The Decline of the Neolithic and the Rise of Bronze Age Society

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The Oxford Handbook of Neolithic Europe *(Forthcoming)*
Edited by Chris Fowler, Jan Harding, and Daniela Hofmann

Online Publication Date: Nov 2014

Subject: Archaeology, Archaeology of Europe
DOI: 10.1093/oxfordhb/9780199545841.013.057

[–] Abstract and Keywords

This chapter explores the historical transition from the Neolithic to the Bronze Age between the fourth and the third millennia BC and highlights some major qualitative or structural differences between the two. It argues that this new social formation restructured the political economy around a new set of institutions, giving rise to more complex societies at a global level. The chapter first examines the historical conditions or forces that led to the decline of the Neolithic and the rise of the Bronze Age in prehistoric Europe by comparing seemingly similar tell societies in both epochs in the Carpathian basin before identifying the new institutions of the Bronze Age, including the regional economic division of labour. As bronze was universally adopted it implied regular long-distance trade in metal, which created a new globalized economy that did not exist during the Neolithic.

Keywords: Neolithic, Bronze Age, social organization, family, property, metallurgy, political economy, Europe, Carpathian basin, trade

Theoretical outline

In this contribution I propose that there existed world historical epochs during the prehistory and early history of western Eurasia where communities, even when not directly connected to each other, shared basic conditions that enabled and constrained their evolutionary potential. The Neolithic and the Bronze Age represent such world historical epochs, and it is therefore pertinent to raise the question: what were the historical conditions or forces that led to the decline of the Neolithic and the rise of the Bronze Age? In raising this question I propose that there is a qualitative difference between Neolithic and Bronze Age social formations in prehistoric Europe, which fundamentally changed both their worldviews and their political economies. Consequently, once metallurgy was introduced and became integrated in the economy, the world would never be the same, and a Neolithic subsistence was no longer possible. This, however, is disputed by some (Kienlin and Zimmermann 2012; Kienlin 2012), and I shall therefore explicitly make a comparison between seemingly similar tell societies in the Neolithic and the Bronze Age in the Carpathian basin to make my point clear. Also the transition needs to be discussed, as the term Chalcolithic or Copper Age is often used to characterize much of the fourth millennium BC in this region. I shall argue that the adaptation of metallurgy and new ideas about property and inheritance inspired by the expanding urban societies in Mesopotamia and its hinterland enabled this transformation.

My theoretical point of departure is thus a combination of World System theory, here summarized in the concept ‘historical epochs’, and a political economy approach (Earle and Kristiansen 2010). I consequently employ a scalar approach that weds an understanding of the political economy of local communities with the larger historical forces which indirectly governed their existence, even if this was beyond their knowledge. In accordance with Marx, history is shaped under conditions inherited from the past and therefore not of our own choosing, and yet the accumulated force of multiple individual choices may change the direction of that history, when conditions are ripe. Therefore we need to understand those conditions that govern and motivate either stability or change: in short, the political economy.

According to Kristiansen and Earle (in press):

> a political economy approach seeks to understand the linkage between the society's economy, power, and institutional structure as it unfolds both vertically (complexity) and horizontally (networks). In simple terms, this approach identifies the different horizontal and vertical social groups and their associations with contrasting interests. Fundamental is to understand the potential for different social segments to control in part the flows of resources that are used to support (finance) the political standing of different social segments. This ability to control economic flows in both subsistence and wealth depended on the creation of social institutions with specific cultural formations most importantly involving property rights and the formation of a new type of warrior aristocracy/institution to protect them. This approach is based on a Marxist analysis generalized to the new economic contexts of prehistory (see Friedman and Rowlands 1977; Kristiansen 1998: chapter 3; Ekholm and Friedman 2008; Earle 2013). To this we add an analysis and interpretation of the social institutions that were new to the Bronze Age in order to secure long-distance trade and political stability, but also the potentially disruptive forces that may destroy such political networks.

In the following this theoretical and interpretative framework will be used to explore how Neolithic and Bronze Age economies and social systems differed. However, this demands further theoretical elaboration, not least how different forms of social complexity operate.

Complexity in Neolithic and Bronze Age political economies

The study of complexity is linked up with the old question of how power and inequality comes about. Under what circumstances will a majority of people hand over their power to a minority of people (Earle 1997, Flannery and Marcus 2012)? Both Neolithic and Bronze Age societies were complex; the question is how they differ in their complexity. It obviously depends on how one defines complexity. I define complexity as the structured and institutionalized distribution of power. Access to power thus becomes increasingly unequal when complexity increases (example: elites versus commoners). Complexity is both vertical and horizontal, and the forms of integration involved in these arrangements define the limits and potential of power. Interacting systems are therefore the object of analysis, just as we need to employ a scalar approach that allows us to move from local to global and back.

