 O(i) ns.	2	7	5	0	7	0	0	12
e. Rectangles of arranged stones enclosing standing stones. 2 O(i) S ns.	0	0	0	0	56	0	0	1

TABLE F-7C. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.)

	1. Lamuru (G.46.3)	2. Makam Tua Lamuru (G.47)	3. Bonto Sunggu (G.55.11)	4. Makam Pallapa Barambang (G.63.3)	Balang Sari/Pattiro Tua (Gowa 63) 5. Makam Pattiro (around zone 12)	6. Northeast graves (near zone 6)	7. North graves (G.63.15)	8. North-west graves (G.63.7)
f. Arranged stone rectangles enclosing simple masonry *nisan*. 2 O(i) 1T/U(i) ns.	0	1	0	0	3	0	0	12
g. Arranged stone rectangles enclosing standing stone and wooden *nisan*. 2 O(i)S/7T ns.	0	0	0	0	9	0	0	0
h. Arranged stone rectangles enclosing wooden *nisan*. 2 O(i) 7T/U ns.	0	0	0	0	2	0	0	0
i.2R/2 O(i) 1U(i) ns/ 2p: 7/9Y: 3X(ix).	0	0	0	1 (2 graves)	0	0	0	0
j. Arranged stone rectangles inside modern cement sepulchre. 2 O(i) ns/5Q.	0	1 (2 graves)	0	0	0	0	0	0
k.Arranged rectangle of stone and bricks enclosing pair of old cement *nisan* with standing stones. 2 O(i) 2S/4U(i) ns/Y.	0	1 (Makam Takba)	0	0	0	0	0	0
l. Square stone arrangement enclosing three east-west isolated or paired standing stones. 2 O(i) 2 R/S ew.	0	1	0	0	0	0	0	0
m.Isolated standing stones.2R.	0	3	0	0	14	0	0	0

n.Paired standing stones.2Sns.	0	1	0	0	7	x	1	3
o.Rectangles of arranged rough masonry cuboid blocks. 10(i)ns.	0	0	0	0	0	x	12	0
p. Isolated simple triangular *nisan* facing east. 1T(i) ew.	0	1 (3Z)	0	0	1	0	0	0
q. Masonry marker with simple *nisan*. 1PN(i) ns.	0	2 (1 "/2R")	0	0	0	0	0	0
r.Sheltered old cement marker with simple *nisan*, enclosing standing headstone.4PN(i)R ns.	0	1 ("Somba Garassik")	0	0	0	0	0	0
s. Old cement marker with simple *nisan*. 4PN(i) ns.	0	8 (1 Y)	0	0	1	0	0	0
t. Modern cement marker enclosing standing stones. 5P 2S ns.	0	2	1	0	0	0	0	0
u. Other modern cement. 5Pns.	2	4	0	0	22	0	0	0
v. Wooden *nisan*. 7T/U ns.	0	5 (1 "7Z")	0	0	2	0	0	0
w. Modern masonry marker, painted. 1 P ns/p.	0	1	0	0	0	0	0	0

1d and 1u. Family of our informant in Lamuru; grave types respectively dated to middle 1960s and late 1970s.

4i. Makam Parappa Barambang. Large stone inside one of two arranged stone rectangles (the wife's) which enclose roughly masoned triangular *nisan*, surrounding by platform of laid stones, protected by tomb with modern brick walls and tin roof supported by a wooden frame attached to the inside walls.

5p. Actually on the road to the northwest of Makam Pattiro.

TABLE F-7D. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.)

	1.Makam Moncong-Moncong (G.56.1)	2.Makam Bangkala Tua (G.65.2)	3.Makam Bangkala Baru (G.65.3)	4.Makam Biring Balang (G.64.4)	5.Makam Bado-Bado Tua (G.68.3)	6.Makam Parang Bambe (G.68.4)	7.Kg Jeknek Madinging (G.73)	8.Man-ggala Tua (U.17)	9.Makam Patadang Toa (G.81)	10.Makam Tua Embung (G.94)
a. Brick and cement box markers with simple *nisan*, in brick house-like tomb.	2	0	0	0	0	0	0	0	0	0
b. Standing stone at north inside masonry box marker with spiky triangular *nisan*; within cement tomb with tin roof. 1CPN(ii)2R; 5/7/9P X(viii)	0	0	0	0	0	0	2	0	0	0
c. Brick tomb with cement floor and tin roof (grave undescribed).3/5/9X(viii).	0	0	0	0	0	0	0	0	1	0
d. Rectangular stone arrangement enclosing staff-like *nisan*, within bamboo shelter. 2 O(i) T(vi) ns/7Y.	0	0	0	0	0	0	0	0	1	0
e. Rectangular stone arrangements enclosing standing stones. 2 O(i,ii) R/S ns.	100 (1 "7Z")	0	0	8	| | | |	11	0	| | x |	x	x
f.Other rectangular stone arrangements.2 O(i,ii)ns.	97	0	8	18	19 | |	7	0	|	x	x
g. Isolated standing stones. 2R.	0	0	1	5	|	0	0	0	?	?
h. Paired standing stones. 2S ns.	0	0	0	0	0	0	0	x	?	?

i. Rectangular arrangements of masonry slabs and cuboid blocks.1O(i)ns.	0	127	0	0	0	0	0	0	0	0
j. Slabbed masonry markers. 1BP ns.	0	12	0	5	0	3	0	0	x	?
k.Rectangular arrangements of masonry blocks with simple triangular *nisan*. 1BP N(i) ns.	0	7	0	3	0	4	0	0	x	?
l.Masonry box markers with simple *nisan*. 1CPN(i) ns.	0	3	4	1	0	1	0	x	x	x
m. Masonry box markers with spiky triangular *nisan*. 1CPN(ii) ns.	0	0	0	0	0	0	0	0	0	2
n. Masonry box markers with tablet-like *nisan*. 1CPN(v) ns.	0	0	0	0	0	0	0	0	0	2
o. Old cement case marker. 4EP ns.	0	0	1	0	0	0	0	0	0	?
p. Old cement box markers with simple *nisan*. 4CPN(i)ns.	14	0	1	10	0	6	0	0	0	x
q. Modern cement markers. 5P ns.	28	0	2	2	0	16	0	0	0	x
r. Wooden *nisan*. 7T/U ns.	5	0	1	0	0	0	0	0	0	x

1a. The graves of associated with Moncong-Moncong's former boss. Full description of his grave: peg-like masonry *nisan* with grooved top and surrounding stones enclosed at north of stone arrangement within brick-and-mortar box marker with cement top surfaces and simple cement *nisan*, surrounded by platform of bricks arranged flat, inside brick tomb enclosing wooden frame supporting tin roof. 2R/1T(vi,d) 3/5GP 5N(i) 3p ns: 3/7/9Y. Accompanying grave lacks headstone, i.e. 3/5GP 5N(i) 3p ns: 3/7/9Y.

2i. Some of these comprise both inner and outer arranged rectangles.

7b. Makam Karaeng Jeknek Madinging. 9c. Makam Karaeng Patadang.

TABLE F-7E. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.) - MONCONGLOE LAPPARA (MAROS 5)

	1. South group, zone 5	2. Other graves, zone 5	3. Graves west of zone 5	4. Zone 38	5. Zone 21	6. Graves west of zone 21	7. Zone 42	8. South of zone 24
a. Octagonal mosque-like tomb. X(vi).	0	1	0	0	0	0	0	0
b. Paired peg-like masonry *nisan* inside modern cement box markers with crenulated *nisan*, under new cement shelter with tin roof and platform of large bricks. 5CN(ii)P 1U(v) ns: 3p: 5/9 Y.	0	1 (2 graves)	0	0	0	0	0	0
c. Paired peg-like masonry *nisan* circumscribed with cord marks, inside modern cement box marker with stepped *nisan*, under new cement shelter with tin roof and cobble platform. 5CN(i)P 1U(iv,d) ns: 1p: 5/9Y.	0	1	0	0	0	0	0	0
d. Paired peg-like masonry *nisan* in wooden shelter with tin roof. 1U(v) ns: 7/9Y.	0	0	0	0	0	1	0	0
e. Masonry stepped box markers with paired knobbly triangular *nisan*. 1 KPN(ii) ns.	7	0	0	0	0	0	0	0
f. Masonry box markers with wavey triangular *nisan*.1 C/GPN (ii) ns.	4	0	0	0	0	0	0	1
g. Masonry box markers with simple *nisan*. 1 CPN(i) ns.	0	5	48	0	0	1	0	10

h. Masonry box marker surrounded by rectangular arrangement of rough masonry blocks. 1 O(i)CP ns.	1	0	0	0	0	0	0	0
i.Other masonry box markers.1CPns.	5	0	0	0	0	0	0	0
j. Masonry slab-sided marker with simple *nisan*.1 DPN(i) ns.	1	0	0	1	0	0	0	0
k.Masonry slab-sided marker.1DPns.	5	0	0	0	1	4	0	6
l. Masonry slabbed markers with peg-like *nisan*. 1BPN(v) ns.	6	9	1	0	0	0	0	5
m. Masonry slabbed marker.1BP ns.	0	3	0	0	0	0	0	0
n. Isolated masonry tablet *nisan*. 1T(v)ns.	1	0	0	0	0	0	0	1
p. Paired masonry *nisan*. 1Uns.	0	0	0	0	0	0	0	1
q. Rectangles of arranged stones and masonry slabs on side. 1DP/2O(i) ns.	4	0	0	0	0	0	0	0
r. Rectangular stone arrangements. 2 O(i) ns.	0	14	0	0	3	10	7	6
s. Stone arrangment enclosing standing stones. 2 O(ii) R ns.	0	1	0	0	0		0	0
t. Stone piles. 2 O(ii) ns.	1	0	0	4	0		0	0
u. Isolated standing stone. 2R.	0	2	1		0		0	1

