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The Corded Ware Phenomenon Reconsidered

Jan Turek^a

*The author dedicates this article to
the memory of Miroslav Buchvaldek,
who was born 95 years ago.*

This article focuses on the reconsideration of some aspects of the Corded Ware phenomenon in Europe. It highlights the impact of new archaeogenetic data, which challenge traditional views of archaeological cultures as monothetic entities. It critiques interpretations of extensive steppe migrations as simplistic, particularly concerning genetic changes. Additionally, it underscores the importance of sacred landscapes, sacred mountains and natural shrines, in understanding Corded Ware rituals and beliefs. The continuity and transition between the Corded Ware and Bell Beaker periods are explored, with a view that rather than a sharp break, these periods represent evolving cultural and ritual practices, particularly noticeable in their burial customs. The article calls for nuanced interpretations embracing both archaeological and genetic evidence to understand the intricate cultural development of the 3rd millennium BC in Europe.

KEY-WORDS: Corded Ware phenomenon, archaeogenetic data, steppe migration, burial rites, natural shrines, Corded Ware-Bell Beaker transition

When, after fourteen years, I reread my contribution to the Schnurkeramik Symposium “Corded Days” in Kraków (December 2011) I realised how much has changed in the intervening time in the research into the 3rd millennium BC in Europe and how my own views of some questions have developed. Firstly, we now have an ever-increasing volume of archaeogenetic data that cannot be ignored; it is essential to critically evaluate and incorporate these findings into the reconstruction of the cultural and population processes of this period. However, we still grapple with

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a number of other questions, the resolution of which is often burdened by various biases that hinder our ability to develop new models and pose entirely different questions. In this essay, I will attempt to summarise at least some of the questions that have arisen in the ongoing discussion about the Corded Ware phenomenon from the perspective of current archaeology.

Among the traditionally discussed issues of the Corded Ware period are: how do we reconstruct the economy and subsistence of Corded Ware communities? Do we have evidence to support the long-held view of this culture in Central Europe as predominantly nomadic pastoralists, or are there grounds for inferring a preference for arable farming and local variability in agricultural practices? What can be traced as remaining steppe elements? What is the significance of single burials and circular barrows? How do we interpret collective burials? How can we perceive the impact of the Corded Ware phenomenon on the local development of Neolithic cultures and was there a total “colonisation” of the entire landscape during the 3rd millennium BC? What are the visible and invisible transitions to the Bell Beaker period, do they represent continuity or discontinuity? A new culture, new people?

The issue of interpreting archaeogenetic data has been thoughtfully summarised by Martin Furholt (2020), who points out the bias of monothetic perceptions of archaeological units (traditionally classified as cultures) in interpretations that assume massive migrations (Kristiansen *et al.*, 2017). Archaeological cultures of the European Neolithic have traditionally been understood in a monothetic sense, as exclusive units reflecting human communities and perhaps also genetically different groups of populations, as expressed in the formulation of this concept by V. Gordon Childe (1929). This approach has later been described as a misrepresentation of the proper use of archaeological material by David Clarke (1968) and Evžen Neustupný (1976). In the case of the Corded Ware population, the concept of “steppe migration” has been employed. However, Furholt rightly notes that the assumption of a direct link between the genetic origins of the population and the monothetically conceived concept of archaeological cultures complicates the interpretation of cultural population processes in the Neolithic. He states that “it is useful to separate biological patterns from patterns of social traditions or innovations, and also to separately deal with the different categories of finds, seeing them as potentially connected to different social worlds” (Furholt 2020: 9).

In the discussion about population changes in the 3rd millennium BC, I would like to refer to the book in which Johannes Krause from the Max-Planck-Institut für evolutionäre Anthropologie attempted to summarise this issue for the general public (Krause and Trappe 2019). In his genetic concept, he introduces the so-called steppe migration, which is said to have completely transformed the demographic

composition of Europe around 4800 years ago. His interpretation revisits the migrationist view of history, which was the dominant idea of the cultural-historical paradigm and the so-called settlement archaeology of Professor Gustaf Kossinna prior to the Second World War, positing that the main motive for cultural changes in prehistory was population exchange and extensive migrations.

