

The Neolithic of Southern China—Origin, Development, and Dispersal



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INTRODUCTION

SANDWICHED BETWEEN THE YELLOW RIVER and Mainland Southeast Asia, southern China¹ lies centrally within eastern Asia. This geographical area can be divided into three geomorphological terrains: the middle and lower Yangtze alluvial plain, the Lingnan (southern Nanling Mountains)—Fujian region,² and the Yungui Plateau³ (Fig. 1). During the past 30 years, abundant archaeological discoveries have stimulated a rethinking of the role of southern China in the prehistory of China and Southeast Asia. This article aims to outline briefly the Neolithic cultural developments in the middle and lower Yangtze alluvial plain, to discuss cultural influences over adjacent regions and, most importantly, to examine the issue of southward population dispersal during this time period.

First, we give an overview of some significant prehistoric discoveries in southern China. With the discovery of Hemudu in the mid-1970s as the divide, the history of archaeology in this region can be divided into two phases. The first phase (c. 1920s–1970s) involved extensive discovery, when archaeologists unearthed Pleistocene human remains at Yuanmou, Ziyang, Liujiang, Maba, and Changyang, and Palaeolithic industries in many caves. The major Neolithic cultures, including Daxi, Qujialing, Shijiahe, Majiabang, Songze, Liangzhu, and Beiyinyangying in the middle and lower Yangtze, and several shell midden sites in Lingnan, were also discovered in this phase.

During the systematic research phase (1970s to the present), ongoing major excavation at many sites contributed significantly to our understanding of prehistoric southern China. Additional early human remains at Wushan, Jianshi, Yunxian, Nanjing, and Hexian were recovered together with Palaeolithic assemblages from Yuanmou, the Baise basin, Jianshi Longgu cave, Hanzhong, the Li and Yuan valleys, Dadong and Jigongshan. Early rice remains were discovered in the Neolithic sites of Pengtoushan, Xianrendong, and Yuchanyan, creating a broader picture of the origin, development, and dispersal of early agriculture in southern China. In the Lingnan-Fujian region and the Yungui Plateau, new cultural

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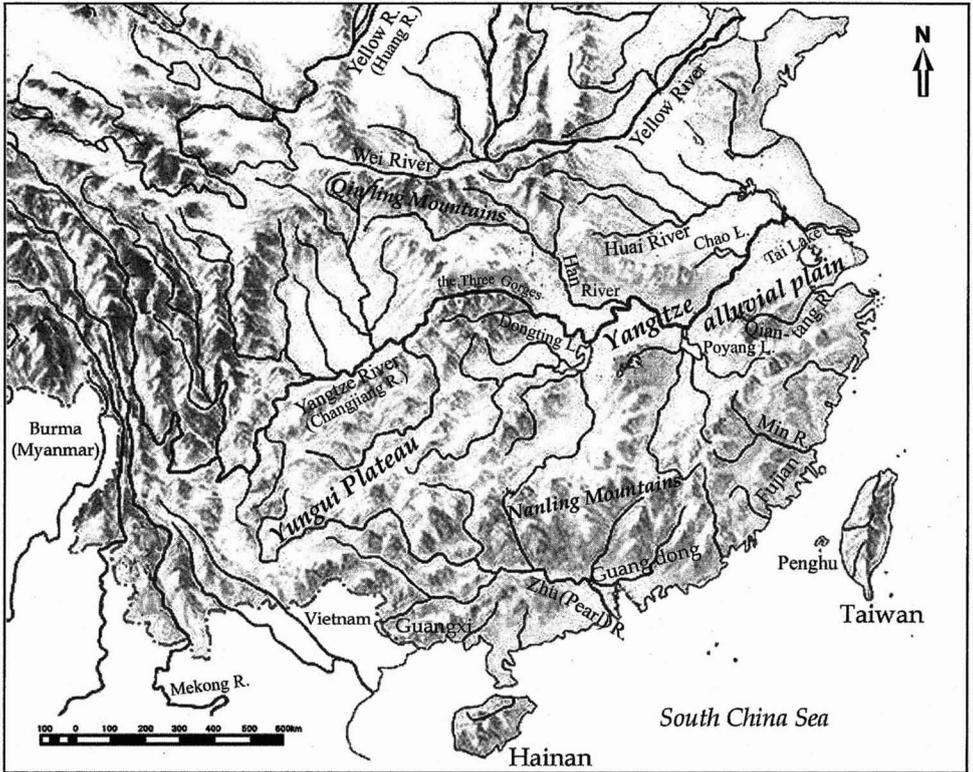


Fig. 1. The geographic regions and landforms of China. In this paper, southern China refers to the geographic region between the Qinling Mountains and the Huai River Valley and the Chinese national boundary with countries in Mainland Southeast Asia.

discoveries included Tanshishan in Fujian, Shixia in Guangdong, and Baoduncun in Sichuan. Many other sites have also been discovered in Guangxi, Yunnan, and Chongqing. These new discoveries illuminate aspects of prehistoric societies in the region such as farming (e.g., Yan 1997), settlement patterns (e.g., C. Zhang 2003), social structure (e.g. Meng 1997), and pottery, lithics, and jade working (e.g., C. Zhang 2000c). Our knowledge of cultural chronology in southern China has also developed immensely.

THE TRANSITION FROM LATE PALAEOOLITHIC TO EARLY NEOLITHIC

During the late Palaeolithic, following the last glacial maximum, the Palaeolithic pebble tool industries of southern China became influenced by the northern China tradition of small flake tool production, characterized especially by scrapers and pointed tools (Y. Wang 2003, 2005). Some related studies also propose that there was a shift to more animal hunting at this time, with less emphasis on plant gathering than previously (Y. Wang 2005).

The period between 16,000 and 10,000 years ago was of uncertain significance

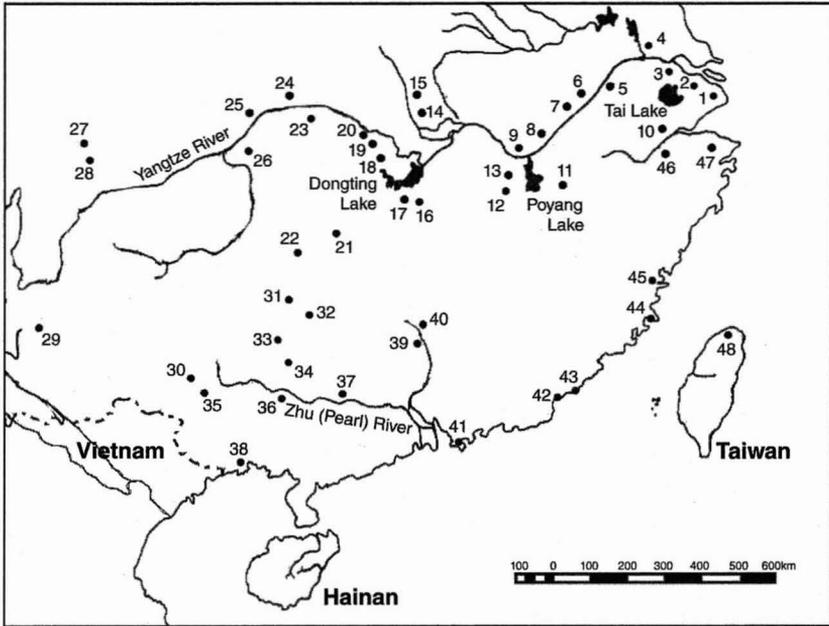


Fig. 2. The major Neolithic sites of southern China mentioned in this paper. 1: Guangfulin/Maqiao/Songze; 2: Caoxieshan; 3: Majiabang; 4: Nandang; 5: Beiyinyangying/Zanmiao; 6: Lingjiatan; 7: Zhangsidun; 8: Xuejiagang; 9: Ludun; 10: Liangzhu; 11: Xianrendong/Diaotonghuan; 12: Shinianshan/Fanchengdui; 13: Shanbei; 14: Shijiahe; 15: Qujialing; 16: Daiziping; 17: Datang; 18: Tangjiagang; 19: Bashidang/Chengtoushan/Pengtoushan; 20: Zaoshi; 21: Doupengpo; 22: Gaomiao; 23: Chengbeixi/Honghuatao/Yangjiawan; 24: Guandukou; 25: Daxi; 26: Yuxi/Yuxiping; 27: Yingpanshan; 28: Baoduncun; 29: Dian Lake; 30: Gexinqiao; 31: Xiaojin; 32: Yuchanyan; 33: Dayan/Miaoyan/Zengpiyan; 34: Liyuzui; 35: Beidaling; 36: Dingsishan; 37: Wusaoling; 38: Fangcheng; 39: Shilaodun; 40: Shixia; 41: Xiantouling; 42: Shiweishan; 43: Chenqiaocun; 44: Keqiyutu; 45: Tanshishan; 47: Hemudu; 46: Kuahuqiao; 48: Dabengkeng.

