

The discovery of early pottery in China

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ABSTRACT – *During the transitional period from the Upper Pleistocene to the onset of the Holocene, there were two different cultural traditions in southern and northern China. The pottery appeared in both cultures. The earliest pottery in southern China might be dated back to 16 000 b.p. The early pottery found in the North is later than the earliest pottery in southern China, the Russian Far East, and Japan, but its character bears some similarity with the early pottery from other areas, especially from the Russian Far East and Japan.*

IZVLEČEK – *V prehodnem obdobju med poznim pleistocenom in začetkom holocena sta bili na južnem in severnem Kitajskem dve različni kulturni tradiciji. V obeh se je pojavila keramika. Najzgodnejšo keramiko z južne Kitajske lahko datiramo do 16 000 b.p. Najzgodnejša keramika s severa je kasnejša kot najzgodnejša keramika z južne Kitajske, ruskega Daljnega vzhoda in Japonske, toda po značilnostih je nekoliko podobna najzgodnejši keramiki s teh področij, posebno tisti z ruskega Daljnega vzhoda in Japonske.*

KEY WORDS – *Mesolithic; Neolithic; China; pottery*

INTRODUCTION

In the early 1960s, a series Mesolithic or Early Neolithic cave sites associated with early pottery were found in a limestone area of southern China. In 1962 and 1964, two seasons of excavations were conducted at one of these cave sites, Xianrendong, in north-eastern Jiangxi Province (Fig. 1). More than 500 pieces of pottery sherds were uncovered from two layers within the excavated 69 square meters. Two radiocarbon dates were published afterwards in the mid-1970s; one bone sample from the lower layer was dated to 8575±235 b.p. (ZK-92-0), one shell sample from the upper layer was dated to 10 870±240 b.p. (Zk-39) (*Jiangxi Provincial Committee for Administration of Cultural Relics 1963; Jiangxi Provincial Museum 1976*). These dates do not fit the strata, and are considered unreliable. In 1973, Zengpiyan Cave in Guilin, Guangxi Province, was excavated, and the same kind of pottery as at Xianrendong was found from the lower layer at the site. Seven shell samples from Zengpiyan lower layer were dated to around 10 600 b.p., and the TL date of the

pottery sample was 10 370±870 b.p. (*Hu Dapeng, et al. 1999*). In 1980, eight pottery sherds unearthed from the lower layer at Liuzui Cave in Liuzhou, Guangxi Province, and two shell samples from the same layer dated to 18 555±300 b.p. (PV-0379-1), and 21 025±450 b.p. (PV-0379-2) were so much earlier that they are doubted by most researchers (*Liuzhou Museum et al. 1983*).

In late 1980s and 1990s, more cave sites were excavated in southern China. Within these sites, five pieces of early pottery sherds were found from layer 5 at Miaoyan, in Guilin, Guangxi Province; the pottery samples were dated to 15 660±260 b.p. (residue, BA94137b) and 15 560±500 b.p. (humic acid, BA94137a). Two pottery pots unearthed at Yuchanyan in Daoxian (*Yuan Jiarong 1996*), Hunan Province (Fig. 2), were dated to 14 810±230 b.p. (residue, BA95057b) and 12 320±120 b.p. (humic acid, 95057a) (*Yuan Sixun et al. 1997*). Further excavations conducted at Xianrendong (Fig. 3) and Dia-



Fig. 1. View of Xianrendong.

tonghuan (Fig. 4), only 800 meters away from Xianrendong, unearthed more than 300 pieces of pottery sherds from several stratified layers; more than 30 carbon and bone samples from these layers were dated to between $17\,640 \pm 60$ b.p. and $12\,430 \pm 80$ b.p. (Zhang Chi *et al.* 1996). It is claimed that the same kinds of pottery were also uncovered in the recent excavation at Dayan in Guilin, Guangxi Province. These discoveries indicate that the limestone area in southern China was among the sites where the earliest pottery was produced.

