

NEOLITHIC SAND BAR SITES ROUND THE PEARL RIVER ESTUARY AREA AND HAINAN: A COMPARATIVE STUDY

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ABSTRACT

The many Neolithic sites found on coastal sand bars in the Pearl River estuary, Hong Kong and Hainan Island form a distinct type of site. Whereas some archaeologists have divided the coastal Neolithic into three or four periods the author prefers to recognise only two; an Early and a Late Neolithic phase with rather different material assemblages. At many sites these are separated by a sterile layer probably caused by mid-Holocene sea level oscillations. Fishing and coastal foraging seem to have been major activities throughout the Neolithic but there is some evidence for a reduction of mobility and more permanent settlement in the Late Neolithic. A number of shell middens have been discovered on tributary streams further up the Pearl River delta and the relationship between these and the sand bar sites is explored.

The discovery of sand bar sites in southern coastal China began in the 1920s and 1930s (Yip 1975). Major discoveries continued to be made in Hong Kong until the 1950s, when quite a number of these sites were also found in the coastal areas of Guangdong and Hainan Island (Mo 1958, 1961a, 1961b; Mo *et al.* 1960). In recent years several professional teams have carried out excavations in both Guangdong and Hong Kong so much more information is available. For instance, at Tung Wan site, Hong Kong, a layer containing a large quantity of chipped pebble tools and coarse pottery was identified just above the bottom gravel layer (Tang 1991). This implies that there might have existed an earlier period preceding the phase with painted pottery represented at most other sites. In Guangdong Province, prehistoric

sand bar sites with clear strata have been found and carefully excavated, especially those of Middle Neolithic date such as Xiantouling (Peng *et al.* 1990; Chen, this volume) and Dahuangsha in Shenzhen (Wen *et al.* 1990), Houshawan in Zhuhai (Li Ziwen 1991a), and Longxue in Zhongshan (Zhongshan City Museum 1991).

NEW DISCOVERIES

Of some 90 Neolithic sand bar sites known in Guangdong, Hong Kong and Hainan Island, about one third have been excavated, mainly around the Pearl River estuary area. According to the artefacts unearthed, all the Neolithic sand bar sites in this area undoubtedly belong to the same archaeological culture. Even in Hainan, artefacts from Neolithic sand bar sites clearly belong to the archaeological macro-tradition of Neolithic South China, demonstrated especially by the many stone adzes with triangular, semicircular or oval cross sections (Fu Xian-guo 1992). Some archaeologists have tried to set up a detailed cultural sequence for prehistoric Zhuhai, but the conclusions vary considerably (Yan 1991; Zhu 1991; Li Ziwen 1991b). Some have even attempted to treat the whole prehistory of the Pearl River estuary area or delta in the same way. Thus, the Neolithic period in this area has been divided into three phases (Li Yan 1992) or four phases (Chau 1993). However, it would be premature at this stage to speculate on a full or detailed Neolithic periodization for this area, although it is obvious that we are dealing with two major phases - one Middle Neolithic and the other Late.

The First Neolithic Phase (Figure 1)

Artefacts of the first Neolithic phase in the Pearl River estuary area had distinctive characteristics. Amongst characteristic pottery we have painted basins, painted

