The Earliest Pottery in East Asia: A Review

K.N. Dikshit* and Manjil Hazarike**

The beginning of 21st century is a landmark in the understanding of the neolithic culture of Far East in terms of farming and beginning of pottery along with other characteristic features of animal husbandry. In the Near East, the neolithic lifestyle including agriculture preceded the introduction of pottery and hence, the

Fig. 1: Some important sites yielding early evidence of pottery in East Asia
(The base map of East Asia is downloaded from www.wikipedia.com)

*Former Joint Director General, Archaeological Survey of India and General Secretary, Indian Archaeological Society, New Delhi
** Research Associate, Indian Archaeological Society, New Delhi and Ph. D Researcher, Himalayan Languages Project, Bern University, Switzerland
neolithic cultural levels which existed prior to the invention of pottery have been termed as “Aceramic” or “Pre-Pottery” neolithic period. Such levels are recorded at several sites like Ain Ghazal, Jericho and Abu Hureyra etc. While discussing the issue of origin of pottery in a global context, it is found that East Asia has replaced the age-old long established thinking that domestication of plant is earlier than pottery. Radio-metric dates suggest emergence of pottery making technology in East Asia around 14,000 BP and 13,000 BP (Kuzmin and Kealley 2001, Kealley et al. 2004). These new evidences belied our notion and many scholars working in Far East have pronounced on the basis of AMS dates, the manufacture of handmade pottery at least 20,000 years BP from a site known as Xianrendong Cave in Jiangxi province of China (Fig. 1).

China

Several sites located in China have yielded in recent years earliest ceramics which may be considered as the oldest known so far in the world context. In China, two different cultural traditions have provided evidence of early pottery manufacture: (i) southern China in association with pebble tool tradition comparable to the Hoabinhian culture of Southeast Asia and (ii) northern China in association with microlithic tradition of Northeast Asia. In South Chinese context, the cave site of Xianrendong is known for yielding early pottery. Another important site is the Zengpiyan cave in Guilin in Guangxi province which has also provided similar pottery like Xianrendong from the lowest level of excavation in 1973. Then in 1980, the excavations at the site of Liyuzui cave in Liuzhou of Guangxi province have also attracted the attention of scientific community for the early chronology of pottery making. Subsequently, the sites of Miaoyan in Gulin in Guangxi province, Yuchanyan in Daoxian in Hunan province, Diaotonghuan in Jiangxi province, Dayan in Guilin of Guangxi province have also provided an early timeframe with radio-metric dates. The cord-marked pottery was the most common type in southern China (Chi 2002) which has a wide distribution in South and Southeast Asian context too, however from a later chronological sequence.

Xianrendong Cave

The cave site of Xianrendong, located in Wannian County of the northern Jiangxi province of China, around 100 km south of the Yangtze river was first excavated in 1961 and 1964 and then subsequently in 1993 and 1995 and again in 1999 and 2000 by different Institutions. Recent excavations in 2009 provided a new series of radio-carbon dates which suggest a time range of ~20,000 to 19,000 cal. years BP for the earliest pottery in the world. It is tempered with crushed quartzite or feldspar and fired at relatively low temperature. These are plain-surfaced or cord-marked and also having parallel striations on the interior and exterior surfaces due to smoothing done with grass fibres (Fig. 2, 3 & 4). These early pottery were probably made by sheet laminating and coiling with paddling. The signs of burning on the exterior of the pot suggest cooking activities by the earliest potters (Wu et al. 2012).

Yuchanyan Cave

The Yuchanyan cave site, located in the Daoxian County of Hunan province in China, approximately 450 km south of the main course of the Yangtze river has drawn considerable attention in recent years. The site yielded early evidence of pottery in association with large amounts of ash, animal bones, cobble and flake artifacts, tools made of bone and shell. It is a site of the Late Paleolithic forager. The analysis of the charcoal and bone collagen extended a time bracket of around 21,000 to 13,800 cal. BP and the date of the pottery between 18,300 and 15,430 cal. BP. Excavations at the site by Jiarong Yuan in 1993 and 1995 revealed two clusters of potsherds indicating the presence of two vessels. These were coarsely made, with thick uneven walls upto 2 cm
Fig. 2: Stripe-marked pottery from Xianrendong cave (courtesy Chi 2002: 32)

Fig. 3: Stripe-marked pottery from Xianrendong cave (courtesy Chi 2002: 32)

Fig. 4: Plain pottery from Xianrendong cave (courtesy Chi 2002: 32)
thick, and were fired at low temperature. It is interesting to note that the interior and exterior surfaces of the pottery are cord-impressed (Fig. 5 & 6). The radio-carbon chronology obtained from the samples collected during the recent excavations in 2004 – 2005 is based on high-precision dating of the entire sequence of the deposits (Boaretto et al. 2009).

