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Introduction: Unravelling the Neolithic of Southern Vietnam

Neolithic archaeology in southern Vietnam

Research on the neolithic occupation of Southeast Asia thus far has been predominantly limited to particular regions, especially central and northeast Thailand and northern Vietnam. Multiple excavations in these regions have resulted in a number of significant site reports and comparative publications (e.g. Oxenham *et al.* 2011; Higham and Kijngam 2009; Nguyễn 2006; Higham and Thosarat 1998a; Ciarla 1992; Rispoli 1992; Higham and Bannanurag 1990). Over the past two decades, research, surveys and excavations have increased in southern Vietnam. This monograph focuses on the ceramics from the neolithic occupation in southern Vietnam, with particular reference to those excavated from the mound site of An Sơn in Long An Province. To date An Sơn is the most comprehensively excavated site in southern Vietnam shown to exhibit a neolithic sequence. With this new research, previous overviews of cultural sequences for Southeast Asia (e.g. Higham 1996b: 4, figure 1.2) can now be reworked to include southern Vietnam.

Most researchers accept the appearance of neolithic communities in mainland Southeast Asia in the late third millennium to early second millennium BC. There are currently two main models for the development of neolithic culture in mainland Southeast Asia. One posits that a transition to cultivation took place as farmers expanded into the region from the north and the indigenous hunter-gatherers were replaced or assimilated (Higham 2011: 1; Bellwood and Oxenham 2008). The other focuses on the importance of the adaptability amongst indigenous groups as neolithic farmers entered (Higham 2011: 1). Identified neolithic sites in mainland Southeast Asia are predominantly distributed either along, or near, present or former coastlines and rivers. These environments provide the natural flooding and rainfall required for rice cultivation. Both north and south Vietnam has the prime Red and Mekong River delta areas that are well-suited for wet rice agriculture. In the past these rivers and their tributaries were likely to have been of great importance to the movement of people and ideas. The neolithic occupation of Vietnam exhibits evidence of contact with China and other regions of mainland Southeast Asia, leading to hypotheses that agricultural ideas travelled from the north either via the mainland rivers and/or down the coastline (Higham *et al.* 2011; Fuller *et al.* 2010).

The oldest evidence of cultivation in mainland Southeast Asia appeared in these neolithic communities, including rice and other crops, supported by a hunter-gatherer-fisher economy. Within sedentary village habitation sites people kept domestic pigs and dogs and shared aspects of ceramic traditions, ground and polished stone assemblages, and bone and shell technologies. Some of these communities may have been settled for up to 1000 years. One such settlement was the mound site of An Sơn, located alongside the main course of the Vàm Cỏ Đông River, overlooking

alluvial floodplains with rice fields. An Sơn has evidence of a neolithic sedentary occupation at which many generations of people were occupied in rice cultivation and animal husbandry, and utilised ceramic, stone, shell and bone technologies (Piper *et al.* 2012; Bellwood *et al.* 2011).

Many questions about the origins of neolithic people in mainland Southeast Asia remain unanswered; who they were, the routes they used to arrive there, what they brought with them, how they interacted with indigenous groups, and how regionalised neolithic life developed. This monograph explores a small part of these queries, focussing on the neolithic ceramic traditions that were brought to southern Vietnam and the innovations that ensued soon after with the establishment of a local identity.

Past research at An Sơn has explored the connection between the ceramics of this and other sites in southern Vietnam (Nishimura 2002). Nishimura Masanari (2002; also in Búi *et al.* 1997; Nishimura and Vương 1997) has highlighted the problems in establishing a sequence for southern Vietnam, especially a lack of understanding of stratigraphical relationships between sites and errors in radiocarbon dates. This research (Nishimura *et al.* 2009; Nishimura 2002; Nishimura and Vương 1997) has investigated ways to correlate the various neolithic sites of southern Vietnam with a particular focus on ceramic decoration and form. It is my intention to develop this approach further, supported by analyses of other ceramic and non-ceramic material culture.

While the parallels between the ceramics of sites in southern Vietnam and sites in Cambodia and Thailand (such as Samrong Sen, Ban Chiang, Ban Kao, Tha Kae and Khok Phanom Di) have been noted previously (Búi *et al.* 1997), detailed analysis of these similarities has not been conducted. Cross-cultural studies within Vietnam have been restricted by a tendency to define ‘Cultures’ in terms of one or a set of artefacts (Tấn 1984–1985) (see Chapter 2), with little attention paid to issues of social identity and cultural boundaries. In this monograph I analyse data utilising multiple variables to follow pathways of cultural movement that could represent fluid constructions of identity and reveal the complexities of relationships between sites. These ideas are explained later in this chapter.

This chapter firstly introduces the research aims for the monograph, which is followed by a discussion about how to define the ‘Neolithic’ in Southeast Asia and how the term is used in this monograph. The site of An Sơn and the 2009 excavation are introduced, and the theoretical framework and methods employed in this monograph are presented. This chapter concludes with a chapter breakdown.

Research aims

This monograph focuses on the ceramic evidence from the neolithic site of An Sơn in southern Vietnam in order to establish a sequence of ceramic vessels over time, and to evaluate the relationships between An Sơn and other southern Vietnamese sites of similar date. Comparisons extend to well-documented neolithic sites in other regions of mainland Southeast Asia. The research includes material culture analysis, ceramic characterisation, and an interpretation of the organisation of pottery production and the role of potters within the neolithic community at An Sơn.

The overall objectives of this monograph are:

- to document the neolithic ceramic sequence for An Sơn by means of a detailed analysis of the morphological, decorative and material attributes of the ceramic assemblage excavated in 2009;
- to contextualise the An Sơn assemblage within the neolithic of southern Vietnam, in terms of material culture linkages with other sites, and local instances of stylistic and technological innovation;

- to place southern Vietnam within a wider debate on the transition to cultivation and related neolithic developments in mainland Southeast Asia;
- to investigate the roles of neolithic potters in southern Vietnam in the exchange and transference of items of material culture and ideas;
- to consider the role of potters within the An Sơn community itself, and the local organisation of pottery production;
- to examine the role of ceramic material culture in general in establishing identity for the An Sơn community.

The neolithic expression of Southeast Asia has often been described as a ‘package’, in which items such as incised and impressed pottery, polished stone tools, stone and shell beads and bracelets, an extended burial posture, and evidence of sedentary life with a transition from hunting and gathering to animal husbandry (especially pigs) and rice cultivation, appeared at approximately the same time across a large area (Rispoli 2007: 235, 238; Bellwood 2005: 131–134; Higham and Thosarat 1998b: 74–75). This research investigates whether An Sơn fits a neolithic package model, reaching southern Vietnam from the north or west in a rapid cultural change.

