Restructuring our understanding of the South China Sea interaction sphere: the evidence from multiple disciplines

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ACRONYMS

BP	Before present
PAN	Proto-Austronesian
PMP	Proto-Malayopolynesian
SCS Interaction Sphere	South China Sea Interaction Sphere

ABSTRACT

The region of the South China Sea is both a rich zone for maritime interaction and an arena for political conflict in the present. However, the cultures that border it are extremely diverse in language and structural organisation, and part of the challenge in reconstructing the history of the sea is to understand their co-evolution, which allowed these cultures to adopt a shared pattern of trade. The observation that shared ceramic types were found in widely separated locations around the South China Sea almost certainly goes back to Solheim who identified commonalities between the Kalanay pottery of the Philippines and ceramic styles found in Vietnam. This paper proposes that for at least four thousand years there has been a South China Sea Interaction Sphere (henceforth SCS Interaction Sphere), a maritime space marked by intense contact, leading to not only the exchange of goods, but mutual cultural and linguistic influences on populations bordering the sea. A series of maps shows how the languages that border the sea gradually attained their current locations. Words for 'boat' and 'iron' illustrate the dispersal of technologies, while a study of iconography and musical practice maps the consequences of trade and interaction. The genetics literature is reviewed, and the debate over the correlation of genes and Austronesian languages is discussed.

Keywords: South China Sea; linguistics; archaeology; genetics

1. Introduction

The region of the South China Sea is both a rich zone for maritime interaction and an arena for political conflict in the present, so there is no reason to think that this was not already the case as early as vessels were capable of crossing it on a regular basis. However, the cultures that border it are extremely diverse in language and structural organisation, and part of the challenge in reconstructing the history of the sea is to understand their co-evolution, which allowed these cultures to adopt a shared pattern of trade.

The observation that shared ceramic types were found in widely separated locations around the South China Sea almost certainly goes back to Solheim (1957, 1964) who identified commonalities between the Kalanay pottery of the Philippines and ceramic styles found in Vietnam. Solheim attributed this to a putative trading culture, the Nusantao, to which he assigned rather early dates which have little or no foundation in archaeology. He later came to suppose this accounted for the dominance of the Austronesian languages throughout the region (Solheim 1984-5). Although we can safely say this equation is unlikely, his observations about contact remain valid and much additional evidence has now emerged. Since his era, our knowledge of the distribution of trade items has expanded dramatically, in particular underlining the importance of Taiwanese nephrite, which has been found as far away as then Isthmus of Kra in Thailand (Hung et al. 2007). From this we can be sure that active networks were disseminating high-value goods from at least 3500 BP. Indirect evidence points to still earlier contact, but exact dates for this must remain in the realm of speculation.

Archaeological finds with shared characteristics constitute a foundational element in the argument, but they are not dissimilar to a complex crossword puzzle or a murder mystery. To make sense of them, the pattern must be interpreted historically and sociologically. Does trade underlie these commonalties or is this a network of ritual exchange such as operates further into the Pacific, with circuits like the Kula ring? This paper[1] proposes that for at least four thousand years there has been a South China Sea Interaction Sphere (henceforth SCS Interaction Sphere), a maritime space marked by intense contact, leading to not only the exchange of goods, but mutual cultural and linguistic influences on populations bordering the sea.

To give substance to the parameters of the SCS Interaction Sphere we need an approach broader than archaeology. A variety of disciplines are included, notably an understanding of climate, and its corollaries in currents and winds, as well as elements from linguistics, genetics, comparative ethnography and in the later periods, written sources. This paper begins with an overview of the use of interdisciplinary approaches in understand the SE Asian past and then reviews the emerging evidence for the history of a South China Sea Interaction Sphere in the light of this.

2. Interdisciplinary approaches

Although the synthesis of linguistics, archaeology and genetics in the reconstruction of the past is becoming a commonplace in global prehistory, it has yet to make a major impact on the SE Asian region. Hence many of the questions asked are internal to specific disciplines, addressed to colleagues, rather than the larger sphere of understanding the past. A preliminary outline of an agenda for inter-disciplinary study is set out in Wang (1998) who characterised linguistics, archaeology and genetics as ‘three windows on the past’. This is expanded in Blench *et al.* (2008) who apply this type of synthesis to the East Asian region. In addition, comparative ethnography has so far only featured in the archaeology window. But information on the distribution of material and cultural traits is rich and can potentially be incorporated into larger models. Figure 1 sets out a potential multi-disciplinary framework for reconstructing the SE Asian past.

[1] This paper has been written by request from the editors in relation to a book emerging from a conference held in Paris, 17-18th November, 2015. The author was present as a discussant and the arguments develop from reactions to a series of stimulating presentations given in Paris. Particular thanks to the organisers, Frank Muyard, Paola Calanca and Liu Yi-ch'ang for the invitation to attend.