Similar pottery was recovered during the excavations in 1997 at the site of Dingsishan near Nanning city in southern Guangxi showing affinity with the Xianrendong and Yuchanyan caves which are also handmade having uneven and thick wall and very friable fabrics indicating low firing temperature. Cord-impressions were also noticed on the surface (Xianguo 2002: 63-64).

In northern Chinese context, the sites like Nanchuangtou on the piedmont of the Taihang Mountains, 35 km west of Baiyangdian Lake at the western border of the North China Plain in Xushui dated between 11,500 - 11,000 BP after calibration; Donghulin,
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situated in the Zhaitang Basin of the Qingshui river, 78 km west of Beijing on a piedmont overlooking the northern end of the Taihang Mountains just to the west of the North China Plain dated to 11,000 – 9,500 BP; Hutouliang in the Nihewan basin of the north-western Hebei province; Uujuagou in Yangyuan and Zhuannian in Beijing are some of the important sites which have provided early evidence of pottery (Yang 2012).

Nanchuangtou and Hutouliang Site

The site of Nanchuangtou in the Xushai County was first discovered in 1986 and excavation has yielded potsherds of body, rim and base portions (Fig. 7 & 8). These low fired potteries are of two types: grey ware and yellowish-brown pottery. The grey ware pottery contains fresh-water mussel, shell and quartz fragments. The common designs are cord-decoration. Some potsherds show hook marks and some have perforations (Ruihai and Jun 2002: 195-196). The group of sites at Hutouliang in the Yangyuan County which were excavated during 1995 and 1997, have provided evidence of rough and porous flat based potsherds fired in low temperature. The lack of traces of smoke and burning at the base of the pot suggests the use of these vessels as container. The early pottery has been dated to 13,080 ± 120 years BP (Ruihai and Jun 2002: 198-200).

It has been suggested that the forest hunter-gatherers occupying the middle Yangtze river basin were the first to invent pottery who led a sedentary lifestyle (Yasuda 2008). Excavations at the sites of Xianrendong and Diaotonghuan in the Jiangxi province have provided ample evidence for the understanding of the transition from Palaeolithic to Neolithic period (Chi 1999). Several archaeological sites of South China have yielded potsherds of thick walls with coarse inclusions in South China. Most of these sites are associated with flaked or ground stone tools and ground organic implements. These early potters are interpreted as affluent foragers whose livelihood was based on diversified natural resources. They made pottery characterized by thick, crumbled walls built by hand pinching and without decoration (Lu 2010). Recent intensive research into the neolithic phase of southern China suggests an early beginning of the culture from around 11,000 - 8,000

Fig. 7: From Nanchuangtou site (courtesy Ruihai and Jun 2002: 196)
With the rise of temperature, early Neolithic culture spread to other areas of middle and lower Yangtze river valley and formed the heartland of rice agriculture subsequently (Chi 1999: 99). In north China, the evidence of ancient pottery is slightly later than South Chinese context (Yang 2012).

**Japan**

The earliest evidence of ceramics has come from several sites of Honshu and Shikoku Islands of Japan and some of the most important sites are Odai Yamamoto 1, Fukui cave, and Kamikuroiwa. The 6th layer of the site of Kamikuroiwa has been dated to 10,085 BP and the 9th layer to 12,165 BP yielding pottery. Other sites are Senpukuji, Isigoya, Maedakochi, Shimomouchi, Katsusaka, Kamino, Nasunahara, and Hanamiyama dated between 10,280 BP to 11,360 BP of which the ceramic types resembles with the Fukui Cave. Along with pottery most of these sites have yielded a microblade industry comparable to the lithic industries of Eastern Siberia and the Russian Far East. Ceramics from the site of Odai Yamamoto 1 has demonstrated a coarse preparation with undecorated surfaces and dated to 12,000 years BP comparable to the Higashi-Rokugo site on Hokkaido. The Kosanri site in Korea has also yielded early pottery.

**Odai Yamamoto I site**

The Odai Yamamoto I site, located at the northern end of the Honshu Island in Japan was excavated in 1975 and 1976 which yielded typical Chojakubo type stone artifacts and plain Mumon type pottery with a flat bottom and two arrow heads which are distinctive of Jomon culture. Subsequent excavations in 1998 have yielded more pottery in association with stone artefacts. Although not reconstructed fully, a pot possibly had a flat base, possibly a deep bowl or a pot, however, without any clear surface decoration (Fig. 9). The charred materials on the surface of the pottery have been identified as ancient food residues or fuel carbon for cooking. Boiling of food has been suggested on the basis of a water level line inside the pot. Radiocarbon determination suggests a date of use of pottery at the site between 13,780 - 13,070 BP and calibrated age as 16,540 - 15,710 cal. BP, using INTCAL98 calibration data (Nakamura et al. 2001).