TABLE F-7E. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.) - MONCONGLOE LAPPARA (MAROS 5)

	1. South group, zone 5	2. Other graves, zone 5	3. Graves west of zone 5	4. Zone 38	5. Zone 21	6. Graves west of zone 21	7. Zone 42	8. South of zone 24
v. Old cement marker enclosing paired standing stones. 4P 2S ns.	0	2	1	0	0	0	0	0
w. Old cement sepulchre topped by cement box marker with stepped nisan. 4Q 4CPN(i) ns.	0	0	1	0	0	0	0	0
x. Marker of old cement over bricks with simple nisan of new cement. 3/4P 5N(i) ns.	0	0	2	0	0	0	0	1
y. Old cement marker with simple nisan. 4P N(i) ns.	0	0	0	0	0	0	0	1
z.Modern cement markers.5PN(i)ns.	0	7 (3 "7Z")	3	0	0	0	0	17
aa. Raised earth feature. 8 ns.	0	0	1	0	0	0	0	1
bb. Wooden nisan. 7T/U.	0	0	1 (7U/8 ns)	0	0	0	0	3

1e. "Elite graves" as shown on site map (Figure 10-28). One case is also T(iv).

1f. These fall in a straight line due east of the "elite graves".

2a. Makam Karaeng Moncongloe. Contents not inspected as tomb is kept under lock and key.

6. The cemetery is heavily overgrown and further marked graves are probably present.

TABLE F-7F. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.)

	Manyempang Toa			-- Makam Diccekang (M.6) --			
	1. North graveyard (M.3.4)	2. South graveyard (M.3.1)	3. Makam Balang Patti (M.4)	4. West graveyard	5. Central graveyard	6. East graveyard	7. Moncong-loe Bulu (M.5.2)
a. East-west box marker made of positioned masonry slabs. 1CP ew.	1	0	0	0	0	0	0
b. Masonry box markers with paired spiky or undulating triangular *nisan*. 1 CPN(ii) ns.	14	3	6	0	1	0	0
c. Masonry box marker with paired simple *nisan* enclosing paired sceptre-like *nisan*. 1CPN(i)U(iv) ns.	1	0	0	0	0	0	0
d. Masonry box markers with simple *nisan*. 1CPN(i) ns.	21	2	26	1	5	0	0
e.Stepped masonry box marker enclosing paired standing stones. 1KP 2S ns.	1	0	0	0	0	0	0
f. Stepped masonry box marker with simple *nisan*. 1 KPN(i) ns.	0	1	0	0	0	0	0
g. Other masonry box markers, 1CP ns.	0	11 (7*)	5*	0	0	0	0
h. Masonry slab-sided marker with simple *nisan*. 1DPN(i) ns.	1*	0	0	0	0	0	0
i. Masonry slab-sided marker enclosing standing stone at south. 1DP 2R ns.	1	0	0	0	1	0	0
j. Masonry slab-sided marker. 1DP ns.	9	10 (1*)	0	0	0	0	0

TABLE F-7F. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.)

	Manyempang Toa			-- Makam Diccekang (M.6) --			
	1. North graveyard (M.3.4)	2. South graveyard (M.3.1)	3. Makam Balang Patti (M.4)	4. West graveyard	5. Central graveyard	6. East graveyard	7. Moncong-loe Bulu (M.5.2)
k. Slabbed masonry markers 1BP ns.	12 (10*)	2	45	0	1*	0	0
l. Masonry case made from single block. 1EP ns.	2	0	0	0	0	0	0
m. Stones and masonry blocks arranged into a rectangle. 1/2 O(i) ns.	2	2	0	2*	1	0	0
n. Masonry box marker with simple nisan, enclosed by rectangular stone arrangement. 2 O(i) 1CPN(i) ns.	0	0	0	0	1	0	0
o. Paired standing stones enclosed by rectangular stone arrangement. 2O(i)Sns.	1	2	12	7	26	0	x
p. Rectangular stone arrangements. 2 O(i) ns.	19 (1*)	3		16	52 (3*)	5	x
q. Stone splatter. 2 O(ii).	0	1		0	0	0	0
r. Isolated standing stones. 2R ns.	4 (2*)	1*		0	0	1	0
s. Paired standing stones. 2S ns.	0	0	0	0	0	0	x
t. Paired standing stones inside old cement box marker with simple nisan, in shelter with cemented-over brick 4CPN(i) 2S ns: 3/4/7/9 Y.	1	0	0	0	0	0	0

u. North standing stone inside old cement box marker with stepped *nisan*, in shelter with wooden frame, tin walls, wooden frame and tin roof. roof and cemented-over brick floor. 4CPN(i) 2S ns: 7/9 Y: 3/4p.	1	0	1	0	0	0	0
v. Stacked bricks. 3 O(ii) ns.	0	0	0	0	1	0	0
w. Modern cement. 5P ns.	6	0	7	1	20	0	0
x. Wooden *nisan*. 7T/U.	0	0	7	3	3	3	0
y. Raised earth feature in bamboo corral. 8P 7Z ns.	0	0	0	0	2	0	0

*. Designates cases recorded as made from limestone.

2b. One of these has the spiky *nisan* only at the north.

3u. Actually, the manufacture of the shelter is undescribed by my notes, but the style of marked grave fits the description.

4w. Bears the date 1978.

5k and 5p. *Nenek moyang* graves, side-by-side in a shelter with walls of old cement and bricks, wooden frame and corrugated iron roof (3/4/7/9 Y).

5o. Include the marked grave under the *saukang*.

TABLE F-8a. CEMETERIES, CHAPTER 11 OF MAIN TEXT

	Benteng Somba Opu			Kaccia Lama (UP4)			----- Bonto Lakja -----		
	1. G.3.1	2. Near mosque	3.Makam Sarombe (G.3.3)	4. South	5. North	6. Bayoa (UP7)	7.Makam Umum (G.62.1)	8.Makam Nenek moyang (G.62.8)	9. Tuan Said (G.62.12)
a. Cement box marker with tablet *nisan* enclosing stone at north, under tin-roofed cement shelter with brick floor.5CPN(v)R:3/7/9X(viii)ns.	1	0	0	0	0	0	0	0	0
b. Masonry slab-sided sepulchre enclosing paired blocky "tablet" *nisan*. 1HQ U(v) ns.	0	1	0	0	0	0	0	0	0
c. Stone arrangement at north of rectangular arrangement of bricks under tin shelter on a brick platform. 2R 3O(i) ns/9Y/3p.	0	0	0	1	0	0	0	0	0
d.Standing stone at north of casetop silhouette within brick arrangement under bamboo shelter on a brick platform. 2R 3A/O(ii) ns/7Y/3p.	0	0	0	1	0	0	0	0	1 (Tuan Said)
e. Bas-relief incised slab-sided marker with carved crenulated *nisan* enclosing paired standing stones. 1D(d)N(ii,d)P 1S; 3p ns.	0	0	0	1	0	0	0	0	0
f. Cement stepped box-marker with winged *nisan* enclosing opposed handle-shaped and crenulated masonry *nisan*. 5KN(i)P 1U(ii[d],iii[d])/3p ns.	0	0	0	1	0	0	0	0	0
g. Paired masonry staff-like *nisan*. 1U(v)/3p ns.	0	0	0	1	0	0	0	0	0
h. Masonry slabbed markers. 1BP ns.	0	0	0	1 (3p)	?	0	0	0	1
i. Masonry case markers. 1EP ns.	0	0	0	?	x	0	0	0	6 (4 are 3p)

j. Single stones at north or south on a brick platform. 2R ns/3p.	0	0	0	0	0	0	0	5	0
k. Masonry box markers. 1CP ns.	0	0	0	?	x	0	0	0	1
l. Masonry box markers with simple *nisan*. 1CPN(i) ns.	0	0	0	x	x	0	30	4	21
m. Paired carved masonry staff-like *nisan*. 1U(v,d) ns.	0	0	0	0	0	0	1	0	0
n. Paired standing stones. 2S ns.	0	0	0	?	?	0	13	1	0
o. Paired standing stones inside cement markers. 2S 4P ns.	0	0	0	0	0	0	2	0	0
p. Piles of brick. 3O(ii) ns.	0	0	0	?	?	0	4	1	0
q. Cement-plastered brick marker with simple *nisan*. 3/5PN(i) ns.	0	0	0	0	0	0	1	0	0
r. Old cement case marker. 4EP ns.	0	-	0	?	?	0	0	1	0
s. Old cement box markers with simple *nisan*. 4PN(i) ns.	0	-	x	x	x	0	29	17	11
t. New cement box markers with simple *nisan*. 5PN(i) ns.	0	-	x	x	x	0	17	5	1
u. Cement marked graves. 4/5P ns.	0	1	-	-	-	0	-	-	-
v. Paired upright wood *nisan*. 7U ns.	0	0	?	?	?	1	13	13	5

1a and 2b. Marked graves possibly associated with Ralle Dg Paikak and Dg Manarai Kg Mamampang.

4c, e to h. Together at the north of the cemetery on a raised brick terrace (3p).