in the rise of farming in China (C. Zhang 2000a: 190–198). During that period, referred to as early Neolithic by Chinese archaeologists, owing to the presence of pottery, most habitation sites appear to have been located in limestone caves in the foothills of the Nanling mountain range. Subsistence evidence comes mainly in the form of large numbers of riverine gastropods (N. He 1988: 158–166), seeds, and even a few rice remains (see below). Excavations in the caves of Xianrendong in Wannian (Zhang and Liu 1996); Yuchanyan in Daoxian (J.-R. Yuan 1996); and Miaoyan (S. Chen 1999), Zengpiyan (Institute of Archaeology, CASS et al. 2003) and Dayan (Fu et al. 2001) in Guilin, have produced the earliest pottery in China (C. Zhang 2000a, 2000b, 2006; see Fig. 2 and Table 1). Most vessels are either round-based jars with linear incision or cord impressed surfaces, or deep bowls, sometimes with weaving impressions. Coarse quartz grit was used as a tempering agent. The lithic industry at this time was still characterized by pebble tools that included unifacial choppers, flaked hoes and axes, perforated pebbles, and a few cutting tools with polished edges. Small flake tools of chert and quartz are also present in some cave middens. Bone awls, needles, arrowheads, fishing

TABLE 1. RADIOCARBON DATES FROM EARLY NEOLITHIC SITES IN SOUTHERN CHINA
(ALL DATED MATERIALS WERE ASSOCIATED WITH POTTERY)

LOCATION, SITE	LAB NO.	DATE, B.P.	METHOD, MATERIAL	REFERENCES CITED
Xianrendong	BA95136	19780 ± 360	AMS, Charcoal	C. Zhang 2000b:47
	UCR3555	15050 ± 60	AMS, Charcoal	C. Zhang 2000b:47
	UCR3561	12430 ± 80	AMS, Charcoal	C. Zhang 2000b:47
	ZK-39	10870 ± 240	¹⁴ C, Shell	Institute of Archaeology, CASS 1974:337
	ZK-92-0	8575 ± 235	¹⁴ C, Animal bone	Jiangxi Provincial Museum 1976:35
Yuchanyan	BA95057b	14810 ± 230	AMS, Food residue on sherd	S. Yuan et al. 1997:392, 803-806
	BA95057a	12320 ± 120	AMS, Humic acid	S. Yuan et al. 1997:803-806
	?	14490 ± 230	AMS, Charcoal	S. Yuan et al. 1997:803-806
	ZK-2903	8194 ± 610	¹⁴ C, Animal bone	Institute of Archaeology, CASS 1997:38
	ZK-2902	8820 ± 399	¹⁴ C, Animal bone	Institute of Archaeology, CASS 1997:38
ZK-2901	7707 ± 413	¹⁴ C, Animal bone	Institute of Archaeology, CASS 1997:38	
Miaoyan	2K-2841	17238 ± 237	¹⁴ C, Shell	S. Chen 1999:163
	BA92036-1	18140 ± 320	¹⁴ C, Animal bone	S. Chen 1999:163
	BA94137b	15660 ± 260	AMS, Food residue on sherd	S. Yuan et al. 1997:803-806
	BA94137a	15560 ± 500	AMS, Humic acid	S. Yuan et al. 1997:803-806
	BA92036-1	18140 ± 320	¹⁴ C, Shell	S. Chen 1999:163
	BA92034-1	13710 ± 270	¹⁴ C, Shell	S. Chen 1999:163
	ZK-2841	17238 ± 237	¹⁴ C, Shell	S. Chen 1999:163
Zengpiyan	ZK-0279-1	11310 ± 180	¹⁴ C, Shell	Institute of Archaeology, CASS 1977:203
	ZK-280-0	7580 ± 410	¹⁴ C, Animal Bone	Institute of Archaeology, CASS 1978:283
	SB36c-SB35c	10370 ± 870- 9240 ± 620	TL, sherds	W. Wang 1984:324
	ZK316805	11596 ± 91	¹⁴ C, Shell	Institute of Archaeology, CASS et al. 2003:437
	ZK316803	11000 ± 112	¹⁴ C, Shell	Institute of Archaeology, CASS et al. 2003:437
	ZK316803b	11235 ± 141	¹⁴ C, Shell	Institute of Archaeology, CASS et al. 2003:437
	ZK316806	11575 ± 112	¹⁴ C, Shell	Institute of Archaeology, CASS et al. 2003:437
	ZK316806b	11438 ± 85	¹⁴ C, Shell	Institute of Archaeology, CASS et al. 2003:437
	ZK316811	10996 ± 68	¹⁴ C, Shell	Institute of Archaeology, CASS et al. 2003:437
	ZK316813	10944 ± 132	¹⁴ C, Shell	Institute of Archaeology, CASS et al. 2003:437
	BA01245	10500 ± 140	AMS, Charcoal	Institute of Archaeology, CASS et al. 2003:441
	BA01246	11960 ± 240	AMS, Charcoal	Institute of Archaeology, CASS et al. 2003:441
	BA01239	9440 ± 280	AMS, Charcoal	Institute of Archaeology, CASS et al. 2003:441

TABLE I (Continued)

LOCATION, SITE	LAB NO.	DATE, B.P.	METHOD, MATERIAL	REFERENCES CITED
	BA01244	9380 ± 170	AMS, Charcoal	Institute of Archaeology, CASS et al. 2003:441
	BA01243	9770 ± 130	AMS, Charcoal	Institute of Archaeology, CASS et al. 2003:441
	BA01238	9380 ± 180	AMS, Charcoal	Institute of Archaeology, CASS et al. 2003:441
	BA01242	9490 ± 190	AMS, Charcoal	Institute of Archaeology, CASS et al. 2003:441
	ANU-11734	9350 ± 250	AMS, Charcoal	Institute of Archaeology, CASS et al. 2003:443
	ANU-11733	10520 ± 280	AMS, Charcoal	Institute of Archaeology, CASS et al. 2003:443
	ANU-11728	9130 ± 160	AMS, Charcoal	Institute of Archaeology, CASS et al. 2003:443

Methods: AMS—accelerator mass spectrometry carbon-14 dating; ¹⁴C—conventional radiocarbon dating; TL—thermal-luminescence dating. CASS: Chinese Academy of Social Sciences.

spear points, and shell knives with one or two holes are also widespread. Associated calibrated ¹⁴C dates (excluding those on freshwater shell) from these sites fall between 16,000 and 10,000 years ago (Table 1).

Hunted animals included deer, pigs, birds, fish, freshwater turtles, and shellfish, indicating that hunting and gathering were still major food procurement strategies during this phase (Institute of Archaeology, CASS et al. 2003:341–346). Remains of several edible plants, such as Chinese gooseberries (*Actinidia chinensia* and *Actinidia* sp.), wild grapes (*Vitis* sp.), plums (*Prunus mume*), and Chinese hackberries (*Celtis tetrandra*) were discovered during flotation in Yuchanyan and Zengpiyan caves (Institute of Archaeology, CASS et al. 2003:286–294; J.-R. Yuan 2000:35). Three grains of rice unearthed from Yuchanyan in 1993 and 1995 have been identified both as morphologically wild by Crawford and Chen (1998), and as early cultivated rice (*O. sativa* L., subsp. ancient *zhang*) by Zhang (W. Zhang 2000:122). Phytoliths of similar age found in Xianrendong and Diaotonghuan caves have been identified as morphologically wild (Z. Zhao 1998). Because of problems with the small sample sizes in these cave sites, Nakamura (2000:1–11) believes that reliable evidence for rice cultivation in this phase is uncertain. It should also be noted that none of these early rice grains have been directly AMS dated. Fuller et al. (2007) commence wild rice food production during the basal phase at Hemudu (c. 5000 B.C.), or perhaps a millennium earlier, which is much later than the late Pleistocene phases discussed above.

Although these limestone cave habitation sites continue a Palaeolithic cave occupation tradition, the occurrences of pottery and possibly wild rice remains suggest a changing economic strategy. This phase thus overlaps with the following middle Neolithic phase of Chinese archaeologists in southern China. Its duration would appear to have been quite long, and future research on the transformation to the Neolithic is badly needed, especially on the palaeobotany of the period.

MIDDLE AND LATE NEOLITHIC CULTURES OF THE MIDDLE AND
LOWER YANGTZE RIVER BASIN

The development and dispersal of farming in southern China was a long process. In this article we divide the agricultural Neolithic of the middle and lower Yangtze basin into four phases: middle Neolithic (8000–5000 B.C.), early phase of the late Neolithic (5000–3500 B.C.), late phase of the late Neolithic (3500–2500 B.C.), and terminal Neolithic (2500–2000 B.C.) (C. Zhang 2003; Table 2).

The Middle Neolithic (8000–5000 B.C.)

The first phase of pre-domestication cultivation in the middle and lower Yangtze basin occurred at this time. Although the number of discovered sites is not large, the overall cultural sequence is well established. The key sites belong to the Pengtoushan-Zaoshi Culture of the Li River basin (Dongting Lake region), the Datang culture of the middle and lower Xiang basin, and the Shangshan-Kuahuoqiao culture of the Qiantang basin (lower Yangtze) (Figs 2 and 3:1). Most sites are now located outside caves, on riverine terraces that could have supported cultivation.

As an example of a settlement of this phase, Bashidang in Lixian County, Hunan, covered more than 30,000 sq. m, or 3 ha (Institute of Archaeology, Hunan Province 1996:26–39, 2006:213–275; Pei 1998:1). It was enclosed by a ditch and low earthen bank, and within the 1000 excavated square meters, 24 earthen floors, 98 graves, 80 pits, and a group of raised-floor constructions were discovered. Most earthen floors covered about 30 to 40 sq. m and were located on higher land in the north and northwest of the site, together with the raised-floor constructions. Inhumation burials were scattered between the houses. Most contained a few pots or stone tools as grave goods, but there were no signs of major differences in wealth or social differentiation.