The earliest pottery found in northern China is not as rich as in the south, and 3 sites where early pottery has been unearthed are located in a limited area in the northern part of Hebei Province and Beijing. In 1987 and 1997, two seasons of excavations conducted at Nanzhuangtou site in Xushui uncovered 60 pieces of pottery sherds, and the carbon sample from the associated layer was dated to $10\,510 \pm 110$ b.p. (BK87075) (Baoding City Institute for Administration of Cultural Relics 1992). In 1995–1997, excavations at Yujiagou (Fig. 5) in Yangyuan unearthed several pieces of pottery sherds, and the TL date of one piece was 11 000 b.p. (Xie Fei 1998). Early pottery from the excavations at Zhuannian in Beijing in

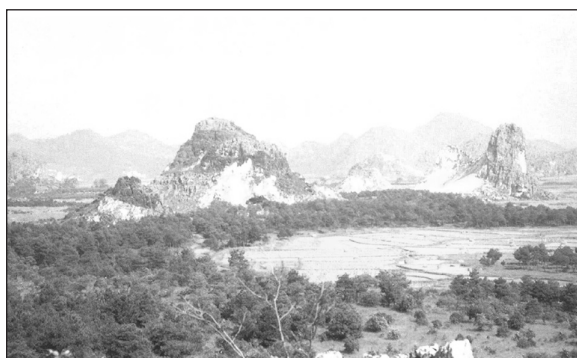


Fig. 2. View of Yuchanyan.

the 1995–1996 has not been published, although it is reported that the date of the associated sample is around 9800 b.p. (Yu Jincheng 1998).

THE ARCHAEOLOGICAL CONTEXT OF THE EARLY POTTERY

According to the absolute dating, early pottery in China appeared during the transitional period from the Upper Pleistocene to the onset of the Holocene. In this period, there were two different archaeological cultural traditions in China: one was the so-called cave dwelling culture in the south, and its lithic industry was related to the pebble lithic industry of adjacent continental Southeast Asia of the same period (the Hoabinhian culture). The second was the so-called microlithic culture in the north, and its microlithic industry is associated with the lithic industry of Northeast Asia.



Fig. 3. Excavation at Xianrendong, 1993.

The cave dwelling culture in the South is characterized by cave dwelling sites. These cave dwelling sites are primarily found in the karst area, especially at the base of the southern slope or the northern slope of the Nanling Mountains in South China. In stratigraphy, the cultural deposit in these cave sites is in the transitional period from the Pleistocene to the Holocene. It contains large amounts of snail and mollusc shells and fossil vertebrates. Almost all the faunal remains are of modern species. The artifact assemblage includes substantial amounts of lithic, bone, antler, and mollusc shell implements. The manufacture of chipped pebble implements, which is characterized by using the direct percussion method and unifacial retouch, is a primary feature of the lithic industry. In typology, chopping implements predominate in the lithic assemblage. Some scrapers and points are also present. Flake implements are few in number. Perforated pebbles (so-called “weight stones”) and cutting implements with polished blades are the most abundant polished implements. Some



Fig. 4. Excavation at Diaotonghuan, 1995.

localities yielded small flint implements. The major types of bone, antler, and shell artifacts include awls, needles, projectile points, spades, and knives (Yuan Jiarong 1991).

The 1990's excavations of cave dwelling sites such as Xianrendong, Diaotonghuan, and Yuchanyan have yielded more information on the subsistence strategy in this period. At Xianrendong and Diaotonghuan, over 1600 phytoliths from all types of plants were detected in more than 40 samples obtained from every layer. Researchers applied multivariate analysis to compare the double peak formed rice phytoliths statistically. With this method, a certain number of phytoliths morphologically indicative of wild rice (*Oryza nivara*) and cultivated rice (*Oryza sativa*) have been identified. This suggests that cultivated rice had become part of people's diet during this period. The results from the carbon isotope (^{12}C , ^{13}C) and nitrogen isotope (^{14}N , ^{15}N) analysis on the human bones excavated at Xianrendong and Diaotonghuan tend to confirm this observation. The discovery of rice phytoliths is widespread in the cultural deposit at Yuchanyan site. Over 40 species of plants were identified at the Yuchanyan site through the floatation method. More importantly, four rice husks were found at the site, two of which were found in layers close to the bottom of the deposit. Based on the microscopic analysis of the morphological feature of the double peak on the surface of the husks, researchers believe that these rice samples retain characteristics of *O. Sativa indica*, and *O. Sativa japonica*, as well as wild rice. They represent the archaic prototype of cultivated rice developed at the initial stage of the evolution from wild to cultivated rice.

