Introduction: Changing the Paradigm

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> " … And the Lord God formed man of the dust of the ground"
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> Genesis, Ch. 2: 7

Undoubtedly, the transition from the Palaeolithic to the Neolithic is among the most important events in Old World prehistory. The usual definition of the Neolithic period includes the presence of both pottery and agriculture. In one of the most recent archaeological dictionaries the Neolithic is described as "[a] period in prehistory originally defined by the occurrence of polished stone tools and pottery" (Darvill 2002:286), but further that it is "[n]ow used most frequently in connection with the beginning of farming" (Darvill 2002:286). Another basic source gives us a broader definition of the Neolithic: "Although the Neolithic was originally defined with reference to presence of ground and polished stone tools in lithic assemblages, it quickly became associated with a major set of cultural and economic changes including the use of pottery, the domestication of animals, agriculture and sedentary living" (Jameson 1999).

In East Asia, however, the understanding of the term 'Neolithic' as "an Old World chronological period characterized by the development of agriculture" (Renfrew and Bahn 1996:543) makes the situation unclear, due to the quite late appearance of agriculture compared with the emergence of pottery (cf. Cohen 1998). Since Chester E. Chard's studies of northeast Asian prehistory, the term 'Neolithic' refers mainly to the presence of pottery (Chard 1974:63-64, 87-90), and this continues generally in the latest compilations (cf. Barnes 1999:17, 69). In modern Russian archaeology, 'Neolithic' also means the presence of pottery (Oshibkina 1996).

In the early stage of the Jomon tradition in Japan, agriculture is missing (Crawford 1996). Thus, East Asia shows a strong difference from the Near East and Europe where the most common approach to the earliest Neolithic societies is by reference to their agricultural character. The situation with the Neolithic stage in East Asia has become even more complicated since the early 1960s, when extremely early radiocarbon (hereafter ^{14}C) dates, 12,700-12,200 ^{14}C years ago (BP), were obtained for two sites with pottery in Japan, Fukui Rockshelter and Kamikuroiwa (Ikawa 1964). Throughout the 1970s and 1980s, the abundance of evidence for the very early appearance of pottery in East Asia, as compared with the rest of the Old World, was constantly growing. Nowadays, we have solid data to establish the beginning of pottery production in East Asia at ca. 13,000 BP. The earliest agriculture in East Asia, on the other hand, appears at ca. 8400-8000 BP (Chang 1986; Crawford and Shen 1998; Higham and Lu 1998). It is now quite possible to represent this disjuncture between the appearances of pottery and of agriculture as "the East Asian model of the Neolithization."

Recently, two volumes on the archaeology of the Pleistocene-Holocene transition were published (Straus et al. 1996; Eriksen and Straus 1998). In this Special Issue, we concentrate on the Palaeolithic-Neolithic transition in greater East Asia, including China, Japan, Korea, Mongolia, the Russian Far East, and the Pacific Islands. There are three main foci: archaeology, chronology, and the environment of the final Palaeolithic and initial Neolithic cultural complexes. We assume that the appearance of pottery in East Asia manifests the beginning of a new stage of the human culture, the Neolithic. Radiocarbon data are the backbone of cultural chronology and periodization, and particular attention is given to the most recent progress in the dating of the earliest pottery-containing sites.

C.T. Keally, Y. Taniguchi, and Y.V. Kuzmin review the archaeological and environmental aspects of the emergence of pottery in East Asia, with a particular focus on the Japanese Islands. This is the first systematic description in English of the current status of the earliest Jomon archaeology and environment. As is traditional in Japanese archaeology, the Incipient Jomon is sub-divided on the basis of pottery typology. Radiocarbon dating of the Incipient Jomon and early Initial Jomon sites creates solid evidence for the appearance of pottery manufacture in Japan at ca. 13,500 BP; in total, about 100 ^{14}C dates were used in this study. The quantitative approach gives us an opportunity to understand the dynamics of pottery production and use, with the conclusion that pottery had become common in everyday life at the beginning of Initial Jomon, ca. 10,000 BP. Judging from the carbon stable isotope values of the charred food on the surface of potsherds, it is evident that the first vessels were used for the cooking of vegetables and meat. Environmental data indicate that the emergence of pottery in Japan preceded the abrupt climatic changes in the Late Glacial, such as Oldest Dryas and Bølling.

