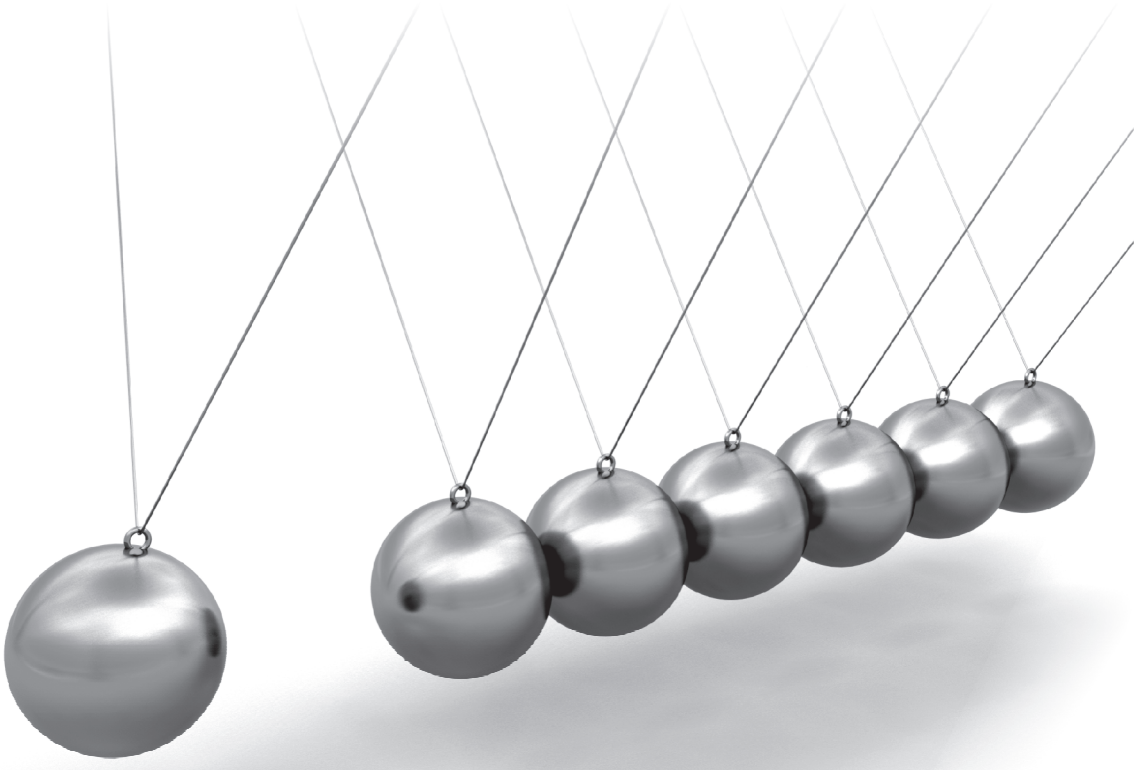
HUMANS AND SOCIETY IN TIMES OF CRISIS

Archaeology of Crisis

Edited by Staša Babić



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Jasna Vuković*

THE NEOLITHIC TRANSITION CRISIS: TECHNOLOGICAL HYBRIDIZATION AS A CONSEQUENCE OF STRESS

Abstract: Any transitional period can be regarded as a period of crisis. The stressful conditions during the Early to Late Neolithic transition in the Central Balkans were probably caused by a population decrease. The technological hybridization in the production of ceramic objects, mainly pottery, can be regarded as evidence of the mixing of technological traditions, or in other words, of different social groups, probably through intermarriage. Therefore, the peaceful coexistence of different groups, resulting in the collapse of social boundaries, could have been a possible response to stressful conditions caused by a population decrease.

