THE NEOLITHIC OF THE RUSSIAN FAR EAST AND NEIGHBOURING EAST ASIA: DEFINITION, CHRONOLOGY, AND ORIGINS

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ABSTRACT

The exact definition of the term "Neolithic" is discussed and the spatio-temporal coordinates of the main Neolithic-related phenomena in greater East Asia, pottery and cultivation of plants and animal husbandry, are presented. In this part of Eurasia, pottery-making preceded agriculture by several millennia. Pottery may be accepted as the major criterion of the Neolithic epoch in the hunter-fisher-gatherer continuum of East Asian prehistory. This situation differs from that in the Near East, where plant and animal husbandry developed before the emergence of pottery, and Europe, where pottery and agriculture appeared almost simultaneously. Thus, today, three main trajectories for Neolithisation may be defined in Eurasia. The ultimate reason for the origin of pottery in East Asia remains unclear.

INTRODUCTION

In the last two to three decades, the meaning of one of the basic terms in prehistoric archaeology, "Neolithic", has become obscure due to the accumulation of new data in different parts of the Old World, mainly in Eurasia (see some of the latest discussions: Bellwood 2005; Barker 2006). This new information does not fit models of Neolithisation that highlight cultivation of plants (and to some extent animals) as primary criteria (e.g. Davison et al. 2007). It is timely to discuss the current situation in light of data that have become available during the late 2000s and early 2010s. Spatio-temporal aspects of the two main components of the Neolithic in East Asia, pottery and agriculture, are presented (see also brief discussion in Kuzmin et al. 2009:892-897). All ^{14}C ages are calibrated and quoted at the two sigma range, using Calib Rev 6.0.1 (Reimer et al. 2009). All date ranges are rounded to the nearest century.

DEFINITION OF TERMS

As is well-known, the term "Neolithic" was coined by Sir John Lubbock in his *Pre-Historic Times* (first edition 1865): "The later or polished Stone Age; a period characterized by beautiful weapons and instruments made of flint and other kind of stone … This we may call the "Neolithic" period." (Lubbock 1878:2-3). Along with polished tools, Lubbock (1878:16) also considered pottery as part of the Neolithic "package", and gave a hint that agriculture could be another phenomenon that appeared for the first time in the Neolithic of Switzerland (Lubbock 1878:236). In the 1920 to 30s, the situation changed with the introduction of V. Gordon Childe's concept of the "Neolithic Revolution", with agriculture as the main criterion. After the Second World War, the meaning of the Neolithic stage in human prehistory became more and more diverse, as described in detail by Thomas (1993).

In the 2000s, opinions were expressed concerning the Neolithic, such as that by Bahn (2001:317):

> Over the last century, the term ….. has become progressively more equivocal. For instance, in the Near East, the first food production occurs before pottery; in Japan, pottery appears among foraging populations without food production.

Jameson (1999:423) states:

> Although the Neolithic was originally defined with reference to the 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. Up until the 1950s and the widespread use of radiocarbon dating, it tended to be assumed that, in each region, these changes occurred together as a package. In some regions, it has become apparent that this is an over-simplification.

As a result, in some dictionaries the term "Neolithic" has been presented as:

