World Systems, Cores, and Peripheries in Prehistoric Europe

ANTHONY HARDING

Department of Archaeology, University of Exeter, Exeter, UK

The paper reviews the rise and utility of World Systems Theory in archaeology, with particular reference to Europe and the Bronze Age. After a consideration of its origins in the 1970s and 1980s, the main aspects of the theory are discussed. The evidence that shows that the Bronze Age world was highly interconnected is presented, and the implications of a World Systems view of the period considered. In an attempt to work towards a new narrative of the European Bronze Age, a brief discussion of network methods is introduced, since these offer an alternative, 'bottom–up', approach to the period which, it is argued, is more appropriate to the data than the World Systems approach.

INTRODUCTION

World Systems Theory or World Systems Analysis (WS, WST, or WSA, also written as world-systems, and also known as Core-Periphery Theory), has been an important theoretical concern in archaeology for more than thirty years. A host of papers and books that apply it to a range of archaeological situations have appeared during that time; these have been both in favour of it and opposed to it. The great majority, however, have enthusiastically espoused it, while extensive critiques have been much fewer, and mostly muted in tone. In this paper, I review the rise of the concept within archaeology, and consider some of the arguments for and against it as an interpretative tool with which to further our understanding of the ancient past. In this, I will have most to say about the Bronze Age, the period with which I myself am

most familiar, and also the one within which some of the most vocal advocates of the theory work. I also restrict myself to the Old World, and mainly Europe, though I am aware that much has been said and written in the Americas on the topic, and in the Old World, more specifically on the Near East, where abundant written records provide detailed evidence for trade systems between the various cities and states of the third and second millennia BC.[1]

World Systems Theory (WST) was developed as a means of visualizing the situation of early modern Europe, and largely the brainchild of Wallerstein (1974), who believed that it was only applicable to the capitalist world that developed in the fifteenth and sixteenth

---

[1] A useful survey of writings on World Systems Theory was submitted by Christoph Kümmel as a Masters dissertation for Heidelberg University in 1997 (Kümmel, 2001).

centuries AD. Nonetheless, a series of commentators have believed that it can be applied to much earlier periods.

Wallerstein did not have archaeologists in mind when he formulated the model, so it is not surprising that initial applications of it to archaeology met with criticism, on a variety of fronts. We are urged by WST enthusiasts: however, not to take these initial formulations as representing his or their considered views thirty or forty years later, but instead to consider the approach based on refinements that have been introduced in the subsequent decades, and made relevant to archaeology, particularly prehistoric archaeology (e.g. Kardulias & Hall, 2008: 577–78).

WST is essentially a means of understanding, or at least describing, how one area becomes dependent on another, so that developments in one will affect the other. Specifically, it has been seen as a way to model the means by which goods and materials moving between the two can structure not only economic but also social practice. For instance, prestige goods manufactured in the 'core' area can be introduced into the 'periphery', where they may play an important role in articulating social divisions. WST would go further; since economies typically experience cycles (in their simplest form, upward and downward trends, but in more extreme form, cycles of boom and bust), one might expect to see cyclical patterns in both core and periphery – though not necessarily going in the same direction. Kristiansen has suggested just such a set of cycles for the course of the European Bronze Age (Kristiansen, 1998: 411–17 and elsewhere); Frank (1993) believed that similar cycles were in play during the Early and Middle Bronze Age of the Near East; John Bintliff examined the possibility that the existence of such cycles in Iron Age Greece might be explicable in terms of Dependency Theory (DT) or WST (Bintliff, 1997).

WST provides a mechanism for understanding the role of traded commodities in given situations, both at the macro level of exchange between regions (or 'peoples') and at the micro level of enabling discrimination within communities through differential possession of imported (and thus elite) goods. It has also been used to study social interactions. It is particularly applicable in cases involving long-distance trade and exchange. 'These concepts do provide a general framework within which it is possible to analyse in very precise terms the specific conditions in which the relationships between polities at different levels of economic, political or technological development did, in specific cases, produce changes in those polities' (Champion, 1989b: 10). It is, of course, arguable how one is to recognize and define cores and their peripheries, but a working hypothesis would appear to be that they exist where there is a flow of goods between unequal partners – unequal in technology, in craft production, and, by implication, in social and political development. Thus, the movement of wine amphorae from the Mediterranean into Gaul and Britain in the Iron Age, or of Etruscan bronze vessels into Burgundy or Württemberg, would qualify as examples of such movement that indicated unequal partners in trade and thus a 'world system' (or part of one).

A BRIEF HISTORY OF WST IN OLD WORLD ARCHAEOLOGY

It is usual to mark the start of the application of WST to archaeological problems with the publication in 1977 of an article by Friedman and Rowlands (1977).[2] This came hard on the heels of the publication

---

2. According to Hall and Chase-Dunn (1993: 121–22), a conference paper by R.A. Pailes and J.W. Whitecotton in 1975 was the first archaeological application (later published as Pailes & Whitecotton, 1979).

of Wallerstein's initial formulation of the WST model (Wallerstein, 1974). Although Friedman and Rowlands do not directly refer to that formulation, they were presumably aware of it; several of the elements in the article relate closely to what has come to be known as core-periphery theory: a focus on the importance of the 'centre' in a range of archaeological situations, a stress on the movement of raw materials and sumptuary objects, links between centres and 'sub-centres' (Friedman & Rowlands, 1977: 243), and talk of 'tribal peripheries' specializing in 'supplying local products to the dominant centre in exchange for titles and goods from that centre' (Friedman & Rowlands, 1977: 270).

At about the same time, Philip Kohl published an article in *Current Anthropology* on trade in south-west Asia in the third millennium BC, in which he made specific reference to Wallerstein's 1974 book (Kohl, 1978). Within Europe, however, the first event to draw attention to the theory in a major way was a conference in 1980 in Aarhus entitled 'Relations between the Near East, the Mediterranean World and Europe – 3rd to 1st Millennium BC', organized by Rowlands with Kristian Kristiansen and Mogens Trolle Larsen. A wide range of scholars from different disciplines in archaeology (including Egyptology and Assyriology) and anthropology was present; most (myself included) had an interest in cross-cultural relations in the ancient past, in one form or another. At this meeting, I and several others were introduced to WST; this was new to most of us at that time, but it was soon to become a standard part of archaeological theory.

The Aarhus conference was later published as *Centre and Periphery in the Ancient World* (Rowlands et al., 1987); only those conference speakers who had specifically concerned themselves with

WST were invited to submit their papers for publication, along with some other invited contributors. In this volume, papers by several authors presented a view of WST as applied to Near Eastern and European prehistory, while some papers extended forward in time to the late Iron Age and Roman period.

In 1985, a conference with a rather similar theme was held in Mainz, organized by Peter Schauer (like me, a member of the *Salon des Refusés* of Aarhus, but unlike me, a believer in far-reaching connections across the Old World evidenced by similarities in artefact form), under the title 'Orientalisch-Ägäische Einflüsse in der europäischen Bronzezeit' (published as Römisch-Germanisches Zentralmuseum Mainz, 1990). Schauer had published a series of articles on this theme during the 1980s that expanded on the views he had presented at Aarhus (Schauer, 1983, 1984, 1985). This conference took a thoroughly traditional approach to the question of cross-cultural connections, as the published papers show. In discussion, the phrase 'world systems' was hardly mentioned and does not appear in the published proceedings, even though Kristian Kristiansen was present and made trenchant criticisms of any papers that doubted the existence of such connections (these remarks were edited out of the published discussion).

At the inaugural World Archaeological Congress in 1986, a session was held under the title 'Comparative Studies in the Development of Complex Societies'; this was later published as *Centre and Periphery: Comparative Studies in Archaeology* (Champion, 1989a). Champion's introduction gave a survey of the field, while other papers were concerned with various parts of the world, and most covered periods later than prehistoric – again, Iron Age, Roman, and medieval topics were

included, though most of the authors concerned were cautious about a straightforward application of WST to their area.

In 1992, a conference was held in Bristol under the auspices of the Prehistoric Society, entitled 'Trade and Exchange in Prehistoric Europe' (published as Scarre & Healy, 1993). This conference was honoured by the attendance of the distinguished economic historian André Gunder Frank. At the conference, he and the late Andrew Sherratt were to be observed in earnest conversation. The following year both published major contributions to the debate: Frank, an article in *Current Anthropology*, which set out a WS approach to the Ancient Near East, and also an edited book (with Barry Gills) in which his approach was set out at length; Sherratt, his own version of WST applied to the Bronze Age, in what became the journal of the EAA, as well as an article in the proceedings of the Bristol conference – and subsequently other articles on the same theme (Frank, 1993; Frank & Gills, 1993; Sherratt, 1993a, 1993b, 1994).

Meanwhile, other scholars had followed up the ideas they had formulated previously. Another article by Philip Kohl, also present at Aarhus in 1980, purported to include a critique of WST, but in reality this related mainly to those aspects of Wallerstein's initial formulation that were soon adapted in response to a number of criticisms (Kohl, 1987). Kohl in fact saw a WS in existence that included Mesopotamia and other 'central' areas, but with areas like Central Asia as part of the system. Perceptively, he also saw the existence of 'multiple cores', the existence of which indicated a 'basic disconformity' between the supposed Bronze Age WS and that postulated by Wallerstein (Kohl, 1987: 20). 'Patterns of dependency or…interdependency were [thus]

established as a result of intercultural exchange in the Bronze Age world system' (Kohl, 1987: 21)…'The Bronze Age world system consisted…of overlapping systems that constantly shifted and modified their boundaries' (Kohl, 1987: 27); if Wallerstein's model did not fit the ancient world perfectly, the archaeologist's task was to identify the interactions of that world and understand why they differed from those of more modern times.

