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WHAT WOULD A BRONZE-AGE WORLD SYSTEM LOOK LIKE? RELATIONS BETWEEN TEMPERATE EUROPE AND THE MEDITERRANEAN IN LATER PREHISTORY ¹

Andrew Sherratt

Two competing forms of explanation have alternated in the interpretation of European prehistory: one 'evolutionary' or 'autonomist', emphasising ecological factors, population growth, and agricultural change or the local development of technologies; and the other 'diffusionist' or 'interventionist', emphasising outside contacts, trade, and the spread of ideologies. Although both interpretations have been elevated to the status of competing philosophies, and are deeply embedded in different regional traditions of archaeology, their widespread espousal at particular periods has often been primarily rhetorical: that is to say, they have been asserted in opposition to prevailing attitudes, in order to correct what seemed at the time to be mis-perceptions and mis-interpretations.

The recent history of 'diffusionism' is a case in point. Whereas post-1945 German archaeology has commonly assumed an implicitly Montelian view of culture contact in reaction to the excesses of the Kossinna school, many English-speaking prehistorians have espoused an autonomist approach as a corrective to the over-simple diffusionism of Gordon Childe. The lengthening of prehistoric chronologies as a consequence of radiocarbon dating has given support to this autonomist view in some periods by severing many traditional typological links in the Neolithic, Copper Age, and early Bronze Age; but now that dendrochronology² has begun to provide a reliable and largely agreed framework for later prehistory, many of the contentious uncertainties associated with typological dating have been resolved, and issues of contemporaneity are no longer a matter of interpretative preference. The time has therefore come to examine these competing attitudes and to go beyond the often sterile debates which they have generated. In this way it may be possible to combine the insights of detailed regional studies with a broader continental perspective, and at the same time to take advantage of new ideas about the role of material culture that avoid the passive role for local cultures which diffusionism implied. What this

requires is a more sophisticated view of inter-regional relations.

It is important at the beginning to recognise the relativity of descriptions involving words like 'dependent' or 'independent', since these depend on the framing of the question. Copper metallurgy in the Balkans may have been 'independent' of the contemporary tradition of metal working which grew up in the Near East (to judge by their distinctive products); but both grew out of a common experience with the controlled pyrotechnology of making Neolithic painted pottery. Megalith building in Brittany and Scandinavia began 'independently', though each had a similar background in a Mesolithic population in contact with loess-land farmers, and both ultimately came to form part of a more or less continuous megalith-building zone in western Europe. Early-Bronze-Age culture in the Cyclades was a local creation, but received much of its metallurgical technology from Anatolia. It is right to emphasise their independence in relation to earlier models of mass migration or diffusion involving prospectors and missionaries; but it is still necessary to situate them in a larger structural setting to explain why they developed when and how they did. It is particularly important if prehistory is to contribute to a wider consciousness of the past, and its relevance to historical explanations of the growth and expansion of urban societies both in ancient and more recent times. It is unhelpful to an outside reader to be told that Cycladic or Etruscan culture was 'autonomous', except to dispel the outdated myth that either of them was transplanted ready-made from Asia Minor; clearly both were made possible by a conjunction of circumstances which included the existence of urban trade networks in the east Mediterranean, as well as flourishing local economies and contacts with an adjacent hinterland. What distinguished both Bronze-Age Melos or Iron-Age Etruria were their positions in relation to movements along routes which brought exceptional opportunities by comparison with contemporary communities elsewhere in Europe.

The death of diffusionism as a respectable explanation has left something of a vacuum in conceptualising such larger structures.³ The organisation of European archaeology within a largely national framework has postponed the necessity for treating regional cultures as parts of larger wholes; while large-scale surveys of European prehistory have often been relatively superficial. In search of theories on an appropriate scale, archaeologists have recently turned to the debate within modern history and economics on the nature of 'world-systems', created to explain why the formerly colonial territories of the Third World remain literally dependent on the core areas where capital accumulation and industrialisation began.⁴ This body of 'dependency theory' relates specifically to the last few centuries, and is hard to transfer to earlier situations – even though the eagerness with which the idea has been explored is symptomatic of the need for such a scale of treatment (Kohl 1989).

European prehistorians have at their disposal an 8000-year record of societies which existed adjacent to, and in many ways affected by, a nuclear area which saw both the beginnings of farming and the genesis of societies organised as states and empires. During this time, many different types and degrees of relationship existed between the Near East, the Mediterranean and temperate Europe. Because of the degree of temporal specialisation within archaeology, in which Neolithic, Bronze-

Age, and Iron-Age experts occupy different discursive communities, these contrasts have rarely been made explicit. With a shorter chronology, it was possible to assume that similar phenomena occurred throughout all these periods: indeed, much of the dissatisfaction with Gordon Childe's classic descriptions of prehistoric Europe stems from precisely such an undifferentiated view. But with the currently accepted chronology, major contrasts are inevitable. Quite different types of phenomena must have characterised the communication networks of fourth- and first-millennium societies, for instance. This is why the old vocabulary of diffusionism seems hopelessly impoverished to deal with such diversity – though the problem is not specific to large-scale topics, but recurs for instance wherever Neolithic farming is described in terms more appropriate to recent agriculture. Archaeology requires a constant sensitivity to anachronism.

The polarities of the contrast are already becoming clear. Megaliths and early metallurgy are not well described by diffusionist language, and Neolithic societies have a greater resemblance to those described by anthropologists in highland New Guinea than to any of the historical sources for early Europe. At the opposite end of the temporal spectrum, Iron-Age and early-medieval societies – although still within the domain of the anthropological 'other' – have many resemblances to the societies of sub-Saharan Africa at the time of Islamic and early Western contact, with their trade goods and slave-raiding. It is the period in between where the greatest ambiguity exists. Were European Bronze-Age societies essentially autonomous, like their early Neolithic predecessors; or were they fundamentally affected by the contacts and trading activities of adjacent civilisations, like many of their Iron-Age successors? That is why it is worth asking the question: what would a Bronze-Age world system look like?

DEFINITIONS: CORE, PERIPHERY, AND MARGIN

The aim of this article is to consider the various kinds of structural relationship which existed in later prehistory between different parts of the continent. The term 'structure' refers to the pattern of cultural connections, and cannot be simply read off from the geography, even though it has an underlying geographical logic. A simple ecological differentiation into zones related to vegetational belts, or the contrast between coastal and inland areas in the Mesolithic, is not a structural relationship in this sense; only where the development of a coastal zone is critically affected by its position in relation to other areas can a structural relationship be said to exist. The emergence of megalithic cultures in western and northern Europe, for instance, involved contacts between the inhabitants of the Atlantic and Baltic coastlands and the incoming farming groups in central Europe, in a way which critically influenced the course of their development (Sherratt 1990). Differences in ecology and natural resources played a part, but it was the *position* of the area in relation to wider social interactions which determined the significance of these environmental contrasts. Such situations are typical of the development of European societies following the introduction of farming, and can often be described in terms of 'central' and 'outer' regions.

There is a further element, however, which distinguishes societies in contact with urban economies and states; and it is to this situation that more specific terms such as 'core' and 'periphery' can most usefully be applied. This is more than just a historical conjunction, but involves a continuing adjustment to new opportunities and the emergence of a degree of functional differentiation. In describing the economic system of the east Hallstatt area as 'peripheral' to urban Etruria, for instance, an active, contemporary relationship is implied: an organic connection such that the disappearance of one partner (or any change in the pattern of supplies between them) would alter the character of the other. By whatever mechanism the goods moved (gift exchange, disembedded barter, purchase via an exchange medium), the two sides were linked by flows of materials which structured the relationship. Moreover the goods moving in different directions had a different character: southwards from central Europe the goods were mainly raw materials (metals, salt, hides, perhaps slaves); what came in return were manufactured goods (wine, drinking sets, probably organic commodities such as textiles or leatherwork) – an exchange of *prime value* for *added value*. This implies a 'technology gap', principally in processes of high-skill manufacture and technologies of mass production. There was thus an asymmetry to the relationship (perhaps ideological as much as economic, since this is implied by the concept of added, transferable value), which may be taken as the defining characteristic of core/periphery structure.

Is this the same as a 'world system'? In Immanuel Wallerstein's usage (1974:1–63), the term is restricted to exchanges of bulk food products for manufactured goods, between politically independent entities – a phenomenon which he thinks first emerged in early-modern Europe. Such a definition seems too restrictive, in ignoring both the importance of trade in other, more valuable, raw materials such as metals, and also the considerable transfers of grain which took place even in the ancient world (not only within the politically unified Roman Empire, but also between politically independent entities such as the Greek Black Sea states and the Athenian Empire). It therefore seems useful to adopt (but adapt) the term 'world system', though to free it of the specific connotations given to it by its inventor. It would therefore apply to the large-scale core/periphery systems that began in the Near East and Egypt and spread along the Persian Gulf and the Mediterranean to create the states and empires of the ancient world – in essence, to the urban *oecumene* and its supply areas. The term 'core' would then apply to the large masses of urban consumers and manufacturing centres, and 'periphery' to the surrounding penumbra of politically and economically less-developed societies, typically 'chiefdoms' or emerging secondary states.

The core itself consists of spatially discrete core areas, not all of which are of equal importance: shifts of core dominance, rivalry, and the emergence of larger hegemonic structures, are characteristic of the processes of capital concentration which take place within urban systems. These have direct effects on the surrounding areas, which may suddenly move into, and out of, peripheral status. Not all peripheries will be incorporated in subsequent core regions. There are also temporal contrasts, often summarised in François Simiand's (1932) distinction between 'A' and 'B'

phases of a macroeconomic cycle, in which A corresponds to expansion and capital concentration, and B to fragmentation and capital mobilisation (otherwise known as piracy or privatisation!). There is no reason to suppose that such cycles are restricted to the modern world, and certain system-wide crises of the ancient world (such as that at the end of the east Mediterranean Bronze Age) would fit well with this description. It is unlikely, however, that the ancient world system was as coherent as its more recent successors, and local recession phases are as likely to result from spatial shifts as pan-systemic crises. Even though sometimes restricted in spatial scope, B-phases are nevertheless important in giving new opportunities to previously peripheral areas to make a bid for core status.

Are world systems the only forms of core/periphery structures on this definition? It is evident that small-scale contrasts in the importance of different areas have always existed in human settlement patterns: contrasts in density, or in the nature of exploitation such as permanent occupation as opposed to seasonal use or raw-material procurement. A densely occupied plain surrounded by mountains is likely to have a zonal structure of settlement; so may an enclosed sea like the Tyrrhenian or the Baltic. Such topographically generated contrasts may include an element of capital concentration and accumulation, for instance in the ownership of herds or prestige items of material culture at central areas or other advantageous nodal points; some element of asymmetry between raw-material production and simple manufacturing processes may even be involved. In such a case, consistency demands that the term core/periphery be applied. Only rarely, however, do such concentrations show a pattern of cumulative growth, and come to affect areas beyond their immediate topographic setting; though they may in certain circumstances be linked into wider networks of contact and supply. One of the main questions addressed in this paper is therefore whether such structures emerged independently in Bronze-Age Europe, or whether such localised core/periphery systems – distinct from the macro-structure of the world system as defined above – only came about by some form of articulation with it.

How extensive was the area of the world system to which the term 'periphery' might reasonably be applied? Wallerstein's usage includes the term 'semi-periphery', to describe important gateway communities between sustaining areas and dominant core regions. (Phoenicia would be an ancient example.⁵) Attempts to delineate the spatial range of ancient world systems have sometimes been misled into treating both periphery and semi-periphery as broad zones covering huge areas of pre-historic territory (e.g. Wilkinson 1991: Figs 3–11). This is a mistake. To be useful, the term 'periphery' must apply only to societies that underwent structural transformation as a result of regular exchanges of material products with privileged consumers elsewhere. Although the industrialising world of the sixteenth to nineteenth centuries created a huge periphery – for instance through the North American and Siberian fur trade (Curtin 1984:207–229; Wolf 1982:159–194) – earlier peripheries were conspicuously smaller. While the maximum extent of the Roman-empire-centred system in Europe reached as far as Scandinavia, it is doubtful whether the fourth-millennium periphery extended into Europe at all; while the second-millen-

nium periphery might be seen in the central Mediterranean, but no further (see Fig. 13).

On the other hand, the contacts and indirect influence of urban trading systems undoubtedly extended beyond this periphery, as rigorously defined. Ideas and technologies could spread beyond it, and exchange routes for certain types of items might extend for considerable distances without creating inter-dependence. For this third zone, a further label is desirable. An appropriate term has already been suggested by Jane Schneider in her brilliant review of Wallerstein's model in 1977: the idea of a *margin*. 'Marginality is a distinct concept from periphery. In contrast to peripheral areas, marginal ones are disengaged from processes of struggle and competition [i.e. hegemony-rivalry within the core], differentiation, and specialisation in relation to much older and more developed centres of civilisation' (1972:21). This suggests that this concept might be further developed to describe the characteristics of large parts of later prehistoric Europe.

PHENOMENA OF CONTAGIOUS SPREAD

In looking at European developments from the mid-first millennium onwards,⁶ the core/periphery structure of the world system is of obvious importance – even if its precise effects need to be defined more specifically, and its immediate impact was spatially restricted. But the continent on which these larger structures impinged was not a homogeneous mass: it was already zonally differentiated. While environmental contrasts contributed to this, a large part of its zonal structure was due to earlier episodes of cultural transmission from a Near Eastern hearth: for instance the spread of agriculture from its nuclear region in the western Old World, and its adoption and the transformation of associated social structures by indigenous populations. There is a danger of creating an artificial contrast between an 'autonomous' Neolithic and an 'interventionist' Iron Age. The concept of a *margin* bridges the notions of cultural transmission and the independent construction of indigenous cultures on the basis of received elements – whether these were transmitted by population movement, emulation, or indirect forms of trading contact. Europe was always part of a macrosystem, though not necessarily of a core/periphery kind in the sense defined above; hence the need for a more inclusive term. Since the words 'nuclear' and 'margin' are already in use, the phrase 'nuclear/margin' would cover the appropriate conceptual space. World systems would thus be that subset of nuclear/margin systems characterised by large-scale core/periphery relationships.

Within a simple nuclear/margin system, the zones are not functionally differentiated and interdependent, as in a core/periphery structure; they are not maintained by contemporary flows of products. They are therefore likely to involve spatial processes with long time-lags, and can potentially develop independently after an initial transmission episode. Because of this, there are no simple criteria to determine their role, as in the case of a periphery or semi-periphery. This means that 'nucleus' and 'margin' are descriptive and relative terms, with little precise meaning in the absence of further definition: but it is precisely this 'polythetic' character which makes them

useful in describing the processes which occurred in later prehistory, which do not conform to the picture of 'core-periphery' relations. The pattern of agricultural spread can therefore serve as a model for the kinds of local reinterpretation and secondary consequences which typically take place within a margin.

The very use of the word 'Neolithic' contains an ambiguity of this kind. What links pre-pottery Neolithic Jericho with the Neolithic of Arctic Norway? Formally, almost nothing – except perhaps polished stone axes, which were rightly singled out as the type-fossil of the 'Neolithic' by nineteenth-century typologists. What links them *historically* is a polythetic chain of relationships involving the transmission of a package of farming, houses, and pottery (and the social practices of cultivation, residence, kinship, and cuisine that these imply) to central Europe, and the successive transformation of this by indigenous groups of northern Europe until only pottery (and its implied social practices) and stone axes remained from the original package – and pottery was not even present in early agricultural Jericho! Even megalith-building Neolithic farmers in northern and western Europe had effectively abandoned the physical, rectangular house-for-living-in (and in some areas perhaps even the centrality of cereal cultivation), although substituting their own monumental surrogates. Nevertheless these diverse phenomena were linked as phases of a spatial process, with parts of the Near East as its nucleus.