**Fukui Cave**

Earliest pottery from site of Fukui cave on the southern most Japanese Island of Kyushu has been dated to 12,400 ± 350 BP and 12,700 ± 500 BP. The pottery in different layers of the site represents different characteristic features: rotated stump pottery in the first layer, fingernail incised pottery in the second layer and linear band appliqué in the third layer. There is evidence of association of micro-blade tradition with appliqué ceramics and the bifacial arrowheads with non-
decorated ceramics and then finally the emergence of cord-marked pottery (Kajiwara and Kononenko 1999).

Some other important sites (Fig. 10) also yielding early pottery suggest a strong cultural exchange between the Japanese Islands and the Russian Far East (Nakamura et al. 2001, Ono et al. 2002).

**Russian Far East and Eastern Siberia**

Although the beginning of agriculture is comparatively late in Russian Far East when compared to China, pottery appears quite early, particularly in the regions of Amur river basin, Promorye province and Sakhalin Island. In the context of Amur river, Osipovka complex, particularly the site of Gasya is very significant as it has yielded early evidence dated back to c. 13,000 BP. Another important Neolithic context Gromatukha in the middle reaches of the Amur river has been excavated since 1960s and yielded radio-carbon chronology of 12,3000 BP to 13,200 BP, comparable to the Osipovka complex. The Ust-Karenga complex in the middle reaches of Vitim river in Eastern Siberia has also provided similar chronological framework of 11,200-10,800 BP (Kuzmin 2002). The pottery fragments from the site of Usti-Kyakhta have been dated to 12,595 ± 50 BP and 11,505 ± 100 BP. Some other important sites of this area are Usi-Ulima 1 and 2 located on the
Selemzha river, a tributary of the Amur (Kajiwara and Kononenko 1999: 65)

**Osipovka Complex**

The excavations since 1960s at the site of Gasya in the Amur river, one of the important sites of Osipovka complex have yielded pottery in association with Mesolithic-like laurel-leaf point. Reconstruction of a pot suggests its shape as conical with a flat base having 25 - 27 cm height, 1.2 - 1.7 cm thickness of the wall and 1.5 – 1.7 thickness at the base. The simple designs at the external surface show vertical grooves. Plant fiber was used as tempering material. Pottery from the site of Khummi are also plant fiber tempered, however, due to small size of the fragments, reconstruction has been a problem. Another site Goncharka has yielded a good number of potsherds and four flat based vessels have been reconstructed. The potsherds demonstrate horizontal internal scratches made by either bundled of grass or a comb. The rim portion has wave like indentations made by pressing sticks or cords. Apart from these potsherds which have internal decorations, there are some other potsherds being decorated with external comb-like instrument or cord-impression, the well-developed designs showing vertical zigzag pattern were made with a comb. The lowermost level of the site of Goncharka is dated to 12,500 ± 60 BP. Another important site, Khummi yielding pottery is dated to 13,260 ± 1000 and 10,345 ± 110 BP (Kajiwara and Kononenko 1999, Kuzmin 2002 and detailed references therein).

**Gromatukha and Ust-Karenga Complex**

The site of Gromatukha on the Zeya river has recorded in excavations a good amount of pottery having tempered with fiber. A reconstructed vessel shows grooves on its internal and external sides and have flat base with a thickness of 0.7 - 0.8 cm of the wall portion. Pottery from the site of Ust-Karenga has quite elaborated designs with comb impressions, zigzag and cogged stamps and tempered with plant fiber (Kuzmin 2002 and detailed references therein).

The stone artifacts and pottery types found in northern Japan at the Pleistocene-Holocene transition show certain homogeneity with those found in the Osipovka culture from the Amur river basin which may be explained through the commonality of subsistence base in these regions (Kajiwara and Kononenko 1999: 65). The pottery from the site of Ustinovka dated to 10,500 years BP shows no decoration except the row of perforations under the rim and shallow horizontal
Scratches on the inner surface. These are analogous with the pottery from Japan, particularly from the Jim site in Niigata and Katsusaka in Kanagawa (Kajiwara and Kononenko 1999: 67).