A major aspect of this neolithic package is the ceramic material culture, and the research objectives address the role of ceramics and potters by investigating the social constructs surrounding the potting occupation and its contribution to relationships between sites. This research is framed around technological theory, particularly in relation to the organisation of production (e.g. Costin 1991), cultural transmission of technology and interactions between groups (Eerkens and Lipo 2007). This enables detailed comparison between sites, in terms of ceramic assemblages, to uncover potential relationships, cultural affinities and differences that may indicate the identity of the potters and the communities involved. The theory of identity for archaeological groups appreciates fluctuating interactions and social meanings of artefacts (e.g. Jones 2007), and may offer hypotheses for the social and cultural reasons for similarities and variations in assemblages between groups. Technological and identity theories also allow for potters to be at the forefront of discussions for neolithic developments in mainland Southeast Asia in both ritualistic and everyday life. The theories applied in this research are described further later in this chapter.

This research will consider several hypotheses for the cultural interactions that took place during the Neolithic, with respect to An Sơn and its ceramic material culture. These include the theory that An Sơn is part of a wider network of sites within southern Vietnam (Nishimura 2002). It considers whether the sites along the various river courses are connected. Furthermore, the alternate hypotheses for the settlement of southern Vietnam are explored: one that posits settlement via the coast from the north, and the other that suggests southern Vietnam was occupied after Neolithic peoples voyaged along inland rivers from Cambodia and Thailand (Higham *et al.* 2011; Fuller *et al.* 2010).

Defining the ‘Neolithic’

The term ‘Neolithic’ has been used in a general Old World context to describe particular economic, technological, settlement and population features. At first, the term was used to describe ‘The later or polished Stone Age; a period characterised by beautiful weapons and instruments made of flint and other kinds of stone, in which, however, we find no trace of the knowledge of any metal...’ (Lubbock 1865: 2–3). Later on, especially in Europe, the term acquired the implication of a combined use of ground and polished stone tools, pottery and agriculture. However, developing research on neolithic communities has indicated that ‘Neolithisation’ was regionally specific and that a uniform package is not necessarily to be expected (Thomas 1991: 7). Sites with stone working and pottery technology, and evidence of sedentary occupation, may not actually contain any evidence of cultivation or animal husbandry, nor reveal such without

focused archaeozoological and archaeobotanical research. This has been especially the case with excavations in Southeast Asia (Higham 1989: 45–54) (see Chapter 2). Conversely, sites with evidence of cultivation may be aceramic, as in the early Neolithic of the southern Levant (Kuijt and Goring-Morris 2002), the Pre-Formative Period of Mesoamerica, and the Late Pre-ceramic phases in the Andes and New Guinea (Bellwood 2005: 142–145, 165–168).

In modern archaeology, use of the term ‘Neolithic’ implies cultivation of plants and husbandry of animals, at least in most temperate and tropical regions of Eurasia. ‘Neolithic’ is a technological term, meaning ‘new stone’, yet the ultimate criterion for the neolithic age at present commonly rests upon evidence for farming. A uniform ‘Neolithic package’ will not be found in many regions, such as the Middle East or Mesoamerica/Andes, owing to the non-synchronous appearances of pottery, polished stone, and agriculture. This is to be expected in areas where food production was developed indigenously from local resources, as in the above regions. However, in situations where food production was introduced, either by a migrant population or through rapid adoption by an indigenous population, it can be expected that there was a co-occurrence of items deemed to be neolithic. Such appears to have been the case in mainland Southeast Asia (e.g. Bellwood *et al.* 2011; Higham and Kijngam 2011; Belfiore *et al.* 2010; Bellwood and Oxenham 2008; Rispoli 2007).

There is variability in the terminology applied to issues of food production in archaeology. These terms overlap in their meanings and they must be used explicitly (Harris 1996: 3). For instance, Harris (2009) has described *agriculture* as both the cultivation of crops and the rearing of livestock. *Cultivation* is the interaction between plants and people, and is usually applied to the growing of domesticated crops, although it can also include wild plants. *Husbandry* is the rearing of livestock and *horticulture* describes garden cultivation. The concept of *domestication* is associated with morphological, behavioural and genetic changes in plants and animals due to human selection, whether voluntary or involuntary (Harris 2009).

The role of diffusion in the adoption and establishment of agriculture has been contentious in the past. The modes of diffusion have been described as either demic/primary, such as the migration of people to a new area to spread not only agricultural technologies and related neolithic innovations but also genes and languages, or cultural/secondary, which involves the selective adoption of foreign concepts into indigenous practices (Harris 1996: 7). There is now a prevailing opinion that diffusion in some form was an important part of the ‘origin’ and ‘spread’ of agriculture. Opinions can vary greatly in relation to the relative importance of ‘diffusion’ and ‘independent invention’. There was a time of outright rejection of diffusionist explanations for cultural change in the 1960s and 1970s, but this has now been re-evaluated to comprehend the range of ways in which cultural innovations might have spread (Harris 1996: 7).

As stated above, the term ‘Neolithic’ has been applied to mainland Southeast Asia to describe the appearances of pottery, polished stone adzes, shell and stone body ornaments, extended burials, evidence of sedentism, and a transition from a hunter-gatherer economy to a reliance on rice cultivation and pig and dog domestication (Rispoli 2007: 238; Bellwood 2005: 131–134; Higham and Thosarat 1998b: 74–75). Although coarse cord-marked ceramics were present in earlier hunter-gatherer contexts (e.g. in Hoabinhian and Đa Bút sites in northern Vietnam), Fiorella Rispoli (2007: 235; 1992) has clarified the distinctive pottery component associated with the neolithic in mainland Southeast Asia. This includes decoration comprising impression or incision within incised boundary lines. These incised and impressed motifs on pottery appeared contemporaneously with the remainder of the package associated with neolithic developments. Sites located near major river plains were exposed to similar cultural developments, and the characteristic elements of neolithic occupation do not appear in isolation (Rispoli 2007: 235, 238).

The generalised cultural package identified above is largely understood to have ultimately originated from southern China, specifically the middle and lower Yangtze Basin (Bellwood 2011; Castillo 2011; Lu 2011; Fuller *et al.* 2010; Nakamura 2010; Zhang and Hung 2010; Zhao 2010; Rispoli 2007; Higham 2002a). Higham (2002a) has suggested agricultural groups spread southwards and downstream along major river routes from Yunnan. However, current archaeobotanical evidence from Southeast Asia suggests rice first appeared in the lower reaches of the Red River in northern Vietnam around 2000 BC, and also along the Mekong River in Cambodia and Chao Phraya River in Thailand. Evidence from sites located further inland up these rivers appears to be later, *c.* 1500 BC (Higham and Higham 2009b). The evidence currently suggests that the spread may have been based on movements along coastlines or lower mountain slopes, and *Oryza sativa japonica* first appeared in lowlands and lower slopes in environments with natural flooding and monsoonal rainfall (Fuller *et al.* 2011; Fuller *et al.* 2010).