Figure 1. Elements in reconstructing SE Asian prehistory

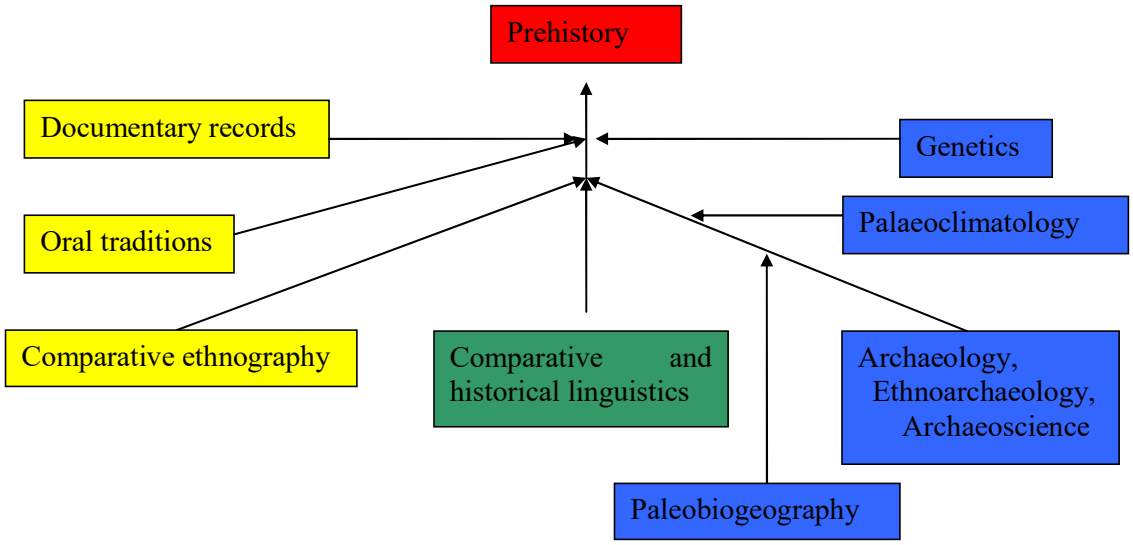


Table 1 shows the different disciplines used for the reconstruction the Southeast Asian past and tabulates various features associated with both their collection and availability. It gives impressionistic estimates both of the type and amount of data available in specific disciplines and also the extent to which such data has been exploited.

3. Regional archaeology

Archaeology is typically a nationalist enterprise. Monographs are often framed in terms of the prehistory of nation-states which clearly did not exist at the period covered by the narrative. Current political rivalries all too frequently result in the undervaluing of findings from a neighbouring country, no matter how arbitrary the boundaries. Given that sea-level change during the Holocene has dramatically changed the actual configuration of the land, this can be misleading for reconstructing interactions on the SE Asian mainland. For a sea, it can be disastrous; oceans exist to be crossed and there is every sign that they were as crucial as land routes in the thinking of merchants and seamen.

Evidence for some type of maritime capacity in this region goes back as far as the first movements of early humans into the area. Humans managed to cross the Arafura Sea from Timor to Australia some 55,000 years ago (O'Connor & Chappell 2003). Ono et al. (2010) document the successive occupation and abandonment of the Talaud islands (which require a 100 km. voyage across open sea) from 35,000 BP onwards. There seem to have been regular transits up and down the chain of the Ryukuyus from 35,000 BP, which is particularly remarkable in the light of the dangers of the 'Black Current'. We have little or no idea what type of ships might be involved in these voyages, since prior to the modern types in the region, there is only evidence for bamboo rafts.

Whatever the case, around 4000 years ago there was a revolution in shipbuilding, apparently in Taiwan, which enabled a marked expansion in seagoing capacity. We know this rather indirectly, as one subset of the Taiwanese populations, taking advantage of enhanced maritime technology, migrated not only to the Batanes and the Northern Philippines (Bellwood & Dizon 2014), but also eastwards to the Marianas (Reid 2002; Hung et al. 2011) and (more controversially) westward back to the Chinese mainland. The archaeological evidence of first settlement in the Marianas by at least 3500 BP is strong, on the basis of convincing similarities in the ceramics. Carson et al. (2013) provide a comprehensive view of the evidence connecting the Northern Philippines with Remote Oceania. Interestingly, change in the ceramics of the Northern Philippines is rapidly reflected in the Marianas, and thus contact was continuous and intentional rather than a one-off voyage.

Table 1. Data classes, their attributes and values in reconstructing SE Asian prehistory

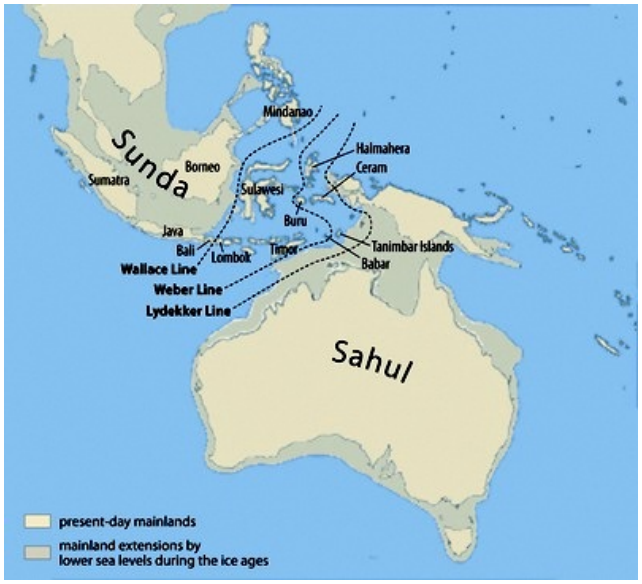
Features	Country	Linguistics	Archaeology	Iconography	Palaeo-climate	Text/epigraphy	Oral traditions	Genetics	Ethnography/ ethnoscience
Samples		Very large number	Small number of point samples	Highly variable sample	Low	Extensive in China, very limited elsewhere	Limited	Large number	Very small number
Precision		Low	High	High	Medium	Medium	Low	High	Very low
Dating		Low	High	Low	Medium	High	Medium	Medium	None
Degree of exploitation in:	Myanmar	Low	Medium	Low	Low	High	Low	Low	Low
	Laos	Low	Medium	Low	Low	Low	Low	Low	Low
	Thailand	Medium	High	Medium	Medium	Medium	Low	Medium	Medium
	Taiwan	High	High	Medium	Medium	None	Low	High	High
	South China	Low	Medium	Medium	Low	Medium	Low	Medium	Low
	NE India	Low	Very low	Low	None	Low	Low	Low	Low
	Cambodia	Low	Medium	Medium	Low	Medium	Low	Medium	Low
	Vietnam	Low	Low	Medium	Low	Low	Low	Low	Low
	Malaya	Medium	Medium	Medium	Low	Medium	Low	Medium	Medium
	Indonesia	High	Medium	Medium	Low	Medium	Low	Low	Low