7m. Reportedly the grave of the dukun (medecine-person) and the oldest grave here, but not dated really.

7o. Cement enclosures inscribed with the dates 1949 and 1956.

8j. Makam Patta Sakga.

9i. The four specimens tagged 3p are on the same brick platform with Tuan Said.

TABLE F-8B. CEMETERIES, CHAPTER 11 OF MAIN TEXT (CONT.)

	1. Benteng Garassik (G.5.16)	2. Bayoa 1 (U.1.22)	3. Paknak-kukang (U.2.4)	4. Makam Kg Papok (U.9.2)	5. Makam Bilaya (G.11.1)	6. Makam Tangaya (U.3.7)	7. Makam Barombong (U.3.2)
a. East-west directed masonry slabbed marker. 1BP ew.	0	1	0	0	0	0	0
b. East-west directed masonry box markers with thickened edges. 1GP ew.	0	2	0	0	0	0	0
c. Tiled cement box marker, enclosing masonry peg-like *nisan* circumscribed with cord mark, in modern cement tomb. 5/6CP 1U(v,d) 5X(viii) ns.	0	0	1	0	0	0	0
d. Tiled cement box marker enclosing arranged stones in modern cement tomb. 5/6C 2R/S 5X(viii) ns.	0	0	1	0	0	0	0
e. Modern cement box marker with wide sloping skirtings enclosing paired masonry peg-like *nisan*, in a bamboo shelter with one tin wall and a tin roof. 5GP 1U(v): 7/9Y ns.	0	0	1	0	0	0	0
f. Old cement (1928) stepped box marker with simple *nisan* enclosing wooden staff *nisan* on brick platform under tin shelter. 4GN(i)P 7T(v,d) 9Y/3p ns.	0	0	0	1	0	0	0
g. Old cement (1928) stepped box marker with simple *nisan* enclosing wood sceptre *nisan*, but excluding wooden handle-shaped *nisan*, on brick platform under tin shelter.4GN(i)P 7U(iii,iv,d) 9Y/3p ns.	0	0	0	1	0	0	0
h. Masonry box marker with simple *nisan* enclosing stone at north, under skeletal wooden shelter with tin roof. 1CN(i)P 2R ns: 7/9Y.	1	0	0	0	0	0	0

i. Paired stones enclosed by old cement case marker with simple *nisan*, enclosed by platform of arranged bricks, enclosed by brick and cement corral, under skeletal wooden shelter with tin roof. 4EN(i)P 2S ns:3p:3/4Z:7/9Y.	1	0	0	0	0	0	0
j. Masonry sceptre-like *nisan* in stone arrangement on brick platform under shelter with cement-plastered brick footings, bamboo frame and tin roof. 2 O(i) T(iv) 3p 3/4/7/9Y ns.	0	0	0	0	1	0	0
k. Cement stepped box marker with wavey *nisan* enclosing standing stone at north, under thatch shelter with tin roof. (Makam Salekowa). 5KN(i)P 2R 7/9Y ns.	0	0	0	0	0	0	1
l. Masonry case markers. 1EP ns.	0	0	0	0	x	0	0
m. Masonry case markers with crenulated *nisan*. 1EP N(ii) ns.	0	0	0	0	x	0	0
n. Masonry box marker with crenulated *nisan*. 1CN(ii)P ns.	0	0	0	0	0	0	1
o. Marker enclosing masonry peg *nisan*. P 1N(v) ns.	0	0	0	0	1	0	0
p. Rectangular arrangements of bricks. 3 O(i) ns.	0	x	?	0	1	0	?
q. Cement markers with simple *nisan*. 4/5P N(i) ns.	0	x	x	0	x	x	x

3c and 3d: the marked graves of the "man from London" and his wife, respectively. 3e: the grave of the former "owner" of unremembered name.

TABLE F-8c. CEMETERIES, CHAPTER 11 OF MAIN TEXT (CONT.)

	1.Makam Bontoa (UP26)	2.Aengtoa (T.2)	3.Karama (T.34)	4.Jonggoa Batu-Batu (T.5)	5.Summanak (T.33)	Pakkala Toa 6.Barat (T.4.5)	Pakkala Toa 7.Timur (T.4.1)
a. Paired standing stones oriented east-west. 2S ew.	0	0	0	1	0	0	1
b. Masonry box marker oriented east-west. 1CP ew.	0	0	0	0	0	1	0
c. Masonry stepped box with simple *nisan* enclosing standing stone, in bamboo corral. 1KN(i)P 2R 7Z ns.	1	0	0	0	0	0	0
d. Masonry box marker with simple *nisan* enclosing standing stone, skirted by slabs. 1GN(i)P 2R ns.	1	0	0	0	0	0	0
e. Other masonry box markers with simple *nisan*. 1CN(i)P ns.	x	x	0	x	x	0	0
f. Masonry stepped box markers lacking *nisan*. 1KP ns.	?	?	x	x	x	0	0
g. Other masonry box markers lacking *nisan*. 1CP ns.	?	?	x	x	?	x	0
h. Masonry slabbed markers lacking *nisan*. 1BP ns.	?	x	x	x	x	x	0
i. Sceptre-like *nisan*. 1T/U (iv).	1	?	0	0	?	0	0
j. Isolated and paired simple masonry *nisan*. 1T/U(i) ns.	x	x	?	?	x	0	0
k. Masonry slabbed marker with some arranged bricks. 1C/3O P ns.	0	0	0	0	0	x	0
l. Brick sepulchre beneath wooden shelter with tin roof. 3Q 7/9Y ns.	0	1	0	0	0	0	0
m.Modern and cement brick corral.3/5Z.	0	0	0	1	0	0	0

n. Cement markers with simple *nisan*. 4/5P N(i) ns.	x	x	x	x	x	0	0
o. Modern cement box markers with simple *nisan* inside bamboo picket corral. 5CN(i)P 7Z ns.	0	x	0	0	0	0	0
p. Wooden *nisan*. 7N(i) ns.	?	?	?	x	0	x	0

TABLE F-9. OTHER CEMETERIES, BENTENG TALLOK (CHAPTER 12)

	1. Makam Tallok Lama	2. Makam Takbakka	3. Makam Mangara Bombang	4. West	Makam Bunting Berua 5. Central	6. Bastion	7.East
a. Box marker of masonry blocks enclosing masonry dollop-shaped *nisan*, under tin shelter. 1BPN(vii) ns 7/9Y.	1	0	0	0	0	0	0
b. Slab-sided masonry marker with crenulated *nisan* enclosing handle-shaped masonry *nisan*, under wood and tin shelter with platform of masonry blocks. 1DPN(ii) 1T(iii) ns 7/9Y 1p.	0	1 (Makam Takbakka)	0	0	0	0	0
c. Masonry slab-sided markers. 1DP ns.	0	| 5	| 12 (2 are 7/9Y)	| 5	| 2	| 5	0
d. Masonry box markers. 1 CP ns.	0	|		|	|	|	0
e. Stepped masonry cases. 1MP ns.	0	0	0	0	0	2	0
f. Bevelled masonry box marker with coarse simple nisan. 1GPN(i) ns.	0	0	0	0	0	1	0
e. Masonry box markers with crenulated *nisan*. 1CPN(ii) ns.	0	0	0	0	0	13	1
f. Masonry box markers with simple *nisan*. 1CPN(i) ns.	0	0	0	0	0	6	2
e. Cement marked graves. 4/5 P ns.	0	| 50	x	| 10	0	0	0
f. Wooden paired *nisan*. 7 U(i) ns.	0	|	x	|	0	0	0

APPENDIX G. IRON FRAGMENTS, COINS AND STONE ARTEFACTS

This appendix lists the iron fragments, coins and flaked stone artefacts recorded at the Gowa-Tallok sites described in Chapters 6 to 12. The captions to the associated photographs (Photos G-1 to G-12) describe the three stone hatchets, two fragments from polished stone tools, and the hammerstone recorded at the Gowa-Tallok sites, as well as the polished stone adze which was found independently of SSPHAP's survey at a Gowa-Tallok site (Maccinik Sombala). The remaining two polished stone artefacts (a disc with a hole, and two rim fragments from a stone box), the three bronze pieces, two stone pestles and one stone mortar (*lesung batu*) also found at the Gowa-Tallok sites are described in Chapters 6 to 12 or depicted in the associated photographs.

G.1 Iron Fragments

G.1.138.9	Iron fragment (no further described)
G.6.3.1	Modern painted iron fragment
G.29.11.6	Modern iron spike
G.31.1	Iron fragment (no further described)
G.62.4.1	Pierced iron disc (diameter 26.5 mm)
G.64.5	Modern iron fragment
G.67.12	Garden fork tooth fragment
M.2.30.9	Modern iron pot fragment
M.2.33	Two iron fragments (no further described)
U.2.9	Two modern iron fragments
U.22.10	Iron fragment (no further described)
T.2.2.8-9	Iron slag (joining fragments)

G.2 Coins

G.1.108.79	Coin dated 1970
G.30.17	Coin (no further described)

G.48.2.2	Netherlands India coin
G.49.1.5	Copper coin, early 1900s?
G.51.2.6	Netherlands India coin
G.52.1.2	Netherlands India coin dated 1914
G.52.1.3	Copper coin dated 189x (?)
G.68.1	Coin (no further described)
G.72.5	Coin (no further described)
G.74.1.4	Netherlands India coin
M.2.40.1	Coin dated 1952
U.3.5	5 rupiah coin dated 1970
U.14.1	Coin (no further described)
T.2.4.5	Netherlands India coin dated 1819

G.3 Flaked Stone Artefacts

Only a small proportion of the flaked stone artefacts collected during SSPHAP's survey were brought back to Canberra. The rest were drawn in Ujung Pandang by Iwan Sumantri, and students in archaeology Agustiawan, Budianto H., Andi Said Cam, and Alam, all with the Department of Archaeology, Hasanuddin University. I also described the artefacts according to the categories used by Chapman (1981, 1986).