Keywords: Neolithic, technological hybridization, pottery, group identities, social relations

The Neolithic as a Period of Crisis

The Neolithic is a period characterized by revolutionary changes in the way of life, the most important of which was food production, followed by changes in technology and social relations. As a major shift in human lifestyle, the Neolithic can also be regarded as a stressful period, a period of crisis. It is still unknown what triggered the shift to food production, and among the many possible explanations and theories, some authors argue that the Neolithic itself originated as a consequence of food crisis: "agriculture by stress", caused by population increase, i. e. population pressure and/or depletion of foraging resources (Binford, 1968; see also Harlan, 1992; Wiesdorf, 2005), implying that population stress was the key element for the origins of food production. Regardless of the causes of the Neolithic revolution, it seems indisputable that the Neolithic "came" to Europe as a

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consequence of an environmental crisis: the so-called 8.2-kiloyear climatic event characterized by cooling and increased aridity caused migrations of the early farmers from Anatolia to southeastern Europe, by different routes (Winninger et al. 2006). The population movements from the Near East and Anatolia to the Balkans and further to central Europe (Mathieson et al. 2017) were followed by different contacts and interactions with autochthonous groups, and by the inventions/adoptions of technological innovations. At the same time, the abandonment of the hunter-gatherer economy and increased reliance on agriculture caused dietary stress, resulting in poor health stature, the first occurrences of certain health conditions (dental disease, rachitis, malnutrition as a consequence of famine and reliance on a single crop causing nutrient deficiency) and infectious diseases (Cohen & Armelagos, 1984; Jovanović, 2017; Mummert et al., 2011). Although the Neolithic is traditionally viewed as a peaceful period, there is also growing evidence of the presence of another stress form: conflict and violence during the whole Neolithic sequence. In some cases, especially in the Balkans, this can only be assumed. The ditches and enclosures registered at Neolithic sites (for example, Kalafatić et al., 2020; Šošić Klindžić et al., 2019) are sometimes explained as defensive structures, and some classes of portable finds are interpreted as possible weapons (for example, ceramic balls as sling ammunition), and there is other evidence suggesting conflict (Balaban, 2013; Runnels et al., 2009). On the other hand, the findings of skeletal remains with evident traces of trauma inflicted by violent attacks, in some cases real massacres (Meyer et al., 2015), in others isolated events (Roksandic et al., 2006), further suggest an insecure social environment. Finally, the end of the Neolithic period can also be related to some sort of crisis. This Late Neolithic crisis is characterized by the collapse of large settlements; for instance, Tripolye mega-structures, and their relocation to more defensive positions, then the decline of resources and agricultural economy, in most cases related to the arrival of nomadic pastoralists, corresponding with the beginning of the Copper Age.

Early to Late Neolithic Transition Crisis

Almost all of these stressful conditions can be observed during the Neolithic sequence – in the Early and the Middle Neolithic Starčevo, and Late Neolithic Vinča cultures of the Central Balkans. In traditional archaeology based on culture-history, the transition between the two has been considered and explained as a consequence of migration of

new groups from the east, or as an autochthonous "evolution" of the Early Neolithic populations. This intra-Neolithic transition is generally thought to have been peaceful, although some authors consider more stressful conditions and conflict during this period (for overview, see: Vuković, 2015). Even today, the issue of the origin/formation of the Vinča culture is still puzzling researchers, as the debate between the supporters of demographic and cultural continuity from the Early Neolithic and those supporting the opposite hypothesis – discontinuity and the arrival of newcomers – is still vivid and unresolved. Although the debate continues, it is highly probable that the Starčevo-Vinča transition was also a period of crisis. Contrary to the idea of population pressure at the beginning of the Neolithic, recent research suggests that the episode of significant population decrease took place after 5500 cal BC, with a minimum between 5400 and 5300 cal BC (Porčić et al., 2016; Porčić et al., 2020), corresponding with the end of the Early Neolithic.

Although population decrease can be interpreted in favor of two different hypotheses – cultural and demographic (dis)continuity between Starčevo and Vinča (Porčić, 2020) – it undoubtedly reflects stressful conditions. Can they, however, be considered a crisis? Relating an intra-Neolithic transition demographic event to a crisis seems appropriate since the term is usually connected to some kind of transitional stage, viewed as a permanent condition of the world, or any kind of uncertainties (Koselleck and Richter, 2006, pp. 398–399). They can be identified in the archaeological record and further explored by employing different research agendas. Bearing in mind that one of the characteristics of Early to Late Neolithic transition is considerable change in material culture, especially pottery, the study of technology may be an appropriate tool for assessing the ways Neolithic communities responded to the crisis. Possible answers therefore may be inferred from the analyses of the mechanisms of technological change, technological style as one of the indicators of group identities, and especially the hybridization of technological features.