From this period onwards, evidence for trade and regional interaction accelerates. Concrete archaeological evidence is provided by the distribution of Fengtian jade artefacts (Hung et al. 2007). They say, 'These belong to two phases in Southeast Asian archaeology; the Neolithic in Taiwan (-?3000-500 BC) and the Philippines (-?2000-500 BC) and the Early Iron Age in a much broader region across the South China Sea between 500 BC and 500 AD'. Following this is the evidence from pottery types discussed by Solheim and then an abundance of evidence once bronze artefacts become traded (Hung & Bellwood 2010). Finally there is evidence for the ships themselves in the shape of finds in Indonesia and Vietnam (Manguin 1996, 2004).

4. Palaeo-climate and sea-level data

The process of understanding changes in sea-level in the South China Sea and the consequences for shorelines has only just begun. However, the situation can be summarised by saying that 11,000 years ago sea levels were much lower, and many locations which are islands today were interconnected. After the Last Glacial Maximum, rapid episodes of rises in sea-level occurred at ~14.5, 11.5 and 7.5 ka, flooding about half of the land area of Sundaland, with a concomitant doubling of the length of the coastline. As late as 11,000 BP, the Malay Peninsula, Sumatra, Java and Borneo were still a single landmass and could be reached without navigation (Horton et al. 2005). Wallace's Line, the most important for zoogeography, is longstanding, but as the map shows, other lines of lesser significance can be traced along across Sahul. Bird *et al.* (2005) argue that during the last glacial there was a savanna corridor in southern Sundaland which may have allowed the transit of both humans and possibly the dingo southwards to eastern Indonesia and Australia. Hanebuth *et al*. (2000) and Voris (2000) present a series of maps showing sea-levels and thus land-bridges as different time-slices during the Pleistocene. Map 1, showing the approximate division between Sunda and Sahul, gives an idea of the rise in sea levels which created the system of islands familiar from the present and opened up the potential for maritime trade. The present configuration of islands and mainland may thus be as late as 5000 BP, i.e. only just before many of the major language expansions in the region.

Map 1. Sunda and Sahul



Source: CC

5. Linguistics

5.1 Languages around the South China Sea

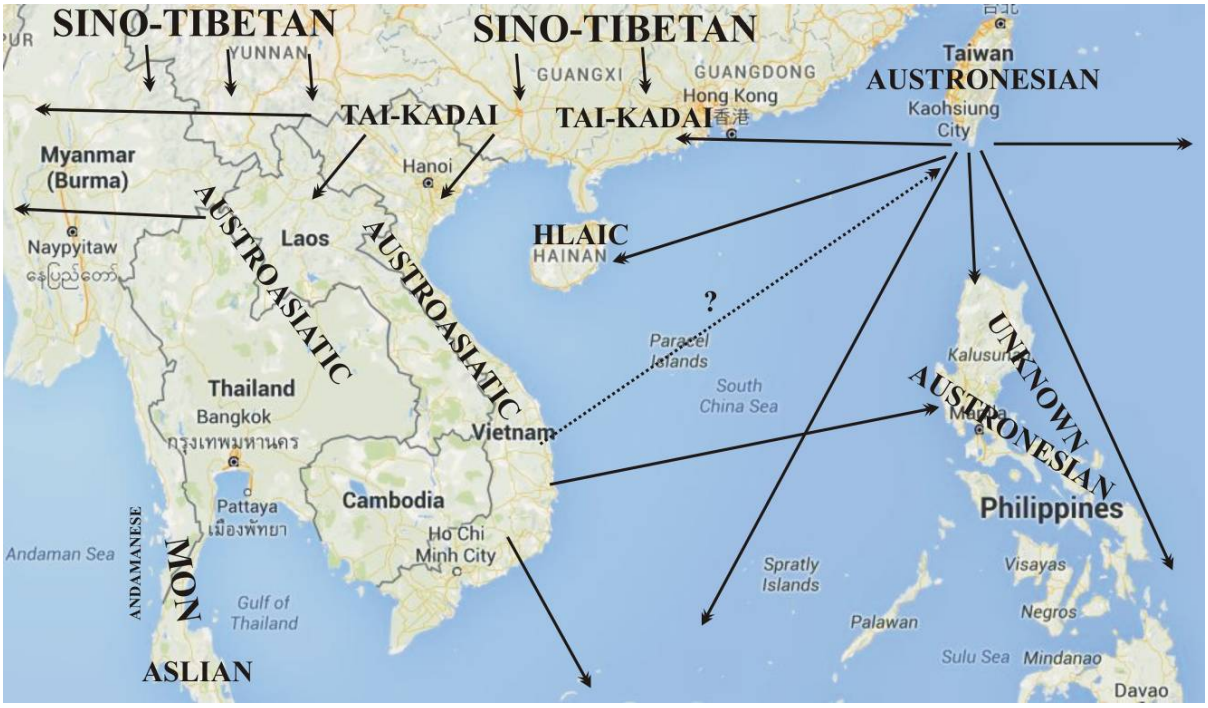
The dynamics of trade are closely intertwined with the spread of languages and cultures across this region. Maritime interaction from 4000 BP onwards is a major driver for the expansion of Austronesian in particular. We can strongly co-associate the dispersal of the Malayic network of languages with the development of the Srivijaya trading empire from the sixth century onwards. Therefore to model a SCS Interaction Sphere we need an appreciation of the evolving linguistic situation from around 5500 BP onwards, when the first interactions across the Taiwan Strait are recorded. This section represent the changing situation in a series of maps.