Incised and impressed sherds have been excavated at Baiyangcun and Dadunzi in Yunnan (Rispoli 2007 cites: Jiexiang 2003; Xia 2001; Yong 1985; YNBWG 1981, 1977). Rispoli (2007) expanded her research to identify ceramic parallels between neolithic sites in mainland Southeast Asia and some along the Yangtze River, such as at Daxi. While single cultural traits may have spread from the Yangtze through the Guangxi to northern Vietnam, a ‘Neolithic package’ may have been a later event (Rispoli 2007). My research does not investigate any precise origin for this neolithic ‘cultural package’. Instead, this monograph focuses on regional linkages within neolithic Southeast Asia only. Even though the sources of many neolithic attributes may be traceable to China, I do not follow this trail.

However, it is still important to consider the question of whether or not there was a ‘Neolithic package’ in Southeast Asia. Zhang and Hung (2010) point to the absence of evidence for any simultaneous introductions of agriculture and domesticated pig and dogs. This may simply reflect scarcity of data and a weakness in observational techniques utilised during excavations. Part of the problem is a lack of direct remains of cultigens in sites and archaeobotanical research (Castillo and Fuller 2010; Higham 1989: 31–45). Agricultural dispersal out of China was not a unitary event southwards to mainland Southeast Asia, and the hypothesis of an independent or simultaneous transition to a neolithic lifestyle in mainland Southeast Asia has not been confirmed (Zhang and Hung 2010).

A strong correlation between the neolithic of Southeast Asia and rice cultivation has often been assumed, due in part to the discovery of rice in pottery fabrics. Conversely, an absence of rice remains in ceramic materials need not imply an absence of rice agriculture. Other plants and possible cultigens in Southeast Asia include foxtail and common millet, and also tubers such as taro and yam (Castillo and Fuller 2010; Weber *et al.* 2010; Dewar 2003). Millet and rice can be cropped in the same field, providing that dry rather than wet rice cultivation took place (Weber *et al.* 2010). Foxtail millet and rice have been found together at Gantuoyan in Guangxi Province, not far north of the Vietnam border, dated to before 3000 BC, and at the Nanganli sites in Taiwan 2700–2200 cal. BC (Castillo 2011; Castillo and Fuller 2010; Fuller *et al.* 2010; Weber *et al.* 2010; Zhang and Hung 2010).

It has been hypothesised that rice and millet as cultivated crops entered mainland Southeast Asia simultaneously, with the earliest evidence of millet at Non Pa Wai in central Thailand, in neolithic contexts dating to *c.* 2300 BC (Castillo 2011; Castillo and Fuller 2010; Fuller *et al.* 2010; Weber *et al.* 2010). Recent excavations at Rạch Núi in 2012 also indicate that millet was present in some neolithic deposits in southern Vietnam (preliminary identification by Cristina Castillo in the field). It had previously been proposed that foxtail millet arrived in mainland Southeast Asia in the second millennium BC (Kealhofer and Grave 2008; Kealhofer and Piperno 1994), but

new evidence presented by Weber *et al.* (2010) indicates that it was present in central Thailand and perhaps also southern Vietnam by the late third millennium BC. While rice and millet may have been introduced together, it has been suggested that there was initially a preference for millet cultivation until rice became prominent as increasing social complexity occurred after the neolithic in Southeast Asia (Castillo 2011; Fuller *et al.* 2011; Weber *et al.* 2010). Fuller (2011) states that it is plausible that multiple rice-millet waves came through mainland Southeast Asia after other cultigens entered, including taro.

In terms of location and food resources, many neolithic settlements in Vietnam (e.g. Mán Bạc and Rạch Núi) were very close to contemporary coastlines and show considerable evidence for ongoing marine fishing and gathering. Conversely, although much closer to the coastline in prehistory than it is today, the economy at An Sôn seems to have been almost entirely terrestrial and riverine (Piper *et al.* 2012; Bellwood *et al.* 2011). For those sites that did exploit marine resources, it is possible that subsistence strategies did not shift as rapidly to agriculture and cultivation in comparison to communities living in inland environments. In these marine environs, neolithic material culture may have been readily incorporated into indigenous hunter-gatherer-fisher life when cultivating cultures came into contact with these groups, and traditional subsistence strategies may have been retained in full- or part-time sedentary coastal occupation (as suggested for Khok Phanom Di) (Higham and Thosarat 2004c).

The ways in which agriculture was introduced and adopted in Southeast Asia appear to have been diverse. Interactions between agriculturalists and hunter-gatherer groups varied substantially in different regions of mainland Southeast Asia and evidence of such interactions are scant, except perhaps in northern Vietnam and in northeast and coastal central Thailand (Higham *et al.* 2011; Matsumura *et al.* 2008; Bentley *et al.* 2007). Factors that should be considered influential to the introduction of agriculture include environmental constraints and opportunities, cross-cultural relations, local innovations towards agriculture, relative demographic profiles, the land requirements of farmers versus hunter-gatherers, and the identities and traditions that existed within indigenous hunter-gatherer-fisher communities. These factors affect the archaeological representation of neolithic life.

An Sôn has been identified as a 'Neolithic' site due to its late third to second millennium BC radiocarbon dates, the presence of incised and impressed ceramics, organic/fibre tempered ceramics, ground stone adzes and domestic fauna, and a lack of any prehistoric metal artefacts (see Chapter 4). The term *neolithic* is used in this monograph in the lower case due to the origin of the term for archaeological contexts in Europe and the Near East, and the need to continually re-evaluate the definition of neolithic in mainland Southeast Asia in current archaeological research. In keeping with recent research in Vietnam (Matsumura and Oxenham 2011; Oxenham and Tayles 2006), neolithic is applied tentatively for 'food-producing communities that lacked evidence for metal' in mainland Southeast Asia (Matsumura and Oxenham 2011: 4). Lowercase palaeolithic, bronze age, iron age and metal age are also used for similar reasons and consistency in this monograph.