We can distinguish between two forms of complexity: centralized and decentralized (Kristiansen 1984, 1998, Figure 18; Kristiansen and Larsson 2005: Chapter 8.1). These are their main attributes:

- *Centralized*: hierarchical structure around major centres; power and ownership concentrated; leadership and wealth concentrated—a staple finance system controlling resources essential to subsistence; vertical cosmology.
- *Decentralized*: complexity without major centres; power and ownership distributed spatially; leadership and wealth movable—a wealth finance system driven by acquisition of prestige goods and gift exchanges; horizontal cosmology.

The two forms were always intertwined, but with one or the other dominant.

With this as a starting point I shall briefly explore how Neolithic and Bronze Age complexity was linked to different political economies in their integration of vertical and horizontal differentiation. I shall mainly refer to later Neolithic societies of the fifth and fourth millennium BC (cf. Heyd 2012). In the Neolithic we see the formation of some large settlements with high population figures in certain regions; however, these were not systematically connected, and in the long-term they collapsed, rather than expanded. Here lies a major difference in complexity compared to the Bronze Age. Two factors were decisive: essential raw material could be obtained locally, with the exception of some prestige goods. There was no development of permanent higher-level institutions in charge of trade and alliance formation. There was consequently no development of interregional economic dependency and division of labour of the kind observed during the Bronze Age.

We may thus define most late Neolithic/Copper Age societies as regional political economies that were able to build up and control rather large populations in areas of high productivity. Good examples are the Tripolje mega-sites, or

the tell settlements in east central Europe and the Balkans, or the mega-sites in Spain and Portugal, with fortified settlements interspersed by huge (several hundred hectare) settlements with enclosure ditches, such as Valencina de la Conception (Garcia and Morillo-Barroso 2013; Marquez-Romero and Jiménez-Jáimez 2013). Among tell settlements in east-central Europe we typically find a two-tier settlement structure, such as the Polgár-Csőszhalom site in Hungary in the Tizsa region. A central tell (2–3ha), with a ritual circular structure and—in my interpretation—chiefly houses, is surrounded by a large 25-ha settlement presumably of commoners (Raczky et al. 2011, Figure 2 and Figure 9). Some megalithic communities can now be demonstrated to have exploited and drawn in livestock from non-megalithic areas within economies operating at a regional scale (Sjögren and Price 2013). These may have involved a degree of centralization. Certain forms of prestige goods, such as jade axes, were distributed over large regions in Europe, with a typical fall-off curve from the centre (Klassen at al. 2011, Abb. 7, 9, and 18), indicating prestige good exchange rather than trade and therefore not the ability to control other regional economies/chiefdoms. Therefore we should rather characterize these later Neolithic regional economies as territorial chiefdoms, spanning from simple to complex. This is based on an anthropological model in which chiefdoms are ranked societies where power is institutionalized and hereditary within chiefly lineages; competition and social mobility exists in such communities, although there is often a division between 'chiefs', 'commoners', and 'unfree' persons.

When we compare mobility in Neolithic and Bronze Age societies, we find that mobility was a dominant feature of both, but increased in the Bronze Age (Müller 2013b, Tab. 3), especially during the early Bronze Age. Only the pioneer early Neolithic period can show a similar degree of mobility. It is likely that Bronze Age population figures were substantially higher than those in the Neolithic due to the fact that settlements were now continuously occupied, and encompassed much larger areas (Müller 2013b, Figure, 8 and 9; Rassmann 2011). This also allowed long-distance trade networks to develop and be sustained between many stable centres of inhabitation. This defines a major structural difference compared to the Neolithic, where trade and exchange networks remained regional. Contrary to this, Bronze Age metal trade was regular and organized/institutionalized, and it was interregional—universally so in Europe by *c.* 1600 BC. Few mining areas produced the bulk of metal to be systematically distributed via long-distance trade to all communities, yet huge quantities of copper were circulated on an annual basis. We may thus define Bronze Age political economies as interregional and decentralized, spanning from ranked to stratified societies in Fried's terminology. They were part of a widespread metal economy where regional divisions of labour played a crucial role, and where chiefly institutions were sustained by tribute and warrior retinues. Before we probe more deeply into these structural differences, let us take a look at the decisive transformation from later Neolithic to Bronze Age social formations.

The decline of Neolithic economies and the expansion of new decentralized economies: Corded Ware and Bell Beakers

More than 10 years ago Janusz Kruk and Saunas Milisauskas (1999) published an inspiring book on the rise and fall of Neolithic societies. Here they pointed to a global crisis in temperate Neolithic economies around 3000 BC, which in some regions led to a renewed expansion of non-Neolithic economies, such as Pitted Ware, and to the expansion of pastoral Yamna/Corded Ware groups that also introduced some metalworking (Hansen 2011; Heyd 2011, 2012). Subsequently, this decline has been confirmed using thousands of C14 dates as a measure of population/settlement density, which in northern and western Europe shows a marked decline after 3000 BC, with a few exceptions (Shennan et al. 2013). One conclusion to be derived from these observations is that the expansion of a new social formation of Yamna/Corded Ware groups was helped by the crisis, which had then seriously diminished the power of Neolithic communities. In this respect Yamna and Corded Ware represented the expansion of a Bronze Age social formation into former Neolithic terrain, where most groups would live on a mixed stone/metal economy for another millennium, and where for some centuries old and new cultural identities and oppositions were maintained (Czebreszuk and Szmyt 2011). How did this Neolithic crisis or transformation come about?