Map 2 shows the situation around 5500 BP. Unfortunately, we know very little about the languages spoken in the pre-Austronesian period. Austronesians resident on the mainland were crossing to Taiwan while early Sino-Tibetan languages were spreading south from central China and gradually displacing the resident Austromelanesian populations.

Map 2. Language distribution around the South China Sea ca. 5500 BP

Moving ahead two millennia, Map 3 shows the situation around 3500 BP. This is period of great dynamism, when the major language phyla of the region were beginning their movement outwards from their presumed homelands. There is considerable controversy about the location of these and their relevance to the present discussion is limited, so the map is presented in as neutral a fashion as possible. Austronesian languages were dispersing southwards from Taiwan, Austroasiatic languages were filling up the Vietnamese coastal regions, and also the Isthmus of Kra. There is more than a possibility that there was Austroasiatic settlement on the western Borneo as well as Sumatra (Blench 2011; Simanuntjuk 2016). Daic languages were present on the coast opposite Taiwan in the Pearl River Delta (Blench 2013). Sino-Tibetan languages (or at least Mongoloid populations) were spreading southwards from Yunnan into northern SE Asia.

Map 3. Language distribution around the South China Sea ca. 3500 BP



Map 4 shows the situation around 1500 BP. The islands of Indonesia have become fully Austronesian speaking, whereas the mainland is Austroasiatic, with Austronesian incursions (the Chamic languages) in Vietnam. The Malay Peninsular is probably Mon and Aslian-speaking (i.e. Austroasiatic) with Thai yet to penetrate this area. The ancestors of the Malays appear a couple of centuries later in the south of the Peninsula. Daic and Hmong-Mien languages are spoken in the interior of South China and northern mainland SE Asia. Chinese has penetrated Vietnam and other Sino-Tibetan languages are spoken north of Mon. Apart from Hmong-Mien, there is no reason to think that speakers from all these other language families were not participating in a complex multi-lingual commercial interactions. The intensity of these interactions is recorded in the patterns of borrowing names for key technologies, such as boats and iron. These are considered in some detail in the next section.

No Sinitic arrival in Philippines before the Song Dynasty (10th A.D.). South China only sparsely populated by Sinitic groups before Tang (7th A.D.) and Song (mainly the fortified towns and ports), all countryside probably non-Sinitic populations. Guangxi, Guangdong probably still mainly Kra-Dai et Miao-Yao, Fujian either AN or Kra-Dai.

Map 4. Language distribution around the South China Sea ca. 1500 BP

What presence of Mayalic in Central Philippines?

5.2 Terminology for boats

Linguistics is a key tool in tracing the movements of both ideas and trade goods, especially those which may leave no trace in the archaeological record. The most important technique is the analysis of loanwords. When a concept or physical item is adopted by one culture from another, it is very often the case that the words also travel. By compiling lists of cognates in the languages around the SCS Interaction Sphere also illuminates the nature of interactions.

A maritime culture depends on boats and the pulses of expansion after 4000 BP, including the growth of Srivijaya, must have been powered by technological innovation. Although we have scattered information about ship construction, for example the famous images on Borobudur and a few archaeological finds (Manguin 2004), much more will need to be done. Linguistics suggests that Austronesian speakers were a major source of innovation. Table 2 shows a regional root for 'boat' which originates in Taiwan, almost certainly originally 'canoe' ?check, but which becomes transformed into ocean-going vessel. It is borrowed into Austroasiatic languages along the Vietnamese coast, and thence into Tai-Kadai check. It then travels inland and becomes a canoe or small river boat anew. However, the connection between boats and coffins in this region is well-established, and it is then recorded only as 'coffin' (Mahdi 1999).