In terms of economic developments, considerable quantities of rice husks were incorporated into pottery at Shangshan, dated c. 8000 B.C., and these have been identified as cultivated rice by Jiang and Liu (2006). However, Fuller et al. (2007) note that fully domesticated non-shattering forms were not yet present, indicating wild plant food procurement or production. At Kuahuoqiao, several thousand husks and grains of ancient cultivated rice (Institute of Archaeology, Zhejiang Province and Xiaoshan Museum 2004:273–277) and evidence of animal domestication, especially of dogs and pigs (Institute of Archaeology, Zhejiang Province and Xiaoshan Museum 2004:249–254), were also recovered. Heavily exploited wild nut and fruit-bearing plants include *Prunus persica*, *Prunus mume*, *Prunus armeniaca*, *Quercus acutissima*, *Quercus variabilis*, *Quercus fabri*, *Choerospondias axillaries*, *Trapa bicornis*, *Trapa quadrispinosa*, and *Euryale ferox*. Seeds of Leguminosae, Cucurbitaceae, Theaceae, and Polygonaceae were also unearthed (Institute of Archaeology, Zhejiang Province and Xiaoshan Museum 2004:271). In the middle Yangtze basin, 20,000 rice husks and grains were collected during a small-scale excavation at Bashidang. These have been identified as ancient cultivated rice, but not identical to any of the present-day *indica* or *japonica* varieties (Zhang and Pei 1997:36–41).

Many rice remains have also been reported from Pengtoushan. Some doubt whether this was domesticated rice (Crawford and Chen 1998), yet it is evident

TABLE 2. CHRONOLOGIES OF YANGTZE BASIN NEOLITHIC CULTURES (SEE FIGS. 2 AND 3)

AGE	PHASE	UPPER YANGTZE		MID- TO LOWER YANGTZE				
		XIA-JIANG REGION	MID-HAN RIVER	TWO LAKES		GAN-BO REGION	SU-WAN REGION	JIANG-ZHE REGION
			REGION	REGION				
			NANYANG BASIN	JIANGHAN PLAIN	DONGTING LAKE			
THREE GORGES	XIANGFAN VALLEY	DONGTING LAKE	GAN VALLEY	SU-WAN PLAIN	CHAO LAKE PLAIN			
		WESTERN HUBEI	SUIZAO CORRIDOR	PLAIN	POYANG LAKE PLAIN	NINGZHEN AREA	YANGTZE DELTA	
10,000–8000 B.C.	Early Neolithic			Yuchanyan Cave site	Xianrendong Cave and Diaotonghuan Cave sites			
8000–5000 B.C.	Middle Neolithic	Chengbeixi culture Lower Yuxi culture	Peiligang culture*	Pengtoushan- Zaoshi culture Datang culture			Shangshan- Kuahuqiao culture	
5000–3500 B.C.	Early phase of late Neolithic	Early Daxi culture Middle Daxi culture Late Daxi culture	Early Yangshao culture* Mid Yangshao culture* Late Yangshao culture*	Early Daxi culture Middle Daxi culture Late Daxi culture	Phase I, Shinianshan culture Phase II, Shinianshan culture	Beiyinyangyin culture Xuejiagang culture	Hemudu culture Majiabang culture Early Songze culture Late Songze culture	
3500–2500 B.C.	Late phase of late Neolithic	Qujialing culture Early Shijiahe culture Middle Shijiahe culture	Qujialing culture Early Shijiahe culture Middle Shijiahe culture	Qujialing culture Early Shijiahe culture Middle Shijiahe culture	Early Fanchengdui culture Late Fanchengdui culture Shanbei culture	Ludun remains Zanmiao remains Early Zhangsidun remains	Early Liangzhu culture Middle Liangzhu culture Late Liangzhu culture	
2500–2000 B.C.	Terminal Neolithic	Late Shijiahe culture	Late Shijiahe culture	Late Shijiahe culture		Late Zhangsidun remains	Nandang culture	

*Northern China Neolithic tradition.

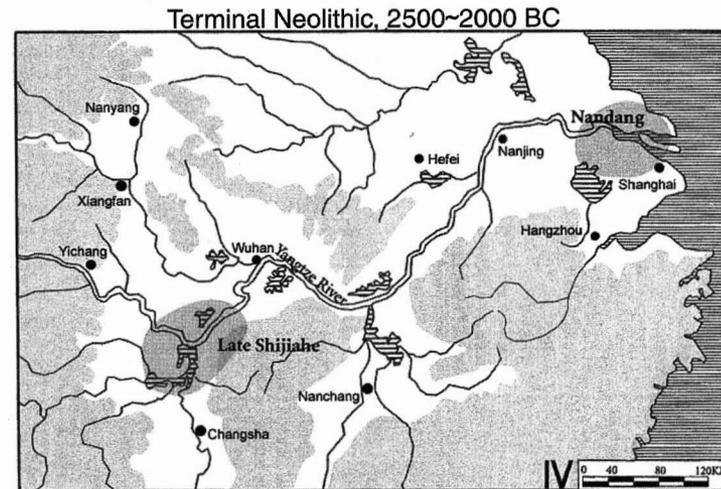
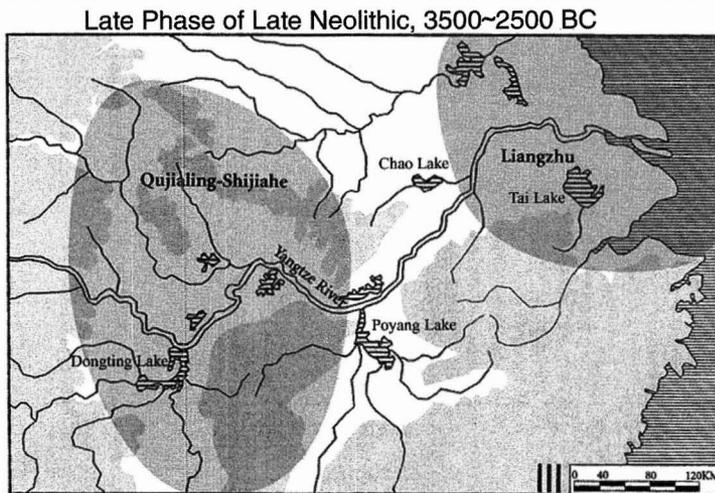
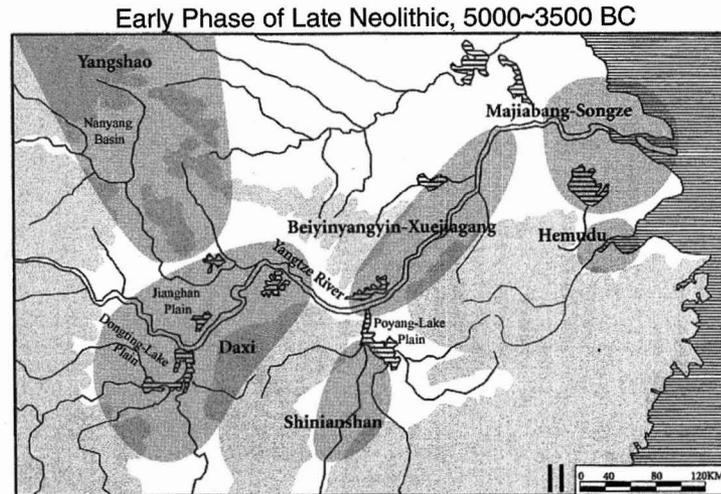
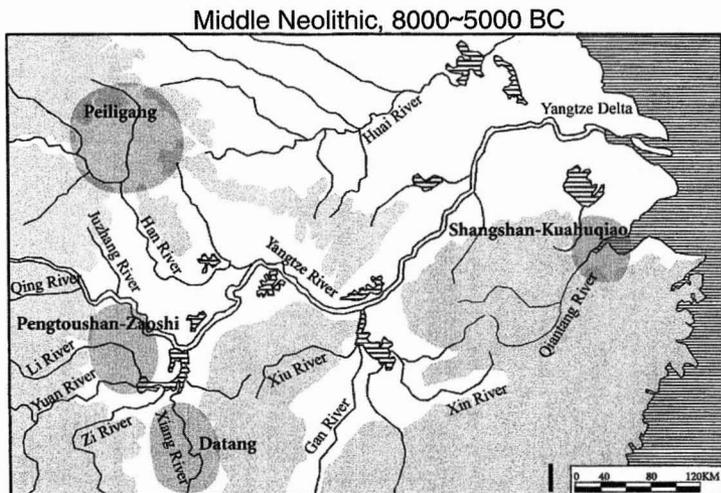


Fig. 3. The distribution of Neolithic cultures in the middle and lower Yangtze Valley. (Shaded area: 500-m elevation; solid circles: modern cities.)

from the quantity found in the site that food production was already beginning at this time. There is ambiguous evidence for domesticated pigs and chickens in sites of the Pengtoushan-Zaoshi culture (Pei 2000). In the later middle Neolithic, a spinning and weaving industry arose in the Kuahuqiao and Zaoshi cultures. Kuahuqiao alone has produced over 100 baked clay spindle whorls. Remarkably, a log boat made of pine was recently discovered at Kuahuqiao, 560 cm long and 52 cm in beam (Institute of Archaeology, Zhejiang Province and Xiaoshan Museum 2004:375).

