

Southeast Asian early Maritime Silk Road trading polities' hinterland and the sea-nomads of the Isthmus of Kra

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Abstract: In Southeast Asia, archaeological research has recently shown that the earliest centralised polities qualifying as incipient States emerged by the late 5th and early 4th c. BCE (Kim 2013; Stark 2015; Bellina 2017; Bellina 2018). Understanding of their hinterland is still very limited. This essay presents the results of a regional study conducted since 2005 in the Isthmus of Kra in the Thai-Malay Peninsula, a narrow piece of land located between the Bay of Bengal and the South China Sea. It argues that in this region, Maritime Silk Road incipient trading states' emergence went along economic specialisation, cultural differentiation and cooperation between different groups participating in local and long-distance networks. Amongst these so-called "marginal" groups emerge "sea nomads". Like those described in historical and ethnographic sources some of which are referred to here, these early sea nomads appeared to have already played a crucial economic and political role as part of these maritime trading polities hinterland. Along with an archaeology of sea nomadism, this study opens perspectives on reconstructing a more complete narrative of Southeast Asia and beyond of the Maritime Silk Road, a narrative that integrates marginal groups.

INTRODUCTION

Cultural differentiation is a major issue but often poorly understood. In particular, questioning which of the environmental, social, demographic and economic factors are at play in this process becomes even more pertinent when dealing with mobile or semi-sedentary and forager or semi-agriculturalist groups living on the margins of centralised polities. Far from the evolutionist postulate according to which the social organisation of foragers or nomadic groups represented a stage preceding state societies, anthropologists and archaeologists now argue that these highly adaptive groups form part of regional states' political economies (Possehl, 2002; Ivanoff, 2015). In South and Southeast Asia, interdependent relationships mostly developed with different socially and economically-organised groups, in particular with traders (Dunn, F. 1975; Headland et al. 1989; Morrison 2002) and/or with lowland agriculturalists (Junker 2002; Junker and Smith 2017) as an adaptive strategy to deal with the fragmented and diverse environment and to thrive in a politically and economically changing world (Morrison and Junker, 2002). The pressures lowland regional states exerted over neighbouring groups, such as "corvées" (forced or required labour), war, slave raids and plunder, are also often cited to explain groups' voluntary marginalisation and sociogenesis, such as for the various farming groups' in mountainous regions (Scott 2009) or for the sea nomads of Thailand (Moklen) and Myanmar (Moken) (Ivanoff 2015; Bourdier et al., 2015; Ferrari, 2015). In the Malay World Benjamin suggests that minorities resulted from a choice to avoid an imposed hierarchical organisation and its apparatus combined to an internal process of dissimilation between the different socio-economically organised groups (2002: 9). At the same time, several of these marginal groups were also crucial for the emergence of some trading polities and their maintenance, in particular the Orang Laut and Sama Bajaw (Benjamin, 2002; Chou, 2010; Nolde, forthcoming).

This article addresses cultural adaptations in the Kra Isthmus in conjunction with the rise of centralised trading powers from the 4th c. BCE in this region that was key to the early Maritime Silk Road. This paper argues that the emergence of “minorities” amongst which the “sea nomads”, went along with economic specialisation and cooperation between different groups participating in local and long-distance networks. In Southeast Asia, research showed fairly recently that the earliest incipient States emerged during the Iron Age by the late 5th and early 4th c. BCE (Kim, 2013; Bellina, 2017, 2018; Stark 2015). Their hinterland remained to be studied. This essay wishes to define the earliest trading powers’ hinterland based on original data obtained through a region-scale research conducted there over more than a decade and on ethnographic parallels¹. Various groups in the Isthmus of Kra belonging to the forest or the maritime spaces were thus characterised. Amongst the latter, we trace what we consider to be the first evidence for “sea nomads”. There, soon after the rise of lowland trading polities, some coastal groups different both from lowland coastal and inland groups arrive and become visible in the archaeological records. They settled at river mouths at the termini of transpeninsular routes. Transpeninsular routes are a series of passages using river valleys and tracks (mountains up to 2000m height in the northern part of the peninsula) crossing different environments (marine, estuarine, plains, and forests) that connected the Bay of Bengal and the South China Sea (Bellina et al., 2014; Bellina, 2018). These early sea nomads played an intermediary role between upstream forest groups and the occupants of early multi-ethnic ports-of-trade, and traders from afar. They developed a common material culture. Their culture is distinct both from the urban and upland populations with whom they interacted but nevertheless with some shared elements. These features taken independently cannot by themselves be taken as indicative of these groups. It is the combination, the sum of these elements altogether that signal the group. This contradicts the assumption according to which, because these highly mobile groups were spending a large proportion of their time at sea, they did not develop a material culture hence were invisible to archaeologists. An important implication of this discovery is that an archaeology of sea nomadism can be developed, along with a long-term history of these groups. By unravelling the presence of these groups, this study supports Benjamin’s (2002) framework according to which in the Malay world, “tribal” groups, be they forest, estuarine and sea nomads emerged in response to regional centralised trading polities. Finally, it also highlights for the first time the key role these “marginal” groups and sea nomads in particular may have played in the development of the Maritime Silk Road, their associated centralised trading polities and regional cultural transfers.

I. Sea nomads’ diversity in historical and ecological contexts

Southeast Asia is characterised by a high cultural, linguistic and ecological diversity. There, but in southern China as well, are groups called “sea nomads”, “sea gypsies”, “aquatic people” because they developed an adaptation qualified as “semi-sedentary hunter-gatherers” (Hoogervorst, 2012). Their lifestyle differs from sedentary maritime-oriented groups, i.e. village-dwelling fishermen. The

¹ The picture drawn here is based on excavations and survey conducted in the Isthmus of Kra by the French-Thai Archaeological Mission since 2005. This mission is supported by the French Ministry of Foreign Affairs and by the National Centre for Scientific Research. It is a collaboration with Silpakorn University and the Fine Arts department. Amongst the mission’s research themes are the co-evolution of populations and of their environment in relation to long-distance maritime exchange networks and the role they played in trade and cultural productions in Asia. The project pays special attention to the various social, economic and political evolutions these interacting populations experienced in relation to regional and inter-regional maritime exchanges.

sea nomads spend a larger proportion of their time at sea (Hoogervorst, 2012). They exploit well-defined areas of their “seascape” for subsistence and for trade with sedentary communities (Chou, 2010; Andaya, 2008: 180). The sea nomads are almost exclusively engaged with the sea for their subsistence (nutrition and other materials for construction, etc.) and for their occupations. However, it is important to stress that beyond this common denominator, a wide range of adaptive modes characterises them. This reflects the very diverse resources they exploit for trade as well as their interactions with regional states. It has thus been argued that “boat nomadism” should be considered in the light of its particular historical and ecological contexts (Sather, 2006), with the caveat that the level of information on the different Southeast Asian sea nomads’ past activities is highly uneven. As an illustration, the Urak Lawoik and Moken/Moklen - located in the northern part of the Strait of Melaka - have been less studied than the Orang Laut further south and the Sama Bajaw further east in Island Southeast Asia. Regarding the Orang Laut, this is because they were socially and economically actively involved with Melayu trading polities and thus appear in literary sources besides modern ethnographies (Andaya, 2008).

In addition to subsistence, diversity also characterises sea nomad groups’ size, economic importance and socio-political organisation. These differences differ between the major groups of Moken, Orang Laut and Sama-Bajaw but also within them such as in the case of the Bajaw (Sandbukt, 1984; Nolde, forthcoming; Chou, 2010). Nowadays, Bajaw live on scattered shoreline and island settlements, often in the vicinity of the agrarian groups they interact with. In the past, they were one of the different specialised groups that composed the historical Sulu State of the Philippines. The State structure was pyramidal, based on personal allegiances and alliances aiming to control trade. Some stayed mostly at sea, constituting seamen who applied their skills to navigation, boat construction, craft activities (smiths, potters) or inter-island trade. Others were involved in raids against passing ships and coastal settlements for the benefit of a port-entrepôt leader. The Sama Bajaw sea nomads lived in bands and provided their land-based lord with sea products for trade such as sea cucumber, pearls and dried fish. They moved with their family on board and exchanged with other families when anchoring at the same moorage site seasonally (Sather, 2006). Originally, the Sama would have been a sea-oriented group with a knowledge of the land who experienced a dissimilation process when the Maritime Silk Road trade increased by the 10th century. They then moved and settled in different zones: some established ports, others settled in bays in the mangrove and others on land. Some would have established networks of trading colonies at coastlines of the islands and river mouths to control the local river trade like at the Agusan river mouth in Mindanao. There they would have married local land-based wives; some stayed there, others returned to Sulu establishing the trading community of Jolo which became a major trading centre (Sather, 2006: 260-1). Amongst the Sama, sea nomad communities emerged out of a common coastal population, originally coastal foragers, who would have become “increasingly specialised and trade-dependent with the rise of maritime states, a development to which their presence itself almost certainly contributed” (Sather, 2006: 263).

As for the Orang Laut, their tasks in relation to the State were varied and contributed to shape sub-groups. Some were engaged in their ruler’s navy, where they would fight with lances he provided and they could serve as rowers. They could also patrol and guard sea lanes for their land-based leader, activities labelled as piracy by Dutch observers but arguably they were privateers. The Orang Laut were also engaged in economic activities on land. There, they had horticultural activities dealing with sago, coconut trees, pepper, they collected specific woods like eagle and lacquer-wood, ebony, rattan, and construction timbers. They could also be involved in some craft activities such as gold panning, working iron to produce weapons for the ruler, making pots, weaving palm-leaf mats for roofing and sails, producing coconut oil, etc. (Begbie, 1967; Pelras, 1972; Andaya, 2008; Nolde,

forthcoming). The earliest mentions of sea nomads, in Arab and Chinese sources predating the 16th century, describe them as cruel pirates who dominated the maritime world (Ferrand, 1913). Their mastery of the sea and their capacity to integrate widely dispersed communities via a complex network of exchange and communication is indeed an essential trait characterising sea nomads. Anthropologists and historians thus consider that they were long-standing political and cultural agents in the South China Sea. The earliest references show that there was already a political and economic association between the Orang Laut and a Melayu trading polity during Srivijayan's thalassocracy (7th -13th c. CE) (Chou, 2010; Hall, 1985; Andaya, 2008). Although evidence is tenuous, Andaya (2008: 192) also believes that mutually profitable relationships are attested in the "Hikayat Merong Mahawangsa" (or "Kedah Annals", a Malay literary account of the history of Kedah) between the Urak Lawoik and the leaders of the different port-entrepôts of the Kedah region (northwest part of Malaysia, bordering Thailand and encompassing the Langkawi archipelago). He supposes that mutually beneficial cooperation between the Moken and peninsular trading polities further north may have existed too. This cooperation may have involved promoting the use of transpeninsular routes, at the exit of some of which port-polities were located. The Malay "Sejarah Melayu" annals describe how the Orang Laut and the refugee Prince of Palembang Sri Tri Buana also known as Parameswara contributed to the founding of Malacca about 1400. The Orang Laut located at the mouth of River Bertam (Malacca River), suggested to Prince Parameswara that he establish an entrepôt there because it would secure a market for the products they collected and legitimise their activities. In the Portuguese merchant and diplomat Tomé Pires' 16th century book, "Suma oriental", the Orang Laut are recorded as recommending this location because they found it adapted for a large Melayu town where the Malay could exploit large areas for rice fields, gardens and cattle/livestock. The clear contrast between their respective lifeways and economic specialisations made the relations between trading rulers and sea nomads mutually beneficial. These clear-cut identity boundaries probably also helped maintaining freedom and independence (Hall, 1985; Andaya, 2008: 198; Chou, 2010).

What about the more distant past when there are no written sources? Which place did archaeologists give to sea nomads in their reconstitutions? And what remains have they associated with sea nomads? Very few archaeologists have tackled these issues. Archaeological and genetic evidence for long-distance circulations between the Mainland and Island Southeast Asian are already attested in the early Holocene (Bulbeck, 2008; forthcoming; Soares et al., 2016; Brandão et al., 2016). Archaeology and linguistic studies have demonstrated that the combination of foraging and exchanging/trading is an economic strategy that various Chinese and Southeast Asian coastal groups developed prior to the Neolithic (Blust, 1976). For Sather, coastal adaptation along with the development of navigational skills and inter-island trade were critical elements to Austronesian-speakers' expansion after 4000 BC (Sather, 2006). In Island Southeast Asia, Bellwood (2007) associates the Austronesian speakers' diaspora to farmers' migrations (Bellwood, 2007). On the other hand, many researchers now argue that Austronesian speakers were actually opportunistic maritime forager-traders who acquired cultural traits amongst the various coastal groups they encountered. They also believe that these forager-traders were then responsible for disseminating cultural similarities between various groups and that these common traits were later thought to be typical of Austronesian speakers. The social motivations for these long-distance interactions favouring alliances and shared ideational themes -materialised in decorated pottery styles and shell and obsidian goods- is also emphasised. Instead of a homogenised process of neolithisation, archaeologists now portray multiple histories reflecting the diversity of peoples who practiced heterogeneous strategies that cannot simply be categorised under either forager or farmer. These economically heterogenic groups

early on seemed to have developed interdependent interactions (Blench, 2012; Bulbeck, 2008; Solheim, Bulbeck and Flavel 2006; Oppenheimer and Richards, 2001; Spriggs, 2011; Higham et al., 2011).