As the records on the artefacts are quite detailed, it is possible to classify them into the categories currently recognised by most Australian archaeologists (e.g. Hiscock, 1989), as I have used myself in consultancies (Bulbeck and Boot, 1990a, 1990b, 1991). Current definitions of artefact measurements, notably the use of flake length to refer to the length along the axis of flake detachment, can also be applied. However, no attempt will be made to include usewear.

The descriptions which follow include the type of stone used. Although there are undoubtedly errors in these determinations, especially as I generally have to rely on my notes made in Ujung Pandang, the broad indications (e.g.

stone used would probably also be correctly identified. The colour of the stone is given as the Munsell name of the main colour found on the flaked surfaces. Cortex colours, and colour variations on flaked surfaces, were recorded but are not included here. The presence of cortex on the artefact is indicated by "Yes" in the column headed "Cortex?". In addition, all measurements are given in mm, and the weights are given in grams.

The last column includes additional information on cases of apparent phytolith gloss (cf. Chapman, 1986) or possible usewear; observations of broken artefacts; and some finer classifications than those given under the column "Artefact Type" (e.g. whether a backed blade would also rank as a geometric microlith; and finer divisions among the retouched flakes).

SPECIMEN	COLOUR	STONE TYPE	ARTEFACT TYPE	LENGTH	BREADTH	THICKNESS	WEIGHT	CORTEX?	COMMENTS
G.1.21.1	Red	Chert	Blade Core	40	19	16	12	No	
G.1.44.45	Very Dark Grey	Agate	Core	29	25	22	19	Yes	
G.1.101.19	Light Brownish Grey	Chert	Bipolar Flake	24	21	8	4	No	
G.1.107.1	Pink	Chert	Flaked Piece	16	11	11	2	Yes	Chunk
G.1.107.2	Red	Jasper	Flake	17	13	3.5	1	Yes	
U.10.114.2	Dark Reddish Brown	Chert	Core	55	54	39	106	Yes	
U.10.114.3	Very Dusky Red	Obsidian	Core	32	14	12	6	No	
G.1.181.4	Reddish Brown	Chert	Flaked Pebble	41	41	20	26	Yes	
G.5.4.1	Reddish Yellow	Chert	Flaked Piece	61	32.5	26	44	Yes	Strike-a-light
G.5.4.2	Red	Chert	Flake	31	21.5	7	6	Yes	
G.5.5.1	Light Grey	Chalcedony	Retouched Flake	40	35	11	19	No	
G.5.6.88	Pale Red	Chert	Retouched Flake	21	18	7	3	No	
G.5.9.2	Black	Chert	Flake	19	25	5	2	No	
G.25.1.1	White	Flint	Flake	72	38	16		Yes	
G.25.1.2	White	Flint	Maros Point	28	16	5		No	
G.25.1.3	White	Flint	Flaked Piece	24	18	6		No	
G.25.1.4	White	Flint	Flake	46	25	7		Yes	
G.25.1.5	White	Flint	Blade	36	13	6		Yes	Retouched?
G.25.1.6	White	Flint	Retouched Flake	46	24	12		No	
G.25.1.7	White	Flint	Retouched Flake	33	18	6		No	
G.25.1.8	White	Flint	Blade	39	11	9		No	
G.25.1.9	White	Flint	Flake	23	21	8		Yes	Snapped
G.25.1.10	White	Flint	Retouched Flake	30	19	9		No	Fine-edged Scraper
G.25.1.11	White	Flint	Flake	33	41	7		Yes	
G.25.1.12	White	Flint	Blade Core	38	27	9		Yes	
G.25.1.13	White	Flint	Blade	27	13	3	1	No	Broken
G.25.1.14	White	Flint	Blade	29	12	5		Yes	
G.25.1.15	White	Flint	Backed Blade	20	10	3	1	No	Geometric Microlith
G.25.1.16	Light Grey	Flint	Blade	22	10.5	4	1	Yes	NO!
G.25.1.17	White	Flint	Bipolar Flake	19	16	6		No	
G.25.1.18	White	Flint	Flake	19	17	6		No	Snapped
G.25.1.19	White	Flint	Blade	44	21	11.5	10	Yes	
G.25.1.20	White	Flint	Retouched Flake	25	29	9		No	
G.25.1.21	White	Flint	Flake	45	29	8	10	Yes	
G.25.1.22	Pinkish White	Flint	Flake	17	17	3.5	1	No	
G.25.1.23	White	Flint	Blade	30	12	5	2	No	Bipolar
G.25.1.24	White	Flint	Flaked Piece	34	34	10		No	
G.25.1.25	White	Flint	Core	32	23	12		Yes	
G.25.1.26	White	Flint	Blade	39	15	11		Yes	
G.25.1.27	White	Flint	Flake	22	27	6		No	
G.25.1.28	White	Flint	Flake	26	20	6		No	
G.25.1.29	White	Flint	Retouched Flake	25	35	7		Yes	
G.25.1.30	White	Flint	Flake	26	19	5		No	
G.25.1.31	White	Flint	Flake	25	34	9	7	Yes	
G.25.1.32	White	Flint	Bipolar Flake	17	10	6	1	No	
G.25.1.37	White	Flint	Blade	20	11	4	1	No	Snapped
G.25.1.34	White	Flint	Retouched Flake	32.5	19	5	2	Yes	Point
G.25.1.35	White	Flint	Flake	22	23	4		Yes	
G.25.1.36	White	Flint	Flake	23	27	5	3	Yes	Snapped
G.25.1.33	White	Flint	Flaked Piece	28	20	7		Yes	
G.25.1.38	White	Flint	Flake	18	25	5		Yes	
G.25.1.39	Light Grey	Flint	Flake	19	14	3	1	No	Snapped
G.25.1.40	White	Flint	Flaked Piece	21	16	5		No	
G.25.1.41	White	Flint	Flake	16	23	6		No	
G.25.1.42	White	Flint	Flake	18	19	5		No	
G.25.1.43	White	Flint	Flake	24	18	4		Yes	
G.25.1.44	White	Flint	Flake	13	13	3.5	1	No	
G.25.1.45	White	Flint	Flake	13	21	5		No	
G.25.1.46	White	Flint	Flake	18	13	5		Yes	

SPECIMEN	COLOUR	STONE TYPE	ARTEFACT TYPE	LENGTH	BREADTH	THICKNESS	WEIGHT	CORTEX?	COMMENTS
G.25.1.47	White	Flint	Flake	11	17	4		Yes	Snapped
G.25.1.48	White	Flint	Blade	20	10	4		Yes	
G.25.1.49	White	Flint	Flake	13	16	3		Yes	
G.25.1.50	White	Flint	Flake	15	21	9	2	No	Usewear?
G.25.1.51	Pinkish White	Flint	Retouched Flake	16	21	4	1	No	Thumbnail Scraper
G.25.1.52	White	Flint	Flake	10	15	2		No	
G.25.1.53	Pinkish White	Flint	Maros Point	26	15	5	2	No	Unfinished
G.25.1.54	White	Flint	Flake	22	32	6.5	4	Yes	
G.25.1.55	White	Flint	Flake	11	17	5		Yes	
G.25.2.1	White	Flint	Flake	43	34	10		No	
G.25.2.2	White	Flint	Flake	17	15	4		No	
G.25.2.3	White	Flint	Backed Blade	18	9	5		Yes	Geometric Microlith
G.25.2.4	White	Flint	Blade	18	9	4		No	
G.25.2.5	White	Flint	Flake	17	19	12		No	Chunky
G.25.2.6	White	Flint	Flake	30	23	8		Yes	
G.25.2.7	White	Flint	Flake	22	19	6		No	Snapped
G.25.2.8	White	Flint	Retouched Flake	17	18	3		No	
G.25.2.9	White	Flint	Flake	13	18	3		No	
G.25.2.10	White	Flint	Flake	19	20	7		No	
G.25.2.11	White	Flint	Flake	12	9	5		Yes	
G.25.2.12	White	Flint	Retouched Flake	15	13	3		No	Snapped too
G.25.2.13	White	Flint	Flake	11	21	4		No	
G.25.2.14	White	Flint	Flake	11	16	4		No	
G.25.2.15	White	Flint	Core	49	25	18		Yes	
G.25.2.16	White	Flint	Flake	14	9	3		No	Snapped
G.25.2.17	White	Flint	Flaked Piece	11	9	3		Yes	
G.25.2.18	White	Flint	Core	34	34	28	15	Yes	
G.25.2.19	White	Fkint	Core	43	32	23		Yes	
G.25.2.20	White	Flint	Blade	46	22	10		Yes	
G.25.2.21	White	Flint	Blade	38	18.5	14		Yes	
G.25.2.22	White	Flint	Flake	31	31	11		No	
G.25.2.23	White	Flint	Core	24	17	12		Yes	
G.25.2.24	White	Flint	Flake	16	24	3		No	Snapped
G.25.2.25	White	Flint	Blade	32	14	5		Yes	Retouched, Burin?
G.25.2.26	White	Flint	Flake	26	21	6		Yes	Snapped
G.25.2.27	White	Flint	Retouched Flake	50	29	10		Yes	Fine-edged Scraper
G.25.2.28	White	Flint	Flake	40	24	7		No	
G.25.2.29	White	Flint	Flake	18	20	9		No	
G.25.2.30	White	Flint	Flaked Piece	27	18	5		No	
G.25.2.31	White	Flint	Flake	23	29	10		No	
G.25.2.32	White	Flint	Retouched Flake	19	21	5		No	
G.25.2.33	White	Flint	Flake	29	25	6		No	
G.25.2.34	White	Flint	Flake	27	21	4		No	
G.25.2.35	White	Flint	Flake	17	10	9		No	
G.25.2.36	White	Flint	Flaked Piece	24	17	6		No	
G.25.2.37	White	Fkint	Flaked Piece	19	18	8		No	
G.25.2.38	White	Flint	Flake	18	18	6		No	
G.25.2.39	White	Flint	Flake	21	16	5		No	Snapped
G.25.2.40	White	Flint	Flake	13	13	3		No	
G.25.2.41	White	Fossil Bone	Fluted Point	37	22	8	5	No	cf. Maros Point
G.25.2.42	White	Flint	Retouched Flake	22	13	4		No	
G.25.2.43	Pinkish White	Flint	Flake	12	16	4	1	Yes	
G.25.2.44	White Flint	Flake	Flake	12	17	3.5	1	No	
G.25.2.45	Very Pale Brown	Chert	Flake	32	22	8	5	Yes	Snapped Tip
G.25.2.46	White	Flint	Blade	26	13	3	2	No	Snapped
G.25.3.1	White	Flint	Flaked Piece	11	18	5	1	Yes	
G.25.3.2	White	Flint	Flaked Piece	16	14	4	1	No	Snapped
G.25.3.3	Very Pale Brown	Flint	Flake	13.5	17	4	1	No	Snapped
G.25.3.4	White	Flint	Flaked Piece	16	13	4	1	Yes	Retouched