Krause's genetic reconstructions assume that during this period, there was a significant shift in Y chromosomes, those inherited through the male line, and that after the steppe migration, the demographic landscape of Europe changed such that in the populations of the following Bronze Age, 80 to 90 percent of the Y chromosomes were entirely new (Krause and Trappe 2019). As a genetic legacy from these "forefathers", around 70% of the West European population today carries the Y chromosome haplogroup R1b, which is associated with the population of the Bell Beaker Culture, while approximately 50% of contemporary East Europeans have the Y chromosome haplogroup R1a, linked to the earlier Corded Ware Culture. Also, due to the interpretational mistake in using the archaeological cultures as monothetic and almost ethnic units, the credibility of haplogroups, wherein the hereditary lines of mitochondrial DNA and Y chromosomes are combined into a single pedigree, is far from convincing. While Krause predicates a 70% change in genetic structure for the area of present-day Germany, he posits that it was over 90% in Britain. An uncritical approach to archaeological sources is also evident in Krause's attempts to explain the genetic changes in the population at the end of the Late Neolithic and the beginning of the Bronze Age in Europe. He assumes that at the beginning of the 3rd millennium BC, a large number of people with the so-called steppe genes must have migrated to Central Europe, significantly altering the genetic structure of the region within just five generations. According to Krause, the population change was so immense that: "if we were to achieve a similar effect today, ten billion people would need to arrive in Europe all at once"... "or, to remain within realistic possibilities, one billion migrants to Germany" (Krause and Trappe 2019).

I believe that these assumptions, primarily due to their implausibility, largely disqualify the interpretation of such extensive genetic changes at the end of the Neolithic, and that in future we will learn how to read and interpret these biological data properly. I am concerned that some archaeologists, particularly those adhering to the cultural-historical paradigm, are to some extent involved in the hasty rewriting of the population history of prehistoric Europe without sufficient critical distance from qualitatively new biological data and with biased and purpose-driven interpretation of archaeological sources. As we know, throughout the later Prehistory (and particularly in the Protohistoric period and the Early Middle Ages) it was precisely migration and the intermingling of peoples that shaped the continent's present ethnic landscape. For

Europe, the synthesis and coexistence of groups of diverse origin is characteristic. Its population has been formed in this manner for millennia, and modern political efforts to preserve the existing ethnic composition and to pursue national isolationism are but a misguided struggle against natural demographic development.

Let us be specific: Johannes Krause refers to archaeological findings in the region around the confluence of the Elbe and Saale rivers, from which he infers that between 3000 and 2800 BC, there was a significant decline in population in this area, and broadly across Central Europe. He mainly cites the absence of human skeletal remains and the general lack of artefactual evidence from this period. He explicitly states: “As if everything disappeared into some kind of black hole” (Krause and Trappe 2019). It is important to highlight that the characterisation of settlement patterns from this period in Bohemia, Moravia, and also in Bavaria, Saxony, and elsewhere in Central Europe (for example, the cultures of Cham, Řivnáč, or Jevišovice, c. 3300–2900 BC), is specific by the presence of enclosures on hilltops, generally smaller fortifications rather than sizeable settlements, the relatively sparse record of open-air settlements, and an almost complete absence of burials. However, such archaeological evidence does exist. Archaeologists are well aware that human activities during certain periods of prehistory are highly invisible in the archaeological record, but this does not mean that these activities were not carried out by humans in other, today unrecognisable, ways. For example, incineration of the dead with dispersed ashes on the surface or in rivers is, at present, undetectable in the prehistoric landscape. The same might apply to this transitional period from the Middle to Late Neolithic (Řivnáč/Cham/Jevišovice to Corded Ware).

A general hypothesis of depopulation of the fertile Central European lowland landscape would need to be supported by much more concrete evidence, such as a series of palynological records indicating abandonment of cultivated fields and subsequent reforestation; however, such evidence is lacking. On the contrary, pollen profiles from Zahájí and Vrbka in northern Bohemia, for instance, reveal human presence and expanding deforestation (Pokorný *et al.*, 2015). Krause attempts to address this issue within the cultural-historical framework, adopting a highly positivist stance. The proposed population decline that would permit substantial migration, Krause presents as an indication that “points to a catastrophic epidemic” (Krause and Trappe 2019), a theory linked to the earliest evidence of *Yersinia pestis* genomes, which spread into Europe alongside the Yamna Culture (the term Yamna is derived from the Ukrainian language). It is worth noting that evidence of *Yersinia pestis*, the bacteria responsible for plague, dates back to periods predating the “steppe migration”, specifically from the environment of the Trypillia Culture in south-west Ukraine and from a burial of the Funnel Beaker Culture at Frälsegården in western Sweden (Seersholm *et al.*, 2024).