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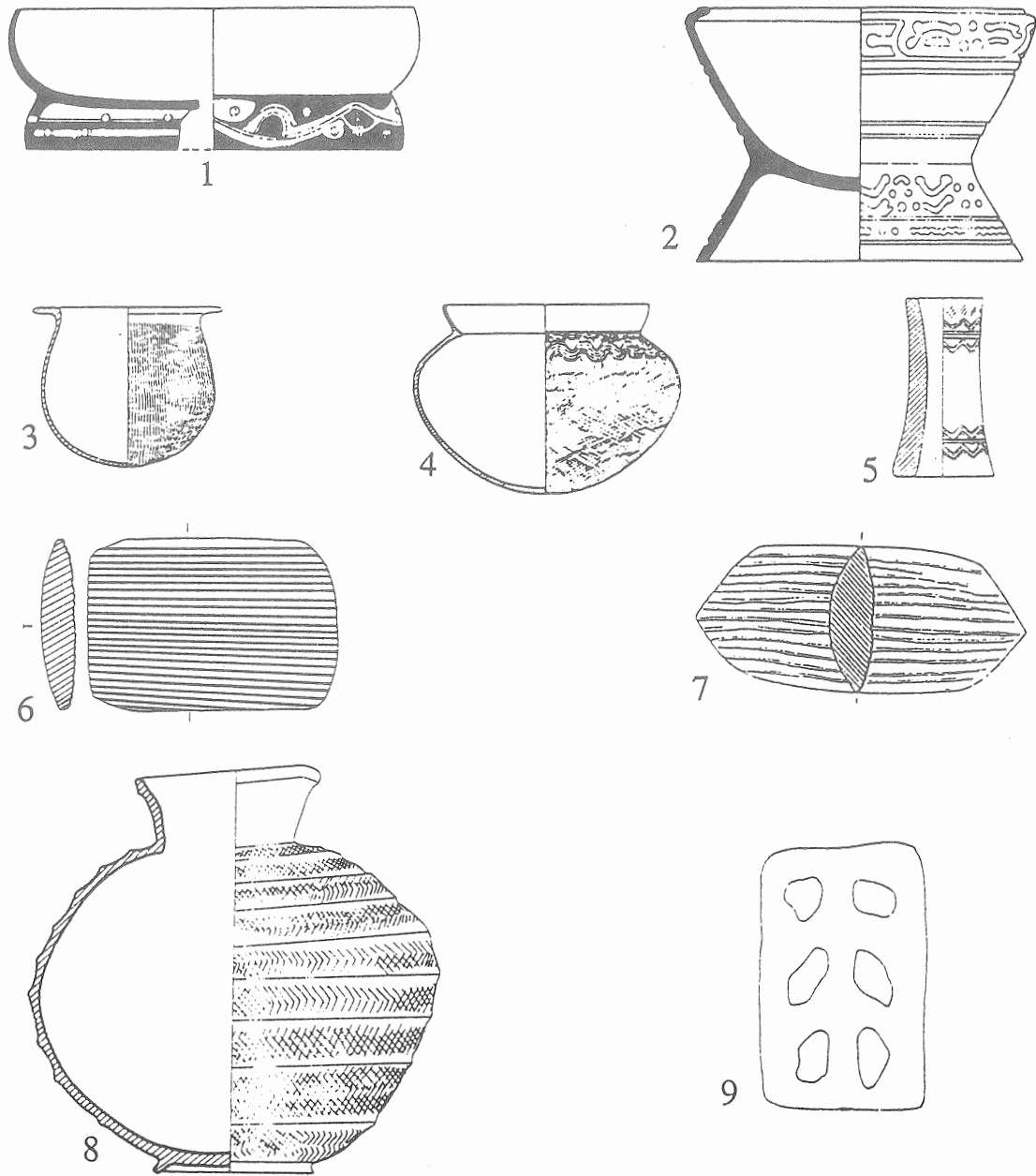


Figure 1: Pottery from Pearl River sand bar sites: 1) painted basin; 2) chalky basin; 3), 4) coarse pots; 5) pottery stand; 6), 7) bark cloth beaters; 8) chalky pot; 9) fire grate.

Numbers 1-7 are from the first Neolithic phase and 8-9 from the second phase. (Not to scale).

Sources: 1, 2 and 8, after Li Ziwen 1991a; 3 and 5, after Wen Benheng et al. 1990; 4 and 7, after Liang Zhenxing et al. 1991; 6, after Peng Quanmin et al. 1990; 9, after Mo Zhi 1982.

cups, coarse pots, coarse stands and bowls. Almost all vessels have round bottoms or ring feet. Most common are painted basins as well as coarse pots. The former were made of a fine, soft 'chalky' pottery. Their outer and sometimes inner surfaces were decorated with various painted red designs (mainly wavy lines, bands or dots). In terms of fashion, coarse ware was more common than chalky ware. For example, at Xiantouling coarse sherds make up 96% of the total, chalky only 4%. (Peng *et al.* 1990). In Caotangwan, coarse ware accounts for 92% of the total but chalky pottery only 8% (Liang *et al.* 1991).

