DRAFT. PLEASE DO NOT QUOTE WITHOUT PERMISSION

# The triumph of *lontara'*

**Campbell Macknight**[1]

Abstract: Recent work on the early history of South Sulawesi provides a context within which various scripts were developed for writing Bugis and Makasar. Like most other scripts in Southeast Asia, the earliest of these were based on the Indic system of aksara with vowel modifiers and are conveniently referred to as aksaries. Like most borrowings, the scripts were significantly 'localised' initially and then adapted over time. Both of these processes involved some deliberate initiatives. Though we do not know who was responsible for most of these decisions, we can offer some suggestions on when, where and perhaps why they were made. The lontara' script eventually evolved as a remarkably elegant and effective means of rendering South Sulawesi languages.

The first section of this paper offers an oversight of the historical context within which the South Sulawesi scripts were developed. This allows an appreciation of the local initiatives involved in this process as described in the second part of the paper.

By 'South Sulawesi scripts' I mean, firstly, the aksary called Old Makasar or *jangan-jangan* (bird script)[2] once used to write the Makasar language and, secondly, the aksary known as *lontara'* in both Makasar and Bugis and now used to write both languages. My preferred systems of Latin orthography are those described for Makasar in Jukes (2005) and for Bugis in Macknight (2012). Both are based on the systems of Cense and Noorduyn. Both languages have also been rendered in an Arabic-based script known as *serang*/*sérang* or sloping script, but I assume that this post-dates the formal adoption of Islam in the seventeenth century. A cipher script appears to date from the nineteenth century (Matthes 1883a:2–3), as do some special characters in Luwu (Noorduyn and Salim 1988). Many variations of the *lontara'* script have continued to be proposed into comparatively recent times. I assume that the use of the *lontara'* script to render the Mandar language, as found in a small number of manuscripts, derives from its use for Bugis and Makasar, and does not represent a separate line of development.

Several recent publications provide excellent illustrations of the manuscript heritage using these scripts. Tol (1996) describes and illustrates the tradition in the context of other manuscript traditions in the archipelago. Some of the illustrations in Yayasan Harapan Kita (1998) need to be re-oriented, but they are very clear. Noorduyn (1993)

---

[1] A paper prepared for the International Workshop on Endangered Scripts of Island Southeast Asia, Research Institute for Languages and Cultures of Asia and Africa, Tokyo University of Foreign Studies, 27 February – 1 March 2014. Campbell Macknight is a Fellow in the Research School of Asia and the Pacific, Australian National University. His email address is: macknight@ozemail.com.au

[2] Rahman (2006:29) discusses various possible explanations for the use of this term. Other connotations suggest that it could well be associated with romantic communications of a type not unknown in the Philippines. See Cense 1979:175–6.

provides useful examples for his discussion of scripts. Rahman (2006:24–30) has very helpful comparative tables of aksaras and draws usefully on local knowledge.

**The early historic period in South Sulawesi**

The southwestern peninsula of Sulawesi and adjacent territory around the head of the Gulf of Bone comprise the present province of South Sulawesi, now without the western coastal region of West Sulawesi. A long series of chances has led, though the twentieth century and subsequently, to archaeological investigations in the area and the modern province is perhaps the most intensively studied area by prehistoric archaeologists, at least, in Indonesia. Human occupation dates from the late Pleistocene, roughly 30 000 years ago. A major discontinuity in the sequence, though still poorly understood in the archaeological record (Bulbeck 2004; Bulbeck 2008a), is the arrival of Austronesian-speaking people about 3 500 years ago. This change, whatever it might have meant in human terms, has led to the modern Austronesian languages of Bugis and Makasar, among others, being spoken in the area.

Although one must be careful not to assume simple associations or a total loss of continuity with the past, other cultural features found in most Austronesian-speaking societies were very probably present in South Sulawesi from about this time; the two most important are a system of ascriptive status and the technology of maritime voyaging. Rather than an economy based on farming rice, however, Bulbeck (2008a:32) argues that during the Neolithic phase, that is before about 2 500 years ago, 'colonisation of the Austronesians' island world was predicated on their ability to combine exploitation of maritime environments with the planting of locally-adapted crops which could be productively harvested with minimal tending.' The suceeding Early Metal Phase saw developments such as long distance maritime trading and bronze and iron metallurgy. There is some evidence for swidden agriculture and an increase in population. The disposal of the dead in cliff ossuries or jar burials argues for ranked societies (Bulbeck 2010).

From about a thousand years ago, that is from around AD 1000, substantially more evidence becomes available and the time from then until AD 1600 is usefully designated the early historic period. Though there were undoubtedly some Muslims in South Sulawesi before 1600, the formal adoption of Islam by the political elite dates only from the early seventeenth century while the thorough Islamisation of society can be seen as an on-going project. Similarly, there was brief contact by the Portuguese in the 1540s, but substantial trading and political involvement by them, by many other Europeans and Asians, and eventually by the armed power of the Dutch East India Company did not come until the following century. The cultural and political achievements of this early historic period in South Sulawesi have only become apparent in the last few decades and are not yet noticed in conventional accounts of Indonesia's history.[3]

[3] This lack of attention to South Sulawesi's past is perhaps a partial reflection of the absence of Chinese contact with South Sulawesi before the seventeenth century and, hence, a silence in the Chinese texts. Note, for example, how the recently rediscovered Selden map showing Chinese understanding of Southeast Asia in Ming times degenerates into murk east of Kalimantan and south of the Philippines. In the same way, there is no sign of the southern parts of Sulawesi on Portuguese charts before the 1540s. Yet there is considerable detail on

The most striking feature of this period is the steady consolidation of several centres of political authority leading to the later states of Gowa, Bone, Wajo, Soppeng, Luwu and many other smaller ones.[4] There is a relatively smooth path of development from the expression of status differentiation within villages to the status competition between complex polities.[5] These political changes were supported by various economic bases which can also be discerned with some clarity.

The evidence for this story is essentially twofold. The most general is archaeological, especially that deriving from the widespread use of Chinese and some other mainland ceramics in conjunction with the disposal of the dead whether by cremation or inhumation. Grave robbing has a long history in South Sulawesi and in the tough times of the 1960s the flow of ceramics out of the countryside to antique dealers all over the world was very substantial. The scope of prospecting with long metal rods and subsequent excavation was beyond the wildest dreams of archaeologists. Such activity always resulted in breakages, however, and in later years and with more control it has been possible to locate areas of digging and collect broken sherds. One of David Bulbeck's many contributions to South Sulawesi archaeology has been to develop a method for systematically analysing collections of sherds to show the period or periods at which a site was occupied, or perhaps more accurately, when its cemetery was in use.[6] The method was first developed in the Soppeng area, then applied to a very wide and intensive survey of the Gowa plain behind Makassar. More recently, it has been applied in the Ajatapparang region, in Wajo and in Luwu. In all, a good deal of the peninsula has been surveyed in this way.