Fig. 1. Map of the distribution of Corded Ware (red) and Bell Beaker (green) phenomena in Europe.



Fig. 2. Typical Corded Ware assemblage of child “male” burial: beaker, amphora and siltstone mace head. Photo: J. Turek.

Krause also considers the possibility of violent extermination of the first farmers (specifically their male members) as part of the process of asserting “steppe” genetic elements introduced by migrants. He adopts a highly positivist view, stating that: “even in such a case, the population in Central Europe would already have been severely decimated prior to the invasion from the east; otherwise, there would be evidence of slain individuals with Neolithic DNA, such as in mass graves or on battlefields, dating back 5000 years”. Here, again, lies a fundamental misunderstanding between genetics and archaeology. The idea of a steppe genocide of descendants of Anatolian Neolithic populations is unlikely to the extent that the authors envisage. The absence of evidence for massacres during the steppe migration period cannot be used interpretively; burial rites of the time are generally highly invisible archaeologically, so even if such genocides occurred, they would remain undetectable. Conversely, from the period of the first farmers (Linear Pottery Culture), we have abundant evidence of collective graves representing entire communities including women and children that were killed. These early Neolithic collective burials are, however, not being interpreted as evidence of an invasion by a foreign population.

The regions considered least affected by the steppe invasion were the Iberian Peninsula, Sardinia, and present-day Albania and Greece. Krause also overestimates the pastoral nature of the life of steppe migrants and emphasises the significance of the fenlands, which were comparable to the North European continental plain,

as a key terrain for them. Consequently, he presumes that the most suitable route westward would have been across the territory of modern Poland and Germany into northern France and Britain. This notion again presumes that Neolithic farmers, who had lived and cultivated the landscape in this region for two and a half millennia, would have suddenly “vanished to the sunset”, leaving the entire landscape to new coming pastoralists who, only after some time, would have realised they could also begin cereal cultivation.

Primarily, if such extensive population movements had indeed occurred, the steppe migrants must have already been farmers. The archaeological consensus (Turek 1995; Neustupný 1997; 2013) is clear that the cultures characterised by Corded Ware and Bell Beakers were of agricultural nature. From a genetic perspective, however, it was by no means a unidirectional movement. Around 2200 BC, at the very dawn of the Bronze Age, populations bearing a mixture of genetic lineages, descendants of “Anatolian Neolithic” farmers and “steppe tribes”, migrated eastward across Central Russia to the Altai region.

It is probable that already in the Neolithic, nearly 8000 years ago, Indo-European languages gradually became dominant throughout Europe. Certain evidence suggests that during the 6th millennium BC, an ancestor of the Indo-European language existed, and only later did processes of localisation and further linguistic differentiation commence (Renfrew 1987). However, this hypothesis is challenged by recent genetic research indicating that the real Indo-Europeanisation of Europe occurred only as a consequence of the steppe migration at the beginning of the 3rd millennium BC (Krause and Trappe 2019). Archaeogenetic studies propose that the Indo-European language was confined initially to only the eastern (North Iranian) branch of the Neolithic cultures of the Fertile Crescent, which subsequently spread agriculture to present-day Pakistan, Afghanistan, and northern India. This branch is also believed to be responsible for the dissemination of Indo-European languages both into the Indian subcontinent and through the Caspian region into northern Black Sea territories, and later into Europe via the Yamna Culture.

It is crucial, however, to emphasise that language and genes are not always congruent. In ethnology, there are well-documented cases where different ethnic groups maintain entirely distinct subsistence strategies, yet share a common language and material culture. It is important to recognise that the dominant languages in various regions of the continent may not have corresponded directly to the actual ethnic or genetic composition of populations. For this reason, the question of the spread of Indo-European languages remains unresolved and cannot presently be considered definitively answered.



Fig. 3. Bacín (Vinařice, District Beroun), the prehistoric sacred hill with long term sacrificial activity. The location of a Corded Ware natural shrine. Photo: J. Jiroušek.