The edge of this spatial process can be conceptualised as a wave. This is not limited to the 'demographic wave of advance', which in some parts of Europe coincided with it and constituted it, but refers to successive limits of an externally generated process (from a European point of view), however manifested. Transmission of this wave in different directions created different local responses – for instance in western and eastern Europe, the Atlantic, and the steppes. In some areas this involved the domestication of new species of animals and plants. The increased diversity of resources encountered and utilised gave scope for internal transmission within the areas affected by the passage of the wave. Some elements, left behind in the initial polythetic spread, continued to disperse and catch up with the restricted parts of the package which had arrived in the outer areas. Other processes, set in train by the passage of the wave, continued to work themselves through: demographic growth, spatial expansion, the development of extractive facilities for stone axes, and the circulation networks they presuppose; as well as further technological innovations (like early copper working) derived from certain central aspects of the introduced package. These may be conceptualised as 'echoes' of the initial expansion.

These effects, set in train by the initial introduction of farming, together generated a set of markedly zonal patterns within the margin to the nuclear area of western Old-World farming. In themselves, however, they are insufficient to explain the further direction of temperate European development before the direct impact of urban economies in the first millennium. Although European societies seem to have evolved largely independently for some three millennia after the initiation of agriculture, the continent was not isolated from what was happening in the nuclear area of the Near East. From the mid-fourth millennium onwards, it is necessary to invoke

a further episode of transmission comparable to the arrival of farming itself: the dispersal of the secondary products complex⁷ and associated elements of material culture. Although each of these elements need to be argued in detail (as I have tried to do elsewhere), the reason for invoking them here is to demonstrate their logic within the overall framework that I have so far described.

The Near East did not cease its development with the end of the Neolithic: it continued to accumulate innovations such as the plough, irrigation, wool-bearing sheep, sailing boats, and so forth, as part of the process of environmental exploration and the formation of exchange networks and settlement hierarchies which culminated in urbanisation and the appearance of a structurally differentiated (i.e. core/periphery) zonation (Childe 1956). The Near East thus became *a new kind of nucleus*. The scale of this system, both in its social stratification, concentration of population, and range of trading contacts, far exceeded that of any previous structure; and the scale of its effects was correspondingly large. The creation of a periphery which ranged from the Aegean to the Caucasus and the Iranian Plateau brought selected elements of this urban package to Europe's doorsteps, and resulted in the spread of a second wave of innovations. As with the first 'nuclear' episode, in the Neolithic, elements of this later episode, too, were adopted and transformed – much in the manner of the selective absorption of 'transferable technologies' characteristic of those parts of Europe where farming spread to indigenous populations rather than by the demographic wave of advance. The traction complex of wheeled vehicles and the plough was particularly rapidly disseminated, followed more slowly by advanced copper metallurgy and woollen textiles. On the steppes east of the Urals, these waves coincided in a demographic wave of advance; over most of temperate Europe they spread separately, in a series of waves and echoes as they triggered further combinations and interactions.

These new features provided the preconditions for more complex interactions within Europe itself, and more consistent links between different areas – some of which came to articulate with developments on the edge of the growing urban system, and generated by demand within it. The main contrast between earlier Neolithic Europe and the system which emerged in the fourth millennium BC was thus the formation of *a new kind of margin*, adjacent to a now differentiated core/periphery system centred in the Near East. This kind of margin began increasingly to accord with Jane Schneider's definition of the margin to a world system, where long trade routes or linked exchange cycles could play a significant role in the further development of the nuclear region, and picking out the areas where further expansion of the periphery was to occur.

How, then, is most of Europe best described during the third and second millennia? Just as, previously, it had been a margin to the nuclear region of early farming, it now became a margin to the nuclear (core+periphery) region of early urbanism. Structurally unaltered, but culturally transformed, the margin takes its place as the third element in what can now be described as a *core/periphery/margin* system. This is the first, abstract, answer to the question of what a Bronze-Age world system would look like.

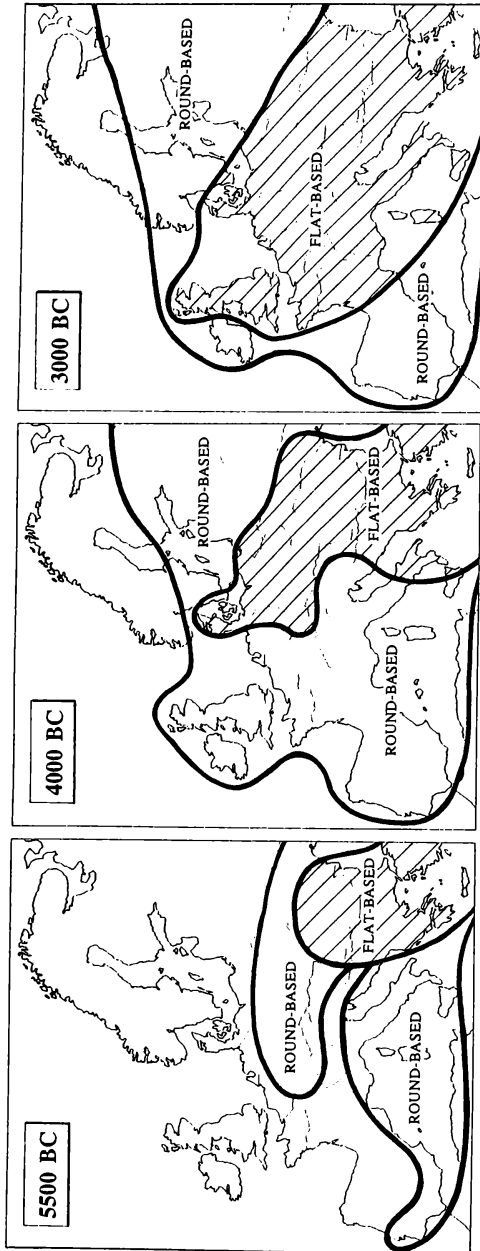


Figure 1. The spread of flat-based pottery in Neolithic Europe: approximate limits in (a) 5500 BC; (b) 4000 BC; (c) 3000 BC.

DESCRIPTION: THE LATE NEOLITHIC AND COPPER AGES ⁸

These definitions are only of use if they help to make sense of patterns observable in the archaeological record, and in particular by distinguishing the kinds of contagious spread associated with nuclear/margin structures from those of core/periphery/margin systems. It is appropriate, then, to begin with a discussion of some examples of what might be called 'delayed' nuclear/margin phenomena.

It has often been noted that, in its passage across Europe, many aspects of the original Neolithic package underwent alteration or simplification: painted pottery, for instance, spread no further than the Carpathian Basin; rectangular domestic dwellings were not initially constructed by early farmers beyond the loesslands. What has been less often remarked is the way in which some features which were 'left behind' in pioneer simplification subsequently 'caught up' with the others in succeeding millennia. One example of this, which is relatively simple to map archaeologically, is flat-based pottery. This is not just a technological feature, but can be correlated with other aspects such as flat surfaces on furniture (known from Balkan late-Neolithic models such as those from Polyantsa, Bulgaria), and a formality of eating arrangements which involved sitting at tables. A preliminary attempt to sketch the successive distributions of flat-based and other pottery is given in Figure 1. The first Neolithic groups beyond the Balkans used round- or point-based pottery, but the practice of making flat-based containers continued to spread more slowly along an axis running south-east to north-west, reaching Scandinavia in early TRB (though not the Michelsberg and Chasséen areas), beginning in Britain (but not Ireland) with Grooved Ware, and in Iberia only in the early Bronze Age. Some other features follow a similar pattern: domestic longhouses did not appear in early-Neolithic Scandinavia (only rectangular funerary structures), but are not infrequent there by middle-Neolithic times. Painted pottery was used in Moravia in Lengyel. There is no reason here to adduce renewed long-distance contacts with the areas in which farming began: but some measure of emulation of the practices of adjacent groups in a more central position, who had retained more 'sophisticated' usages from the primary package, seems to have been taking place. Position in the wider network of contacts is a necessary part of the explanation, in conjunction with local reasons for the adoption of more complex domestic arrangements and eating habits.

Some other 'local' processes can also be seen as having a wider spatial logic. One of these is the growth of intensive exchange cycles connected with the circulation of stone axes (and probably involving archaeologically less visible goods such as live-stock - and, indeed, women). Axes were particularly necessary for initial forest clearance, and were thus especially important in temperate Europe; they also had symbolic and social value beyond their immediate technological importance. Other types of stonework, including obsidian, were locally important. A number of large-scale circulation systems of this kind form an impressive part of the archaeological record of Neolithic Europe (Sherratt 1982). They are particularly associated with the expansion of population following the introduction of farming, and as such they also show a time-transgressive pattern of the kind which I have described above as an

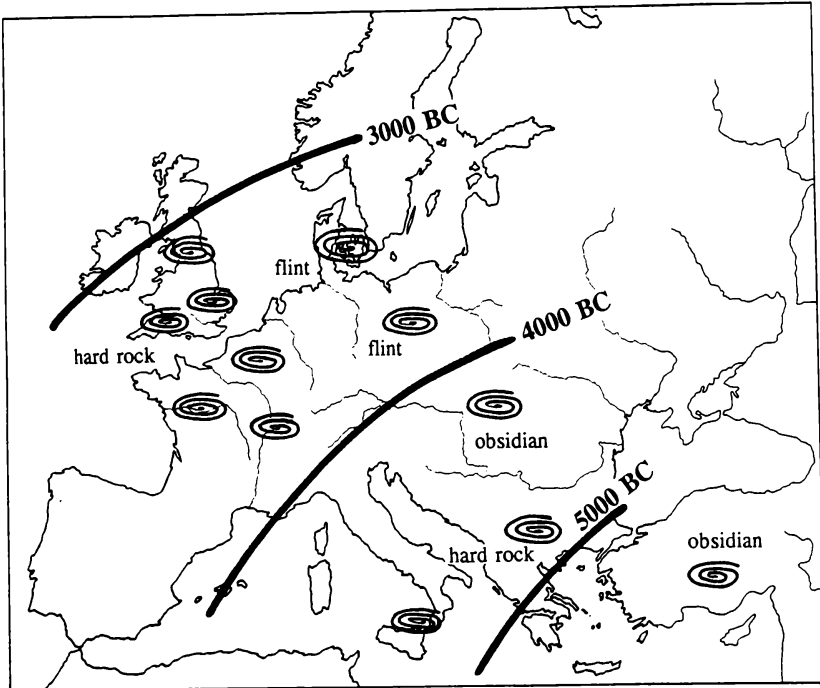


Figure 2. 'Cyclones' of Neolithic exchange (stone axes, obsidian, etc.) from 6000–3000 BC, showing the wave-like nature of their advance, echoing the spread of farming.

'echo' of the wave of farming spread. Some of these 'cyclones' – a term which conveys both the image of circulation and a tendency to blow themselves out after a few centuries – are shown on Figure 2, where it can be seen that their occurrence, too, has a 'wave-like' character.

Another process manifesting progressive spatial extension is the spread of copper working and ore extraction. Early copper metallurgy was restricted to simple ore types: native metal, oxides, and especially carbonates, which were particularly abundant in south-eastern Europe as a result of weathering conditions. The smelting of copper ores and the manufacture of simple items in one-piece moulds grew out of the pyrotechnology of pottery making, especially using the reducing conditions needed for black polished wares and graphite paint. The earliest copper sources to be used were those in Bulgaria, and a sequential series of regional florescences in copper production can be traced during the Copper Age, in more or less linear fashion, moving into Serbia and Romania, and then into Slovakia; and subsequently, in early-Bronze-Age times (and with a rather different technology), into the *Fahlerz* deposits in the Alps and the Harz Mountains of central Germany (Fig. 3) (see also Shennan, this volume). Copper-Age production in particular had the character of 'boom and bust', since the accessible and easily smeltable ores were fairly rapidly ex-

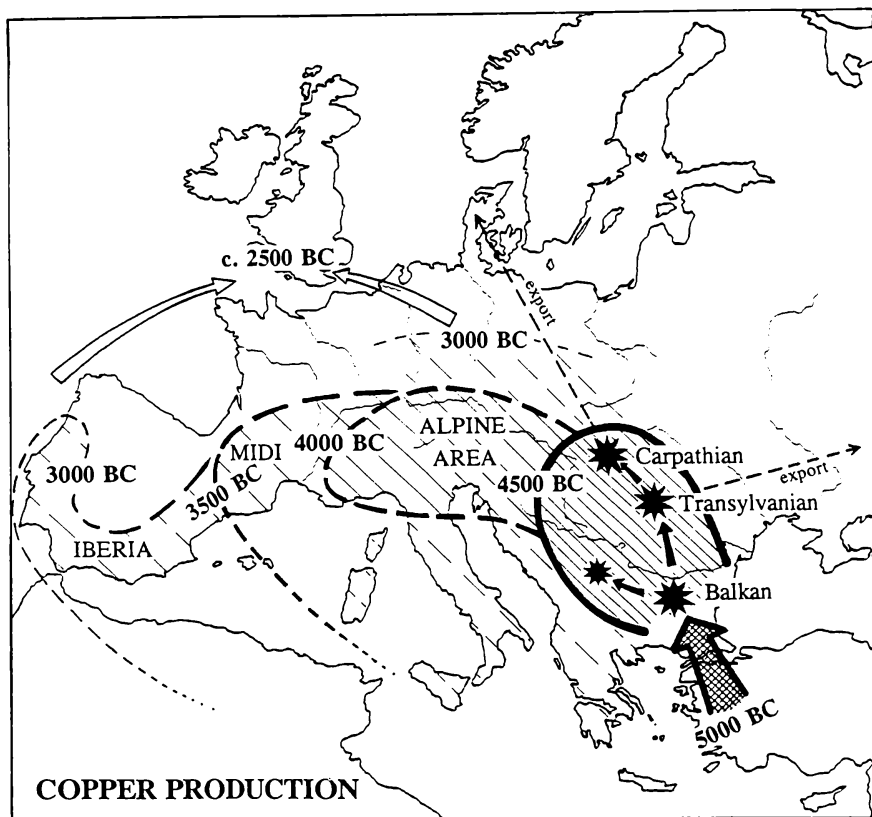


Figure 3. 'Florescences' of copper production (mining, smelting, casting and local circulation) within the Tertiary fold-chain of east-central Europe, 4500–2000 BC, and the spread of copper metallurgy.

hausted; although new and more advanced techniques of mining and smelting might subsequently revitalise certain areas, as apparently in Transylvania in the later part of the early Bronze Age.

All these processes were operating simultaneously: the spread of flat-based pottery to Scandinavia and the beginning of the Danish flint cyclone were contemporary with the florescence of Carpathian copper sources. South-east-European copper objects achieved a wider distribution than the more localised circulation of flint and stone axes; just as, subsequently, specialised flint sources producing long daggers (like Grand Pressigny) were to achieve significantly wider distributions in outer Europe. What is particularly interesting is that for a brief period Carpathian copper reached as far north as Scandinavia; but it was then swamped by the development of the local flint cyclone (Randsborg 1978), before the change to a different system based on stone battle-axes and flint daggers in Corded-Ware and late-Neolithic contexts. Each of these types of material object seems to have been closely related to the nature of the

circulation system of which it formed part, and been selected by it: it was not the inherent characteristics of the materials so much as their appropriateness for a particular social context. A major element of this social context is likely to have been a growing pastoral component: the increasing numbers of animals that could be kept as temperate Europe was gradually deforested, and the circulation of livestock as an increasingly important element of social organisation. It was systems of this kind which grew up in the wake of the initial 'cyclones', closely related to conditions immediately following the introduction of farming, such as the circulation of axes for forest clearance. The existence of copper working in areas where simple ores were easily available was not, therefore, simply a process of technical discovery. Copper was only consistently selected by later Neolithic societies as indigenous value systems altered with ecological and social change, and as daggers and axes of flint or copper became symbolically more important – just in the same way as more formal architecture and eating arrangements had earlier spread northwards only in the appropriate context.

The processes described above, even though manifesting patterns of concentric expansion from a more advanced region (Balkan-Carpathian Europe), had been set in train by the initial transmission of the farming package to the European continent. They can therefore be seen as the kinds of phenomena to be expected in the margin of a nuclear farming area. Despite the transfer of *Spondylus* shell and copper for distances of 1000 km in some cases, a core/periphery system did not emerge: exchanges depended on specific raw material requirements and complementarities, and asymmetrical relations between regions are not evident.

