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Neolithic residential patterns in the southern Caucasus: Radiocarbon analysis of rebuilding cycles of mudbrick architecture at Göytepe, west Azerbaijan

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ABSTRACT

Neolithization took place in the southern Caucasus at the beginning of the sixth millennium BC, most likely as part of the expansion of the Neolithic socioeconomy from the Middle East, where the food-production economy had been established at least a few thousand years earlier. However, local adaptation and indigenous cultural development are also likely to have played important roles in this process, by which distinct Neolithic ways of life emerged in the southern Caucasus. This study investigated one possible local aspect of the residential system, referring to archaeological evidence from Göytepe, a major Neolithic settlement of the early sixth millennium BC in Azerbaijan. Using a Bayesian analysis of 45 radiocarbon dates from different occupation levels of this 11 m thick mound, we established a high-resolution chronology of this settlement. Moreover, the analysis of the main trench dates, spanning from ca. 5650 to 5460, revealed a uniquely short rebuilding cycle for mudbrick buildings, an estimated average of 11.4 years, which is far shorter than expected for mudbrick buildings in the Neolithic of the Middle East in general. This finding provides an important piece of evidence for considering a particular type of residential pattern in the Neolithic culture of the southern Caucasus. To test that view, we refer to ethnoarchaeological models and theories of site-formation processes.

1. Introduction

Over the last two decades, there have been significant advances in research on Neolithization processes in the southern Caucasus. International teams conducting field investigations in Armenia, Georgia, and Azerbaijan have documented the emergence and development of food-producing societies during the first few centuries of the sixth millennium BC (Lyonnet et al., 2012, 2016; Chataigner et al., 2014; Nishiaki et al., 2015a). This important cultural and economic transformation undoubtedly occurred as part of the expansion of the Neolithic socioeconomy from the Fertile Crescent, involving the introduction of domesticated plants and animals (Kadowaki et al., 2017) as well as new tool manufacturing technologies. Neolithization had proceeded in different parts of the Fertile Crescent by 11,000 BC, more than 3000 years before its introduction in the southern Caucasus (e.g., Zeder, 2008; Willcox, 2013). However, the cultural elements of the southern Caucasian Neolithic were not necessarily wholesale imports. Rather, aspects of local tradition might have continued, suggesting that local communities also played an important role in the establishment of the full-fledged Neolithic in the southern Caucasus. One such example is the aceramic culture: the use of pottery was very limited during the first few centuries of the earliest Neolithic in the southern Caucasus, though it flourished in the contemporaneous Neolithic cultures in the Fertile Crescent (Badalyan et al., 2010; Nishiaki et al., 2015a, 2015b). The combined local and nonlocal processes were likely to have played a key role in the formation of distinct Neolithic cultures in the southern Caucasus.

To further document the details of Neolithization processes in the southern Caucasus, it is important to define a chronological framework for the related Neolithic sites and cultural assemblages. In this regard, increasing radiocarbon dates from the related sites, distributed on both the northern and southern foothills of the

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Lesser Caucasus, provide an opportunity to establish a detailed chronology. One of the best-studied sites is Göytepe, Azerbaijan, where the 11 m thick stratigraphy has been investigated based on 34 radiocarbon dates from 14 architectural levels. Although previous analyses indicated that this site was occupied for about 200 years during the mid-sixth millennium BC (Nishiaki et al., 2015a), this large set of radiocarbon dates, unavailable for other sites of this period, warrants further analysis.

The accumulation of 14 architectural levels for the 200-year period suggests that the average lifespan of each building level was about 15 years at most. This is rather short in terms of our general understanding of the lifespan of mudbrick buildings. Ethnographic studies have indicated that, with regular maintenance, traditional mudbrick houses in the Middle East can have a much longer lifespan, sometimes more than 50 years (Kramer, 1982: 264; see also Rosen, 1986). Although rigorous research on the rebuilding cycles of Neolithic mudbrick architecture is rare, a few studies of Neolithic and Chalcolithic settlements in Syria have produced roughly comparable estimates (Nishiaki, 2001: 156; van Plicht et al., 2011). Thus, the significantly shorter estimate at Göytepe is unique and requires interpretation. A detailed investigation of this inconsistency could improve our understanding of the distinct residential pattern of the southern Caucasus, which may well differ from that of the Fertile Crescent. In the present study, therefore, we tested previous suggestions regarding the rebuilding cycles of mudbrick houses at Göytepe using a larger set of 45 radiocarbon dates, including 11 unpublished dates. In what follows, we will present the results of the analysis and provide interpretations of residential patterns in the southern Caucasian Neolithic.

We should briefly comment on the nomenclature of the Neolithic culture to which Göytepe belongs. It was originally discovered at two eponymous sites in the Middle Kura Valley in the late 1950s and early 1960s, first at Shomutepe, Azerbaijan, and then at Shulaveris Gora, Georgia. Based on those excavation results, Kiguradze (1986) called it the Shulaveri-Shomutepe culture while Narimanov (1987) proposed calling it the Shomutepe-Shulaveri culture. More recently, Badalyan et al. (2010) demonstrated the existence of this culture at sites in the Ararat Plain, including Aratashen in Armenia, calling it the Aratashen-Shulaveri-Shomutepe culture. While all three names are mentioned here to indicate this culture's widespread distribution across the southern Caucasus, this paper adopts a more conventional term, the Shomutepe-Shulaveri culture after the two sites excavated much earlier in the order of excavations (Narimanov, 1987).

2. Mudbrick buildings at the Göytepe Neolithic settlement

Göytepe is situated in the Ganja-Gazakh plain on the right bank of the Middle Kura Valley, about 10 km east of Tovuz, west Azerbaijan (Fig. 1). This alluvial plain is distributed at an altitude of about 400 m above sea level and is intersected by wadis and rivers running from the Lesser Caucasus mountains to the north. The area has been subjected to intensive archaeological fieldwork since the 1950s. About two dozen Neolithic mound sites, including the Shomutepe site, are known in the region (Narimanov, 1987). Discovered in the 1950s, the Göytepe mound is one of the largest Neolithic sites in the region, covering an area 140 m in diameter and 9 m high. Excavations started in 2008 as a joint project of the Institute of Archaeology and Ethnography, National Academy of Sciences, Azerbaijan, and the University Museum, University of

Fig. 1. Neolithic sites of the southern Caucasus mentioned in the text.

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