SINGLE BURIALS, ROUND BARROWS AND THE QUESTION OF COLLECTIVE BURIALS

Individual inhumations and circular burial mounds are perhaps the most characteristic markers of the Corded Ware phenomenon across its broad distribution. The round form of these barrows belongs to the new ritual package associated with the Single Grave Burial Rite Complex (Furholt 2020). In Central and northwestern Europe, circular barrows first appear with the Corded Ware Culture. The origin of this new round-barrow form is also discussed in this volume by P. Krištuf and J. Turek (2025).

Corded Ware funerary practices show considerable uniformity in material expression, evident in a defined set of prestige goods that occur mainly in graves (Fig. 2). The principles behind Corded Ware burial rites stem from a symbolic system probably mirroring specific social and economic conditions characteristic of the Late Neolithic communities. Burials of males and females are accompanied by different “gendered” artefacts. Female graves often include necklaces of perforated animal teeth as well as their imitations made from bone, small perforated freshwater-shell discs and decorated shell “solar” discs. Typical female-associated pottery comprises ovoid pots and jugs and large amphorae used for storage, though these vessel types do not

occur in male graves and persist into the Bell Beaker period. Male assemblages frequently feature weapons that symbolize social power such as polished stone battle-axes, mace heads, or massive axes.

These gendered mortuary expressions probably reflect distinct social roles for men and women. Corded Ware burial evidence also points to social differentiation within communities, affecting individuals of different ages, including children.

Although uncommon, multiple burials are a recurrent element of Corded Ware funerary behaviour. Amongst the multiple burials, attention is drawn by the so-called antipodal burial positions in some graves and on the age, gender category, and possible familial relationships of the interred. A notable case is the bi-ritual Grave 1/95 at Slaný (Kladno District, Turek 2001), containing at least seven individuals (men, women, children), four of whom were cremated. Despite the exceptional choice of cremation, the Slaný grave conforms to the recognized collective Corded Ware burial type documented in Bohemia (e.g., Třebusice, Kladno District; Bylany, Kolín District; Chrášťany, Prague-west District). Comparable, though not identical, collective graves occur at Obrnice (Most District) and Určice (Prostějov District) in Moravia, and at Święte, Site 20 (Grave 43) in Lesser Poland (see Turek 2023). Parallel examples include the Eulau collective burial in Saxony-Anhalt (Meyer *et al.*, 2009; Schroeder *et al.*, 2019).

These communal interments probably reflect a specific funerary ritual type rather than the direct consequence of single catastrophic events (e.g., mass violence or epidemic). Emerging archaeogenetic results promise to clarify whether such graves reflect kin-based arrangements like nuclear families in mortuary practice, and to illuminate the role of collective burial events in past lifeways. Some instances (e.g., Eulau) indicate collective burials could follow violence (conflict or sacrifice); others may result from disease or from the special status of particular individuals or groups.

The patterns of age and gender associations in Corded Ware multiple burials strongly suggest kin and familial links among partners and between parents and children. Recent archaeogenetic insights support these interpretations while indicating that kinship and family organization in Late Neolithic Europe were probably more varied and regionally complex than previously assumed. Multiple burials remain a crucial source for investigating these questions (Turek 2023, with further references).

SACRED MOUNTAINS AND NATURAL SHRINES

From the early Neolithic, notable hills and mountains in Bohemia served non-residential roles such as worship and sacrifice (Zápotocký and Zápotocká 2010). Finds



Fig. 4. Bacín, Corded Ware jar found within the natural shrine as a votive offering. Photo: H. Toušková.

associated with these activities commonly include polished stone axes and battle-axes, along with isolated finds of pottery. Summarizing Neolithic material (5300–2500 BC) from northwest Bohemian hilltops, Zápotocký and Zápotocká (2010) argue that most of these discoveries are sacred in nature. The practice continued into the Bronze Age, when offerings and hoards of copper and bronze items were deposited on many of the same hills and mountains that show Neolithic sacrificial deposits (Smrž and Blažek 2002).

The most emblematic sacred hill in Czech myth is Říp (456 m a.s.l.), which rises from an elevated, waterless plain in the Litoměřice District. Were Říp situated 30–50 km to the northwest, it would merely be one among the Bohemian Central Mountains; its isolated position in the Elbe plain, however, has given it a unique status as Bohemia's sacred mountain. The ancient myths and legends refer to the landscape around this hill as to the hearth of Bohemia, where the Forefather Czech (Čech) brought his people and proclaimed it as their new homeland. Botanical reconstructions indicate the mountain remained treeless for a long period. Its form, resembling more a smooth burial mound than a forested peak, may have contributed to its role within prehistoric mythology.