A substantial amount of faunal remains have been excavated at Xianrendong and Diaotonghuan. After

the initial classification of bone remains, the presence of deer, boar, rabbit, fox, turtle, and a variety of birds were identified. Bones from various species of deer predominate in the faunal remains, which is followed by boar and bird remains. Among the large amount of faunal remains at Yuchanyan, deer predominates, including water deer, red deer, and other kinds of deer, followed by boar, cattle, and the Chinese bamboo rat. There are also abundant bird bones, which account for 30 per cent of total animal remains. Substantial amounts of aquatic animal remains were uncovered at the site, including fishes, turtles, molluscs, and snails. The faunal remains have attributes similar to those of the Xianrendong site. This reflects the general pattern of the hunting activities during this period.

Since these remains have striking characteristics and similarities in distribution and chronology, the majority of scholars are inclined to classify them as the remains of one cultural horizon (Yuan Jiarong 1996). Based on the fact that this group of assemblages demonstrate similarities with the Hoabinhian Culture which was widespread in Southeast Asia in the contemporary period, and the Hoabinhian Culture was thought to be representative of a "Mesolithic" period, some scholars proposed that the remains of these cave dwelling sites represent the Mesolithic cultures in



Fig. 5. Profile at Yujiagou.

south China (Tong Enzheng et al. 1989) before 1990s. Contemporaneous with the southern finds, a microlithic assemblage dated to the transitional period from the Pleistocene to the Holocene has been identified in northern China. This microlithic assemblage is found to be widespread in North China and its adjacent areas. Over 100 sites containing this assemblage have been located in Hebei, Shandong, Henan, Shanxi, and Shaanxi. Among these localities, the Shayan site in Dali, Shaanxi, the Lingjing site in Xuchang, Henan, the Hutouling site in Yangyuan, He-

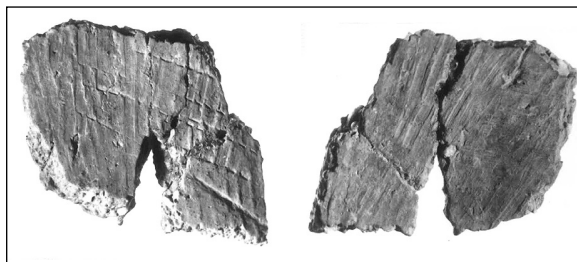


Fig. 6. Stripe-marked Pottery from Xianrendong.

bei, and the Fenghuangling site in Linyi, Shandong have been excavated or intensively surveyed. The cultural assemblages of these sites maintained the tradition of microlithics from the upper Paleolithic in northern China. Flint and quartzite were the main types of raw material. The lithic assemblage includes microblades and cores of wedge shape, keel shape, and conical shape. It also has microlithic implements made from retouched flakes, including projectile points, scrapers, engravers, and knives. This microlithic assemblage demonstrates minor variations in regional characteristics. Therefore, it is subdivided into the “Shayuan Culture,” “Hutouliang Culture,” and “Fenghuangling Culture”.

Most of these sites were identified as lithic workshops after excavation, and the overall characteristics of the society are still inadequately known. The new discoveries of the 1990's from the Nihewan basin in Yangyuan yielded more information on other cultural aspects. Close to ten sites containing microlithic assemblages have been excavated or intensively surveyed, including Yujiagou, Ma'anshan, Qijiaowan, Gongdiliang, and Bashibutan. The dates of these sites fall into a range between 14 000 and 9000 BP. Fire hearth and ash pits have been located at the Ma'anshan site, which has lithic cores, flakes, microblades, and blanks for lithic implements scattered around the site. The cultural deposit at the Yujiagou site consists of three layers. Its lithic assemblage includes microblades, scrapers, projectile points, burins, and adzes. There are also decorative items made of mollusc shells, snail shells, and ostrich eggs. The animal remains uncovered from the cultural deposit

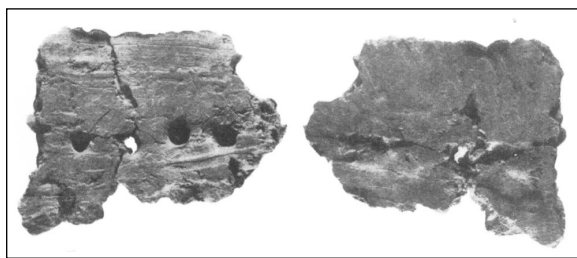


Fig. 7. Stripe-marked Pottery from Xianrendong.

include frogs, ostriches, mice, wild horses, wild donkeys, deer, bison, and antelope. Antelope predominate in the fauna.