By middle Neolithic times, therefore, the food producing subsistence system of Neolithic southern China was in formation. Rice was under cultivation in pre-domesticated form, incipient domestication of pigs and chickens was under way, but various aquatic and non-cultivated forest plants, such as water caltrop, lotus, and oak (acorns), together with wild animals, were still probably of major importance in the diet.

The Early Phase of the Late Neolithic (5000–3500 B.C.)

This phase is characterized by a major increase in site numbers, indicating rapid population growth in the middle and lower Yangtze basin. Relevant cultures include Daxi⁴ in the Two Lakes region⁵ (Jiangnan plain and Dongting Lake plain), Yangshao in the Han Valley, Beiyinyangying and Xuejiagang on the plains of the Su-Wan region,⁶ Shinianshan in the Gan-Po region,⁷ and Hemudu, Majiabang and Songze in the Jiang-Zhe region⁸ (Jiangsu and Zhejiang Provinces; Figs. 2 and 3:II).

In the early phase of the late Neolithic, the first evidence appears for increasing hierarchy in settlement size and increasing complexity of social organization. Settlements now average 2–3 ha in size, such as Tangjiagang in Hunan (Hunan Provincial Museum 1982; Pei 1992), with presumably more than 100 residents in each village. Xiawanggang (Institute of Archaeology, Henan Province 1989:166–183) and Baligang (Archaeological Team of the Peking University 1989:31–45) in the middle Han Valley are both 1000–2000 sq. m in size, and each has two rows of houses. One house row at Xiawanggang has been excavated, and consists of 29 rooms joined in a single terrace (Fig. 4). Allowing an average of 4 persons to a household, each row might have held 100 people, giving a total of 200 for the whole settlement. Burials occur in clusters that can hold more than 100 or even 1000 graves (such as at Sanxingcun in Jiangsu, National Bureau of Cultural Relics 2000:11–19), potentially for separate lineage/clan groups. The quantities of grave goods now begin to vary between burials and between clusters. For example, in some clusters the average grave has only a few mortuary objects, but in others there is more wealth (C. Zhang 2003).

The largest settlements are between 10 and 20 ha in size; Lingjiatan in Hanchuan, the most extensive settlement of this phase ever excavated, covers more than 1 sq. km (Institute of Archaeology, Anhui Province 1989, 1999, 2006; J. Zhang 1991). These large settlements reveal evidence for craft specialization, for example the pottery workshop at Chengtoushan (Institute of Archaeology, Hunan Province 1999, 2007) and the jade workshop at Lingjiatan. At Chengtoushan, eight pottery kilns were excavated, with working areas and clay collecting areas nearby. Very few kilns have been found in contemporary smaller

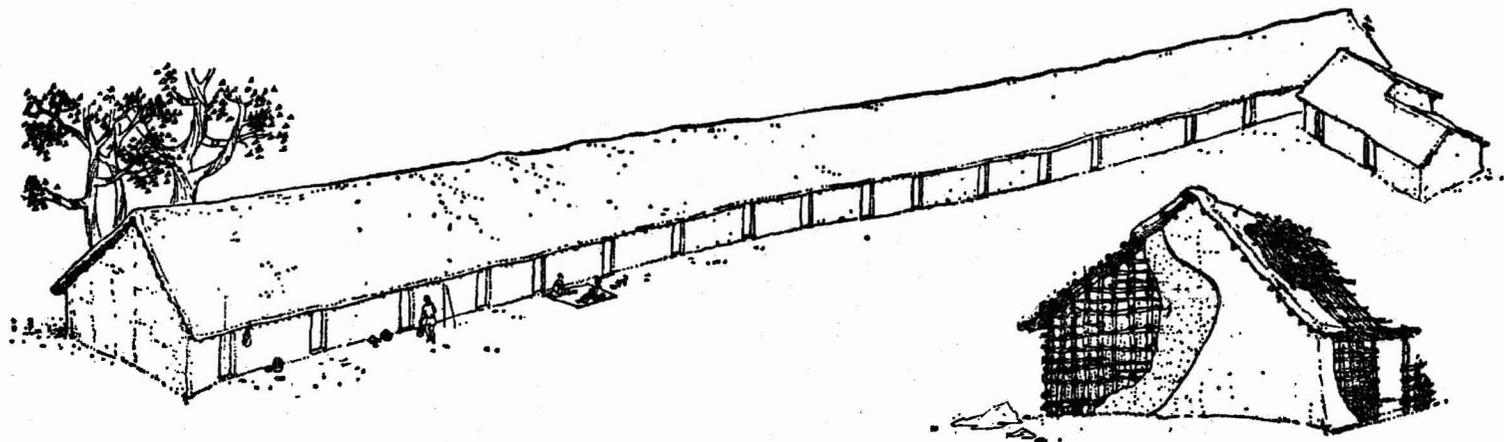
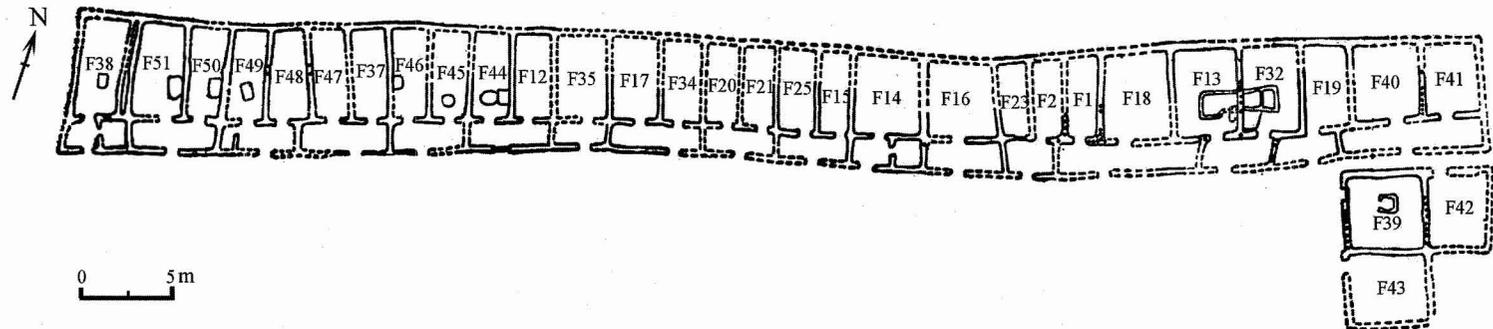


Fig. 4. Plan and reconstruction of a longhouse at Xiawanggang, Xichuan, Henan (from Institute of Archaeology, Henan Province 1989:165).

settlements, suggesting that Chengtoushan may have been a specialized pottery producing site.

Lingjiatan was a very important jade workshop during this phase. In the northern cemetery in this site, many burials contained more than 100 exquisite jade and stone artifacts as mortuary objects, sometimes together with large numbers of manufacturing tools for jade production, and discarded jade fragments. Such rich discoveries are so far absent in the cemeteries of smaller settlements. Chengtoushan also has evidence for ceremonial platform construction, suggesting that the large settlements probably served as regional ceremonial centers.

Remains of rice fields have been unearthed in some lower Yangtze Majiabang-Songze sites, such as Caoxieshan (H. Zou et al. 2000:97–113). On average, these very small fields enclose 3 to 5 sq. m and are surrounded by low earthen banks. Large numbers of spades made of bone or wood come from the contemporaneous Hemudu site, but there is no evidence for plow cultivation until the late Songze (see below). In the early phase of the middle Yangtze Daxi culture, a phase often referred to as Tangjiagang (Hunan Provincial Museum 1982; Pei 1992), rice fields were much larger and enclosed more than 2000 sq. m, indicating that the scale of field agriculture in the alluvial plain of the Two Lakes region was larger than in the lower Yangtze basin. Between 15 and 26 percent of consumed meat from settlements of this phase belong to domesticated pigs (J. Yuan 1999:8). Because of the local absence of raw materials for manufacturing stone tools, farmers living on the alluvial plains obtained stone artifacts by exchange. Lithic and jade artifacts that originated in the Su-Wan region became very widespread (C. Zhang 2003:123–134).

The Late Phase of the Late Neolithic (3500–2500 B.C.)

During this late phase of the late Neolithic, c. 3500–2500 B.C., social structures and settlement patterns in the middle and lower Yangtze basin changed dramatically in the direction of greater hierarchy and complexity. Two nuclear areas developed, focused on the Qujialing-Shijiahe culture located in the Two Lakes region and the Liangzhu culture located in the Tai Lake region. Current evidence suggests that the adjacent regional cultures located in the middle Han Valley⁹ and in the Su-Wan, Gan-Po, and northern Jiangsu regions did not undergo such developments toward complexity (Figs. 2 and 3:III).