Amongst archaeologists, this is this ability to connect groups and to disseminate cultural traits, roles more closely associated to the Austronesian foragers-traders which is most often highlighted. Chen is one illustration who believed that many coastal shell midden sites on low terraces alongside estuaries in the coastal regions of southeast China and Taiwan - at Ch'in-Kuei-Shan (Jinguishan) (6000-4000 BCE) and at P'u-pien (Pubian) (2500-1500 BCE) - were remains left by coastal Yue he interpreted as ancient Austronesian sea nomads (Chen, 2002). All were small and briefly occupied, possibly during a season, and revealed shell gathering and fishing practices but no agriculture. Chen thought that the Yue would have helped diffuse material culture amongst these coastal communities. Another coastal site Bukit Tengkorak in Sabah occupied during the first millennium BCE by foragers was associated to precursors of sea nomads. This association was made because there foragers combined long-distance exchange with marine, streams and coastal forest exploitation (Bellwood, 1989) and they produced the portable pottery hearths traditionally linked to the maritime Sama Bajaw (Sather, 2006).

In eastern ISEA, Galipaud considers that ancient highly mobile groups involved in inter-island exchange could represent sea nomadism; they would be responsible for bringing social complexity, diffusing cultural models, techniques and material culture such as Dong Son drums during the early centuries CE (Galipaud, 2015). In the Upper Thai-Malay Peninsula decorated pots found in caves offshore and showing parallels to pots in the Philippines were interpreted as possible funerary deposits associated with mobile groups moving between the Philippines and the peninsula (Bellina, Epinal and Favereau, 2012). From the 4th c. BCE, Favereau (2015) observed further evidence of centuries of cross-fertilising exchanges between the Isthmus of Kra and the Philippines. In parallel, some nephrite from Taiwan and possibly from other sources yet to discover in the Philippines, was being imported as raw material to various places in Vietnam and the Isthmus of Kra (Hung et al., 2007). There local workshops manufactured nephrite and other imported stones according to a pan-regional style (Bellina, 2014). However, there is as yet no evidence for direct Taiwanese involvement in South China Sea networks. This could suggest that raw material was collected and exchanged by mobile intermediaries, possibly from the Philippines (Favereau and Bellina, in press).

Referring to a slightly later period in the Malaysian part of the Peninsula, Bulbeck suggested that the offshore islands of Pulau Kelumpang near the mouth of Kuala Selinsing may correspond to a camp of sea nomads during the early centuries CE (2004, 2014). Leong interpreted the site as a "feeder point", one of the local supply centres serving South Kedah entrepôts (1990). At Kuala Selinsing groups were living in the vicinity of major historical port-cities, sharing some of their material culture with the latter, in particular prestige items such as stone and glass beads. However, Bulbeck observes that they seem not to have adopted Indic religious traits. He interprets these non-Indianised maritime groups of Pulau Kelumpang as the precursors of 'sea gypsies'. They were producing stone beads (rock crystal and cornelian), which signalled this community's prosperity and its likely involvement in trade, at least so that they were able to obtain the raw material for what was a small scale production (Bellina, 2001). However, they depended on mainland populations for rice and meat. For the historical period, written sources account for the close association between some of these groups and trading polities whilst remaining in their periphery (Andaya, 2008).

The picture that comes out of this overview of sea nomadism in historical context can be summarised as follow. Originally sea nomads were probably coastal foragers-traders characterised by their adaptive capacities. Their diversity reflects this capacity to adjust to different groups, organisations

and the polities they interacted with. They were thus always enmeshed in symbiotic specialised networks. In the context of trade and trading States, they took advantage from their knowledge of the sea and the connexions they established through their networks to become intermediaries facilitating trade over long-distances. Some archaeologists also believe that they could have been key cultural agents facilitating diffusion amongst those various groups, perhaps contributing to homogenised material culture.

An overview of the cultural evolution and in particular of differentiation in the Thai-Malay prior to the region's involvement in the Maritime Silk Road by the 4th c. BCE is presented here in order to appreciate better the major change its groups experienced then.

2. Background of cultural evolution in the Upper Thai-Malay Peninsula during the late prehistoric period

In the Thai-Malay peninsula like Mainland Southeast Asia to which it belongs, groups experienced cultural differentiation from the mid-Holocene (White, 2011); a process that some connect to the Neolithic and the establishment of regional exchange networks (Higham et al., 2011). In Mainland Southeast Asia, the dispersion of new life styles associated with the Neolithic has traditionally been linked to the migration of Neolithic populations or to contacts between them and local groups of scattered hunter-gatherers. The oldest evidence for rice cultivation is found at the coastal site of Khok Phanom Di in Thailand in the Gulf of Siam. There the community kept exploiting the resources from the mangrove and practicing vegiculture (possible exploitation of taro and yam, banana, etc.), whilst rice was obtained first by exchange and at a later stage by agriculture (Higham and Thosarat, 2004; 2012). Recent excavation of Rach Nui in southern Vietnam showed that rather than an abrupt transition, coastal groups shifted gradually from a hunter-gatherer lifestyle to an agrarian one. The inhabitants were mainly hunter-gatherers who exploited the mangroves and surrounding swamps, and practised a mixed economy that combined traditional exploitation of the environment, vegiculture and rice cultivation (Castillo et al., 2017).

In the Thai-Malay Peninsula, both the issues of the transition/adaptation to the Neolithic lifestyle and cultural differentiation are hazy. The link between the two is also debated. The peninsula today presents a palimpsest of groups of different origins and social and economic organisations. South Asian, Chinese and Malays result from economic migrations that occurred over several centuries (plantations, mine exploitations, etc.). Others groups, considered as indigenous or aboriginal, called Orang Asli, today occupy the southern part of the peninsula. For the latter, Benjamin describes a social pattern characterised by three organisations which relate to three modes of environmental exploitation as follows (Benjamin, 2002). A first pattern represented by egalitarian groups of low-density nomadic hunting-and-gathering foragers. This characterises the Semang who are found in the northern part of Peninsular Malaysia and who exploit their surrounding environment. A second pattern is represented by groups of medium-density egalitarian semi-sedentary swidden-farmers. They also trade with outsiders and the state although they remain autonomous from it. This is the "Senoi" pattern represented by Temiars and upland Semais in the central parts of the Peninsula. Finally, a "Malayic" pattern combines farming or fishing with collecting forest or marine products for trade with outsiders. Many groups with variations to this pattern can be found including the Orang Laut who are sea nomads. However, they all have in common collecting for trade.

There used to be two main frameworks to explain this "layer-cake" palaeosociology in the Peninsular Malaysia. First that of successive waves of migrants who had already differentiated elsewhere in

Mainland Southeast Asia, who maintained their difference and pushed earlier established groups like the Orang Asli further in refuge zones (Bellwood, 2007). Austroasiatic-speaking farmers' arrival would have pushed further inland older indigenous groups. In this scenario, there is a link between the tripartite social patterning described above and the successive waves of migrants. In particular, Bellwood (2007) linked waves of Austroasiatic-speaking farmers coming down the Peninsula from further north to the "Ban Khao culture" (after the name of the eponymous site in the west-central province of Kanchanaburi). These would be epitomised by ceramics with a tripod shape, pedestalled pots, finely polished adzes, barkcloth beaters and extended burials. However, no clear open air settlement of Ban Khao culture provided robust data to confirm this farming transition. A second hypothesis based on archaeological, genetic and linguistic evidence posits a common cultural matrix with a local differentiation based on lifestyle complementarity and distinct cultures between the groups described above (Benjamin, 1987; 2002). These differing traditions were maintained even if some gene flow occurred between those groups and also between some of them and Island Southeast Asian groups (Indonesian) through occasional matings (Fix, 2002). The importance of the Neolithic in this model on cultural differentiation is still unclear. Benjamin clearly establishes links between the social pattern and the "long-established presence in the region of three main modes of environmental appropriation: foraging (nomadic hunting-and-gathering), horticulture (semi sedentary swidden-farming), and collecting (the gathering of natural products for trade with outsiders). He also believes that the collecting for trade "would have intensified around 2000 years ago, when Chinese, Indian, and West Asian interests had led to the exploitation by tribal "fetchers" of the region's lac, wood-oil, camphor, and minerals" (2002: 10). This suggests an earlier differentiation that would have increased along with the intensification of trade during the early centuries CE. Fix' position on whether this goes back to the Neolithic or to an early stage of trade is not clear.

Bulbeck clearly supports the idea that groups differentiated during the Neolithic. He also called for a reassessment of the supposed link of the Ban Kao culture to the Neolithic (Bulbeck, 2011). First, he divides the Neolithic in two phases. There would be an early Neolithic phase by the mid-Holocene during which arboriculture developed but not agriculture, as indicated by phytoliths and populations move to Malaya bringing the N9a6a haplogroup (Hill et al., 2006). Artefacts including cord-marked pottery and lightly polished cobble tools show similarities between the Da But culture of North Vietnam and what can be observed at Gua Kepah in Malaysia and in southern Thailand sites (Bulbeck, 2011). The second phase by 2000 BCE purportedly took place with the arrival of proto-Aslian language speakers (Austro-Asiatic speakers), ancestors of the Senoi, who are the Orang Asli groups who nowadays practise horticulture in Malaysia, from the Mekong delta region. They introduced the F1a1a haplogroup in association with extended burials, pedestalled pots, and slash-and-burn agriculture including rice alongside other crops. Bulbeck believes that the differentiation between Orang Asli would have been catalysed by competition for land during this second phase. In addition, he also disconnects the tripod complex from the arrival of proto-Aslian speakers from further north and instead relates it to a point of origin that could well be the Isthmus of Kra. There, tripods appear older and in larger numbers than in the Kanchanaburi province. Moreover, tripods as well as pedestalled pots and polished adzes were found earlier in the peninsula than in Kanchanaburi that the latter was the source (Bulbeck, 2014).

In the peninsula, in general, the period from the turn of the 2nd millennium to the mid-1st millennium BCE is still very poorly documented. Inland, the French-Thai Archaeological Mission found evidence dating to this period in Tham Nam Lot in the Khao Thalu relief (Nasak district, Chumphon province) (Map 1). There in 2012, the mission excavated a series of caves located in a hill hosting two natural underground tunnels through which the River Sawi flows, constituting part of a secondary transpeninsular network. A few test pits opened near the entrance of this tunnel revealed a

sequence of use from the Neolithic onward, characterised by pottery-producing groups' ceramics whose quantity increased through time, suggesting a growing frequentation of this transshipment zone from the 1st millennium BCE. It also yielded bronze axes whose style compares with some excavated in Northeastern Thailand and which were produced with ores likely imported from the source of Xepon in Laos (Pryce, pers. comm.). Those point towards the extension of regional exchange networks within which the peninsula was engaged. The presence of sea shells used as ornaments in funerary deposits in caves inland indicates movements to the coast. This is not a great surprise given the short distance between the two coasts in this part of the peninsula, at places equating to 40-50 km. However similar types of shells were used for funerary practices in burials across ISEA and thus attest to the extension of the networks in Mainland and Island Southeast Asia by 1000 BCE and the existence of similar cultural practices throughout the maritime region. Indeed, there is increasing evidence that extensive links within the South China Sea took place during the second millennium BCE. They may be the key to the initiation of common practices and cultural affinities there visible from the 1st millennium BCE (Bulbeck, 2008). These may account for the ease with which populations were able to circulate and the speed with which they were exchanging the goods and ideas of the Iron Age by 500 BCE. The causal incentive for these second millennium BCE movements is not totally clear (Spriggs, 2011). Some view Bellwood's Austronesian-speakers "farmer demographic" expansion as the precedent underpinning Iron Age ease of connectivity in a predominantly Austronesian speaking South China Sea (Hung and Bellwood, 2010; Hung et al., 2013). Alternatively, for Bulbeck, population movements may be accounted for by 'fisher-foragers' having both mobility and capacity to interact and exchange with various groups including settled vegeticulturalists (Blench, 2015; Bulbeck, 2008). Solheim's 'Nusantao Maritime Trading and Communication Network' (NMTCM) portrays a multidirectional inter-ethnic network which sustained interactions that produced cultural similarities, with Malay as the lingua franca (Solheim et al., 2006). The overall picture is that interactions in the South China Sea transformed mutual cultural and linguistic influences on a range of coastal populations and that those second to early first millennium interactions laid the ground for a prehistoric cultural matrix and shared cultural repertoire.

Map 1: sites survey and/or excavated by the French-Thai archaeological mission mentioned in the text (Favereau)

In a matter of fact, by the 4th BCE, the material culture of coastal groups bordering the South China Sea and in particular the Gulf of Siam appears share many similarities. Bellina labelled this pan-regional style: "Late Prehistoric South China Sea style" (2018). In the Isthmus of Kra, the late 5th/early 4th c. BCE coincides with the insertion of the region in the "Maritime Silk Road" and the development of trading polities in the lowlands at a short distance from the coast and along a river leading to it (and discussed below). There South Asian and East Asian-related materials were from then identified. This "Late Prehistoric South China Sea style" includes similar stone (siliceous stones and nephrite), glass (drawn and lapidary) and gold ornaments, Dong Son bronze drums, Indian-inspired decorated bronze bowls, and the so-called "Sa Huynh-Kalanay" inspired ceramics (hereafter "SHK-inspired"), etc. (Figure 1). This is this crucial period that the French-Thai Archaeological Mission has been focusing on and which main results are synthesised below.