Technological Change, Hybridization, and Crisis

Technology or "a way of doing something" (Hegmon, 1992, p. 517) does not simply imply the steps in the manufacture of objects – as technology can also be a way a ritual is performed (Lemonnier, 1992) – but also includes many other elements, the most important of which are social factors, such as the possession of certain knowledge and the ways it

is transmitted, or in other words "traditions." The technological process is frequently regarded as a set of choices (Lemmonier, 2002) conditioned by socially accepted norms. As it was broadly confirmed both in ethnoarchaeological and archeological research, technological traditions – or "styles" (see: Lechtmann, 1977; Hegmon, 1992, 1998) – are conservative, and usually, society seeks to maintain them through different mechanisms of pressure (Longacre et al., 2000; Gosselain, 1992), including even sanctions (Mahias, 2002), as a way of preventing established cultural patterns from collapsing. Technological traditions, therefore, exhibit high temporal durability, but eventually, changes occur, by innovation, i.e. invention, and consequently, the adoption of a specific technology. The reason why technological change takes place and its interdependence with crisis/stress must be further explored.

In evolutionary archaeology, it is argued that technological innovation occurs entirely as a consequence of stressful conditions. The idea that "the necessity is a mother of invention" (Rosenberg, 1990), was however criticized, mainly because invention was regarded as random, analogous to a mutation in biology (see: Fitzhugh, 2001). Furthermore, a risk-sensitivity model of technological change was developed, showing that "technological innovation under crisis would more often fail than would innovation in times of security" (e.g., p. 156). If we regard crisis as a transition towards something different (Koselleck and Richter, 2006, p. 358), it can be stated that technological change can be triggered by different kinds of pressure and stress, if not exclusively by severe insecurity, for example, by changes in lifestyle or food habits (Schiffer and Skibo, 1987), an increased demand for specific products (cf. Vuković, 2020), or population decrease.

One of the most intriguing aspects of technology is hybridity, and it seems that it can be especially connected with periods of crisis. Cultural hybridity can be defined as "a combination and modification of elements from two or more social groups in ways that challenge preexisting power relations" (Leibmann, 2015, p. 4). Hybridity has often been considered from a perspective of postcolonial theory and seen as a postcolonial phenomenon (cf. Stockhammer, 2012). The two main types of cultural hybrids were firstly identified in linguistics (Bakhtin, 1981, pp. 358–361) as organic (unconscious) and intentional (conscious). In anthropology, considerations about hybrids are focused on "double objects", such as Mickey Mouse (Leibmann, 2015) and the Virgin kachina dolls, or hybrid ceramic vessels (Leibmann, 2013), to understand processes such as amalgamation or syncretism. Archaeological investigations on technological hybridity

in pottery production (taking into account all important elements such as organization of production, technical knowledge, artisans' skill, among others), were also generally focused on societies with a political organization, and interactions between the conquerors and the conquered. The hybrid ceramic vessels combining local and Inca features in the Inca Empire, for example, reflect the policies of assimilation of local elites into the upper echelons of society (Costin, 2013; 2016). On the other hand, the concept of hybridity has also been recognized as an epistemological potential for analyzing cultural transformations in the archaeological record (Stockhammer, 2012). The notion of "material entanglement", as the second step in cultural transformation, refers to the creation of a new object, which combines familiar with previously unknown (e.g., pp. 49–51; Stockhammer, 2013). It was tested through the research of local imitations of Aegean pottery in the Levant during the Bronze Age, showing "the creative potential" of local artisans to produce a hybrid object. All of these concepts of hybridity emphasize complex social relations, implying that hybridization can emerge primarily in non-egalitarian, hierarchical, or even politically organized societies.