The other main form of evidence is documentary. Leaving aside for the moment the questions of when and why writing began in these societies, there is a great deal of information about the period before 1600 surviving in manuscripts which, themselves, are of later date. The most common materials are genealogies, king lists, chronicles and short accounts of particular events or relationships. Particularly since nobles are often identified by their attachment to specific settlements and there has been no significant change in local place names, some individuals can be associated with the archaeological evidence.

In addition, various other archaeological finds, a few useful references in external written sources and, most importantly, a regard for the geography and geomorphology provide various insights into the past. The current phase of research began about forty years ago and continues strongly today. In my mind, three major

---

Maluku, as well as western Indonesia. The quest for spices has subtly distorted other realities.

[4] There has been some discussion about whether or when these polities should be called 'states' or 'complex chiefdoms'. See Bulbeck 2008b and Caldwell 1995.

[5] Similar trajectories can be seen in the prehistory and history of many other Austronesian-speaking societies, particularly across the Pacific, though none can be followed in such detail as that in South Sulawesi.

[6] A succint outline of the method may be found in Macknight 1993:20.

discoveries stand out: the iron industry in Luwu, the expansion of wet-rice agriculture and the extent of trade.[7]

There was certainly some metal, both bronze and iron, used in Sulawesi before about AD 1000, that is in the Early Metal Phase, though it is not known where most of the metal came from. By AD 1000, though, there seems to have been some iron smelting around Lake Matano, even if the evidence for this is not entirely clear. From about AD 1000, however, there is abundant evidence of growing exploitation of the nickeliferous iron ore in this area. Over the next few centuries it was smelted there and at several sites on or near the coast of the Gulf of Bone. By AD 1300 a settlement had developed at Malangke which seems to have derived ore both from Lake Matano and from the Rongkong valley. Malangke and several nearby sites grew over the next few centuries into a major centre of population with demonstrable links to Java. In the fourteenth century the population of the immediate area is estimated at 2 700 and this grew to 9 500 in the fifteenth century and 14 500 in the sixteenth (Bulbeck and Caldwell 2000:76).

While this iron industry is important in its own right, its integration into other contexts is striking. It would seem likely — even if more specific evidence is needed — that Malangke supplied iron tools and weapons to Majapahit in Java. One item of return was Indian textiles, some of which were traded up into the mountains for various products and preserved safely until collected for museums in recent times. Half a dozen examples, dating from the early fourteenth to the sixteenth century are illustrated by Robyn Maxwell (2003: 114, 123–32), five from Gujarat and one from the Coromandel Coast. (See also Barnes 2004.) The rise of Malangke also seems to be associated with an influx of Bugis speakers from the Cenrana valley to the south who came to take advantage of the trade and perhaps the iron-working possibilities. This point is important since it contradicts the longstanding claim that Luwu was the earliest of the Bugis kingdoms; it was, in fact, an area of later settlement from about the thirteenth century (Bulbeck and Caldwell 2000:103–7).

The iron from Luwu may have been important, however, in facilitating the expansion of wet-rice agriculture across several parts of the peninsula by providing better tools. This process, though, rested on much more than technological innovation and I long ago argued for a more complex explanation (Macknight 1983). It also seems to have begun roughly a century or more earlier than I once thought; significant occupation at Allangkangangngé ri La Tanété, the central palace site of Cina in the Cenrana valley, can be dated to around AD 1200 and there is clear association with rice (Bulbeck, Caldwell and others in preparation). The initiation of wet-rice cultivation can be followed in a series of unreported excavations on small sites around the historic heart of Wajo north of the Cenrana, each near an area of swamp. The general pattern can be followed, relying on various kinds of evidence, across the peninsula, though Luwu's agricultural economy seems always to have been based on sago. In the Makasar speaking areas, Caldwell and Bougas (2004)

[7] Note that I omit our new understanding of the La Galigo material, important and fascinating as that may be for quite other reasons. In my view, the La Galigo material we have in manuscript form dates from later than the seventeenth century, most of it much later, and therefore it cannot provide significant independent information on the period before 1600.

have traced the development of minor polities around Binamu and Bangkala, while Bulbeck's work in Gowa shows in extensive detail how larger units gradually established themselves as centres of higher prestige (Bulbeck 1995). In the most detailed exposition yet published of the methods described here, Druce (2009) shows that developments in the northwestern areas were slightly later than elsewhere, but the processes were very similar.

It is important not to over-emphasise the advantage of coastal regions. The very widespread occurence of imported ceramic sherds across the peninsula argues for the involvement of many high status individuals, each in their own polity, in receiving trade goods and, presumably, reciprocating with local material. Moreover, since Bugis and Makasar speakers, like most Austronesian-speakers, had access to boat and maritime skills, we should not assume that the trading involved outsiders visiting Sulawesi; it is just as easy, if not more so, to envisage Bugis and Makasar traders disposing of goods elsewhere and returning home with items they had acquired in turn. The sheer quantity of ceramics brought into South Sulawesi is impressive and indicates the scale of at least one side of the trade.

As well as iron, gold, forest products and probably spices trans-shipped from Maluku, a major export seems to have been rice. Tomé Pires at the beginning of the sixteenth century has several references to rice being brought from South Sulawesi to ports in the western archipelago, such as Melaka (Macknight 1983:100–1). Yet through much of that initial century of European contact, South Sulawesi hardly appears on European maps, confirming the suspicion that the shipping was in indigenous hands. The famous Dieppe maps from the 1540s, for example, show open sea in the relevant area, even though there is recognisable detail in Maluku. After the Portuguese contact in the 1540s, a vague coast appears with a few placenames, but even late in the century, the best Dutch map makers were showing an island of 'Macace' separate from 'Celebes'.[8] The memory — and perhaps the reality — of local shipping from Makassar bringing goods to Melaka was still current around 1600, at the same time as Portuguese vessels were going the other way (Borschberg 2014;187, 217, 221). Traders from South Sulawesi were not only bringing goods to and from the western archipelago, but various lines of evidence also suggest that they were sailing northwards to the southern Philippines (Macknight 1983:95–6; 1993:40; Bulbeck and Clune 2003:99). Both destinations were important for our purposes here.

In 1365, the author of the Javanese poem, the *Deśawarṇana*, lists several names in South Sulawesi as being somehow within the world of Majapahit (Robson 1995:34). The new picture of the early history of South Sulawesi, derived in large part from archaeology, gives us a remarkably detailed understanding of what lay behind the names known in Java. It was within this context that a form of literacy developed.

[8] See, for example, the 1575 map of the East Indies in Abraham Ortelius, *Theatrum Orbis Terrarum*, Antwerp, 1575, reproduced in National Library of Australia 2014, p. 97. A small island labelled 'Macasser', with the placenames 'Macasser' in the southwest and 'Bogis' in the east, appears as late as 1598 on the map by Cornelis Claesz reproduced in Borschberg 2014:162.