Like the cave dwelling culture in the south, many scholars have regarded this microlithic assemblage as the representation of the Mesolithic cultures in northern China (CASS 1984; Yan Wenming 1987). Nevertheless, these two cultural traditions are the sources of the succeeding Neolithic cultures after 9000 b.p. in the mid and lower Yellow River basin and the mid and lower Yangtze River basin, which were both heartlands of the cultural development in China.

TYPES OF EARLY POTTERY

Since the early pottery in China appeared in different places and lasted for a long period, different characters can be observed from the unearthed pottery specimens. The stratified Xianrendong pottery provides leads for further study of early pottery in southern China.

The hundreds of potsherds at Xianrendong came from 8 stratified layers. These are primarily body sherds as well as a small quantity of rim sherds. Most of these potsherds have a similar paste, which was tempered with coarse grain quartzite grit. The dia-



Fig. 8. Plain Pottery from Xianrendong.

meter of grain size ranges from 1 to 5 mm. Some are over 5 mm in diameter. The sorting is poor for the temper, which indicates that no attempt at intensive selection was made.

Since many quartzite implements have been excavated from the local sites of this period, it follows that the raw material for the temper might have come from the adjacent area and the pottery might be of local production. Brown is the basic color tone of the potsherd, which derives into many colors, including brown, dark brown, reddish brown, and grayish brown. Some potsherds have a black core, indi-

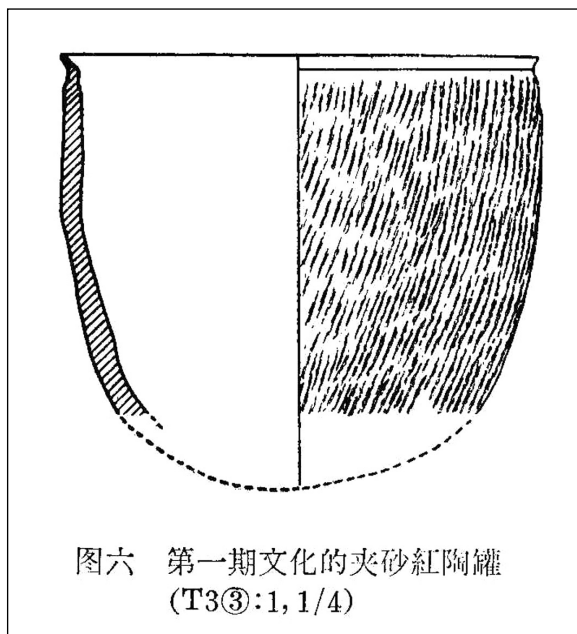


Fig. 9. Cord-marked Pottery from Xianrendong.

cating that the paste was not fully oxidized and the pottery ware might not have been fired in a kiln.

The piece building method and the coiling method were both applied in pottery production. Pottery made by the former method is classified into two types. The first type has stripe-marks which were wiped or scored with some sort of blunt object with teeth like a fork on both the interior and the exterior of the vessel as a result of surface retouching (Figs. 6, 7). The second type has a plain surface, cre-

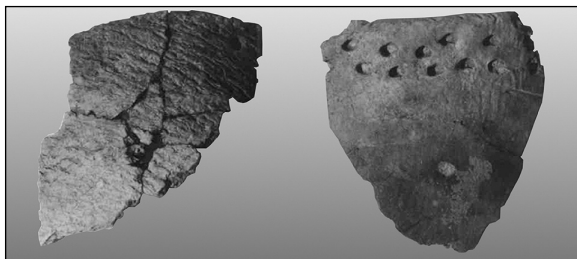


Fig. 10. Woven Pattern Pottery from Xianrendong (exterior).

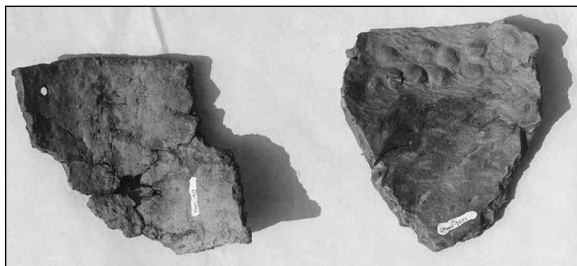


Fig. 11. Woven Pattern Pottery from Xianrendong (interior).

ated by hand smoothening (Fig. 8). The decoration on the stripe-marked pottery and the plain pottery is primarily the same, which is characterized by V-shaped or U-shaped denticulations at 1 cm intervals on the vessel rim. In the area under the rim, the exterior surface is decorated with a single row of puncture dots created by using a small stick to punch the interior of the vessel. The walls of both types of vessel are thick, generally measuring 0.7 cm. Some vessels are as thick as 1.2 cm. Although no intact specimen survives, the vessel shape as suggested by the fragments was probably that of a round-based jar with a straight rim.