Sakhalin Island

Sakhalin Island is the largest island in the northern part of the Pacific Ocean. It extends in a north-south direction along with the islands of the Japanese Archipelago forming the eastern boundary of the Japan Sea basin. Several sites, located in the Sakhalin Island such as Ado Tymovo 2, Nyivo 2, Starodubskoe 3, Malyi Ruchei, and Porech’e 4 have yielded fragmentary pottery at around 9,000 – 8,000 years BP. These earliest pottery bears traces of mollusk temper which are identified by the characteristic pits in the surface and on breaks of the pottery fragments. Due to scanty material and absence of diagnostic features, the shares have not been well reconstructed. The thickness of wall is up to 1 cm. The use of mollusk tempering in early pottery support an independent tradition of pottery making in Sakhalin as it has not been found in the neighbouring Japanese Islands and Jomon culture (Zhushchikhovskaya and Shubina 2006: 111-112).

Cord-impressed Pottery

As the term suggests, cord-impressed pottery bears cord-impressions, mostly on the outer surface, either partially or fully. Impressions are made either as a decorative pattern with a paddle wrapped with a cord, or they remain over the surface as a by-product while beating and shaping the pot in leather-hard condition with a cord-wrapped paddle. These impressions can be considered either as decorations (stylistic) or just as a process of potting (technological) or both, besides its functional aspect, if there is any. The cords are wrapped around the paddle for easy beating of the sticky clay by preventing the paddle from sticking to the clay. In many cases, the paddles are also curved with various designs for the same purpose which also depicts impression over the body of the pot. Moreover, cordage or basketry is also used to wrap the paddle. In certain cases, it is observed that these impressions are shallow and not very clear, and so the decorations cannot be figured out. Sometimes, it becomes difficult to identify whether these are cord-impressions or impressions of a carved paddle. All the terms, like cord-impressed, cord-marked and corded wares, are used to designate this kind of pottery (Hazarika 2012). This pottery has a long antiquity in East Asian context.

Discussions

As far as the origin of pottery is concerned the entire area starting with southern part of China, Japan, Russian Far East and Eastern Siberia has provided a chronological sequence for the earliest pottery in the world. With more excavations and dating attempts, we have a fairly good understanding of the date of the earliest pottery.

On the basis of the presence of rice as husks and/or phytoliths found at the sites of Xianrendong and Yuchanyan caves, Lu (1999) earlier suggested that the invention of pottery was also due to the need of cooking cereal food grains. Experimental study and faunal data of shellfish at the sites of Zengpiyan and Dayan suggest another possibility of cooking shellfish as stimulus for the invention of pottery making in southern part of China (Lu 2003: 139).

Kuzmin (2002: 42-43) suggests that hunting and fishing were the possible economic activities of the earliest potters in Russian Far East and pottery must have been used for cooking meat and fish and specially for extraction of fat from anadromous salmonids in the Amur river. Similar suggestions have also been made by Kajiwara and Kononenko (1999). The emergence of pottery was not associated with agricultural activities as the evidence of farming is quite late in comparison to
pottery making. The transition from lithic tradition to the emergence of ceramics in Japan has been correlated with the climatic changes in the post-glacial period and change in the subsistence pattern (Kajiwara and Kononenko 1999: 64). A comparison of the manufacturing technique, surface treatment and ornamentation styles of the early pottery found in Russian Far East and Japan suggest a similar development of prehistoric cultures throughout the Final Pleistocene (Kajiwara and Kononenko 1999: 67). The wide distribution of early pottery making in East Asia has been explained as the result of inter-societal interactions of people living in different environmental condition possibly along with other ideas and technologies (Shelach 2012: 1645).

Origin of pottery has been a crucial issue in world prehistory and several important questions are yet to be answered. Keeping in view the recent data, several independent centers for the origin within East Asia have been suggested (Kealley et al. 2004: 349). Based on a critical examination of the earliest radio-carbon dates for the emergence of pottery in different regions of East Asia and the designs, shapes and other technological characteristics of the early potteries, Kuzmin (2006) suggests an almost simultaneous appearance of pottery technology in different parts of East Asia which makes the possibility of three independent ‘centres’ of pottery origin, located in southern China, Japan, and the Russian Far East. The pace of the beginning of pottery in different parts of the world was asynchronous and a slow process (Kuzmin 2010).

Acknowledgements

Authors are grateful to Prof. Y.V. Kuzmin of the Institute of Geology and Mineralogy, Siberian Branch of the Russian Academy of Sciences, Russia and Prof. Ofer Bar-Yosef of the Department of Anthropology, Harvard University, USA especially for their suggestions. Photographs used in this article are by the courtesy of Prof. Yoshinori Yasuda of International Research Center for Japanese Studies from his edited book The Origins of Pottery and Agriculture published in 2002.

References


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