The neolithic of An Sôn and southern Vietnam

The neolithic chronology of Southeast Asia

The prehistoric sequence for Vietnam is not as comprehensively understood as that of Thailand. One of the broader chronologies presented for the China/Southeast Asia region has been put forward by Higham (1996b: 4, figure 1.2) (Figure 1.1). This is one of the few chronologies to

include Vietnam, but the gap in knowledge of southern Vietnam is noticeable. Higham's (1996b: 4, figure 1.2) sequence places the onset of neolithic cultures at c. 2200 BC in Southeast Asia, lasting until the beginning of the bronze age at around 1300 BC.

More recent research at Ban Non Wat has dated the first neolithic phase at this site to the mid-seventeenth century BC and the initiation of the bronze age in northeast Thailand to c. 1000 BC (Higham and Higham 2009). Compiling the radiocarbon dates from Ban Non Wat, Ban Lum Khao and Noen U-Loke, Charles and Thomas Higham have presented a new prehistoric sequence for northeast Thailand that positions the time span of neolithic occupation from 1650 cal. BC to 1050 cal BC (Higham and Higham 2009b). This is considerably later than previous chronologies, such as those presented for Khok Phanom Di and Nong Nor (Higham and Hogg 1998; Higham and Bannanurag 1990), and needs to be considered against the dates for neolithic occupation at An Sơn (Chapter 4).

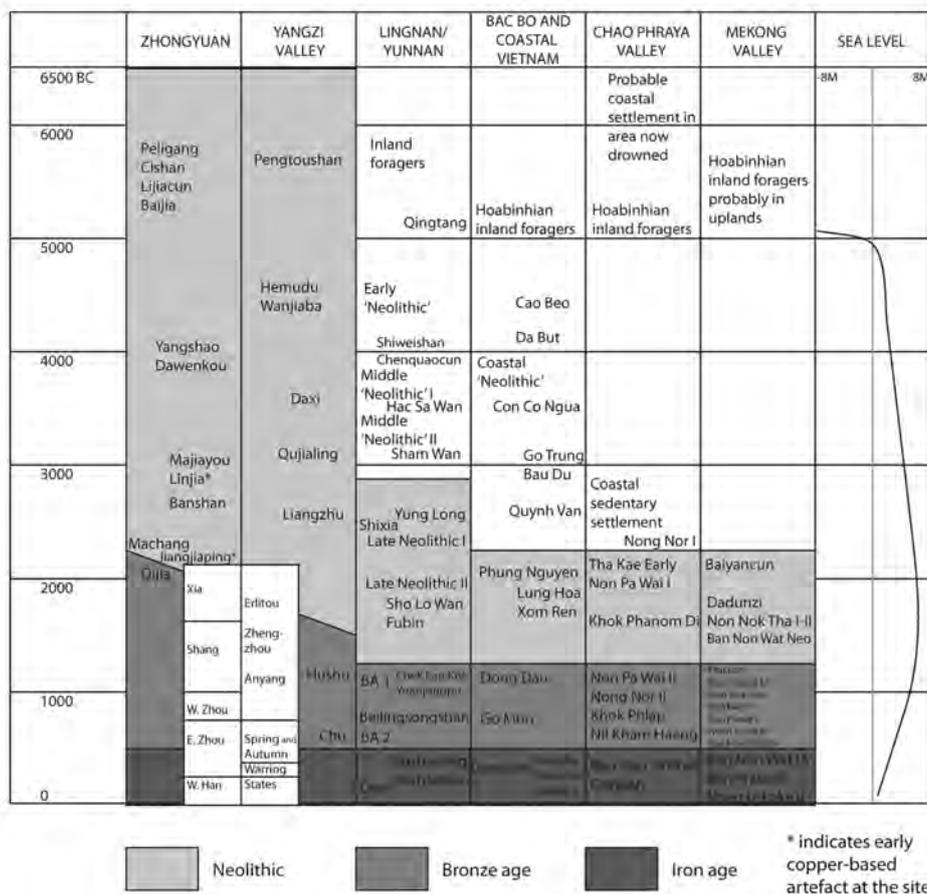


Figure 1.1. C. F. W. Higham's chronological chart showing the cultural sequences in the different regions of Southeast and East Asia. Zhongyuan refers to the lower reaches of the Yellow River, Lingnan refers to southeastern China, and Bắc Bộ refers to northern Vietnam.

Source: After Higham 1996b: 4, figure 1.2; Tha Kae and Ban Non Wat added by C. Sarjeant.

Introduction to the 2009 excavation at An Sơn

The An Sơn mound is a maximum of 170 m in diameter. Its modern flat summit is about 100 m across, and is 6 m higher than the surrounding landscape of rice fields. The site is located on a natural levee in the middle reach of the Vàm Cỏ Đông River, that runs north to south in the western region of Long An Province (Nishimura and Nguyễn 2002: 101) (Figure 1.2, Figure 1.3). The surviving mound has been truncated by road and house cuttings, particularly on the west and south edges, and it is likely that some of its outer flanks have now been destroyed.

An Sơn was initially reported by Louis Malleret and Paul Levy (Malleret 1963: 94–95). Excavations began in 1978 on the top of the mound, and subsequent investigations took place in 1997 (Nishimura and Nguyễn 2002). The 2004 excavation focused on areas with burials located beyond the eastern edge of the main mound, and a small excavation unit was opened in 2007 in the same area. Three 2009 excavation trenches were positioned adjacent to the 2004 trenches, with the intention of uncovering more extended burials. A small test square was also opened at the western side of the mound. The 1997 to 2009 excavations were organised by Hanoi National University and Nishimura Masanari in 1997, the Institute of Archaeology, Hanoi and Nguyễn Kim Dung in 1997 and 2009, the Centre for Archaeological Studies, Southern Institute of Social Sciences, Ho Chi Minh City in all years, Bùi Chí Hoàng in 2009, and The Australian National University in 2009. The 2009 excavation was funded by a Discovery Grant from the Australian Research Council, awarded to Peter Bellwood, Marc Oxenham and Janelle Stevenson. My research focuses on the excavations in which The Australian National University participated during 2009.

This excavation, as part of an ARC project entitled *The Creation of Southeast Asian Peoples and Cultures, 3500 BC to AD 500*, was intended to address the origins of rice agriculture in Southeast Asia in general and in southern Vietnam, as well as information concerning the people from interment practices and human remains. The 2009 excavation at An Sơn revealed evidence for a mixed economy, including domestic pig and dog, the *japonica* subspecies of rice (as husk in pottery), fish and shellfish from brackish estuarine rivers, and hunted animals. Some of the earliest layers contained domestic dog, but it is uncertain whether the earliest pig remains were domesticated or wild. No wild pig remains were identified at An Sơn (Piper *et al.* 2012). Rice chaff was not identified in pottery tempers from the earliest layers of An Sơn, but appeared shortly after. Other material culture at An Sơn included ground and polished stone tools, shell beads, bone fishhooks and worked bone/ivory, ceramic roundels or counters, and baked clay pellets (Chapter 4).