**The why, when and how of writing**

Ascriptive status is common to most, if not all, Austronesian-speaking societies and nowhere more so perhaps than among those speaking Bugis and Makasar. The consequences of this — and particularly the inherent competition between individuals, families and groups of all kinds — have been extensively studied by anthropologists concerned with contemporary societies and by historians seeking to understand the past. The ideology of difference which promises recognition of status, but delivers rivalry, is central to politics in the past and in the present in South Sulawesi. The central principle of the system is that a child derives status equally from both parents, so that the aim of an individual is always to marry up for the benefit of one's children. The gap between theory and practice is the stuff of history.

The most convincing explanation for the development of writing among the Bugis and Makasar is that literacy provided support in the assertion of status.[9] A written record could demonstrate descent from high-status ancestors and, not just in a single line of descent, but in a 'funnel' of all direct ancestors channeling status down to an individual. To achieve this, however, one must begin from the origin of status which lies with 'those who have descended' or otherwise appeared in this middle world either from the world above or from the world below. An important feature in South Sulawesi of this common ideology of the Austronesian speakers is that the 'white blood' of these descended beings, *tomanurung* in Bugis, is recognised by each other and by the whole society, not just by their descendants. There is a class of *tomanurung*. The outcome of this situation is the creation of a net of relationships through which the flow of status can be traced in any direction.

This explanation is supported by the prevalence of genealogies and related materials within the corpus of Bugis and Makasar manuscripts.[10] Some are drawn out as family trees, running sideways over page after page. Others are written out as prose in the most direct terms; they are not rivetting reading. It is worth, however, giving a short sample — with some simplifications — drawn from Ian Caldwell's superb thesis (1988) in which he edits and translates several of these texts. This extract is from what seems to be a seventeenth-century work providing the genealogy of the rulers of Soppeng. Caldwell's Bugis text is based on comparison of seven manuscripts and runs through fourteen generations to the ruler who converted to Islam in 1609. The whole text runs to four pages of Bugis in typescript, six of English. It begins — with letters indicating personal names in order to bring out the structure more clearly:

> May I not swell for setting out in order the descendants of the lord called A who descend at Sékkanyili. He went to marry at Suppa' with B. Their child

[9] Since the point is of importance in what follows, it is worth noting that I believe Cummings (2002) is wrong to argue that writing produced the status; status surely pre-dated literacy. See Macknight 2002:106.

[10] Most work has been done on Bugis texts of this type, but a glance at the Makasar chronicles of Gowa and Tallo, now available in Cummings' excellent edition, shows a Makasar interest in genealogy quite the equal of the Bugis. As he remarks, 'the texts are elaborately genealogical' (2007:10).

> was C. C married D. Their children were E, who returned as Datu of Suppa', and F, the Datu of West Soppéng. F went to marry at Balusu with G. Their child was H. H was Datu of West Soppéng [and seems to have been active in promoting wet rice agriculture]. H married at Léworeng with I. They had seven children, among them J who ruled Bila, he was the first lord of [historic] Soppéng. The younger brother of J, called K, was Datu of West Soppéng. Their other children with L, M, N and O. O married at Baringeng with P. Their children were Q, R, S, T, U and V…. (Caldwell 1988:122)

That covers the first four generations, and then things begin to get complicated and the net widens. It is notable that two fifth-generation figures, one in the sixth generation and possibly another two in the eighth can be identified in the parallel genealogy of Cina (Caldwell 1988:117).

Our manuscript copies of this work are from nineteenth and twentieth centuries and the original may have been composed in the seventeenth century, but the level of detail appears to require the existence of earlier written sources. It is possible to imagine oral transmission of the relatively simple line of descent for the first few generations; the expansive and coherent record which we have seen beginning in the fifth generation of Soppeng implies writing. These extensive genealogies run down to and include individuals with firm dates, usually associated with the formal arrival of Islam in the early seventeenth century, so that it is possible to count back the generations to the point of expansion — in the case of Soppeng, from the fourteenth back to the fourth generation. One could quibble about the number of years to allow for a generation and about at which point exactly a written record may be implied, but the best estimate for the presence of writing is sometime in the fourteenth century.[11] A precise date does not affect the question of why it was worth developing and, as we have seen above, there was much else happening at that time in South Sulawesi.

There is general agreement on the practical matter of what was written upon. The Makasar word *lontara'* derives by regular processes from the Malay and Javanese *lontar*, which is derived by metathesis from words meaning 'palm leaf'. The meaning of *lontara'* has then expanded to signify both script and manuscript. The straightforward Makasar term *leko'-ballo'*, literally 'palm-leaf', is used with the same expansion of meaning (Cense 1979:390). The Bugis use of *lontara'* is taken from the Makasar form of the word. The act of writing on palm leaf involved scratching a mark on a smooth, pale surface and then filling in the mark with a dark substance. While this process is common across South and Southeast Asia, the format of the palm leaf in the few examples we have of South Sulawesi palm-leaf manuscripts is unique. All known examples appear to be in Bugis. A single line of text was inscribed along a narrow strip which was sewn end-on to another strip. The final ribbon of manuscript could run to several metres and it was then rolled up in a frame to make a kind of casette.[12]

[11] See Caldwell 1998 for more on Bugis genealogies.
[12] On these manuscripts, see Kern (1939:580–3) for an excellent description of their manufacture, Macknight (1986:222–3) for the general context, and Yayasan Harapan Kita 1998 for some very clear photographs. Noorduyn (1993:561–4) has a useful discussion of

It is not known when paper became available in South Sulawesi and when, therefore, it was possible to produce a manuscript codex, though this was certainly possible by the seventeenth century. It seems reasonable to suppose that the palm-leaf ribbons were used before paper, but in the absence of dated early examples, there is no actual proof of this. The availability of paper would also have made the composition of longer works more feasible.

Occasional examples of writing on other media can be found over the centuries, but never at any length. The assumption that South Sulawesi scripts began to be written on palm-leaf ribbons appears to be reasonable.

**The system of writing**

The essential principle of the Old Makasar and Bugis scripts is that a character, representing a consonant and an inherent vowel /a/, can have the vowel modified by the addition of a sign above, below, before or behind the character. This principle is undoubtedly Indic and is common across many scripts found in Southeast Asia. Because the Sanskrit term for a character is *akṣara*, I believe it is helpful to call these scripts, aksaries. This avoids confusion with alphabets and syllabaries.[13]

The very word, alphabet, however, reminds us of an important point. Such a system of writing is more than a collection of symbols; it is a series of symbols. For aksaries too, the series is important. One of the great discoveries of the Sanskrit grammarians was to arrange their *akṣara* in a series reflecting phonetic relationships, that is velars or gutturals, were followed by palatals, by cerebrals, by dentals, by labials — mirroring the progression from the throat to the lips — and then various fricatives and others.

If we think of the task of bringing this system to the writing of a new languages, various points of decision are needed. The first task is to recognise the phonemes of the new language or languages and, in particular, relate them to the phonemes of the donor system. Here Makasar and Bugis present no special problems since the phonemic structure of each is simple with seventeen identified consonants and five vowels for Makasar, six for Bugis.[14] The apparent simplicity of the problem of rendering these phonemes in a system derived from elsewhere, perhaps from another Austronesian language with relatively similar phonemic structure or at least with an awareness of some prior transfer into an Austronesian language, should not blind us to the elegance of the solution.

