

NEW ARCHAEOLOGICAL DISCOVERIES IN SOUTH CHINA

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ABSTRACT

Several archaeological sites have been excavated in South China since the late 1990s. The cultural chronology of the western part of this region is much clearer now than it was before. The Five Mountains Range in southern China offers numerous pathways, both riverine and land-based, for human movement between the Yangzi Basin and South China. Recent archaeological discoveries in Guangxi suggest strong cultural similarities between the Yangzi Basin and South China during the Neolithic, indicating that there might have been close cultural exchanges between the two areas.

In this paper, the term South China refers to the area south of the Five Mountains (*lingnan*), consisting of Guangxi, Guangdong, Fujian and Hainan provinces, as well as Hong Kong and Macao. Being a sub-tropical to tropical area, there are rich water, floral and faunal resources in this region. The average precipitation is between 1400 and 2000 mm, and the yearly average temperature between 20 and 22°C (Editing Committee 1984). The northern part of South China is mountainous with many caves, providing natural shelters for prehistoric occupation. Plateaux, basins and river valleys form the central part of South China, while small plains, river terraces and deltas are major geomorphologic features of the southern part (Figure 1). The Pearl River, the major river in the region, is connected in its middle sector to the Yangzi River by small rivers such as the Zi and Xiang, and in its upper course to the Mekong and Hong Rivers (Figure 1).

Although archaeological work in South China commenced in the 1920s, the cultural chronology of this region did not become clear until the 1990s. In 1996, the Institute of Archaeology, Chinese Academy of Social Science, began research in this region, and four archaeological sites have been excavated or re-excavated since then, namely the Dingsishan shell midden (dug in three seasons from 1997 to

1999), the Baozitou shell midden (dug in 1997), Dayan cave (dug in 1999 and 2000), and Zengpiyan cave (re-excavated in 2001). Meanwhile, supported by funds from China's central and local governments and the Chinese University of Hong Kong, various approaches including soil flotation, pollen and phytolith analysis, faunal identification and lithic use-wear studies have been applied.

Some of the archaeological discoveries from the aforementioned sites have been reported elsewhere (Fu 2002a, 2002b). Briefly, the outcome of the recent archaeological and related work conducted in Guangxi can be summarized as follows:

1. Preliminary results of pollen, phytolith and faunal analysis indicate that palaeoclimates from the early to middle Holocene were similar to those of the present, with rich floral and faunal resources available to prehistoric humans.
2. A cultural chronology for northern Guangxi is now established. Archaeological assemblages of the terminal Pleistocene are characterized by cobble stone tools and small flakes. The transitional period from the upper Pleistocene to the early Holocene witnessed an occurrence of ground organic tools, including bone and shell tools, and early pottery. This was followed by the manufacture of ground stone tools in the early to middle Holocene (Fu 2001).
3. In southern Guangxi, the cultural transition from the upper Pleistocene to the Holocene is not yet very clear, but small flake tools occur at approximately 10,000 years ago in the Dingsishan site, followed by partially ground and then fully ground stone tools (Guangxi Team *et al.* 1998). Shell and bone tools occurred around 8000-7000 years ago.
4. Large quantities of shells and/or animal bones have been found in these archaeological assemblages. In the Zengpiyan and Dayan cave sites in northern Guangxi, dense riverine shell accumulations occur in cultural deposits dating from approximately 12,000 to 5000 years

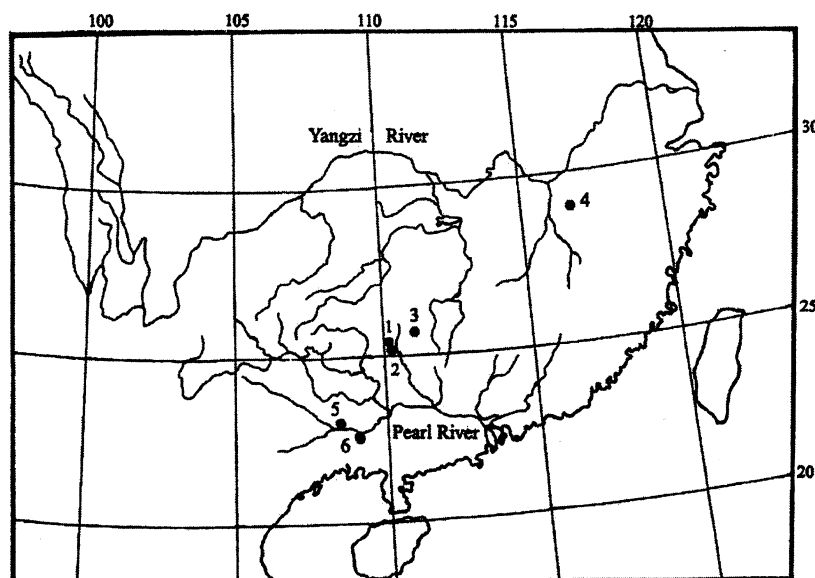


Figure 1: Archaeological sites mentioned in the text. 1. Zengpiyan; 2. Dayan; 3. Yuchanyan; 4. Xianrendong; 5. Baozitou; 6. Dingsishan.