SPECIMEN	COLOUR	STONE TYPE	ARTEFACT TYPE	LENGTH	BREADTH	THICKNESS	WEIGHT	CORTEX?	COMMENTS
G.25.3.5	White	Flint	Flake	16.5	17	3	1	No	
G.25.3.6	White Flint	Blade	Blade	29	14.5	6	2	No	Retouched; Snapped
G.25.3.7	White	Flint	Flake	24	17	4	3	Yes	
G.25.3.8	Very Pale Brown	Flint	Flake	17	20	5	2	Yes	
G.25.3.9	White	Flint	Flake	20	24	7	4	Yes	
G.25.3.10	Grey	Quartz	Bipolar Flake	16	24.5	7	4	No	
G.25.3.11	White	Flint	Flaked Piece	24	18	7	2	Yes	Truncated
G.25.3.12	White	Flint	Retouched Flake	26	15	5	2	Yes	
G.25.3.13	White	Flint	Retouched Flake	34	28	9.5	6	Yes	Point
G.25.3.14	White	Flint	Flaked Piece	28	17	10	4	Yes	
G.25.4.1	White	Flint	Retouched Flake	14	16	5	1	Yes	Thumbnail Scraper
G.28.1.1	Light Grey	Flint	Retouched Flake	24	13	5	2	No	
G.29.1.1	Light Grey	Banded Cher	Flake	16	22	7	3	No	Usewear?
G.29.6.1	Light Grey	Chert	Flaked Piece	22	15	5	2	No	Retouched; Burin?
G.29.6.2	Pink	Flint	Flake	18	22	9.5	2	Yes	
G.29.6.3	White	Flint	Retouched Flake	16.5	24	6	2	No	
G.29.6.4	Red	Quartzite	Flake	50	57	20	51	Yes	Pebble Flake
G.29.6.5	Redish Brown	Volcanic	Flake	45	51	12	24	Yes	
G.29.7.1	Light Grey	Chalcedony	Blade	32	12	3	2	No	
G.29.7.3	Pinkish Grey	Chalcedony	Flake	15	15	3.5	1	No	Snapped; Usewear?
G.29.7.4	Pinkish Grey	Chert	Flake	24	27	9	8	Yes	
G.29.7.5	Light Grey	Chert	Flake	21	20	10	3	Yes	Usewear?
G.29.8.1	Pinkish Grey	Chert	Flake	15	13	3	1	No	Snapped
G.29.8.2	Light Grey	Chert	Flake	16	13	5	1	Yes	
G.29.8.3	Light Grey	Chalcedony	Flaked Piece	15	11.5	2	1	No	
G.29.8.4	Pinkish Grey	Chalcedony	Flake	27.5	18	5	2	Yes	Usewear?
G.29.8.5	Pinkish Grey	Flint	Flake	13	14	8	2	No	
G.29.8.6	Very Pale Brown	Flint	Core	37	25.5	17.5	11	Yes	
G.29.9.1	Grey	Agate	Retouched Flake	28	19	4	2	No	Point
G.29.9.2	Pinkish Grey	Chalcedony	Flaked Piece	20	19	7	2	Yes	
G.29.10.1	Reddish Yellow	Obsidian	Retouched Flake	37	21.5	7	6	No	Point
G.29.10.2	Pink	Chalcedony	Blade Core	24	13	10	2	No	
G.29.10.3	Light Brownish Grey	Chert	Flake	16.5	21.5	5	2	Yes	
G.29.11.1	Pinkish White	Flint	Flaked Piece	24	14	8	3	No	
G.29.11.2	Pinkish Grey	Chalcedony	Flake	29	25	8	6	Yes	
G.29.11.3	Plae Brown	Chalcedony	Flake	29	21	6	4	Yes	
G.29.11.4	Pink	Flint	Bipolar Flake	22.5	15	7.5	3	Yes	
G.29.11.5	Pinkish Grey	Chalcedony	Blade	44.5	18	6	4	Yes	
G.29.12.1	Pink	Chalcedony	Core	27	19	19	8	Yes	
G.29.13.1	Pinkish White	Flint	Core	25.5	16	15	5	No	
G.29.13.2	Pinkish White	Flint	Flake	24	27	7	5	Yes	
G.29.13.5	Reddish Brown	Volcanic	Flake	34	42	9	13	Yes	Usewear?
G.29.15.1	Pink	Chalcedony	Retouched Flake	33	23	7	5	No	
G.29.16.1	Pink	Flint	Retouched Flake	21	27	10	6	No	Steep-edge scraper
G.29.18.1	Pinkish Grey	Chalcedony	Retouched Flake	28	22	7	3	Yes	
G.29.19.1	Pinkish Grey	Chalcedony	Blade Core	18	15	19	5	Yes	
G.29.20.1	Brown	Quartz	Bipolar Flake	30	16.5	13	14	No	Chunky
G.29.20.2	Light Grey	Variegated	Flaked Piece	59	40	18	74	No	
G.29.21.3	Dark Greenish Grey	Volcanic	Flake	24	16	6	2	No	
G.29.22.1	Pinkish White	Chalcedony	Blade	41	15	6.5	4	No	Usewear?
G.29.22.2	Pinkish White	Chalcedony	Retouched Flake	25	13.5	6	2	Yes	
G.29.22.3	Light Grey	Chalcedony	Flake	35	30	7	7	Yes	
G.29.25.1	Pinkish Grey	Chalcedony	Flaked Piece	28	21	8	4	Yes	
G.29.28.1	Pink	Chalcedony	Blade Core	36	18	12	6	Yes	
G.29.31.1	Very Pale Brown	Chalcedony	Flake	15	21.5	4	2	No	Usewear?
G.30.22.1	Pink	Agate	Retouched Flake	30.5	26	9	9	No	Truncated tip
G.40.1.2	Pinkish Grey	Chalcedony	Flake	27.5	19	5	2	Yes	
G.40.3.1	White	Flint	Flake	17	11	5	1	No	
G.40.4.1	Pinkish White	Chalcedony	Flake	25	22	7	4	No	Usewear?