The second task in this process of transfer is to arrange the phonetic symbols or graphemes, in this case the aksaras and the vowel modifiers, into series. It is primarily through the series that the aksaras and their value can be learned. Here,

---

Kern's ideas on the script and Tol (2009) provides detailed photographs of particular aksaras and a discussion of the text of one such manuscript.

[13] It is also convenient to use the terms 'aksara' and 'modifier' to describe the elements of the aksaries and this will be followed below.

[14] Both later added /*ha*/ for rendering Arabic terms and, as described below, omit the glottal stop.

the two Sanskrit series which begins with the velars or gutturals, /*ka*/, /*ga*/, /*nga*/, and orders the vowels in some variant of /*a*/, /*i*/, /*u*/, /*e*/, /*o*/ seems to have been widely, though not universally, influential. For example, Kozok, in discussing the order of aksaras in Batak scripts and building in part on van der Tuuk's work, distinguishes six different orders, some with minor variations as well (Kozok 2009:86–8). It is hard to see a pattern in the first four variants, while the sixth derives from a mnemonic phrase. In the fifth order, which van der Tuuk used for his 1861 dictionary, Kozok believes that the influence of the Sanskrit order almost certainly derives from van der Tuuk himself. Similarly, with Javanese, the common *ha-na-ca-ra-ka* order derives from a mnenomic device, though a Sanskrit-like order is also found. Given the importance of the order of the aksaras in various scripts, this question deserves further work.

For the South Sulawesi scripts, the order of the aksaras is clearly related to, but not identical with, the Sanskrit order. There is relatively little variation in the sources. The earliest published order is found in Raffles *History of Java* from 1817, closely followed by Crawfurd in 1820 and Thomsen in 1832 and 1833. The material is clearly set out and discussed by Noorduyn (1993:533–41). Though one might guess at some influence of the Sanskrit order from Leyden or other scholars around Raffles, there seems no reason to assume this and, bearing in mind Kozok's suspicion of van der Tuuk's influence, it should be noted that this is well before Matthes began his work. The major difference between the Sanskrit order and the South Sulawesi order is that, after the velars [/*ka*/, /*ga*/, /*nga*/], the order of the palatals [/*ca*/, /*ja*/, /*nya*/], dentals [/*ta*/, /*da*/, /*na*/] and labials [/*pa*/, /*ba*/, /*ma*/] is reversed[15] — 'inexplicably' according to Noorduyn (1993:567). As discussed below, I believe the now-standard order — or one very like this — to derive from the original development of the South Sulawesi scripts. The fact that this order seems to apply to both the Old Makasar and the *lontara'* scripts is significant in itself.

Both scripts in their original form share three other distinctive and related features when compared with others across the archipelago: the lack of a *virama* or means of 'killing' the vowel; the lack of a means to indicate the final consonant in a syllable — though in Bugis and Makasar this can only be a nasal or a glottal stop; and the lack of means to indicate gemination of consonants or a stop before a consonant.[16] Admittedly, there have been many attempts to 'remedy' these shortcomings. Noorduyn (1993:544–9) argues persuasively that the four pre-nasalised aksara common in Bugis texts (/*ngka*/, /*mpa*/, /*nra*/. /*nca*/) are later additions and are more useful for Bugis than Makasar. He also notes that a superior tick, used to indicate a schwa vowel in Bugis, is sometimes used in Makasar to indicate a final nasal (1993:549–53). A variety of more elaborate stratagems have been devised to address the 'problems', but none have gained wide acceptance (Noorduyn 1993:559–61). Taken as a whole, these three distinctive features of the South Sulawesi scripts appear to go back to the origin of the scripts. They suggest a highly sophisticated understanding of the phonology of Bugis and Makasar, in particular the fact that syllables can only end in the open vowel, a nasal or glottal stop. It is this limitation

[15] There are no cerebral phonemes in the South Sulawesi languages.
[16] The doubling up of vowel modifiers on a single aksara, particularly, but not always, where the same vowel is concerned, is another notable feature. For examples see Tol 2009:195. Miller (2013:11) provides Philippine examples using the same vowel.

which allows the scripts to function as a recognisable representation of the languages — at least to native-speakers!

It has long been realised that the lack of the *virama* in Philippine scripts, while even more troubling in the relevant languages, indicated a relationship with the South Sulawesi scripts. The question arises as to who influenced whom? Given what we now know about the early history of South Sulawesi, as discussed above, it seems more probable that the influence was northwards, that is sailors from South Sulawesi or perhaps visitors from the Philippines carried the idea of writing from Sulawesi to the Philippines. We assume contacts on other evidence and there is well over a century between the probable development of writing in South Sulawesi and the earliest records of Philippine writing.[17]

An important consequence of this hypothesis is that the Philippine graphemes for the aksaras, whether historic or contemporary, may retain archaic features of South Sulawesi graphemes which have now been lost. It is to these graphemes that we must now turn.

**The form of writing**

While the system of writing found in the South Sulawesi scripts has long been recognised as Indic, the form of the aksaras and their relationship to other scripts has been a problem. In his 1848 survey of scripts, Crawfurd gave up: 'It may safely be said that the Bugis letters bear no resemblance to those of Sumatra, of Java, or even to the obsolete alphabet of Sumbawa.' Even the Old Makasar script 'has the classification of the Dewanagri, and in point of form differs wholly, not only from the alphabet in use, but from every other of the Archipelago' (Crawfurd 1848:774). It is worth quoting Holle in 1882 at some length since he, of all people, had a broad view of the problem:

> The alphabets of Celebes, however, and those of Bima and Endeh, which are derived from those of Celebes (probably long ago), differ almost completely as far as form is concerned from those of India. If it were not for the placement of vowel signs for /i/, /e/, /u/ and /o/ (above, before, below and behind the aksara) and the arrangement of the letters according to the way they are articulated in the mouth, as in the Indian alphabets, which provide a strong indication that these alphabets also have an Indian origin, one could almost doubt it on the basis of the shape of the letters. A few letters, however, show some similarity. If one looks, for example, at the Old Makasar alphabet, it is possible to find a little similarlity with the Kawi alphabets for the letters /g/, /p/, /m/ and /l/. That alphabet was in use until the seventeenth century. If, however, one recalls that, as language and many old superstitions show, Celebes no more remained free of Hindu influence than the other islands of the archipelago, then it seems easier to be guided by these indications and accept that the Makasar and Bugis alphabet is of Indian origin and that their creator only wanted to show some originality by changing the

[17] A fourteenth-century date for writing in Sulawesi would even allow for any likely date for the problematic Catalagan pot inscription. See Guillermo and Paluga 2011.

> form of the letters — unless it might later appear that the change took place gradually, but I believe there is little chance of this.
>
> Whether, in the remote past, there was an alphabet in Celebes that was closer to the Indian type might perhaps come to light if an ancient inscription on stone should be found, just as has unexpectedly turned up recently in Borneo. Although this is not very likely in that so far there has been no mention of such a thing, yet I think it not completely impossible (after Holle 1882:6).