Table 2. A SEA regional term for 'boat'

Phylum	Branch	Language	Attestation	Gloss
Austronesian	PAN		*qabaŋ	boat, canoe
	Formosan	Siraya	avaŋ	canoe
	Formosan	Favorlang	abaŋɯ	boat
	Formosan	Kanakanabu	abaŋu	boat, canoe
	Formosan	Saaroa	ʔabaŋə	boat, canoe
	Formosan	Proto-Rukai	*avaŋə	boat, canoe
	Formosan	Tsou	apaŋə	boat, canoe

Phylum	Branch	Language	Attestation	Gloss
	Bashiic	Tao	avaŋ	large boat
	Bashiic	Itbayat	avaŋ	big boat with sail and oar
	Philippines	Magindanao	kaban	boat
	Philippines	Tagalog	baŋkaʔ	canoe
	Philippines	Casiguran Dumagat	abeŋ	canoe, small boat (with outriggers); to travel by boat
	Philippines	Gaddang	abaŋ	boat, canoe
	Philippines	Western Bukidnon	avaŋ	small boat, dugout canoe
	Philippines	Maranao	awaŋ	boat
	Philippines	Tiruray	ʔawaŋ	canoe or small boat
	Philippines	Sulu	guban	boat
	Ibanic	Iban	boŋ, buuŋ	long, shallow boat
	Chamic	P-Chamic	*bɔɔŋ	coffin
	Malayic	Moken	kabaŋ	houseboat, group of Moken boats
	Malayic	Malay	kəbaŋ	vessel
	Malayic	Sekah	gobaŋ	boat
	Bima-Sumba	Sawu	kowa	boat
Austroasiatic	Aslian	Jahai	kupon	boat
	Bahnaric	Biat	baŋ	coffin
	Aslian	Semai, Temiar	kapal[2]	boat
	Monic	Old Mon	kḅaŋ	ship
	Mangic	Mang	ɓaaŋ	ferry, boat
	Nicobaric		kopòk	boat

The outrigger is used through much of the Philippines today, but the lexical evidence points to the technology as having diffused northwards as none one of the early PMP languages seem to reconstruct 'outrigger'. Formosan 'boat' almost certainly applied to the bamboo rafts widely used in the Taiwan Strait and around the island, and still persisting as sport and fishing craft, albeit with polypropylene tubes instead of bamboo (Photo 1).

[2] ? < Malay or Tamil

Photo 1. Modernised rafts north of Taidong, Taiwan

Source: Author photo

5.3 Iron and iron-working

Iron is a metal of key importance in transforming subsistence, far more so than bronze. Once steel-bladed hoes and axes can be traded or made, times for agricultural work are dramatically shortened and numerous other household processes are made easier. In the New Guinea Highlands, where even traded iron was unknown until the early twentieth century, steel axes began to change society as soon as they percolated from the lowlands even before direct contact (Salisbury 1962). Discounting objects of meteoric iron, the first manufactured iron in East Asia occurs in Henan, Central China, from about the 8th century BC, and by the following century we have evidence for iron smelting (ref). However, the technology of iron-smelting in SE Asia is quite distinct from that of China (Balfour 1907). The use of the upright double piston is spread all around the South China SEA and apparently travelled as far west as Madagascar and as far east as Nias. During the short period when iron was being smelted in Taiwan, this was the technology used, not the Chinese horizontal box-bellows (ref).

The chronology of the spread of iron around the South China Sea remains largely speculative. The external origin of iron and its first appearance with imported artefacts is attested through polysemy with the names of objects. This pattern suggests that iron artefacts first entered the region from South Asia, and the names for these then became generalised to 'iron'. The evolution of the double-piston bellows remains unknown, but this is the technology the emerging Malay trade network must have dispersed around the South China Sea together with the word for 'iron'. Malayic speakers are likely to have been the major agents of diffusion of iron, as illustrated by the travels of the most common term in the region*_bəsi_ [dates evidence]. Most south-central Philippines languages borrow from Malay *bəsi* (Blust 2005 compiles a table of reflexes of this root). Hoogervorst (2013: 69) speculates on a South Asian source for this term, apparently from manufactured goods, such as axes, brought via the sea-trade. Table 3 shows terms for 'iron' in SE Asian languages and their possible source in South Asian languages;

Table 3. Terms for 'iron' in SE Asian languages

Phylum	Branch	Language	Attestation	Gloss	Comment
Austronesian	Malayic	Malay	bəsi		
Austronesian	Chamic	P-Chamic	*bəsɛy		
Austroasiatic	Monic	Middle Mon	bəsɔy		
Austroasiatic	Aslian	Jahai	bəsiʔ		
Austroasiatic	Monic	Old Mon	bərsɔy		
Indo-European		Proto-Indo Aryan	*vā´śī	sharp pointed knife or adze	
Indo-European		Pali	vāsi	sharp knife, adze	
Indo-European		Bengali	bāsi	axe	
Indo-European		Sinhala	væhæ	axe	

Rather more local borrowings attest to the intensive interaction between the Philippines and Taiwan in terms of both iron itself and manufactured iron goods. Table 4 shows a shared root for 'iron' in Formosan and Northern Philippines languages, attesting to the transmission of iron-smelting technology between the two areas, something also confirmed in Taiwanese archaeology.

Table 4. A root for 'iron' shared between Taiwan and the Northern Philippines

Branch	Language	Attestation	Comment
Formosan	Paiwan	vaꞇuláian	
Formosan	Saisiyat	patonay	? Cognate
Bashiic	Tao [Yami]	va'alan, vagaran	
Cordilleran	Isneg	balayaŋ	
Cordilleran	Kalinga	baalyaŋ	

Table 5, adapted from material in Wolff (2010), points to a cultural borrowing, where the word for 'iron' in Tagalog was taken as a word for a small knife in southeastern Formosan languages, presumably because it was the item they were trading.