COMMENT

What was the characteristic of these systems, that limited their spatial and temporal range? In the first place, the finite range of valuable materials restricted the formation of wider exchange networks because of the small number of equivalent items: lacking one of the small range of valuable materials, there was no way of participating in long-distance exchange. A further limitation was the nature of these materials themselves. For flint and stone (and of course for shell) the form of the artefacts was fixed at the point of manufacture. They had a limited component of added value, which was imposed at source and not transformable as the objects moved into new cultural contexts. Objects might be broken down into smaller pieces, but only with some loss of value. The meanings which such items had in local value systems were hard to transfer across them. There was little opportunity for reworking into new forms that were more meaningful in new contexts; and the materials themselves often had local equivalents so that they had no absolute rarity. Even amber, which outside the Baltic region came nearest to such absolute rarity, scarcely moved outside the Nordic region in the period of mass transfer in later TRB; and it only escaped from local circulation in the long-distance transfer chains of Corded Ware and Bell Beakers. Yet even so, it was still within a single cultural context, and thus arguably within a single value system; it did not move into an inter-cultural context until the Nordic Bronze Age, when the widespread use of metal gave liquid-

ity to the system, and allowed particular materials to escape from the confines of local cyclones or transfer chains (Shennan 1982; and this volume).

A further limitation was simply the finite number of material items in the cultural repertoire. The range of foods, the range of textiles, the range of ornaments, the range of weapon-types – all the primary media of social display – was very restricted. Hence the density of messages that was carried by this limited range of items of material culture was very high, and locally specific. Such messages would have been virtually untranslatable when placed in a different cultural context. A decorated pot had a specific meaning in one place, but would be meaningless when transferred to another cultural setting. In economic terms, this meant that there was very little opportunity for adding value within the long-distance exchange system in earlier Neolithic contexts.

The fundamental limitation was thus the difficulty of transfer between value systems, and hence the fact that most items were confined to circulation in particular cultural contexts; there was little opportunity to form cross-cultural trade routes. Even at Varna, in the most spectacular of Copper-Age cemeteries with its six kilograms of gold, there is not a single item imported from outside the Varna/Gumelnitsa culture (Eluère 1989). The quantities of buried gold reflect not generalised purchasing power but lack of exchangeability.

THE TRANSFORMATION OF THE MARGIN

What I would like to argue now is that this situation was slowly but fundamentally transformed by the effects of Near Eastern urbanisation, in ways that were ecological, material, and ideological. Had this transformation not occurred, European societies would probably have evolved in a way that more resembled those of temperate North America (at least before AD 500, when comparable processes began to occur there). In describing the nature of this transformation, the word 'margin' remains crucial; but now it was the margin to a core/periphery system rather than an agricultural nucleus. This exposed it to the spread of transferable technologies and other cultural elements which would not have arisen indigenously within the same time scale, if at all.

Urbanisation involved fundamental changes in the nature of material culture, because it was essentially an asymmetric set of exchanges of manufactured products for raw materials. It therefore created and disseminated a whole range of new, artificial materials and manufacturing processes, especially in the media of display – food, eating equipment, furniture, textiles, ornaments, weapons, means of transport. The diversification of agriculture and pastoralism brought dietary changes, such as new forms of food and drink; craft workshops provided metal vessels and wooden furniture, and used rotary manufacturing processes; wool-textile industries expanded enormously; military needs promoted new weapon types. Many of these specialised crafts remained confined to palace centres with capital and special expertise; these were capital-intensive technologies (like the construction of large sailing ships, or jewellery-craft skills) or mass production methods (like wheel-made

pottery manufacture) which were dependent on an urban setting, and did not appear more widely except in the context of incipient urbanism. Other features, as Philip Kohl (1987) has pointed out, were more easy to imitate and were eagerly taken up by emerging elites of different kinds in neighbouring areas, both on the periphery and to some extent on the margin. In the new contexts of these outer areas they were both technologically simplified and socially reinterpreted: but the spread of drinking habits (for inebriants and their social settings were one of the important areas of innovation), modes of clothing, metallurgical techniques, vehicle use, new types of furniture, etc., all brought a new range of products to consume, and to trade in. They therefore slowly transformed the economic and social potential not only of the core/periphery area but the margin as well.

The features that spread to the European margin through the expansion of contacts and economic activity in the period of the Uruk colonies (though in many cases having an earlier origin in different parts of the Near East) were both basic features of agricultural production and more complex products based upon them, which initially had their appeal to an elite. The traction complex in Europe may have owed its initial appeal to the human fascination with wheeled vehicles, and the adoption of the cart as a prestige⁹ conveyance; and the use of the plough (with which it now came to be closely associated) may initially have been as much ideological as agricultural in its employment of a new form of animal power. Nevertheless both came to have an important role in transforming the farming systems of temperate Europe. Wool-sheep, too, would initially have been a limited luxury, in a continent still largely forested and where extensive grazing areas were rare. Fermentation processes required the accumulation of sugar-rich ingredients; cultivated fruit crops like vines required high inputs of labour, and outside the Mediterranean substitutes such as honey were required in quantity (Sherratt 1987). New metallurgical techniques, making possible the manufacture of a wider range of artefacts, also initially affected only the elite. All these elements can thus be seen as part of a process of social emulation (often motivated by a desire for specific products, like wool), and not just the local progress of agrarian and technological change. They can thus be seen as 'top down' phenomena, whose products were initially confined to a minority of consumers, rather than immediately becoming generally available. The introduction of these 'transferable technologies' was therefore both a material and an ideological event, which not only contributed to product diversification but also had growing ecological consequences as the productive and extractive activities needed to maintain them were intensified. They both promoted existing élites¹⁰ and made possible new forms of social and economic differentiation through new modes of wealth and consumption.

The way in which I perceive this as happening has been set out in an earlier section; and it is important to bear in mind that the new features initially impinged upon a continent on whose outer edges the processes of adjustment to the introduction of farming were still working themselves through (Fig. 4). The set of elements that I would attribute to the effects of intensification on the periphery of the nascent urban system include the traction complex of solid-wheeled cart and simple plough

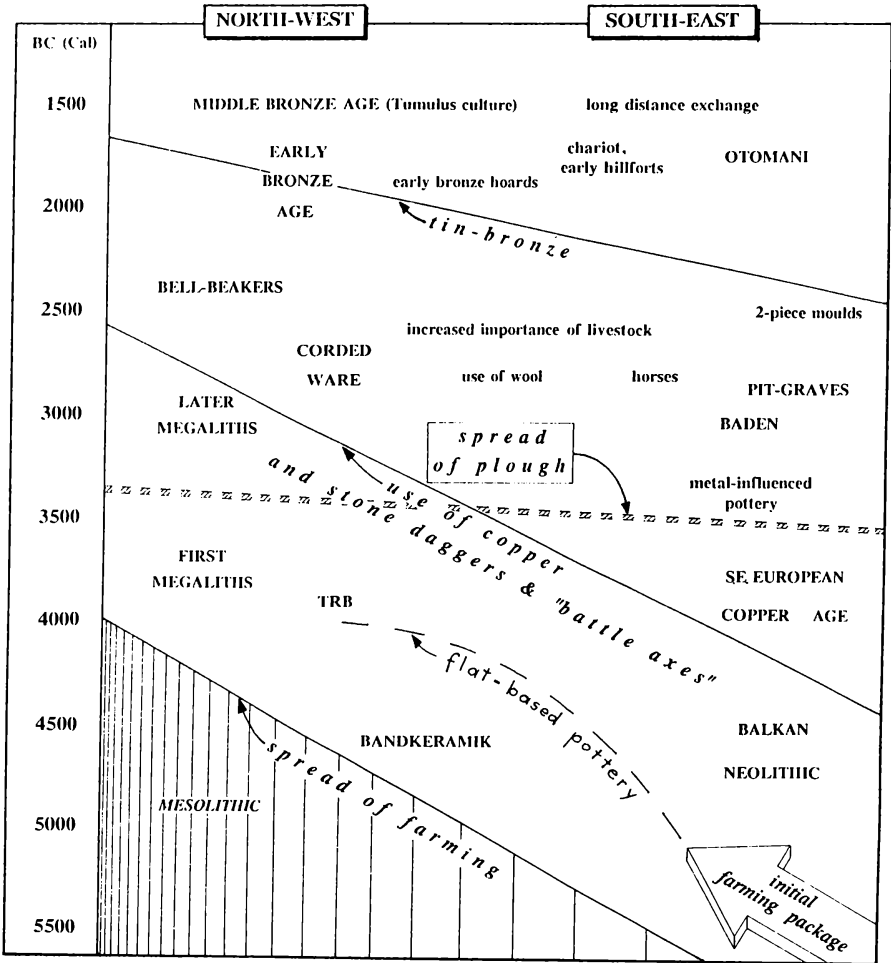


Figure 4. The chronological cline between south-east and north-west Europe in the spread of farming, flat-based pottery, copper-use, elements of the Secondary Products complex, and features of Bronze-Age material culture.

(i.e. ard), metal-skeuomorphic drinking-vessels, and the drinks they imply (arriving, via Anatolia, ca 3500 BC); then, slightly later, arsenical-alloy metallurgy and the bivalve mould¹¹ (arriving via the Pontic steppes ca 2600 BC), and also wool-sheep (by both routes). Mediterranean Europe saw the arrival of tree crops and donkeys. Horses reached temperate Europe in larger numbers as a result of the Pit-Grave expansion on the steppes, itself made possible by the use of wheeled vehicles. While the cultures of south-east Europe were immediately transformed, those of the north and west - where farming had been adopted more recently, and 'echo' phenomena were still occurring - absorbed them more selectively, and continued a megalithic

pattern until the more radical changes with the spread of the Corded Ware and Bell-Beaker complexes, paralleled by the emergence of the Pit-Grave complex on the steppes. The large areas covered by these phenomena are symptomatic of a new scale of contacts, in which the circulation of animals was probably an important feature. They also carried the potential for future change, as metal technology began to allow the manufacture of objects beyond the range of types familiar in stone, and textiles and brewing contributed to a further elaboration in the repertoire of material culture – especially in the realm of fighting, clothing, and drinking.

The cumulative effect of these changes in material culture was to alter the whole nature of the exchange process, both by their effect on exchange systems through the diversification of products, and also by improving the liquidity of the system through the convertibility of certain material items. The diversification of exchange systems required an element of liquidity: a standard of exchange that was convertible between different kinds of goods, and which could balance the flows between different areas – in other words, a kind of proto-currency. To be acceptable between different cultures and value systems, this had to be a material which was generally desirable, but which could change its form – easily, and without loss – between different forms of local expression. It must be neither too rare nor too common. Copper on its own might potentially have come to play such a role; but it was inhibited both by the limited range of exchangeable goods, and by its own limited range of finished forms. As Stephen Shennan has argued (e.g. 1986; also this volume), it was only in the alloyed form, as bronze, that it came to be such a medium. Urban societies, with plentiful supplies of copper, chose the rarer material of silver to act as a fungible medium. Societies on the margin converged on the use of bronze. Bronze was more than a 'primitive valuable' for use only in ceremonial prestations within restricted spheres of exchange (like shell 'currencies'), but it was not a foreign 'prestige good' manufactured outside the area, like the classic prestige-goods economies of the periphery of the industrial world in the nineteenth century, in Africa and elsewhere (Ekholm 1972). Instead, it was an internally produced and valued material which had both an inherent attractiveness and a variety of useful forms (cf. Herbert 1984). Like special iron 'currencies'¹² in the shape of spits or sword-blanks, it was capable of being reshaped into other forms of object; but as a major display material it carried its own connotations both as adornment and through its association with bright weapons and cutting tools. In conjunction with livestock and textiles, it could circulate in local exchange cycles; but melted and recast, it could be transferred between local typologies and the regional ideologies they expressed. It was the large-scale use of bronze which linked these potentialities into actuality, and made bronze into the primary material of the margin.

The effects on Europe of the new wave of innovations propagated by Near Eastern urbanisation can thus be separated into two phases: a phase from 3500 to 2500 BC in which the absorption of a variety of new elements began to diversify production; and a phase of faster development which began around 2500 BC, in which the adoption of bronze and the emergence of standard categories of artefact began to articulate regional specialisation through a common language of consumption and

medium of exchange. The first phase was characterised by the formation of large cultural units, like the Baden, Corded Ware, Bell-Beaker, and Pit-Grave complexes. Before metal came to be used as a standard medium of inter-regional exchanges, participation in wider networks was dependent on a common cultural code; and these larger units – within which most transactions took place – rapidly expanded as the principal medium of extra-local contacts. These larger cultural blocs, and their associated transfer-chains for small items of metal, provided a network of contacts which (as with Bell-Beakers) underlay the routes which emerged later on. After 2500 BC, however, as bronze increasingly came to be used as a standard medium of exchange, it was possible to have intense trade contacts without cultural convergence; hence the larger blocs broke up into smaller cultural units (defined their pottery and domestic objects), though with larger units of metallurgical style.¹³ The Bronze-Age cultures ranged along the Danube, for instance, were clearly linked by traffic in metal and other valuable items but nevertheless stressed their differences in distinctive forms of material culture at the domestic level. Thus the whole pattern and patterning of European cultures was altered by new forms of interaction.

The two elements together – diversification of production and a universally valued medium – made the exchange systems of Bronze-Age Europe radically different from their predecessors. Diversification in the range of items of material culture sustained both ecological differentiation and a range of processes giving added value to raw materials; inter-regional exchangeability allowed flows of materials between regions and cultures, rather than just within them.

THE GROWTH OF 'MARGINAL' TRADE IN THE BRONZE AGE,¹⁴ 2500–700 BC

It is now time to address the question of whether localised core/periphery systems emerged independently in Bronze-Age Europe, or whether they only came about by some form of articulation with the macro-structure of the world system. Although the spread of new elements of production occurred by time-lag processes broadly comparable to those operating in the Neolithic, I shall argue that there were also catalytic contacts that were responsible for mobilising these potentialities – even though these contacts fall short of the continuing relationship characteristic of the development of a periphery. These contacts were influential both in promoting the use of bronze as a medium of exchange, and in providing an incentive for long-distance exchange. They were thus 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. This process was itself an extended one, and can be divided into phases both by geographical shifts in the patterns of interaction, and by the internal evolution of European societies as they responded to these opportunities through the intensification and diversification of production. New properties therefore emerged within European exchange systems during the course of this time. Broadly speaking, the early Bronze Age (in the Reinecke sense: Fig. 5a) saw the formation of small-scale regional asymmetries based on access to copper and tin, the middle Bronze Age saw the development of directional chaining

BC Cal	SCANDINAVIA	WEST-CENTRAL EUROPE	EAST-CENTRAL EUROPE	ITALY	ANATOLIA/AEGEAN	MESOPOTAMIA
4000	Early Neolithic		Copper Age	Late Neolithic	Late Chalcolithic	Proto-literate
3500	Middle Neolithic	Eneolithic	LCA or Period of Transition	Early Eneolithic	EB I	(Uruk Colony Period)
3000	Corded Ware	Corded Ware		Late Eneolithic	EB II	Early Dynastic
2500		Bell-Beaker	EBA		EB III	Akkadian
2000	Late Neolithic	EBA	MBA	EBA		Ur III
1500	Earlier Bronze Age	(flat graves)			MBA	Old Assyrian Period
1000	Later Bronze Age	MBA (tumuli)	LBA	MBA	LBA	Kassite/Mitannian
500	EIA	LBA (urnfields)	EIA	Final BA		Middle Assyrian and Babylonian
		EIA	LIA	Villanovan		Neo-Assyrian
		LIA		Etruscan	Geometric	Achaemenid
				Roman Republic	Archaic Classical	Hellenistic

Figure 5a. Comparative regional terminologies for the Bronze Age, showing the extent of core, periphery and margin. The usage of 'early', 'middle' and 'late Bronze Age' in this article follows that of west-central Europe, begun by Reinecke. (Calibrated timescale).