In the western steppe in the fifth to fourth millennium stratified Chalcolithic societies were developing in the Balkan–Carpathian region, only to collapse or be transformed during the later part of the fourth millennium BC (Chernykh 1992, Chapter 2; Sherratt 2003). They adopted copper production on a limited scale, but with the potential to expand exchange networks and ultimately change the economy. However, they were not able to transform either economy or exchange network in the long run (Müller 2013a; Chapman 2013). Instead a combined ecological/economic crisis set in around 3000 BC, but beginning even earlier around the Black Sea, when the

mega-settlements of the Tripolje culture gradually collapsed.

Stretching from the Romanian Black Sea coast to the north-east of the Dniester–Dnieper Rivers the proto-urban communities of the Tripolje Culture created a barrier towards the west during this period. It represents what Mallory (1998) has called the first of three fault lines to be passed in order to explain the expansion of Indo-European languages. But more importantly they provide the demographic foundation for the later peopling of the steppe and the light soils of central and northern Europe. These proto-urban communities were organized around fortified settlements with two-storey houses arranged in concentric circles, the largest settlements being from 100–400ha, and containing 5,000–15,000 people (Videjko 1995; Chapman 2012). Each community with satellite settlements would hold from 6,000–20,000 people, and a local group of several communities from 10,000 to 35,000 people. Their interaction with steppe communities and later abandonment or transformation into pastoral groups from the later fourth millennium onwards is still a matter of debate (Dergachev 2000; Chapman 2002; Manzura 2005), but it opened up an opportunity for a westward expansion into central and northern Europe of the new social and economic practices (Johannsen and Laursen 2010). It culminated in the formation of the Corded Ware Culture shortly after 3000 BC (Czebreszuk and Müller 2001), whose rapid expansion is reflected in its ritual coherence over vast regions (Fuhrholt 2011, Abb. 10). Some have called this a 'barbarization' or decline of the Neolithic (Kruk and Milisauskas 1999; Rassamakin 1999, 125 ff, 154), but it represented a major transformation from centralized to decentralized economies.

The expansion of this mobile agro-pastoral economy was rapid and sometimes dramatic, as evidenced in a recently analysed multiple burial from Saxony-Anhalt, the result of a massacre on a small family group of 13 individuals (Meyer et al. 2009; Haak et al. 2008). During the early and middle Neolithic periods there were still large forest reserves preserved in Europe, although mainly on lighter soils. However, during the early third millennium BC these areas were colonized by expanding pastoral herders and warriors with an apparently never-ending appetite for new pastures, who rapidly burned down the forests to create grazing lands for their animals, as evidenced in pollen diagrams (Andersen 1995; 1998; Odgaard 1994; Kremenetski 2003). The expansion could have been helped also by climatic changes (Paschkevych 2012). As land-use was extensive it demanded much larger tracts of open land to feed people and animals than in a more sedentary (centralized) agrarian economy, and to facilitate communication and travels they employed ox-drawn, four-wheeled wagons (Burmeister 2004). The mobile lifestyle is also exemplified by the use of mats, tents, and wagons, which are sometimes found in burials (Ecsedy 1994; Shislina 2008, Figures 27 and 28). Strontium isotope evidence of migration of individuals is beginning to emerge and sustain archaeological interpretations (Gerling et al. 2012; Irrgeher et al. 2012; de Jong et al. 2010). In western Jutland the decimation of the forest during less than one hundred years and the creation of open grassland and heath is due to a massive immigration of a new population, the Single Grave Culture, with a new economy and social organization that demanded open land for their grazing herds (Kristiansen 1989).

The newcomers practiced some cultivation of cereals, especially barley (Robinson and Kempfner 1987), but the economy was based primarily on animal products, as reflected in diet (Kolar et al. 2012), and they expanded through a combination of warfare and recruitment of new members through clientships (forged through gifts and ethnic incorporation) and other means of social dominance. For instance, language was replaced in some areas due to mass migrations (Anthony 2007; Kristinsson 2012), as in western Jutland. Small houses or huts appeared during the later stage of the Corded Ware and Single Grave Culture (Liversage 1987; Müller et al. 2009).