There the problem sat for well over a century. Noorduyn (1993:568) offered a possible line of evolution for two aksaras in the *lontara'* script and promised a fuller treatment for that and for Old Makasar, but was tragically unable to complete the task. Mere comparison of the forms of aksaras, however, particularly of selected examples, has its limits. The most extensive recent attempt to solve a related problem by this approach is by Wade (1993), who provides a wealth of data in his effort to relate Cham scripts to the Philippine scripts. In my view, he does not get past establishing a very general relationship.

The situation has now been transformed by the work of Christopher Miller and I accept the general line of his conclusions, at least in the areas where I am able to judge. His work is distinguished by his attention to system as well as form and, most importantly, he deals with the full series of aksaras for each script. In essence, he suggests starting from 'an early variety of Gujarati script' (Miller in press:1) and creating an hypothetical proto-script for known scripts in Sumatra, Sulawesi and the Philippines. This is a risky move, but it seems to be vindicated by the results.

In Sumatra, the Gujarati-derived proto-script may or may not have been contemporary with the earlier scripts known from stone inscriptions, but there are many differences between the scripts of the inscriptions and the wide variety of scripts known from recent centuries on bamboo and bark in both central and southern Sumatra. Miller derives the Old Makasar script from the southern Sumatra scripts (Miller in press:9–10). An important point to note here is that the Old Makasar script, at least in the examples we have from the seventeenth and eighteenth centuries, shares with the *lontara'* script the Sulawesi features relating to vowels and the lack of *virama*.

For the reasons already explained, the Gujarati-derived proto-script probably arrived in South Sulawesi before it, or a derivative, reached the Philippines. The Philippine scripts, however, would seem to preserve more faithful versions of the aksara forms than the later South Sulawesi scripts and thus it is these which Miller uses to demonstrate the relationship (Miller 2013). At this point, it is useful to recall Caldwell's conclusion that writing was developed in South Sulawesi sometime in the fourteenth century and, as set out above, there is abundant evidence of external contacts northwards from the major centres in South Sulawesi at this time and even earlier.

**The form and order of *lontara'***

Even a cursory glance at the Sumatran and Philippine scripts derived, according to Miller, from the Gujarati-derived proto-script shows a considerable gap between these scripts and the modern *lontara'* script. Noorduyn (1993) shows how Matthes was responsible in the late nineteenth century for developing the beautiful script used in his publications and that has clearly influenced later handwriting, but even allowing for that, we have enough examples of *lontara'* script from the eighteenth century to show that the script was well established by then.[18]

In the past, it has been possible to assume a relatively straightforward sequence of development, even if there was no evidence for it: a Kawi or some other Javanese script somehow produced Old Makasar with the loss of the *virama* and other minor changes, which in turn led to *lontara'* for Bugis with the addition of a vowel sign for schwa and the prenasalised-consonant aksaras. Noorduyn (1993:545) explains the reason why it is more convenient to have the prenasalised-consonant aksaras in Bugis than in Makasar, but in any case, their use is very inconsistent. The difficulty has always been that one cannot demonstrate any consistent relationship between the full series of aksaras in a Kawi script and Old Makasar aksaras, or between the Old Makasar aksary and the *lontara'* aksary whether used for Bugis or Makasar.

Miller's hypothesis avoids this difficulty by proposing the derivation of Old Makasar from the south Sumatra scripts as a separate process from the derivation of the *lontara'* script from the Gujarati-derived proto-script. He has still to assume some contact between Old Makasar and *lontara'*, however, as seen in their similar systems of vowel modification. This, Miller suggests, came about because Gujarati merchants had introduced the south Sumatran scripts as a 'quasi-abjad', that is almost as independent consonants, and needing better legibility, they or others had taken over the Kawi vowel modifiers, including the *virama*. In turn, the South Sulawesi systems had both abandoned the *virama* — and later Bugis *lontara'* developed the idea of prenasalised-consonant aksaras in forms different from those in any Sumatran model (Miller 2013:7–8). For the moment, it is helpful to leave the Old Makasar script out of the discussion, though we will return to it below.

In dealing with the *lontara'* script, I am struck by two features of it in use. Firstly, not all aksaras are equal, and secondly, the design elements of the script are remarkably restricted.

To illustrate the first point, I counted up the use of individual aksaras in various types of text. The percentage occurrence of aksaras on a page may vary a little if one particular name is used repeatedly or for some other similar reason and there does seem to be some variation across the type of material, but overall the results are reasonably consistent and set out in table 1.

[18] It would be a useful exercise to compile a list of securely dated examples of *lontara'* script. I know of none before the eighteenth century.

*Table 1. Percentage usage of Bugis aksaras*[19]

| | | | | |
|---|---|---|---|---|
| Ka |  | 3.7 | | |
| Ga |  | 1.6 | | |
| Nga |  | 3.5 | | |
| Ngka |  | 0.5 | | |
| | | | Velars | 9.3 |
| Pa |  | 6.2 | | |
| Ba |  | 2.2 | | |
| Ma |  | 7.0 | | |
| Mpa |  | 1.0 | | |
| | | | Labials | 16.4 |
| Ta |  | 9.2 | | |
| Da |  | 3.6 | | |
| Na |  | 11.1 | | |
| Nra |  | 1.9 | | |
| | | | Dentals | 25.8 |
| C |  | 0.8 | | |
| J |  | 2.1 | | |
| Nya |  | 0.3 | | |
| Nca |  | 0.01 | | |
| | | | Palatals | 3.2 |
| Ya |  | 2.7 | | |
| Ra |  | 8.3 | | |
| La |  | 8.6 | | |
| | | | | 19.6 |
| Wa |  | 7.5 | | |
| Sa |  | 5.2 | | |
| A |  | 12.9 | | |
| | | | | 25.6 |
| Ha |  | 0.01 | | |

The usage of vowels, other than /a/, is more equal as shown in table 2.

[19] These figures are derived from counting 3518 asksaras on Matthes 1864–72: vol. 1, 301, 521, 582; vol. 2, 3, 265, 438, 518.

*Table 2. Percentage usage of Bugis vowel modifiers*[20]

| | | |
|---|---|---|
| /a/ | nil | 41.9 |
| /i/ | ◌ᨗ | 16.0 |
| /u/ | ◌ᨘ | 11.9 |
| /é/ | ◌ᨙ | 11.8 |
| /o/ | ◌ᨚ | 9.8 |
| /e/ | ◌ᨛ | 8.7 |

One obvious point is that the system of using the default vowel /a/ for the aksaras suits Bugis very well. It is probably coincidental that the frequency of vowel usage declines in accordance with the usual order in which the vowel modifiers are arranged in their series.

The figures for aksaras, that is, in effect, for consonants, are more interesting. Some figures may be explained by particular circumstances, such as the high figure for /*na*/ which serves a variety of functions as prefix and suffix, or the very low figure for /*ha*/ which reflects its exclusive use in religious material. The most striking feature of the list, however, is the very low occurrence of the palatals. I suggest that this feature may explain the rearrangement of the order of the aksaras; the palatals were simply too rare to come as the second group in the series and the order the three groups, labials, dentals and palatals, was adjusted to move from the front of the mouth to the back. The velars were left in place because any aksary was expected to begin with /*ka*/, /*ga*/, /*nga*/, as found across the archipelago.