BC Cal	DENMARK	SOUTHERN GERMANY	HUNGARY
3000			LATE BADEN
	CORDED	CORDED	
2500	WARE	WARE	EB I Brno Lišen
	(Montelius)	BELL-BEAKER (Reinecke)	EB II Pitvaros
2000	LN I	Br A1:a	EB III
	LN II	Br A1:b	MB I
	(a)	Br A2 (=A2b)	MB II Hajdúsámson
1500	Per I (b)	Br B1	MB III Koszider
	Per II	Br B2	
		Br C	LB I Forró
	Per III	Br D	
		Ha A1	LB II
		Ha A2	
1000	Per IV	Ha B1	LB III
	Per V	Ha B2/3	EIA I
	Per VI	Gündlingen	
	EIA I	Ha C	EIA II
		Ha D	
500			

Figure 5b. Synchronisms between the Carpathian Basin, north-Alpine region and Scandinavia, as established by cross-dating and dendro-calibrated radiocarbon. Scandinavia (partly after Vankilde), southern Germany (after Ruckdeschel), and Hungary (after Bóna et al.), with sequence rescaled.

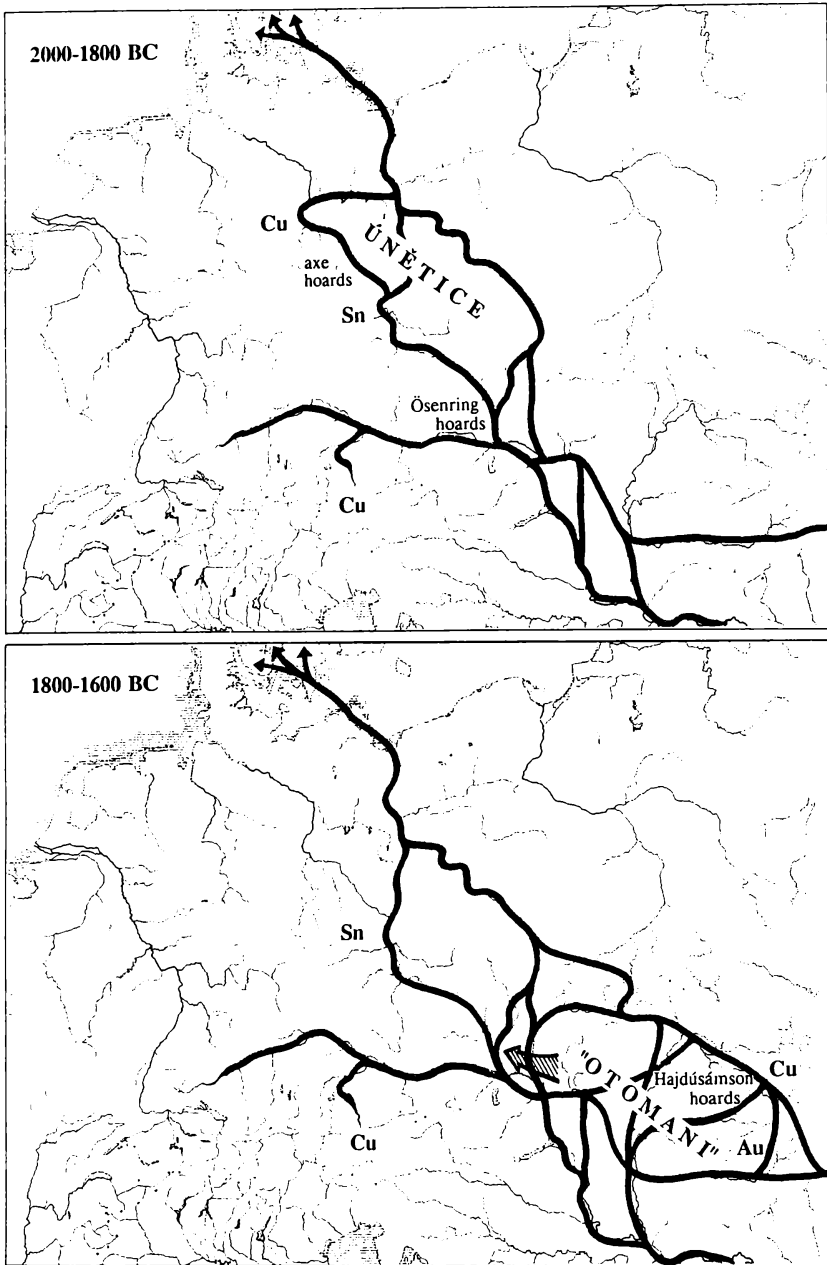


Figure 6. Long-distance 'trade' (directional exchange) routes and elements of regional metallurgical production between the Lower Danube and Scandinavia, 2000–1600 BC. (top) The later half of the early part of the Reinecke EBA, 2000–1800; (bottom) the later part of the Reinecke EBA, 1800–1600 BC.

between regions, and the late Bronze Age saw strong (though constantly switching) internal articulation at a time of recession in the world-system core areas – so providing routes of penetration for the extension of core/periphery relations in the first millennium.

EARLY BRONZE AGE (1), 2500–1800 BC (Figs 5B, 6A)

While (English-speaking) prehistorians, in reaction to Childe, have tended to describe the beginning of the European Bronze Age as an autonomous development, there are nevertheless indications of long-distance contacts which had a formative role right from the beginning: that is, from the onset of the Reinecke early Bronze Age which began in central Europe around 2300 BC. The features that distinguish this period are the extensive mining of *Fahlerz*, increasing use of tin alloying, and the appearance of hoards, which together mark the beginning of large-scale metal exploitation and circulation. This was used to produce a range of novel weapons and ornaments: riveted daggers, neck-rings, pins, and various sheet and wire adornments, which did not occur in the preceding Copper Age and point to the possibility of outside contacts. The axis of these long-distance contacts was the Danube, as Childe¹⁵ long ago pointed out, and as has recently be re-emphasised (in the context of a calibrated radiocarbon chronology) by Sabine Gerloff (in press). The distribution of wound-wire pin-types (*Schleifennadeln*), the emergence of cultures with strikingly riverine orientations, the importance of cemeteries at nodal points such as the Maros confluence, the occurrence of *kantharos* shapes in pottery there, and the distribution of *Ösenringe* across the southern Carpathian Basin, all point to the potential importance of routes from the Danube mouth through southern Transylvania to the Middle Danube and central Europe. The simultaneous appearance of the *Ösenring*, simple *Schleifennadel*, golden *Lockenring*, and faience beads in the Óbéba cemetery, in a context¹⁶ dating to ca 2400 BC, strongly suggest an external input of new clothing and ornament types, and the transferable technologies needed to reproduce them. The various ornament types (which also include wound-wire and sheet-bronze beads and pendants) have been convincingly interpreted by Schuhmacher-Matthäus (1985) as parts of head-sets, not dissimilar to the gold ornaments from the Troy II treasure, as worn by Sophie Schliemann in the famous photograph. This process apparently began when Bell-Beaker assemblages were still being deposited in central Europe, throwing doubt on the attempt to interpret subsequent early-Bronze-Age developments there purely in terms of indigenous development (Shennan 1986). The discovery of what appears to be a slotted spearhead of Anatolian/Aegean form, together with amber beads, *Ösenringe* and wound-wire and other pins and rings in a pot at Kynha near Leipzig in central Germany (Coblentz 1986; Gerloff in press), indicates that contacts of some kind between the Únětice area and north-west Anatolia are not impossible: and Manfred Korfmann has recently recovered a gold *Schleifennadel* from a contemporary Troy II context at Troy itself, to join pieces found in less certain contexts by Schliemann and Blegen (Korfmann 1993).

The consistent use of tin as an alloying agent first occurs in south-central Europe in

Bell-Beaker times, albeit in small quantities, mainly for tanged daggers (Spindler 1970:209). As noted above, this overlaps with the period of the first postulated north-west Anatolian features on the Middle and Lower Danube. The proportions of tin do not rise decisively in early Reinecke A1 in central Europe, but become more marked towards its end (ca 2000 BC). It is not impossible, therefore, that systematic tin alloying was begun as a result of Anatolian contacts: the fact that the use of tin-bronze begins over an extensive area of the Near East just previously (partly perhaps as a result of the increased mobility of high-value metals and the consequent liquidity resulting from the use of silver as a medium of payment) is strongly suggestive of a wider pattern; and the suggestion of a transferred technology is at least as plausible as an 'evolutionary' view of purely local development in Bohemia. It was perhaps the motivation to create new kinds of products, demanding a more advanced technology, that was the critical stimulus. What should undoubtedly be resisted, however, is the tendency to look to the Aegean (in another hangover from short-chronology diffusionism) for the origin of these stimuli; in the third millennium, the Aegean was itself peripheral to more advanced centres in Anatolia. It is to processes within *Anatolia*, initiated in the mid-third millennium by demand from the large-scale economy of Syria (revealed in the Ebla tablets) and the expansion of the Akkadian 'Empire', which are reflected in the urbanisation of central Anatolia and further west in the growth of centres such as Troy.

Anatolian influence was by this stage (EB III in the Aegean system) increasingly evident in the Aegean, both in the Cyclades and eastern mainland Greece, with ceramic assemblages including Anatolian forms like the *depas* cup at Kea, Lefkandi, and Tiryns, and Anatolian metal at Kastri on Syros. The possibility of maritime trading activity over even longer distances, from northern Syria to Crete, is demonstrated by representations of vessels with sails on EM III seal-stones and imported ivory. The eastern Aegean was by the later third millennium arguably a periphery of Syria/Anatolia, supplying silver cupellated from lead ores; and Crete itself was within a few centuries to become an independent core-area. (See in general Sherratt and Sherratt 1991). The Anatolian initiative in the Black Sea, if such it was, is likely to have taken the form of an exploration of routes probably already used for local traffic on the western Black Sea coast, from the Sea of Marmara up to the mouth of the Danube - in the same way as the formation of links to the western Aegean at the same time - and hence the propagation of trading activity through indigenous groups along the major river highways. As to the nature of the goods traded, it may be symptomatic that the pins themselves were intended to fasten loosely-woven woollen textiles, in which Troy¹⁷ apparently specialised (Barber 1991:54). (These may actually be reflected in the geometric encrusted ornament on Nagyrév and other Danubian early-Bronze-Age pottery.) The injection of small quantities of highly desirable exotic items may have been catalytic in spreading new technologies and stimulating exchange cycles for which the local preconditions already existed.

None of this activity along the Danube would qualify as the formation of a periphery. The links were too distant, the quantities too minor, and the technological disparity too small. Nevertheless there is no need to neglect its historical importance,

which is likely to have resulted in warfare and competition as much as peaceful trade. The goods that entered the the system in response to introduced novelties may well soon have gained currency in their own right; and in any case a chain of imitations and local developments could take place. It was these locally produced goods and materials which sustained the main volume of trading activity. Initially, however, the range of these goods is likely to have been small: the main commodity was probably metal itself, which soon came to be exploited in bulk. The rich indigenous sources of metal in central Europe supported a boom in the production of introduced ornament types and local axe types, beyond the propensity of local communities to consume, either within the modes of earlier Bell-Beaker use or the sumptuary codes of societies like early-Bronze-Age Troy. Unable to convert this surplus into other consumables (and perhaps unwilling to let so strategic a commodity escape to neighbouring communities except for material return), much of this metal was deposited as hoards.

In the early Bronze Age, the principal metal-producing areas (the eastern Alps and central Germany) are characterised by large-scale hoards (often predominantly of a single type of object such as *Ösenringe*, some in half-finished form) which represent the deposition of a considerable quantity of material (Bath-Bílková 1973; Butler 1978). Its withdrawal from circulation in this way seems to indicate (as with the gold of Varna) that the limitations on general demand and exchangeability were still strong. Because of the limited development of other exchangeable items (e.g. textiles or furs), it could not be converted into the consumption of different forms of wealth, obtained over greater distances. Hence a degree of over-production is likely to have taken place, and different source areas may have been in competition for outlets on the Danube axis, which was a channel of limited capacity. Although some metal crossed the boundaries of local cultures, most hoards are within areas culturally linked to the sources, as if too much could not be allowed to escape to neighbouring groups. This would explain a particular 'pile-up' of metal in Moravia, in the form of *Ösenring* hoards. These types of hoard disappear later in the Bronze Age, when metal in temperate Europe was more negotiable. On the northern edge of the metal-production area, for instance in Denmark, only limited quantities of imported metal circulated, in a context which was still basically 'late Neolithic'. This must reflect the still limited range of items entering into circulation there, of which the only item with a wider demand was probably still just amber, which was traded to central Germany and Bohemia.

EARLY BRONZE AGE (2), 1800–1600 BC (Figs 5B, 6B)

During this time expansion continued to take place in the core/periphery area, including the further opening up of Anatolia for manufactured goods. The expansion of the Old Assyrian *karum* trade to Cappadocia, and the extension of maritime systems along the southern coast to the newly formed polities of Minoan Crete, stimulated further demand in their hinterlands. Troy continued to be important, and its access to the Black Sea region paralleled the exploration of the central Medi-

terranean, where middle Helladic pottery reached the Aeolian Islands, at the southern entry point to the Tyrrhenian Sea. By 1600 BC, the Argolid and Messenia had emerged as nodal areas within the network of Aegean exchanges, with their own local centres of power. While Mycenaean became increasingly involved in the Tyrrhenian, and across the Aegean to Troy, it is unlikely that Greeks themselves were involved in the Black Sea. 'Mycenaean influence' in eastern and central Europe is a myth. Nevertheless north-west Anatolian centres such as Troy are very likely to have had links with the Danube mouth in the early second millennium, and this interest (for example in the gold of Transylvania) explains certain features of its development. Artefactually, this is best reflected in the goldwork itself: the *Lockenringe* which occur both in Transylvania and Troy; the hoards of gold weapons with exotic typologies at Perşinari (including even rarer silver examples), Țufalău and Măcin; and the two generations of gold vessels – the first, hand-made, examples like the Co. Bihor vessels, the second, lathe-finished, like Vulchitrun, Rădeni, and Kryzhovlin (Sherratt and Taylor 1985). These distinctive pieces – all locally made, but indicative of contacts with more sophisticated workshops – have counterparts in unusual bronze types such as the Transylvanian rapiers and west Pontic double-axes, which although mostly stray finds that are hard to date nevertheless indicate outside contacts because of their departure from the standard range of south-east European metal types. Again, none of this implies the formation of a periphery: but these points of contact were where technologies 'escaped' from the fringe of urbanism.

One feature of Near Eastern armament which made its appearance in Europe at this time was the metal spearhead. Metal-tipped spears had not been developed in the earliest Bronze Age of temperate Europe: battle-axes dominated in the east, daggers and archery equipment in the west; while attempts in several areas to use a blade on a pole arm resulted in the appearance of the halberd – a fusion of the battle-axe and the dagger. Anatolian and Aegean early-Bronze-Age cultures used metal spears attached to the pole either by a rat-tail tang or binding-slots (cf. Kynha, above). In the Caucasus and eastern Anatolia, socketed forms were used: though the sockets were not hollow-cast, but beaten out and wrapped round (as later iron versions were to be). Use of the metal-tipped spear (with a split socket) seems to have spread from this Caucasian prototype, and was adopted widely by second-millennium steppe groups such as *Mnogovalikovaya*, Timber-Grave and Andronovo, which increasingly developed their own metal technology based on sources in the Urals, Kazakhstan, and the Altai. The hollow-cast socket, made by means of a suspended core, appeared specifically in a zone reaching across the forest-steppe from the Altai to the Urals, where it was used both for axes and spearheads (Chernykh 1992:215–33). This group of industries, named Seima-Turbino after two rich cemeteries (near Gorki and Perm respectively) with other distinctive material such as nephrite rings, have connections with Mongolia and China (as Childe recognised in 1954, though dating it too late). It seems likely that this technology, therefore, was of east Asiatic origin, and belongs specifically to the 'Northern Complex' on the edge of Shang and Chou China (Yün 1986). It was this form of spearhead that appeared in Transylvania around 1800 BC and then spread to other parts of Europe.¹⁸ A specific link between

Transylvania and the Seima-Turbino industries is provided by the hoard of Borodino, near Odessa, with silver spearheads, dagger and winged pin, and nephrite battle-axes.¹⁹ These inter-connections across Eurasia are astonishing, but increasingly documented both for the forest-steppe and steppe belts, where wheeled vehicles form a further link – in this instance going from west to east, to reach Shang China (see below). As well as its Danubian links to Anatolia, therefore, the Carpathian Basin possessed the further advantage over other parts of western and central Europe that it was in contact with a vast and increasingly important area further east.