Complex Chalcolithic societies also emerged in the Iberian Peninsula with a concentration of population living in huge settlements, some fortified. They stretched from Zambujal at the Tagus estuary in Portugal to south-east Spain and Los Millares, to name but the best-known. Huge, densely populated settlements and causewayed enclosures were also located in the region, as throughout much of contemporary Europe (Garcia and Morillo-Barroso 2013; Marquez-Romero and Jiménez-Jáimez 2013). These complex centralized societies in Iberia collapsed and transformed into smaller expanding, maritime Bell Beaker groups in the second quarter of the third millennium BC, and they brought with them not only new metallurgical skills, but also skills in boat-building and mining (Case 2004; Laubaune 2013; O'Brien 2004). Their expansion was both toward the western Mediterranean, to north Africa and Sicily (Guillaine et al. 2009), and northward to France and north-western Europe (Prieto-Martinez and Salanova 2009; Prieto-Martinez 2012). From here communities using Bell Beakers moved into central Europe (Heyd 2007), and mixed with Corded Ware groups, creating a Proto-Celtic language in the process. But more importantly they created a new metallurgical economy that was gradually adopted throughout Europe, along with more intensive agriculture (Lechterbeck et al. 2013). They also crossed the channel to the British Isles (Needham 2002; 2005,

Figure 3), represented by the famous Amesbury archer and his companions (Fitzpatrick 2011), and in Ireland by the Ross Island mining community (O'Brien 2004). This 'out of Iberia' scenario for the origins of Bell Beaker expansion has recently been supported by extensive studies of tooth morphology in two thousand Bell Beaker burials in several regions of continental Europe (Desideri 2011), among other evidence (Czebreszuk 2004; Nicolis 2001; Fokkens and Nicolis 2012; Prieto Martinez and Salanova 2013).

Bell Beaker groups expanded along the western Mediterranean and along the Atlantic façade before they moved inland (but never further east than Hungary), and they always settled in small pockets. They were travelling artisans that were well received because of their skills (Price et al. 2004; Vander Linden 2007; Heyd 2007), but they were also a demographic force looking for new places to settle (Vander Linden 2012). Through hybridization between the Corded Ware/Single Grave Culture and the expanding Bell Beaker Culture there emerged a hybrid Beaker Culture (Needham 2005, Figure 3). This new culture experienced a rapid expansion that transformed society in much the same way as the Corded Ware and Single Grave Culture had transformed temperate Europe 300 years earlier.

The new institutions of the Bronze Age: the origin of the family, personal property and gender divisions.

As I have demonstrated there is mounting archaeological and scientific evidence that centralized Late Neolithic/Copper Age societies were replaced by expansionist, decentralized societies by the third millennium BC. The background to this historical change was in part linked to the rise of proto-state societies and urban life in Mesopotamia and the Near East that marked the beginning of the Bronze Age. Consequently there developed new needs for these proto-states to establish relations with the outer world to get access to a number of essential goods located outside their own territories, such as copper, tin, and—later on—also horses. The so-called Uruk expansion of the mid to later fourth millennium BC (Algaze 1989; Stein 1999; Aubet 2013, Chapter 6) created these new links that circulated copper from the Caucasus in exchange for new types of prestige goods and technological knowledge (Courcier 2010; Dolukanov 1994, 326ff.; Sherratt 1997). From this interaction there emerged new ranked chiefdoms in the Caucasus by the mid-to later fourth millennium BC, called the Maikop Culture, who buried their chiefly lineages in large kurgans or barrows with rich grave goods (Rezepkin 2000; 2010). But other social institutions were adopted as well.

The early city-states of Mesopotamia had developed new means for trade and exchange that demanded new concepts of property and its transmission. This in turn entailed a new economic and legal definition of family and inheritance (Diakonoff 1982; Postgate 2003; Yoffee 1995). These new concepts were selectively adapted to a different and less complex social and economic environment in Anatolia and the Caucasus, as well as the Aegean (Rahmsdorf 2010). The royal kurgans and Mesopotamian/Iranian imports of the Maikop Culture in the Caucasus (Sherratt 1997: chapter 18; Ivanova 2012) represented new institutions based upon a new concept of rank linked to movable, personal property, mainly in the form of prestige goods including metal and herds of animals. This new social organization was ritually manifested in a new type of *kurgan* with individual burials and rich personal grave goods to symbolize the new standing of personalized property and power. It was quickly transmitted to steppe societies where it caught on and was wedded to a new expansive pastoral economy of mobile wealth of herds of animals (Kohl 2001 and 2007; Rothman 2003; Kristiansen 2007).

I thus propose that transmission of a new family structure from the city-states of the south (the Uruk expansion) with new definitions of family, property and inheritance helped to facilitate the social formation of a new mobile agro-pastoral society in the steppe region and beyond, also including an Iranian hinterland (Ivanova 2012). It constituted the monogamous family group as a central social and economic institution based on a patrilineal kinship system. It favoured the accumulation of mobile wealth through expansion and the formation of external alliance systems (Kristiansen and Larsson 2005, Chapter 5), and mobile wealth that could be carried along and even transmitted between generations. The new funerary ritual of individual burials furnished with these very same symbols of wealth and covered by barrows represented the ritualized institutionalization of these new principles as they were now also transferred to the land of death, when property had to be transmitted and redistributed.