Table 5. ***bakal*** **'knife' in Formosan and Philippines languages**

Language	Attestation	Gloss	Comment
Rukai	bakal	small knife	
Puyuma	vakał	single-edged knife	
Paiwan	vakał	dagger	/ł/ because it is secondary
Tagalog	bákal	iron	

The emerging pattern seems to be that despite their proximity, Taiwanese iron-smelting and iron objects do not derive from mainland China but from further south. Similarities between the names of manufactured items point to trade between Taiwan and the northern Philippines. However, the now uniform practice of iron-smelting is apparently spread by Malayic speakers, perhaps originally reflecting a stimulus from South India How was it spread?.

6. Comparative iconography

6.1 General

When people travel, goods and ideas are exchanged and goods typically carry symbolic freight. Certain shapes and images which have meanings for their original creators attract the attention of potential recipients who then ascribe changed meanings to them, adapting the iconography to a local system. Items preserved in the archaeological record, such as the jade ling-ling-o, provide direct proof of this. However, objects which perish, such as wood, rattan, or which can be melted down, for example silver and gold, may disappear but survive in the ethnographic record. Striking artefacts, such as the bronze drums found across the region, are regularly found in excavation, but many more have surfaced in dealers' showrooms, with little indication of

provenance. They can be found by farmers and then re-incorporated into the ritual system, creating a whole new series of meanings. This section discusses two examples of the movement of iconography in the SCS Interaction Sphere.

Photo 2. Tanimbar (left) and Batak (right) figures

Source: Author collection

6.2 The bulul

One of the most well-known iconographic figures that characterises the SCS Interaction Sphere is the *bulul*, a seated figure with either the arms crossed or placed on the knees, and generally with a serious demeanour (Photo 2 and Photo 3). The northernmost occurrence of the *bulul* figure is in Luzon and it is recorded widely across the Austronesian world in very similar form (Anderson 2010). It reaches Việt Nam, Eastern Indonesia and northwestern Melanesia but was apparently unknown to the Lapita peoples, speakers of Oceanic languages (Map 5). Its strongly religious associations suggest it was of key importance in the early Austronesian spiritual world. This figure is virtually unattested in the archaeological record but the strong coincidence with the early movement of the Austronesians out of the northern Philippines suggests that it originated some four thousand years ago, subsequent to the migration out of Taiwan and was carried throughout the region. Materials typically used to carve the images, wood and ivory, do not often survive.

Photo 3. Stone bulul, Ifugao, Philippines

Source: CC

Photo 4. Bulul figure, Costa Rica

Source: Author Photo

Map 5. Distribution of the *bulul* figure

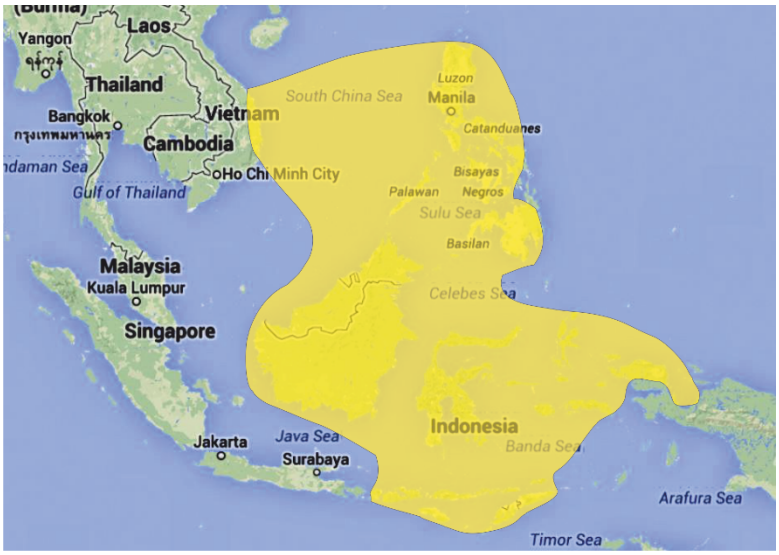


Photo 4 is included as a curiosity which might imply broader contact across the Pacific. It shows one of a set of *bulul*-like figures in volcanic stone found in Costa Rica, and dated to 1000-1500 AD, now in the Museo Arqueológico Precolombino in Santiago, Chile. This image of the seated figure is quite exceptional in the context of New World iconography. Anderson et al. (2007) have pointed to the presence of both

Austronesian iconography and a unique technology, the sailing raft, in Ecuador in pre-Columbian times, and these New World *bulul* may provide further evidence for contact between the SCS Interaction Sphere and Meso-America.

6.3 Gong ensembles

The gong is a circular percussion instrument, usually made of bronze or brass, suspended and struck with a soft, padded beater. It is perhaps the single most characteristic musical instrument of the Southeast Asian region (Simbriger 1939). Gongs are divided into two main types, the deep-rimmed, bossed gong and the flat, shallow-rimmed gong, known respectively as *mang* (?) and *luó* (鑼) in Chinese. In Borneo and the Philippines there are intermediate types with shallow rims, flat faces and low bosses (Frame 1982). The earliest gong, *luó*, that has been excavated is from the Luobuwan site in Guangxi Province in southwestern China (Wu Ben 2002:111) dating from the period of the early Han Dynasty (i.e. after 202 BC, before the region was culturally and linguistically sinicized). Casting of gongs was a highly specialised art, only practised in a few places and gongs were traded over great distances as prestige goods (Arsenio 2009).