Most coarse sherds have corded patterns, perhaps made by stone paddles according to Feng *et al.* (1994), which might also have served as bark cloth beaters, especially when taking account of the relative lack of spindle whorls in this phase. However, most of these stone paddles are much thinner than those found in Taiwan and other Southeast Asian areas (Chang 1989; Bellwood 1979; Lien 1979). The combed wavy patterns and impressed dotted designs on the pottery might have been made with edges of shells (Peng *et al.* 1990; Feng *et al.* 1994). Stone implements include chipped pebble tools, small polished axes/adzes, and particularly the stone paddles just mentioned, all of which have a thickness of less than 2 cm. Most adzes are trapezoid in plan and the shouldered adzes are among the earliest found so far in the area. Archaeological features in the first Neolithic phase include postholes, pits, possible house floors and a number of burials. Cremated human bones have been unearthed in Sham Wan (Meacham 1978).

In total, there are about 20 sites of this phase known, including Xiantouling, Dahuangsha, Xiaomeisha (Mo 1982), Dameisha (Ye 1993), Houshawan, Longxue, Caotangwan, Tung Wan (Au *et al.* 1990; Tang 1991), Chung Hom Wan (Tomlin 1971, 1972; Bard 1976), Tai Wan (Finn 1958), Hac Sa Wan (Kelly 1973; Meacham 1979a, 1986), Yung Long (Meacham 1993a), Hai Dei Wan (Williams 1980), Sai Wan (Meacham 1979b; Rodwell 1990), Tung Kwu (Kelly 1974, 1976; Meacham 1976), Tai Long (Bard 1972; Meacham 1982; Peacock *et al.* 1988) and Soa-Kheng (Maglioni 1975). Sites thus occurred in every major region of the area including Shenzhen, Zhuhai, Zhongshan, Macau, Hoifung and especially Hong Kong.

The Second Neolithic phase

Archaeological sand bar sites of this phase are densely and broadly distributed in the Pearl River estuary area. So far, more than 70 occupations have been reported, of which the most important include Houshawan, Tung Wan, Sham Wan, Tai Wan, Yung Long, Hai Dei Wan,

Tai Long, Caotangwan, Tung Kwu, Lung Kwu Sheung Tan (Meacham 1993a), Sha Chau (Frost 1976), Chiwan (Mo 1982), Hedishan (Mo 1982), Cuntou (Qiu *et al.* 1991), Dongaowan (Li Yan 1990), Lo So Shing (Meacham 1980), Sha Po Tsuen (Meacham 1993b), Siu A Chau (Frost 1980), Shek Kok Tsui (Salmon 1972), Po Yue Wan (Williams 1982; Meacham 1984; Crawford 1986), Tai Kwai Wan (Meacham 1979c), Nanshawan (Zhao 1991), Lingjiaozui (Long 1991) and Man Kok Tsui (Davis 1960). These occupations occur across a wider territory and some of them form upper layers in the main sites inhabited by the population of the earlier phase.

Pottery of the second Neolithic phase is still dominated by coarse corded ware, with chalky ware second in quantity. Coarse pottery in Chiwan amounts to 88.4% of the total and chalky ware only 11.6% (Mo 1982). Coarse pottery in Houshawan accounts for 86% of the total, chalky ware only 14% (Li Ziwen 1991a). In Sham Wan, coarse wares make up more than 80% of the total and chalky pottery accounts for the rest (Meacham 1978). However, this phase is also characterized by the appearance of soft geometric pottery. The major stamped patterns are squares, rhomboids, cloud-and-thunder patterns, leaf-veins and 'tortuous' patterns.

New pottery forms include stem cups and fire grates. Many stone adzes, axes, rings, arrowheads and spearheads have been discovered from this phase. The stone paddles seem to have disappeared. Stepped adzes appear for the first time, as well as *yue* axes and *ge* daggers. A large number of pottery spindle whorls, stone net weights and shell and bone implements have also been unearthed. The small number of post holes, pits, hearths and burials identified show no clear evidence of permanent residence.