The 2009 excavation revealed an assemblage of 227,231 ceramic sherds, inclusive of 35,723 rim sherds, with a total weight of 2581 kg. Most of this material was recovered from occupation layers, either in discard or activity (e.g. cooking) areas. From these assemblages, a large array of rim forms was identified. Some vessels used as grave goods were found complete. Past research at An Sơn has identified the modifications in ceramics over time (Nishimura 2002; Nishimura and Nguyễn 2002), but with more detailed analysis of form, decoration and fabric, a sequence can be firmly established to compare with sequences from other neolithic sites in Southeast Asia. The 2009 excavation included an assemblage of utilitarian vessels used in cooking contexts, ritual vessels in burial contexts, and other decorated wares that indicate both connections to other neolithic sites in Southeast Asia, as well as localised innovation.

The environment of An Sơn

An Sơn is located in An Ninh Tây commune, Đức Hòa district, close to the northern border of Long An Province. The site is now about 75 km from the sea and about 300 m east of the Vàm Cỏ

Đông River, on a slightly raised Quaternary alluvial terrace, north of the Mekong Delta region (Figure 1.2, Figure 1.3). The coastline around the Mekong Delta has changed substantially over time. The lower Mekong River traverses the Indosinian cratonic block and has been relatively stable since the Jurassic period. However, the development of tectonic and volcanic events during the Quaternary, as well as glacial to interglacial cycles, has resulted in climatic and sea level changes in southern Cambodia and southern Vietnam (Carling 2009: 18–20). The sea level rose from -12.8 to +1.2 m relative to the present level between 8000 and 6000 years ago, and was 2.5 and 5.8 m higher between 5000 and 4000 years ago. The entire Mekong Delta region is likely to have been at sea level and prone to flooding until at least 4000 BP (Sathiamurthy and Voris 2006: Figure 26; Geyh *et al.* 1979).

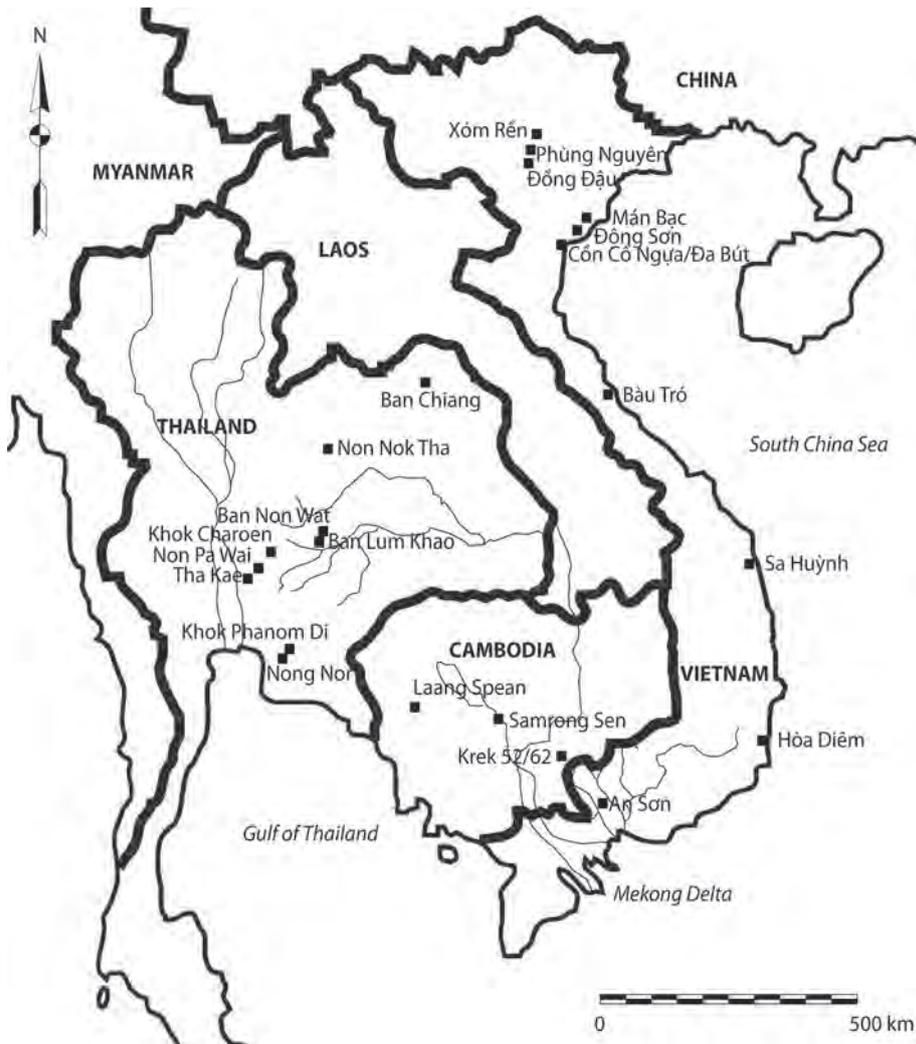


Figure 1.2. Map of An Sơn and the Southeast Asian sites mentioned in the text.

Source: Map by C. Sarjeant.