Distinctive hills, together with rivers, fords, and confluences, were regarded as sacred sites for worship and for depositing offerings (Bradley 2017: 189–198; Turek

2022). Certain mountains functioned as natural shrines throughout prehistory (Bradley 2000). Evidence for cultic and ritual activity related to these natural features includes rock art and sacrifices (of human remains, animals, and artefacts) to mountain spirits or subterranean world of ancestors. Prehistoric life was tightly interwoven with extensive symbolic and ritual systems; ritual behaviour was pervasive and not confined to formal cult ceremonies. In many cases, social norms generated ritualized taboos that governed and sometimes complicated routine, secular actions. After two millennia of monotheism, our perspective on prehistoric cults and religion is heavily filtered by contemporary cultural and religious norms, and we probably misinterpret many clear patterns of past human behaviour.

As noted above, the third millennium BC marks a major shift in attitudes toward verticality in Central Europe (Neustupný 2013). From the Middle Neolithic, people tended to focus some secular and probably largely sacral activities on hilltops; in the Late Neolithic this focus moved to the horizontal plane and hilltops were largely abandoned. There may have been a ritual taboo against digging secular features deeply below the surface. Consequently, especially from the Corded Ware period onward, sunken residential or economic features are absent, unlike in many prehistoric farming communities. This implies adherence to strict, almost fundamentalist, rules governing house placement, household refuse disposal, and extraction of raw materials such as clay or stone. The sole vertical intrusion regularly recorded is burial digging: grave pits were cut into the ground, a corpse placed unburned, and typically covered with an earthwork (burial mound). It appears that only in burial contexts were people permitted to penetrate beneath the surface. This taboo probably relates to a cult oriented vertically toward the underground; for Corded Ware groups the underworld may have begun immediately below the ground, making interference by the living inadvisable.

It seems the Corded Ware communities in Central Europe had a very strong relation towards the different rock formations and “entrances” to the underground. Karst sanctuaries illustrate the practice of depositing sacrifices in rock fissures, for example Bacín Hill near Vinařice in the Beroun region of Central Bohemia (Matoušek and Turek 1998). In one fissure (conceived as an entrance to the underground), alongside offerings from other prehistoric periods, a complete Corded Ware storage vessel was found; it may have contained a sacrificial drink, perhaps beer. Bacín Hill lies on the western margin of the Central Bohemian settlement area for the Corded Ware period, and no other contemporary finds are known nearby. The karst cracks in the hill could have been perceived as sacred entrances to the underworld and thus acted as natural sanctuaries. The existence of natural shrines as counterparts to constructed monuments is well attested in European prehistory and antiquity (Bradley 2000).

Comparable Corded Ware rock sanctuaries are documented at least at three Upper Franconian sites. At Motzenstein near Wattendorf, sacrifices associated with Corded Ware were discovered between two 10–15 m Jurassic limestone outcrops that feature numerous karst fissures (Seregély and Müller 2008), similar to Bacín. Among the artefacts were symbolic miniature clay models of battle-axes, prestigious objects to the display of warrior prestige (for the souls of dead warriors) in both living ceremonial contexts and burial rites. It is likely these miniature weapons were produced specifically for sacrificial offerings to ancestral spirits believed to dwell within the mountain. Such myth is known from many oral history sources, such as for example the legend on the Blaník hill knights (Turek 2022).

The area around the Czech mythical Mount Říp also produces a high density of Corded Ware burial finds, and a battle-axe and a stone axe were found on the mountain itself, which could be examples of offerings to gods and ancestors, similar to those clay axes in karst shrines in Franconia, or the above-mentioned sacrificial pot at Bacín. The accumulation of Corded Ware sites around the fabled mount of Říp was recorded even within the recent “Ritual landscape” project in the territory of Central/North Bohemia (Turek and Křišťuf 2022; 2025).