The Two Lakes and Tai Lake regions had dense populations in this phase. In the Two Lakes region, the Shijiahe site complex covers a total area of over 8 sq. km. A one-sq.-km urban complex is located in the center, surrounded by a 60–80-m-wide trench. Many smaller settlements encircle this central area (Department of Archaeology, Peking University et al. 1992:213–294). In the Tai Lake region, the Liangzhu complex includes over 130 settlements distributed through 40 sq. km (Institute of Archaeology, Zhejiang Province 2005a:314–326). Interestingly, unoccupied zones occur between these big site complexes, suggesting that the domain of each cluster was almost as large as a modern Chinese county. Such large Neolithic settlement complexes never occurred in previous phases, and the uninhabited zones between them could suggest very tense social relations.

There is strong evidence from settlement hierarchies to suggest rank differentiation by this time. Large complexes such as Liangzhu contain specialized work-

shops for production of jade ornaments. The smaller site clusters (1 to 2 ha) have not yet produced such evidence. There is also evidence for burial hierarchy. Most Liangzhu graves have very few mortuary objects, but rich graves placed in high artificial mounds usually have several hundred jade ornaments and items of lacquered woodwork (Fig. 5). The most famous cemeteries of the Liangzhu phase, Yaoshan (Institute of Archaeology, Zhejiang Province 2003) and Fanshan (Institute of Archaeology, Zhejiang Province 2005*b*), are both located in high platforms built of multicolored layers of soil and stone.

Plow cultivation first appeared in the late Songze phase, and became very well developed in the Liangzhu phase (e.g., Mou and Song 1981:75–84; You 1996:143–150). In Liangzhu, the evidence for plow cultivation comes from several new types of agricultural implement, such as the so-called winged implements believed to be plows by many Chinese archaeologists, and large triangular stone blades. There are also rectangular and semilunar knives with holes, and stone sickles. Domesticated pigs by this time contributed about 70 percent of the consumed meat (J. Yuan 1999:8). During the Songze phase, production of domesticated crops became the major subsistence strategy, as emphasized by Fuller et al. (2007). The Two Lakes and Tai Lake regions had excellent environmental conditions for wet-field rice agriculture, as also noted by Ruddiman (2005; Ruddiman et al. in press), in his argument for increased methane and carbon dioxide levels in the atmosphere as a result of increasing wet rice production in Asia from this time onward. The Two Lakes and Tai Lake regions also became nuclear regions, in terms of settlement and population density, into which craft specialists migrated from outlying regions. For instance, the center of jade production moved from the Su-Wan region to the Tai Lake region (C. Zhang 2003:220).

The Terminal Neolithic (2500–2000 B.C.)

In this phase, the Neolithic cultures in the middle and lower Yangtze basin evidently declined. The large Qujialing-Shijiahe and Liangzhu settlements appear to have been abandoned in favor of small settlements mostly located in the northern Yangtze Valley. These include the late Shijiahe and post Shijiahe sites of the Two Lakes region (Department of Archaeology, Peking University et al. 1992; Meng 1997), and the Nandang or Guangfulin culture of the lower Yangtze basin (Institute of Archaeology, Nanjing Museum et al. 1995, 1997; Longqiuzhuang Archaeological Team 1999; Figs. 2 and 3:IV).

The cause of the decline of the Neolithic cultures in this region is still uncertain, but one of the reasons could be related to the expansion of late Longshan cultures from the Yellow River Valley (C. Zhang 1997:65). The late Dawenkou culture of the Yellow River Valley expanded as far south as the northern bank of the Yangtze (Nanjing Museum 1993:87–88).¹⁰ The late Shijiahe culture maintained close relations with the late phase of the Dawenkou culture, so that some scholars consider that the late Shijiahe was not directly derived from the early Shijiahe at all (C. Zhang 1997:65). During the terminal Neolithic, the lower Yangtze became the borderland for the Wangyoufang facies of the northern Longshan culture.

In this phase, site numbers in the Yangtze River basin are relatively few—only

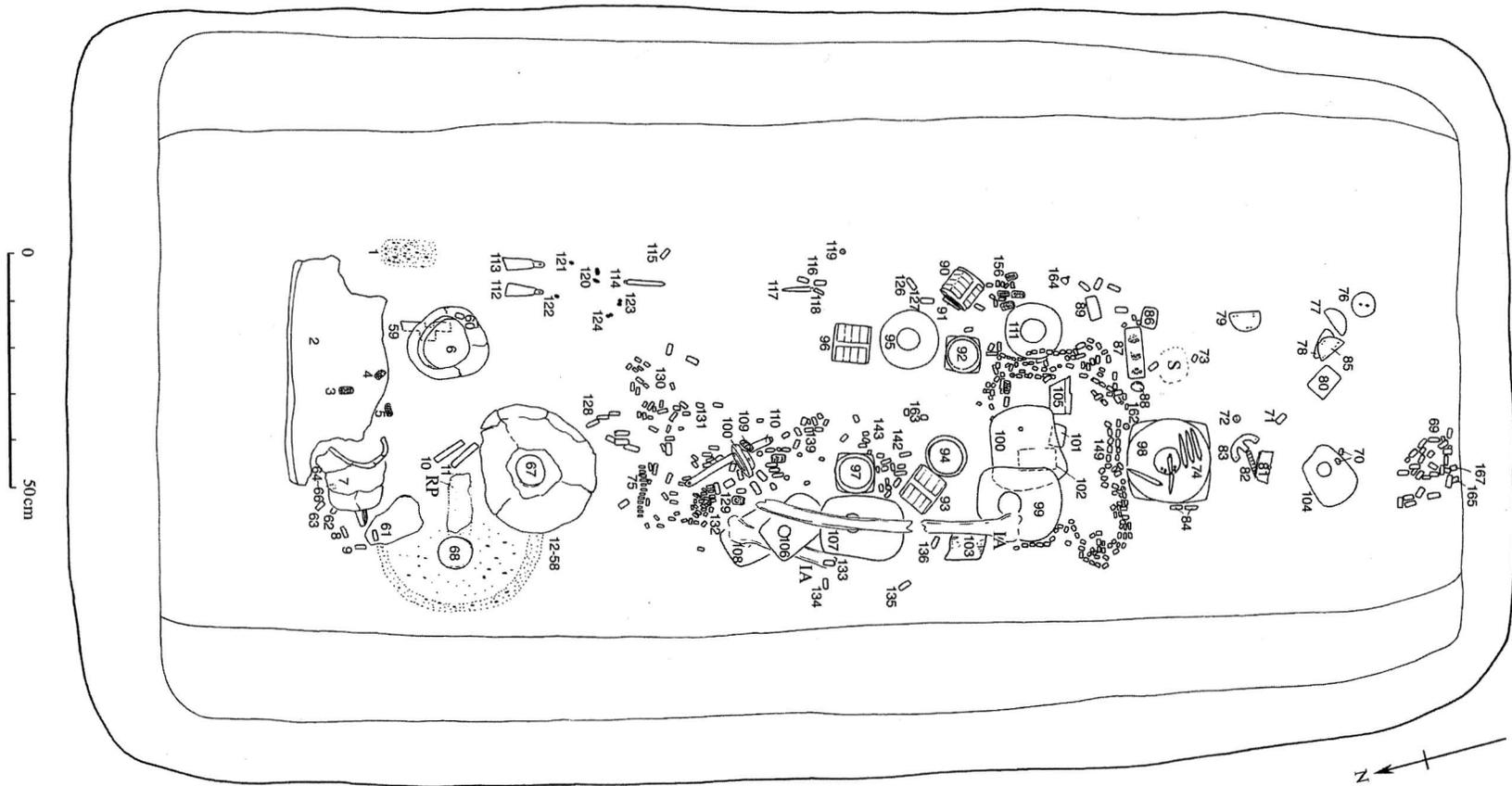


Fig. 5. Plan of excavated burial pit (M12) and grave goods at Fanshan. S: human skull; IA: ivory artifact; RP: red pottery. 1, 68: lacquered woodwork. 2, 6, 7, 67: pottery vessels. 99, 104, 106, 107, 108: stone implements. The burial was wrapped in a silk shroud with a large number of attached jade beads (not numbered individually) and *cong* (from Institute of Archaeology, Zhejiang Province 2005b:29).

28 in the middle Yangtze and 5 in the lower Yangtze. The jade and lacquer industries, so well developed in previous phases, are no longer in evidence. The Neolithic cultures of the middle and lower Yangtze apparently continued to decline, until the rise of Early Shang civilization during the Erligang phase (c. 1500 B.C.) in the north.

NEOLITHIC CULTURES OF THE LINGNAN-FUJIAN REGION AND SOUTHWESTERN CHINA

Contrary to the development of intensive agriculture in the middle and lower Yangtze basins, subsistence strategies in Lingnan-Fujian and southwest China after the early Neolithic continued with a heavy emphasis on fishing and hunting. The first direct evidence for farming appeared only in the late phase of the late Neolithic, after 3500 B.C., apparently as a result of farming dispersal from the Yangtze basin. As with the Yangtze basin, we also divide the Neolithic cultures of the Lingnan-Fujian region and southwest China into four phases.

The Middle Neolithic (8000–5000 B.C.)