There is another, even more speculative, reason behind the order.

Noorduyn (1993:564–8), among others, has observed that the design elements of the lontara' script are remarkably restricted. He distinguishes four: the vertical stroke, the V shape, the inverted V shape and the dot. I am not sure that the vertical stroke, which only occurs in some versions of /*ka*/ and a rare form of /*sa*/, is strictly needed, and I would reduce the elements to two: the diagonal stroke in either direction and the dot. If we assume that the script was originally written on palm-leaf strips, then this seems sensible; a stylus can make a clear mark diagonally across the grain. Rahman (2006:37) reports that an elderly lady in 1999 remembered her aunt — but perhaps just an older woman — marking the palm leaf with two pointed implements: one like an elongated question mark for making extended lines, the other a round point for making dots. The very clear photographs of a palm-leaf ribbon manuscript in the South Sulawesi branch of the National Archives show aksaras without any curvilinear element at all, though this is apparently a relatively modern example of the format (Yayasan Harapan Kita 1998:116–17, 132). The somewhat older, but undated, examples held in the Tropenmuseum in Amsterdam are almost as angular. Admittedly, the aksaras in the palm-leaf strip manuscript shown by Tol (2009) include some curvilinear elements and the example of the 'palm-leaf' script reproduced by Noorduyn (1993:562) is largely made up of rounded aksaras — though this last example is actually on paper, not a palm-leaf strip. An

[20] The figures are drawn from counting 714 aksaras on Matthes 1864–72: vol. 1, 185; vol. 2, 540.

even more divergent form of the script — though still quite legible — is found in a short text impressed into the silver base of a sirih box; the punches used to create the aksaras seem to have been either circular, held at an angle to produce a semi-circle in many cases, as well as a straight edge and a point.

Whatever the flexibility of the script, however, all the basic shapes can be reduced ultimately to diagonal strokes and dots. Thus the aksara for /*sa*/ /  / can be seen as four strokes forming a lozenge and this has given rise to an association with the so-called *sulapa' eppa'* or four-sided concept in Bugis thought (Noorduyn 1993:566; Rahman 2006:31–3, both quoting Mattulada). I remain a little sceptical of the power of this to explain the origin of the script since there are many other manifestations of four-sidedness in the conceptual world of Austronesian speakers, but it is at least interesting to note the claim.

Taken as a whole, and especially when compared with others ultimately derived from an Indic source, even the Sumatran and Philippine scripts, the *lontara'* script is regular, clear and restrained. It is parsimonious in its balance of line to phonetic realisation. This takes some specific forms in relation to the Bugis language and we need to remember that it is this spoken language which the script is representing in the first instance. We have already noted the 'efficiency' of /a/ as the default vowel.

Some aksaras are also simpler than others. Notice, to begin with, the simplicity of /  / [7.0%], /  /[9.2%], /  /[3.6%] and /  /[11.1%] and, except for //, their relatively high usage. Conversely, the much more complex palatals are relatively rare: //[0.8%], /  /[2.1%] and /  /[0.3%].

Further patterns emerge when we consider the order of the series. Leaving aside the prenasalised aksara /  / which is clearly inserted, // and //, // and // form two pairs. Not quite so perfectly, the preceding // and // consist of an initial up-stroke from the bottom left, followed by three sides of the lozenge inverted in the case of //. If we group the original last six aksaras into two groups of three, then each begins with a glide /  / and /  /, for which the forms are obviously related, while the simple vowel comes last /  /.[21]

All these patterns occur within what is usually considered the 'original' series of eighteen aksaras. The additional four prenasalised aksaras are inserted after their corresponding nasal and, as Noorduyn argues (1993:545), the form of two of the four relates to the non-prenasalised aksara, and the form of a third to the nasal. One can play with various possibilities to explain //. The form of the final, special aksara // may be related to the Arabic *haa'*.

These patterns within the order of the series suggest a further reason for that order. In particular, the last labial // immediately precedes its inverse // the first

[21] It is tempting to play with other possible pairs, though none are very convincing. Thus // and // have some similarity, as do // and //. The final palatal // is followed by //.

dental and this, along with the low usage of palatals, goes some way to explaining the puzzling re-arrangement of the Sanskrit order.[22]

**The form of Old Makasar**

Before discussing the implications of this analysis of the *lontara'* script, it is of some interest to look at the results of applying the same process to Old Makasar. Table 3 and table 4 present the results from Makasar material, though admittedly found in *lontara'* form in Matthes as shown in the third column.

*Table 3. Percentage usage of Makasar aksaras*[23]

| | | | | | |
|---|---|---|---|---|---|
| Ka |  |  | 10.3 | | |
| Ga |  |  | 1.3 | | |
| Nga |  |  | 4.5 | | |
| | | | | Velars | 16.1 |
| Pa |  |  | 5.9 | | |
| Ba |  |  | 6.2 | | |
| Ma |  |  | 8.7 | | |
| | | | | Labials | 20.8 |
| Ta |  |  | 8.8 | | |
| Da |  |  | 3.2 | | |
| Na |  |  | 11.5 | | |
| | | | | Dentals | 23.5 |
| C |  |  | 0.5 | | |
| J |  |  | 3.3 | | |
| Nya |  |  | - | | |
| | | | | Palatals | 3.8 |
| Ya |  |  | 3.3 | | |
| Ra |  |  | 8.1 | | |
| La |  |  | 8.4 | | |
| | | | | | 19.8 |
| Wa |  |  | 2.3 | | |
| Sa |  |  | 4.7 | | |
| A |  |  | 8.9 | | |
| | | | | | 15.9 |
| Ha | |  | - | | |

[22] Note that it would be possible to run this argument the other way, that is, that adjacent aksaras in the order are given related forms. This, however, would be to remove any relationship at all between the form of the lontara' aksaras and any prior model. The argument for form helping to determine order, as suggested in the text, is easier to accept.
[23] The figures are drawn from counting 1029 aksaras on Matthes 1883b:51, 345.

Comparison with table 1 shows surprising similarity in many cases and no marked differences. Again the high value for /*na*/ reflects the language.

*Table 4. Percentage usage of Makasar vowel modifiers*[24]

| | | |
|---|---|---|
| /a/ | nil | 49.8 |
| /i/ | ◌ᨗ | 14.3 |
| /u/ | ◌ᨘ | 16.5 |
| /é/ | ◌ᨚ | 18.4 |
| /o/ | ◌ᨛ | 11.0 |

Comparison with table 2 shows considerable similarity, though most of the Bugis schwa count has moved to /a/ as one would expect from the regular correspondences in the two languages.

Whatever its nostalgic charm, it is hard to see much pattern, much less regularity, clarity or restraint in the Old Makasar script. It shows no influence of any need to accommodate the requirements of a particular medium or tool. Nor do there seem to be the patterns in the order of the series which we have noted in the *lontara'* script.