The works by Frank seemed to strike a chord with many archaeologists; at any rate, critiques of it were not numerous, even though it was very evident that Frank relied almost entirely on secondary sources for his information about the archaeology of the periods he was discussing. The critiques by Michael Dietler and Gil Stein (Dietler, 1998; Stein, 1999, 2002) were among the more vocal and persuasive, though several other authors have been sceptical to a greater or lesser degree.

A series of outputs from sociologists started to appear from around 1990, notably from the pens of Christopher Chase-Dunn and Thomas Hall (Chase-Dunn & Hall, 1991; Hall & Chase-Dunn, 1993), two authors who have continued their advocacy of the application. In 1995, the *Journal of World-Systems Research (JWSR)* was founded by Christopher Chase-Dunn; many of the major players in the field contributed in the years that followed, including some archaeologists. At the same time, other authors applied WST, or versions of it, to other parts of the world (e.g. La Lone, 1994; Peregrine & Feinman, 1996, among many others).

Since that time, there seems to have been something of an unspoken assumption that WST is a useful model to follow. Applications have been made to a whole range of areas and periods. In the context of prehistoric Europe, and in particular the Bronze Age, the works of Kristiansen have been among the most numerous and

most cited (Kristiansen, 1987, 1994, 1998); scholars such as Nick Kardulias have also acted as enthusiastic advocates for the application of the model (Kardulias, 1999b, 1999c, 2007; Kardulias & Hall, 2008). Recent numbers of JWSR have included a number of articles on archaeological themes, most by archaeologists, but at least one by a political scientist (Wilkinson, 2004); this exchange of views between scholars working in very different disciplines has been seen as particularly important.

Of course, it has not only been archaeologists who have been interested in the application of WST to their material. Historians have also sometimes seen cycles in the development of cultural systems in their particular areas; Barfield (1989), for instance, refers to 'cycles of power' in the relations between the steppe nomads of central Asia and the Chinese kingdoms. Abu-Lughod (1989) extended the range of WST back from the early modern period to the Eurasian world in the preceding centuries.

WST and DT

Before considering WST in more detail, it is worth drawing a distinction between WST and DT.[3] DT is based on the principle that there are core polities or states and peripheral ones, and that resources flow from the latter to the former, enriching one at the expense of the other. DT is concerned with underdeveloped nations in the modern world, and the nature of the causes for their continuing underdevelopment. While this is clearly related to WST in general terms, WST includes

aspects that DT does not – notably the interdependent nature of the link between the two parts, and the cyclical nature of the 'system'. DT would simply imply that one area 'depended' on another; WST that the two were inextricably linked, in both material and in social terms.

A review of the value of the WS approach was written by Chase-Dunn and Hall in 1991; several similar articles have appeared from their pens and those of others. Recent articles by Kardulias and Hall (2008) and Kardulias (2009) have reviewed the role of WST (WSA) in archaeology, including some consideration of criticisms of the theory. Most recently, a volume in memory of Andrew Sherratt has included a series of articles that espouse or criticize WST, in various manners and using a range of different case studies (Wilkinson et al., 2011).

Kardulias sets out the position clearly (Kardulias, 2009: 56):

1. Societies do not now, nor did they in the Bronze Age, exist in splendid isolation.
2. Societal trends follow cycles or patterns.

According to Kardulias (2009: 56), WSA is a 'generalizing approach…that forces us to see the forest of external links in which individual sites are embedded'; it 'provides a conceptual framework to comprehend how systems function'. It revolves around the concept of cores and peripheries, however you define them; and it involves the concept of a 'world', which, however, is not a global entity but something that relates to 'interacting politico-economic units' (citing Wallerstein). The main point about all WST applications is that they 'emphasize interaction as central to cultural formation and change'. At the same time, it is possible to modify the basic concepts in order to increase their utility; for instance, by

---

3. A review by Nick Kardulias of my 2000 book *European Societies in the Bronze Age* rightly criticized me for confusing the two theoretical standpoints (Kardulias, 2002).

creating the notion of 'negotiated peripherality', in which 'people who live in peripheries or margins can determine the nature and extent of interaction with core polities, to at least some degree' (Kardulias, 2007: 55). A world-systems perspective allows 'consideration of a wider view' than just a single culture or area, because 'the fundamental unit of historical development is not the single society, but the entire intersocietal context within which individual societies exist' (Chase-Dunn & Hall, 1993: 85; cited by Flammini, 2011: 205).

It is the writings of André Gunder Frank that have promoted in its most extreme form the notion that WST is an appropriate way to view the remote past. According to this view, there was a '5000-year old World System', one that was 'the *one* central world system', that extended in 'unbroken historical continuity between the central civilization/world system of the Bronze Age and our contemporary modern capitalist world system' (Frank, 1993: 387), and which has allegedly stayed the same system in spite of various modifications that it has undergone over the years. Frank appears to have believed that any situation in which one can demonstrate trade connections, and a tendency to growth and decline, would qualify for admission into the category of a world system.

Other observers, notably Sherratt, adopted a much more nuanced approach to the question. He posed the pertinent question: where there was a 'technology gap', such as between the advanced civilizations of the East Mediterranean in the Bronze Age and those of continental Europe, and therefore an asymmetry to the relationship between the two, was this the same as a 'world system' (Sherratt 1993a: 4)? By adapting the term and freeing it from the connotations of exchange that applied in the early modern world, one might apply it, in Sherratt's view, to the 'large-scale core/periphery systems that began in the Near East and Egypt… in essence to the urban *oecumene* and its supply areas' (Sherratt, 1993a: 4). Sherratt was critical, however, of the notion of the periphery, preferring instead (following Schneider, 1977) the concept of the 'margin' (an area beyond the periphery), and seeing the terms 'nucleus' and 'margin' as preferable to 'core' and 'periphery' – these being descriptive terms with little implied deeper meaning. In seeing a growth in 'marginal' trade during the Bronze Age, in particular as far as the technological gap was concerned, where 'escapes' or 'time-lag phenomena' (rather than structural interdependence, Sherratt, 1993a: 43) took place from technologically more advanced civilizations to less advanced ones, Sherratt was able to develop his notion of a core/periphery/margin system, with new margins forming to new nuclei (themselves composed of cores and peripheries). Nevertheless, in essence Sherratt accepted the idea that 'catalytic contacts…were responsible for mobilizing the potentialities' of new production systems (Sherratt, 1993a: 18). In particular, the use of bronze as a medium of exchange was 'instrumental both in allowing the formation of small core/periphery structures in certain locations within the margin, and in affecting the pattern of links that grew up between them' (Sherratt, 1993a:18). His definition of a 'world system' in his second paper of 1993 indicated that he accepted there was such a thing, but that it was rather different from that advocated by Frank and Gills (Sherratt, 1993b: 252).

Kristian Kristiansen had developed his WST approach to the Bronze Age already in the 1980s; his contribution to the Aarhus conference volume was an initial attempt at describing the situation, seeing the Scandinavian Bronze Age situation as

one based on ritual, power, and prestige, with two types of centre/periphery relationships: regional and local. By 1994, this had been developed into a much fuller model, where three 'structural variants' in settlement and society were present in the Bronze and Iron Ages: sedentary centres of production and redistribution, warrior societies, and large peasant communities, and — important for the WS point of view — cyclical patterns in settlement and inter-community relationships. While climate may have had a bearing on these cycles, in particular as far as subsistence production was concerned, equally important were the creation and use of wealth, and the role of exchange. Thus, three patterns of core/periphery relationship were identified; these suggested 'regular shifts in dominance through time' (Kristiansen, 1994: 23).

Kristiansen's (1998) book *Europe before History* depended heavily on the incorporation of WST, though it basically develops the ideas of the 1994 article. He saw Europe in the Late Bronze Age as covered by a series of 'regional traditions' forming a 'regional system' (Kristiansen, 1998: 63–73). The regional traditions 'shared certain prestige goods, and through elite exchange shifting patterns of interregional (international) exchange networks were formed, keeping the system together' (*ibid.* 73). A series of case studies was deployed to support these ideas; several of them merit detailed consideration but this would greatly extend the present discussion.

Kristiansen's views on WS continue to be promulgated (Kristiansen, 2011), though now the justification for their inclusion is considered unnecessary. 'The Bronze Age world-system is a heuristic device that allows us to think big and trace the forces of history in their full extent…the notion of a Bronze Age world-system becomes an interpretative frontier that challenges conventional

wisdom' (Kristiansen, 2011: 243). In this formulation, the incorporation of temperate Eurasia into a Bronze Age world system was linked to the expansion of mobile pastoral societies on the steppe, a new perception of family, gender and property, the rise of the male warrior chief, and saw also the expansion of Indo-European languages, the spread of the war chariot around 2000 BC, and a range of institutional and ritual elements that represent the ideological sphere in human social life. Here, we move beyond the easily assimilable elements of WS research, into an area where almost any element of Bronze Age material culture can be harnessed to support ever more intangible hypotheses.