The Neolithic artefacts from the sand bar sites of Hainan island display close relations to those of Guangxi province, especially during the late Neolithic (Wang 1987). I took part in an excavation at the Shigong site in eastern Hainan in 1992. The artefacts there seem relatively simple and different from those of the Pearl River estuary area. The major pottery is coarse ware (generally amounting to about 90%) and the main vessels were coarse *fu* pots, cups, bowls, spindle whorls and net sinkers. Most of the utensils are plain and have polished outer surfaces coated with red slip. The major stone tools are polished axes and adzes in trapezoid plan, with a few shouldered axes. In Late Neolithic times, the Hainan artefacts show clear relationship with the *Da Shi Chan* (Big Stone Shovel) remains in Guangxi and west Guangdong (Wang 1990).

DISCUSSION

Periodization

As mentioned above, the periodization of the prehistoric cultures of the Pearl River estuary area is subject to heated arguments. However, the Neolithic period of this area can certainly be divided into at least two phases: the early (first) phase and the late (second) phase. It is noticeable that at many sand bar sites there is always at least one natural sterile layer between the layers of the earlier phase and those of the later phase. This is true in such major sites as Dahuangsha in Shenzhen, Houshawan, Caotangwan, Nanshawan in Zhuhai; and Sham Wan, Tung Wan and Tai Wan in Hong Kong.

These sterile layers can be classified into two kinds. One kind is less than 40 cm thick and the artefacts in the layers above and beneath it are similar, such as the one between the 2nd and the 4th layers of Dahuangsha or the one between the 2nd and the 4th layers of Houshawan. The other kind is more common and ranges from 30 to 150 cm thick. In this kind the artefacts in the layers above and below are sharply different. This suggests a chronological and cultural discontinuity between the cultural layers. In Houshawan, Caotangwan, Sham Wan and Tai Wan, artefacts from the layer under the sterile layer belong to the first phase, while those from the layer above belong to the second phase. One study in prehistoric Zhuhai shows that the sterile layer there represents a cultural hiatus of 700 years between about 5000 BP and 4300 BP (Zhu 1991). However, another study argues that the Pearl River Delta had a continuous prehistory, with four Neolithic cultural phases from 6500-3500 BP, and this sequence is well supported by radiocarbon dates from the area (Chau 1993).

It appears that we cannot help but attribute the formation of the sterile layers to natural forces such as marine transgression. According to recent research, prehistoric sea level change in the Pearl River Delta occurred as follows.

- 1) A steep rise before 6000 BP.
- 2) A slow fall from 6000-5500 BP.
- 3) A steep rise from 5500-5000 BP, at a velocity of 7.0 mm per year, from -3.5 m to about 0 m.
- 4) Another slow drop from 5000-4500 BP, followed by
- 5) A slow rise from 4500-3200 BP, then
- 6) A rapid rise at a rate of 6.25 mm per year between 3200-2800 BP, from -1.0 m to +1.5 m. (Li Pingri *et al.* 1991).

As a result, it seems that the widespread appearance of a sterile layer in the Pearl River estuary sand bar sites roughly around 5000-4300 BP may be accounted for by

the oscillation in sea levels in the area between 5500 and 4500 BP. But this raises another question - where did the people move to?

GENERAL OBSERVATIONS ON MATERIAL CULTURE AND ECONOMY

The main characteristics of the first phase of the Neolithic sand bar sites in the Pearl River estuary area are:

- 1) The major stone tools are axes and adzes, mostly small in size. Most stone paddles (bark cloth beaters) are very thin.
- 2) The pottery was dominated by coarse ware.
- 3) Many pottery utensils are decorated by wavy lines, dots, bands and perforations, although cord marked designs dominate.
- 4) There are very few direct archaeological traces of dwellings.

During the second phase some changes can be seen:

- 1) Stone axes and adzes, though still small in size, were much more numerous. At the same time, many stone rings, arrowheads and spearheads appeared. Also present are the larger *yue* axes, which are similar to those from Shixia in north Guangdong (Shixia Archaeological Team 1978).
- 2) Pottery was still dominated by coarse wares, but in smaller proportions.
- 3) Many net sinkers, animal bone tools and shell tools occur.
- 4) Archaeological assemblages were more complex than in the first Neolithic phase, with many new pottery and stone types. But evidence for dwellings is still inadequate.