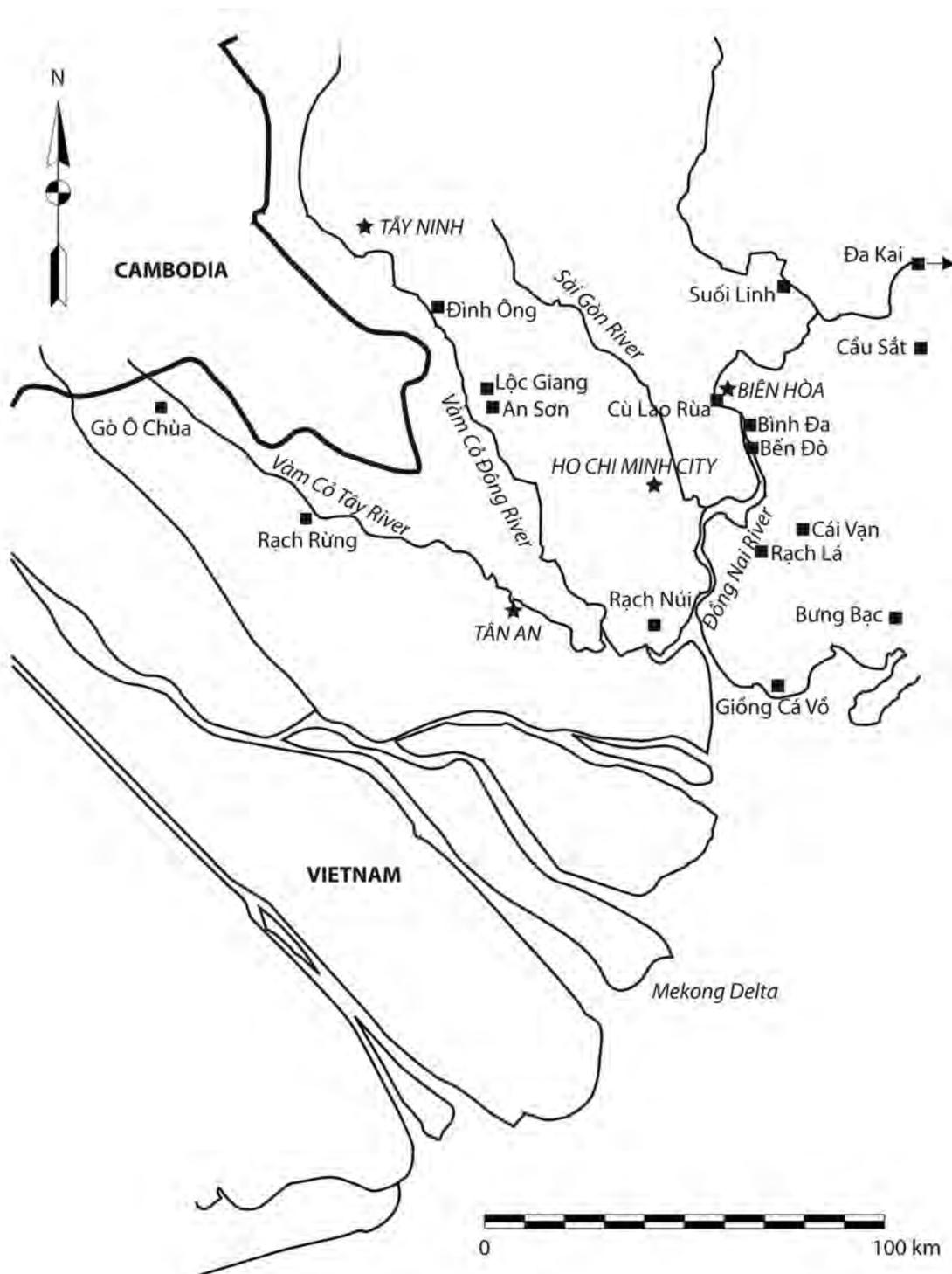


Figure 1.3. Map of An Sơn and neighbouring southern Vietnam archaeological sites.

Source: Map by C. Sarjeant.

The location of the future site of An Sơn was closer to the coastline compared to today during the period of maximum Holocene marine transgression, between 4000 and 3000 cal. BC, when the sea level was at +2.5 to +4.5 m above the present level (Proske *et al.* 2010; Tạ *et al.* 2002; Nguyễn *et al.* 2000). An Sơn may have been under mangrove vegetation at this time. However, by the time the

archaeological site was founded, between 2500 and 2000 BC, the sea may have already retreated 40 to 50 km. An Sơn itself contains no strong evidence for marine food consumption and all subsistence resources may be categorised as terrestrial or riverine, although the shellfish are estuarine, so perhaps brackish water extended quite far inland (Piper *et al.* 2012; Bellwood *et al.* 2011).

In recent years, a large number of archaeological sites dating from the neolithic to the iron age have been investigated in the Vàm Cỏ Đông and Vàm Cỏ Tây drainage systems and the adjacent Đồng Nai and Sài Gòn River valleys, all forming the hinterland to Ho Chi Minh City (Figure 1.3). Many date from the bronze and iron ages (1000 BC to AD 500), but the Vàm Cỏ Đông has a concentration of tested neolithic sites dating from the late third and second millennia BC, including An Sơn, nearby Lộc Giang, and Đình Ông further upstream in Tây Ninh Province (Nishimura 2002; Nishimura and Nguyễn 2002).

Introduction to the theoretical framework and research methodology

This section introduces the methods and theoretical framework applied to address the research aims of this monograph.

Characterisation of the An Sơn ceramic assemblage

While all excavated archaeological features and material culture from An Sơn are presented in this monograph, detailed analysis is conducted only on the ceramic assemblage. The entire 2009 assemblage was assessed to identify rim forms, modes of decoration and surface treatment, and types of temper. It was possible to separate sand-tempered sherds macroscopically from fibre-tempered sherds for the whole assemblage. Fibre temper is used in this monograph to describe ceramic fabrics tempered with organic material, often rice chaff (see Chapter 6, Part I). Rim forms were drawn and classified, complete and reconstructed vessels were drawn and photographed, decoration was photographed, and samples of different ceramics over time were collected for further analysis (see Chapter 5).

Ceramic sherds were collected for more detailed analysis from an area of the 2009 excavation that presented the longest sequence. This was square C1 in Trench 1, which was cut into the flank of the 5 metre high main mound. Additional sherds were collected from the basal layers of the Test Square dug into the western flank of the 1997 excavation. Some rim forms and fabrics that were under-represented in Trench 1 C1 were collected from other contexts in the 2009 excavation and analysed. The ceramic fabrics were analysed macroscopically, microscopically, and with scanning electron microscopy (SEM). The fabrics were characterised visually with SEM backscatter micrographs and quantitatively with energy dispersive spectrometry (EDX) on the SEM to characterise the mineral grains and clay matrices of the ceramics. These analyses permitted the characterisation of the variety of fabrics over time at An Sơn (see Chapter 6).

The analysis of the ceramics at An Sơn introduces a whole host of theoretical approaches from the literature on ‘The Anthropology of Technology’ (Schiffer 2001). In no way can this monograph encompass all facets of sociotechnical systems. In terms of current literature, these extend to (a) technological processes and the *chaîne opératoire* (e.g. Dobres 1999; Schlanger 1994; Leroi-Gourhan 1964); (b) the organisation of production and the identities of potters (e.g. Neupert 2007; Hurcombe 2000; Senior 2000; Roux and Matarasso 1999; Rice 1996b, 1991; Mills 1995; Costin 1991; Wright 1991); (c) technological change (e.g. Eerkens and Lipo 2007; Roux 2003b; Stark 1991); (d) the influence of function and style on design (e.g. Rice 1996a; Hegmon 1992; Skibo 1992; Mills 1989; Hill 1985; Sackett 1982; Dunnell 1978); (e) potter choices and acts of invention, experimentation and conservatism in manufacture (e.g. Eerkens and Bettinger 2001; Neiman 1995; van der Leeuw and Torrence 1989; Rice 1984; Nicklin 1971); and (f) cultural

transmission and learning of technology (e.g. Bowser and Patton 2008; Eerkens and Lipo 2008, 2007, 2005; Roux 2008; Tehrani and Riede 2008; Crown 2007, 2002; Minar and Crown 2001; Eerkens 2000).