Despite its widespread dispersion and significance of the gong we have no real idea of its antiquity in Southeast Asia; gongs are certainly present when the first carvings of musical ensembles are shown. Despite its importance, the gong took a long time to come to the attention of European observers. Peter Mundy described it in Sumatra in 1637:

> *another Copper Instrument called a gung, wheron they strike with a little wooden Clubbe, and although it bee butt a small Instrumentt, not much More then 1 Foote over and 1/2 Foot Deepe, yet it maketh a Deepe hollow humming sound resembling that of a great bell.*
>
> (Mundy, 1919:123)

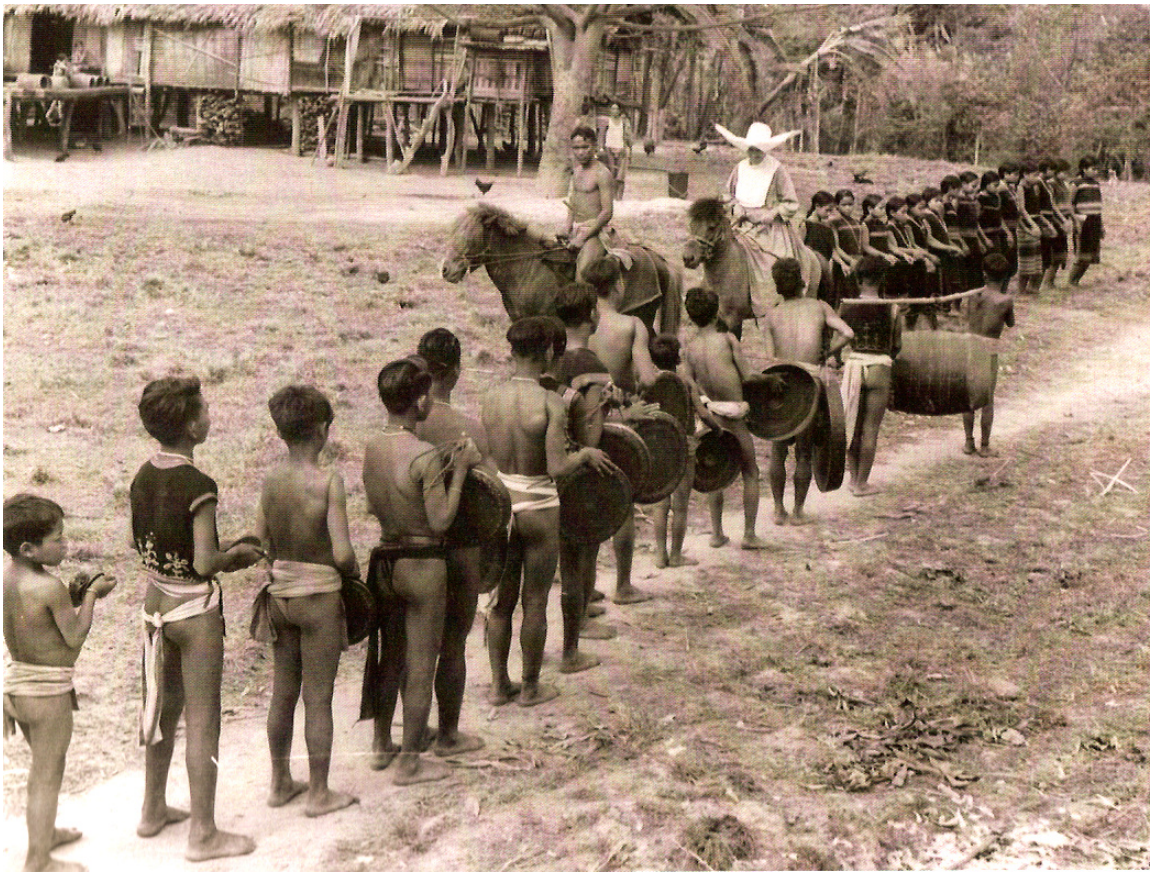
Gongs can be played as single large instruments or in tuned sets, as in the Burmese gong circle, *kyi waing* □□□□□□□□□□. However, their most distinctive music is in the form of large ensembles, where instruments are not tuned but graded in size and timbre. Throughout MSEA and in the Philippines and Borneo, collections of gongs owned by individuals are brought together in ensembles (Collaer 1979; Maceda 1998). The gong ensembles of the Vietnamese highlands were in 2005 named by UNESCO as part of the intangible cultural heritage of humankind. Why the exactly similar ensembles of Cambodia and Laos were excluded probably says more about heritage politics than any subtle appreciation of cultural ethnohistory.

Figure 2. Gong ensemble, Annah Rais, Sarawak

Source: Author photo

Nonetheless, these ensembles are sufficiently striking to warrant wider recognition. Arsenio (2009) has reviewed archaeological finds of gongs, mostly from shipwrecks, which suggest that they were expensive traded items. Gongs are known throughout much of Northeast India and even into Tibet, but they were never used in large ensembles. Some representations of what are apparently flat gongs appear in India, but these do not survive in the ethnographic record. Angkor Wat and Borobudur provide some evidence for the time-depth of gong ensembles. Figure 2 shows a fairly typical gong ensemble, played for a marriage ceremony by the Bidayuh people at Annah Rais, Sarawak and Figure 3 depicts nuns supervising a Jarai gong performance in the highlands of Vietnam in the 1930s.