Besides the gold and copper sources of Transylvania, there was thus a further item of interest to Anatolian societies in the Black Sea region: horses. Eastwards from the Carpathian Basin, around the northern shore of the Black Sea and onwards to Kazakhstan, the steppe cultures bred horses to pull light, two-wheeled 'chariots'. These vehicles, of simple construction with bentwood wheels and four spokes, were the first applications of the horse as a traction animal (Piggott 1985; 1992). From their area of development on the steppes, they spread both to eastern Europe and the Near East, via Anatolia (and perhaps through the *karum* network). In the Near East they were transformed, by more sophisticated carpentry, into elite conveyances and war machines – the form in which they appear on the stelai of the Mycenae shaft-graves. Further north, they remained of simple, home-made construction. Nevertheless they were still elite items, not least because of the expense of keeping horses in large numbers beyond the steppes. The use of the chariot greatly increased the demand for horses in the regions where it was adopted, and they are likely to have been a major item of trade. Chariots, evidenced by clay models of four-spoke wheels, were used in the Carpathian Basin in the Otomani group of cultures (ca 1800–1600 BC); and their use is associated with antler cheek-pieces for bridle-bits and other items, decorated in a distinctive compass-drawn decoration (Vladár 1973). (Horses from the Carpathian Basin may also have reached north Italy via Slovenia to judge by the occurrence of similar decorated antler cheek-pieces there.) Comparable antler cheek-pieces, in slightly different forms, were used across the steppes: but the compass-ornament is characteristic of the Carpathian Basin (which may have acquired the technique of compasswork from its Trojan contacts). Moldavia and the Carpathian Basin became centres of horsemanship, and perhaps suppliers of animals and expertise for consumers in north-western Anatolia and the Aegean. Items of compass-decorated horse-gear occur in the Mycenae shaft graves; while the style of compass-drawn decoration was applied to Transylvanian gold- and bronze-work of Hajdúsámson type (and then, freehand, to pottery). It is this set of phenomena which has been erroneously conflated into a 'Mycenaean horizon' in eastern and central Europe.

Two other features characterise this period from 1800 to 1600 in the Carpathian Basin: a massive increase in bronze production, associated with the opening of new Transylvanian copper sources (and access to Bohemian tin); and the development of fortified sites, both in the plains and more spectacularly on strategic routes leading through the mountains (Fig. 7).²⁰ In Romania, and significantly on the main route from the Danube mouth to Transylvania, where the land rises to the foothills before the pass to Braşov, the fortified acropolis (*Cetăţuia*) of Sărata Monteoru overlooks a

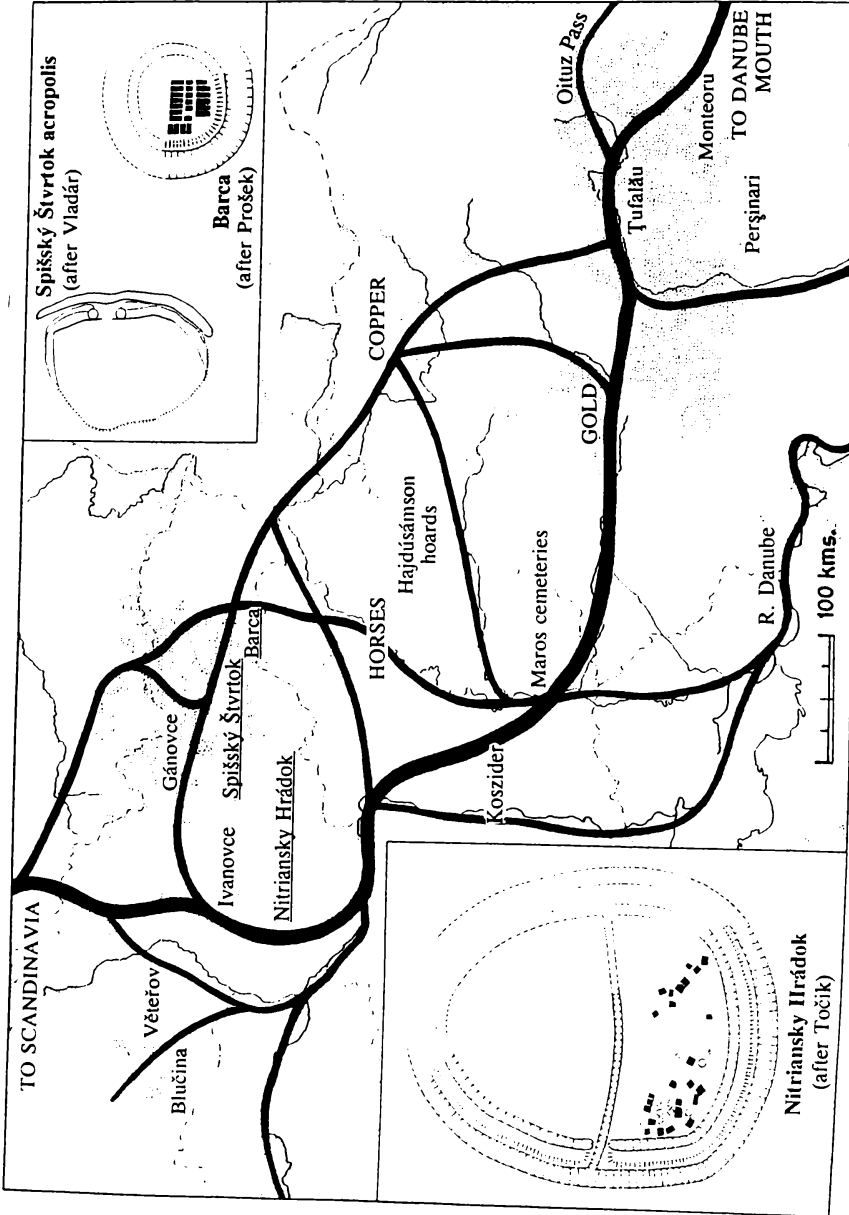


Figure 7. The locations and selected examples of defended sites in relation to major access routes into and out of the Carpathian Ring.

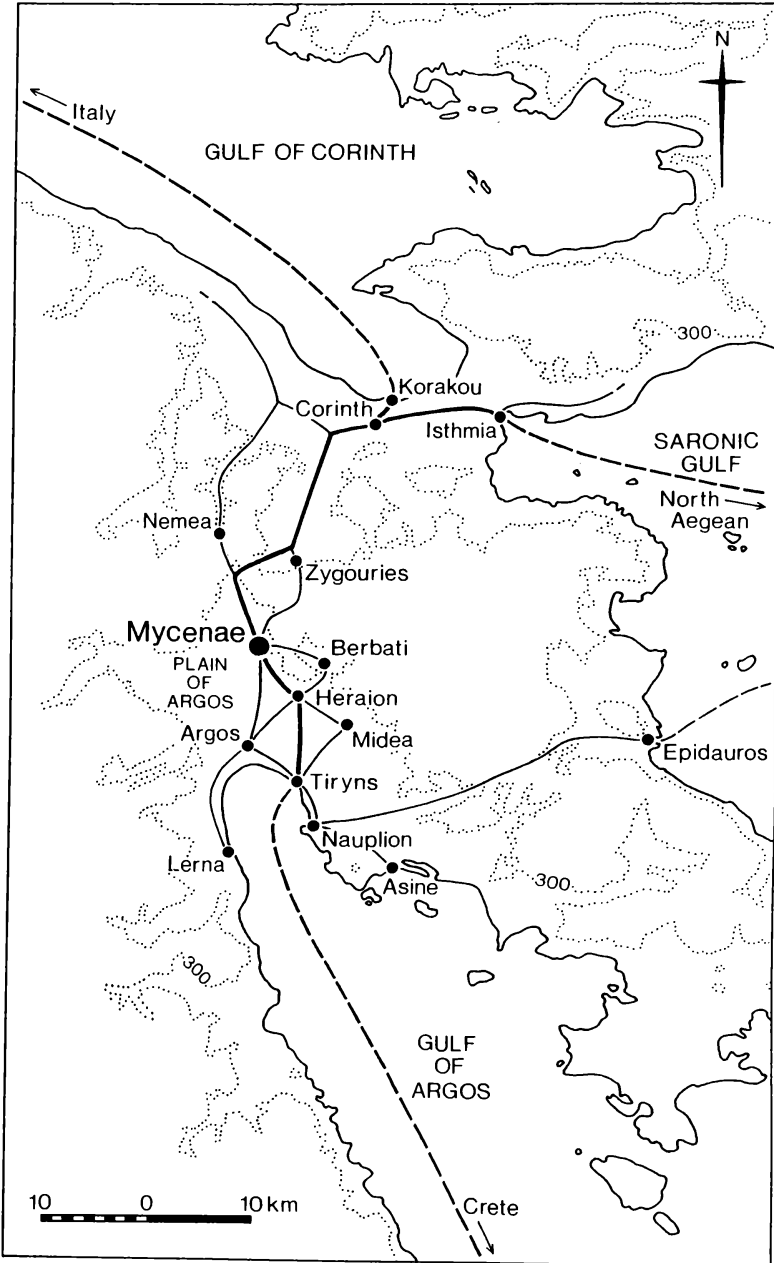


Figure 8. The location of Mycenae as a fortified nodal point on the trans-isthmian route between the Gulf of Argos and the Corinthian Gulf, linking routes to Crete and Italy.

domestic settlement; other stone-built fortifications guard the Oituz pass further north. (Mycenae itself began as just such a fortified acropolis, dominating the route from the Gulf of Argos to the Corinthian Gulf and its westward links: Fig. 8). But such sites are not restricted to the southern edges of the Carpathian Ring: they occur, equally significantly, within the Carpathian Basin along the Danube and Tisza, and on the northern Carpathian passes in Slovakia, where routes pass into the North European Plain. The horse rearing and metal-working centres of northern Hungary and Transylvania had also developed long-distance contacts with the north.

The rise of the Transylvanian centre coincided with a relative collapse of the central German (Harz) copper supplies, which gave Transylvania the opportunity to outflank it and take over its contacts to Scandinavia along the Oder. These links, over a distance of 1000 km, mark the beginning of Period Ia of Montelius' early Bronze Age (Vandkilde 1989), and had a lasting influence on the Nordic school of bronze working (which then copied, albeit in a different technique, elements of its curvilinear style of decoration: Rønne 1989). Some of the finest prestige weapons (solid-hilted Apa swords and socketed spearheads) travelled along this route. In return came amber. The two routes which gave access to the headwaters of the Oder were the east Slovakian one, up the Hernad to the Spiš and down to Little Poland, and the west Slovakian one, up the Nitra and Vah and through the Beskids. Both saw a rash of fortified sites, either totally enclosed with a ditch and box-rampart (like Barca and Nitriansky Hrádok), or with an acropolis and outer settlement (like Spišský Štvrtok). All of them have yielded spectacular quantities of either fine bronzework, goldwork, or amber – or all together, as in the destruction level at Barca. Significantly, too, many of these sites show evidence of the production either of metalwork, or textiles, or both; and some textiles may have accompanied the bronzes exported to the north. The west Slovakian sites of the Mad'arovce group form part of a *Drang nach Westen*, taking Otomani culture elements into an area formerly Bohemian/central German (Únětice) in orientation. Control of the northern outlets was clearly crucial. This expansion displaced the area served by east Alpine copper, which now began to extend further west to Bavaria and Switzerland. Transylvania became the first of the metal-rich zones of central Europe to have contacts across the whole width of the continent, from north to south.

MIDDLE BRONZE AGE, 1600–1300 BC (Figs 5B, 9)

By this time the pattern of urbanisation in the Mediterranean had extended from the centres established in the early second millennium to include new areas of their northern periphery that had been early points of contact with a wider hinterland. Two in particular, the Greek mainland and central Anatolia, saw the establishment of foci of political development: the Mycenaean and Hittite heartlands. (Troy, while retaining its prosperity, seems not to have undergone a comparable process of political aggrandisement – perhaps because of its distance from the main south Anatolian/Aegean axis.) Mycenaean trading missions made contact with Tyrrhenian exchange systems at ports of trade at Lipari and Vivara, tapping local products and stimulating

wider contacts (Sherratt and Sherratt 1991a:370). This suggests that the inflow of materials from the northern margin was a continuing and expanding process; and that the newly developing areas might be increasingly in competition for northern products.

The axial route established in the early second millennium from the western Black Sea along the Danube, and from Transylvania to Scandinavia, was polythetic: it is unlikely that any commodity travelled over the whole distance, from one end to the other. Metals, exported from the centre, were the major element. Even the long-range penetration of Transylvanian metal along the Oder to Denmark may have been sustained by a simple dyadic link – the exchange of bronze (perhaps accompanied by a few textiles) for amber. By 1600, however, this commodity, amber, travelled the whole distance from the Baltic to the Mediterranean. Among the rich grave-goods in the tombs of the emerging dynasties at nodal points on the Greek mainland – the Shaft Graves at Mycenae and the *tholos* of Kakovatos near Pylos – are amber beads (including distinctive complex-bored spacer-plates: Harding and Hughes-Brock 1974²¹) which not only originated in the north but point unequivocally to a chain of transmission through west-central Europe to Italy, and so into the growing maritime links between the Aegean and the Tyrrhenian. The new pattern therefore involved both a new route and greater power of transmission. How did these properties come about?

A chain of long-distance links such as that established in the early Bronze Age would inevitably involve some degree of intensification, if not of specialisation, at different points along it, since a surplus had to be mobilised to shift the amber or the metal from its points of collection/extraction and production to nodal centres of (elite) middlemen activity. Agricultural products or livestock would thus have filled vital gaps in the chain. Further diversification and specialisation would have allowed a growth in the volume of traffic. Two constraints still operated: the limitations of transport, which restricted the bulk of traded items, and the limited manufacturing capacity, which restricted the range of products that could be exchanged for valuable raw materials. Rivers and sheltered coastal waters, where canoe traffic was possible, helped to overcome the former; and during the second millennium some larger-scale indigenous trading networks developed in areas like the Tyrrhenian or the Baltic, which manifested a degree of core/periphery asymmetry. For the Baltic, this involved a set of exchanges of metalwork for furs and hides (beaver, otter, elk, seal) in areas of coastal Sweden and Norway, perhaps from indigenous hunting groups reached through the intermediation of coastal farmers, who themselves maintained a 'provincial' version of the south Scandinavian lifestyle and consumption patterns, including the use of Nordic bronzework (Kristiansen 1987). The nature of such organic commodities is harder to reconstruct than that of durable items, but in areas where pictorial evidence exists there is a multitude of unexpected desirables (like the Cretan ibex horns shown in Egyptian wall-paintings, used as essential elements of composite bows: Wachsmann 1987). This pattern of regionally differentiated commodities seems to have emerged by the Reinecke middle Bronze Age, in which localised core/periphery systems (no longer dependent on having their own copper sources) formed parts of larger structures or chains. It was this system which made

contact with the Mediterranean, but no longer only along the Danube: the new routes went over the Alps, to Italy and so to Greece. This scenario is very different, however, from Childe's vision of prospectors crossing the Brenner in search of metal ores, for it was a *marginal* rather than a *peripheral* process which, although responsive to changes within the Mediterranean, involved the economic transformation of European societies themselves.