Although some caves continued to be occupied during this phase, for instance Xianrendong, Zengpiyan, and Liyuzui, open settlements now appeared on riverine terraces. Examples include sites of the Dingsishan (Baozitou) culture (Guangxi Team et al. 1998) along the Zuo, You, and Yong rivers in Guangxi. A related cultural assemblage also occurred in northern Viet Nam, here called the Da But culture by Vietnamese archaeologists (Viet 2005). This was followed slightly later by the Gaomiao culture of the middle Yuan basin in Hunan (G. He 2006; Institute of Archaeology, Hunan Province 2000); the Chengbeixi culture (Chen and Yang 1989); as well as the lower layer of the Yuxi site in western Hubei and eastern Chongqing (Zou 2003; Fig. 2). Although settlement locations appear similar to those of the contemporaneous Pengtoushan-Zaoshi and Kuaahuqiao cultures of the middle and lower Yangtze, the subsistence patterns of the Lingnan-Fujian region and southwest China remained quite different. There is a virtual absence of direct palaeobotanical evidence for agricultural production, in favor of continuing fishing and hunting. At Dingsishan, no evidence for rice agriculture prior to Dingsishan phase IV has been found so far (Z. Zhao et al. 2005). Although a few rice husks were found at Gaomiao and Chengbeixi, it is still uncertain whether these were local in origin or acquired by exchange.

Aquatic resources in the form of shell middens occur in sites of the Dingsishan and Gaomiao cultures, and many fish and wild animal bones were found in the sites of the Chengbeixi culture and the lower layer of Yuxi. Burial in a crouched or flexed position is also characteristic of these sites. Unlike sites of this period associated with the Yangtze plain cultures, there is no evidence for any textile industry. Both the Gaomiao and Chengbeixi cultures emerged to the north of the Nanling mountain range, and show strong connections with the Pengtoushan-Zaoshi culture of the Dongting Lake alluvial plain. But the origins of these cultures are still uncertain. In Lingnan, south of the Nanling Mountains, only sites of the Dingsishan culture are reported. In the Yun-Gui region of Yunnan, late Palaeolithic occupations continued in Maludong Cave, Mengzi, and Tangzigou,

Baoshan County (X. Y. Zhang 1991:109–111). Open sites with hunter-gatherer subsistence have also been found in the Xia-Jiang region¹¹ of the Three Gorges and western Hubei.

The Early Phase of the Late Neolithic (5000–3500 B.C.)

This period of maximum postglacial temperature, which provided the background for the development and spread of agriculture in the middle and lower Yangtze basins, also witnessed the spread of a hunter-gatherer economy in the Lingnan-Fujian region and southwest China. Most of the shell middens in the Yuan River basin date from this time. Settlement numbers increased in the Xia-Jiang region of the Three Gorges and western Hubei, forming a backdrop for the eventual development of a non-agricultural facies of the Daxi culture in western Hubei (or the so-called Exi facies of the Daxi culture) and the Yuxiping culture of Sichuan. Sites of both these cultures produce large quantities of fish remains (Fig. 2).

In the Xia-Jiang region, several lithic workshops were discovered from this phase, such as Yangjiawan in Yichang (B. Lin 1994), Guandukou in Badong (R. Wang 1997), and Honghuatao (Yan 1989a). Large numbers of stone axes, adzes, and chisels were produced by these workshops (C. Zhang 2003:124–125). Very large lithic workshops also occur at Gexinqiao in Baise (Archaeological Team of the Guangxi Zhuang Municipality 2003) and in the first phase at Beidaling in Duan (Q. Lin et al. 2005), both in Guangxi, and at Shilaodun in Yingde, Guangdong (Yingde City Museum 1999; Fig. 2). The shellfishing economy expanded into Lingnan, with shell middens such as Fangcheng in Guangxi (Guangdong Provincial Museum 1961) and Shiweishan and Chenqiaocun in Guangdong (Cultural Relics Committee of Guangdong Province 1961). Some sand dune sites, with pottery but without dense shell midden, such as Xiantouling (Dawan culture) in the estuary of the Zhu (Pearl) River, also appear at this time (Shenzhen City Museum and Department of Archaeology, Zhongshan University 1990), as do early shell midden sites on Hainan Island (Hao and Wang 2003), on several islands off the Fujian coastline (Keqitoutou culture) (Chang 1986:231; Fujian Provincial Museum 1991; C. Lin 1973), in the Penghu archipelago, and on Taiwan (early Dabengkeng culture; see Huang 1974). These shell midden and sand dune sites represent the earliest pottery-using cultures of coastal southern China (Fig. 2).

We suggest that these hunter-gatherer cultures might have originated from the later Gaomiaoculture, contemporaneous with the Daxi culture in the middle Yuan basin (J. He 1994). The Xiantouling culture in the Zhu estuary is even called the Lingnan facies of the Daxi culture by some researchers, owing to the similarities in pottery style (Bu 1999:54). Farming practices in the Lingnan-Fujian region are not well substantiated, but 10–20 percent of meat consumption in the Daxi culture came from domesticated pigs (J. Yuan 1999:7–8).

The Late Phase of the Late Neolithic (3500–2500 B.C.)

The late phase of the late Neolithic is marked by the first identified farming dispersal from the middle and lower Yangtze into Lingnan-Fujian. The number of

shell middens declined in the Yuan River and Xia-Jiang regions, and the lack of continuity (Meng 1997) into later cultures suggests a possible migration from the Qujialing culture of the middle Yangtze. Shell midden and sand dune sites also declined in the Zhu delta of Guangdong and the Min delta of Fujian (Nishitani 1997).

At this time, the Shixia culture (Guangdong Provincial Museum 1978) arose in northern Guangdong, as did the Wusaoling culture (G. He 1997) in western Guangdong and the Xi basin of eastern Guangxi. Shixia and Wusaoling share similarities and both resemble the Fanchengdui culture of the Gan-Bo region (Jiangxi Team of Cultural Relics et al. 1989; Qingjiang Museum 1981) and the Daiziping culture of the Xiang basin. There is a high possibility that the Shixia culture developed from the Fanchengdui, and that the Wusaoling followed the Daiziping (G. He 1997). The Tanshishan culture of the lower Min River, the first rice farming complex in Fujian Province, shows strong relations with the Liang-zhu culture of southwestern Zhejiang (Institute of Archaeology, Zhejiang Province, and Cultural Relics Committee of Suichang County 2001; Fig. 2).

Clear evidence suggests that these agricultural societies (Yan 1989b; Yang 1978), such as Shixia, Wusaoling, and Tanshishan, were not indigenous to the Lingnan-Fujian region but spread from the Yangtze. All of these communities have similar settlement patterns, with a large number of house foundations, pits, cemeteries, and craft-specialized workshops. They all grew rice, as in Taiwan (here with foxtail millet) by this time (Tsang et al. 2004). In southwestern China, a Majiayao site in Yingpanshan, Maoxian, northwest Sichuan (Institute of Archaeology, Chengdu City 2002), also supports a hypothesis of southward migration from northwest China (Chen and Yu 2005).

The Terminal Neolithic (2500–2000 B.C.)

In this phase, the number of settlements dramatically increased in the Lingnan-Fujian region (H. Zhao 1999) and southwest China. Locally, this was the full blossoming of the Neolithic in this area, at a time when regional populations are estimated to have exceeded in size those of the middle and lower Yangtze. Most Shixia (phase III) river terrace sites in Guangdong are typically agricultural, and the distribution of this culture spread northward to the Doupengpo culture of the upper Yuan and Zi basins (G. He 1997). In Taiwan, during the local middle Neolithic, the number of sites multiplied considerably. Agriculture was well developed and lithic and jade artifacts were exchanged extensively in Taiwan during this phase (Hung 2004, 2005a).

In Guangxi, many new settlements were founded in this phase, which belong to the “Large Shovel (*Da Shi Chan*) Culture” of local Lingnan archaeologists. Significant quantities of rice have been recovered from Dingshishan phase IV in southern Guangxi (Zhao et al. 2005) and Xiaojin phase II in northern Guangxi (Archaeological Team of the Guangxi Zhuang Municipality and Cultural Relics Committee of Ziyuan County 2004). In southwest China, we see the appearance of numerous large settlements, some defended by *hangtu* walls, with the emergence of the Baoduncun culture in the Chengdu plain (Z. Jiang et al. 2002). In Yunnan, it has long been believed that the oldest Neolithic sites occur along the

shoreline of Lake Dian (Xiao 2001; Fig. 2), but recent evidence suggests that these sites date to only ca. 1500 B.C. (Sun 2006:77). So far, the earliest rice remains in Yunnan are from Baiyangcun, where husks and straw are dated c. 2500–2000 B.C. This suggests that the earliest Neolithic assemblages in Yunnan were associated with rice farming, probably as a result of cultural dispersal from outside.

The development of food production may have been the major factor behind in situ population growth in Lingnan–Fujian and southwest China. However, considering the evidence for contemporary decrease of population in the Yangtze basin, it is possible that a southward and westward migration from here needs to be taken into account. Similar explanations can be applied to the seemingly abrupt appearances of the Baoduncun culture (Yu 1997) and the Neolithic of southwestern China.

SUMMARY AND DISCUSSION

Cultural Evolution in the Middle and Lower Yangtze Valley

In this article, we have offered a brief review of cultural patterns and settlement history in southern China, integrating new archaeological data into the record of Neolithic sites in the region. Toward the end of the early Neolithic (14,000–8000 B.C.), sites located on the northern and southern sides of the Nanling mountain range began to reveal cultural differentiation (C. Zhang 2006). The oldest pottery, with only ambiguous evidence for food production, occurred north of the Nanling Mountains. The Pengtoushan–Zaoshi culture (8000–5000 B.C.) of the middle Yangtze Valley appears to descend from this earlier northern pottery tradition. The Pengtoushan–Zaoshi sites, mostly located on riverine terraces, have very early records for pre-domestication food production, possible animal domestication, and a textile industry.