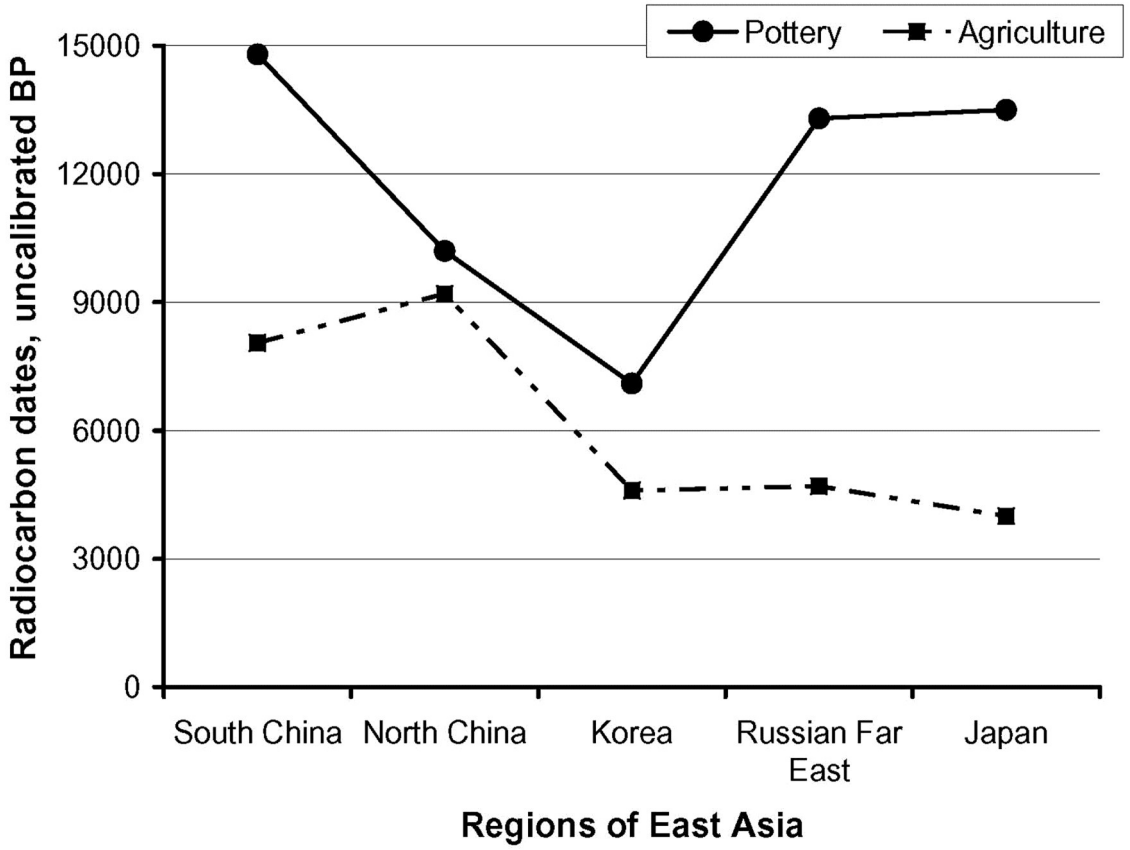

Figure 1. Chronology of the emergence of pottery and agriculture in the main regions of East Asia (for references, see text).

> A period of prehistory originally defined by the presence of polished stone items and pottery. Now used most frequently in connection with the beginning of farming. … The appearance of characteristic polished flint and stone types, including axes, adzes, and arrowheads, is generally also associated with the introduction of cereal cultivation and animal domestication, and in Europe with earliest manufacture of pottery (Darvill 2002:286).

It is clear that nowadays it is impossible to give universal worldwide definition of the Neolithic, so it is very important to define the main terms which are used in this discussion. To me, the most precise definition of the term **"**pottery", as one of the major criteria of the Neolithic, is: "clay that has been fashioned into a desired shape and then dried to reduce its water content before being fired or baked to fix its form" (Darvill 2002:337-338). Thus, we can accept that "pottery" means primarily vessels made of fired clay. The term **"**ceramics**"** has wider meaning and includes any objects made of fired clay: "any artifact made of fired clay, belonging to pottery, figurine, or other ceramic industries" (Kipfer 2000:103). The term **"**agriculture" is more or less self-explanatory. One of the latest discussions on this subject can be found in Harris (2007) (see also Kuzmin et al. 2009:892).

Based on the most widely accepted views, in East Asia the Neolithic is associated primarily with an occurrence of pottery in artefact assemblages (e.g. Chard 1974; Barnes 1999; see also Kuzmin 2006). Some scholars, however, consider the earliest pottery sites in South China, without agriculture and dated to ca. 18,500 to 13,800 calibrated years ago (hereafter – cal BP), as belonging to the late Upper Palaeolithic (Prendergast et al. 2009). This is an example of a "Levantine" perspective on the definition of the "Neolithic" (see below).

DISCUSSION

Spatio-temporal patterns of the Neolithisation of East Asia

In order to understand the dichotomy between pottery and agriculture in East Asia, the most recent information about the timeframe for the emergence of these phenomena is presented (Figure 1) (see Kuzmin 2006; Kuzmin et al. 2009). The earliest East Asian pottery currently comes from South China, dated at Yuchanyan Cave to ca. 14,800 to 14,600 radi-

ocarbon years ago (BP) (or ca. 18,500 to 17,500 cal BP) (Boaretto et al. 2009). In the Japanese Archipelago and the Russian Far East (Amur River basin), pottery appeared slightly later than in South China, at ca. 13,500 to 13,300 BP (or 16,700 to 14,900 cal BP) (Kuzmin et al. 2004). Pottery from North China and Korea is much younger: ca. 10,200 BP (or ca. 12,400 to 11,400 cal BP) and ca. 7100 BP (ca. 8200 to 7700 cal BP), respectively (e.g. Choe and Bale 2002; Kuzmin 2006).