Figure 1: some of the goods characterising the "Late Prehistoric South China Sea style" (Bellina)

3. Methods and materials (corpus of remains)

3.1. Methods

On the field, the French-Thai Archaeological Mission carries out an extensive regional survey and excavation programme. This approach is the only one providing data to draw a “complex, multi-ethnic social landscapes” picture (Junker and Smith, 2017). Projects often focus on a single site, a cave or a cemetery and only very few investigate settlements where the archaeological record is tenuous due to tropical conditions. A few studied second millennium Historical kingdoms or States’ hinterland such as in the Philippines where forager-farmers trade involved the exchange of agricultural foodstuffs and lowland utilitarian or status-conferring manufactured goods (metal implements, pottery, stone, glass and shell ornaments) against tropical forest products (meat, honey, resin, birds, spices, etc.) (Junker, 1999; 2002; Junker and Smith, 2017). In mainland Southeast Asia, another project focused on the Angkor state exchanges with the Kuay groups who were iron-producers and forest products collectors (Pryce et al., 2014; Hendrickson et al., 2017). Other studies tackled the upland-lowland exchange networks of Iron Age trading polities in Central Vietnam (Phuong, 2010), and late first-early second millennium Malaysia (Allen 1991) and Indonesia (Miksic, 1979; Manguin, 2009) but evidence of the upland groups was very limited (Junker and Smith 2017) and beyond merchants, maritime groups were not integrated into historical constructions. Seldom were sea nomads mentioned although their role in relation to trading polities is known thanks to a few historical written sources and to modern ethnographic studies (Andaya, 2008; Hall, 2011).

The French-Thai Archaeological Mission’s team implements a technological approach for industries to characterise each group’s socio-technological system (Lemonnier, 2004; Leroi-Gourhan, 2013, 2014). The spatial distribution among different types of sites (caves, open-air settlements, relay stations) and locations (coastal, mangrove, offshore islands and forested inland) of the different technological groups provides a cultural sequence of the social groups, of their organisation and interactions. This article draws upon the sites excavations and technological analysis of ceramics and glass and hard stone ornaments which are the best represented and preserved materials.

Pottery was analysed using a technological approach as developed by V. Roux and M.-A. Courty (Roux and Courty, 2007; Roux, 2016). Focusing on techniques and ways of doing, the analyses use the *chaîne opératoire* approach (Balfet, 1991; Roux, 2010, 2016) to define pottery technical traditions and to characterize know-hows, these being representative of the social group in which they are acquired (Roux, 2016). Traces and features indicative of techniques are interpreted using ethno-archaeological and experimental databases. Pottery fragments are classified first based on techniques, then based on fabrics. Within each group, pottery shapes and decorations are examined.

Glass was studied combining descriptive information and compositions obtained using laser ablation – inductively coupled plasma – mass spectrometry (LA-ICP-MS). The analytical work was conducted at the Field Museum with an Analytik Jena and then (after 2015) a Thermo ICAP Q ICP-MS connected to a New Wave UP213 laser for direct introduction of solid samples. The protocol of analysis was described in details in Dussubieux and Bellina (2017). It is important to emphasize that this approach is virtually non-destructive, leaving traces invisible to the naked eye, while being extremely sensitive with limits of detection in the range of the ppm or below depending on the elements.

The hard stone technological analysis is based on a frame of reference elaborated in an ethnoarchaeological study carried out in the Cambay workshops (Roux, 2000). This frame of references made possible the characterization of every stage of the *chaîne opératoire*, from the extraction, heating and knapping (Pelegrin, 2000) (to the operation of final polishing (D'Errico, Roux, and Dumond, 2000) and the quality of the product (hence the artisan's skill) (Bellina, 2007; 2014)

3.2. Corpus of remains

Ceramics. Ceramic assemblages from 18 sites dated between 500 BCE - 500 CE and located in the Thai-Malay Peninsula have been analysed, representing nearly 24,000 fragments (including those studied by Bouvet (Bouvet, 2017a, 2017b, 2017c) at Khao Sam Kaeo (hereafter KSK). Pottery sherds have been classified into six pottery traditions and many subgroups (Favereau, 2015). Two of these traditions have been interpreted as locally produced. Among each group of locally produced ceramics, a minority of sherds display specific decorated motifs that relates to the so-called "Sa Huynh-Kalanay" style. These locally produced Sa Huynh-Kalanay-inspired ceramics come from 16 sites, including three ports-of-trade (KSK, Khao Sek (hereafter KK) and Tha Chana) and 13 caves (Tham Phu Khao Thong, Tham Tuay, Tham Chaeng, Khao Krim, Ko Din, Tham Ma Ngaen, Tham Ta Thun, Tham Kuan, Khao Lak, Khao Ta Plai, Khao Thalom 5, Khao Yong Ma 2 and Tham Ma Yang) (Table 1)². In total, 420 locally produced Sa Huynh-Kalanay-inspired fragments are been analysed. Furthermore, ceramics belonging to three different traditions found in the Thai-Malay Peninsula have been interpreted as imported. One tradition is likely to come from the Philippines (Kalanay-related pottery), one from China (Han dynasty-related fragments) and one from India (Fine Wares). The remaining tradition identified in the Peninsula gathers together paddled and impressed fragments (Fig. 2). Its origin is still uncertain. The artefacts from the other industries studied here do not necessarily come from the same sites, because of looting which, in some cases, did not allow us to access to pottery (such as in Khao Mueni, for instance, an important site for glass and stone materials).

Figure 2. Local and exogenous ceramics found on sites of the Isthmus of Kra referred to in the text (Favereau)

Map 2: Maps showing the location of sites mentioned in the text and types of industries analysed for each site (maps: Favereau)

² KSK, KK, Tha Chana, Tham Phu Khao Thong, Tham Tuay, Tham Chaeng, Khao Krim, Ko Din, Tham Ma Ngaen, Tham Ta Thun, Tham Kuan and Khao Lak were excavated and/or surveyed by the Thai-French archaeological mission (Table 1). Khao Ta Plai, Khao Thalom 5, Khao Yong Ma 2 and Tham Ma Yang were investigated by the Archaeology Department in Nakhon Si Thammarat.

SITE	TYPE OF SITE	FUNCTION	LOCATION	THAI-LOCAL-1-SHK-RELATED	THAI-LOCAL-2-SHK-RELATED	STONE ORNAMENT	TYPE OF STONE ORNAMENT	GLASS SAMPLES RECORDED	GLASS SAMPLES ANALYSED WITH LA-ICP-MS	TYPE OF GLASS SAMPLE
Khao Sam Kaeo (KSK)	Open air port-settlement	Port-of-trade	Lowland coastal	152	2	435	Beads pendants production wastes		162	Drawn lapidary beads, bracelets wastes
Khao Sek (KK)	Open air port-settlement	Port-of-trade	Lowland coastal	77 highly fragmented (MNI=1)		191	Beads pendants production wastes		45	
Tha Chana	Open air port-settlement	Port-of-trade	Lowland coastal	8						
Ko Din	Cave	funerary	offshore		1					
Tham Phu Khao Thong Langsuan	Cave	funerary	Lowland coastal	46	43	1	Pendent	12	4	
Tham Pramong	Cave	funerary	Lowland coastal			4	beads			
Tham Tuay	Cave	funerary	Coastal/estuarine	9	34	1	bead	6	6	Drawn beads
Tham Chaeng	Cave	funerary	Coastal/estuarine			1	bead	66	5	Drawn beads
Tham Phla	Cave	funerary	Coastal/estuarine					13	1	Drawn beads
Ban Na Hyan	Open air	Transshipment /feeding point	inland					18	18	Drawn and lapidary beads, cluster of melted beads, bracelets wastes Glass beads, wastes and cluster of melted beads
Pang Wan/Pang Thaw	Open air	Transshipment /feeding point	Inland					7	7	Drawn beads
Na Sak Lot Yai	Cave	Funerary/transshipment	Inland					1	1	Drawn bead
Khao Krim	Cave	funerary	Inland	1	2	3		26	5	Drawn beads
Tham Ma Ngaen	Cave	funerary	Inland		22					
Tham Ta Thun	Cave	funerary	Inland	2		18	beads	4	1	Drawn beads
Khao Ta Plai	Cave	funerary	Inland	8	3					
Khao Thalom 5	Cave	funerary	Inland	1						
Khao Yong Ma 2	Cave	funerary	Inland	3	1					
Tham Ma Yang	Cave	funerary	Inland	1						
Tham Khuan	Cave	funerary	Inland	3						
Khao Lak	Cave	funerary	Inland	1						
Khao Mueni	Cave	Funerary/ritual site	Inland			49	beads	195	13	Drawn beads bangles
Khao Thapon	Cave	funerary	Inland			18	beads			
Tham Khao Krok	Cave	funerary	inland			1	bead			
Tham Tasak	cave	funerary	Inland			3	beads			
TOTAL				312	108	725		348	268	

Table 1: sites and analysed material

Glass. As far as glass is concerned, the upper Thai-Malay peninsula can be considered as a region fairly well studied compared to other Southeast Asian areas. For this article, 12 sites were considered. They feature different layouts, functions and types of location yielded glass that was available for LA-ICP-MS study (Table 1).

Whereas several thousand glass artefacts were extracted from only two locations, KSK and KK, the glass from the 10 other sites investigated here represents only 348 catalogued artefacts. KSK and KK yielded indisputable evidence for beads and bracelet manufacturing (Dussubieux and Bellina, 2017;

2018). Glass from two close by inland transshipment sites along the River Langsuan was studied. At the other sites consisting of caves and rockshelters, beads and more rarely bracelets are mostly associated with burials. At Ban Na Hyan glass waste and melted clusters of beads along lapidary beads and a glass vessel fragment were found. Generally, the vast majority of the beads are drawn monochrome beads.

Stone. 725 beads were studied (Table 1). Attention was mainly given to KSK (435 pieces) and KK (sampling: 191 pieces) workshops. The characterisation of these productions was essential to trace their distribution within the peninsula and abroad, and hence to reconstruct the social, economic and political structure of these trading polities. A detailed presentation of the *chaîne opératoire* and technological groups for those two manufacturing centres is published elsewhere (Bellina 2014; Bellina 2018). More than 83 beads from sites in the provinces of Chumphon and Ranong other than the production sites were analysed. Found in funerary deposits in caves distributed across a large territory, they are all finished products. Unfortunately, looting activities make it difficult to estimate what may have been their importance. A few come from our excavations (1 at Tham Tuay and 1 Tham Phu Khao Thong) and 81 were studied in villagers' collections with 8 from coastal caves (Tham Pramon, Tham Chaeng, etc.) and 74 from inland caves (Mueni, Khao Krim, Tham Taprom, etc).

4. Results - Synthesis on the cultural profiles and socio-economic organisation during the last centuries BCE.

The spatial distribution of the different technological groups of materials draws a picture of a dynamic socio-economic landscape evolving through time between two main stages. The early regional networks, originating by the first part of the first millennium BCE, strengthened, allowing the development of regional ports-of-trade such as KSK from the early 4th c. BCE. During the later period, perhaps from the 3rd c. to the 1st c. BCE, activity on exchange network increases. Local and exogenous groups belonging to different environments now appear economically and culturally better defined and working in concert. Among these exogenous groups are found those we interpret as early sea nomads.

4. 1. Earliest riverine ports-of trade and its immediate hinterland – centripetal dynamic – 4th c. BCE

During this early phase, ports-of-trade arise and already developed complex urban and political models. Ports-of-trade concentrate the largest range of imports and developed culturally hybrid industries. They redistribute their culturally hybrid products characterised by a pan-regional style at a regional level. At this period, the involvement of surrounding local groups only appears discreetly in the archaeological records. In ports-of-trade and in the caves around, these lowland groups' material culture already reveals a well-grounded maritime orientation towards the Bay of Bengal and more strongly (i.e. currently supported by more archaeological evidence) towards the South China Sea.

4.1.1. The ports-of-trade

During the very late 5th c. or the early 4th c. BCE, local ports-of-trade acting as regional economic and cultural centres emerged, such as at KSK (Bellina (ed.), 2017) and potentially at Tha Chana (unfortunately, not subjected to controlled excavations). They were likely preceded by more discrete small coastal trading nodes: as we have seen, there is evidence for early 1st century BCE regional

networks linking this part of the peninsula with other sites in Mainland and Island Southeast Asia. This is further supported by the material culture style in ports-of-trade and more discreetly in surrounding sites (funerary deposits in caves) which reveals longer-established links with other coastal groups. The local repertoire integrates traits shared by other coastal communities along the South China Sea (Bellina, 2018).