SPECIMEN	COLOUR	STONE TYPE	ARTEFACT TYPE	LENGTH	BREADTH	THICKNESS	WEIGHT	CORTEX?	COMMENTS
G.40.4.2	Pinkish Grey	Agate	Flake	13	20	8	2	No	
G.40.5.1	Light Grey	Chalcedony	Flake	31.5	22	9	8	No	
G.40.5.2	Light Reddish Brown	Jasper	Retouched Flake	29.5	19	6	3	No	Point with Broken Tip
G.40.6.1	Light Grey	Flint	Flake	21	12	5	1	No	
G.41.1.1	White	Chalcedony	Core	35	31	30	52	Yes	
G.45.5.1	Brownish White	Flint	Flake	20	25	6	3	No	
G.45.6.1	Reddish Brown	Jasper	Flaked Piece	51	29	12	16	Yes	
G.46.3.2	Reddish Brown	Chalcedony	Blade Core	41	28	17	15	Yes	
G.46.4.1	Pink	Chalcedony	Flake	21	31	7.5	6	Yes	
G.46.13.1	Dark Reddish Grey	Chert	Flaked Pebble	77	74	33	200	Yes	
G.46.15.1	White	Chalcedony	Blade	33	16	9.5	4	No	
G.49.3.1	Light Brownish Grey	Chert	Flake	40	33	14	19	No	
G.49.3.2	Dark reddish Brown	Volcanic	Flaked Pebble	56	49	38	118	Yes	
G.50.3.1	Pink	Flint	Core	32	28	20	19	No	
G.50.4.1	Very Pale Brown	Flint	Core	21	17.5	12	3	No	
G.50.4.2	Light Grey	Flint	Core	28	23	17	9	Yes	
G.50.4.3	Pinkish White	Flint	Bipolar Flake	21	20.5	13	5	No	
G.50.4.4	Pinkish Grey	Chalcedony	Flake	14	24	10	2	Yes	
G.50.4.8	Pinkish Grey	Chalcedony	Bipolar Core	21	16	34	9	Yes	
G.50.6.1	Pink	Chalcedony	Retouched Flake	36	28	10	8	Yes	
G.50.8.1	Reddish Grey	Jasper	Flake	13	17	3	1	Yes	
G.50.8.2	Pink	Chalcedony	Core	50	43	12	24	No	
G.51.3.1	Yellow	Flint	Flake	22	31	8	4	Yes	
G.52.1.1	Yellow Red	Chert	Retouched Flake	24	18	6	2	No	Point
G.52.5.1	Light Grey	Flint	Core	30	28	14	12	Yes	
G.52.14.1	Light Grey	Flint	Flaked Piece	14	12	4	1	No	
G.53.1.1	Pinkish Grey	Flint	Flake	20	13	6	1	No	
G.53.1.2	Pinkish Grey	Flint	Flaked Piece	31	24	18	8	Yes	
G.53.2.2	Pinkish Grey	Flint	Flaked Piece	22	21	12	5	Yes	
G.53.3.1	Yellowish Red	Jasper	Retouched Flake	29	31	16	22	Yes	Steep-edged Scraper
G.53.4.1	Pink	Flint	Retouched Flake	24.5	15	6	2	No	Point
G.53.4.2	Pink	Chalcedony	Retouched Flake	24	23	6	2	No	Burin?
G.54.1.1	Yellow	Jasper	Flaked Piece	21.5	21	9.5	4	No	Chunk
G.54.1.2	Yellow	Jasper	Flaked Piece	28	27	16	9	No	Chunk
G.54.1.3	Brownish Yellow	Chert	Flake	27	42	9	11	Yes	
G.54.1.4	Red	Jasper	Flaked Piece	25	25	16	9	No	Chunk
G.54.1.5	Light Brown	Chert	Flake	53	33	12.5	25	Yes	Pebble Flake
G.54.1.6	Pink	Flint	Flake	22	23	4	3	No	
G.54.3.1	Pink	Chalcedony	Flake	22	16	4	2	Yes	
G.55.2.1	Pinkish Grey	Flint	Blade	31	14	4	2	No	
G.55.2.2	Light Reddish Brown	Chert	Flake	16	22	11	4	Yes	
G.55.8.1	Pink	Flint	Backed Blade	23	7.5	3.5	1	No	
G.55.9.1	Pink	Chalcedony	Bipolar Core	30	11.5	34	10	Yes	
G.56.0.1	Pink	Flint	Maros Point	21	14	3	1	No	
G.56.5.1	Light Reddish Brown	Quartzite	Flake	61	51	25	92	Yes	Pebble Flake
G.56.6.1	Light Grey	Chalcedony	Flake	45.5	27	7	7	Yes	Phytolith gloss
G.56.12.1	Pink	Quartzite	Flaked Pebble	46.5	33	19.5	31	Yes	
G.56.14.1	Light Grey	Flint	Retouched Flake	18	17	7	2	No	
G.56.14.2	Qhite	Quartz	Flake	18	13	6	1	No	
G.57.6.1	Pink	Chert	Retouched Flake	17	16	6.5	2	No	
G.57.6.2	Pink	Chert	Flake	17	14	4	1	No	
G.57.8.1	Very Pale Brown	Chert	Flake	48	36	21.5	35	Yes	
G.57.8.2	Weak Red	Jasper	Flake	15.5	24	7	2	No	
G.59.1.5	Pink	Flint	Flake	19	23	10.5	6	No	Chunk
G.59.1.6	Very Pale Brown	Flint	Flaked Piece	16	12	7	2	No	Chunk
G.59.1.7	Very Pale Brown	Flint	Flake	15	13	3	1	No	Broken
G.59.1.8	Very Pale Brown	Flint	~~Backed Blade~~ Retouched Flake	~~27~~ 12	~~12~~ 27	6	2	Yes	Burin
G.59.2.20	Brown	Chert	Flake	29	27	11	8	Yes	
G.59.2.21	Brown	Chert	Core	24.5	14.5	16	7	Yes	Some Bipolar Scars

SPECIMEN	COLOUR	STONE TYPE	ARTEFACT TYPE	LENGTH	BREADTH	THICKNESS	WEIGHT	CORTEX?	COMMENTS
G.59.2.22	Very Pale Brown	Flint	Flake	15	17	5	1	No	
G.59.2.23	Pinkish White	Flint	Flake	20.5	22	8.5	4	No	Truncated
G.59.2.25	Very Pale Brown	Flint	Flake	10	13	4	1	No	
G.59.2.26	Pinkish White	Flint	Flake	13	16	4.5	1	No	
G.59.2.27	Reddish Yellow	Chert	Retouched Flake	17	18	5	1	No	Thumbnail Scraper
G.59.2.28	Yellow	Chert	Flaked Piece	36	28	12	9	No	
G.59.2.29	Pink	Chalcedony	Flake	11	18	3	1	No	Snapped
G.59.2.30	Very Pale Brown	Flint	Flake	10	12	5	1	No	
G.59.2.31	Very Pale Brown	Flint	Flake	21	19	6	2	No	
G.59.2.32	Weak Red	Chert	Flaked Pebble	43	31	12.5	18	Yes	
G.59.2.33	Very Pale Brown	Flint	Retouched Flake	16	25	5	2	No	Burin?
G.59.2.34	Weak Red	Chert	Retouched Flake	14	26.5	7	3	Yes	Point
G.59.2.35	Reddish Brown	Chert	Flaked Piece	15	14	9	2	Yes	Chunk
G.59.2.36	Very Pale Brown	Flint	Chi[	9	7	2	1	No	
G.59.2.38	Very Pale Brown	Flint	Flake	13	18	6	1	No	Broken
G.59.3.1	Very Pale Brown	Flint	Flake	13	15	2	1	No	
G.59.3.2	Very Pale Brown	Flint	Retouched Flake	11	16	3	1	No	
G.59.3.3	White	Flint	Backed Blade	18.5	11	4	1	No	Geometric Microlith
G.59.3.4	Pink	Chalcedony	Retouched Flake	18	16.5	4.5	2	No	Thumbnail Scraper
G.59.3.5	Very Pale Brown	Flint	Flaked Piece	17	13	3	1	No	
G.59.3.6	Brown	Chert	Flake	22	24	6	3	No	
G.59.3.7	Light Grey	Chalcedony	Flake	19	16	8	2	Yes	
G.59.3.8	Very Pale Brown	Flint	Flake	17	12	4	1	No	
G.59.3.9	Very Pale Brown	Chalcedony	Retouched Flake	16	13.5	6.5	2	Yes	Burin?
G.59.3.10	Pinkish Grey	Chalcedony	Flake	18.5	19	4	1	Yes	
G.59.3.11	Very Pale Brown	Flint	Flake	25	27	8	6	Yes	
G.59.3.13	Very Pale Brown	Flint	Flaked Piece	26	11	5	2	No	Retouched Point
G.59.3.14	Reddish Brown	Chert	Flake	28	30	6	6	No	
G.59.3.15	White	Flint	Flake	24.5	16	4	2	No	
G.59.3.16	Pinkish Grey	Chert	Flake	15	17	4	1	Yes	
G.59.3.17	Pink	Flint	Retouched Flake	18	14	3.5	1	No	
G.59.3.18	Pinkish grey	Chert	Flake	20	15.5	5	2	No	
G.59.3.19	Light Grey	Chert	Flaked Piece	19	11	4	1	No	
G.59.3.20	Pink	Flint	Flaked Pebble	40	23	13	12	Yes	
G.59.3.21	Very Pale Brown	Chert	Flake	40	31	15	16	No	
G.59.3.22	Very Pale Brown	Chert	Flake	50	35	12	18	Yes	
G.59.3.25	Reddish Brown	Chert	Flake	32	19	6	3	No	
G.59.3.26	Very Pale Brown	Chert	Bipolar Flake	17	11	6	1	Yes	
G.59.3.27	Pinkish Grey	Chalcedony	Bipolar Flake	12	12	4	1	No	
G.59.3.28	Very Pale Brown	Flint	Flake	10	11	1	1	No	
G.59.4.4	Very Pale Brown	Flint	Flaked Pebble	43	40	18	19	Yes	
G.59.4.5	Pink	Flint	Flake	15	15	2	1	No	
G.59.4.6	White	Flint	Chip	8.5	8	1.5	1	No	Broken from a Flake
G.59.4.9	Pinkish Grey	Chalcedony	Flake	10	11	2.5	1	No	
G.59.5.3	Grey	Chalcedony	Flake	22	12	7	2	Yes	Point
G.63.1.1	Pinkish Grey	Flint	Blade Core	39	13	12	5	Yes	
G.63.1.2	Pink	Flint	Flake	26.5	21.5	7	3	No	
G.63.1.3	Reddish Yellow	Chert	Flake	15	22	6	2	No	
G.63.1.4	Light Grey	Chalcedony	Flake	17	12	8	2	No	
G.63.1.5	Pink	Chert	Core	24	22	13	4	Yes	
G.63.1.6	Pink	Chert	Flake	17	16	4.5	1	No	
G.63.1.7	Pinkish Grey	Agate	Flaked Piece	33.5	25	15	6	Yes	
G.63.1.8	Strong Brown	Chert	Flaked Piece	23	14	10	2	No	
G.63.1.9	Reddish Yellow	Banded Cher	Bipolar Flake	20	27	7.5	3	Yes	
G.63.1.10	Pink	Chert	Flake	13	13	6	1	Yes	
G.63.1.11	Light Brown	Chert	Blade	26	13	5	1	No	
G.63.1.12	Pinkish White	Chert	Flake	17	27	4	2	Yes	
G.63.1.73	Light Reddish Brown	Flint	Core	41	33	19	20	Yes	
G.63.1.74	Pink	Chert	Flake	16	22	6	1	Yes	