Furthermore, in both phases, the sand bar sites were all situated in coastal environments around the Pearl River estuary. This shows the existence of a coastal economy with fishing and seafood gathering as perhaps important. In the first phase, the evidence for subsistence was not so clear and the simplicity of the archaeological assemblages might derive from a relatively mobile life.

However, in the second phase many fishing items such as net sinkers, shell and bone tools appear. Arrowheads and spearheads might have been used as both fishing and hunting tools. The large numbers of axes and adzes perhaps relate to canoe-making. The complexity and diversification of the second phase archaeological assemblages might point to a tendency towards a more stable life than in the first Neolithic phase. Agriculture might also have played a more important role according to the appearance of the stone *Yue* axes which indicate communication with the Shixia agricultural population in northern Guangdong.

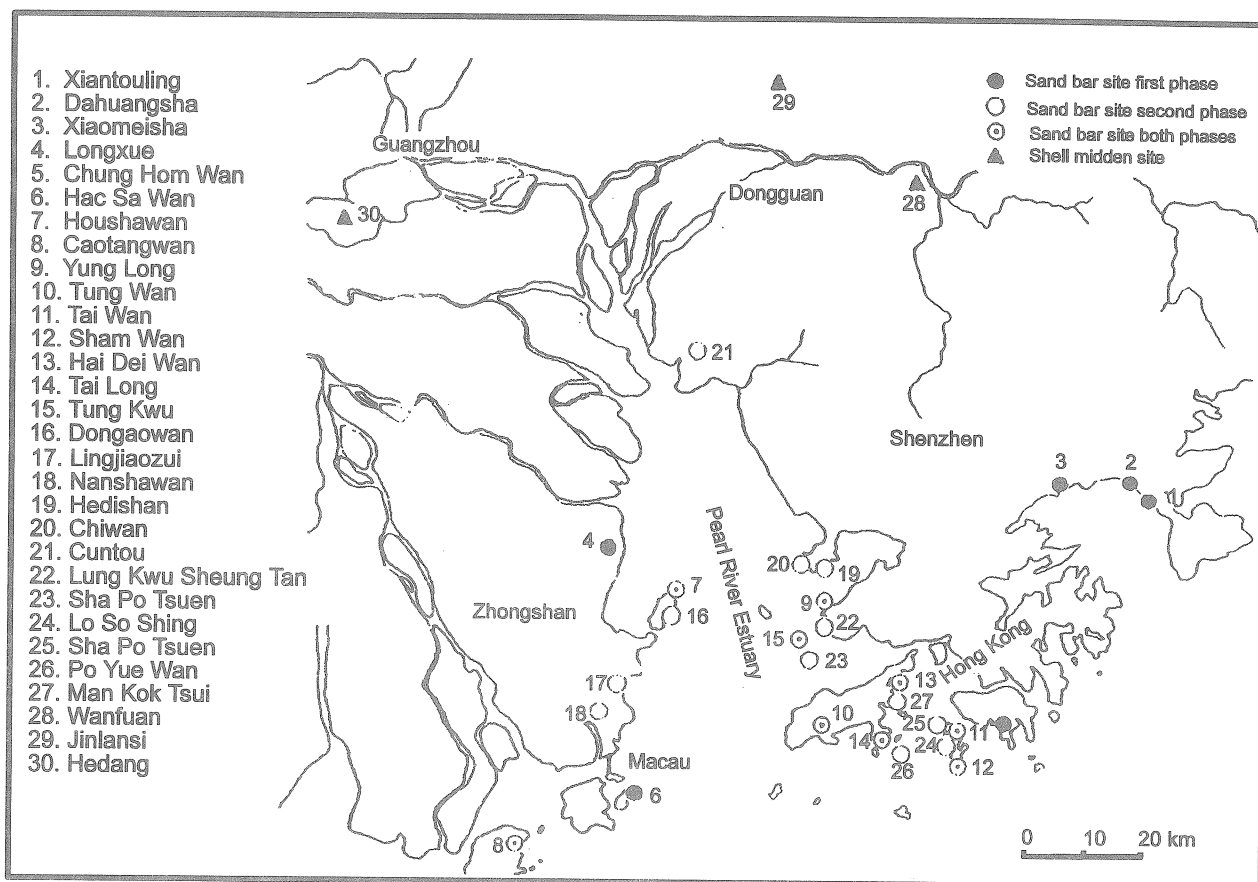


Figure 2: Major Neolithic sand bar sites around the Pearl River Estuary area.