Ports of trade arose on barely elevated hills along rivers and at a few kilometres from the sea (less than 10km). They are currently represented by KSK (Bellina, 2017), KK (Bellina, 2018) and Tha Chana on the eastern coast and by the complex of Ban Kluay Nok and Phu Khao Thong (Bellina et al. 2014) on the west coast although this group of site is less well dated. Survey and excavations in the Myanmar side of the peninsula have begun to uncover more of those. These ports-of-trade show signs of early urbanism and in the specific case of KSK, a cosmopolitan character with compounds hosting foreign communities such as South Asian, North Vietnamese or Chinese, different Southeast Asian groups of merchants and skilled craftsmen. The political structure emerging from comparative study of KSK and KK is that of a confederation of hierarchically specialised and complementary small city-states. These developed highly skilled and culturally hybrid industries that fed different levels of the networks and played a role in rulers' political and economic strategy within the confederation and between the city-states and their hinterland (Bellina 2018). These 4th c. BCE ports-of-trade drained imports from various South and Southeast Asian regions. They also manufactured goods that they distributed locally and regionally. Their workshops fed other smaller and affiliated specialised sites such as the port-of-trade of KK (Bellina, 2018a; Dussubieux and Bellina, 2018; Favereau, 2018) and local networks. The larger port-settlements such as KSK and probably Tha Chana too, concentrate the broadest variety of ceramic, glass and stone types: local, local with foreign characteristics and imports.

For ceramic, all pottery groups identified in the Peninsula can be found in ports-of-trade: local types, local types with Indian-inspired traits or South China Sea traits and imported ones (Figure 2) (Bouvet, 2017; Favereau et al, 2017; Favereau, 2018; Péronnet and Srikanlaya, 2017). Earthenware burial jars drawing links with the Philippines and Vietnam were also discovered. These were first identified by Bouvet (2017) at KSK and named Black and Red Jars. They were later recognized at KK and Tha Chana. They are rare in the Peninsula (about fifty jars in total in the current state of research). In the Philippines, similar jars were found on the island of Masbate (see Bay-Petersen, 1982 and 1982-83: 266, fig. 3) and also reported on Palawan and Samar islands (see Hutterer 1969 and Fox, 1970, after Bay-Petersen, 1982: 80). In Vietnam, such jars differ from those of the Sa Huynh culture. On the cemetery of Hoa Diem in Khanh Hoa province for instance, jars similar to the Black and Red Jars from Thailand were used for funerary purposes (Yamagata, 2012: 125; fig. 52). Given their distribution and their scarcity, they seem to be associated with small groups of people involved in the South China Sea networks.

During this early stage, glass and stone industries are hybrid: they produce locally goods with foreign raw material and technologies in the pan-regional style. The pattern of distribution of glass and stone ornaments is less clear, a situation resulting from the more limited amount recovered in context due to looting activities. As for pottery, KSK and KK implemented the same hybrid productions. They combined the same foreign elements occurring at the same stages of a similar *chaîne opératoire*. Both glass and stone industries used South Asian raw materials and techniques that they associated to a regional style characteristic of the "early late prehistoric South China Sea style" (Bellina, 2018a; Dussubieux and Bellina, 2017; 2018). In addition to similarities in the sites' configuration, these parallels in their industries supports the hypothesis that they were closely linked and part of the

same political confederated entity (Bellina, 2018). During this early phase, glass mainly consists of faceted beads worked at KSK and KK with South Asian techniques traditionally used to work stone, bracelets and minute drawn beads (Figure 3). Raw material from Northeastern India was imported and worked in KK and KSK's workshops to manufacture lapidary glass beads, glass bracelets and minute red drawn beads.

Lapidary glass beads and bracelets have not yet been found within the peninsula but they appear more clearly distributed regionally as part of this set of objects with the "early late prehistoric South China Sea style" (Figure 3). Lapidary glass beads were found in Thailand at Ban Chiang and at Ban Don Ta Phet. Bracelets are attested at Ban Don Ta Phet in Thailand and at the Mimotien site in Cambodia, at certain Sa Huynh-related sites in Vietnam such as Giong Ca Vo, Phu Hoa, and Go Ma Voi, possibly in the Oc Eo area in Vietnam and in the Tabon Caves in the Philippines (Chamber B in Manunggul Cave, Palawan Island). Minute red beads with a similar Northeastern Indian composition, were present at Ban Don Ta Phet, Giong Ca Vo and sites of the Samon Valley in central Myanmar. Those sites belong to an Iron Age network that encompasses the Bay of Bengal and the South China Sea. In contrast, the recovery of these productions at a local level is still limited. As per glass, so far, it has only been unearthed at the cave of Phu Khao Thong Langsuan (Bellina, 2014 unpublished report) located in the lowland area about 5km from KK. The production may have been predominantly oriented towards regional networks around the South China Sea including Ban Don Ta Phet in West-Central Thailand, Giong Ca Vo in southern Vietnam and the Tabon Cave in The Philippines (Lankton, Dussubieux and Gratuze, 2008).

Figure 3: bracelet fragments (left), lapidary glass beads (right) from Khao Sek and Khao Sam Kaeo, Early Period (photo Bellina)

Similarly to glass ornaments, the pattern of distribution for stone ornament productions within the peninsula is sketchy due to looting. At this early stage, workshops in ports-of-trade were producing ornaments made of raw material likely imported from South Asia and worked with South Asian skilled techniques in the regional "early late prehistoric South China Sea style". Very similar ornaments were uncovered at Ban Don Ta Phet in Thailand, at Sa Huynh-related sites such as Giong Ca Vo and in the Tabon caves in the Philippines (Bellina, 2014). These productions are found within the two port-settlements and in defined zones at Khao Sam Kaeo (see figure 5 p.354 in Bellina 2014).

The bronze industry in these ports is also hybrid. However, as opposed to glass and stone, the raw material is most likely local. The Ranong area along the western coast of the Kra Isthmus is renowned for its sources of tin which were exploited up to the present. KSK and KK provided evidence again for a hybrid industry combining local tin and Indian technologies to produce high-tin bronze ingots likely for export (Pryce and Bellina, 2018; Pryce et al., 2017). Lead isotope analysis has established links between the high-tin bronze alloy used for bowls found at Ban Don Tha Phet (West Central Thailand), KSK and KK and an ingot from Tilpi in West Bengal (Pryce et al., 2014).

4.1.2. Port-of-trade's immediate hinterland (surrounding)

The populations lying in the vicinity are until now only visible through neighbouring caves, some of which yielding funerary deposits. No open air sites have been found. They used the manufactured goods in funerary contexts found in caves like at Tham Phu Khao Thong Langsuan located near KK

(French-Thai excavations in 2014, hereafter PKTL), Khao Krim, Khao Lak, Tham Phla, Tham Tuay, and at the caves of Khao Ta Plai, Khao Thalom 5, Tham Khuan, Khao Yong Ma cave 2. In terms of material culture, the influence of the ports-of-trade and their exchanges with local groups is well-evidenced by the main local pottery tradition named “Thai-Local-1” (Figure 3) identified in the Peninsula and interpreted as local. Tradition Thai-Local-1 is found on these sites whether coastal or inland. Within this tradition which represents 60.7% of the pottery sherds under study, a small proportion (~ 1.2 %) displays decorations showing Sa Huynh-Kalanay influences. These ceramics share a few stylistic traits that can be found in various sites along the South China Sea: pots are decorated with incisions creating SHK-inspired geometric designs. Incisions are often filled with impressions and/or red painting. The more frequent and relevant patterns for this group are spirals, rectangles, triangles and waves. Patterns are usually repeated either by interlocking or by forming a frieze and can be combined (i.e. interlocking triangles or alternating triangles and spirals for instance). Such designs are identified on several vessels from other sites located along the South China Sea. As an illustration, they can be found at sites in central and southern Vietnam, central Philippines (chiefly the Visayas and Palawan) and Indonesia (Sulawesi and Borneo) (see for instance Balbaligo, 2016; Bellina, Epinal and Favereau, 2012; Favereau and Bellina, 2016; Dizon, 2003; Paz, Ronquillo and Lewis, 2011; Reinecke, Nguyen and Lam Thi My Dzung, 2002; Solheim, Bulbeck and Flavel, 2006; Yamagata, 2012). The main local SHK-related group (hereafter named “Thai-Local-1-SHK-related”) was distributed both to ports such as KSK and Tha Chana in specific domestic contexts and in a few caves spread over a large territory. Because of its specific distribution -specifically at KSK- and its rarity (see contexts in KSK for example in Favereau, 2015), it might be “prestigious”. It is likely that these pots were produced upon order. Strong links between KSK and its immediate hinterland are attested by the presence of this Thai-Local-1-SHK-related (Figure 3) but also and more clearly with the distribution of its variants (“Thai-Local-1-SHK-related&impressed-with-shell”). Besides KSK, the latter has so far only been recovered from caves, coastal or inland: Khao Ta Plai, Khao Thalom 5, Tham Ma Yang, Khao Yong Ma 2, Tham Khuan and Tham Phu Khao Thong Langsuan. They evidence the central role of KSK because they are systematically present and more numerous there. All pottery groups and subgroups identified at Tham Phu Khao Thong Langsuan are present at KSK and Tha Chana, but absent at KK, although KK is located in the immediate vicinity of Tham Phu Khao Thong Langsuan. This contributes to the argument that there is a marked hierarchy within this confederation. KSK and perhaps Tha Chana would exert a stronger influence in the region despite the fact that other ports-of-trade are located in their neighbourhood.

Locally-made hybrid stone ornament may well have been distributed locally also. Iron Age inhumations in the neighbouring caves and rock shelters often yield stone and glass jewellery, many of which could come from the regional industrial ports. The only material found in context dating of this early period was excavated at Tham Phu Khao Thong Langsuan in 2014. It is a small carnelian pendant of a singular morphology, part of one of the funerary deposits in this cave radiocarbon dated of the 4th-3rd c. BC (WK 39004: 2338±25 BP; SacA47091: 2205±30 BP; SacA47092: 2210±30 BP). Given the unique morphology and the skill involved, it is conceivable that the pendant was made to order in one of the two contemporary workshops of KSK or the neighbouring port of KK. Burials in this cave yielded several fragments of high tin bronze bowls, one of which was definitely decorated with a central knob, looking very similar to the bronze vessels at Ban Don Ta Phet (Kanchanaburi) and at KSK. At KK, working evidence for high-tin bronze was uncovered (see below).

Though still tenuous, these manufactured goods suggest links between regional ports themselves and with their immediate hinterland. How extensive and intensive were these links is difficult to appreciate given the material’s scarcity. In any case, we know that such exchanges took place. One possibility is that they occurred for the exchange of agricultural products. Rice and millet constituted

the agricultural base at KSK and potentially at KK too, though evidence is sparse in the latter. This agricultural base could support local and transient merchants or artisans (Castillo, 2017). Other indirect evidence for links with the hinterland lies in the material found along transpeninsular routes and local tin exploitation. Transpeninsular routes passing by the Kraburi/Ta Thapao and the Langsuan river systems were already used. Indian raw materials (stone for ornaments and raw glass) and other long-distance trade-related material (imported Indian Fine Ware, Dong Son drums from Southern China or northern Vietnam) uncovered on sites along these routes such as at Ban Na Hyan in the middle of the peninsula along the Langsuan river system (Chumphon) or in ports at their ends (Bellina et al., 2014; Bellina, 2017).

The results on this first period can be summarised as follow: long-distance networks and ports-of-trade were already well-developed by the 4th c. BCE, likely relying on formerly established nodes. Local populations around those fluvial ports-of-trade appear linked with them, exchanging manufactured material against various goods, many of which did not preserve. Tenuous indirect evidence suggests that they may have been involved providing agricultural, forest and mineral products, tin in particular. Foreign traders and craftsmen also lived in ports-of-trade. The latter probably produced goods for local rulers to build their prestige but also for them to seal alliances with surrounding populations who supplied their local ports' marketplaces goods for regional trade.

Figure 3: Local Sa Huynh-Kalanay related types of ceramics found in the Kra isthmus in the Thai-Malay peninsula (A. Favereau).

4.2. The later period: Upstream-downstream and inland networks and more groups involved, culturally/economically better defined and cooperating

During the later period, perhaps from the 3rd c. to the 1st c. BCE or more, exchange increase and get organised with specialised sites emerging (such as relay/transshipment stations). Local groups belonging to different environments appear economically and culturally better defined and are archaeologically more traceable. Many more groups were then present in the peninsula. Amongst those, some found at river mouths and in neighbouring islands. These groups we interpret as sea nomads migrated there slightly after the emergence of the lowland ports. They are different from lowland coastal groups. They display a strong maritime profile being involved both in local and regional networks. They were acting as intermediaries firstly between the local upstream-downstream networks, and secondly between the regional maritime ones. During this second period, culturally distinct groups in ports, at river mouths and inland were connected, but apparently culturally distinct and working in concert.

4.2.1. Ports-of-trade

During this later period, more ports-of-trade have emerged: Phu Khao Thong and Ban Kluay Nok on the western coast in Thailand (Bellina et al., 2014) and possibly Aw Gyi in southern Myanmar (Bellina et al., 2018). Many more foreign groups and imports are found there, some indicating links with the Western world. This is probably the period when KSK extends further north and new surrounding walls are built around the new compounds. Ports-of-trade concentrate larger ranges of materials indicating the presence of many more social groups. In the latter are now found imports from Han China and from South Asia, as well as more material from the South China Sea, the Philippines and Taiwan. We interpret the appearance of local pottery tradition Thai-Local-2 ceramic (Figure 3) as indicating the arrival of such foreign groups with closer links with the South China Sea and the Philippines in particular. Most of the Thai-Local-2 potteries are highly fragmented and undecorated, however they were recognized as part of the same tradition through the analysis of fabrics and manufacturing techniques. This tradition represents about 25.7% of the pottery production in the Peninsula. At KSK, Thai-Local-2 (Figure 3) pottery ware concentrate in hills 3 and 4. Excavations have shown that these two hills may correspond to a phase of occupation of the site more recent than hills 1 and 2 (Bellina and Bernard 2017). This suggests that Thai-Local-2 pottery could represent a group of individuals implanted in the Peninsula later than the group represented by Thai-Local-1. In addition, the spatial distribution of Thai-Local-2 at KSK suggests that these individuals were probably a group of migrants because the containers were mostly found in an area occupied by the non-local populations of the site (hill 3 and 4) (Bellina and Bernard, 2017).