Another important institution that was introduced from the early city-states to their closer peripheries in Anatolia and the Caucasus was that of organized warfare under royal or chiefly command. In the Eurasian societies of the third millennium BC the male herder-warrior became a new ideal. This can be attributed to the institution of chiefly

leadership with low levels of institutionalized or heredity inequality (Vandkilde 2011; Reinhold 2012). It was materialized in the widespread role of the carefully executed war axe in precious stone, copper, silver, or gold, later supplemented with the composite bow. But the contours of a more complex division of social roles and institution were also emerging. Specialists, such as the metal smith, began to appear in burials, and ritualized priestly functions were also demonstrated in grave goods, from the steppe to Central Europe. A more complex society of warriors, priests, craft specialists, and herders/farmers was emerging, although yet in embryonic form (Hansen 2002; 2011; Müller 2002; Shislina 2008; Schwarz 2008). The expansion of this kind of society was facilitated by the demographic surplus that emerged when the large Tripolje settlements of tens of thousands of people were dissolved during the mid to late fourth millennium BC and had to find a new way of living in dispersed family groups.

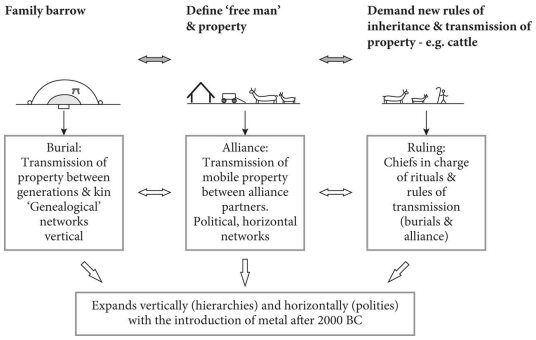

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Figure 1 . Model of basic material and institutional components of western Eurasian societies of the third millennium BC.

From the new institutionalized roles of leadership linked to warriors, priests, and craftsmen, and the new rules of family and kinship to control property and mobile wealth, there also followed new and stricter definitions of gender roles (Harrisson and Heyd 2007, Figures 45–48; see Fig. 1).

Figure 1 presents a model of this social organization and its basic components. The most important of these was the family barrow or tumulus, which became the ritualized extension of a new kinship system where the transmission of mobile property (herds) played a crucial role through inheritance and partnerships. The barrow thus defined ritually the free man, his family, and his property, and it also defined the male warrior as heading a new institution of chieftainship. Male and female genders were strictly and rigorously demarcated in burial ritual through the orientation of the body, laying on the left or right side. This ritual institution remained stable throughout western Eurasia during several hundred years, and it speaks of a social and ritual commonality of vast geographical proportions, but also of a highly regulated society.

There can be no doubt as to the important role of gender, although male burials always outnumber female burials. Mobile herding societies often exhibit a strongly gendered division of labour, and this we see reproduced in burial rituals throughout the third and second millennia BC in Eurasia. In an agro-pastoral society of herding based upon property of animals and their produce, rules of transmission and of inheritance become important. Therefore there had to be specialists—whether chiefs or other persons—in charge of maintaining and performing a corpus of ritualized rules.

To summarize, during the third millennium BC there emerged a new social and economic order in western Eurasia, supported by major population movements. The change was therefore not only social but also demographic and genetic, as recent evidence, although still sparse, suggests that the haplogroups that were introduced by Tripolje/Yamna/Corded Ware and Bell Beaker groups were transmitted to modern Europeans (Nikitin et al. 2010; Brandt et al. 2013). By the mid to late third millennium BC common ritual and social institutions were employed from the Urals to northern Europe within the temperate lowland zone as part of what Philip Kohl (2003, 21) refers to as ‘an interconnected world’.

What is the difference: Neolithic and Bronze Age tell societies compared

Background to the problem

What are the major qualitative differences—if any—between more complex Neolithic societies, such as tell settlements, and mature Bronze Age tell societies? While a general consensus exists among researchers that Bronze Age societies were differentiated in terms of hierarchy and complexity distinctly from Neolithic societies, recently some have questioned if these differences are simply of degree rather than of kind (Kienlin 2012). Yet despite considerable quantitative continuity between the Neolithic and Bronze Age of Europe, developing prestige goods exchanges and commodity trade, especially in metal, caused significant institutional (qualitative) restructuring. Using a comparative analysis, we can recognize that substantial variation existed both through time and across space in the Neolithic and Bronze Ages. Although sometimes creating an impression of similar organizational complexity, the reality was two sets of societies articulated to very different political economies and social formations, not least when taking into account the spatial dimensions of social organization.