Many other authors have followed the WST line, though usually in a less dogmatic form. Berg, for instance, takes it for granted that the Bronze Age Aegean was home to various world systems: 'building on the assumption that ancient societies were not qualitatively, but only quantitatively, different from modern capitalist ones' (Berg, 1999: 475); her study applies WST to the southern Aegean during the Middle and Late Bronze Age. Berg discusses the various trade networks that are demonstrably present in the southern Aegean, following it with this statement: 'As has become clear from the above presentation, the Southern Aegean system consists of a core and a semiperiphery. No periphery could be ascertained within this region' (Berg, 1999: 478). This, it seems to me, epitomizes the approach adopted by many WST adherents: identify trade networks, place them within a WST framework, but ignore the need to demonstrate that there was a system of any sort in operation, let alone a 'world system', with the specific conceptual baggage that the term brings with it. I contend that we simply do not have the information to show that such a system

existed, even within the Bronze Age Aegean. Similar criticisms were advanced by Dietler (1998) and Knappett (2011).

A recent article by Warburton (2011) reiterates a WS view of the Bronze Age, but this view consist largely of assertions about important trade goods (amber, lapis lazuli, and jade). In European Bronze Age terms, nothing is said to justify the notion of Europe as a periphery to the Aegean.[4]

We are now at a stage where it has become part of accepted archaeological dogma that many areas in the later prehistoric world were part of a World System. Nevertheless, it is far from the case that all observers of the scene are convinced that WST is a helpful or appropriate way to view the ancient past: the critiques by Stein (2002) and Knappett (2011) are particularly trenchant. Knappett, for instance, points out that WST is a top-down approach, focusing on institutions, and ignores the 'micro-level', person-to-person type of interaction; it denies the 'enactive' role of material culture, with institutions being materialized in artefacts; and it is vague in the way it depicts space (e.g. what is core and what is periphery). Here, the individual has no role; nor do the peripheries (or 'recipient cultures' to use Stein's formulation: 2002: 905) do anything except passively receive influence from the core. WST also has nothing to say about gender or identity at the level of the individual or group, though it is only fair to point out that Kardulias has tackled this problem with some success (2007 and elsewhere), as have other recent authors – so it would not be fair to characterize all WST supporters as being tarred with the original Wallerstein brush. Michael Dietler has criticized WST for concentrating solely on economic factors, thereby making the periphery merely a passive object to be manipulated by outside forces (e.g. Dietler, 1998). In part this probably stems from the fact that WST was founded on a Marxist political and economic analysis, in which the exploitative nature of long-distance relations was emphasized.[5]

This makes it an appropriate time to consider its utility – and its validity – in one part of the ancient world to which it has been increasingly applied: Bronze Age Europe.

THE BRONZE AGE WORLD: TOWARDS A NEW NARRATIVE

Internal and external interaction in later prehistoric Europe

Attempting to understand the nature of social and political organization within societies in early Europe raises a series of questions about how their internal arrangements impinged on the outside world. Even in the smallest scale societies, human groups cannot have existed in isolation, if only because maintenance of group size and fitness would have necessitated interaction with adjacent groups in order to ensure reproductive success. As groups grew larger, such matters will still have been of concern, though they may have been easier to satisfy. Contact with the outside world, however, is a demonstrable fact in most areas of later prehistoric Europe, since materials and artefacts can frequently be shown to emanate from areas other than those in which they were found.

This contact appears to increase in extent and importance as the later

---

4. This author's lack of familiarity with the European scene is evident from his mention of 'massive importations of amber into the Mycenaean area' (2011: 129, Fig. 10:8), and his equation of jadeite axes in the western Europe Neolithic with jade in China.

5. This insight was kindly provided by an anonymous reviewer.

millennia BC pass. While in the Neolithic, the main archaeologically preserved materials moved were stone (for axes and blades) and shells (for ornaments), in the Bronze and Iron Ages, a whole series of materials were moved around: most notably metals, but also such other materials as coral, amber, or glass. It is also in these periods (third–first millennia BC) that the great palace civilizations of the East Mediterranean area developed, and later the states or proto-states of the central Mediterranean. This led to a notable phenomenon: the requirement for large quantities of raw materials for the complex societies of the south and east, principally but by no means exclusively metals. The need for these minerals is obvious in a society involved in the large-scale use of metal, but less so was the requirement for exotic materials such as amber or lapis lazuli, or even special woods: for instance, a large piece of African blackwood (ebony) was discovered on the Uluburun shipwreck (Bass et al., 1989: 9–10, Fig. 17).

It is now impossible to doubt that the Bronze Age world was an interconnected one. It has long been appreciated that communities in the European Bronze Age were connected by economic (commercial) factors and – on some level at least – by social factors as well. This is an area that has been the subject of debate for many years; the different positions adopted can be seen from the works of Jan Bouzek, Peter Schauer, Kristian Kristiansen, and me (e.g. Harding, 1984; Bouzek, 1985, 1994; Kristiansen, 1994). In fact, there were always points of agreement between all observers; for instance, on the existence of an 'amber route' linking the Baltic, southern England, central Europe, and Greece, especially for the unique amber spacer-plates that represent an artefact type that can only have been copied from one area to another, and not

independently invented, and for which the material was in any case derived from the Baltic.

Since the 1980s, when most of these works appeared, there have been many new finds, which lend support to the idea that there were numerous connections that linked distant parts of Europe. The discovery of a large sewn plank boat in Dover in 1992 shed new light on the question of sea voyages in the Bronze Age – whether or not the boat was used to cross the English Channel. The fragment of an oxhide ingot in a German hoard is not a new find, but its recognition sheds intriguing light on the question of metal circulation. A hoard on the northern shores of the Sea of Marmara, containing double-axes, a Mycenaean sword hilt, and an oxhide ingot, suggests that contact with the Black Sea was an important part of the east Mediterranean trade network, as do certain objects on the Uluburun ship. Other finds in England are also intriguing: notably, the gold cup from Ringlemere in Kent, one of a group of high-status vessels that cluster in north-west Europe, recently (March 2012) joined by a gold cup from Montecchio Emilia in north Italy that appears to be very similar to that found at Fritzdorf in the Rhineland in 1954 (von Uslar, 1955; Needham et al., 2006).[6] New amber spacer-plate finds have also recently been made and finds on the sea-bed off Salcombe in Devon strongly suggest the movement of metals across the Channel (the most recent group including ingots of tin and copper, almost certainly from the

---

6. This find is also not yet published; accounts derived from the Soprintendenza of Reggio-Emilia can be found at http://www.beniculturali.it/mibac/export/MiBAC/sito-MiBAC/Contenuti/MibacUnif/Comunicati/visualizza_asset.html_1180997707.html [accessed 30 January 2013], or in an English translation at http://www.archeobo.arti.beniculturali.it/montecchio_re/gold_cup_en.htm [accessed 30 January 2013]. The precise significance of this remarkable find has yet to be elucidated, but must surely indicate a further link in the chain of connections across Europe as early as the Early Bronze Age.

Devon/Cornwall metal sources). This is to say nothing of the amber beads with engraved Linear B symbols from Bernstorf, Bavaria, which are controversial because of their nature and their find circumstances (though the gold finds from the same place have an unimpeachable provenance) (references to all these finds can be found in Harding, 2007.[7]). A new study of amber in the Mycenaean world reinforces these links (Czebreszuk, 2011), while its importance in the central Mediterranean has recently been examined in detail by Italian scholars (Radina & Recchia, 2010). The importance of cross-Channel links has also been emphasized by Stuart Needham, who coined the term 'maritory' to express the geographical 'system' that bound together coasts and islands in a common interaction sphere ('high-flux sphere of maritime interaction', with a 'set of shared and reciprocal interests') (Needham, 2009:19, Fig. 2.3). This is just the latest expression of a long-held view that there were many links across the English Channel; the cups in precious materials are the most eloquent expression of those links.

The most spectacular find of recent years, the *Himmelsscheibe* (Sky Disc) from Nebra, central Germany (Meller, 2010), also brings information in this area. Opinions differ on the origin of the concepts seen on the disc[8] and can hardly be conclusive, but on the question of the origin of the metals used, there are clear pointers towards a long-distance movement of materials. The tin in the bronze

of the disc is argued to be Cornish (Haustein et al., 2010), and most recently, the gold fits best with a Cornish signature as well (Ehser et al., 2011), suggesting that connections implied by other means had a reality in material transfers.

These new finds and discoveries join a series of objects that have repeatedly been discussed in the literature, without any consensus being reached. These include, for instance, the Mycenaean bronze cup from Dohnsen, Lower Saxony (Sprockhoff, 1961; Matthäus, 1977–78), or the finds of Cypriot daggers or double-axes of Aegean type. The evidence of similarities in artwork are more difficult to assess, but Wolfgang David has convincingly demonstrated close parallelism between the spiral-related designs on Aegean objects of the Shaft Grave period and designs on bone and metal in the Carpathian Basin (David, 1997). While in most cases there can be no certainty about the date at which they were introduced into the areas where they were found, taken as a whole, their evidence might be thought to provide powerful indications of the movement of objects and designs across the European continent.