**A possible narrative of developments**

Holle was right to doubt whether any stone inscriptions would come to light in Sulawesi which could throw light on the development of writing there. None has appeared. We are left, therefore, with the scripts as found on various kinds of media, but none of the surviving material can be dated earlier than the later seventeenth century. Is it possible to advance a possible narrative of the processes involved in the development of these aksaries?

I believe any explanation must be along the following lines. At some time in perhaps the fourteenth century, the benefits of recording information in writing prompted some person or persons to think about how this could be done for Bugis and Makasar. The similarities and the differences in the solution for the two languages raise a problem. Given the similarities in the system adopted for the two languages as described above — the identification of phonemes, the use of vowel modifiers, the loss of the *virama* and perhaps the ordering of the series — was this a single event, after which differences in the form of the aksaras arose? If this were the case, it is rather easier to assume the priority of the Old Makasar aksaras. Or, given the different derivation in the form of the Old Makasar and *lontara'* aksaras — as Miller would suggest — were there essentially two initial events followed fairly soon by contact which produced the similarities?

On balance, I tentatively favour the former scenario, with the provision that the development of the *lontara'* aksaras for Bugis involved some reference back to forms additional to those which had produced the Old Makasar aksary. This does, however, involve a difficulty if we assume that the order of the aksaras is, in the

[24] The figures are drawn from counting 510 aksaras on Matthes 1883b:251.

ways suggested above, related to the form of particular aksaras in the *lontara'* script, but not the Old Makasar script. Of course, we do not possess any evidence for the order of the Old Makasar aksary before possible influence from the *lontara'* aksary and one could argue that this matter of ordering favours a more independent development of the *lontara'* script.

There should be no surprise if process seems more complicated than a simple linear progression when one recalls the many lines of contact across the archipelago at this time. The argument of the development of writing in about the fourteenth century rests essentially on Bugis materials and I see no strong reason to doubt that that writing was in *lontara'* script. In other words, the differential use of the two scripts which we can observe in the seventeenth century may go back to at least the fourteenth century.

In the course of the eighteenth century, it would seem, the *lontara'* script came to be used also to write Makasar, though the dating for this is very vague. Presumably the simpler form of most aksaras was the main recommendation and there was no felt need to adopt the Bugis innovation of the pre-nasalised aksaras. For Raffles and others in the early nineteenth century, there was still enough memory of the Old Makasar script for them to record it, as indeed there is faint memory today, but the use of the *lontara'* script for Makasar in the printed works of Matthes and by the vast majority of nineteenth-century copyists meant that it came to dominate.

**Conclusion**

By the eighteenth century, at least, we have evidence of long manuscripts in Bugis being produced using a script very recognisably similar to the modern *lontara'* script. Certainly, some variation can be observed in the representation of certain aksaras as Noorduyn (1993) and Tol (2004) have so carefully described — and I believe that there are many more examples of minor variation to be discovered. There have also been various attempts to improve the system as Noorduyn and Salim (1988) have illustrated. But these variants seem to me to be minor when compared with the overall form and system of the script. Although interesting, they are evidence of a continuing willingness to experiment and an adapability to circumstances of medium rather than traces of the development of the script.[25]

As noticed above, the very format of writing on palm-leaf ribbons appears to be an invention somewhere in the eastern part of the archipelago and our best examples of it come from South Sulawesi. Moreover the genealogical content of the first writing in Bugis and Makasar, if that can be accepted, is unlike other traditions, even if not surprising in the overall cultural context.

The achievement of the *lontara'* script itself, however, rests on a series of innovations which deserve recapitulation. The first is the recognition of the phonemes of the language and linking these phonemes with aksaras of some kind. The very specific ways in which the aksaras were then developed into a system which suits the Bugis and Makasar languages so well must be seen as a significant intellectual achievement. Whatever view one takes on the point at which the ordering of the

[25] One recalls the successful reform of the Indonesian spelling system in 1972.

series of aksaras may have occurred, the order itself, which adjusts the Indic order to take account of the usage frequencies in Bugis and Makasar, is another remarkable innovation. Most spectacular of all, however, is the development of the forms of the *lontara'* aksaras which are, at the same time, so elegant and so fitted to purpose. There is a touch of genius here.

Do we owe this remarkable feat of innovatory 'localisation' to a single individual or to series of initiatives over some time? It is tempting to imagine a solitary seer, perhaps in fourteenth-century Malangke, pondering the issues and producing this wonderful result — but, if that is the origin of the *lontara'* script, we have no name to honour. What we do know is that this seems to be one part of the wide cultural, economic and political achievements of Bugis society in the early historic period.

Whatever the origins of the South Sulawesi scripts, they have proved very serviceable and the capacity for Bugis and Makasar speakers to record matters in writing has had profound consequences. In both languages, a significant written literature has accumulated over the centuries. If the initial impulse to write lay in recording genealogical information, in the seventeenth century, if not before, this expanded into the chronicles, diaries and other historical works which have attracted considerable scholarly attention. The abundant legal and religious texts are less well-known, and it is instructive to note that, despite some use of Arabic script to write Makasar and Bugis in the *serang*/*sérang* manuscripts, the lontara' script has proven quite capable of handling the vocabulary of Islam. In the end, perhaps the most significant consequence of all has been the creation of the manuscript texts of the La Galigo cycle of stories which I see as having occurred principally in the eighteenth century and which record a major literary genre. This, however, is to get on to the content of what was written. Our scope in this paper is limited to the South Sulawesi scripts themselves and here we can surely speak of the triumph of *lontara'* as an enduring solution to writing Bugis and Makasar.

**References**

Barnes, Ruth 2004, 'Indian textiles for island taste: Gujarati cloth in eastern Indonesia', *Ars Orientalis: the arts of Islam and the East*, 34, pp. 134–49.

Borschberg, Peter (ed.) 2014, *The Memoirs and memorials of Jacques de Coutre: security, trade and society in 16th- and 17th-century Southeast Asia*, NUS Press, Singapore.

Bulbeck, FD 1992, A Tale of Two Kingdoms: The Historical Archaeology of Gowa and Tallok, South Sulawesi, Indonesia, unpublished PhD thesis, The Australian National University.

Bulbeck, David 2004, 'Divided in space, united in time: The Holocene prehistory of South Sulawesi', in Susan G Keates and Juliette M Pasveer (eds), *Quaternary Research in Indonesia (Modern Quaternary Research in South East Asia 18)*, Balkema, Leiden, pp. 126–66.

Bulbeck, David 2008a, 'An Integrated Perspective on the Austronesian Diaspora: The Switch from Cereal Agriculture to Maritime Foraging in the Colonisation of Island Southeast Asia', *Australian Archaeology*, 67, pp. 31-51.

Bulbeck, David 2008b, 'Review of William P Cummings, *A chain of kings*', *Review of Indonesian and Malaysian Affairs*, 42(1), pp. 207–20.