BEAKER CONTINUITY AND DISCONTINUITY

When discussing the continuity and discontinuity of archaeological cultures in specific regions of Europe, it is important to consider the nature of the continuity being addressed. As mentioned in the introduction to this study, there is a significant difference depending on whether we view archaeological cultures as monothetic or polythetic structures. If we perceive cultures in the traditional cohesive monothetic form, an apparent sharp discontinuity would be observed between the Corded Ware and Bell Beaker cultures. This is, however, primarily because the typological analysis of artefacts from both cultures and their classification is based on burial assemblages, which are strictly defined by the ideological identity principle (see Fig. 5). The lack, or even absence, of settlement finds from the 3rd millennium BC unfortunately does not allow us to transcend this interpretative limitation. In the case of the Corded Ware, particularly with the Bell Beaker phenomenon, it is necessary to consider the cultural substrate of the Middle/Late Neolithic, which, after the decline of the Bell Beaker cultural uniformity, continued into the Early Bronze Age (Turek 2019). Regarding Corded Ware, attention must be paid to the demonstrated continuity of the Cham Culture in western and southwestern Bohemia, where radiocarbon data reach as far back as the mid-3rd millennium BC (John and Kočár 2009; John 2010). Thus, it is



Fig. 5. Cultural identity: A caricature image of communication between the Beaker cultures/people. After Turek 1996: fig. 1.

possible that within the Corded Ware territory, such as Bohemia, there existed certain enclaves of internal periphery where the previous cultural development continued.

Sites dated to the Corded Ware and Bell Beaker periods are relatively rare in southwest Bohemia, especially when contrasted with the much higher site densities in Central and northwest Bohemia. Corded Ware battle-axes from Domažlice and Opálka lie only about 40 km from contemporaneous sites in the Upper Palatinate (Nittenau, Lkr. Schwandorf, Bay) and Lower Bavaria (Sankt Englmar–Meinstorf, Lkr. Straubing-Bogen), yet these finds appear geographically isolated. It is therefore necessary to reassess whether the disparity between the archaeological signatures of classic farming regions in Central and northwest Bohemia and that of southwest Bohemia reflects merely variation in the record of human activity across the landscape. Scholars propose that Corded Ware settlements featured above-ground dwellings and other features that were not dug into subsoil strata and thus left little or no archaeological trace (Turek 1995; 2019; Neustupný 1997). If regional differences in funerary practice are taken into account, the paucity of finds might also be explained by alternative mortuary treatments that left no visible archaeological residues. A dramatic depopulation of fertile zones such as the Pilsen basin during the period in question seems improbable. Most isolated Corded Ware battle-axe finds in southwest Bohemia are situated in the lowlands of the Pilsen basin. The corpus of Corded Ware battle-axes from southwest Bohemia should not be read solely as evidence for ephemeral or seasonal settlement, or occasional burials of people moving between

Central Bohemia and the Upper Palatinate, Upper Franconia and Lower Bavaria. It is entirely plausible that further Corded Ware and Bell Beaker material will come to light in the region, although the density of the archaeological record in southwest Bohemia will probably never match that of areas with a regular occurrence of Corded Ware and Bell Beaker sites.

During the 3rd millennium BC, the archaeological record indicates not a break but a transformation: a pattern emerges of conspicuous funerary behaviour in the form of single inhumations and concurrently much less visible settlement evidence. Reconstructing the cultural trajectory of the Late Neolithic/Early Bronze Age sequence in Central Europe principally involves recognizing the substantial, uninterrupted continuity of the *Central European Eneolithic–Bronze Age Pottery Complex* (Neustupný 1995).

The phenomena labelled Corded Ware and Bell Beaker in Central Europe can be understood as expressions of a strict or fundamentalist cultural model (Neustupný 2011: 177). With the rise of such strict cultures, arbitrary symbolic and expressive systems change rapidly. These shifts may affect artefact styles, burial practices, settlement patterns, and possibly aspects of social relations and cosmology. The later occurrence of the Bell Beaker package did not produce a wholesale rupture in the preceding prior development; rather, in many respects it continued elements of the Corded Ware period. Strict cultures tend to appear abruptly and, at least initially, exhibit a highly uniform expression that spreads rapidly over wide territories. The symbolic content of the Bell Beaker package was probably locally adapted in different regional contexts and in peripheral zones; beyond those peripheries, neighbouring cultural areas adopted only selected elements, perhaps stripped of some of their original symbolic meanings.

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