A very important aspect of hybridity is the issue of identities. From a postcolonial perspective, the hybrids are the result of an encounter with otherness, one between the colonialists and the indigenous populations. Thus, hybridization "rearticulates identities and positions in the periods of social and political change" (Costin, 2016, p. 321). However, the phenomenon of mixing of technological features occurs in less complex societies, i.e. societies that are not exclusively hierarchical or with a political organization. In the heart of the idea of technological style (Hegmon, 1992, 1998; Stark, M., 1999; see also Vuković, 2017a, 2017b) are also group identities: it is viewed as a "package" of elements that reflect the technology of a specific social group, a culturally conservative set of behaviors, activities, and procedures that make a certain society or social group different from some other. Through the concept of social boundaries (Stark, M., 1995; 1999) the issues of technological change are further explored, suggesting that it is triggered by changes in social relations, i.e. by increased interactions between different social groups or communities. These interactions can result in mixing, or the hybridization of technological traditions, bringing about the emergence of "boundary objects". They are viewed as "the things that cross social boundaries, not demarcate them" (Mills 2018). The mixing of technological styles, therefore, was not exclusively a consequence of some kind of conquest or (political) domination of one group over the other. It could also have resulted from a less extreme kind of interaction, such as the coexistence of different social groups.

Hybridity in Early to Late Neolithic Transition

As it was suggested in archaeological research, high variability in archaeological finds points out to the presence of technological innovation (Schiffer, 2010), and/or mixing of technological styles (Stark et al., 1995). Since pottery is the most abundant class of portable finds, and also most prone to changes, it is suitable for the research of technological styles and hybridization. The period of intra-Neolithic transition is, although insufficiently explored, characterized by increased variability of ceramic finds, both as so-called mixed assemblages and as technological hybrids. These finds are represented by vessels, and more rarely, other ceramic objects (lids, so-called altars, and figurines).

The hybrid ceramic vessels characterized by the mixing of Starčevo-Vinča traditions are observed in more detail at the site of Pavlovac-Čukar (Vuković, 2015; 2017b; 2020). The presence of shapes belonging to one tradition, but with fabric, surface treatment, and decoration belonging to the other, reveals that the mixing of different traditions was a two-fold interaction, between Starčevo and Vinča. The hybrids are also explained as the consequence of the mixing of peoples, or in other words, the mixing of different social groups, the autochthonous communities with newcomers carrying their own technological style. Especially important for the understanding of this process are rough, carelessly, "imperfectly" finished objects. In contrast to the hybrids, only forms of the Starčevo tradition, not the Vinča ones, were executed poorly, indicating artisans who were not necessarily inexperienced but rather belonged to another tradition and were unfamiliar with the local one. The presence of so-called altars, objects usually associated with symbolic meaning, in both groups of finds (i.e. hybrid objects and "unskillfully" made objects), implies not only the artisans' lack of technical knowledge, but also their unawareness of local beliefs and customs. Hybridization among the anthropomorphic figurines is pretty elusive, and so far observed only on Kovačke Njive, a neighboring site to Čukar. It is worth noting, although it is not a real technological hybrid, but rather a hybrid form: the upper part resembling Vinča, and the lower part more in the Starčevo fashion, with emphasized glutei and incised representation of vulva (Vuković et al., 2016, p. 184). Pavlovac is not the only site belonging to the period of the Early-to-Late Neolithic transition with assemblages containing technological hybrids. They can be traced on many sites in modern-day Serbia, in archaeological literature conveniently named as transitional types (for overview, see: Vuković, 2015). Furthermore, recent research in neighboring areas, namely east Slavonija, also reveals the presence of Starčevo-Vinča

technological hybrids.[1] A similar process may also be identified on the sites where "technological amalgamation" included not only two but three traditions – LBK as well (Botić, 2020). This further points out the need for further research on this phenomenon.

Discussion: Crisis and Peaceful Coexistence

The technological hybridization in Neolithic pottery production has so far not been acknowledged as an important feature of the Neolithic transition. Although ideas about "colonization" and the possible hostility between autochthonous Starčevo and immigrating Vinča populations were sporadically taken into account in traditional archaeology (cf. Vuković, 2015), there is no convincing evidence that any kind of conflict or crisis actually happened. On the other hand, as it was noted before, a considerable population decrease did take place, and the consequences of this event could have been stressful. The hybridization of Starčevo and Vinča technological styles was already seen as a mixing of different groups, i.e. the Starčevo and Vinča peoples (Vuković, 2015; 2017b; 2020), as a consequence of the collapsed boundaries between the groups and the "relaxing" of knowledge transmission patterns. All of these processes suggest changes in social relations as well, and they should be considered furthermore.