X. Wu and C. Zhao introduce an updated summary of the earliest Chinese Neolithic ^{14}C chronology and brief characterization of the associated artifact assemblages. The territory of the modern People's Republic of China is crucial for understanding the patterns of Palaeolithic-Neolithic transition in East Asia and the whole Old World, along with two other areas, Japan and the Russian Far East. In this chapter, important new ^{14}C dates are presented. As was recently observed in different places in northern Asia (Siberia, Korea, China), polished tools and grinding stones appeared in the late Upper Palaeolithic, and the presence of earthenware is the most reliable indication of the Neolithic in this part of the World. The newly released ^{14}C dates supposedly associated with the earliest pottery from South China are much older than anywhere in East Asia (Zhao and Wu 2000). For the Xianrendong site, the earliest dates now are ca. 16,400-16,300 BP. For the Diatonghuan site, the earliest pottery may be dated to earlier than ca. 15,100 BP.

However, some remarks should be made about the chronology of the earliest Neolithic sites in South China. Diatonghuan has furnished the first and as yet single Late Glacial ^{14}C date obtained, and further evidence is necessary to confirm Wu's assertion. The situation with Xianrendong is much more complicated compared with the straightforward view presented in this chapter, as well as in other recent papers (cf., Zhang 2002). For layer 3C1b of this site, another ^{14}C value exists: 17,420±130 BP (AA-15008) (MacNeish and Libby 1995). As for the chronology of zone 3C, there is a ^{14}C date from the underlying zone 3B1, 14,185±290 BP (BA93181) (MacNeish and Libby 1995). From zone 3, the ^{14}C date is 15,180±90 BP (UCR-3300) (MacNeish and Taylor 1995). It seems that the stratigraphy of the Xiarendong site is not perfect, and disturbance in the cultural layers may have taken place. Keeping in mind the importance of the appearance of pottery, we should remain cautious and con-

tinue chronological studies of Xianrendong and Diatonghuan. Before this latest dating, the most reliable age estimate for the Xianrendong earliest pottery is ca. 12,400 BP from zone 3B1. As for South China in general, the most reliable pottery-associated ^{14}C dates are around 13,700 BP (see Keally et al., this volume).

D.J. Cohen provides an informed broad review of archaeological and chronological aspects of the Palaeolithic-Neolithic transition in China, with discussion of the Upper Palaeolithic complexes. He points out that the invention of pottery in East Asia at around 16,000-13,000 BP was not accompanied with agriculture or sedentism. He concludes that the transition from the Upper Palaeolithic to full Neolithic cultures in China and East Asia was not necessarily a universal linear pathway from one culture stage to the next. Rather it encompassed multi-directional and multi-dimensional changes that span a transition of over 6000 years.

Y.V. Kuzmin and I.Y. Shewkomud present an overview of the archaeology, chronology, and environment of the final Upper Palaeolithic and Initial Neolithic cultural complexes ('cultures' in Russian archaeological terminology) from the Amur River basin and Primorye (Maritime) Province. To make ^{14}C measurements of the organic temper in pottery, such as plant fiber, a special technique was developed. The ^{14}C values obtained were cross-checked with dates run on wood charcoal. Kuzmin and Shewkomud briefly characterize the main features of the stone tool assemblages. They find almost no difference between the Final Palaeolithic and Initial Neolithic, the only difference between them being the presence of pottery in the Amur River basin sites belonging to the Osipovka and Gromatukha cultures. The earliest pottery from the Gasya site, ^{14}C-dated to ca. 13,000 BP, is coarse and plant-fibre-tempered. Later, the pottery with comb pattern and without plant fiber appeared in the Goncharka 1 site at ca. 10,300 BP. The earliest plant-fibre-tempered pottery is ^{14}C-dated in neighbouring Primorye to ca. 10,800 BP, and at ca. 9500 BP sand-tempered pottery appeared. The main conclusion is that plant-fibre-tempered pottery appeared in the Amur River basin by ca. 13,000 BP, and corresponds to the Bølling (ca. 12,800-12,300 BP), one of the climatic ameliorations within the Late Glacial.