Some of the hybrid goods of the first period are no longer produced there. This is the case of glass bracelets and of lapidary glass beads. The provenance of the raw material for glass has changed too. The pan-regional style has evolved. The “later Late Prehistoric South China Sea style” is especially well illustrated with stone ornaments and now includes more Indic adapted material (group 3, see figure 5 p.354 in Bellina 2014). Stone ornaments include many widespread morphologies alongside a wide variety of zoomorphic figurines, structures (stupa-like) and symbolic shapes. Some images such as lions or tigers, tortoises, frogs, fish, etc., cannot be related specifically to Indic imagery

4.2.2. Inland sites: caves and open-air transshipment/collecting centres

During this period, a series of inland sites located along main and secondary transpeninsular routes linked one coast of the peninsula with the other. Inland sites are of two types. There are open-air transshipment and collecting sites often localised at rivers’ tributaries. These are at roughly regular intervals along these routes. They yield archaeological remains related to long-distance networks such as Dong Son drums, glass beads, and exogenous ceramic (Indian Fine Ware). Those include Wat Pathumtaram (Ranong), Ban Na Hyan and Pangwan along the River Langsuan (Chumphon) and Tham Nam Lot along the smaller River Sawi (Chumphon). There are caves located in the Tenasserim central chain used as temporary camps and for funerary practices. Amongst those, the French-Thai mission investigated caves at Tham Nam lot, Khao Krim, Khao Mueni, Khao Chula, etc. They are often located along rivers which are part of the transpeninsular routes.

4.2.2.1. Inland caves

The Inland sites include cave sites such as Khao Krim and Khao Muni along the River Langsuan and transshipment and collecting open-air sites along tributaries such as Pangwan and Ban Na Hyan located along the River Langsuan leading to the port of KK. This river system is part of the transpeninsular network. Archaeological remains in Inland sites are sparse due to numerous disturbances. Nevertheless, there too appears discreetly the later tradition of local pottery with

organic temper (Thai-Local-2). It coexists with the mineral-tempered earlier production (the Thai-Local-1 tradition).

4.2.2.2. Transshipment places and collecting centres

Until recently, amongst crucial evidence missing to support the use of transpeninsular routes was the absence of inland-relay/transshipment stations. The first ones were evidenced along the major transpeninsular route linking Kraburi to KK/Langsuan. These are the transshipment and collecting centres of Wat Pathumtaram (Ranong), Ban Na Hyan and Pang Wan. They provide foreign imports witnessing the passage of foreign merchants and foreign goods. In terms of glass, Ban Na Hyan is puzzling as it yielded a range of artefacts considerably more diverse than those found at other sites inland. Blocks of glass, clusters of melted glass beads, drawn and lapidary beads were found at the site (Figure 4). Is that a sign that glass beads were manufactured at this location? This cannot be excluded. Was Ban Na Hyan just a point of transit to other sites that would have used the raw glass and recycled the melted beads? The type of glass however that was found there, places Ban Na Hyan in the same type of network than the sites dating from the 3rd c. BC – 3rd c. AD period. However, the type of material seems to indicate a more complex organisation at this site compared to the others. The absence of excavations there and the extent of the lootings may prevent any in-depth study and the possibility to interpret the economic and political significance of this site and the glass work taking place there.

The site of Pang Wan (about 30km east from Ban Na Hyan) contrasts with Ban Na Hyan as glass artefacts only appear in the form of small translucent turquoise and dark blue beads showing much less diversity. Those were found associated with a Dong Son drum recovered after the collapse of the Langsuan river bank during a monsoon season. But this lack of diversity probably reflects less a reality than sampling opportunities at a looted site whose beads are kept in different private collections. The compositions of the glass artefacts at Pang Wan that are potash are similar to the compositions found at Ban Na Hyan, suggesting that the two sites belong to the same network of relay stations and operated around the same period despite different status or functions. As a matter of fact, Ban Na Hyan may have taken advantage from its privileged position along what was then an important transpeninsular route and may have grown in importance so that a glass workshop may have arisen. There are historical examples in Sumatra of thriving inland secondary and tertiary exchange centres that grew economically powerful (Andaya and Andaya, 2015): 193).

Figure 4: glass material from Ban Na Hyan (photo Bellina)

Merchants crossing the peninsula were likely assisted by local groups who had a good knowledge of their environment. This knowledge was crucial in a hostile environment through which circulation could not be improvised, both on land along tracks or on rivers whose course and water level vary quickly, greatly and dramatically and which implied using multiple means of transport (Jacq-Hergoualc'h, 2002). This leads to question the respective role of each group in this network. Who were the groups familiar with this difficult and changing environment who assisted foreign

merchants and transportation of the goods? Were those collecting the same as those engaged in assisting travellers and goods circulation? It is hard to answer this question at this stage but it is likely that groups from the interior did so. What material culture tells us is that foreign influence appears rather limited inland. Though looted, burials found there along major or secondary fluvial systems yielded important quantities of hard stone and glass ornaments that may well have been produced in regional ports-of-trade. Stone beads appeared rather simple and did not seem Indic or South China Sea influenced. They were made in various materials, some imported and others possibly of local origin. To sum up, they do not compare with those found in ports-of-trade. These burials never seemed to include long-distance imported material such as the Indian Fine Ware, the Han Chinese, Dong Son drums, amongst funerary deposits in caves inland. Those imports were encountered in the transshipment/collecting places only where traders were stopping. Were inland groups taking forest goods they collected to local collecting/transshipment sites only, thus limiting their exposure to foreign traders/travellers? It seems unlikely. More plausibly, inland groups may signal their distinct socio-economic specialisation through their material culture. These inland groups would have taken those forest goods at the river mouth. From there coastal/estuary groups acting as middlemen could have taken the material on to the regional city-port. One cannot exclude either that some downstream groups at the river mouth may also have become specialised as middlemen gathering and redistributing goods from inland transshipment/collecting centres to regional ports. The latter could also have acted as guides for foreigners crossing the peninsula and joining inter-regional ports. This is discussed in the following section.

4.2.3. Estuarine, coastal and offshore caves

From this period, exogenous groups settled in the peninsula. The local pottery tradition Thai-Local-2 ceramic signals the arrival of foreign groups with closer connections with the South China Sea and the Philippines in particular. The Thai-Local-2-SHK-related pottery (Figure 3) may correspond to pottery used by some of those groups who locally settled at river mouths to command the upstream-downstream trade and that we interpret as early sea nomads. The privileged relation between estuarine, coastal and offshore caves, mean that the groups that produced and acquired Thai-Local-2-SHK-related pottery were more influential in these areas that was a strategic location both between ports-of-trade and the upstream-downstream/transpeninsular networks. It shows their involvement both into inter-regional networks and in local upstream-downstream exchange networks. These groups located at estuaries played an intermediary role redistributing goods between upstream inland sites and regional ports, although inland groups may also have come downstream to exchange.

Their activities are currently only attested by supposedly funerary deposits found in estuarine, coastal and offshore caves. Funerary contexts are clearly attested at Tham Tuay and Tham Phu Khao Thong Langsuan. Other caves are said to have been used for funerary purposes by our informants (villagers) who found human remains/bones associated. Among these caves, only Tham Tuay and Tham Chaeng yielded Black and Red Jars as well as imported pottery material just as at ports-of-trade such as Indian Fine Wares and Han Chinese wares.

Thai-Local-2-SHK-related is a sub-group of the local pottery tradition Thai-Local-2 which represents a small number of vessels (~ 0.5%) decorated with SHK-inspired designs. Thai-Local-2-SHK-related pottery are systematically present at Tham Tuay, Tham Phla, Tham Ma Ngaen, Tham Phu Khao Thong Langsuan and on the island of Ko Din. However, they remain rare (less than 100 pots). They are very similar from one site to the next: manufacturing traces are identical, finishing is carefully made,

decorative techniques include incision, painting, shaving and impressions, and decorative patterns are clearly different from what is found in the sites of the interior, the ports-of-trade and the other cave sites. Motifs associated with the SHK style include incised interlocking spirals or triangles, as well as scallop decorations shaved on carinations, incised geometric motives often combined with red and yellow paintings and patterns impressed with the edge of a shell. Other motifs, not diagnostic of the SHK lexicon but still evoking the SHK style, consist of floral and animal designs. The contours are incised and then filled up with reddish and yellow paintings. Such designs do not appear on any other site in the Peninsula. These motives, specific to these caves, attest to the use and reinterpretation of the Sa Huynh-Kalanay style repertoire.

The Thai-Local-2-SHK-related wares are interpreted as being produced upon order. Such occasional productions are almost exclusively found in coastal caves (95% to 98% of the pots), very rare in ports-of-trade such as KSK and Tha Chana and absent at KK. Indeed, outside of these caves, only a few Thai-Local-2-SHK-related pottery were identified at KSK, 2 at the interior cave of Khao Krim and 1 at Tha Chana and these don't display any floral or animal-like decorations. The decorative style found in the coastal caves is absolutely unique and distinct from what is found in ports and inland caves. The distribution of these specific decorated pottery indicates privileged links between coastal caves at the mouth of the Rivers Tako and Langsuan (PKTL) and caves offshore like Ko Din, all of them sharing comparable patterns.

The groups we interpret as sea nomads who were using these coastal caves seem to have been in recurrent contact with the Philippines. Comparative study of SHK-related pottery from the Thai-Malay Peninsula and from the Philippines reveals that a style circulated and developed through time as a result of prolonged and repeated interactions between Thailand and the Philippines, suggesting round trips between the two areas and synchronised developments (Favereau, 2015; Favereau and Bellina, in press). Circulations involved groups of people, presumably from the central Philippines as the earlier dates from the Philippines suggests. These individuals may have come to the Thai-Malay Peninsula around 500/400 BCE and be represented by the pottery group Thai-Local-2-SHK-related.

On the contrary to Thai-Local-2-SHK-related pottery that are rare, pottery classified within the tradition Thai-Local-2 were found in larger quantities on ports-of-trade such as KSK and KK.

4.2.4. Estuarine, costal and offshore caves links with inland caves: Upstream-downstream

Some artefacts now clearly evidence upstream-downstream exchange and special connexions between a few estuarine, coastal and offshore caves and inland caves upstream. This is the case for Tham Tuay at the River Tako estuary, and Tham Chaeng at the River Sawi mouth on one hand, and of Khao Krim and Khao Muni, two inland caves upstream along the River Sawi on the other. These two river systems belong to what can be labelled a secondary network, i.e. used by local groups and only perhaps occasionally by traders. The coastal caves of Tham Tuay and Tham Chaeng may be interpreted as regional collecting sites that supplied local ports' marketplaces with inland products, as they are directly located at the rivers' mouth, between the major ports of Tha Chana, KK and KSK. They may have redistributed products collected inland to the regional major ports acting as international market places such as KSK and Tha Chana, but also have been more directly involved into regional maritime networks, as the presence of foreign imports may suggest. The pottery at Tham Tuay and Tham Chaeng includes imported Indian Fine Wares and Han ceramics which are usually found in ports-of-trade like KSK and Tha Chana (albeit excluding KK).

Glass too supports the hypothesis of connexions between estuarine coastal groups on one hand and between the latter and upstream groups. For this later period, a certain number of sites yielded material with a Southeast Asian/Southern Chinese composition. The presence of this glass but the absence of Northeastern Indian glass is typical of this period. Such a glass type was found at a number of sites: Tham Chaeng, Tham Pla, Khao Krim, Pang Wan, Ban Nai Hyan and Khao Muni, which would support upstream-downstream connexions. Tham Tuay can be associated chronologically to this group of sites despite the presence of two opaque green beads of South Asian Northeastern composition. The colour of these artefacts does not correspond to the colour of very early Northeastern Indian glass and might have been brought to the site by a network different from the early one that was identified for earlier periods.

It is important to note that the glass material at all those sites is not uniform, albeit with more similarities between certain sites and more disparities between others. The Southeast Asian/Southern Chinese compositions of the glass found at Tham Chaeng and Tham Tuay are similar but this Southeast Asia/Southern Chinese glass subtype is fairly common. Tham Chaeng only yielded turquoise blue beads, while the range of colours for Khao Krim is limited to dark blue and turquoise blue. Khao Krim and Tham Chaeng have in common the presence of high alumina Southeast Asian/Southern Chinese glass that is absent at Tham Tuay and fairly rare in general.