It is not only linkages between the Mediterranean and continental European worlds that are involved; many connections can be seen in objects moving across different parts of the continent. An object like the Balkåkra drum shows clear connections both in technology (manufacture) and arguably also in symbolism between the Carpathian Basin, where it was probably made, and the Nordic area, where it was found (Knape & Nordström, 1994). This curious object joins a series of other items, notably swords, from the Nordic Early Bronze Age that seem to be closely connected to, if not derived from, the Carpathian Basin. The study of many individual classes of object has shown a wide dispersal of particular types; in other

---

7. The new Salcombe finds are not yet published, but can be viewed at http://news.nationalgeographic.com/news/2010/02/photogalleries/100224-shipwreck-bronze-age-treasure-salcombe-britain-pictures/, among other websites.

8. Kristiansen (2011: 245), for instance, links the disc to 'complex astronomic and cosmological knowledge.[which] probably originated in the Near East, where the sun and moon are often displayed on seals, but in Europe it was wedded to a shared Indo-European religion, that placed the sun-cult and its practitioners in a milieu of dual gods'.

words, there were channels through which objects moved, no doubt facilitated by existing social networks.

People transported these objects, of course, but many individuals moved their place of residence during their lifetime as well. Initially, such scientific studies were restricted to the Beaker period, e.g. in southern Germany (Price et al., 2004) or southern England (Evans et al. 2006; Fitzpatrick, 2011), where the well-known 'Amesbury Archer' has been shown to have been born somewhere in central Europe. More recently, it has been shown that of 38 individuals studied at the Late Bronze Age cemetery of Neckarsulm (Baden-Württemberg) – all young males – twelve have isotopic signatures different from that of the local area: in other words, they were born elsewhere and moved to the area where they died at some stage during their life (J. Wahl in Knöpke, 2009: 339–45; Price & Wahl, forthcoming). On the other hand, similar work on individuals from the Early Bronze Age cemetery at Singen, near Konstanz on Lake Constance (Bodensee), produced no evidence for mobility in the individuals analysed (Oelze et al., 2012), so some people stayed put.

This isotopic evidence can be supported by study of artefacts in particular contexts. A seminal and much-cited article by Jock-enhövel (1991) isolated what he termed 'fremde Frauen', that is, women moving in marriage between adjacent groups as defined by characteristic dress ornaments placed in graves. This has a bearing on personal identity, but what is noteworthy here is the information on the size of the groupings who used similar ornaments – a core area some 100 km across is suggested, with a 'halo' or periphery outwards up to another 50 km from the centre (i.e. total radius 100 km). This suggestion has been enthusiastically followed up by a number of scholars: for instance, in a study of

tumuli on the Grosse Heide at Ripdorf (Uelzen) in Lower Saxony (Geschwinde, 2000). The potential of this type of analysis is obvious, especially if it can be allied to stable isotope work.

World systems versus local systems

To show that the links across Europe were systematic (*sensu* world systems), we need more than the demonstration that they existed. There must be a presumption that there was mutual knowledge between core and periphery (and that the core was dominant, influencing the periphery); that exchange brought about social and economic change; that there were cycles of relative boom and relative bust in the system; and that all these things were linked. Wallerstein (1974) was interested in, *inter alia*, the emergence of capitalism in the early modern world, with the assumption that trade resulted in a profit for those taking part in it; it seems to me inappropriate to bring this aspect into a consideration of the prehistoric world, though of course matters such as prestige or status could well be involved.

Proving interaction on this level, though crucial in any assessment of the debate, is not as simple a matter as has often been claimed. Certainly, there is not just one way of interpreting the evidence; there are alternative ways of visualizing the societies of later prehistory in Europe. To begin with, it is necessary to get a handle on the scale of communities at different stages of the past, and if possible, obtain some idea of the extent to which they were open systems rather than closed ones. For this, extensive and detailed information on settlement patterns is needed, along with the best available data on artefact form and provenance. Modern techniques are able to provide such information; the best

modern studies of settlement and landscape give unrivalled quality and quantity of data (e.g. Bjorhem & Säfvestad, 1993; Arnoldussen & Fokkens, 2008). Provenance studies coupled with sensitive artefact analysis have already solved many aspects of ancient production and distribution, and the detailed study of artefacts in particular contexts has provided remarkable information on gender and identity (e.g. Sørensen, 1997; Bergerbrant, 2007).

The study of local context is important for another reason, one that represents a major objection to the application of WST to prehistoric societies: the removal of autonomy from 'peripheral' communities in the mindset of modern observers. If peripheries were dependent on cores, and owed their social and economic development to those cores, they become little more than puppets whose strings were pulled by elites from the core areas. A similar objection has been raised by both Dietler (1998) and Joseph Maran (2011; Maran & Stockhammer, 2012). There is no reason why we should consider such dependence to have existed as the default position: in some instances, interaction may have mutated into interdependence, but as the general rule, this assumption is unwarranted.

One can argue that the view of Bronze Age Europe as a system with a developed core and a dependent, undeveloped periphery stems in part from a particular view of the developed technological, social, and economic status of the East Mediterranean, and specifically the Aegean. Part of this probably goes back to what Henrik Thrane perceptively called the 'Mycenaean fascination' (Thrane, 1990), the wonder with which the glories of Minoan and Mycenaean Greece are held by most observers, and the desire to see elements of those civilizations percolating to even the darkest corners of Europe. A similar

point was made for Classical Greece in relation to southern Italy by Whitehouse and Wilkins (1989). Another part of it stems from the desire for a grand narrative with which to tell a 'story' of the Bronze Age. We may certainly see scope for travellers' tales playing a role, and for the importance of exotic knowledge derived from travels to distant lands; but neither of these things – so important in the narrative put forward by Kristiansen and Larsson (2005) – can be more than speculative ideas.

The implications of a WST view of the Bronze Age

If one follows a WST view of the Bronze Age, among the implications are these:

- social change was brought about in the periphery;
- these changes and movements had a cyclical nature.

Social change

Much work has been done in recent years on social reconstruction, mainly from burials, but also from settlement patterns and artefact distributions. While some of this work is highly speculative, the increasing complexity of society can be judged from the provision of grave-goods over the centuries of the Bronze Age. Not merely the number of artefacts, but the combinations in which they occur, can indicate the presence of (for instance) warriors – and indeed, certain types of warrior – craftspeople, possibly shamans or religious leaders, and others, as well as provide information on kinship, gender, and personal identity. The move towards social complexity came to have, during the first half of the second millennium BC, an unstoppable momentum, and most

commentators have seen the origin of this movement through local circumstances, perhaps allied to the role of trade and exchange in facilitating the acquisition of relevant technologies.

The most important element in political development in the Middle and Late Bronze Age was the rise of forts (their appearance in the Early Bronze Age in central Europe does not seem to have led to long-term effects); the apparently territorial nature of their distribution suggests the existence of a quasi-political organization that in the Iron Age led to defined tribal territories, as known from classical authors. There is no reason to see this as linked to long-distance contact; all the necessary prerequisites (increasing population and elite leadership) were present in local communities by around 1200 BC.

Cyclical change

Kristiansen pointed to complementary 'ups' and 'downs' in the archaeological record when one compares the sequence in the Mediterranean with that in the European inland (Kristiansen, 1998: 412–17). In this, notable interruptions or hiatuses are important: for instance, the end of Hungarian tells at the time of the Koszider horizon, when there was a marked phase of hoard deposition, the apparent disappearance of lakeside settlement on the Swiss lakes in the Middle Bronze Age (and its reappearance in the Late Bronze Age), or the major change affecting much of Europe in the thirteenth century BC (the start of the Urnfield period).

In reality, the question revolves around our interpretation of ambiguous or 'missing' evidence, as is so often the case in archaeology. The missing Swiss lake sites have sometimes been claimed to be the result of rising lake levels in the mid-second millennium BC (e.g. Furger in Ammann et al., 1977: 32–35), though this may not in itself be an adequate explanation. For a start, the lack of sites on the lakes, as compared with a developed settlement pattern in the mountain valleys, suggest a more complex pattern that was brought about by human action. The explanation for the break in tell settlement in Hungary, which is accompanied by the deposition of Koszider-style bronze hoards, can equally be explained in terms of human action – indeed, hostile invasions have usually been seen as the most likely explanation for their deposition (Mozsolics, 1957; Gimbutas, 1965: 281–83). One should not forget, however, the role of environmental change in influencing the location of settlements, though I would argue that this was rarely the sole reason for change in settlement patterns.