SPECIMEN	COLOUR	STONE TYPE	ARTEFACT TYPE	LENGTH	BREADTH	THICKNESS	WEIGHT	CORTEX?	COMMENTS
G.63.1.75	Pink	Chalcedony	Flaked Piece	20	16	9	2	No	
G.63.1.76	Light Reddish Brown	Chert	Retouched Flake	21	14	8.5	2	No	
G.63.1.77	Pink	Chert	Blade Core	31	17.5	18	9	No	
G.63.1.78	Pink	Chert	Core	32.5	19	12	6	No	
G.63.1.79	Very Pale Brown	Chert	Flake	20	16	4.5	1	No	
G.63.1.80	Pink	Chert	Backed Blade	14	7	2.5	1	No	
G.63.1.81	Light Brown	Flint	Retouched Flake	15	19	5	1	No	Point
G.63.1.82	Very Pale Brown	Chert	Flake	31	17	13	5	Yes	
G.63.1.83	Pink	Chert	Flake	17	11	6	1	Yes	Snapped
G.63.1.84	Very Pale Brown	Chert	Core	26	20	12	6	No	
G.63.1.85	Very Pale Brown	Chert	Flake	18	20	5	2	No	Snapped
G.63.1.86	Very Pale Brown	Flint	Flaked Piece	19	18	10	2	No	
G.63.1.87	Brownish Yellow	Chert	Blade	31	13	5	2	No	Retouched
G.63.1.88	Very Pale Brown	Chert	Flaked Piece	12.5	10	6.5	1	No	
G.63.1.89	Weak Red	Jasper	Bipolar Flake	18	17	11	2	No	
G.63.1.90	Pink	Chert	Flake	23	22	8	4	No	Broken
G.63.1.91	Pink	Agate	Flake	15	14.5	4	1	No	
G.63.1.92	Light Grey	Chert	Backed Blade	21	11	5	1	No	
G.63.1.93	Light Reddish Brown	Chert	Bipolar Flake	16.5	10	4.5	1	No	
G.63.1.94	Pink	Chert	Flake	13	19	5	1	No	
G.63.1.95	Pink	Chert	Flake	10	8	2	1	No	
G.63.1.96	Dark Red	Jasper	Flake	18	25	5	3	No	
G.63.1.97	Pink	Chalcedony	Retouched Flake	20	15	5	1	No	Point
G.63.1.98	Very Pale Brown	Chert	Flake	11	13	5	1	No	
G.63.1.99	Yellowish Red	Volcanic	Flaked Pebble	36	26	17	16	Yes	
G.63.1.100	Pink	Flint	Flake	16	22	5.5	1	No	
G.63.1.101	Pink	Flint	Flake	14	17	7	1	Yes	
G.63.1.102	Weak Red	Jasper	Retouched Flake	28	27	7	4	No	
G.63.1.103	Weak Red	Chert	Flake	17	36	4.5	4	Yes	
G.63.1.104	Reddish Brown	Flint	Flake	21	31	6	2	Yes	
G.63.2.2	Light Olive Brown	Chert	Core	25	23	13	8	No	
G.63.2.3	Light Grey	Quartz	Bipolar Core	21	17	15	6	No	Chunk
G.63.2.4	Pink	Flint	Retouched Flake	17	17	4.5	1	No	
G.63.2.5	Pink	Chert	Core	19	14	23	5	No	
G.63.2.6	Pinkish Grey	Chalcedony	Flake	18	11	4.5	1	No	
G.63.2.7	Pinkish Grey	Chalcedony	Flake	10	16	2	1	No	
G.63.2.8	Light Grey	Flint	Flake	12	13	6.5	1	No	
G.63.3.1	Dark Reddish Brown	Jasper	Flake	12	11	8	1	Yes	
G.63.3.2	Pinkish Grey	Chert	Flake	19	20	6.5	2	No	
G.63.4.1	Black	Jasper	Retouched Flake	22.5	10	7.5	2	Yes	Steep-edged Scraper
G.63.4.2	Reddish Yellow	Chert	Bipolar Flake	16	31	7.5	4	Yes	
G.63.4.3	Light Reddish Brown	Flint	Flake	16	12	4	1	Yes	
G.63.4.4	Pink	Chalcedony	Retouched Flake	14	10	4	1	No	
G.63.8.1	Pinkish White	Flint	Blade Core	16	11	34	5	Yes	
G.63.8.2	Pinkish White	Flint	Flake	26	18	11	3	No	
G.63.8.3	Pink	Flint	Flake	15	27	7	3	No	
G.63.8.4	Pink	Flint	Flake	14	19	5	2	No	Snapped
G.63.8.5	Very Pale Brown	Chert	Flake	19	19	7	2	No	
G.63.8.6	Pink	Flint	Flake	13	10	2	1	No	
G.63.8.7	Very Pale Brown	Flint	Flake	9	18	4.5	1	No	
G.63.8.8	Pink	Flint	Flake	10	15	3	1	Yes	
G.63.8.9	Very Pale Brown	Flint	Flake	13	16	5	1	Yes	Snapped
G.63.8.10	Pink	Flint	Flake	9	14	4	1	Yes	Snapped
G.63.11.1	Pink	Chert	Flake	42	37	14.5	15	No	
G.63.11.2	Reddish Yellow	Chert	Flake	12	16	4	1	Yes	
G.63.11.3	Pink	Chalcedony	Flake	31.5	24	4	3	Yes	Usewear?
G.63.13.1	Pink	Flint	Blade Core	26.5	14	44	13	No	
G.63.13.2	Pink	Chert	Blade Core	26	14	44	13	Yes	
G.63.13.3	Very Pale Brown	Chert	Flake	10	16	4	1	No	

SPECIMEN	COLOUR	STONE TYPE	ARTEFACT TYPE	LENGTH	BREADTH	THICKNESS	WEIGHT	CORTEX?	COMMENTS
G.63.13.4	Reddish Yellow	Chert	Flake	12	19	3	1	Yes	
G.63.14.1	Pinkish White	Chert	Bipolar Flake	27	26	11	6	No	
G.63.14.2	White	Flint	Flake	8	14	4	1	No	
G.63.15.1	Very Pale Brown	Chert	Flake	35	20	7	5	Yes	
G.64.3.1	Dark Grey	Chert	Flake	16	26	5.5	2	Yes	
G.64.3.3	Colourless	Quartz Crys	Bipolar Core	17	11	11	2	No	
G.65.1.1	Reddish Grey	Chalcedony	Blade	50	12	8	6	No	Phytolith Gloss
G.65.1.2	Pinkish White	Flint	Flake	12	17	7	1	No	
G.65.1.3	Pinkish Grey	Chalcedony	Flake	13.5	23	6.5	1	Yes	
G.76.1.1	Very Dusky Red	Jasper	Blade	42	21	12	8	Yes	Usewear?
G.76.1.2	Very Dusky Red	Jasper	Flake	24	22	6	4	No	
G.76.1.3	Dark Red	Jasper	Core	40	40	20	34	Yes	
G.76.1.4	Dusky Red	Jasper	Retouched Flake	19	18	4.5	2	No	
G.76.1.5	Weak Red	Jasper	Flaked Piece	13	11.5	11	1	Yes	
G.76.1.6	Pale Brown	Chalcedony	Flake	19	27	5	4	Yes	
G.76.1.7	Reddish Yellow	Jasper	Flake	16	11	7	2	Yes	
G.90.1.1	White	Flint	Retouched Flake	28	18	4	1	No	Point
G.90.1.2	Light Grey	Flint	Flake	23	16	6	2	No	
G.90.1.3	Very Pale Brown	Flint	Blade	28	13.5	3.5	2	No	
G.90.1.4	White	Flint	Flake	15	22	5	1	No	
G.90.1.5	Very Pale Brown	Flint	Retouched Flake	15.5	14.5	5	1	No	
M.2.1.1	Very Pale Brown	Chalcedony	Flake	12	18	6	1	No	Snapped
M.2.1.2	Light Reddish Brown	Chalcedony	Flaked Piece	22	19	7	4	No	
M.2.6.1	Dark Reddish Grey	Jasper	Flake	21	16	7	2	No	
M.2.7.1	Dark Reddish Brown	Jasper	Flake	31	47	9	14	Yes	
M.2.9.1	Pinkish White	Flint	Flake	27	15	4	2	Yes	Usewear?
M.2.9.2	Reddish Brown	Jasper	Blade Core	46	19	16	16	Yes	
M.2.18.2	Pink	Flint	Flaked Piece	11	10	7	1	Yes	
M.2.24.1	Pinkish Grey	Chalcedony	Flake	29.5	24.5	8	5	Yes	
M.2.24.3	Pinkish White	Flint	Core	38	37	24	34	Yes	Pebble Core
M.2.24.4	White	Flint	Flake	40	25	10	10	No	
M.2.24.5	Very Pale Brown	Flint	Flake	19	23	10	5	Yes	Truncated
M.2.24.6	Pinkish White	Flint	Flake	36	23	6	4	No	
M.2.24.7	White	Flint	Retouched Flake	25	15	6	2	No	
M.2.24.8	White	Flint	Flake	21	22	7	4	No	Usewear?
M.2.24.9	Reddish Brown	Jasper	Flaked Piece	11	10.5	3	1	No	
M.2.24.10	Reddish Yellow	Flint	Flaked Piece	10.5	7	5	1	No	
U.13.3.1	Light Grey	Chalcedony	Core	50.5	39	21	40	Yes	Retouched Scraper
U.13.3.2	Red	Jasper	Flake	18	16	6.5	2	Yes	Broken Tip
U.13.3.3	Light Reddish Brown	Chalcedony	Retouched Flake	19	13	9	1	Yes	Point
U.13.12.1	Red	Jasper	Core	33	28	13	13	No	
U.21.5.1	Pinkish White	Chalcedony	Retouched Flake	19	12.5	7	2	No	Point; Broken Tip
U.22.1.1	Light Grey	Chalcedony	Flake	19.5	13	4	1	No	
U.22.1.2	Pink	Agate	Flake	12.5	8	4	1	No	
U.22.2.1	Pink	Chalcedony	Flake	22	19	5	3	No	
U.22.3.1	Light Grey	Agate	Retouched Flake	26.5	33	6.5	5	No	Truncated
U.22.3.2	Reddish Brown	Jasper	Flake	19	13	4	1	Yes	Snapped
U.22.9.1	Black	Agate	Bipolar Core	20	13	11.5	3	Yes	
U.22.9.2	Grey	Jasper	Flake	9	11.5	3	1	No	