Drawing a pattern of distribution of hard stone material beyond port-settlements is currently a difficult task. The corpus available is uneven: the vast majority corresponds to ornaments from the production sites and their settlements, KSK and KK. Similar styles can also be sparsely found inland in the cave of Khao Muni. However, a preliminary analysis of the material from other sites, now in private collections, suggests that most of it was imported from production sites other than KSK and KK. Very few coastal caves escaped looters, and most of the Tham Chaeng material has been spread across various private collections. The site has yielded a Dong Son drum, a high-tin bronze bowl and a nephrite *lingling-o*. One of the three caves at Tham Tuay was excavated by the French-Thai archaeological mission and yielded an iron dagger, a small banded agate flat bead along with local SHK-related ceramic and glass beads.

To summarise, in the course of this second period, a larger number of local groups and others who came to the peninsula both from South Asia and South China Sea became actively involved in exchange. The local groups appeared more culturally and economically defined and distinct than previously. Other groups we interpret as newcomers played an important role in the networks. Amongst those are groups identified in ports-of-trade and along the coast near river mouths and in caves on offshore islands. They were groups sharing a similar outward orientation, having close links with the South China sea and the Philippines in particular. Those evidenced at coastal and estuaries may have specialised as intermediaries probably based on their knowledge both of riverine and of maritime networks. We argue that those may correspond to early sea nomads. They cooperated with inland groups who collected and supplied goods to relay/transshipment stations along primary and secondary transpeninsular routes. At this stage, it is unclear whether coastal/estuary groups served as guides for merchants and transporters for goods across the peninsula or whether this was done too or exclusively by inland groups.

5. Discussion

The spatial distribution of the archaeological materials analysed indicates a chain of cooperation between groups whose lifeways and cultures seemed to diverge significantly in conjunction with the expansion of Maritime Silk Road activities by the 4th c. BCE and the development of regional centralised trading polities. This would bring support to Benjamin's and Fix's hypotheses according to which local groups developed complementary lifeways from a common matrix as a profitable strategy (Benjamin, 1987; Fix, 2002). This chain of collaborations shows parallels with ethnohistorical accounts: the first circle involves Inland "Orang Asli" and "Orang Laut" established in the lower portion of the transpeninsular routes; the second engages estuarine groups and traders settled in regional port-entrepôts. During the historical period, oral traditions and texts attest that sea nomads such as the Urak Lawoik of Lanta Island off the Kedah coast in Malaysia (the Kalah of Arab sources) were located in the vicinity of trading polities that developed there and that they cooperated with them. They were also at the mouth of transpeninsular routes and/or along the coast of the Melaka Strait. Besides the Urak Lawoik, Andaya (2008) also hypothesises that mutually beneficial cooperation probably existed between the Moken and trading polities further in the northern part of the Strait of Melaka. It is conceivable that such cooperation may have involved encouraging traders to use the transpeninsular route that the port-of-trade "controlled" and to which the coastal/estuary group may have been affiliated. Sea peoples' languages bear evidence of their close relationship with dominant regional languages, thus attesting long-established symbiotic relations between them and regional trading polities (Blench, forthcoming).

In addition to internal dissimilation, cultural diversity visible in the Isthmus of Kra was also fashioned by interactions and interbreeding with foreign traders coming from the western and the eastern horizons. Amongst the former, South Asians. There is evidence of South Asian contribution to the genomes of modern MSEA and ISEA populations beginning from the 4th c. BC, i.e. the period during which Maritime Silk Road activities developed and their presence is identified in ports such as in KSK, their compound being located on the Hill 3 (Mörseburg et al., 2016). Furthermore, in the Thai-Malay Peninsula, gene flow is attested between indigenous groups and the Island world and Oceania (Fix, 2002). Linguistic data also point to the presence and close ties developed through recurring interactions and possible mixing with groups closely linked with the Philippines. These are foreign groups we propose to link with Thai-Local-2 ceramic present in ports-of-trade and with the Thai-Local-2-SHK-related pottery found in estuarine/coastal and neighbouring islands caves. We interpret the Thai-Local-2-SHK-related pottery as ceramics used by those amongst these foreign groups who specialised as sea nomads. These groups and close links with the Philippines are further evidenced by ornaments, glass, stone and gold analysed by the archaeological mission. Sea nomads may have married with other groups to build political and economic alliances. Some could have settled and taken local wives as frequently happens with traders. Marriage would have been advantageous for the exchange relationships, which clearly helped maintain links between the Philippines and the peninsula. This hypothesis would support Benjamin's hypothesis based on his analysis of lexical elements where traces of very early forms of Austronesian would suggest direct contacts between the Philippines and the Thai-Malay Peninsula prior to the later Malay expansion from Sumatra (Benjamin, 1987: 130-131). Further south in the peninsula, biological data show that gene flow also took place linking local groups with some from Oceania (Fix, 2002). Mating with central Philippines' traders could explain these close links. It has been hypothesised elsewhere that these small groups in connexion with the Philippines may have been involved with inter-island exchanges and in particular nephrite from sources in Taiwan and elsewhere (Favereau and Bellina, in press). Historical sources attest that marriage with the dominant land groups was widespread at least in the Modern Period. Orang Laut found strategic to marry local entrepôt rulers' family members to bind ties to strengthen their trading partnership (Andaya, 2008: 189). These practices are also attested amongst the Bajaw by ethnographic, genetic and linguistic studies. In their case, they predominantly married local

neighbouring land groups, then other groups of Bajaw but also the dominant trading partners. These intermixing may have been the case all throughout history (Kusuma et al., 2017).

In the Kra Isthmus during the late prehistoric period, groups along the coast and estuaries not only became economic and cultural intermediaries between the different foreign and local groups but also key actors in the political landscape. This is well reflected in their material culture that at the same time shared common trends, was distinct from other groups (inland and from trading communities in port-entrepôts), but included some of the elements from these groups they interacted with. It is by combining this set material culture made of a combination of trade-related items with their spatial distribution limited to river mouth and islands which, we believe, can signal the presence of these groups. Perhaps because much of the evidence comes from burials, their material culture currently mainly consists of what is interpreted as honorific or prestigious artefacts, some made in ports' workshops, perhaps made especially for them, as in the case of ornaments and perhaps too of the Thai-Local-2-SHK-related pottery that they used for funerary practices. Their assemblage also included some of the imports found in these ports and along transpeninsular routes such as the Indian Fine Ware and Han ceramic. Port-of-trade leaders and sea nomads shared prestigious goods such as beads and reflect the close and mutually beneficial links established between them. These goods can be compared to the honorific titles the port-of-trade rulers gave them, which legitimised sea nomads' activity and valued of their specialised skills. There is perhaps a bias as much of the material dealt with which comes from funerary deposits. So far, no mundane or organic material associated to these groups were recovered, hence limiting evidence to potentially valued artefacts. Burial practices took place in coastal/estuarine or offshore caves located on elevated peaks, which possibly served as landmarks for passing ships. These practices are also attested amongst historical Orang Laut. Besides constituting landmarks, they were considered to be the home of powerful spirits. Very few ethnohistorical or ethnographic sources provide accounts of the different sea nomads' funerary practices. White describes the Moken's habits of placing the body either on a stick or in the deceased's boat on a dedicated remote island, sort of cemetery island (White, 1922). Hogan accounts that in the seventies, the Urak Lawoi of southern Thailand as well as the Moken were burying their dead in a burial ground near the coastal village but that before, the dead were buried in caves and coastal caves (Hogan, 1972: 217). Andaya refers to the use of islands and caves in islands by Orang Laut (2008). Their material culture also reflects their pivotal role as intermediaries dealing with inter-islands exchanges or what can be called "feeder' trade" (Blench forthcoming) linking the populations scattered across the numerous islands and carrying sparse resources. This role is perhaps comparable to the intermediaries carrying nephrite raw material that Favereau and Bellina proposes to trace between Taiwan, the Philippines and the Kra Isthmus (Favereau and Bellina in press). The full range of services they provided to the port-of-trade cannot be determined at this stage. It is however likely that they obtained their goods against services such as helping with the upstream/downstream collection and redistribution of goods, and perhaps guiding traders along the perilous transpeninsular tracks. Whether they patrolled and guarded sea lanes for the ports' ruler like the historical Orang Laut or travelled in extensive zones to trade or find new routes cannot be determined. However, what appears plausible is that they may have encouraged foreign traders to use the transpeninsular routes for the benefit of the port-entrepôt's ruler they were associated with. In doing so, they would have been key actors to the trading-polity success, to their rise and decline.

The narrowest part of the Kra Isthmus (currently covering Ranong and Chumphon provinces) became economically and politically less important by the mid-first millennium CE. Many parts of this region

show no signs of activities or even occupation until very recently. It is likely that the decline of the local ports-of-trade entailed the departure of these groups, either further south where trade was thriving by the mid-first millennium CE (Chaiya, Satingpra, etc.), or further north (around the Mergui-Prachuap Khiri Khan route). They may have followed the port-entrepôts' ruler they were affiliated to, such as the Orang Dalam who left from the Malay Peninsula with their ruler to the Riau islands (Andaya, 2008: 183). As in the founding of Malacca, sea nomads could have helped their defeated leader establish elsewhere another port-of-trade further north or south. Alternatively, they may simply have changed to a more discrete local maritime lifestyle or land-based lifestyle. Such is the case of the Moklen of the Phuket area, coastal dwellers who practice some agriculture. Such may also have been the case of some farming groups in the Philippines like the Yakan, Mapun and Inabaknon speaking Samalic languages who may in reality correspond to settled sea nomads. In any case, in the region, even if some of the groups who specialised as sea nomads stayed and settled, their material culture would hardly be distinguishable from other land-based coastal groups whose material culture is very discrete.

6. Conclusion

To conclude, we can conceive that estuarine, coastal and island groups of the Kra Isthmus we interpret as early sea nomads laid the foundation of the historical sea-nomads, especially those present further south at the entrances of the Malacca Strait which became the favoured route by the 1st centuries AD. Their roots go back far into a long-established tradition of highly adaptive and mobile forager-traders found in the South China Sea and whose activities pioneered later trade routes (Bulbeck, 2008). Like other "marginal" groups in the region, they would have formed in response to trade and to the emergence of early centralised trading polities with which they interacted. We may consider that the distinctive socio-economic groups emerged in and off the Peninsula because they found profitable to do so in the context of increasing inter-regional trade with the Maritime Silk Road. In the Kra Isthmus, these foreign groups had close links with the Philippines. They came to settle and likely intermarried there to take advantage from the opportunities the Maritime Silk Road offered and from the transpeninsular routes using river systems that were then used.

Based on the archaeological evidence, the emergence of ancient sea nomads can be considered a dual response to emerging trading polities that developed there first. On the one hand, they seem to maintain a self-protective and independent position possibly to counteract regional polities' raids, social (such as hierarchy) and economic constraints (such as corvées). In this perspective, they maintained a lifestyle that was different but complementary to that of the groups present in multi-ethnic trading polities. On the other hand, they seemed to have close ties, possibly through alliances to maintain profitable trading relationships, perhaps with intermarriage. As intermediaries, they operated on the local and regional levels potentially thanks to networks of trading colonies such as the Sama. In doing so, they secured and legitimised their role and became key economic and politic actors for trading polities. This dual relationship is reflected in their material culture which at the same time is distinct from the land-based trading groups but shares elements with them. Their ability to link distant groups and to disseminate cultural traits is undeniable. In this perspective, what remains to explore much further is the role they played as cultural vectors. This role remains to be elucidated in the Bay of Bengal, at the opposite side of the transpeninsular routes that they might have crossed themselves. There, they would have preceded the Bajaw, who later pushed further west, helping traders/merchants to make their way in the Indian Ocean to reach Madagascar, perhaps playing a role in the settlement of Madagascar (Kusuma et al., 2015; 2017).

Finally, the early sea nomads of the Isthmus of Kra appeared to have played a crucial economic and political role for regional maritime trading polities. Along with an archaeology of sea nomadism, this study opens perspectives on reconstructing a more complete narrative of Southeast Asia and beyond of the Maritime Silk Road, a narrative that integrates marginal groups.

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Allen, J., 1991. Trade and site distribution in early historic-period Kedah: Geoarchaeological, historic, and locational evidence. In: P. Bellwood (ed.), *Indo-pacific prehistory 1990* (Vol. 1,). Canberra, pp. 307–319.

Andaya, L.Y. 2008. *Leaves of the same tree. Trade and ethnicity in the Straits of Melaka*. Hawai'i University Press, Honolulu.

Andaya, B.W. and Andaya L.Y., 2015. *A history of early modern Southeast Asia, 1400-1830*. Cambridge; New York: Cambridge University Press.

Balbaligo, Y., 2016. *Ceramics and Social Practices at Ille Cave, Philippines*. Volume 1: Text. PhD thesis. London: University College London.

Balfet, H., (Ed.). 1991. *Observer l'action technique : des chaînes opératoires, pour quoi faire ?* Paris, France : Editions du CNRS.

Bay-Petersen, J. 1982. Textile impressions on Iron Age pottery in Masbate, Philippines *Philippine Quarterly of Culture and Society* 10, 261–68.

Bay-Petersen, J. 1982-83. Excavations at Bagumbayan, Masbate, Central Philippines: an economic analysis, *Asian Perspectives* 25, 67–98.

Begbie, P.J. 1967. *The Malayan Peninsula*. Oxford University Press.

Bellina, B., 2001. *Témoignages archéologiques d'échanges entre l'Inde et l'Asie du Sud-Est : morphologie, morphométrie et techniques de fabrication des perles en agate et en cornaline*. Thèse de Doctorat, Sorbonne Nouvelle, Paris.