K. Bae and J.C. Kim compile the updated ^{14}C chronology of the Palaeolithic complexes in the Korean Peninsula, with a glance at the earliest Neolithic chronology. Compared with previous studies, which were very limited in terms of data (cf., Lee 1982; Nelson 1993), we have significant progress in establishing a chronological framework for the microblade assemblages in Korea, which now start at ca. 24,000 BP. The data on the Palaeolithic-Neolithic transition remain scanty, and we can only provisionally suggest that the earliest pottery-containing sites are as old as ca. 10,000 BP.

A.P. Derevianko, S.A. Gladyshev, T.I. Nohrina and J.W. Olsen provide an analysis of archaeology and chronology of Chikhen Cave in the Gobi Desert, the most fully studied Final Pleistocene/Early Holocene site in Mongolia. Culturally it can be associated with the 'Mesolithic', due to the virtual absence of pottery and microlithic tool assemblages. Such sites have been known in the Gobi since the 1920s (Chard 1974: 62-63), but their age remains uncertain. In this study, 19 ^{14}C dates are presented (mostly from hearth charcoal), and this indicates site occupations between ca. 5600 and ca. 11,500 BP. The dry desert cave environment was favourable for the survival of perishable items, such as wooden tools and grass beddings. It is clear that much more work is necessary to determine the age of the Mongolian Neolithic.

M. Spriggs has assembled a comprehensive and updated chronology of the transition to the Neolithic for Island Southeast Asia and the Western Pacific. Along with ^{14}C data, archaeological, linguistic, and genetic information was used to evaluate the existing modes of the Neolithization of the vast area which covers Taiwan, the Philippine Islands, Sunda Isles, New Guinea, and Melanesia. In total, about 390 ^{14}C values are used for establishing the chronological framework. This is the most complete list of ^{14}C data for the area, compiled after careful evaluation of the date reliability using so-called 'chronometric hygiene'. In Island Southeast Asia, the emergence of the Neolithic took place between about 6000-3000 BP, much later than the neighbouring mainland. In Taiwan the earliest pottery is ^{14}C-dated to ca. 5300 BP. In the Philippines, on Luzon, the earliest pottery is dated to ca. 5000-4500 BP, and only to ca. 2800 BP on Palawan Island. In the Sunda Isles the earliest pottery may be dated to ca. 4000 BP on Borneo. On the majority of other big and smaller islands within the Sunda Archipelago, the beginning of pottery production is dated to approximately the same time: on Java, ca. 3300-3100 BP; on East Timor to ca. 3500 BP; on Talaud and Sulawesi to ca. 3600 BP; on the Northern Moluccas to ca. 3400-2900 BP. For northern New Guinea, the earliest pottery is dated to ca. 3800 BP; in the Bismarck Archipelago to ca. 3400-3100; and in the Solomon Islands to ca. 3500-3100 BP. In addition to the thorough analysis of ^{14}C chronology for the aceramic/ceramic transition in Island Southeast Asia and Western Pacific, the current state of the Lapita pottery complex origins is discussed by Spriggs.

The emergence of pottery changed human lifestyles so radically that we can put it along with the beginning of agriculture in terms of influence on prehistoric subsistence. As it is quoted at the beginning of this introduction, the new society was formed out of the clay ('dust' in Biblical sense). Now it is time to adjust earlier paradigms, and consider the appearance of pottery as one of the most revolutionary features at the time of the Pleistocene-Holocene transition in the Old World, particularly in East Asia. We hope that this Special Issue will serve as a source of new data, and that their understanding and its interpretation will lead us to the creation of a new paradigm.

Finally, I wish to express my deep gratitude to Prof. Charles F. W. Higham (Otago University, Dunedin, New Zealand) for his useful discussions, and for correcting and polishing the English in several papers in this issue. □

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