The largest disjunction in cultural terms in the whole of the Bronze Age was that seen in the thirteenth century BC, something that affected most of Europe and the Mediterranean area. Kimmig (1964) associated the rise of the Urnfield cultures in Europe with the disruption in the East Mediterranean brought about by (among others) the Sea Peoples; Bouzek (1969: 84–85, Abb. 31) presented a graph showing a decline in the number of sites in Greece complementary to a rise in numbers in central Europe. We know now that this period is one where there is a curious concentration of radiocarbon dates by comparison with periods before and after, that is to say many sites in central and eastern Europe have produced dates in the time bracket 3100–2900 BP, strongly suggesting that there was a major event or series of events at that time. Whether or not the Urnfield cultures represent the arrival of new peoples (as many

have claimed), it is certainly true that major changes were occurring across the continent. Here, one may certainly see a connection between events in the Mediterranean and those in the continental interior, but there is no reason to think that this is part of a cycle of such disruptive occurrences; rather, it seems on present evidence to have been a one-off phenomenon that had profound consequences for cultural development across the continent.
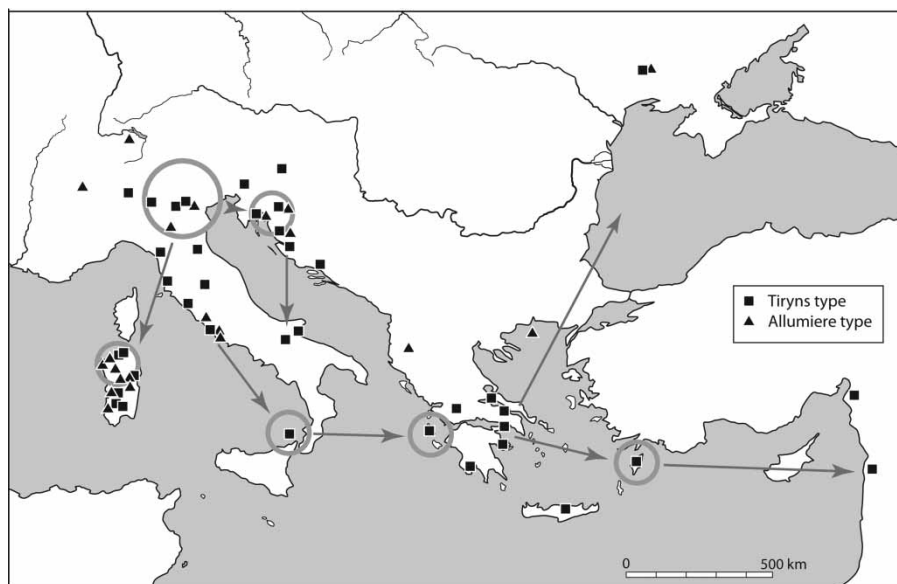
Networks

WST as applied to ancient societies is a study of networks of interaction, though the idea was conceived before modern network theory had taken off. While network methods are only one way of viewing interaction in the ancient world, they have become increasingly important as a way to model interactions in ancient (as well as modern) societies. Networks have become a popular research perspective in many disciplines (Brughmans, 2012), with a specific vocabulary that can be used to describe networks in the brain, in insect colonies, or the world economy; in part this can be traced to the influential work of Latour on Actor-Network theory (Latour, 2005), though his concerns were rather different. 'Network-based approaches assume that the relationships between entities like people, objects or ideas matter…relationships between entities should be examined explicitly if we are to understand the behaviour of these entities' (Brughmans, 2012: 3). A number of articles and books have appeared in the last few years exploring this approach, as Brughmans indicates, but all these authors would agree that the methods are at an early stage and have some way to go before they can displace more conventional ways of thinking. The work of scholars

such as Knappett have indicated some of the ways in which network approaches can shed light on interaction in the ancient world (Knappett et al., 2008; Knappett, 2011).[9] The influence of this school of thought can be seen, for instance, in a recent volume on local societies in northern Europe (Anfinset & Wrigglesworth, 2012), though in a Scandinavian context it was foreshadowed some years ago (e.g. Johansen et al., 2004).

WST is a 'top-down' approach, looking to identify interactions on a large canvas. Network methods work at the small scale, looking for nodes and links at the level of individual members of a framework. The contrast between the broad brush approach of WST and the micro-scale analysis of network analysis could not be more dramatic. But which – if either – represents the better model with which to understand how the ancient world worked? This depends, of course, on your personal preference, but I would argue that the latter is truest to the data, in the sense that it starts from the data and builds the model upwards from it, rather than imposing a model downwards from above.

In this way, one can examine individual pieces of data (*pace* Kristiansen & Larsson, 2005: 17–20, who state that this is precisely what one should *not* do), identify possible links between them, and then isolate the nodes into and through which the links pass. It is ironic that while these authors regard the study of individual objects as a flawed method of understanding the past, insisting instead that we concentrate on the big picture (taking a 'contextual or holistic overview'), one of the main ways in which Kristiansen

---

9. A conference held in Southampton in March 2012 made much progress in developing network theory in archaeology: 'The Connected Past: people, networks and complexity in archaeology and history' (http://connectedpast.soton.ac.uk/, accessed 30 January 2013). In addition, a book on the subject edited by Knappett is in press (Knappett, forthcoming).

Figure 1. *Distribution of amber beads of types Tiryns and Allumiere as presented by Negroni Catac-chio (1999), redrawn with suggested nodes and network routes. The large circle in northern Italy represents Frattesina.*

(1998) validates the supposed Bronze Age world system is through the study of distribution patterns – in other words, the patterns formed by exactly those individual objects which in themselves are not regarded as worthy of detailed attention. Here it is only fair to point out that Kristiansen has in fact undertaken a great deal of work on artefacts, but his approach to an understanding of them differs from mine, as this article makes clear. One must also remember that some authors who espouse WST have adopted very much the procedure I am recommending here (e.g. Kardulias, 1999a).

In identifying links, we need of course to have regard to what we know about workshops, in other words, where objects were actually manufactured, before examining where their products ended up. This is easier said than done. I propose to take just one example: the Protovillanovan site of Frattesina in the Po valley in northern Italy, where a range of materials were

worked into finished objects and (probably) exported, including ivory, glass and amber. It is the amber that provides the clearest picture (Figure 1).

It is likely that the characteristic amber bead types known as the Tiryns and Allumiere types were made at Frattesina, and the distribution of these forms indicates the importance of the sea as a linking factor. There are examples of both types at Frattesina, along with lumps of unworked raw material (Negroni Catacchio, 1972), while the distribution of beads of this form ranges far and wide through Italy, Sardinia, Dalmatia and Greece, with isolated pieces in Switzerland, the Near East and – most remarkably – a considerable quantity in the kurgans at Hordeevka in Ukraine (Berezanskaja & Kločko, 1998; Negroni Catacchio, 1999). But only Frattesina has the evidence for actual production; most of the finds are isolated examples (the Tiryns 'wheels' are an obvious exception: Harding, 1984: 83–84,
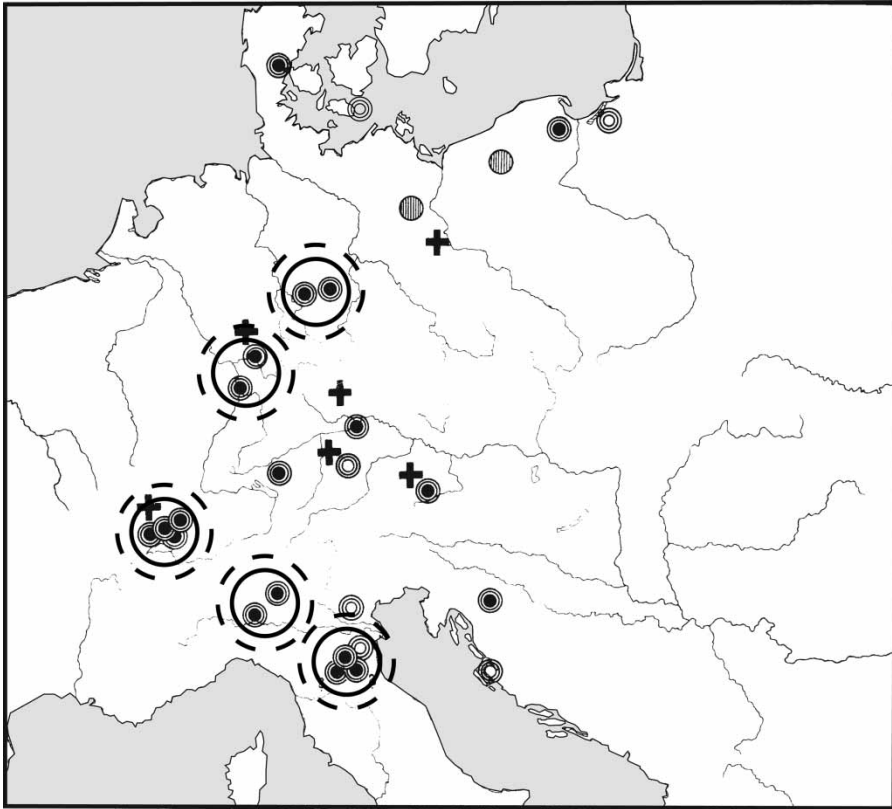
Figure 2. *Distribution of* Vollgriffschwerter *of types Weltenburg and Mörigen, according to H. Müller-Karpe, with circles indicating supposed chiefly centres as added by Kristiansen (1998:164, Fig. 83) (redrawn). The circles are said to indicate political catchment areas, the swords representing 'a select group of prestige objects which all cluster in the same areas, representing cultural and political centres'.*

Fig 22, with full references), usually in graves.

Seen in this light, Frattesina represents a primary node, being ideally placed to oversee the distribution of amber to north, south-west, south, south-east, and east. Sites near Rome, and Piazza Monfalcone on Lipari, might be nodes in the distribution to west and east. In Greece, the discovery of a number of Tiryns beads on Kephalonia might indicate a nodal point there; after that, perhaps Ialysos on Rhodes. Through which node the beads reached Ukraine is not clear at present, but given the increasing number of finds

of such beads in recent decades, it will come as no surprise to find more examples around the Aegean, capable of answering that question.

That the disagreement with Kristiansen is not as drastic as has been suggested can be gauged from considering some of the details in his 1998 book. In that work, to take a single example, Figure 83 (here redrawn as Figure 2) is said to depict chiefly centres from northern Italy to northern Europe, in the form of the distribution of two particular varieties of sword; the image is taken direct from the work of Müller-Karpe (1961: Karte 7, Taf. 98).