By 1600 BC, the links between Scandinavia and the Carpathian Basin had slackened or ceased altogether, and a new link had been formed between the east Alpine copper sources and the Bohemian tin areas on the one hand, and Scandinavia on the other. This middle-Bronze-Age route to the north, across the Lüneburger Heide in north-west Germany, is associated with the rise of the Tumulus cultures and the displacement of the Carpathian Basin as the centre of an axial route. The northern Alpine foreland gained in importance because of its position on the approach to the Alpine passes, and thus to western Italy where the Tyrrhenian cycle was accessible to Mycenaean maritime contacts. The products which passed along this network of contacts must have been confined to high-value, low-bulk materials (of which amber is the most readily identifiable), and in no sense can this route be considered a highway of trade; it resembled rather the pattern of indirect stimuli first transmitted along the Danube nearly a millennium earlier. Nevertheless, in broader perspective, the shift in the focus of central European activity from the Carpathian Basin to the north Alpine area reflects the extension of Mediterranean activity from Troy to Mycenae.

The Tumulus culture network was different in character from the older Danube/Middle Elbe-Oder axis, with its flat cemeteries and fortified centres; and in some ways it revived aspects of the even older Bell-Beaker network, including the practice of tumulus burial. Scandinavia, the Low Countries, and Britain were loose members of this partnership, with Scandinavia more intimately linked than the others. The tumuli survive in large numbers in central Europe because of the rapid expansion of farming on light soils which thereafter rapidly degraded and were abandoned to forest – a pattern which contrasts with the more substantial settlement sites of the contemporary Carpathian basin, and the locally succeeding late-Bronze-Age (Urnfield) groups. This extensive pattern (perhaps associated with cattle-raising) may have involved different mechanisms of inter-regional exchange from the rather different, hillfort-centred, systems. Some idea of the mechanism by which goods moved along it, via a series of trading partnerships, is given by Jockenhövel's (1991: fig. 1) map of *fremde Frauen* – female burials in one sub-area wearing the ornaments characteristic of another, and thus arguably representing wives exchanged among high-status groups in adjoining areas. Bronze objects travelled northwards, to Scandinavia, from Alpine sources (Hundt 1978): what travelled south? Amber, clearly, since that occurs in female graves especially in the southern parts of the route; but also presumably furs and skins, the latter probably already made up (to reduce bulk) into the kind of items such as otter-skin stool-seats which are known from tree-trunk coffin burials in Denmark, and which would have been luxury items in themselves. Such trade is likely therefore to have developed beyond dyadic exchanges of individual luxury items to include various organic commodities, but with only minimal

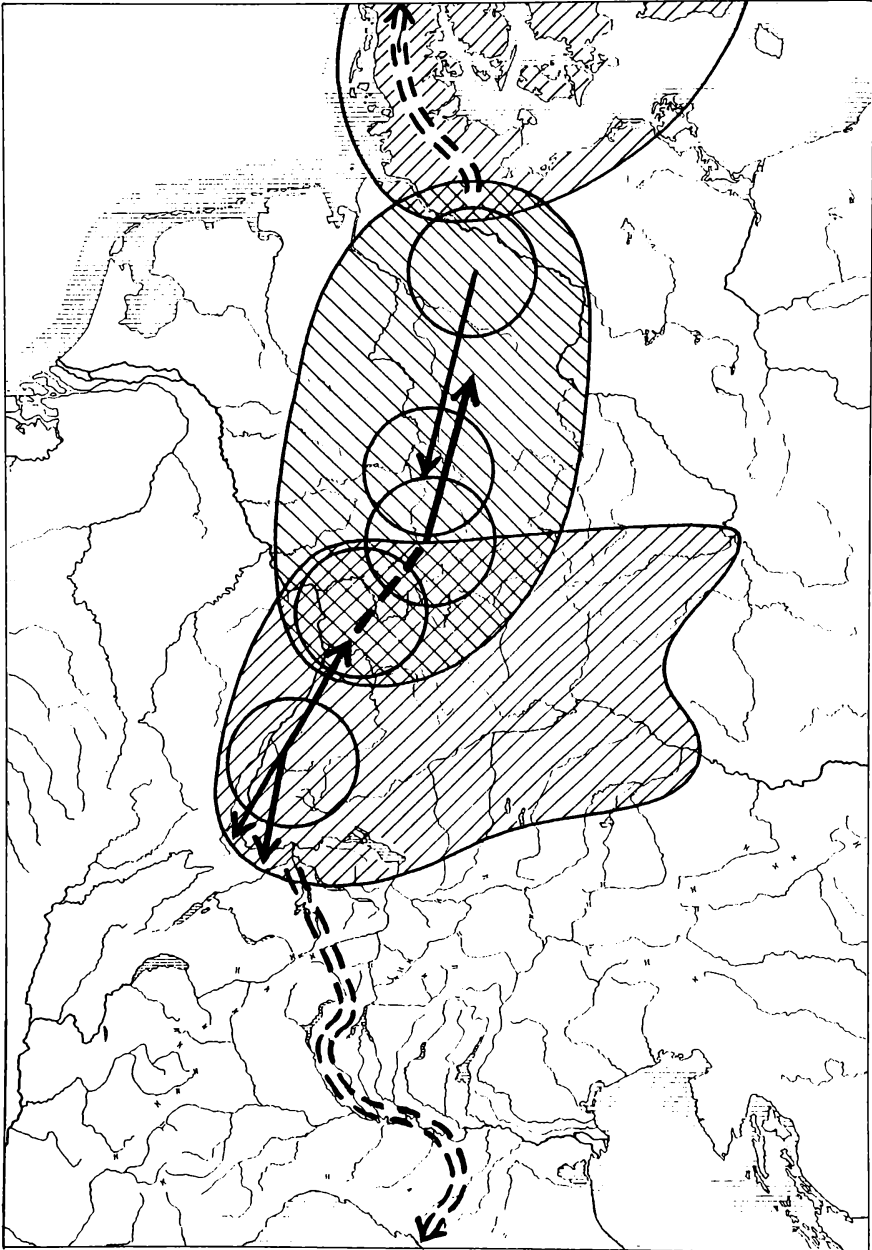


Figure 9. The N/S axis of contact as it emerged in the Reinecke middle Bronze Age (1600–1400 BC), linking the Tumulus cultures with Scandinavia and Italy. Two types of distributions of bronze artefacts are shown: octagonal-hilted swords (produced in the west-Alpine area, with imports/imitations in Scandinavia), and a local ornament-type (wheel-headed pins). The arrows link Jockenhövel's *fremde Frauen*: female burials with 'out-of-area' ornament combinations. A similar pattern underlies the distribution of amber ornaments.

added value due to manufacturing processes. Textiles of this period, well known from the Danish tree-trunk coffin burials under tumuli (Barber 1991:176–83), are relatively simple in character with a number of archaic features; this is consonant with the absence of defended centres where weaving (and metallurgy) took place in the hillfort-centred pattern.

The bulk of such trade was undoubtedly polythetic, in that only a very few items (like amber beads) travelled over maximum distances. Another important item was undoubtedly tin, of which the Tumulus network controlled the major sources (having expanded eastwards into Bohemia and the west Carpathian Basin, as well as having Atlantic links). The general impression, however, is of a relatively unsophisticated group of cultures presented with a new opportunity for indirect contacts with the Mediterranean. It is likely that certain features like folding stools (as symbols of chieftainship: Wanscher 1980) spread along the axis from Italy to Scandinavia between 1600 and 1300 BC, but there is little to suggest the regular transfer of materials between central Europe and the Mediterranean (although high-value metals like tin and gold remain a possibility). Mycenaean interest was largely satisfied by products obtained within the Tyrrhenian cycle; and its periphery extended little beyond Apulia and Sicily. (The Adriatic was not a major contact-route, and Aegean contacts focussed on western Italy.) Only very precious items were drawn in from a larger hinterland. Links between Mycenae and Wessex were of the most indirect kind, mediated through a chain of Tumulus cultures and their neighbours on the Lower Rhine: there is no evidence for the use of an Atlantic route and contacts via the west Mediterranean. Similarly indirect contacts probably continued to exist between north-west Anatolia and the Black Sea region, though this artery was less essential now breeding stocks of horses were widely established in the Near East; Troy remained a key location for high-value items, and was probably linked economically both overland to the Hittite economy and also by sea to the Aegean and other east Mediterranean maritime trading states.

How important was this set of indirect contacts between Reinecke middle-Bronze-Age Europe and the palatial Bronze Age of the Aegean and east Mediterranean? The evidence suggests that although such long-distance exchange chains might find new southern outlets, as Mediterranean maritime trade routes extended westwards, it was not until the first millennium that the conjunction of axial Mediterranean maritime routes and trans-European land routes were capable of producing a real transformation, when it was to lead to the genesis of new focal areas and future cores such as Etruria and, ultimately, Rome.

LATE BRONZE AGE, 1300–700 BC (Figs 5B, 11)

From around 1300 BC onwards (though more rapidly after 1200), parts of the east Mediterranean core area began to experience a recession or collapse which affected the whole of the world system, and provided new opportunities both for its margin and also for certain well-situated enclaves such as Cyprus, where greater continuity of economic life is evident (Sherratt and Sherratt 1991a). Links between Cyprus and

the central Mediterranean continued, though now more directly to the silver-rich island of Sardinia – reached by sailing along the southern shore of Sicily rather than by negotiating the Tyrrhenian (Vagnetti 1986). In this post-palatial period, the command economies of mainland Greece gave way to less formal links: connections were maintained with southern Italy, and shipping may have penetrated along the Adriatic as far north as the Po, to the important coastal site of Frattesina. These links are reflected both in the distribution of Peschiera daggers in the thirteenth century and ‘Tiryns-type’ amber beads in the twelfth/eleventh (maps in von Hase 1990: figs 9 and 13), indicative of a developing relationship between these areas. Italy witnessed an important exchange of central European and east Mediterranean cultural elements, in which European fighting styles and armaments (with their solid-casting technology) spread to the east Mediterranean, and east-Mediterranean technologies of sheet-bronze working (for vessels and armour) and fine carpentry (for new types of wheels: Pare 1987) spread into central Europe (Sandars 1985; 1983). Such advanced technologies may previously have been monopolised by palace workshops. These innovations spread rapidly around temperate Europe, as part of the new configurations of the Urnfield period; and the general increase in the volumes of metal produced and exchanged demonstrates the degree to which the area was both economically independent of developments in the core/periphery region, and in possession of its own autonomous language of consumption. Indeed, Italy, Greece, and Anatolia were affected by the expansion of temperate-European weaponry and also clothing styles²² (as indicated, for example, by the spread of fibulae). Central European patterns expanded westwards as well, into France and Iberia; though the Atlantic seaways increasingly developed an alternative culture and set of connections, albeit influenced by Urnfield innovations.

The Urnfield period in west-central Europe was marked by the appearance of the kinds of fortified centres that had appeared in the later part of the early Bronze Age in south-east and east-central Europe, and had continued in some parts in the intervening period. This was not just a military innovation, since it is in precisely such sites that evidence for metal working and textile working appears; and a main function of these sites seems to have been to guard manufacturing facilities, for the addition of added value, especially at sites with an outlet on trade routes and axes of communication. The simple textile production of the Tumulus-culture area did not apparently require such attention, but the more complex processing of the eastern tradition apparently did. The beginning of the Urnfield period in west-central Europe coincided with a phase of agricultural intensification (field systems, new crops, changed plough design) which are best explained as part of a set of agrarian changes to increase the productivity of arable areas so as to devote a greater acreage to livestock production, especially sheep for wool. The more intensive pattern of the south-east now spread into central Europe, to replace the more extensive (and probably cattle-based) practices of middle-Bronze-Age Tumulus groups.²³ This was intimately linked with the expansion of metal working, through the pressures to produce a further surplus in order to support an increased circulation of bronze (which in some areas seems to have been an inflationary spiral); and it was this which

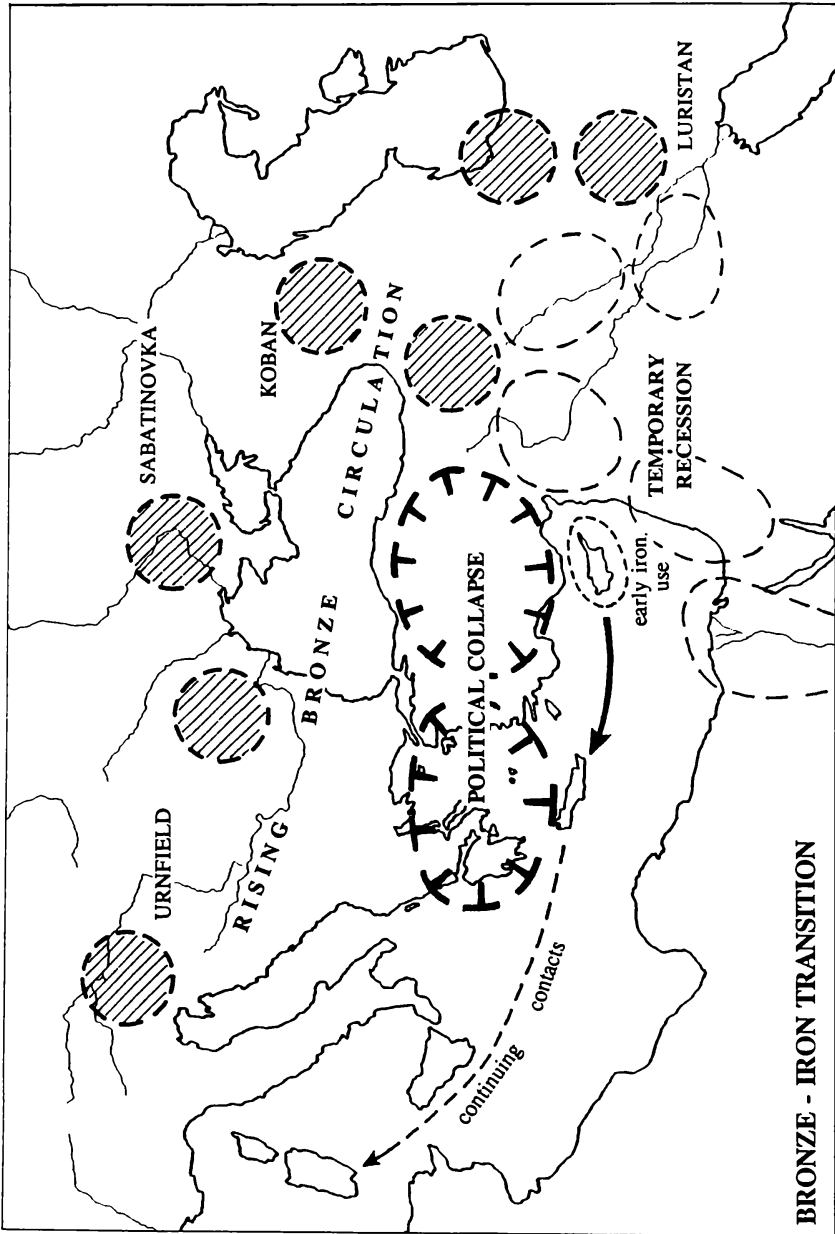


Figure 10. Areas of expanding bronze industries on the margins of the urban crisis in the core of the world system (Bronze Age/Iron Age transition), 1200-800 BC.

caused a radical reorganisation of systems of primary production (Rowlands 1980). This 'grass-roots' (literally!) reorganisation thus went hand in hand with a continuation and expansion in the circulation of bronze.