As it was shown in ethnoarchaeological research, the conservatism of technological knowledge (or the "recipes for action" – Schiffer and Skibo, 1987) is society's way of maintaining accepted norms through rigid patterns of learning/teaching, based on the observation-imitation process (Wallaert-Pêtre, 2001). The opposite strategy, through "trial and error", encourages experimentation, flexibility, and adaptability to new, previously unknown situations and tasks; it can be observed among the technological hybrids. The changes in technological style, as it was also shown, might have been triggered by the integration of potters into the new communities (Stark, 1999); allowance of task execution in a less controlled way suggests a decrease in the social pressure in learning frameworks. Moreover, it seems that during the intra-Neolithic transition this kind of shift in pottery production, i.e. the lack of social pressure and encouragement of experimentation, can also be observed in another class of pottery finds: painted pottery. Experimentation with and usage of new kinds of pigments (specifically, red-colored), and consequently, the application of "new" or previously unknown technology in preparing and applying

1 Rajna Šošić Klindžić, pers. comm.

paint, which resulted in new painted motifs, were observed (Vuković and Bajčev, *in preparation*). The analyzed red-painted specimens from the site of Pavlovac-Čukar are also part of the Starčevo-Vinča mixed assemblages, and in some cases, they are also contextually related to technological hybrids.

The assumption of the presence of different social groups further leads to the issues of the nature of the relations between their members. The presence of technological hybrids, as was already mentioned, implies the integration of potters into the new communities. The objects they produced cannot be regarded as "double objects" or examples of "material entanglement", since both traditions were equally mixed, and there is no evidence to suggest that any of two traditions was more highly ranked or in any way superior; the hybrids cannot be regarded as some kind of imitation, but rather as completely "blended" technology. They are more likely "boundary objects", also suggesting the so-called "secondary apprenticeship", or the reeducation of mature potters (Wallaert, 2013), usually after being married. The presence of two social groups in the same settlement[2], sharing living space, indicate their peaceful coexistence, and the two-fold hybridization process indicates intermarriage between these groups. The same interpretation was also offered for the transitional period at the end of the Middle Neolithic in northern Europe: intermarriage and reeducation of potters probably by close relatives (Larsson and Graner, 2010), belonging to the group a potter entered by marriage. In the case of the Neolithic transition of the Central Balkans, the presence of two groups and their mixing through newly established family ties indicates that, at least in some cases, peaceful coexistence resulting with the collapse of social boundaries could have been a possible response to stressful conditions caused by a population decrease. This scenario should not, however, be regarded as a universal solution. The possibilities of some other risk-solving strategies should also be explored.

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Јасна Вуковић*

КРИЗА НЕОЛИТСКЕ ТРАНЗИЦИЈЕ: ТЕХНОЛОШКА ХИБРИЗАЦИЈА КАО ПОСЛЕДИЦА СТРЕСА

Апстракт: Сваки транзициони период може се сматрати периодом кризе. За време прелаза раног у касни неолит на централном Балкану, стресне околности вероватно су изазване демографским падом. Технолошка хибридизација у изради предмета од керамике, првенствено посуђа, може се посматрати као последица мешања технолошких традиција, или различитих социјалних група, вероватно путем склапања брачних веза. Миран суживот две групе, који је резултирао рушењем друштвених баријера, могао је бити потенцијалан одговор неолитских заједница на стресне услове изазване падом популације.

Кључне речи: неолит, технолошка хибридизација, грнчарија, групни идентитети, друштвени односи.

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While writing the texts collected in this volume, the authors have been living through an extraordinary experience, coping with everyday tasks made more complex by the crisis we have been facing, and creating new habits necessary to navigate the new environment. Although exceptional from our point of view, our present experience is far from unique, and the human history is replete with turbulent periods of crisis, profoundly disrupting the habitual order.

The aim of this collection is therefore to investigate some of the situations of crisis in the past from the archaeological perspective, in a search for insights that may help us to better understand and cope with the present one. At the same time, the papers demonstrate some of the vast possibilities of archaeological investigation to contribute to our understanding of the world we live in, as well as of the past societies whose material traces we study.

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