While the interpretation is open to question on purely empirical grounds,[10] the identification of 'centres' is in essence the same as identifying 'nodes'. What Kristiansen (1998) has in fact done is to identify potential ways of visualizing the networks of interaction that characterized the period; in other words, the method actually proceeds from the objects and attempts to see how larger socio-political structures might be identified from their character and situation.

This 'bottom-up' approach has the great advantage of sticking closely to the artefactual base (the 'data'), and of being modified ('tested') through new finds. What it also enables is a means of contextualizing the objects in their home setting, prior to placing them within a wider framework.

Small worlds versus large worlds

In order to understand the nature of interactions in the Bronze Age, one needs first to contextualize them, which means understanding the nature of the local societies in which they operated. In part, this means looking at individual artefacts or groups of artefacts; in part, setting sites in their landscape context; in part, looking at patterns in grave-goods and deposition mode. The combination of this variety of modern techniques has been shown to be capable of creating a detailed picture of life and death in specific communities. With such studies available, and with the progress of research and the information derived from a constant stream of new finds, a remarkably detailed – and plausible – picture of the Bronze Age world can be obtained. One can point to many areas of Europe where all aspects of the living system are present: settlement, burial, subsistence agriculture, and industry (e.g. bronze metallurgy). Seen in this light, one can argue that such 'small worlds' are what most people experienced rather than the 'big world' of the travellers and traders.

The need for overarching, pan-European narratives thus becomes less important; instead, the narrative of the local, and of the links that connected the local to the regional and beyond, takes on extra significance. While world views (if not systems) have their place in the study of prehistoric societies, regional studies are both simpler and founded on more secure evidence. If one wishes to model such societies in core/periphery terms, the local perspective might lead to a view of Europe as a series of individual core areas, each with its own 'periphery'; even then, one might debate the extent to which such a periphery was interdependent with the core in more than a transient and coincidental fashion. In a geographical sense, peripheries of course existed. But identifying true cores is the real task, and one which the vagaries of archaeological research and preservation make rather difficult. This is no counsel of despair, however; the sophistication of so much that is carried out today shows how much has been achieved, and the potential for so much that will be achieved in the coming years.

10. There are 33 symbols on the map, mostly scattered thinly across this vast area. Kristiansen, however, has drawn circles round five 'groups' of swords, of which three contain only two swords, not found especially close together. The other two groups are those centred on the Bologna region of Italy, and on Lac Léman in west Switzerland. Of these, it is certainly true that Bologna has a special claim to be considered an important area, but the deposition of bronzes in Swiss lake sites is another matter altogether, and has been the subject of intense speculation (most recently, Fischer, 2010, 2011).

(anonymous) reviewers, as well as Robin Skeates, for helpful suggestions (mostly incorporated in the final version) and pointers to additional items of bibliography. I also thank Kristian Kristiansen, Michael Dietler, and Joseph Maran for providing me with articles prior to publication or otherwise unavailable to me.

REFERENCES

Abu-Lughod, J.L. 1989. *Before European Hegemony. The World System A.D. 1250–1350*. Oxford and New York: Oxford University Press.

Ammann, B., Furger, A.R., Joos, M. & Liese-Kleiber, H. 1977. *Die neolithischen Ufersiedlungen von Twann, Band 3. Der bronzezeitliche Einbaum und die nachneolithischen Sedimente*. Bern: Staatlicher Lehrmittelverlag.

Anfinset, N. & Wrigglesworth, M. eds. 2012. *Local Societies in Bronze Age Northern Europe*. Sheffield: Equinox.

Arnoldussen, S. & Fokkens, H. eds. 2008. *Bronze Age Settlements in the Low Countries*. Oxford: Oxbow Books.

Barfield, T.J. 1989. *The Perilous Frontier. Nomadic Empires and China, 221 BC to AD 1757*. Cambridge MA and Oxford: Blackwell. Studies in Social Discontinuity.

Bass, G.F., Pulak, C., Collon, D. & Weinstein, J. 1989. The Bronze Age Shipwreck at Ulu Burun: 1986 Campaign. *American Journal of Archaeology*, 93:1–29.

Berezanskaja, S.S. & Kločko, V.I. 1998. *Das Gräberfeld von Hordeevka*. Rahden/Westf.: Verlag Marie Leidorf GmbH. Archäologie in Eurasien, Band 5.

Berg, I. 1999. The Southern Aegean System. *Journal of World-Systems Research*, 5:475–84.

Bergerbrant, S. 2007. *Bronze Age Identities: Costume, Conflict and Contact in Northern Europe 1600–1300 BC*. Lindome: Bricoleur Press. Stockholm Studies in Archaeology 43.

Bintliff, J.L. 1997. Regional Survey, Demography, and the Rise of Complex Societies in the Ancient Aegean: Core-Periphery, Neo-Malthusian, and Other Interpretive Models. *Journal of Field Archaeology*, 24:1–38.

Bjorhem, N. & Säfvestad, U. 1993. *Fosie IV. Bebyggelsen under brons- och järnalder*. Malmö: Malmö Museer. Malmöfynd 6.

Bouzek, J. 1969. *Homerisches Griechenland im Lichte der archäologischen Quellen*. Prague: Universita Karlova. Acta Universitatis Carolinae Philosophica et Historica, Monographia 29.

Bouzek, J. 1985. *The Aegean, Anatolia and Europe: Cultural Interrelations in the Second Millennium B.C.* Prague and Göteborg: Academia/Paul Åström.

Bouzek, J. 1994. Late Bronze Age Greece and the Balkans: A Review of the Present Picture. *Annual of the British School at Athens*, 89:217–34.

Brughmans, T. 2012. Thinking through Networks: a Review of Formal Network Methods in Archaeology. *Journal of Archaeological Method and Theory*, 19.

Champion, T.C. ed. 1989a. *Centre and Periphery: Comparative Studies in Archaeology*. London: Routledge. One World Archaeology.

Champion, T.C. 1989b. Introduction. In: T.C Champion, ed. *Centre and Periphery. Comparative Studies in Archaeology*. London: Unwin Hyman. One World Archaeology 11, pp. 1–21.

Chase-Dunn, C. & Hall, T.D. eds. 1991. *Core/Periphery Relations in Precapitalist Worlds*. Boulder, CO: Westview Press.

Chase-Dunn, C. & Hall, T.D. 1993. Comparing World-Systems: Concepts and Working Hypotheses. *Social Forces*, 71:851–86.

Czebreszuk, J. 2011. *Bursztyn w kulturze mykeńskiej*. Poznań: Wydawnictwo Poznańskie.

David, W. 1997. Altbronzezeitliche Beinobjekte des Karpatenbeckens mit Spiralwirbel- oder Wellenbandornament und ihre Parallelen auf der Peloponnes und in Anatolien in frühmykenischen Zeit. In: P.I. Roman, ed. *The Thracian World at the Crossroads of Civilizations I (Proceedings of the Seventh International Congress of Thracology, Constanța-Mangalia-Tulcea 1996)*. Bucharest: Institutul Român de Tracologie, pp. 247–305.

Dietler, M. 1998. Consumption, Agency, and Cultural Entanglement: Theoretical Implications of a Mediterranean Colonial Encounter. In: J.G. Cusick, ed. *Studies in Culture Contact: Interaction, Culture*

Change and Archaeology. Carbondale: Southern Illinois University, Center for Archaeological Investigations, Occasional Paper 25, pp. 288–315.

Ehser, A., Borg, G. & Pernicka, E. 2011. Provenance of the Gold of the Early Bronze Age Nebra Sky Disk, Central Germany: Geochemical Characterization of Natural Gold from Cornwall. *European Journal of Mineralogy*, 23:895–910.

Evans, J.A., Chenery, C.A. & Fitzpatrick, A.P. 2006. Bronze Age Childhood Migration of Individuals near Stonehenge, Revealed by Strontium and Oxygen Isotope Tooth Enamel Analysis. *Archaeometry*, 48:309–21.

Fischer, V. 2010. *Les bronzes en contexte pala-fittique sur les rives du Léman et des Trois-Lacs (Suisse occidentale)*. Doctoral thesis, Faculté des Sciences, Université de Genève. Geneva: Atelier d'impression ReproMail.

Fischer, V. 2011. The Deposition of Bronzes at Swiss Lakeshore Settlements: New Investigations. *Antiquity*, 85:1298–311.

Fitzpatrick, A.P. 2011. *The Amesbury Archer and the Boscombe Bowmen - Bell Beaker Burials at Boscombe Down, Amesbury, Wiltshire*. Oxford: Oxbow Books. Wessex Archaeology, Report 27.

Flammini, R. 2011. Northeast Africa and the Levant in Connection: a World-Systems Perspective on Interregional Relationships in the Early Second Millennium BC. In: T.C. Wilkinson, S. Sherratt & J. Bennet, eds. *Interweaving Worlds: Systemic Interactions in Eurasia, 7th to 1st millennia BC. Papers from a Conference in Memory of Professor Andrew Sherratt*. Oxford: Oxbow Books, pp. 205–17.

Frank, A.G. 1993. Bronze Age World System Cycles. *Current Anthropology*, 34:383–429.

Frank, A.G. & Gills, B.K. eds. 1993. *The World System: Five Hundred Years or Five Thousand?* London: Routledge.