Scales of interaction

Neolithic tell societies may provide many points of similarity to Bronze Age tell societies, when they are considered in isolation as a listing of traits. Local populations during the Neolithic could be substantial; however, they were not embedded in regular networks of international metal supplies. It is only by the Bronze Age that population figures rose significantly over Neolithic ones and that settlements and open land became continuous. This difference has been well demonstrated in several recent studies (Müller 2013b; Rassman 2011, Abb. 4 and 5). As described by Andrew Sherratt (1997), Neolithic communities were linked by regional exchange in basic commodities such as flint, and periodically interregional connections were established through migrations that might lead to technological transfer. Long-distance connections, however, were often short-lived (Müller 2013a; Chapman 2013). They were typically based on select prestige goods and these could encompass larger regions, following a traditional fall off-curve of exchange (Klassen et al. 2011, Abb. 7, 9, and 18). Thus Neolithic political economies were based almost exclusively upon the exploitation and control of local resources. When more exotic goods were traded over larger regions they show a characteristic fall-off pattern in abundance that contrasts with the Bronze Age trade. Nowhere during the Neolithic and Copper Age do we find permanently organized, long-distance ('international') trade networks of the kind that provided all Bronze Age communities with metal and other wealth from a few source areas on a regular basis. This contrast has been most explicitly demonstrated by recent network analysis from Bulgaria (Merkyte and Albek 2012, Figure 2 and 3). All Bronze Age communities were dependent on metal for their social identity, warrior weaponry, and basic subsistence economy from the Middle Bronze Age onwards. Across Europe and into Asia, copper and tin had to be provided on a regular basis from mines hundreds or even thousand of kilometres away. This international flow must then have been connected with reciprocal flows of exports that apparently included salt, cattle, wool/textiles, amber, and jet, and the list probably goes on to include skins of wild animals, slaves, horses, and other commodities. We therefore propose that the emergent political economy shifted towards a world system of trade, transforming the very institutional nature of society.

Taking a political economy approach to the prehistory of the Carpathian Basin, we start with two reasonable expectations. First, according to the specific location in the Basin, local social groups were articulated differently with the dominant political economy. We, therefore, expect a fundamental social and economic variability to be manifested during both periods. Second, as international trade in metal and other wealth items picked up, the institutional character of society should be transformed fundamentally, although the specific structure of society will differ from place to place.

The pattern of Bronze Age tells in the Hungarian basin documents this fundamental change from the Neolithic to the Bronze Age (Remenyi 2012; Szeverényi and Kulcar 2012; Uhner 2012). Rather than being concentrated in the lowland agricultural lands along the Tisza, as documented for the Neolithic, the primary distribution of tells sees them line up as beads along the Danube. A recent intensive survey of settlement along the Benta Valley just south of Budapest located very few Neolithic or Copper Age settlements, and no tells; by contrast, in the Bronze Age, a major tell settlement and a secondary tell right above the Danube developed rapidly (Earle and Kolb 2010). Along the Danube, settlements were thus formed in vacant or virtually vacant areas. Why? These locations along the Danube make little sense for agriculture because the river would have truncated access to half the circular catchment area available to a village located centrally within its agricultural land. In fact, the tells and their associated settlements were placed where they could have dominated the movement of wealth along the main river route for international trade in the Bronze Age of Central Europe. Likewise, tells are grouped along the foothills of the Carpathians where they controlled the large-scale extraction and possibly trade in salt, and perhaps also

horse breeding (Dietrich 2012). Admittedly, tells are found in both the Neolithic and Bronze Age periods and in both periods they almost surely linked groups to specific places that defined property rights. The contrasting locations between the two periods, however, show a distinctive shift in what is owned (or controlled) with a dramatic shift in the nature of the political economy and the structure of society. Ownership of agricultural land for staple finance would have been pre-eminent for the Neolithic in contrast to ownership of passage routes significant for the international trade in metal in the Bronze Age.

The shift from land-based exchange in the Neolithic to high-end international trade with boats along the rivers created clear bottlenecks that local populations controlled to extract metal as it moved through their territories overlooking the river (Earle 2013). The tell locations on the Danube allowed for a regular revenue source in foreign wealth, which would have transformed political structure and identity categories. In the Bronze Age cemeteries, only 5% of the burials included bronze, and it appears to indicate a special class of individuals. In the metal hoards that appear at the same time, the concentrated wealth that they represented took on a critical defining characteristic for society's institutions. By adding weapons and horses to the cultural inventory, a warrior elite apparently arose as a dominant social segment. It is important to realize that we do not view such warriors as all-powerful; the power of a chief is always contested locally by a heterarchical mix as seen, for example, by several sizeable, contemporaneous agrarian settlements in the Benta Valley (Earle and Kolb 2010). While recognizing that power would always have been contingent, the position of tells and the addition of status-defining metal wealth and weapons demonstrate a fundamental institutional (qualitative) transformation in Bronze Age society from its predecessors in Hungary and beyond.