In order to simplify matters, I only introduce here the relevant areas of technological research that are utilised in interpreting the ceramic assemblage at An Son, in relation to the research aims. These primarily concentrate on the organisation of production and potter choices to make inferences about identities and the behaviour of potters. Cultural transmission is also discussed, both between potters within the community and between groups, to understand the significance of interaction. Technological theory is linked with theory of identity and material culture (e.g. Hodder 2003; Meskell 2001; Jones and Graves-Brown 1996) in this monograph to illustrate how material culture was utilised at An Son to project concepts of cultural affinity and difference during the neolithic occupation.

Contextualisation of the An Son assemblage within the neolithic of southern Vietnam

Cultural comparisons are integral to archaeological inquiry. To understand change over time and interaction, boundaries and cultural groups are defined and sites and assemblages are placed in temporal and spatial order. Presences or absences of defining cultural characteristics for periods of antiquity and specific regions can help to order sites in cultural groups, tied to specific areas and times. The comparative study between An Son and other sites with neolithic sequences in southern Vietnam involved the examination of museum collections, excavation reports and other reported information. This comparison once again focused on ceramic assemblages, but also considered other material culture and other occupational and mortuary evidence.

Accumulating this information was more difficult than anticipated, and the comparative analysis was necessarily based on the presence or absence of particular ceramic rim forms, decorations, fabrics when known, and other material culture at each site. While photographs, drawings and descriptions validated the analysis, the presence/absence data were analysed in a correspondence statistical analysis. The difficulty in periodising the most significant neolithic sites of southern Vietnam, especially An Sơn, Lộc Giang, Bình Đa, Rạch Núi and Cầu Sắt, has been discussed before (Nishimura 2002). This is largely due to a lack of cross-comparisons of complete pottery sequences from each of these sites, with the exceptions of attempts to link decorative styles (Nishimura and Vương 1997: 81).

The nature of archaeology in Vietnam so far has resulted in the recognition of a number of cultural groups (e.g. Phùng Nguyên, Sa Huỳnh and Đồng Nai ‘Cultures’) that are identified by distributions of material culture and the geographical spreads of particular artefacts. There is often an assumption that the material culture of these groups was inextricably linked to shared identity, ethnicity, language, and specific cultural practices. However, group identities are likely to have been highly subjective, fluid, complex and subtle. Describing the cultural or ethnic identity of a prehistoric individual or community beyond the indications in the archaeological record is likely to be ill-informed. The bounded and homogenous groups that some have perceived for the past, and suggested correlations between archaeological cultures and ethnic groups, are necessarily hypothetical (Jones 2007b, 1996: 72; Lucy 2005: 86–87; Hodder 1982). Cultural identity may be inferred from archaeological material to the extent that it was conditioned by factors such as common ancestry, interaction, replacement and extinction, and invention and innovation.

Material culture distributions may only provide a limited indication of the divisions that existed in cultural reality between different groups, who might have had a relatively homogenous material culture, while maintaining distinct identities. Despite movements of people and alterations in

material culture, the relations and social boundaries between different groups, or within a single community, and their cultural and/or ethnic identities, may be resistant to change (Lucy 2005: 91; Hodder 1982).

It is presumed there was some structure to the way in which cultures interacted. A commonality of material culture may indicate a process of cultural transmission. Material culture can really only identify possible historical links and separations between cultures, but not shared or different ethnicities. Groups that were separated by great distances as a result of migration may have shared a similar ethnic identity or ancestry, but their material culture changed in response to time, available resources and local cultural interactions. In contrast, similar material culture was perhaps shared amongst groups that had very different linguistic or cultural heritages (Rice 1984: 235; Stanislawski 1978: 226).

Regional divergence in material culture can result from contact with other groups rather than from innovation in isolation (Lucy 2005: 105). Beginning with a detailed analysis at a local level, the complex relationships of artefacts and spatial patterning and the context in which social identities were practiced everyday in the past, may be understood. The next step towards the interpretation of cultural groups is to expand the scale of analysis by observing the overlapping and multiple boundaries that may exist and contribute to the cultural differences in a region (Lucy 2005: 109). The formulation of the various groups of the past may be defined by the exclusion or inclusion of certain characteristics. These are the points that differentiate groups from each other (Hodos 2010: 4).

The comparative analysis in this monograph between An Sơn and eleven other sites in southern Vietnam reveals how An Sơn can be used either to typify the neolithic of southern Vietnam or conversely, how it might be seen as an example of regional diversification. By analysing the presence or absence of certain combinations of material culture, possible prehistoric contacts, relationships between sites and the commonalities of neolithic occupation in southern Vietnam are revealed (see Chapter 8).

The appearance of cultivation and related neolithic developments in southern Vietnam

The appearance of agriculture and related material culture in southern Vietnam require comparison with contexts that are well understood elsewhere in mainland Southeast Asia, for instance coastal central Thailand, northeast Thailand, Cambodia and northern Vietnam. This monograph approaches these comparisons with a focus on ceramic and other material culture items, site formation, occupational and mortuary practices, economy, and inter-site relations.

The traditional view for the onset of domestication was that hunter-gatherers adopted agriculture as a more secure and reliable subsistence was required. It was a choice to adopt farming, which was a labour-intensive occupation. There was great variety in the way agriculture was implemented (Tilley 1996: 57). The reasons for the adoption of such a labour intensive practice must be considered alongside environmental evidence, material culture and economic change, and the consequences for the way in which communities interacted. The processes for the adoption of cultivation and associated neolithic attributes were no doubt complex and require systematic investigation.

This monograph outlines aspects of neolithic sites that were part of a wider neolithic expression as well as features that can be considered regional diversifications in a regional comparison between An Sơn and fourteen other sites across mainland Southeast Asia. The chronological relationship between the studied regions may also indicate the manner in which these neolithic attributes entered and moved around mainland Southeast Asia. The relationship between the introductions

that were related to agricultural activities took shape in many ways in the different regions of Southeast Asia and this interaction is of interest here in order to uncover the resulting regional developments (see Chapter 9).