Textiles (now in twills as well as simple weaves: Barber 1991:186–94) are thus likely to have formed an increasingly important element of local circulation. The later (Hallstatt D) textiles from Hochdorf show to what extent value could be added by decoration even in simple techniques: even though their bulk and difficulty of distribution without waterborne transport inhibited the development of a bulk long-distance trade of the kind that characterised urban producers in the Mediterranean, with their access to maritime transport. The bronzes themselves are also symptomatic of diversification of production in other organic goods – the proliferation of elements of horse-harness and vehicle decoration, needing leatherwork, and the appearance of specialist tools like saws and gouges, implying carpentry. Smiths' tools also demonstrate improvements in metal working itself, especially for items of conspicuous display like drinking equipment, weapons, armour, and musical instruments. It was the prime value material of bronze which remained central to circulation and long-distance movement. Certain objects (especially sword types) achieved an inter-cultural currency. Crossing between stylistic ones, more localised object types would need to be recast in local forms. Hence bronze was now often traded as scrap, indicating a degree of commodification of its abstract value as metal. This is shown also in the appearance of certain types of crude ingots – which, however, were never highly standardised like Bronze-Age Mediterranean ones.

How does this growth in European vitality appear in the context of a world systems view? Why did it coincide with downturn in the core region? Were the two contrasting trajectories causally linked, or did Europe simply continue a pattern of uninterrupted growth at a time of collapse elsewhere? Did Europeans benefit in some way? It may first be remarked that Europe was not alone, for a similar pattern of expansion (most evident in bronze industries) is evident all around the urbanised ancient world: on the steppes, the Caucasus, and Iran (Fig. 10). While these areas had some indirect, chain-like links with each other, it is their zonal position rather than any integration between them that seems to explain their parallel courses. Yet it is hard to explain simply in structural terms, as the retention and deployment of surplus value formerly transferred to the core, since the margin was not linked in this intimate fashion, and the explanation appears anachronistic for Bronze-Age Europe. When economic development is frequently attributed to the stimulus of contacts with an expanding world system, the withdrawal of contacts cannot simply be used to explain the same phenomenon!

One point to emphasise is that what happened in the core was a collapse of centralised, command economies, which itself removed political constraints on technologies and the movement of strategic materials (Sherratt and Sherratt 1991a; 1993; E. S. Sherratt forthcoming). It also involved a fundamental technological change, from bronze to iron (which was deferred in much of temperate Europe for another half millennium). Europe and the other areas mentioned undoubtedly received some spinoff from the end of palace monopolies on certain craft skills, and from the more

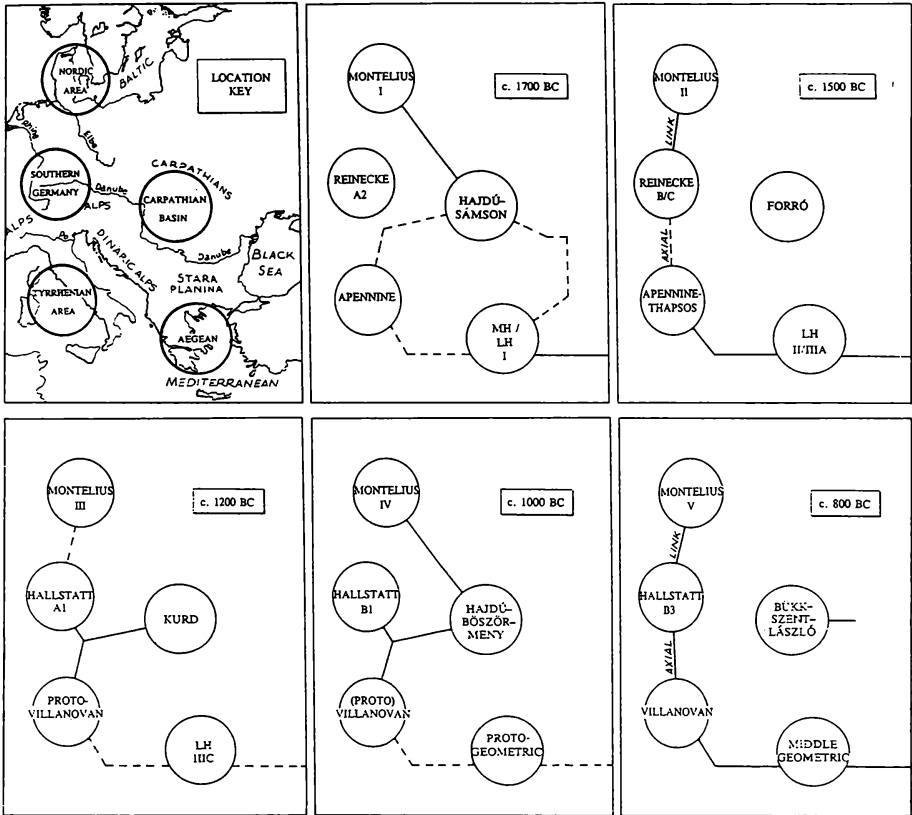


Figure 11. Alternative configurations of metal producers and consumers in Bronze Age central Europe, at selected times between 1700 and 800 BC: circles indicate bronze working foci, solid lines indicate metal transfer; broken lines indicate contacts and other material transfers (schematic). Intervening dates would yield intermediate and other patterns.

opportunistic trading pattern that resulted; but they also maintained a pattern of economic activity based on the circulation of bronze. In a sense, therefore, they maintained a conservative attitude whilst benefitting from the indirect results of urban collapse. It should also be borne in mind that prehistoric, marginal, Bronze-Age economies were not simply evolutionary stages in the development of urbanism and statehood; they had their own motivations and dynamic, even though some of the pre-conditions were provided by the existence of urban systems elsewhere. Many of the mechanisms of circulation were actively resisting the kinds of commodification and de-personalised exchanges which characterised urban trade networks. The growth of competitive destruction (paralleled by a comparable growth in production) which produced the massive hoards of Urnfield bronzework can be seen as symptomatic of the insecurity of indigenous elites when threatened by new sources of power.

It is the shifting patterns of the inter-regional movement of bronze which dominate the archaeological record, and probably the economic life, of the period from 1300 to 700 in temperate Europe (Fig. 11). The three key players were metal-dependent Scandinavia, and the Alpine and Carpathian source-areas, each with their own regional cultures and traditions of bronze working (Thrane 1975; Kristiansen 1981). Metal arrived in Scandinavia either via north-west Germany to Jutland, or via the Oder mouth to the Islands, so that different parts of the region enjoyed prosperity when supplies privileged their particular area. Although the patterns are complex, they can be broadly summarised as: a long period of relative isolation for Scandinavia beginning around 1200 BC, when the Carpathian region was closely connected with Italy, and Scandinavia recycled metal imported in previous periods; a brief re-formation of Carpathian-Scandinavian links (mainly for prestige items) around 1000 BC; and then a gradual shift to a full north-south alignment of Scandinavia, the Alps, and Italy from 900 BC onwards, as Italian links (through Sardinia) with the reviving east Mediterranean became stronger. Cypriot and Phoenician long-distance trade with Sardinia revitalised the Tyrrhenian cycle, and in Etruria the Villanovan period saw the emergence of large, nucleated centres (Matthäus 1988). At the same time, in east central Europe, the Carpathian region increasingly looked eastwards to the steppes and the Caucasus. The inter-regional routes within Europe were marked by the spread of currently fashionable forms of bronze drinking-vessels: cups, and increasingly also handled situlae or bowls from which the drink was ladled (von Merhart 1969:296–369, Karten 1–9).

Amber continued to reach Italy and the Aegean, at first from the Carpathian Basin (probably obtained in the east Baltic region) and then from Scandinavia via the Alpine region (Jensen 1965). The great north/south chain that had emerged by 800 BC followed a broadly similar course to that followed around 1500, but displaced slightly to the east: in the north it followed the Elbe down to Magdeburg, thence to the Main, through Württemberg and Bavaria and around the eastern edge of the Alps. In the middle part of its course it was marked by a network of hillforts (some of them with box ramparts), as Jockenhövel has again demonstrated (1975:57), which not only protected trade routes but provided craft workshops and dominated an agricultural hinterland.²⁴

To summarise: the development of the European margin during the Bronze Age was characterised by chains of regional economies (themselves with a limited degree of core/periphery differentiation), which contributed specialised products (though with a high ratio of prime to added value) into inter-regional networks that at certain periods traversed the whole breadth of the continent – articulating, however weakly, with the maritime core/periphery routes of the world system. Metals formed one of the main commodities and sources of liquidity within the system: inter-regional trade was largely a record of their changing patterns of flow, balanced by the movement of a few high-value inorganic and organic materials: amber and salt, furs and skins, with textiles as an increasingly important element.

FROM MARGIN TO PERIPHERY: THE EARLY IRON AGE, 700—500 BC

The development of trade routes in the margin, as described above, are a necessary background to understanding the development of a European periphery in the following two centuries. These, in turn, help to put earlier developments into perspective. The beginnings of phenomena characteristic of a periphery in central Europe were the result of the incorporation of Italy into the world system as a nascent core-area. The extension of urban networks to north-west Anatolia and Greece during the Bronze Age had produced indirect contacts with temperate Europe: but the old crystalline massif of the Balkans, and the complex Tertiary fold-chains piled against it, was a barrier to more direct links. Italy, despite the obstacle of the Alps, offered more direct access to central Europe – both through Alpine passes and around the sides – and the Alps themselves were an important source of metals. Italy thus came to be an interface between the maritime trade networks of the Mediterranean and the overland links of continental Europe, in a way that Greece could not.

This process was already evident in the closing centuries of the second millennium; but the depth of the east Mediterranean recession, and the fundamental changes associated with the beginning of the use of iron, interrupted the continuity of the process. In the early centuries of the first millennium the momentum was regained, as Phoenicians penetrated first to Sardinia and then the western Mediterranean, while Phoenicians, Aramaeans, and Greeks tapped into the resources of the Tyrrhenian cycle (Sherratt and Sherratt 1993: with refs). By 750 BC these contacts (through trading stations like Pithecusae) were initiating a fundamental transformation of peninsular Italian cultures, which was to lead to the urbanisation of Etruria. This area had links in three major directions: by sea with Sardinia, along the coast to the growing number of Greek colonies in the south in the later eighth century, and northwards by the Florence-Bologna link across the Apennines to the Po valley and the circum-Alpine region. At the interface of land and sea routes, it thus became a primary node of contact between maritime and overland systems of transport. For over a century (or more) it had been linked to the axial north-south route with Scandinavia; now, as its own economy intensified, it began to transform these indirect ('marginal') links into a greater degree of structural inter-dependence and asymmetry (Fig. 12a).

One of the commodities obtained by Greeks in Etruria was iron, from the rich deposits of Elba; and an iron industry developed on a large scale in response to 'international' demand. The larger quantities of iron circulating in its northward contact area began to tip the scales against the use of bronze for weapons and tools. Iron had been known in temperate Europe for some centuries, but largely resisted because of the dependence of tribal elites, and the economic system which supported them, on the circulation of bronze. Indeed the inflation in bronze production could in part be seen as a response to this threat – like the frenetic production of Breton currency-axes which form such massive hoards in the Atlantic region. After 750 iron began to replace bronze in a fundamental way over most of Europe (beginning in

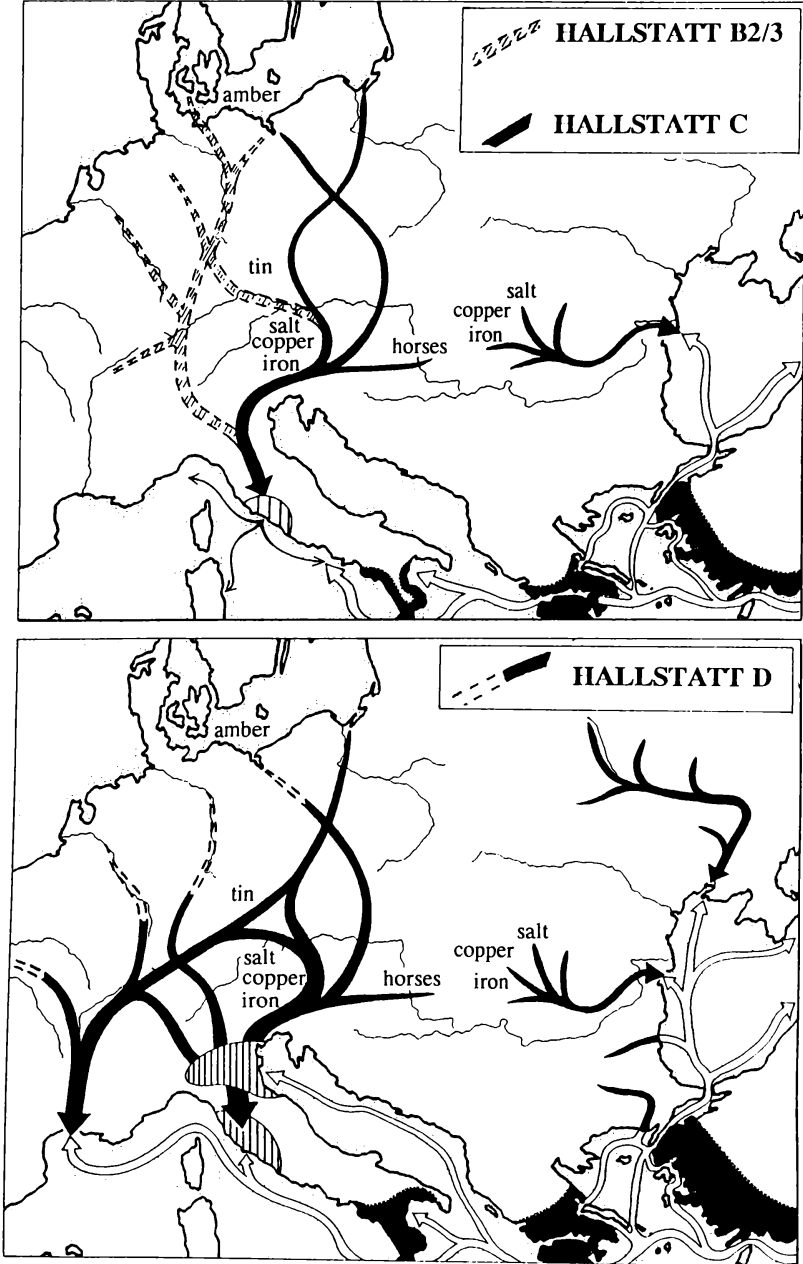


Figure 12. The shifting pattern of long-distance routes linking temperate Europe with the Mediterranean, 900–500 BC (schematic). The maps show the eastwards shift of N/S contacts between the Bronze and Iron Ages (top) and the intensification of trade in the sixth century (bottom).

central Europe though only being completed in Scandinavia after 600 BC). The replacement of bronze as the main medium of circulation had profound consequences for the social structures which were based upon it. Losing control of their monopoly of an imported raw material (since iron, although initially restricted by technology, became much more generally available from more widespread deposits), elites turned to other items of material culture – of which imported manufactured goods²⁵ from Italy were the most important (though horses and their equipment may have been another²⁶). Manufactured goods thus to some extent took on part of the former role of bronze, though without its liquidity. The existence, not far distant, of urban manufacturing centres whose technology was radically more advanced than their own provided the conditions for an increasing dependence on imports – paid for by the intensified extraction and mobilisation of local products, which were mostly raw materials with little added value. This produced a circum-Alpine periphery to central Italy, which increasingly became part of the chain of core regions at the centre of the world system.

The societies of the periphery at this time (the Hallstatt C and D periods: Fig. 12)²⁷ were themselves differentiated in function, in a step-like sequence from the core region of Etruria, as technologies spread and local manufacturing of certain items began, or as environmental settings further out provided the opportunity to intensify mining and salt production, livestock raising, and hide or wool production, or to channel products from a wider hinterland – the horses of the Carpathian Basin or the more distant sources of amber and perhaps other northern products. (Slaves, too, perhaps; though this is probably more characteristic of the later Iron Age.) The axis of these developments lay north-eastwards, to the Po basin and round the eastern edge of the Alps in Slovenia, following the major northward route established at the end of the Bronze Age. Beyond the Danube, however, a different pattern of northern links now emerged; for the former connections via southern Germany and the Elbe to Scandinavia were replaced by a new pattern of northward links to the east Baltic, around the mouth of the Vistula – reached through Bohemia and Moravia, and then from the upper Oder across Great Poland to the Vistula.²⁸ This route, across the trend of the NW-flowing rivers, brought a new importance to central Poland (where the medieval Polish state was to have its origins, for similar reasons), in the lake region between the Oder and Vistula where fortified sites such as Biskupin dominated this important part of the route. Between this feeder area and the east Alpine area with its great hillforts and intensive metal-extraction lay the area of Czech waggon-graves, where a middle zone of local elites grew rich not only on the passing traffic but also fed in further commodities such as tin – still needed for what was now luxury bronze-production in the Mediterranean.