Further to the implications of regular long-distance trade in metal and other commodities

The Bronze Age became a more mobile world for the simple economic reason that copper and tin, or bronze in finished or semi-finished form, had to be distributed throughout the known world from a few source areas. Systematic commodity trade in copper and tin (Bartelheim and Stäuble 2009; Shennan 1993; Bell 2012) and in woollen textiles and salt (Harding 2011; Harding and Kavruk 2010; Kern et al. 2009; Kowarik et al. 2010; Lassen 2010; Monroe 2009) formed the life blood of an international Bronze Age political economy that overlay and integrated the continuing staple economies of Europe and beyond. The control of copper and salt mines and the subsequent trade in these commodities had the same economic significance as the control of and trade in oil and gas resources has today.

During the Bronze Age such trade was probably couched in political alliances where prestige goods played an important role in forging such relationships—whether in Barbarian Europe or in the Near East, as exemplified in the 'Amarna diplomacy' of fourteenth century BC Egypt (cf. Cohen and Westbrook 2000). One precondition for the operation of this economic and political system that was based on a dialectic between staple and wealth finance (Earle 2002) was the rapid development of new maritime technologies during the late third and early second millennium BC, which for the first time allowed safe sea journeys over longer distances and provided larger ships that carried bulk cargoes across open waters (Kristiansen 2004; Needham 2009). These boats, however, could never have travelled safely without carrying warriors for their protection, much as is illustrated by the analogous trade by the medieval Vikings. Likewise the chariot throughout Eurasia came to symbolize a new speedy transport for warfare that had long-term historical consequences in the breeding of horses for transport (Kelekna 2009).

These technological revolutions expanded the potential for long-distance mobility and interaction on a systematic basis from the beginning of the Bronze Age, and by combining sea- and land-based journeys new regions could suddenly be connected. The volume of trade expanded both the scope of commodity transport and the demands for specialists—in shipbuilding and navigating at sea, and the construction of wagons and training of horses for land transport. New specialized social groups emerged along with a new institutional framework to support them, and such specialists expanded the cognitive geographies of Bronze Age communities tenfold or more. The archaeological reconstruction of such a trade network linked by strategic marriages (Kristiansen and Larsson 2005, Figure 107) demonstrates that specific groups with specific swords, such as octagonally hilted swords and flange hilted swords, were able to move and travel long distances. This movement can now also be supported by strontium isotope analysis, such as at Neckarsulm, a cemetery of males, mainly warriors, where one third were non-local, and thus probably had travelled to take service with a foreign chief (Wahl and Price 2013).

The regular connectivity between Bronze Age communities meant that knowledge about faraway places could be

obtained and controlled. Craftsmen could have been enticed by local leaders to move across great distances, and traders became new specialists that provided knowledge and organizational skills to connect distant places and their goods. Warriors became widely sought after as mercenaries in the east Mediterranean during the Late Bronze Age from the fifteenth century BC onwards, as is well attested in texts and on stelae, not least in Egypt (Morkot 2007). Such proposed movement of warriors explains how new sword types would spread rapidly from the Mediterranean to Scandinavia probably within a few years (Sherratt 2003, 2009; Hughes-Brock 2005). Thus the combination of trade in metal and possibly in arms, as well as travelling traders and warrior groups and their attached specialists, created an interconnected 'globalized' world without historical precedent.

Comparative analysis concluded: what was new to the Bronze Age

Regional economic division of labour

Because the products every community needed or craved were located in different regions—tin in Cornwall and Galicia, copper in a variety of places, amber in the Baltic, salt in the Alps and the Carpathians—from at least the Middle Bronze Age onwards, an interregional/international trade system emerged to distribute these products in large enough quantities throughout the known world to satisfy local demands far away from source areas. Because some products such as amber and tin located in northern Europe were needed in the Mediterranean, these regions would soon profit from a competitive advantage, and became rich in metal and other imported products. For the first time we see the formation of an economic division of labour between regions, which had heavy implications in the political economy and led to the formation of new social institutions and more complex and ranked societies. However, complexity and power took on new forms different from those in the palace societies and city-states in the Mediterranean that were able to control and tax a larger territory and could use writing to keep track of transactions (de-personalized control).

Decentralized complexity

Power resided in social networks that extended beyond the immediate local resource area, and was underwritten by personal bonds rather than written treaties and contracts. Participation in the metal trade and in other new forms of long-distance trade in wool/textiles and salt would have demanded the creation of political alliances linking polities together—sometimes in confederations—in order to protect traders and their products. Participation in such institutionalized networks (providing wealth finance) and the formation of institutionalized warrior groups enabled local chiefs and centrally located tells to mobilize local resources (staple finance) by controlling the distribution of metal for both subsistence and prestige goods.

New weapons and warrior institutions

To protect trade, warriors were needed, and the Bronze Age witnessed the formation of a whole new set of weapons (swords, lances, protective body armour) that for the first time led to the formation of more permanent warrior groups and retinues, which among other things is evidenced by systematic use wear on swords and lances, and trauma on skeletons (Kristiansen 1984; 2002; Harding 2007; Harrisson 2004; Horn 2013; Uckelmann and Mödlinger 2011; Vandkilde 2011). These new weapons were much more deadly and efficient than anything preceding them, and the warriors also demanded regular training to master effective swordsmanship. In short the swords introduced a new institution of warrior elites with retinues that could be mobilized and hired as mercenaries when needed. This new panoply of weapons was to be in continued use until historical times (Kristiansen 2013), and it became an institution that could be mobilized by chiefly leaders, but which could also overthrow them.