ago (Fu 2002a). On the other hand, in the Dingsishan site in the south, shells only occurred in layers dated to approximately 8000-7000 years ago, but were absent from both the early deposit dated to around 10,000 years ago, and the late cultural layer after approximately 6000 years ago (Guangxi Team *et al.* 1998).

5. There are both cultural differences and similarities between the archaeological assemblages in the north and the south. Pierced stone tools, organic tools and cord-marked pottery are found in both regions. On the other hand, while cobble tools occur in large quantities in the cave sites, organic tools seem to predominate in the Dingsishan toolkit in the south.
6. Very crumbly potsherds with walls up to 2.9 cm thick were found in the lower layers of Zengpiyan and Dayan caves in the northern region. Crushed but unselected calcite particles were used as tempering agents, some being more than 0.2 cm in diameter. The pottery was manufactured by hand pinching. These sherds were found associated with cobble stone tools, and represent very early pottery in South China, and amongst the earliest in the world.

In summary, by 10,000 years ago, groups of foragers were living in both the limestone caves in north Guangxi, and along the river terraces in the south. These groups learnt to apply grinding first to organic tools, then to stone tools. They also made pottery by no later than 12,000 years ago in the north, as radiocarbon dating suggests that the lower layers in Zengpiyan date to approximately 9500 C14 years BP (Table 1; Fu 2002a); and by approximately 10,000 years ago in the south (Guangxi Team *et al.* 1998). Compared

to that in the northern sites, the pottery found in south Guangxi is comparatively well-formed, with much thinner slab-built walls and a higher firing temperature.

Were there any cultural relationships between the northern and the southern assemblages? Although the pottery found in both regions seems to have cord-marking as the main surface finish and a majority of round-bottomed cooking pots (*fu*), the lithic toolkits are not identical. As mentioned, cobble stone tools dominate in the north, but not in the south. The only stone tool common to both regions is the pierced stone ring, as well as the organic tools.

The prehistoric cultures in South China also shared some similarities with counterparts in neighbouring areas. The stone tools in both South China and the Yangzi River valley belong to a cobble tool industry, also widely found (as the Hoabinhian) in Mainland Southeast

Asia. However, recent archaeological discoveries indicate that small flakes using different mineral materials occurred in the terminal Pleistocene in Xianrendong and Yuchanyan caves in the Yangzi Valley, and in Dingsishan in southern Guangxi (Figure 1).

Except for the Yuchanyan lithic assemblage, research has or is being conducted on the other four assemblages and it is quite clear that all raw materials could have been found within their immediate catchments, mainly from nearby rivers (for instance, for Xianrendong - Xia Shuzhang, pers. comm. August 2002; the other three sites in Guangxi have been studied by the author). Although raw materials differ, the techniques used for tool manufacture appear to have been identical.

According to archaeological experiments and observations, the small flakes found in these sites seem to have been produced by direct percussion using hard hammers, although soft hammers might have been used for the small quartz flakes found in Xianrendong (described as "micro-blades" by MacNeish in his 1998 report [MacNeish and Libby 1998]). Direct percussion was used for the cobble tool industries found over large areas of East Asia. It is very possible that this technique developed and matured during the terminal Pleistocene, and was used to produce small flakes. These technical similarities suggest the possibility of cultural contact between South China and the Yangzi Basin.

The second cultural similarity between the Yangzi River valley and South China lies in the occurrence of organic and ground stone tools during the transition from the terminal Pleistocene to the early Holocene. In both the

Yangzi Basin and South China, it seems clear now that this transition period was characterized by the application of grinding in tool manufacture. The discoveries in Dayan cave illustrate development from ground organic tools, to edge-ground stone tools, then to fully ground stone tools (Fu 2001). The grinding was initially applied to the tips of relatively soft organic materials, then to the harder material of stone. Ground organic tools are also found in Xianrendong, Yuchanyan, Zengpiyan and Dingsishan, although the sequence of development is not as well-illustrated as in Dayan.