As for the emergence of agriculture in East Asia, it is now dated to ca. 9200 to 7300 BP (or ca. 10,600 to 7900 cal BP) in North China and ca. 8000 BP (or ca. 9300 to 8600 cal BP) in South China (for the latter region, see Kuzmin et al. 2009:895-897). In Korea, the Russian Far East (modern Primorye Province), and Japan the earliest plant cultivation is dated to ca. 4600 to 4500 BP (or ca. 5600 to 5000 cal BP) (see reviews in Crawford 2006; Kuzmin 2008:6; Kuzmin et al. 2009). It is obvious that pottery-making in East Asia appeared within a hunter-fisher-gatherer cultural continuum long before the beginnings of plant cultivation, with age differences up to almost 10,000 years in the case of Japan (Figure 1).

Possible cause(s) for the initial use of pottery in East Asia and worldwide

Several factors may be considered as "triggers" for the initial development of pottery, such as climate change, cultivation of plants, and social phenomena (see, for example: Rice 1999:1-14). Climate change could have been responsible for the introduction of pottery vessels after the extinction of megafauna at the end of the Pleistocene and the subsequent move to exploit plant and smaller animal food resources. Pots could have been used for the cooking and storage of cultigens. Increasing social complexity could have been responsible for the invention of pottery as a "prestige good".

The current chronology for the appearances of pottery and plant cultivation rules out agriculture as a possible cause for pottery invention in East Asia (see above; Figure 1). This is in excellent accord with an earlier observation by Rice (1999:44): "The origins of pottery are conceptually, geographically, and empirically distinct from the processes and characteristics of "neolithization" (plant and animal domestication, sedentary village life) and pre-date these phenomena by millennia."

The use of pottery as a symbol of status in the Initial Neolithic of East Asia is hard to accept, because it is my understanding that, at that time, the level of society was one of simple and small hunter-fisher-gatherer bands without any sign of social stratification. Generally speaking, a presence of pottery cannot be correlated with any specific level of social organisation. Perhaps, one of the best examples is the Northwest Coast of North America, where in the 1770s James Cook described native Americans of Nootka Sound (Vancouver Island) as having an advanced social structure (chiefdom level) but no pottery (see, for example: Fagan 1995:217). Pottery was introduced to this part of North America by Spaniards, Russians, Britons, and Bostonians (Yankees in some sources), after the first exploration campaigns in the 1780–90s at the earliest. Thus, pottery is not a mandatory sign of social complexity.

Climate change, and ecological change in a broader sense, is one of the strongest candidates as a factor responsible for the invention of pottery. However, the situation in East Asia is not straightforward, nor is it in other parts of the Old World (Balter 2010). As stated by Taniguchi (2006; see also Taniguchi and Kawaguchi 2001), the earliest pottery in Japan appeared *before* the Bølling–Allerød climatic amelioration (ca. 14,700 to 12,900 cal BP), and coincided with the cooling during the Oldest Dryas period (ca. 17,500 to 14,700 cal BP). The same is true for South China (Figure 2). Therefore, there is no direct relationship between the emergence of pottery and environmental change in East Asia. Some trends, however, can be observed. Changes in the quantities of pottery through the Incipient Jomon at sites in Japan are particularly interesting (Keally et al. 2003:6-9; Taniguchi 2006). In Phase 1 (ca. 16,700 to 15,100 cal BP) there are up to 100 potsherds in each site. In Phase 2 (ca. 15,100 to 13,500 cal BP) the numbers increase to 200–2000 sherds, and in phases 3 and 4 (ca. 13,500 to 9700 cal BP), sites contain up to several thousand sherds. This suggests a continuing intensification of pottery production during the gradual postglacial climatic amelioration in the Japanese Islands, into the Early Holocene (e.g. Taniguchi 2006).

Comparison of East Asian data with the rest of Eurasia: a brief review

It seems useful to compare the relationship between the appearance of pottery and agriculture in East Asia with some regions of Eurasia which have sufficient information. In the Near East, the earliest evidence of domesticated plants is known from Abu Hureyra in the Euphrates River basin, dated to ca. 13,300 to 12,100 cal BP (Hillman et al. 2001). The emergence of the first fully-fledged agricultural complex, Pre-Pottery Neolithic B (PPNB), is dated to ca. 11,200 cal BP; pottery appeared much later, in the Pottery Neolithic (PNA) complex (ca. 9000 cal BP) (e.g. Waterbolk 1994; Aurenche et al. 2001).