Vessels manufactured by the coiling method were stamped with a potter's paddle to reinforce the wall. The paddle was wrapped with cord or fiber of various strands. The vessel surface was left with an impression similar to the cord-mark paddle stamping, which could be classified as cord-mark pottery (Fig. 9). The vessel type should be a round-based jar (or urn), with a slightly flared round rim and a straight

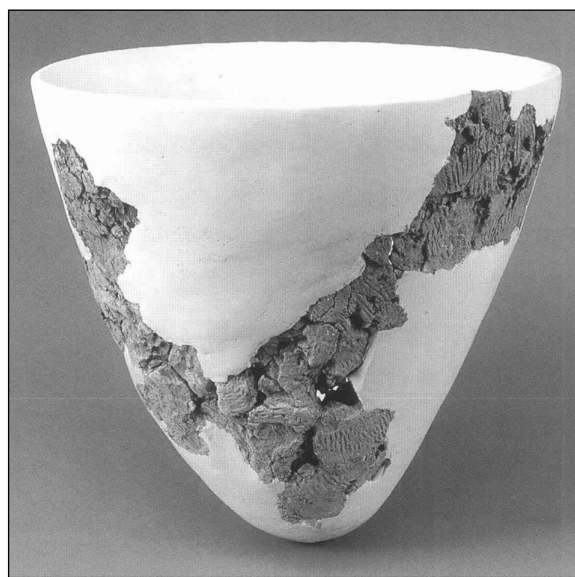


Fig. 12. Pottery from Yuchanyan.

mouth. The pottery vessels manufactured by the coiling method were tempered primarily with coarse grain quartzite grit. A small quantity of vessels was tempered with crushed cord-mark potsherd. The manufacturing process was the same for pottery tempered with both materials. A few pieces of potsherd from pottery produced by the coiling method have a straw mat or cord-woven mat impression stamped on the exterior surface, which could be referred to as woven pattern pottery (Figs. 10, 11), and some of these kinds of pottery might have been paddled by deer horn.

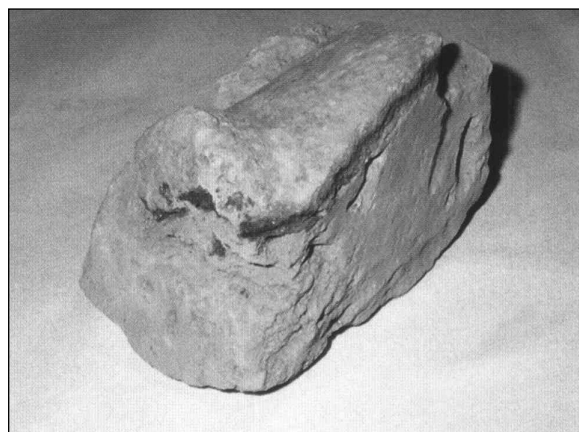


Fig. 13. Pottery from Yujiagou.

According to the stratification at Xianrendong, the stripe-marked pottery is the earliest pottery type. The plain pottery and the cord-marked pottery are represented as the following type in the pottery sequence. The woven pattern pottery is the latest.

Two piles of potsherds situated near the bottom of the deposit are the only pottery remains encountered at the Yuchanyan site. The thickness of the body sherds is heterogeneous. Some specimens reach 2 cm in thickness. The ware is dark brown. Its paste is tempered with quartzite grit of various grain sizes. The majority of the grain size falls into a range between 5 and 10 mm. A round-based urn with slightly pointed bottom, flared rim, rounded rim and slanted body is the only vessel that can be restored (Fig. 12). Pottery from this site also has a paddled cord mark on both exterior and interior surfaces, which was manufactured by a method similar to that of the cord-marked pottery from the Xianrendong site.

The 5 pieces of pottery sherds from Miaoyan site bear the same character as the plain pottery from Xianrendong. Its paste is tempered with large quartzite grit, and its surfaces were smoothed by hand. And the pottery from Zengpiyan site and Dayan site are all cord-marked types similar to that from Xianrendong.