Bulbeck, David 2010, 'Uneven development in southwest Sulawesi, Indonesia during the Early Metal Phase', in Bérénice Bellina, Elisabeth A. Bacus, Thomas Oliver Pryce and Jan Wisseman Christie (eds), *50 Years of Archaeology in Southeast Asia: Essays in Honour of Ian Glover*, River Books, Bangkok, pp. 152–169.

Bulbeck, David and Caldwell, Ian 2000, *Land of Iron: the historical archaeology of Luwu and the Cenrana valley*, Centre for South-East Asian Studies, University of Hull/School of Archaeology and Anthropology, Australian National University, Hull/Canberra.

Bulbeck, David and Caldwell, Ian and others in preparation, 'The Bugis transition to intensive rice production in the central South Sulawesi lowlands'.

Bulbeck, David and Clune, Genevieve 2003, 'Macassar historical decorated earthenwares: preliminary chronology and Bajau connections', in Miksic, John N (ed.), *Earthenware in Southeast Asia*, Singapore University Press, Singapore, pp. 80–102

Caldwell, Ian 1988. South Sulawesi A.D. 1300–1600: Ten Bugis Texts. Unpublished PhD thesis. Canberra: The Australian National University.

Caldwell, Ian 1995, 'Power, state and society among the pre-Islamic Bugis', *Bijdragen tot de Taal-, Land- en Volkenkunde*, 151, pp. 396–421.

Caldwell, IA 1998, 'The chronology of the king list of Luwu' to AD 1611', in Robinson, Kathryn and Muklis Paeni (eds), *Living through histories: culture, history and social life in South Sulawesi*, Australian National University/National Archives of Indonesia, Canberra, pp. 29–42.

Caldwell, Ian and Bougas, Wayne 2004, 'The early history of Binamu and Bangkala, South Sulawesi', *Bijdragen tot de Taal-, Land- en Volkenkunde*, 160, pp. 456–510.

Cense, AA 1979, *Makassaars-Nederlandsch Woordenboek*, Nijhoff, 's-Gravenhage.

Crawfurd, John 1848, 'On the alphabets of the Indian archipelago', *Journal of the Indian Archipelago*, 2, pp. 765–78.

Cummings, William P 2002, *Making Blood White: historical transformations in early modern Makassar*, University of Hawai'i Press, Honolulu.

Cummings, William P 2007, *A chain of kings: the Makassarese chronicles of Gowa and Talloq*, KITLV Press, Leiden.

Druce, Stephen C 2009, *The lands west of the lakes: a history of the Ajattappareng kingdoms of South Sulawesi 1200 to 1600 CE*, KITLV Press, Leiden.

Guillermo, Ramon G and Paluga, Myfel Joseph D 2011, '*Barang king banga*: A Visayan language reading of the Calatagan pot inscription (CPI)', *Journal of Southeast Asian Studies*, 42(1), pp. 121–159.

Holle, KF 1882, *Tabel van Oud- en Nieuw- Indische alphabetten*, Bruining, Batavia and Nijhoff, 's Hage.

Jukes, Anthony 2005, 'Makassar', in Alexander Adelaar and Nikolaus P Himmelmann (eds),*The Austronesian Languages of Asia and Madagascar*, Routledge, London and New York, 2005, pp. 649–82.

Kern, RA 1939, *Catalogus van de Boegineesche, tot den I La Galigo-cyclus behoorende handschriften der Leidsche Universiteitsbibliotheek alsmede van die in andere Europeesche bibliotheken*, Universiteitsbibliotheek, Leiden.

Kozok U 2009, *Surat Batak: sejarah perkembangan tulisan Batak berikut pedoman menulis aksara Batak dan cap Si Singamangaraja XII (Naskah dan Dokumen Nusantara Seri XXV)*, École française de'Extrême-Orient/Kepustakaan Populer Gramedia, [Jakarta].

Macknight, CC 1983, 'The rise of agriculture in South Sulawesi before 1600', Review of Indonesian and Malaysian Affairs, 17, pp. 92–116.

Macknight, CC 1986, 'Changing perspectives in island Southeast Asia', in Marr, DG and Milner, AC, *Southeast Asia in the 9th to 14th centuries*, Institute of Southeast Asian Studies, Singapore/Australian National University, Canberra, pp. 215–27.

Macknight, CC 1993, *The Early History of South Sulawesi (Working Paper 81)*, Centre of Southeast Asian Studies, Monash University, Clayton.

Macknight, Campbell 2002, 'Review of Cummings, *Making Blood White*', *Review of Indonesian and Malaysian Affairs*, 36(1), pp. 105–7.

Macknight, Campbell (ed.) 2012, *Bugis and Makasar: two short grammars (South Sulawesi Studies 1)*, Karuda Press, Canberra.

Matthes, BF 1883a, *Eenige proeven van Boegineesche en Makassaarsche poëzie*, Nijhoff, 's-Gravenhage.

Matthes, BF 1883b, *Makassaarsche Chrestomathie*, Nijhoff, 's-Gravenhage.

Matthes, BF 1864–72, *Boeginesche Chrestomathie*, 3 vols, Spin, Amsterdam.

Maxwell, Robyn 2003, *Sari to sarong: five hundred years of Indian and Indonesian textile exchange*, National Gallery of Australia, Canberra.

Miller, Christopher 2013, 'Devanagari's descendants in North and South India, Indonesia and the Philippines', *Writing Systems Research* 2013, pp. 1–15. DOI: 10.1080/17586801.2013.857288

Miller, Christopher in press, 'A Gujarati origin for scripts of Sumatra, Sulawesi and the Philippines', *Proceedings of the Berkeley Linguistics Society 36: writing systems and orthography*.

National Library of Australia 2014, *Mapping our world*, National Library of Australia, Canberra.

Noorduyn, J 1993, 'Variation in the Bugis/Makasarese script', *Bijdragen tot de Taal-, Land- en Volkenkunde*, 149, pp. 533–70.

Noorduyn, J and Salim, M 1988, 'Special Buginese characters in Luwu' manuscripts', *Bijdragen tot de Taal-, Land- en Volkenkunde*, 144, pp. 351–2.

Rahman, Nurhayati 2006, *Cinta, laut, dan kekuasan dalam epos La Galigo*, La Galigo Press, Makassar.

Robson, S 1995, *Deśawarṇana (Nāgarakṛtāgama) by Mpu Prapañca*, KITLV Press, Leiden.

Tol, R 1996, 'A separate empire: writing of South Sulawesi', in Kumar, A and McGlynn, JH (eds), *Illuminations : the writing traditions of Indonesia*, Weatherill, New York and Tokyo.

Tol, R 2009, 'Rolled up Bugis stories: marriage advice and the tale of the parakeet', *Review of Indonesian and Malaysian Affairs*, 43(1), pp. 189–208.

Wade, G 1993, 'On the possible Cham origin of the Philippine scripts', *Journal of Southeast Asian Studies*, 24(1), pp. 44–87.

Yayasan Harapan Kita 1998 [?], *Indonesia Indah 9 Aksara*, Yayasan Harapan Kita/BP3TMII, Jakarta.