The third cultural similarity between the Yangzi Basin and South China lies in the presence of early pottery. Sherds dated to approximately 10,000 years ago or older have been discovered in Xianrendong and Yuchanyan in the Yangzi Valley, and in Zengpiyan (Table 1), Dayan and Dingsishan. The date of the early pottery found in Zengpiyan seems to be around 9500 C14 years BP, but this issue is complicated and will not be discussed further here. It has been proposed that the invention of pottery might have been stimulated by the need to cook cereal grains (Lu 1999), as the use of pottery is associated with a presence of rice, as husks and/or phytoliths, in Xianrendong and Yuchanyan. However, recent discoveries in Zengpiyan and Dayan suggest another possibility, that the cooking of shellfish might have been another stimulus (Lu 2001). Our experiments indicate that fresh water gastropod shells must be cooked for the meat to be released.

Our analyses are still at an early stage, but phytolith analysis for Dingsishan indicates that rice agriculture was not practiced in southern Guangxi until about 6500 to 6000 years ago. No rice remains were found in this site prior to this time (Zhao *et al.* forthcoming). This suggests two possibilities: that the early pottery might have been used to cook shellfish, as suggested above, and that rice farming might have been an exogenous tradition in this region. In addition, there is a clear cultural gap in this site between cultural phases III and IV, between approximately 7000 and 6500 BP, indicating a local cultural discontinuity. Perhaps the newcomers around 6500 years ago were rice farmers from outside the region. However, the pottery dated to phase IV of Dingsishan differs quite significantly from that in the earlier deposits (Guangxi Team *et al.* 1998). Ceramic cups and incised decoration are both new elements, and to date we have not identified similar pottery in adjacent areas. If the final occupants of Dingsishan site were farmers from outside, one might infer an origin in the Yangzi Valley, where rice farming had developed by 8500 BP. This important issue awaits further investigation.

Table 1. Radiocarbon dates of the early cultural deposits (Cultural Phase I) that contain pottery in Zengpiyan (Institute of Archaeology CASS *et al.* 2003).

| Trench/context no. | Lab. No. | Sample materials | 14C dates (uncal. BP) |
|--------------------|-----------|------------------|-----------------------|
| DT6(28) | ZK316806 | Freshwater shell | 11,575±112 |
| | ZK316806b | Freshwater shell | 11,438±85 |
| | BA01239 | Charcoal (AMS) | 9380±180 |
| | BA01239 | Charcoal (AMS) | 9440±280 |
| | ANU11734 | Charcoal (AMS) | 9350±250 |
| | ANU11728 | Charcoal (AMS) | 9130±160 |

While cultural relationships between the late Neolithic cultures in southern Guangxi and adjacent areas are not yet clear, in northern Guangxi there seem to have been clearer cultural contacts with the Yangzi Valley. Phytolith and macro-plant analyses for Zengpiyan and Dayan are still in process, and it is unclear whether rice was cultivated in this area in the early Holocene. However, some sherds found in the 2001 excavation in Zengpiyan show decorative patterns similar to sherds from the middle Yangzi Valley at 7000 years ago. This seems to suggest that there were cultural exchanges between the Yangzi Valley and northern South China.

If further analysis can prove that rice was cultivated by the Zengpiyan or Dayan residents some 6000 years ago, associated with sherds identical to Yangzi Valley counterparts, then this may support the hypothesis of an expansion of early farmers speaking Southeast Asian languages in the Austroasiatic and perhaps even Austronesian families from the Yangzi Valley first to South China, then to other areas (Bellwood 1996). However, the trajectory of cultural development and exchanges in areas beyond northern Guangxi is not very clear, and further fieldwork is required.

Compared to the early pottery found in the Yangzi Valley, the potsherds found in Zengpiyan and Dayan seem to be more 'primitive' in terms of the thickness of walls, coarseness of tempering agents, and firing temperature. This raises another question: was pottery first manufactured in South China, then in the Yangzi Valley, or was it an indigenous occurrence in both South China and the Yangzi Valley? Further, were the cultural contacts and exchanges between the prehistoric Yangzi Valley and South China single-direction activities, or cultural exchanges in real terms? Is it possible that the Yangzi Valley might have received some cultural influences from foraging populations in South China at the beginning of the Holocene, but that later, when rice farming was developed along the Yangzi, South China became mainly a cultural receiver? These are also questions for further study.

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