Later, in the early phase of the late Neolithic (5000–3500 B.C.), farming settlements spread gradually along the middle and lower Yangtze Valley. Each region developed its own cultural and economic characteristics, and some large settlements became regional economic-cultural centers. In the following phase, the late phase of the late Neolithic (3500–2500 B.C.), the full domestication of rice advanced rapidly. Material culture traditions in pottery, stone, jade, lacquer, and silk became highly developed, and rank differences in material wealth became more visible. Two nuclear areas, Qujialing–Shijiahe and Liangzhu, appeared in the Two Lakes and Tai Lake regions, respectively. However, regional populations declined suddenly in the terminal Neolithic (2500–2000 B.C.).

Site densities rose at first and then fell from the early through to the terminal Neolithic, but with differing regional trends, in both the middle and lower Yangtze alluvial plains and in the Lingnan–Fujian region. For instance, archaeological survey in the Lixian region¹² of western Dongtian Lake, northwest Hunan, has recorded 22 middle Neolithic Pengtoushan sites, 39 Daxi sites from the early phase of the late Neolithic, 200 Qujialing–Shijiahe sites from the late phase of the late Neolithic, but only one terminal Neolithic late Shijiahe site.¹³ From the Daxi to the Shijiahe phases, the population increased rapidly, not only in terms of the number of settlements, but also in terms of settlement size. During

the late phase of the late Neolithic, some settlements had community cemeteries with more than 1000 burials. This was clearly the most prosperous phase in the Yangtze basin Neolithic. In the late Shijiahe phase, population densities in the middle Yangtze basin appear to have collapsed dramatically. Site numbers decreased, and the sites themselves have thin occupation layers. Chinese archaeologists have put forward several hypotheses to explain this pre-Shang collapse, including flooding, northward population movement, or simply a collapse of the social order (H. Lin 1998:501–534).

Northward: Cultural Interaction with the Yellow River Valley

From the middle until the terminal Neolithic, the middle and lower Yangtze basins formed the nuclear agricultural areas for southern China, as likewise did the Yellow River basin for northern China. During the 4500-year Neolithic time span, the Yangtze appears to have played a more active role in the genesis of agriculture and in the development of cultural interaction between these two nuclear areas.

Although the precise nature of rice cultivation in the early Neolithic is debatable, the evidence for food production in the Pengtoushan sites in the middle Yangtze Valley is clear, and earlier than the evidence for early food production in northern China. In northern China, there is no obvious cultural continuity between the late Palaeolithic small flake tool tradition and the millet-producing early Neolithic Cishan-Peiligang phase (Y. Wang 2003). Therefore, Cohen (2003) has questioned the suggestion of independent farming origins in northern China. Zhu (Y.-P. Zhu 2004) has also suggested that millet cultivation in northern China was a result of regional adaptation to lower temperatures, and was based on a foundation of rice cultivation introduced from the south. At Jiahu, in the Huai Valley, not only have millet and rice remains been found, but also pottery and other artifacts similar to those of both Pengtoushan and Peiligang (Institute of Archaeology, Henan Province 1999:515–518).

In northern China, during the later phase of the middle Neolithic, rice agriculture became a major component of subsistence strategies in central Henan and in the Wei River of central Shanxi in the early phase of the late Neolithic (Yangshao culture), especially in the sites of Hejiacun and Lijiacun in the middle Han Valley. During the terminal Neolithic it spread into northern Shandong (Longshan culture), and later to the Liaodong Peninsula, Korea, and eventually Japan (Yan 1993).

In the early phase of the late Neolithic, jade, lacquer, and silk industries developed in the middle and lower Yangtze and strongly influenced the Yellow River Neolithic cultures. In the late phase of the late Neolithic, when plow cultivation and intensive agriculture developed along the Yangtze, the influence of the Qujialing culture reached central Henan (Cultural Relics and Archaeology Institute of Zhengzhou City 2001), and that of the early Liangzhu reached the Shandong-Jiangsu border (Nanjing Museum 2003). However, these northward flows of influence were reversed during the later stage of the late Neolithic, when the late Dawenkou culture expanded to the Yangtze. Until this time, Neolithic achievements in southern China laid the foundations for the coming rise of Chinese civilization.

Southward: Cultural Dispersal into the Lingnan-Fujian Region, Southwest China, and Southeast Asia

The Neolithic agricultural societies of the Yangtze also had a significant impact on the Lingnan-Fujian region, southwest China, and Southeast Asia. During the middle Neolithic, in the Xi Valley (Guangxi), in northern Viet Nam, to the north between Lingnan-Fujian and the lower Yangtze, and in the Xia-Jiang region of the Three Gorges and western Hubei, there appeared an economy based on fishing and shellfishing, quite different from the contemporary pre-domestication agricultural subsistence of the Yangtze basin. In terms of pottery style and lithic technology, we believe that the Dingsishan culture of the Xi Valley developed from the local cave tradition in Guangxi. The Gaomiao culture in the Yuan Valley of northern Hunan and the Chengbeixi culture of the Xia-Jiang region derived from the Pengtoushan culture in the middle Yangtze, but, for some unknown reason, appear to have discontinued agricultural practices.

At about 7000 years ago, the Gaomiao culture, the Xia-Jiang facies of the Daxi culture, and hunter-gatherer groups in eastern Guangxi all began to spread into southeastern China. Shell midden and sand dune sites henceforth appear on the offshore islands of Fujian and Guangdong, forming the Kequtou culture of the Fujian coastline, the earlier phase of the Dabengkeng culture of Taiwan, and possibly the Da But culture of northern Viet Nam. Therefore, a hunting-gathering subsistence pattern in the Lingnan-Fujian region, with a reliance on aquatic resources, was the precursor of the Neolithic lifestyle in Southeast Asia.

Following this phase, in the late phase of the late Neolithic, groups began to migrate from the Yangtze basin by a process of agricultural dispersal, forming the rice-farming Tanshishan and Shixia cultures. At the same time, millet-cultivating groups moved southward into northwest Sichuan. All of these migrations and interactions between exogenous agriculturalists and indigenous hunter-gatherers created a new style of prehistoric culture in southern China. Shell middens disappeared, possibly because of climatic deterioration (Chen and Wu 1996; Zhu et al. 1997:271).

Later on, during the terminal Neolithic (2500–2000 B.C.), the full bloom of agricultural development occurred in Lingnan-Fujian and southwest China, and this led to a second phase of population outflow, this time into Mainland and Island Southeast Asia. From recent studies, it is evident that cultural expansion occurred from Taiwan into the northern Philippines at this time (Hung 2005a, 2005b), as did the spread of farming into northern Viet Nam and Thailand (Higham 2002, 2003). This history of human movements reconstructed from archaeological evidence is similar in origin and directionality to the results of linguistic studies (Pejros and Shnirelman 1998). These movements of farming technologies and subsistence strategies respectively marked the spread of the Austroasiatic and Austronesian-speaking peoples (Bellwood 1991, 2005:111–142).

In the terminal Neolithic, the cultures of Lingnan-Fujian transmitted cultural influence into the middle and lower Yangtze basins. Based on similarities in ceramics, the Doupengpo culture of the upper Yuan and Zi basins has a Lingnan origin. Geometric impressed pottery, a major Lingnan characteristic, also occurs in the late Shijiahe culture of the middle Yangtze, as later in the Maqiao culture of

the Jiang-Zhe region, and other contemporaneous Yangtze cultures that laid the foundations for the Bronze Age in southern China.

Overall, during the middle and late Neolithic, with a developing interest in food production, the foci of major development shifted from the Nanling Mountains, to the middle and lower Yangtze alluvial plain, and then again southward to the Lingnan-Fujian region and the Yungui plateau in the terminal Neolithic. These shifting regions of intensive cultural development and population growth in southern China all had significant influences on the prehistory of China and surrounding areas.

CONCLUSIONS

Our synthesis is consistent with K. C. Chang's Lungshanoid hypothesis (Chang 1964, 1987, 1994), Bellwood's farming dispersal theory (Bellwood 1991, 2005), and Yan's work on the spread of food production in eastern Asia (Yan 1998). All of these authors suggest that the southward dispersal of agriculture and pottery making from the Yangtze Valley was a significant event in the history of human migration. New archaeological evidence in the region suggests that there were two stages in the spread of farming in the southern Chinese Neolithic. Before the spread there was a long period of pre-domestication cultivation, and the spread of food production lagged behind the earliest spread of pottery production (Zhang and Hung 2008).

Both southern and northern China played significant roles in the development of East Asian prehistory and civilization. Because of their different geographical locations and natural environments, and their different histories of interaction and external links since the Pleistocene, each had a different impact. The formation of Han Chinese civilization occurred in the Yellow River Valley, in contact with the northern and northwestern regions of China during the late Neolithic. Southern China was not as well placed in this matter, and no major civilization developed there in prehistoric times. As a result, the historical significance of southern China has long been overlooked. Many new discoveries and more detailed studies of long-known sites are changing the archaeological profile of southern China, bringing new evidence to bear on archaeological theories of East Asian archaeology and even contributing to global studies of agricultural origins and dispersal.

