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Food, pots and socio-economic transformation: The beginning and intensification of pottery production in North China



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ABSTRACT

Ceramic is one of the most transformative and enduring technologies in human history. This paper addresses the development of pottery production in North China since its appearance during the late Pleistocene, and through its development and use first by hunter-gatherer societies and then by the early sedentary village communities. We analyze the economic and social context for the beginning of pottery production in North China and argue that pottery was a transformative agent in the dramatic dietary and social changes that occurred prior to and during the transition to agriculture. At the same time, pottery technology and pottery production were also transformed by this trajectory, especially during the relatively rapid transition to large-scale sedentary villages that took place in North China. A model is developed to chart the feedback processes that embody this trajectory.

1. Introduction

Ceramic is one of the most transformative and enduring technologies in human history. Though much has changed over the years in the way people select and prepare the raw materials, form the shapes of vessels, and fire them, the basic technology – or more precisely, its fundamental principle, which is the transformation of clay through exposure to extreme heat – remains the same technology that was applied to the production of the earliest pottery some 20,000 years ago. Today, in spite of the enormous advances made in the procuring and manufacturing of innumerable materials of varied qualities and purposes, ceramic technology remains widely used in the production of cooking, serving and storage vessels, as well as a variety of modern purposes, including in electronics, the automotive and aircraft industries, in armored parts and more.

Ceramic is also transformative in nature, not only because it is perhaps the first major human technique of artifact production in which the material itself is chemically transformed, but also because ceramic vessels (pottery) were an integral part of the economic, dietary and social transformations undergone by humankind. It will be argued below that pottery was a transformative agent in the dramatic dietary changes that occurred with the transition to agriculture; yet, at the same time, that it was also transformed by it. The focus of this paper is North China, where these processes occurred locally, but references will be made to other parts of China and East Asia as well.

2. The origins of ceramic vessels

The association of the beginnings of pottery production with the transition to agriculture, or the ‘Neolithic Revolution’ as it was traditionally referred to, has deep roots in archaeological and historical thinking. Sir John Lubbock was perhaps the first to make such a connection explicit, in his book *Pre-Historic Times* (Lubbock, 1865; quoted in Jordan and Zvelebil, 2010b: 46), and this became the leading paradigm through the influential writing of V. Gordon Childe (e.g. Childe, 1939). In the Levant, the beginning of pottery production some one thousand years after agricultural villages were already well-established was interpreted as evidence that this new industry was an outcome of the transition to agriculture. Although the timing and context of the beginning of pottery production in the Levant is currently being revised (Biton et al., 2014), the production of pottery was traditionally understood as catering to needs arising from the new economy and dietary habits of Neolithic communities (Garfinkel, 1999). For areas where agriculture did not develop locally, such as Europe, the parallel diffusion of agriculture and pottery is still a recurrent theme in archaeological writings (Barker, 2006: 405).

Since the latter part of the 20th century, however, increasing numbers of researchers started to pay attention to evidence which suggests that not only agriculturalists, but also hunter-gatherers, produced pottery. This phenomenon is known from ethnographic studies (Nelson, 2010) and supporting archaeological evidence from different parts of the world has accumulated quickly (Jordan and Zvelebil, 2010a). By the 1960s and 1970s, pottery from Jomon period sites in

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Fig. 1. Location of sites mentioned in the paper: 1, Houtaomuga 后套木嘎; 2, Daxinjing 大新井; 3, Xiaohexi 小河西; 4, Yushushan 榆树山; 5, Xiliang 西梁; 6, Baiyinchanghan 白音长汗; 7, Chahai 查海; 8, Xinglongwa 兴隆洼; 9, Donghulin 东胡林; 10, Zhuannian 转年; 11, Yujiagou 于家沟; 12, Nanzhuangtou 南庄头; 13, Shizitan 柿子滩; 14, Cishan 磁山; 15, Houli 后李; 16, Bianbiandong 扁扁洞; 17, Lijiagou 李家沟; 18, Peiligang 裴李岗; 19, Lingjing 灵井; 20, Jiahu 贾湖; 21, Xianrendong 仙人洞; 22, Yuchanyan 玉蟾岩.

Japan were dated much earlier than the introduction of agriculture into this region during the first millennia BCE (Crawford, 2011). In fact, Jomon sites provided the earliest evidence of pottery worldwide known at the time. Subsequent research pushed back the dates of incipient Jomon sites and the potsherds found in them to c. 16,000 cal BP (Cohen, 2013; Habu, 2004; Kaner and Taniguchi, 2017).

Subsequently, early pottery was found in pre-agriculture strata throughout East Asia, including South and North China, Korea, and the Russian Far East, and it became clear that, during the Last Glacial Maximum and up to the Early Holocene, low-level pottery production was practiced by societies throughout this region (Cohen, 2013; Kaner and Taniguchi, 2017; Kuzmin, 2006; Shelach, 2012; Zhuang, 2015). Low-level pottery production, or expedient pottery, to use the terminology of Sturm et al. (2016: 651), implies the use of low-investment technology and the production of a small number of pots, usually for a specific task and to be used for a short period of time. Evidence of such production and use of pottery by prehistoric hunter-gatherer societies was also discovered in Europe and other parts of the world (Jordan and Zvelebil, 2010a). These discoveries catalyzed reconsiderations of long-held views about the way social, technological and economic changes and dietary preferences are interconnected, and compelled some scholars to question the a priori association between the advent of pottery production and agriculture (Jordan and Zvelebil, 2010b). Below we survey evidence of the development of pottery production in North China, with an emphasis on Northeast China, as well as the purposes for

which those vessels were used. We use this data to consider different explanations for the genesis of pottery production and how it affected, and was affected by, changing dietary habits and economic preferences. North China is defined here as the region of the Yellow River basin and areas to its north. Northeast China, is a sub-region within North China: the area which was previously known as Manchuria, and which comprises the provinces of Liaoning and Jilin and the eastern part of Inner Mongolia (Fig. 1).

3. The evolution of pottery production in China

The earliest dated pottery known thus far was found at cave sites in the Yangzi River valley: Pottery bearing strata at the Yuchanyan (玉蟾岩) cave in Hunan Province were dated to between 18,300 and 15,400 cal BP (Boaretto et al., 2009). In another cave site, the Xianrendong (仙人洞) cave in Jiangxi Province, an even earlier date was obtained – c. 20,000 cal BP – making potsherds found in those strata the earliest evidence of pottery production anywhere in the world (Cohen et al., 2016; Wu et al., 2012). Complete vessels are difficult to reconstruct from the small potsherds collected at these sites, but they represent coarse, soft, low-fired pottery. The pottery walls are quite thick (0.7–1.2 cm). The clay usually include large pieces of quartz and charcoal. Some of the pots are decorated with cord marks (Fig. 2). Some of the sherds have scorch marks, suggesting they were used for cooking. The small number of potsherds found in each of the sites suggests

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