Friedman, J. & Rowlands, M.J. 1977. Notes towards an Epigenetic Model of the Evolution of 'Civilization'. In: J. Friedman & M.J. Rowlands, eds. *The Evolution of Social Systems*. London: Duckworth, pp. 201–78.

Geschwinde, M. 2000. *Die Hügelgräber auf der Grossen Heide bei Ripdorf im Landkreis Uelzen*. Wachholtz: Neumünster.

Göttinger Schriften zur Vor- und Frühgeschichte, 27.

Gimbutas, M. 1965. *Bronze Age Cultures in Central and Eastern Europe*. The Hague: Mouton and Co.

Hall, T.D. & Chase-Dunn, C. 1993. The World-Systems Perspective and Archaeology: Forward into the Past. *Journal of Archaeological Research*, 1:121–43.

Harding, A. 1984. *The Mycenaeans and Europe*. London: Academic Press.

Harding, A. 2007. Interconnections between the Aegean and Continental Europe in the Bronze and Early Iron Ages: Moving beyond Scepticism. In: I. Galanaki, H. Tomas, Y. Galanakis & R. Laffineur, eds. *Between the Aegean and Baltic Seas: Prehistory across Borders (Proceedings of the International Conference Bronze and Early Iron Age Interconnections and Contemporary Developments between the Aegean and the Regions of the Balkan Peninsula, Central and Northern Europe, Zagreb April 2005)*. Liège and Austin: University de Liège and University of Austin at Texas. Aegaeum 27, pp. 47–56.

Haustein, M., Gillis, C. & Pernicka, E. 2010. Tin Isotopy – a New Method for Solving Old Questions. *Archaeometry*, 52:816–32.

Jockenhövel, A. 1991. Räumliche Mobilität von Personen in der mittleren Bronzezeit des westlichen Mitteleuropa. *Germania*, 69:49–62.

Johansen, K.L., Laursen, S.T. & Holst, M.K. 2004. Spatial Patterns of Social Organization in the Early Bronze Age of South Scandinavia. *Journal of Anthropological Archaeology*, 23:33–55.

Kardulias, P.N. 1999a. Flaked Stone and the Role of the Palaces in the Mycenaean World-System. In: W.A. Parkinson & M.L. Galaty, eds. *Rethinking Mycenaean Palaces: New Interpretations of an Old Idea*. Los Angeles: UCLA Institute of Archaeology, pp. 61–71.

Kardulias, P.N. 1999b. Multiple Levels in the Aegean Bronze Age World-System. In: P.N. Kardulias, ed. *World-Systems Theory in Practice*. New York and Oxford: Rowman & Littlefield, pp. 179–201.

Kardulias, P.N. ed. 1999c. *World-Systems Theory in Practice. Leadership, Production and Exchange*. Lanham/Oxford: Rowman & Littlefield Publishers.

Kardulias, P.N. 2002. Review of *European Societies in the Bronze Age*, by A F Harding. *American Antiquity*, 67:582–83.

Kardulias, P.N. 2007. Negotiation and Incorporation on the Margins of World-Systems: Examples from Cyprus and North America. *Journal of World-Systems Research*, 13:55–82.

Kardulias, P.N. 2009. World-Systems Applications for Understanding the Bronze Age in the Eastern Mediterranean. In: W. A. Parkinson & M.L. Galaty, eds. *Archaic State Interaction. The Eastern Mediterranean in the Bronze Age*. Santa Fe: School for Advanced Research Press, pp. 53–80.

Kardulias, P.N. & Hall, T.D. 2008. Archaeology and World-Systems Analysis. *World Archaeology*, 40(4):572–83.

Kimmig, W. 1964. Seevölkerbewegung und Urnenfelderkultur. Ein archäologisch-historischer Versuch. In: R.V. Uslar & K.J. Narr eds. *Studien aus Alteuropa, Teil 1*. Köln-Graz: Böhlau Verlag, pp. 220–83.

Knape, A. & Nordström, H.-Å. 1994. *Der Kultgegenstand von Balkåkra*. Stockholm: Statens Historiska Museum. Museum of National Antiquities, Stockholm, Monographs, 3.

Knappett, C. 2011. *An Archaeology of Interaction. Network Perspectives on Material Culture and Society*. Oxford: Oxford University Press.

Knappett, C. ed. 2013. *Network Analysis in Archaeology. New Approaches to Regional Interaction*. Oxford: Oxford University Press.

Knappett, C., Evans, T. & Rivers, R. 2008. Modelling Maritime Interaction in the Aegean Bronze Age. *Antiquity*, 82:1009–24.

Knöpke, S. 2009. *Der urnenfelderzeitliche Männerfriedhof von Neckarsulm*. Stuttgart: Konrad Theiss. Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 116.

Kohl, P.L. 1978. The Balance of Trade in Southwestern Asia in the Mid-Third Millennium B.C. *Current Anthropology*, 19:463–92.

Kohl, P.L. 1987. The Use and Abuse of World Systems Theory: the Case of the Pristine West Asian State. *Advances in Archaeological Method and Theory*, 11:1–35.

Kristiansen, K. 1987. Center and Periphery in Bronze Age Scandinavia. In: M. Rowlands, M.T. Larsen & K. Kristiansen, eds. *Centre and Periphery in the Ancient World*. Cambridge: Cambridge University Press, pp. 74–85.

Kristiansen, K. 1994. The Emergence of the European World System in the Bronze Age: Divergence, Convergence and Social Evolution during the First and Second Millennia BC in Europe. In: K. Kristiansen & J. Jensen, eds. *Europe in the First Millennium B.C.* Sheffield: J.R. Collis Publications. Sheffield Archaeological Monographs 6, pp. 7–30.

Kristiansen, K. 1998. *Europe before History*. Cambridge: Cambridge University Press.

Kristiansen, K. 2011. Bridging India and Scandinavia: Institutional Transmission and Elite Conquest during the Bronze Age. In: T.C. Wilkinson, S. Sherratt & J. Bennet, eds. *Interweaving Worlds: Systemic interactions in Eurasia, 7th to 1st millennia BC. Papers from a Conference in Memory of Professor Andrew Sherratt*. Oxford: Oxbow Books, pp. 243–65.

Kristiansen, K. & Larsson, T.B. 2005. *The Rise of Bronze Age Society. Travels, Transmissions and Transformations*. Cambridge: Cambridge University Press.

Kümmel, C. 2001. *Frühe Weltsysteme: Zentrum und Peripherie-Modelle in der Archäologie*. Rahden/Westfalen: Marie Leidorf. Tübinger Texte, Materialien zur Ur- und Frühgeschichtlichen Archäologie, Band 4.

La Lone, D.E. 1994. An Andean World-System: Production Transformations under the Inka Empire. In: E.M. Brumfiel, ed. *The Economic Anthropology of the State*. Lanham & London: University Press of America. Monographs in Economic Anthropology 11, pp. 17–41.

Latour, B. 2005. *Reassembling the Social. An Introduction to Actor-Network Theory*. Oxford: Oxford University Press.

Maran, J. 2011. Lost in Translation: The Emergence of Mycenaean Culture as a Phenomenon of Globalization. In: T. C. Wilkinson, S. Sherratt & J. Bennet, eds. *Interweaving Worlds: Systemic interactions in Eurasia, 7th to 1st millennia BC. Papers from a Conference in Memory of Professor Andrew Sherratt*. Oxford: Oxbow Books, pp. 282–94.

Maran, J. & Stockhammer, P.W. eds. 2012 *Materiality and Social Practice: Transformative Capacities of Intercultural Encounters*. Oxford: Oxbow.

Matthäus, H. 1977–78. Neues zur Bronzetasse aus Dohnsen, Kreis Celle. *Die Kunde*, 28–29:51–69.

Meller, H. 2010. Nebra: Vom Logos zum Mythos - Biographie eines Himmelsbildes. In: H. Meller & F. Bertemes, eds. *Der Griff nach die Sternen. Wie Europas Eliten zu Macht und Reichtum kamen. Internationales Symposium in Halle (Saale) 16.-21. Februar 2005*. Halle (Saale): Landesmuseum für Vorgeschichte. Tagungen des Landesmuseums für Vorgeschichte Halle (Saale) 5, pp. 23–73.

Mozsolics, A. 1957. Archäologische Beiträge zur Geschichte der grossen Wanderung. *Acta Archaeologica (Budapest)*, 8:119–56.

Müller-Karpe, H. 1961. *Die Vollgriffschwerter der Urnenfelderzeit aus Bayern*. Munich: C.H. Beck.

Needham, S. 2009. Encompassing the Sea: 'Maritories' and Bronze Age Maritime Interactions. In: P. Clark, ed. *Bronze Age Connections. Cultural Contact in Prehistoric Europe*. Oxford: Oxbow Books, pp. 12–37.

Needham, S., Parfitt, K. & Varndell, G. 2006. *The Ringlemere Cup. Precious Cups and the Beginning of the Channel Bronze Age*. London: British Museum.

Negroni Catacchio, N. 1972. La problematica dell'ambra nella protostoria italiana: le ambre intagliate de Fratta Polesine e le rotte mercantili nell'Alto Adriatico. *Padusa*, 8:1–18.