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NOTES

1. The subdivision of China into north and south has been a significant concept throughout history. The division is clearly marked by variations in climate, natural vegetation, soils and crops (Chang 1986:1-3). In this article, "southern China" refers to the region between the Qinling

Mountains–Huai River Valley and the southern national boundary with the countries of Mainland Southeast Asia.

2. In the following discussion, the Lingnan–Fujian region refers to the provinces of Guangdong, Guangxi, and Fujian.
3. This region includes Sichuan, Yunnan, and Guizhou provinces.
4. Recent studies have divided the “Daxi Culture” by regions and phases (Meng 1997; Pei 1999; X. Q. Zhang 1992).
5. The Two Lakes region includes the Jiangnan plain and the Dongting Lake plain (see Fig. 3).
6. The Su–Wan region includes the Su–Wan and Chao Lake plains and the Ningzhen area (see Fig. 3).
7. The Gan–Po region includes the Gan Valley and the Poyang Lake plain (see Fig. 3).
8. The Jiang–Zhe region includes the Yangtze delta (see Fig. 3).
9. The Mid–Han River region includes the Nanyang basin, Xiangfan Valley, and Suizao corridor (see Fig. 3).
10. For example, the pottery vessels unearthed from Pit No. 2 (H2) at Beiyinyangying include three-legged *gui*, some with incised designs similar to counterparts in the late Dawenkou culture in Shandong (Nanjing Museum 1993: 87–88, 166–167).
11. The Xia–Jiang region includes the Three Gorges and western Hubei (see Fig. 3).
12. Lixian is a county of 2075 sq. km located in northwestern Hunan. Current population is 880,000, distributed in 32 towns.
13. For more details on changes in site numbers for each Yangtze Valley region, see C. Zhang 2003.

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ABSTRACT

According to direct evidence from archaeology and supporting evidence from comparative linguistics, the Neolithic cultures of the Yangtze alluvial plain played a significant role in the origins of rice cultivation and agricultural populations in East and Southeast Asia. The ultimate results of these developments, according to many authorities, were the dispersals of Austroasiatic and Austronesian-speaking peoples into Mainland and Island Southeast Asia. New archaeological discoveries suggest that some of the earliest pottery in the world also occurred in southern China. Therefore, the historical significance of this region cannot be overlooked. This paper provides a brief review of cultural developments and settlement histories in southern China from the early Neolithic (c. 11,000–8000 B.C.) to the terminal Neolithic (2000 B.C.). Geographically, we examine the middle and lower Yangtze alluvial plain, the Lingnan (southern Nanling Mountains) and Fujian region, and the Yungui Plateau of southern China. Against the backdrop of the waxing and waning of Neolithic cultures in the Yangtze Valley we plot the spread of material culture, rice farming and animal domestication out of the Yangtze region to the Lingnan-Fujian region and the Yungui Plateau, and later into Taiwan and Southeast Asia. This study suggests that the origins of rice agriculture and the process of farming dispersal were more complicated than previously assumed. KEYWORDS: Neolithic, southern China, Yangtze alluvial plain, farming, migration, dispersal.

APPENDIX: ARCHAEOLOGICAL SITE NAMES USED IN THIS ARTICLE
(IN ALPHABETICAL ORDER, USING THE PINYIN SPELLING)

A		D	
Anhui	安徽	Dabengkeng culture	大垆坑文化
		Dadong	大洞
B		Daiziping assemblage	岱子坪类型
Badong	巴东	Datang culture	大塘文化
Baise	百色	Daxi	大溪
Baiyangcun	白羊村	Daoxian	道县
Baligang	八里岗	Dawan culture	大湾文化
Baoduncun culture	宝墩村文化	Dawenkou culture	大汶口文化
Baoshan	保山	Dayan	大岩
Baozitou	豹子头	Dian Lake	滇池
Bashidang	八十垵	Diaotonghuan	吊桶环
Beidaling	北大岭	Dingsishan culture	顶狮山文化
Beiyinyangying	北阴阳营	Dongting Lake	洞庭湖
		Doupengpo culture	斗篷坡文化
C		Duan	都安
Caoxieshan	草鞋山		
Changyang	长阳	E	
Chao Lake plain	巢湖平原	Erligang phase	二里岗文化阶段
Chengbeixi culture	城背溪文化	Exi	鄂西
Chengdu plain	成都平原		
Chengtoushan	城头山	F	
Chenqiaocun	陈桥村	Fanchengdui culture	樊城堆文化
Chongqing	重庆	Fangcheng	防城
Cishan-Peiligang culture	磁山-裴李岗文化	Fanshan	反山
cong	琮	Fujian	福建

- G**
 Gan Valley 赣江河谷
 Gan-Bo region 赣鄱地区
 Gaomiao culture 高庙文化
 Gexinqiao 革新桥
 Guangdong 广东
 Guandukou 官渡口
 Guangfulin culture 广富林类型
 Guangxi 广西
 Gui 雩
 Guilin 桂林
 Guizhou 贵州
- H**
 Han Valley 汉水河谷
 Hainan Island 海南岛
 hangtu 夯土
 Hanshan 含山
 Hanzhong 汉中
 Henan 河南
 Hejiacun 何家村
 Hemudu 河姆渡
 Hexian 和县
 Hoabinhian culture 和平文化
 Honghuatao 红花套
 Huai River 淮河
 Hubei 湖北
 Hunan 湖南
- J**
 Jiahu 贾湖
 Jiang-Zhe region 江浙地区
 Jiangnan plain 江汉平原
 Jiangsu 江苏
 Jiashi 建始
 Jigongshan 鸡公山
- K**
 Keqiutou culture 蚩丘头文化
 Kuahuqiao 跨湖桥
- L**
 Li River 澧水
 Liangzhu 良渚
 Liaodong peninsula 辽东半岛
 Lijiacun 李家村
 Lingnan (southern Nanling Mountains) 岭南
 Lingnan facies of the Daxi culture 大溪文化岭南型
 Lingjiatan 凌家滩
 Liujiang Man 柳江人
 Lixian 澧县
 Liyuzui 鲤鱼嘴
 Longgu cave 龙骨洞
 Longshan cultures 龙山文化
 Ludun remains 陆墩遗存
 Lungshanoid hypothesis 龙山形成期理论
- M**
 Maba 马坝
 Majiabang 马家浜
 Majiayao culture 马家窑文化
 Maludong cave 马鹿洞
 Maoxian 茂县
 Maqiao culture 马桥文化
 Mengzi 蒙自
 Miaoyan 庙岩
 Mid-Han River region 汉水中游地区
 Min River 闽江
- N**
 Nandang culture 南荡文化
 Nanjing 南京
 Nanling Mountains 南岭
 Nanyang basin 南阳盆地
 Ningzhen area 宁镇地区
- P**
 Penghu archipelago 澎湖群岛
 Pengtoushan 彭头山
 Pengtoushan-Zaoshi culture 彭头山-皂市文化
 Poyang Lake plain 鄱阳湖平原
- Q**
 Qiantang basin 钱塘江流域
 Qinling Mountains 秦岭
 Qujialing 屈家岭
 Qujialing-Shijiahe culture 屈家岭-石家河文化
- S**
 Sanxingcun 三星村
 Shanbei culture 山背文化
 Shandong 山东
 Shang civilization 商代
 Shangshan-Kuahuqiao culture 上山-跨湖桥文化
 Shanxi 山西
 Shijiahe culture 石家河文化
 Shilaodun 史老墩
 Shinianshan 拾年山
 Shiweishan 石尾山
 Shixia culture 石峡文化
 Sichuan 四川
 Songze 崧泽
 southern China 中国南方
 Suizao corridor 随枣走廊
 Su-Wan region 苏皖平原区
- T**
 Tai Lake 太湖
 Tangjiagang culture 汤家岗文化
 Tangzigou 塘子沟
 Tanshishan 昙石山

Three Gorges	三峡	Yangtze River	长江
Two Lakes region	两湖地区	Yaoshan	瑤山
W		Yellow River	黄河
Wangyoufang	王油坊	Yichang	宜昌
Wannian	万年	Yingde	英德
Wei River	渭水	Yingpanshan	营盘山
Wusaoling assemblage	乌骚岭类型	Yong River	邕江
Wushan	巫山	You River	右江
		Yuan River	沅水
		Yuanmou	元谋
X		Yuchanyan	玉蟾岩
Xi basin	西江流域	Yun-Gui Region	云贵地区
Xia-Jiang region	峡江地区	Yungui plateau	云贵高原
Xianfan Valley	襄樊谷地	Yunnan	云南
Xiang basin	湘江流域	Yunxian	郧县
Xianrendong	仙人洞	Yuxi	玉溪
Xiantouling culture	咸头岭文化	Yuxiping culture	玉溪坪文化
Xiaojin	晓锦	Z	
Xiawanggang	下王岗	Zanmiao remains	簪庙遗存
Xichuan	浙川	Zengpiyan	甑皮岩
Xuejiagang	薛家岗	Zhangsidun remains	张四墩遗存
		Zhejiang	浙江
Y		Zhu (Pearl) River	珠江
Yangjiawan	杨家湾	Zi basin	资水流域
Yangshao culture	仰韶文化	Ziyang	资阳
Yangtze delta	长江三角洲	Zuo River	左江