New means of transport and new open landscapes

Participating in such expansive in trade put further demands on infrastructure. Some settlements were localized along important waterways, as in Hungary, or along important overland routes, as in Denmark (Holst and Rasmussen 2013). We also witness the formation of continuously open landscapes that allowed travel and transport to take place along structured tracks connecting settlements for hundreds of kilometres. In addition, we see the formation of a new maritime economy along the coastlines of Scandinavia with its own ritual language of rock art and cairns facing the sea (Kristiansen 2004; Ling 2008; 2012). Similar maritime economies arose along the Atlantic façade, and soon allowed maritime long-distance trade a new economic role (Needham 2009; Rowlands

and Ling 2013).

External and internal sources of power from the Neolithic to the Bronze Age

During the Neolithic we see complex societies emerge, and in some areas large populations in tell-like settlements. Their internal organization was complex and based upon an organized and regulated use of the landscape and its resources in a staple finance system supporting territorial chiefdoms. Some of these were obviously complex but could not be sustained in a temperate environment. Regional economic and cultural borders also confined the distribution of goods. There were initial attempts during the Copper Age to develop a metal-based, international economy, which failed. It would seem that the Neolithic economy remained Neolithic precisely because it could not break out of its localized regional economies, grounded in staple finance, and therefore in the long run became vulnerable to overpopulation and degradation of the local resource base, leading to collapse and migrations. During the Bronze Age an interregional metal economy developed that stimulated other forms of interregional trade and travel, thus allowing for more leeway in growth and decline as people moved between local and regional polities. Power now resided primarily in the trade economy of decentralized political networks, as wealth finance. Bronze Age societies were thus more vulnerable to external changes in production and demand of metal, and to internal competition and warfare over the control of trade routes. This shift in the overall balance of the political economy and the origin of power from staple finance to wealth finance (with many degrees of variation) makes it justified to characterize the Neolithic and the Bronze Age in their mature form as world historical epochs with a fundamentally different outlook and world view.

Conclusion

In this contribution I highlighted what I consider to be some major qualitative or structural differences between Neolithic and Bronze Age societies. The historical transformation between the two world historical epochs took place during the transition between the fourth and the third millennia BC (Hansen and Müller 2011; Hansen et al. 2010; Smith and Rubinson 2003), as it paved the way for a new type of social organization based on new notions of family, and of property and its transmission, coupled to the introduction of new metallurgical knowledge. However, it took another millennium before this new social formation unfolded its potential in Europe, which happened only when bronze became an economic foundation and thus restructured the political economy around a new set of institutions, leading to more complex societies at a global level. It may be suggested that the later Neolithic/Chalcolithic mega-sites in both eastern Europe and the Iberian peninsula represented an attempt to carry on a Near Eastern evolutionary trajectory towards urbanization and state formation which failed. And part of an explanation for this failure is perhaps to be found in comparisons with the Bronze Age, when institutionalized trade networks needed to sustain larger populations in the long-term developed along with a regional division of labour and resources.

A discussion about differences between the Neolithic and the Bronze Age is therefore useful, because it highlights some fundamental theoretical and interpretive issues about the nature of later European prehistory. I have criticized those who prefer to view Neolithic and Bronze Age societies as basically similar for disregarding the economic role of interaction and commodity trade during the Bronze Age, despite apparent similarities in social organization. Likewise the role of bronze weapons and of warrior retinues defined a new social institution with capacities to control and conquer on a scale unknown in the Neolithic. Thus, while Neolithic societies could form impressive territorial chiefdoms, they were not grounded in a global system of social institutions that enabled the systematic extraction of tribute and the command of warrior retinues, which characterized the Bronze Age. Mature Bronze Age societies from the seventeenth or sixteenth century BC onwards (Meller et al. 2013) were therefore much closer to later Iron Age societies, and on an evolutionary scale they are rather more like archaic states, or stratified societies in Morton Fried's terminology (Fried 1967). The inability to see this structural difference between Neolithic and Bronze Age society is often based upon a typological misconception of societies as defined by a descriptive list of archaeological traits, which are then used to draw direct parallels between Neolithic and Bronze Age tell societies. What is critical is how those traits are *organized* (instituted) as political systems that structure social segments, in particular power arrangements. Even more critical is to understand the geographical *scale* of the economy, and thus the balance between wealth and staple finance. This balance changed dramatically during the Bronze Age, which accounts for the qualitative differences that separated the two historical epochs, with correspondingly different world-views and power structures as a result.

I wish to thank Timothy Earle for help and inspiration in comparing Neolithic and Bronze Age tell societies. I am here drawing on our joint article, currently in press (Kristiansen and Earle in press).

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