Bellina, B., 2007. *Cultural Exchange between India and Southeast Asia. Production and distribution of hard stone ornaments (VI c. BC– VI c. AD)*, Editions de la Maison des Sciences de l'Homme, Paris.

Bellina, B., 2014. Maritime Silk Roads' Ornament Industries: Socio-Political Practices and Cultural Transfers in the South China Sea. *Cambridge Archaeological Journal* 24 (03), 345-77.

Bellina, B. (Ed.). 2017. *Khao Sam Kaeo: a late prehistoric early port-city between the Indian Ocean and the South China Sea*, Ecole française d'Extrême-Orient, Mémoires Archéologiques 28, Paris.

Bellina, B., 2018. Development of Maritime Trade Polities and Diffusion of the "South China Sea Sphere of Interaction Pan-Regional Culture": The Khao Sek Excavations and Industries' Studies Contribution. *Archaeological Research in Asia* 13, 1-12.

- Bellina, B. 2018a. Khao Sek Hard-stone industry: an insight into early port-polities structure and regional material culture. *Archaeological Research in Asia* 13, 13-24.
- Bellina, B., Epinal, G. and Favereau, A. 2012. Caractérisation préliminaire des poteries marqueurs d'échanges en mer de Chine méridionale à la fin de la préhistoire. *Archipel* 84, 7-33.
- Bellina, B., Silapanth, P., Boonyarit Chaisuwan, Thongcharoenchaikit, C., Allen, J., Bernard, V., Borell, B., Bouvet, P., Castillo, C., Dussubieux L., Malakie LaClair, J. Sachipan Srikanlaya, Peronnet, S., Pryce, T.O. 2014. The Development of Coastal Polities in the Upper Thai-Malay Peninsula. In: Revire, N. and Murphy, S. (Eds), *Before Siam: essays in art and archaeology*. River Books, Bangkok, pp. 69-89.
- Bellina, B., and Bernard, V., 2017. The settlement of Khao Sam Kaeo. In: Bellina, B. (Ed.) *Khao Sam Kaeo: a late prehistoric early port-city between the Indian Ocean and the South China Sea*, Ecole française d'Extrême-Orient, Mémoires Archéologiques 28, Paris, pp. 145-201.
- Bellina, B., Maung Sun Win, Kalayar Myat Myat Htwe, Htet Myat Thu, Castillo, C., Colonna, C., Dussubieux, L., Favereau, A., Miyama, E., Pradier, B., Pryce, O., Srikanlaya, S., Trivière, E., 2018. Myanmar's earliest Maritime Silk Road port-settlements revealed, *Antiquity Project Gallery Volume* 92(366), 1-5.
- Bellwood, P. 1989. Archaeological investigation at Bukit Tengkorak and Segurong, southeastern Sabah. *Bulletin of the Indo-Pacific Prehistory Association* 9, 122-62.
- Bellwood, P., 2007. *Prehistory of the Indo-Malaysian Archipelago*. Canberra: ANU E Press.
- Benjamin, G. 1987. Ethnohistorical perspectives on Kelantan's prehistory. In: Nik Hassan Shuhaimi bin Nik Abdul Rahman (Ed.), *Kelantan Zaman Awal: Kajian Arkeologi dan Sejarah di Malaysia*, Perpaduan Muzium Negeri Kelantan, Kota Bharu, pp. 108– 153
- Benjamin, G., 2002. On Being Tribal in the Malay World. In: Benjamin, G. and Chou, C. (Eds) *Tribal Communities in the Malay World: Historical, Cultural and Social Perspectives*, ISEAS / IIAS, Singapore, pp. 7-76.
- Benjamin, G., 1987. Ethnohistorical Perspectives on Kelantan's Prehistory. In Nik Hassan Shuhaimi Bin Nik Abd Rahman (Ed.), *Kelantan Zaman Awal: Kajian Arkeologi Dan Sejarah Di Malaysia*, Muzium Negeri Kelantan, Kota Bharu, Kelantan, pp. 108–153.
- Blench, R., 2012. Almost Everything You Believed about the Austronesians Isn't True. In: Dominik Bonatz, A. R., and Tjoa-Bonat, Mai Lin, National University of Singapore, Berlin, pp. 128–148.
- Blench, R., (forthcoming). The linguistic background to Southeast Asian sea nomadism. In: Bellina, B., Blench, R. and Galipaud, J.-C. (Eds.). *Sea nomads of Southeast Asia from the past to the present*. National University of Singapore Press, Singapore.
- Bourdier, F., Boutry, M., Ivanoff, J., and Ferrari, O., 2015. *From padi states to commercial states: reflections on identity and the social construction of space in the borderlands of Cambodia, Vietnam, Thailand and Myanmar*. Global Asia 3. Amsterdam: Amsterdam University Press.
- Bouvet, P., 2017a. Indian Fine Wares. In Bellina, B., (Ed.). *Khao Sam Kaeo. An Early Port-City between the Indian Ocean and the South China Sea*, Ecole française d'Extrême-Orient, Mémoires Archéologiques 28. Paris, France, pp. 281-309.

- Bouvet, P., 2017b. Local and Regional Pottery Traditions. In Bellina, B. (Ed). *Khao Sam Kaeo: a late prehistoric early city between the Indian Ocean and the South China Sea*, Ecole française d'Extrême-Orient, Mémoires Archéologiques 28. Paris, France, pp. 231-80.
- Bouvet, P., 2017c. Lustrous Black and Red Wares. In Bellina, B. (ed). *Khao Sam Kaeo: an early port-city between the Indian ocean and the South China sea*, Ecole française d'Extrême-Orient, Mémoires Archéologiques 28. Paris, France, pp.309-43.
- Blust, R. 1976. Austronesian Culture History: Some Linguistic Inferences and their Relations to the Archaeological Record. *World Archaeology* 8(1), 19-43.
- Brandão, A., Khong Eng, K., Rito, T., Cavadas, B., Bulbeck, D., Gandini, F., Pala, M., et al. 2016. Quantifying the Legacy of the Chinese Neolithic on the Maternal Genetic Heritage of Taiwan and Island Southeast Asia. *Human Genetics* 135 (4), 363-76.
- Bulbeck, D., 2004. Indigenous traditions and exogenous influences in the early history of Peninsular Malaysia. In Glover, Ian and Bellwood, P. (eds). *Southeast Asia: From Prehistory to History*, RoutledgeCurzon, London, pp. 314-36
- Bulbeck, D., 2008. 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, 31-51.
- Bulbeck, D. 2011. Biological and cultural evolution in the population and culture history of Homo sapiens in Malaya, In: Enfield, N. J. (Ed.). *Dynamics of Human Diversity*, Pacific Linguistics, 207-255.
- Bulbeck, D., 2014. The Chronometric Holocene Archaeological Record of the Southern Thai-Malay Peninsula. *International Journal of Asia-Pacific Studies* 10 (1), 111-62.
- Bulbeck, D., forthcoming. Late Pleistocene to mid-Holocene maritime exchange networks in Island Southeast Asia. In: Bellina, B., Blench, R. and Galipaud, J.-C. (Eds.). *Sea nomads of Southeast Asia from the past to the present*. National University of Singapore Press, Singapore.
- Castillo, C.C., Fuller, D.K., Piper, P.J., Bellwood, P., Oxenham, M. 2017. Hunter-gatherer specialization in the late Neolithic of southern Vietnam – The case of Rach Nui, *Quaternary International* 489 ·
- Chen, Jonas Chung-yu., 2002. *Bulletin of the Indo-Pacific Prehistory Association* 22, 51-54.
- Chou, C., 2010. *The Orang Suku Laut of Riau, Indonesia: the inalienable gift of territory*. The modern anthropology of Southeast Asia. London; New York: Routledge.
- D'Errico, F., Roux, V., and Dumond, Y., 2000. Identification des techniques de finition des perles en calcédoine par l'analyse microscopique et rugosimétrique. In Roux, V., (Ed.) *Cornalines de l'Inde. Des pratiques techniques de Cambay aux techno-systèmes de l'Indus*, Editions de la Maison des Sciences de L'Homme. Paris, France, pp. 97-169.
- Dizon, E., 2003. Anthropomorphic pottery from Ayub Cave, Piñol, Maitum Saranggani Province, Mindanao. In: Miksic J. N., (Ed.). *Earthenware in Southeast Asia: Proceedings of the Singapore Symposium on Premodern Southeast Asian Earthenwares*, Singapore University Press, Singapore, pp. 52-68.
- Dunn, F., 1975. *Rain-Forest Collectors and Traders: A Study of Resource Utilization in Modern and Ancient Malaya*. Monographs of the Malaysian Branch of the Royal Asiatic Society 5, Kuala Lumpur.

- Dussubieux, L., and Bellina, B., 2017. Glass from an early Southeast Asian producing and trading centre. In: Bellina, B. (Ed.): *Khao Sam Kaeo: a late prehistoric early city between the Indian Ocean and the South China Sea*. Mémoires Archéologiques 28. Ecole française d'Extrême-Orient, pp. 547-85.
- Dussubieux, L., and Bellina, B., 2018. Glass Ornament Production and Trade Politics in the Upper-Thai Peninsula during the Early Iron Age. *Archaeological Research in Asia* 13, 25-36.
- Favereau, A., 2015. Interactions et modalités des échanges en Mer de Chine méridionale (500 Avant Notre Ère – 200 de Notre Ère) : approche technologique des assemblages Céramiques. Muséum national d'Histoire Naturelle.
- Favereau, A. and Bellina, B. 2016. Thai-Malay Peninsula and South China Sea networks (500 BC – AD 200) based on a reappraisal of “Sa Huynh-Kalanay” ceramics, *Quaternary International* 416, 219-27.
- Favereau, A., Bellina, B. Epinal, G., Bouvet, Ph. 2017. The South China Sea-related ceramic. In: Bellina (Ed.). *Khao Sam Kaeo: a late prehistoric early city between the Indian Ocean and the South China Sea*. Mémoires Archéologiques 28, Ecole française d'Extrême-Orient, Paris, pp. 373-90.
- Favereau, A., 2018. The Analysis of Khao Sek Pottery: Insight into the Circulations and the Politico-Economic Context of the Thai-Malay Peninsula during the Second Half of the 1st Millenium BC. *Archaeological Research in Asia* 13: 37-49.
- Favereau, A., and Bellina, B., in press. Reviewing the connections between the Upper Thai-Malay Peninsula and the Philippines during the Late Prehistoric period (500 BC-AD 500). In: Calanca, P., Liu Yi-ch'ang, and Muiyard, F., (Eds.), *Taiwan Maritime Landscapes from Neolithic to Early Modern Times*, EFEO, Institute of History and Philology, Academia Sinica.
- Favereau, A., and Bellina, B., 2016. Thai-Malay Peninsula and South China Sea Networks (500 BC–AD 200), based on a Reappraisal of “Sa Huynh-Kalanay”-Related Ceramics. *Quaternary International* 416, 219-27.
- Ferrand, G., 1913. *Relations de voyages et textes géographiques arabes, persans et turks relatifs à l'Extrême-Orient du VIII au XVIIIe siècles*. Ernest Leroux. Paris.
- Ferrari, O., 2015. Borders and cultural creativity. The case of the Chao Lay, the Sea Gypsies of Southern Thailand. In: Bourdier, F., Ivanoff, J., Boutry, M., Ferrari, O., (Eds), *From Padi States to Commercial States: Reflections on Identity and the Social Construction Space in the Borderlands of Cambodia, Vietnam, Thailand and Myanmar*, IIAS, Global Asia 3. Amsterdam, pp. 119-40
- Fix, A., 2002. Foragers, farmers, and traders in the Malayan Peninsula: origins of cultural and biological diversity. In: Morrison, K. D., and Junker, L.L., (Eds), *Economic specialisation and inter-ethnic trade between foragers and farmers in the prehispanic Philippines*, Cambridge University Press, Cambridge, pp. 185-202.
- Fox, R.B., 1970. *The Tabon Caves: Archaeological Explorations and Excavations on Palawan Island*, Philippines, National Museum, Manila.
- Galipaud, J.-C., 2015. Réseaux néolithiques, nomades marins et marchands dans les petites îles de la Sonde. *Archipel* 90, 49-74.
- Higham, C.F.W and Thosarat, R. 2004. *The Excavation of Khok Phanom Di: Volume VII. Summary and Conclusions*. London: The Society of Antiquaries of London.