Figure 3. Nuns supervising Jarai gong ensemble, Vietnam



Source: CC

Historically speaking, it seems as if gongs were first developed within the same bronze-casting culture that developed bronze drums in the Vietnam, Laos, South China borderland (see Calò 2009). They spread as a prestige good, a rather less expensive and more portable equivalent of the bronze drum. Their musical qualities and the fact that they could be owned by individual families and brought together for collective celebrations made them a potential fit for the heterophonic music and social structures of MSEA. Gongs were carried to the western edges of ISEA by the Chinese trade, but never penetrated far into the eastern islands[3]. why by the Chinese trade, and not by the regional trade ?? And what date ? Trade with China, but not by Chinese started early 1st millienium AD. Chinese boats on the sea not before 8th-9th century AD.The growth of *gamelan* culture in Java allowed for a secondary distribution from the 8th century onwards. Map 6 shows the approximate

Map 6. SE Asian gong ensembles

[3] The easternmost occurrence of gongs appears to be as bridewealth items on the Raja Ampat islands, in the western tip of Papua Barat (formerly Irian Jaya) (caption in Abepura Museum 2014).

distribution of the gong ensemble in the SCS Interaction Sphere.

7. Genetics

Until recently, the genetics of populations in the SCS Interaction Sphere were poorly studied. However, since 2005, new materials, principally from Taiwan and Australia, have certainly increased the density of publications, although the story they tell of prehistoric interactions is far from consistent. Trejaut et al. (2005) have confirmed the persistence of genes representing Pleistocene populations on Taiwan and since presumably these populations also ultimately came from the mainland, they must be disentangled form the later Austronesian migrations. Work on the genetics of the 'Liangdao Man' initially claimed to be 8000 years old but perhaps more recent found on an small outlying islands of Fujian confirms the presence of haplogroup E, which is highly characteristic of the Austronesian-speaking region (Ko et al. 2014). An important point of controversy is the early dispersal of Pleistocene populations around ISEA. In the view of Soares et al. (2008) this was precipitated by sea-level 15-7000 years ago and they attribute the widespread presence of the E haplotype to this event, rather than to the Austronesian dispersal. Tumonggor et al. (2013) propose an intriguing model which notes the disparity between Y-chromosome and maternal DNA in ISEA and they propose a matricentric dispersal in earlier periods, overlaid by predominantly male migrations in the Austronesian era. Trejaut et al. (2014) also propose an early 'pincer' movement from the mainland into the islands beginning some 18,000 years ago moving both into Taiwan and western Indonesia and showing a marked disparity between paternal and mtDNA.

The hypothesis, derived from archaeology, that the source of the indigenous Austronesian peoples of Taiwan was on the Chinese mainland is broadly confirmed by genetics (Brandão et al. 2016). Most authors agree that at least some part of the Taiwanese population voyaged onwards to Island SE Asia, but much controversy attends the significance of this in genetic terms. What may be termed the 'Oppenheimer school' argues that the Taiwanese component was quite low, perhaps 20% of the 'Neolithic' lineages and that the participation of women was very limited (Hill et al 2007; Brandão et al. 2016). In this view, a large part of the genes in resident populations in Borneo and western ISEA derive more directly from mainland China and come from an 'early train' migration of Pleistocene populations (Jinam et al. 2012). However, in other models the Taiwanese component (at least for the Y chromosome) is far more significant. Tabbada et al. (2009) argue that the populations of the Philippines share a large proportion of genes with indigenous Taiwanese and that therefore this was a 'viaduct' to Indonesia.

Karafet et al. (2010) report a striking division between east and west in Indonesia, with one component of the out-of-Taiwan migrations heading towards Sumatra, Java and Bali and the other east to Sulawesi, Lombok and other islands. This corresponds quite well with the linguistic situation, with archaic languages on the Sumatran Barrier islands showing direct links with reconstructed PMP.

Most of this can probably made to correspond with our current understanding of the early maritime settlement of the SCS Interaction Sphere. It is increasingly clear that the 'demographic hypothesis' for the settlement of ISEA has serious problems (Spriggs 2011; Blench 2012) and it would be better to see these early dispersals as mobile fisher foragers encountering foragers but also resident vegeculturalists. Maritime foraging remains a poorly analysed category in prehistoric subsistence, largely because there are no functioning societies of this type today (Yesner 1980). Nonetheless, the increasing evidence for waves of population into ISEA, beginning as much as 18,000 BP, overwriting the Pleistocene populations on some islands and possibly bringing haplotypes previously associated with Austronesians illustrates the care that must be taken when interpreting genetic data. The demography of the 'out-of-Taiwan' event will clearly not be resolved quickly, but a small number of ships, largely crewed by men, but with striking religious beliefs and social organisation, spreading out some 4000 years ago may have been influential far in excess of actual numbers. The parallel with the Viking expansions over a much shorter period is very tempting.

8. Conclusions and the way forward

A paper such as this can only skim over the detail of the growth in interactions in the SCS Interaction Sphere, but it demonstrates how different disciplines can be brought together to nuance the system depicted by the archaeology. Broadly speaking, there is evidence for maritime interaction from a very early period, as valuable items such as obsidian are moved around the region, but evidence for the nature of maritime

technologies at this period is virtually absent. Around 4000 BP there is a technological revolution which allows for larger vessels and longer trajectories, stimulating a very rapid movement of both people and ideas, trade goods and iconographic elements. Archaeology, linguistics, genetics and art history all come together to paint a similar picture.

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