In Europe, the beginnings of pottery-making and agriculture almost entirely coincide (e.g. Whittle 1996; but see Budja 2005:63). In south-eastern Europe, the first Neolithic complexes appeared ca. 8500 cal BP, and in Central Europe at ca. 8000 to 7500 cal BP (Bellwood 2005:69, fig. 4.1). Attempts to locate one of the sources of the European Neolithic in eastern Eurasia (e.g. Dolukhanov and Shukurov 2004; Davison et al. 2007, 2009), without serious proof of any phylo-

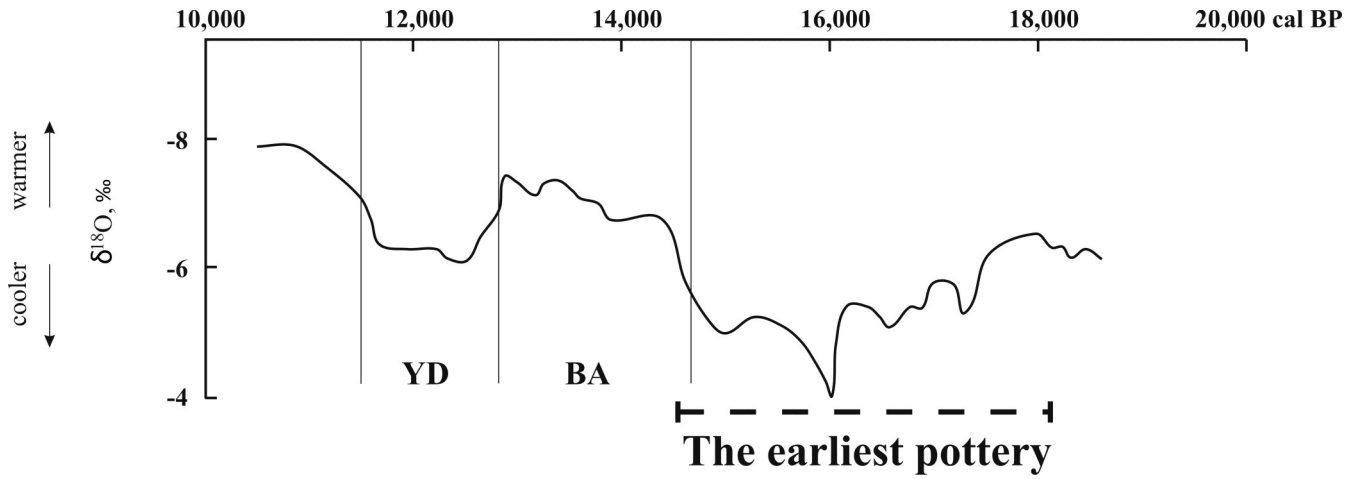

Figure 2. The timing for appearance of pottery in South China and Japan (thick dashed line), against the background of the oxygen isotope record from PD speleothem in Hulu Cave, China ($\delta^{18}O$ relative to VPDB; after Wang et al. 2001, simplified). Abbreviations: BA—Bølling-Allerød; YD—Younger Dryas.

genetic relationship between East Asian and East European Neolithic (i.e., pottery) complexes, seems unproductive, because in the absence of any evidence for direct transmission the application of the statistical approach used by Davison et al. (2007, 2009) is invalid; see a critique in Kuzmin et al. (2009:894). As examples of the proper use of mathematics in investigating the spread of Neolithic complexes, studies by Russel (2004) and Coward et al. (2008) are worth mentioning.

Thus, the main components of the Neolithic "package" in different parts of Eurasia did not emerge simultaneously. This most probably shows that there were several scenarios of the Palaeolithic to Neolithic transition on this supercontinent. In mainland Southeast Asia, for example, the earliest pottery is quite young (ca. 4000 cal BP; see Higham 2002) compared to neighbouring East Asia (see Figure 1). In insular Southeast Asia, it is also late: ca. 4800 to 4000 cal BP (Spriggs 2003). Despite relative geographic proximity to the East Asian "cradle" of pottery (see Kuzmin 2006:363; see also Figure 1), the "delay" in the appearance of pottery vessels in these regions is noteworthy.

CONCLUSIONS

It is impossible today to create a single definition of the term "Neolithic". Two main phenomena of this epoch, agriculture and pottery, appeared independently of each other. In East Asia, pottery may be accepted as the primary indicator of a new cultural stage, the Neolithic. Three major trajectories of the Neolithisation can be tentatively distinguished in the Old World: 1) *Levantine*, with agriculture as the main criterion; 2) *European*, with simultaneous appearance of both agriculture and pottery; and 3) *East Asian*, with pottery as the first indicator of the new cultural epoch following the Palaeolithic. There are many intermediate archaeological complexes which do not belong to these general categories.

The driving forces behind pottery origins in East Asia, and worldwide, remain unclear; none of the obvious factors, such as climate change, agriculture, or social structure, can have been fully responsible. The ultimate reason for inventing pottery, in my understanding, was the need for waterproof containers for storage and the preparation of food, including plants and their fruit, fish, and molluscs. Therefore, the appearance of pottery was determined mainly by utilitarian needs.

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