Photos G-1 and G-2.
The polished hatchet from Katangka Toa, Benteng Tua.
SSPHAP No. U.10.114.1. Suaka Museum Arkeologi No. 2752.
Length 52 mm, working edge width 40 mm, butt width 30.5 mm,
butt thickness 10 mm. Weight 36 gm.
Apparently volcanic. Munsell gley 5 GY 3/1 where polished.

Photo G-3.
The polished adze from Maccinik Sombala, Kecamatan Tamalate,
Kotamadya Ujung Pandang. Suaka Museum Arkeologi No. 2748.
Length 163 mm, greatest width 46 mm, thickness 30.5 mm.
Weight around 250 gm. Volcanic. 5YR-10YR 4/2 where polished.


Q88•MAR'87 GB


Q88•MAR'87 GB


Q88•MEI'87 GB

Photos G-4 and G-5.
The partly polished (edge-ground) hatchet from Bonto Jalling.
SSPHAP No. G.10.2.1. Suaka Museum Arkeologi No. 2749.
Length 71 mm, working edge width 40 mm, butt width 31 mm,
butt thickness 19 mm. Weight 54 gm.
Apparently volcanic. Colour 2.5 YR 3/2 where polished.

Photo G-6.
Other side of the Maccinik Sombala adze (see Photo G-3).

Q88•MAR'87 GB



Q88•MAR'87 GB



Q88•MEI'87 GB

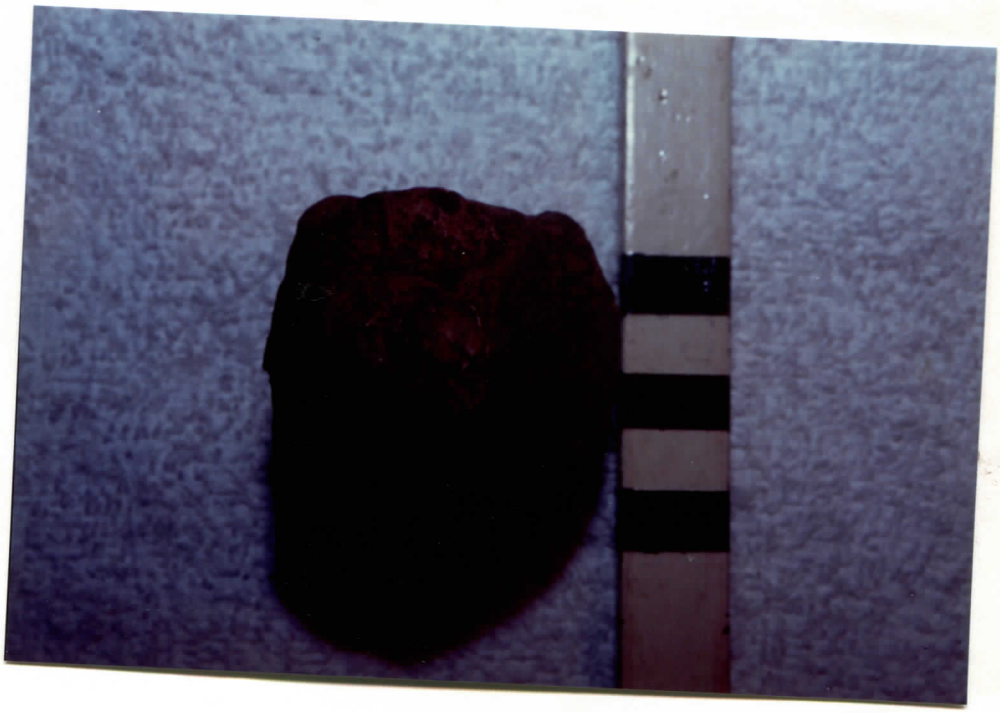


Photos G-7 and G-8.
Fragment of polished stone from Bukit Manggarupi, G.29.30.3.
Length 65 mm, breadth 43 mm, thickness 11 mm. Weight 26 gm.
Very dark green, soft volcanic stone.
Comprehensively striated from polishing.
Trough at top (Photo G-8) looks intentionally ground.

Photo G-9.
Quartzite (?) hammerstone, Bukit Manggarupi, G.29.6.6.
Length 68 mm, breadth 64 mm, thickness 52 mm.
Weight around 250 gm. Colour around 2.5 YR 5/4 (burned).
A piece of pounded red chert can be discerned at the top of the hammerstone.


88•MEI'87 GB


88•MEI'87 GB

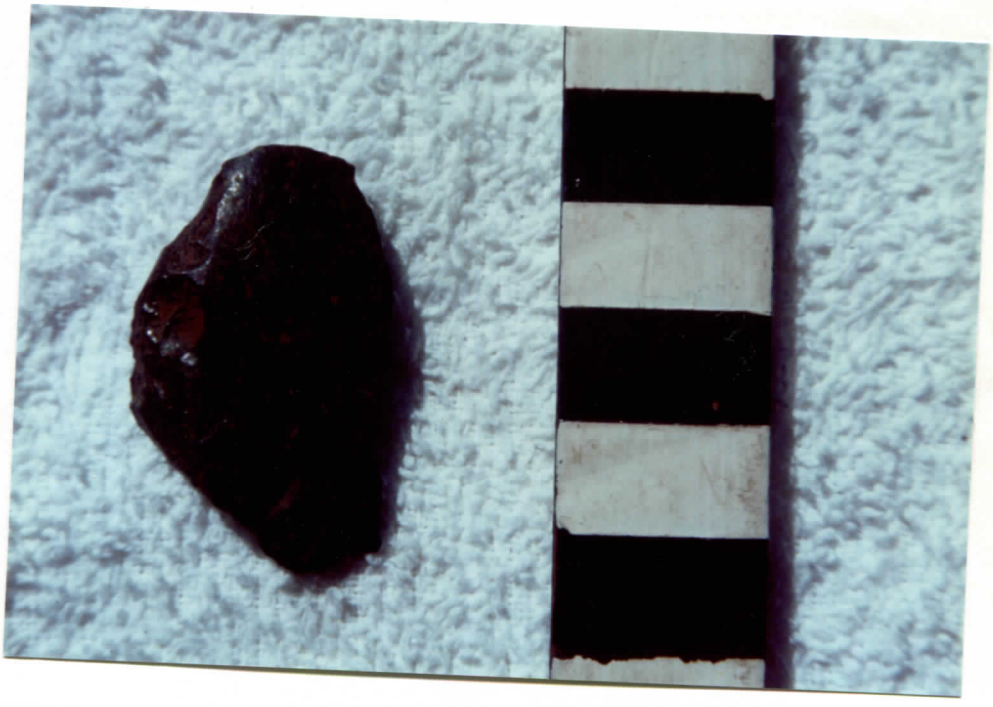


Photos G-10 and G-11.
The polished hatchet from Balang Sari.
SSPHAP No. G.63.2.1. Suaka Museum Arkeologi No. 2752.
Length 38 mm, working edge width 30 mm, butt width 26 mm,
butt thickness 16.5 mm. Weight 22 gm.
Apparently metamorphic. Colour 5 YR 3/3 where polished.

Photo G-12.
Flake from a polished stone artefact, Ganrang Jawa, G.49.2.2.
Flake length 24 mm, flake breadth 39 mm, thickness 10 mm.
Weight 11 gm. Volcanic. Colour 5 YR 2.5/1.


Q88•MAR'87 GB
2752.


Q88•MAR'87 GB



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