The date of early pottery in northern China is later than that in the south, and there are more differences between them. The pottery found in Yujiagou, Nanzhuangtou, and Zhuannian are all jars with flat bases. The potsherd from Yujiagou site was tempered with sand, reddish brown and yellowish brown in color, and formed by slabs joined together. Its exterior was cord-marked, and was incised with parallel arcs like finger-

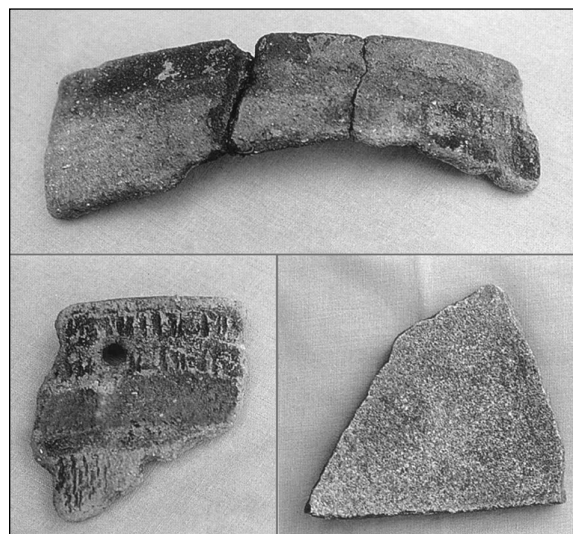


Fig. 15. Pottery from Nanzhuangtou.

nail marks (Fig. 13). The potsherds from Nanzhuangtou were tempered with quartz and mica or shell, made by coiling, and paddled by cord paddle (Figs. 14, 15).

CONCLUSION

During the transitional period from the Upper Pleistocene to the onset of the Holocene, there were two distinct and separate cultural traditions in southern and northern China, and the early pottery appeared in both these two cultures. In southern China, the earliest pottery might date to 16 000 b.p.

The early pottery found from the cave dwelling culture in the South can be divided into different types: the earliest type, strip-marked pottery uncovered at Xianrendong site, bears a great similarity to the early pottery from Sagamino No. 149 in the Kanagawa (Fig. 16), Miyagase in Yokohama, Japan, and from the Ust'novka 3 site on the Amur River in Siberia. So

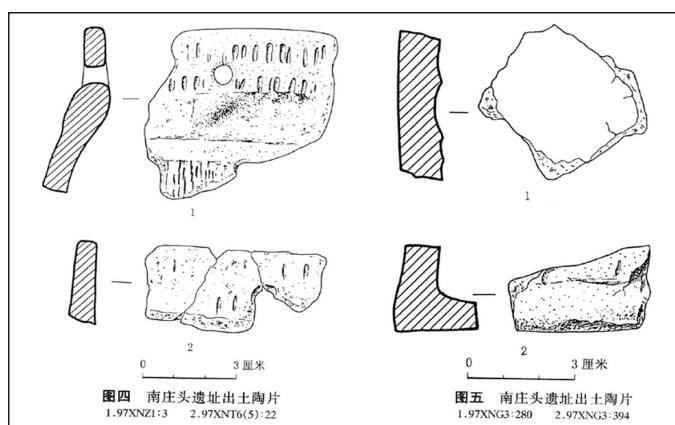


Fig. 14. Pottery from Nanzhuangtou.

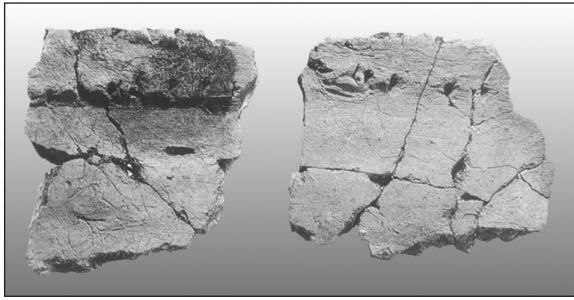


Fig. 16. Pottery from Sagamino No. 149.

that we have no evidence to say that the earliest pottery technique was created separately in diffe-

rent areas of Eastern Asia, although we cannot point out the specific place where it was created. The cord-marked pottery is the most popular pottery type in the South, and eventually became the dominant pottery technique in the succeeding period. The microlithic complex in the North related much more closely to the contemporaneous lithic industry in north-east Asia. The early pottery found in the North is later than the earliest pottery in southern China, the Russian Far East, and Japan, but its character bears some similarity with the early pottery from other areas, especially from the Russian Far East and Japan.

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