Negroni Catacchio, N. 1999. Produzione e commercio dei vaghi d'ambra tipo Tirinto e tipo Allumiere alla luce delle recenti scoperte. In: O. Paoletti, ed. *Protostoria e Storia del 'Venetorum Angulus'. Atti del XX Convegno di studi etruschi ed italici, Portogruaro – Quarto d'Altini – Este – Adria, 16–19 ottobre 1996*. Pisa, Roma: Instituti editoriali e poligrafici internazionali, pp. 241–65.

Oelze, V.M., Nehlich, O. & Richards, M.P. 2012. 'There's No Place like Home' No Isotopic Evidence for Mobility at the Early Bronze Age Cemetery of Singen, Germany. *Archaeometry*, 54:752–78.

Pailes, R.A. & Whitecotton, J.W. 1979. The Greater Southwest and Mesoamerican 'World' System: An Explanatory Model of Frontier Relationships. In: W.W. Savage & S.I. Thompson, eds. *The Frontier: Comparative Studies*, vol. 2. Norman: University of Oklahoma Press, pp. 105–21.

Peregrine, P.N. & Feinman, G.M. eds. 1996. *Pre-Columbian World Systems*. Madison: Prehistory Press.

Price, T.D., Knipper, C., Grupe, G. & Smrcka, V. 2004. Strontium Isotopes and Prehistoric Human Migration: the Bell Beaker Period in Central Europe. *European Journal of Archaeology*, 7:9–40.

Price, T.D. & Wahl, J. forthcoming. *Local and Foreign Males in a Late Bronze Age Cemetery at Neckarsulm*. South-Western Germany: Strontium Isotope Investigations.

Radina, F. & Recchia, G. eds. 2010. *Ambra per Agamemnone. Indigeni e Micenei tra Adriatico, Ionio ed Egeo*. Bari: Mario Adda Editore.

Römisch-Germanisches Zentralmuseum Mainz 1990. *Orientalisch-ägäische Einflüsse in der europäischen Bronzezeit*. Bonn: Habelt. Römisch-Germanisches Zentralmuseum Mainz, Forschungsinstitut für Vor- und Frühgeschichte, Monographien 15.

Rowlands, M., Larsen, M.T. & Kristiansen, K. eds. 1987. *Centre and Periphery in the Ancient World*. Cambridge: Cambridge University Press. New Directions in Archaeology.

Scarre, C. & Healy, F. eds. 1993. *Trade and Exchange in Prehistoric Europe: Proceedings of a Conference Held at the University of Bristol, April 1992*. Oxford: Oxbow Books. Oxbow Monograph 33.

Schauer, P. 1983. Orient im spätbronze- und früheisenzeitlichen Occident. Kulturbeziehungen zwischen der Iberischen Halbinsel und dem Vorderen Orient während des späten 2. und des ersten Drittels des 1. Jahrtausends v. Chr. *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz*, 30:175–94.

Schauer, P. 1984. Spuren minoisch-mykenischen und orientalischen Einflusses in atlantischen Westeuropa. *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz*, 31:137–86.

Schauer, P. 1985. Spuren orientalischen und ägäischen Einflusses im bronzezeitlichen Nordischen Kreis. *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz*, 32:123–95.

Schneider, J. 1977. Was there a Pre-Capitalist World-System? *Peasant Studies*, 6:20–29.

Sherratt, A. 1993a. What would a Bronze-Age World System Look Like? Relations between Temperate Europe and the Mediterranean in Later Prehistory. *Journal of European Archaeology*, 1(2):1–57.

Sherratt, A. 1993b. 'Who are you Calling Peripheral?' Dependence and Independence in European Prehistory. In: C. Scarre & F. Healy, eds. *Trade and Exchange in Prehistoric Europe*. Oxford: Oxbow Books. Oxbow Monograph 33, pp. 245–55.

Sherratt, A. 1994. Core, Periphery and Margin: Perspectives on the Bronze Age. In: C. Mathers & S. Stoddart, eds. *Development and Decline in the Mediterranean Bronze Age*. Sheffield: J.R. Collis Publications, pp. 335–45.

Sørensen, M.L.S. 1997. Reading Dress: the Construction of Social Categories and Identities in Bronze Age Europe. *Journal of European Archaeology*, 5:93–114.

Sprockhoff, E. 1961. Eine mykenische Bronzetasse von Dohnsen, Kr. Celle. *Germania*, 39:11–22.

Stein, G. 1999. *Rethinking World-Systems: Diasporas, Colonies and Interaction in Uruk Mesopotamia*. Tucson: University of Arizona Press.

Stein, G. 2002. From Passive Periphery to Active Agents: Emerging Perspectives in the Archaeology of Interregional Interaction. *American Anthropologist*, 104:903–16.

Thrane, H. 1990. The Mycenaean Fascination: A Northerner's View. In: P. Schauer, ed. *Orientalisch-Ägäische Einflüsse in der europäischen Bronzezeit. Ergebnisse eines Kolloquiums vom 16.-19.10.1985 in Mainz*. Bonn: Habelt. Römisch-Germanisches Zentralmuseum Mainz, Monographien 15, pp. 165–79.

Von Uslar, R. 1955. Der Goldbecher von Fritzdorf bei Bonn. *Germania*, 33:319–23.

Wahl, J. 2009. Die menschliche Skelettreste aus dem urnenfelderzeitlichen Männerfriedhof von Neckarsulm 'Trendpark Süd'. In: *Der urnenfelderzeitliche Männerfriedhof von Neckarsulm*. Stuttgart: Konrad Theiss. Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 116, pp. 339–49.

Wallerstein, I. 1974. *The Modern World-system. I, Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*. New York and London: Academic Press. Studies in Social Discontinuity.

Warburton, D.A. 2011. What might the Bronze Age World-System Look Like? In: T.C. Wilkinson, S. Sherratt & J. Bennet, eds. *Interweaving Worlds: Systemic Interactions in Eurasia, 7th to 1st Millennia BC. Papers from a Conference in Memory of Professor Andrew Sherratt*. Oxford: Oxbow Books, pp. 120–34.

Whitehouse, R. & Wilkins, D. 1989. Greeks and Natives in South-East Italy: Approaches to the Archaeological Evidence. In: T.C. Champion, ed. *Centre and Periphery: Comparative Studies in Archaeology*. London: Routledge. One World Archaeology, pp. 102–26.

Wilkinson, D. 2004. The Power Configuration Sequence of the Central World System, 1500–700 BC. *Journal of World-Systems Research*, 10:655–720.

Wilkinson, T.C., Sherratt, S. & Bennet, J. eds. 2011. *Interweaving Worlds: Systemic Interactions in Eurasia, 7th to 1st millennia BC. Papers from a Conference in Memory of Professor Andrew Sherratt*. Oxford: Oxbow Books.

BIOGRAPHICAL NOTE

Anthony Harding is Professor of Archaeology at the University of Exeter, UK (and previously at the University of Durham). His special field of study is the European Bronze Age; he has worked on interconnections between the different parts of the Bronze Age world, on settlement studies, and on warfare in the Bronze Age. He has conducted fieldwork in Britain, Poland, the Czech Republic, and Romania. His current research centres on the exploitation of salt in prehistory.

Address: Department of Archaeology, University of Exeter, Laver Building, North Park Road, Exeter EX4 4QE, UK. [email: a.f.harding@exeter.ac.uk]

Système-monde, centres et périphéries en Europe préhistorique

Dans cet article on examine la montée et l'utilité du concept du système-monde en archéologie, plus particulièrement en ce qui concerne l'Europe et l'Âge du Bronze. Après avoir analysé ses origines dans les années 1970 et 1980, on étudie les principaux aspects de cette théorie et on présente les éléments de preuve démontrant que l'Âge du Bronze était fortement interrelié. Enfin sont examinées les implications d'une approche de cette période qui se base sur le concept du système-monde. Afin d'établir une nouvelle vision de l'Âge du Bronze en Europe, une brève explication de la manière de fonctionnement des réseaux s'impose, car ces méthodes proposent une approche alternative 'ascendante' de la période qui semble plus appropriée aux données que le concept du système-monde. Translation by Isabelle Gerges.*

Mots-clés: concept du système-monde, analyse du système-monde, théorie du centre et de la périphérie, Âge du Bronze, Europe, analyse des réseaux

Weltsysteme, Kernzonen und Peripherien im vorgeschichtlichen Europa

Dieser Beitrag betrachtet die Entwicklung und Anwendung der Weltsystem-Theorie in der Archäologie unter besonderer Berücksichtigung Europas und der Bronzezeit. Nach einer Erörterung ihrer Ursprünge in den 1970er und 1980er Jahren werden die wichtigsten Aspekte dieser Theorie diskutiert. Es werden weiterhin die Indizien, dass die bronzezeitliche Welt intensiv vernetzt war, dargelegt sowie die Auswirkungen einer Weltsystem-Sicht der Zeitepoche behandelt. Um der Geschichtsschreibung der europäischen Bronzezeit neue Impulse zu vermitteln, wird eine kurze Diskussion von Netzwerkmethoden angeschlossen, da diese einen alternativen Bottom-Up-Ansatz zu dieser Periode bieten, der, wie hier ausgeführt wird, den Daten angemessener ist als die Methodik der Weltsystem-Theorie. Translation by Heiner Schwarzberg.*

Stichworte: Weltsystem-Theorie, Weltsystem-Analyse, Kern-Peripherie-Theorie, Bronzezeit, Europa, Netzwerkanalyse