The roles of prehistoric potters in the exchange and transference of neolithic material culture and ideas in southern Vietnam

The interactions between groups during the neolithic and the cultural developments related to agriculture are closely linked to the development of certain craft occupations. The focus of this monograph lends itself to a discussion about neolithic potters. This necessitates an investigation of individuals: how they conduct and organise their craft, how they transport items and ideas, and how they adopt, transform and reject methods of ceramic manufacture.

The role of potters in a community depends not only on the product output but also the nature of their occupation. If a potter is responsible for items that are valued in the community, regardless of whether they have market or ritual values, the organisation of the occupation is important. Costin (1991: 9) states that the organisation of production can be studied with analyses of context, concentration, scale and intensity. Some of these variables can be used to interpret aspects of standardisation and specialisation (see Chapter 7).

The individual choices made by potters, either to adhere to traditions with conservative behaviours or to permit experimentation and invention, are tied to social constraints and requirements. Conservative behaviours in pottery making have been connected to technology (Vincent 2003: 53, 1991: 344) (e.g. raw material source selection, forming methods, etc.) and can also stem from the organisation of the occupation. Pottery production can be highly structured and monitored by an elite, especially in state organisations, or there can be a situation of artistic freedom amongst the potters in household level production (Wright 1991: 203).

The status and importance of potters in any community are likely to be contingent on the social standing of women, and agreed relations between identity, prestige and status, and the ceramic item. Ethnographic work both in Southeast Asia and worldwide has indicated that earthenware forming at an autonomous tribal village level is primarily conducted by women (Lefferts and Cort 1999; Wright 1991: 198–199; Arnold 1985: 102). Archaeological evidence at Khok Phanom Di links women to potting occupations because anvils and burnishing stones were placed as mortuary offerings in female graves (Higham 2002b). The status of potters may be linked into any social perception of status associated with women (Vincentelli 2000: 16; Wright 1991: 204).

By positioning the potters at the forefront in discussions about the movement and development of neolithic technologies, the occupation may be considered with regard to the identity of the potters. Ethnographic and historic research by other academics in relation to ceramic manufacture and other relevant crafts in mainland Southeast Asia is closely examined alongside the ceramic assemblage from An Sôn. In order to interpret the relationship between potters from different sites this investigation will reveal the nature of pottery production at a local level; the mortuary evidence and related ceramic offerings at An Sôn that might demonstrate material culture associations with a particular sex or age group; and potential interactions established from the comparative studies of ceramic material culture in this monograph (see Chapter 10).

Potters were likely to have had an important role in the movement of neolithic features in mainland Southeast Asia, where there would have been interactions where some neolithic features were adopted and others modified or rejected, including ceramic attributes. Although not bound together, the interactions between potters may have had implications for the way in which agricultural practices and other technologies were exchanged in this neolithic setting.

Overview

This chapter has introduced the neolithic context for An Sôn, including the chronology, environment and cultural occurrences, and key research relating to this period of occupation within mainland Southeast Asia. This chapter has provided the background and framework for the research that will address the characterisation of the ceramic assemblage at An Sôn in detail, and expand this into a wider analysis of interaction between sites within southern Vietnam and mainland Southeast Asia in general. This research considers theories of technology and identity, integrating detailed archaeological data from multiple sites, to interpret potential relationships between An Sôn and the studied sites and potentially uncover the routes and features of the initial occupation of southern Vietnam.

The monograph structure involves initially addressing the background of neolithic archaeological sites in mainland Southeast Asia (Chapter 2) to identify which regions and sites are suitable for the comparative research that is reported in Chapters 8 and 9. Some preliminary observations about parallels and differences between An Sôn and these sites are tentatively introduced, and the detailed analyses of Chapters 8 and 9 validate or disprove these previous claims in the literature.

The methodology for the analysis of the An Sôn ceramics and the comparative studies is presented in Chapter 3, inclusive of the excavation strategies, the sampling and analytical methods, and the statistical applications required to interpret the analyses. The complexities in understanding the technical analyses of Chapters 6, 7, 8 and 9 require following the sampling, analytical and statistical procedures outlined in Chapter 3. An overview of the chronology, stratigraphy and material culture findings of the 2009 excavation at An Sôn is provided in Chapter 4 to demonstrate the context from which the ceramic assemblage derives. Chapter 4 introduces the other material culture and site conditions that may be similar or different at other sites in the region and beyond, as discussed in the comparisons of Chapters 8 and 9.

The characterisation of the An Sôn ceramic assemblage begins in Chapter 5 with the morphology and decoration of the vessel forms and their distributions in the site. This chapter identifies that certain ceramic forms predominantly appear in specific contexts and investigates the chronological sequence of both ceramic forms and decorations. This is followed by the results of the ceramic fabric analysis in Chapter 6. The fabric analyses included temper characterisations and employed a number of statistical methods in order to group the sampled ceramics according to clay chemistry, and deduce chronological sequences of ceramic manufacture and fabric recipes for specific forms. This analysis of specific ceramic forms is further developed through study of the degrees of variability and standardisation in Chapter 7. This analysis informs the nature of ceramic manufacture at An Sôn in terms of a recipe exiting for morphology, decoration and surface treatments, and fabric selection of each form.

The comparative component of this research begins with An Sôn in comparison to other neolithic sites in southern Vietnam (Chapter 8). This includes site descriptions with detail of the material culture identified in excavations. These data are applied to a statistical analysis for the comparison with An Sôn to indicate which sites have a stronger relationship in terms of material culture, and the locations of these neolithic interaction spheres are identified. A larger comparison that includes sites in other regions of Southeast Asia is presented in Chapter 9. The approach is similar to Chapter 8, however the site relationships are divided into certain neolithic features, such as the presence of rice cultivation, lithic types, and specific ceramic forms and decorations, due to the analysis of a wide geographic area and greater variety of archaeological data.

Chapter 10 reconstructs pottery production at An Sôn, its organisation and the occupational behaviours of the potters, and extends to a discussion about the identity of the potters and the ways by which ceramic material culture might have been utilised to construct identity at An

Sơn. Chapter 11 summarises the results of this research with conclusions about the ceramics at An Sơn, and comparisons between ceramics across mainland Southeast Asia. It discusses the organisation of production, including the role, status and behaviours of potters at An Sơn, in order to understand the importance of potters in local developments and the dissemination of a widespread neolithic culture. Please refer to the list of abbreviations and terms at the front of this monograph as needed.

This text taken from *Contextualising the Neolithic Occupation of Southern Vietnam: The Role of Ceramics and Potters at An Son*, by Carmen Sarjeant, published 2014 by ANU Press, The Australian National University, Canberra, Australia.