- Higham, C.F.W., Xie Guangmao, and Lin Qiang., 2011. The prehistory of a Friction Zone: first farmers and hunters-gatherers in Southeast Asia. *Antiquity* 85, 529–43.
- Higham, C. F. W., & Thosarat, R. 2012. *Early Thailand from prehistory to Sukhothai*. River Books, Bangkok.
- Hill, C., Soares, P., Maru Mormina, Macaulay, V., Meehan, W., Blackburn, J., Clarke, D., Maripa Raja, J., Patimah Ismail, Bulbeck, D., Oppenheimer, S., Richards, M., 2006. Phylogeography and ethnogenesis of Aboriginal Southeast Asians. *Molecular Biological Evolution* 23(12), 2480–2491.
- Hall, K.R. 1985. Maritime Trade and State Development in Early Southeast Asia. Hawai'i University Press, Honolulu.
- Hall, K., 2011. *A history of early Southeast Asia: Maritime trade and societal development c. 100–1500*. Lanham, Maryland: Rowman and Littlefield Press.
- Headland, T. N., Reid, L. A., Bicchieri, M. G., Bishop, C. A., Blust, R., Flanders, N. E., Gardner, P. M. 1989. Hunter-Gatherers and Their Neighbors from Prehistory to the Present [and Comments and Replies]. *Current Anthropology* 30 (1), 43-66.
- Hendrickson, M., Leroy, S., Quan Hua, Phon Kaseka, and Voeun Vuthy., 2017. Smelting in the Shadow of the Iron Mountain: Preliminary Field Investigation of the Industrial Landscape around Phnom Dek, Cambodia (Ninth to Twentieth Centuries A.D.). *Asian Perspectives* 56(1), 55-91
- Higham, C. F.W., Xie Guangmao, Lin Qiang. 2011. The prehistory of a Friction Zone: first farmers and hunters-gatherers in Southeast Asia. *Antiquity* 11 (85), 529-43.
- Hill, C., Soares, P., Mormina, M., Macaulay, V., Meehan, W., Blackburn, J., Clarke, D. 2006. Phylogeography and Ethnogenesis of Aboriginal Southeast Asians. *Molecular Biology and Evolution* 23 (12), 2480-91.
- Hogan, D.W., 1972. *Men of the Sea: Coastal Tribes of South Thailand's West Coast*. Siam Society. Bangkok.
- Hoogervorst, T. G., 2012. Ethnicity and Aquatic Lifestyles: Exploring Southeast Asia's Past and Present Seascapes. *Water History* 4 (3), 245-65.
- Hung, H.-C., Iizuka, Y., Bellwood, P., Nguyen, K. D., Bellina, B., Silapanth, P., Dizon, E., Santiago, R., Datan, I., and Manton. J. H., 2007. Ancient Jades Map 3,000 Years of Prehistoric Exchange in Southeast Asia. *Proceedings of the National Academy of Sciences* 104 (50), 19745-50.
- Hung, H.-C., and Bellwood., P, 2010. Movement of raw materials and manufactured goods across the South China Sea after 500 BCE: From Taiwan to Thailand, and back. In: Bellina, B., Bacus, E.A., Pryce, T.O. and J.W. Christie, (Eds.), *50 Years of Archaeology in Southeast Asia. Essays in Honour of Ian Glover*, River Books. Bangkok, Thailand, pp. 234-45
- Hung, H.-C., Nguyen, K.D., Bellwood, P., and Carson, M.T., 2013. Coastal Connectivity: Long-Term Trading Networks Across the South China Sea. *The Journal of Island and Coastal Archaeology* 8 (3), 384-404.
- Hutterer, K. 1969. Preliminary report on archaeological field work in Southwestern Samar Leyte, *Samar Studies* 3, 37–56.

- Ivanoff, J., 2015. The "Interstices". A History of Migration and Ethnicity. In: Bourdier, F., Ivanoff, J., Boutry, M., Ferrari, O. (Eds), *From Padi States to Commercial States: Reflections on Identity and the Social Construction Space in the Borderlands of Cambodia, Vietnam, Thailand and Myanmar*, IIAS. Global Asia 3, Amsterdam, pp. 83-118.
- Jacq-Hergoualc'h, M., 2002. *The Malay Peninsula: Crossroads of the Maritime Silk Road (100 BC-1300 AD)*. Handbook of Oriental Studies. Section 3, South-East Asia, Handbuch Der Orientalistik, v. 13. Leiden; Boston: Brill.
- Junker, L. L. 1999. *Raiding, Trading, and Feasting. The political Economy of Philippine chiefdoms*. Honolulu, University of Hawai'i Press.
- Junker, L.L., 2002. Economic specialisation and inter-ethnic trade between foragers and farmers in the prehispanic Philippines. In: Morrison, K. D., and Junker, L.L., (Eds.), *Forager-traders in South and Southeast Asia*, Cambridge University Press, Cambridge, pp. 203-41.
- Junker, L., and Smith, L. M., 2017. Farmer and Forager Interactions in Southeast Asia. In *Handbook of East and Southeast Asian Archaeology*, NY: Springer New York, New York, pp. 619-32.
- Kim, N.C., 2013. Lasting Monuments and Durable Institutions: Labor, Urbanism, and Statehood in Northern Vietnam and Beyond. *Journal of Archaeological Research* 21 (3), 217-67.
- Kusuma Pradiptajati, Cox, M.P., Pierron, D., Razafindrazaka, H., Brucato, N., Tonasso, L., Suryadi, H.L., Letellier, T., Sudoyo, H., Ricaut, F.-X., 2015. Mitochondrial DNA and the Y chromosome suggest the settlement of Madagascar by Indonesian sea nomad populations. *BMC Genomics* 16: 191.
- Kusuma Pradiptajati, Brucato, N., Cox, M. P., Letellier, T., Manan, A., Nuraini, C., Grangé, P., Herawati Sudoyo and Ricaut, F.X. 2017. The last sea nomads of the Indonesian archipelago: genomic origins and dispersal. *European Journal of Human Genetics* 25 (8): 1004-10.
- Lankton, J.C., Dussubieux, L., and Gratuze, B., 2008. Glass from Khao Sam Kaeo: Transferred technology for an early Southeast Asian exchange network, *Bulletin de l'Ecole Française d'Extrême-Orient* 93, 317-51.
- Lemonnier, P., 2004. Mythiques chaînes opératoires. *Techniques et Culture* : 43-44.
- Leong, Sau Heng. 1990. Collecting centres, feeder points and entrepôts in the Malay Peninsula, c. 1000 B.C. - A.D. 1400. National University of Singapore, Singapore.
- Leroi-Gourhan, A., 2013. *L'homme et la matière : évolution et techniques*. Numérisation et impr. Sciences d'aujourd'hui 1, Albin Michel, Paris.
- Leroi-Gourhan, A., 2014. *Le geste et la parole. 2 : La mémoire et les rythmes*. Repr. Sciences d'aujourd'hui. Paris.
- Manguin, P.-Y., 2009. Southeast Sumatra in protohistoric and Srivijaya times: upstream-downstream relations and the settlement of the peneplain. In: Bonatz, D., Miksic, J., Neidel, D., Tjoa-Bonatz, M.L. (Eds.), *From Distant Tales: Archaeology and Ethnohistory in the Highlands of Sumatra*. Cambridge Scholars Publishing, pp. 434-84.
- Miksic, J.N., 1979. *Archaeology, Trade and Society in Northeast Sumatra*. Thesis presented to the Faculty of the Graduate School of Cornell University.

- Morrison, K. D., 2002. Pepper in the hills: upland-lowland exchange and the intensification of spice trade. In Morrison, K.D. and L.L. Junker (Eds.). *Forager-Trader in South and Southeast Asia. Long Term Histories*. Cambridge University Press, Cambridge, pp. 105-28
- Morrison, K.D. and L.L. Junker (Eds.). *Forager-Trader in South and Southeast Asia. Long Term Histories*. Cambridge University Press, Cambridge.
- Mörseburg, A., Pagani, L., Ricaut, F.-X. Yngvadottir, B., Harney, E., Castillo, C., Hoogervorst, T. 2016. Multi-layered population structure in Island Southeast Asians. *European Journal Of Human Genetics* 24, 1605-11.
- Nolde, L., forthcoming "The Muscles and Sinews of the Kingdom": The Sama Bajo in Early Modern Eastern Indonesia. In: Bellina, B., Blench, R., and J.-C. Galipaud (eds). *Sea nomads of Southeast Asia from the past to the present*, Singapore University Press.
- Oppenheimer, S., and Richards, M., 2001. Fast trains, slow boats, and the ancestry of the Polynesian islanders. *Science Progress* 84 (3), 157-81.
- Paz, V. Ronquillo, R. Lewis, H. et al. 2011. *Palawan Island Palaeohistoric Research Project: Report on the 2011 El Nido Field Season*. Archaeological Studies Program, University of the Philippines and National Museum of the Philippines.
- Pelegrin, J., 2000. Technique et méthodes de taille pratiquées à Cambay. In : Roux, V., (Ed.), *Cornalines de l'Inde. Des pratiques techniques de Cambay aux techno-systèmes de l'Indus*, Editions de la Maison des Sciences de l'Homme, pp.55-93.
- Peronnet, S. and Sachipan Srikanlaya. 2017. The Han Ceramics. In: Bellina (Ed.). *Khao Sam Kaeo: a late prehistoric early city between the Indian Ocean and the South China Sea*. Mémoires Archéologiques 28, Ecole française d'Extrême-Orient, Paris, pp. 391-421
- Pelras, C. 1972. Notes sur quelques populations aquatiques de l'Archipel nusantarien. *Archipel* 3, 133-68.
- Possehl, G. L., 2002. Harrappans and hunters: economic interaction and specialization in prehistoric India. In: Morrison, K.D. and Junker, L.L., (Eds), *Forager-Trader in South and Southeast Asia. Long Term Histories*, Cambridge University Press, pp. 62-76.
- Pryce, T. O., Baron, S., Bellina, B., Bellwood, P., Chang, N., Chattopadhyay, P., Dizon, E. 2014. More Questions than Answers: The Southeast Asian Lead Isotope Project 2009–2012. *Journal of Archaeological Science* 42, 273-294.
- Pryce, T.O., Murillo-Barroso, M. Biggs, L. Martín-Torres, M. Bellina B. 2017. The metallurgical industries. In: Bellina (Ed.) *Khao Sam Kaeo: a late prehistoric early city between the Indian Ocean and the South China Sea*. Mémoires Archéologiques 28. Ecole française d'Extrême-Orient, Paris, pp. 499-536.
- Pryce, T.O and B. Bellina. 2018. Bronze bowls and copper drums: Non-ferrous archaeometallurgical evidence for Khao Sek's involvement and role in regional exchange systems, *Archaeological Research in Asia* 13, 50-58.
- Reinecke, A., Nguyen, C. Lam Thi My Dzing, 2002. *Go Ma Voi : the new discoveries of Sa Huynh culture*. Cologne: Linden soft

Roux, V., (Ed.). 2000. *Cornaline de l'Inde : Des pratiques techniques de Cambay aux techno-systèmes de l'Indus*. Éditions de la Maison des sciences de l'homme.

Roux, V., 2010. Lecture anthropologique des assemblages céramiques. Fondements et mise en oeuvre de l'analyse technologique. *Les nouvelles de l'archéologie* 119, 4–9.

Roux, V., 2016. *Des céramiques et des hommes : décoder les assemblages archéologiques*. Nanterre : Presses universitaires de Paris Ouest.

Roux, V., and Courty, M.-A., 2007. Analyse techno-pérogaphique céramique et interprétation fonctionnelle des sites : un exemple d'application dans le Levant Sud chalcolithique. In: Bain, A. Chabot, J. and Mousette, M. (Eds.). *Recherches en archéométrie : la mesure du passé*. British Archaeological Reports International Series 1700. Oxford, pp. 153-167

Sandbukt, Af Øyvind., 1984. The sea nomads of Southeast Asia: new perspectives on ancient traditions. *Annual Newsletter of the Scandinavian Institute of Asia Studies* 17, 3-13.

Sather, C., 2006. Chapter 13. Sea Nomads and Rainforest Hunter-Gatherers: Foraging Adaptations in the Indo-Malaysian Archipelago. In: Bellwood, P., Fox, J.J., Tryon, D. (Eds.), *The Austronesians: Historical and Comparative Perspectives*. ANU e press, Australian University of Canberra, Canberra, pp.245-83.

Scott, J. C., 2009. *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia*. Yale Agrarian Studies Series. New Haven, Conn: Yale Univ. Press.

Soares, P. A, Trejaut, J. A., Rito, T. Cavadas, B., Hill, C., Eng, K.K., Mormina, M. 2016. Resolving the ancestry of Austronesian-speaking populations. *Human Genetics* 135, 309-26.

Solheim, W. G., Bulbeck, D., and Ambika Flavel. 2006. *Archaeology and culture in Southeast Asia: unraveling the Nusantara*. Diliman, Quezon City: University of the Philippines Press.

Spriggs, M., 2011. Archaeology and the Austronesian expansion: Where are we now?. *Antiquity* 85 (328), 510-28.

Stark, M.T., 2015. Southeast Asian urbanism: from early city to Classical state. In Yoffee N. (Ed.), *The Cambridge World History*. Cambridge: Cambridge University Press, pp.74-93

White, J., 2011. Emergence of cultural diversity in mainland Southeast Asia: a view from prehistory. *Dynamics, of human diversity*, Pacific Linguistics, 9-46.

White, W.G., 1922. *The Sea Gypsies of Malaya. An account of the nomadic Mawken people of the Mergui archipelago with a description of their ways of living, customs, habits, boats, occupations*. London: Seeley, Service & Co.

Winichakul, Thongchai., 2003. Writing at the Interstices: Southeast Asian Historians and Post-National Histories. In: Abu Talib Ahmad and Tan Liok (Eds.), *New Terrains in Southeast Asian History*, Athens, Ohio University Press, pp.3-29.

Yamagata, M. 2012. *The excavation of Hoa Diem in central Vietnam*. Vol. 17. Showa Women's University Institute of International Culture Bulletin. Showa Women's University Institute.