There also appear to be both major sites and secondary sites. Most of the major sites have more artefacts, are larger in size and were inhabited through both phases. Most face south, often being located along a bay protected by a mountain range to the north and by headlands to the east and west. Such examples may be Houshawan, Caotangwan, Dahuangsha, Xiantouling, Longxue, Sham Wan, Tai Wan, Tung Wan and Yung Long. The secondary sites have fewer artefacts, are smaller, have fewer strata and poorer natural settings. Most were occupied for only one phase.

Relationships Between the Sand Bar and the Shell Midden Sites

During Neolithic times, sand bar sites occurred in the lower reaches of the Pearl River estuary and on the coasts of small islands or the mainland. Most shell midden sites

were located further inland (Figure 2). Many discussions have taken place about the relationships between these two kinds of sites. The shell midden sites have similar assemblages to the sand bar sites of the first phase. For instance, from both types of site similar painted pottery basins, coarse pots and patterns of incised lines and perforation are seen (Li Ziwen *et al.* 1990; Gu 1991; Mo 1961a; Li Yan 1991). Furthermore, they were both dominated by coarse wares. At the shell midden site of Jinlansi in Guangdong, for example, coarse pottery accounted for 82.5% of the total (Mo 1961a).

During the second phase of the sand bar sites, however, there seem to be clear differences developing in the proportions of coarse wares and chalky wares between the two kinds of sites. The shell midden sites are dominated by chalky wares while the sand bar sites continue to be dominated by coarse wares. In the shell midden site

of Hedang, chalky pottery amounts to 71% of the total (Yang *et al.* 1981), as also in Zhaogang (He Jesheng 1984). Some scholars suggest that this difference is due to the nature of settlement, with shell midden settlement being relatively long-term and that in the coastal sand bar sites only temporary. Thus, coarse pottery may have been multipurpose, easy to carry and convenient for a migratory life according to Wu *et al.* (1993). It may also be that the sand bar residents largely used coarse wares for cooking alone rather than for storage.

Because of the close relationship between the sand bar and the shell midden sites, some archaeologists argue that the inland shell midden sites might have functioned as the main settlements while the estuarine sand bar sites served as seasonal settlements (Shang *et al.* 1990; Yan 1991; Zhu 1991). However, all these arguments remain to be confirmed by more detailed evidence.

CONCLUSION

The Neolithic sand bar sites in the Pearl River estuary area may be divided into two phases. The first phase belongs to the Middle Neolithic, roughly from 6000 to 5000 BP. The second phase is Late Neolithic, about 4300-3300 BP. Between the first and the second phases in many major sites there is a sterile layer which might be caused by changes in sea level. This sterile layer suggests a cultural discontinuity, especially when taking account of the sharp differences between the material culture of the two phases. Both were dominated by coarse pottery, but in the first phase painted pottery was most common and He Jie-jun (1994) has pointed to the relationship between this pottery and that of the Daxi Culture found in the middle Changjiang (Yangzi) River area. The second phase contains soft geometric pottery, stepped adzes and yue axes, the latter indicative of contact with rice cultivators in north Guangdong. This indicates that agriculture might have played an important role in the second phase.

The existence of bark cloth beaters during the first phase might be significant for the issue of Pre-Austronesian origins on the coasts of southern China (Bellwood 1979: 173-4). In terms of artefacts, fishing seems to have been intensified in the second phase. Settlements of the second phase might have been less mobile than during the first phase, even though this is hard to document. Sites were relatively fewer and more scattered in the first phase, but denser and more widespread in the second. The relationships between the Neolithic sand bar sites in the Pearl River estuary and those on Hainan Island are hard to specify, though there seems no very close relationship between them. During the Late Neolithic the Hainan assemblages are more clearly re-

lated to the *Da Shi Chan* remains in Guangxi and western Guangdong.

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