Away from this brightly illuminated chain of contacts, however, other parts of central and northern Europe experienced a return to more inward-looking economies, as bronze ceased to circulate and no other external links sustained the sorts of power-structures formerly established by it. Manufactured goods did not penetrate to these regions. As central-European copper and tin went southwards to pay for manufactured imports, Scandinavia was forced off the bronze standard. The

decline was particularly acute in the areas of Württemberg and the Wetterau which at the end of the Bronze Age (Ha B2/3) had become prosperous by the traffic with Scandinavia; in these areas hillforts (and lake-villages in the Alpine foreland) were abandoned in Hallstatt C and a less centralised pattern of settlement took over (Jockenhövel 1975; Härke 1979).²⁹ Only in Ha D, with the opening of new outlets over the west-Alpine passes and via the Rhone, were these strategic hillforts re-occupied. The changes which occurred in the sixth century with Hallstatt D were the result of further intensification of competition in the central and west Mediterranean, as Greeks extended direct contacts to the head of the Adriatic (Spina) and the mouth of the Rhone (Massalia), while Etruscans incorporated the semi-periphery of the Po basin and intensified links across the Alps. A new supply network up the Rhone revitalised Württemberg and Bavaria, where waggon-graves now proliferated around the hillforts (some more elaborately built as *Fürstensitze*), and also extended further west to Burgundy, with its access to the upper Seine. This network may have captured some of the central European metal supplies (especially tin) formerly moving down the east Alpine route; but it did not remake the northern links to Scandinavia. Access to the west, via the Seine and Rhine (for salt?), seems to have become more important.

Two other parts of southern Europe developed as peripheries at nodal interfaces between Mediterranean maritime trade and European routes. In Spain, Phoenician colonies stimulated the formation an indigenous urban core (like Etruria), the Kingdom of Tartessos on the Lower Guadalquivir, which acted as the end point of the long Atlantic routes which had grown up in the earlier first millennium. In the Black Sea, Greek colonies founded first at the mouth of the Danube (Histria) tapped the metals, salt, and stock-raising capacity of Wallachia and Transylvania (Taylor 1989), and then at the mouth of the Dnepr and on the Sea of Azov which supplied not only grain but also the more valuable commodities to which the long-distance routes of the Dnepr and Don gave access. The great Scythian fortress at Bel'sk (near Poltava on a middle Dnepr tributary), covering 4000 ha, gives a comparative perspective to its zonal equivalent, the Heuneburg on the upper Danube (.00075 of its area!). All these developing peripheral areas were based on long-distance routes and exchange cycles established during the Bronze Age, tapped into and further stimulated by the active intervention of urban trading networks.

The prosperity and social structures of these peripheral regions were closely dependent on changes and shifts within the core. While the shift from Hallstatt to La Tène centres of prosperity can be seen as an alteration of regional functions within the Italian/central European axis, the middle-La-Tène migrations may reflect a more global shift. As Greek demands on the resources of the central and western Mediterranean slackened in the fourth century – with the development of the Hellenistic Empires, deeper involvement in the East and the extension of Black Sea interests – so Italy became less crucial as a trading partner and Etruscan interest in the north less vital for the Mediterranean as a whole. On a macro-scale, it may be that the Black Sea (Scythian) hinterland took on some of the importance of the west-central European (Celtic) hinterland, so provoking the turbulence associated with the southward

migration of the Celts, now eager to sieze by plunder (or earn through mercenary service) the riches that were no longer reaching them through peaceful trade. It was only with the growth of Roman power, following the conquest of Carthage, that west-Mediterranean economic and political interests were decisively extended into southern temperate Europe.

THE TRANSFORMATION OF A CONTINENT

The theme of this paper has been the role and structure of long-distance contacts in prehistoric Europe, in an effort to define the specific characteristics of the Bronze Age. The crucial concept has been that of a margin, first to the nuclear beginnings of agriculture, then to the nuclear beginnings of urbanism and the emergence of core-periphery structures. The characteristic of the margin is that it is dominated by time-lag phenomena – ‘escapes’ – rather than structural interdependence with the core. This makes it a useful term to apply across period divisions, from the Neolithic to the Iron Age and beyond.

Throughout this time, however, the nature of cores, peripheries, and margins slowly changed – with more complex material cultures, faster communications, and larger concentrations of capital at the centre. Each period saw its specific scale and character of interactions, and the emergence of new properties in each of these zones. The ‘ancient’ and ‘modern’ world systems were distinct phases of a structure which had already passed through many millennia of evolution. As well as the changing nature of the core areas themselves (states, empires, growth of a manufacturing base), a key aspect of this evolution was the growing internal articulation of the margin, which itself therefore came to be an increasingly important factor in the way that the core and peripheral areas could develop: the existence of such indigenous exchange systems allowed areas with a greater concentration of capital to tap into and divert their flows of products.

Many of the features which came to characterise the Bronze Age were transmitted by time-lag processes analogous to the slow spread of flat-based pottery in the later Neolithic. This applies not only to elements of metal technology and usage, but also to textile materials and weaving techniques, transport technologies, food and drink. (Many of the elements of the Urnfield complex can be seen as the extension to west-central Europe of an economic pattern which had existed in east-central Europe for 500 years.) Nevertheless some of the most important elements had been injected into the continent in episodes of catalytic contact, as the process of urbanisation extended rapidly across the Mediterranean as a result of the possibilities of maritime transport. The first and most important of these was the use of bronze for a range of weapons and ornaments, and the intensified production of metal to which it gave rise. The liquidity provided by the widespread use of bronze allowed a much greater degree of articulation between regional exchange cycles than had been possible in the Neolithic. The introduction of bronze as a material generally desired by local elites not only created new asymmetries but resulted in a chaining effect which linked regions in a consistent pattern of demand. Although at first dependent on a narrow range of

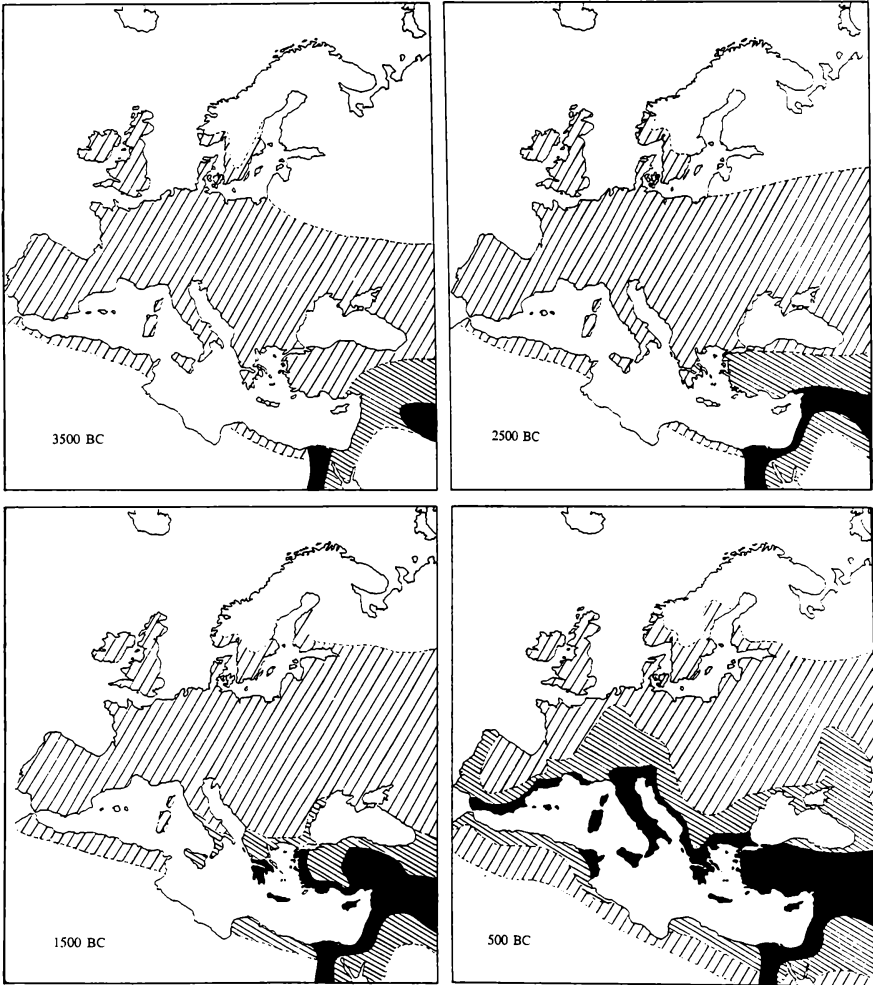


Figure 13. Summary maps of the areas occupied by core, periphery and margin of the world system in Europe and adjacent areas, 3500–500 BC. 'Core' is defined as an urbanised manufacturing zone with bulk transport and state organisation, 'periphery' as a raw material supply zone importing manufactured goods, and 'margin' as the area of 'escaped' technologies and long-distance contacts based on directional exchange-cycles.

high-value items of natural occurrence (of which amber was the principal non-metallic resource), this led to a much wider range of materials being drawn in to the pattern of inter-regional exchanges; and the specialised systems of procurement needed to support this created localised core/periphery asymmetries. This in itself caused a realignment of wider links – no longer reflecting just the complementarities of a few naturally occurring resources, but also the organic commodities mobilised by the new volume of regional exchange. These longer chains followed a broadly

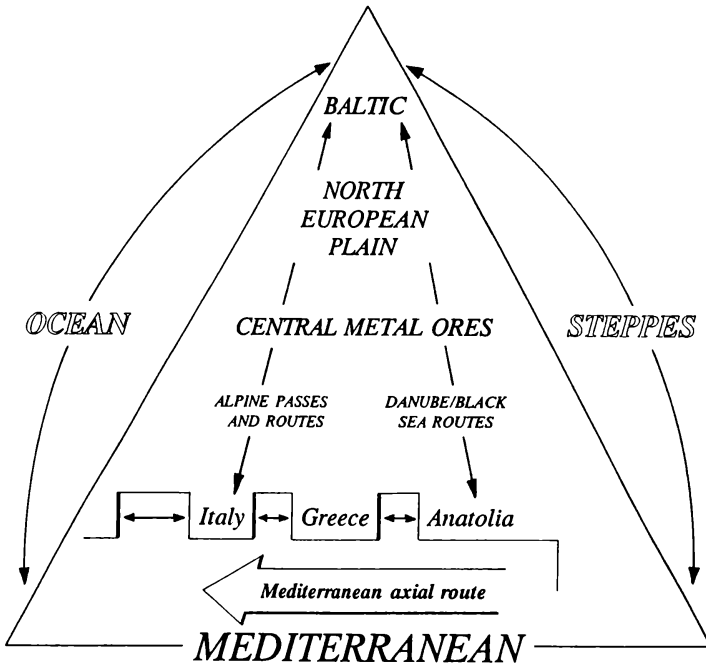
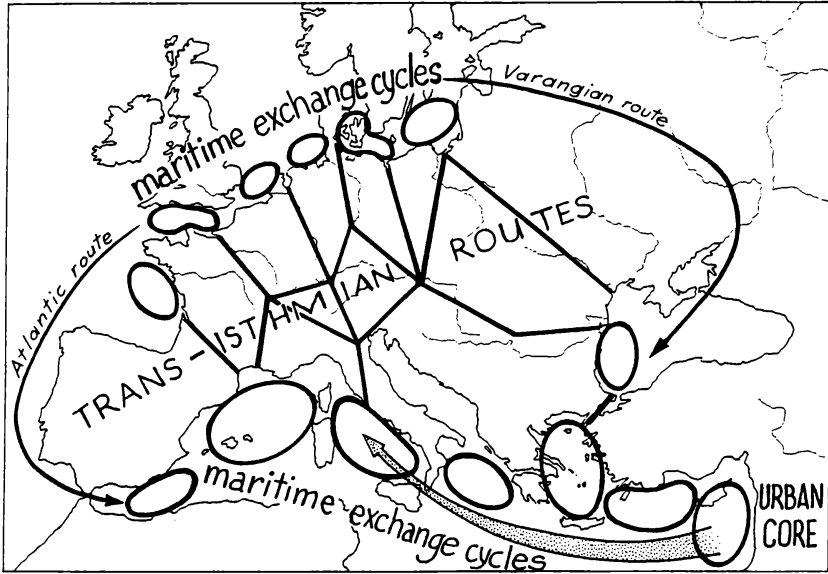


Figure 14. The structure of maritime contacts and trans-continental routes within Europe, and their geographical rationale: (a) maritime exchange cycles and linking routes (b) the European 'Isthmian triangle'.

north/south alignment.

In general terms, these processes in temperate Europe paralleled what was taking place in the Mediterranean during the same period: the extension of networks concerned with the circulation of a few high-value, low-bulk materials and their broadening into systems producing greater volumes of other (often organic) materials. This is the sequence that Sue Sherratt and I (1991a) have described as the move from 'luxuries' to 'commodities' in the context of the emergence of palatial organisation in the Aegean. The difference lies in the degree of added value which was produced by the early palaces in areas such as Crete. Such centres moved rapidly from peripheral contact to more equal participation in inter-regional trade, through the creation of manufacturing facilities and the organisation to support them. This move was facilitated by the relative proximity of the core, the possibilities of direct maritime transport, and the specific resources of the Mediterranean environment (fine-wool sheep and tree-crops, both with a high capacity to absorb added value). In consequence the system was capable of expansion to deal in bulk products (even if relatively smaller than the volumes handled at this time in the east Mediterranean). Temperate Europe, by comparison, only passed the threshold of such centralised production much later, in the Iron Age.³⁰

As well as manifesting these generalised similarities to contemporary Mediterranean development as the result of a common background, Bronze-Age temperate Europe was also linked to it in a more directly historical way by episodes of contact. These episodes helped to determine the process of propagation by which localised core/periphery units emerged and the specific, chain-like patterns in which they became linked. These routes, reaching deep into the continent, were also significant for Mediterranean societies themselves. The growth-points of Mediterranean civilisation – Troy, Mycenae, Etruria and later Rome – occurred where northern feeder routes entered the arteries of maritime trade which connected the urban oecumene. Although islands such as Crete, Cyprus, and Sardinia (as well as smaller nodes such as Lipari) played a crucial part in the westward spread of urban systems, long-term growth was concentrated in areas which had a continental hinterland. The marginal routes created by successive phases of westward expansion – along the Danube, across the Alps, and later via Spain to the Atlantic – were vital in determining the future expansion of the great centres of Mediterranean civilisation.

Particularly significant for future developments was the tentative formation around 1600 BC of the direct route between the Baltic and the Mediterranean: the corridor canonised in an older generation of textbooks as the 'amber route' – the first set of directional exchanges of trans-continental proportions. Such long-distance transfer routes, carrying precious objects over often vast spaces of intervening territory, are fundamental to Schneider's view of the importance of the margin (1977: 21–3), since they have often been instrumental in determining the further growth of peripheries and ultimately cores. The existence of preferential flows of rare materials along these routes provided the opportunity for advantageously placed areas to intensify their own production of raw materials and such finished products as were within their capacity to create. The 'amber route' showed a surprising longevity;

interrupted in the centuries before 1000 BC, it reappeared c. 900, shifted eastwards c. 700, disappeared for some centuries again, before re-emerging in Roman times and then continuing in the form of the Varangian route to Byzantium. The longevity of this structure can be explained by the way that it not only supplied an exotic material that was highly valued for its appearance and properties, but also ran across the latitudinal zonation of the continent – linking the metal resources of the Tertiary fold-chains of central Europe with northern products such as resins and furs. Bridging the European isthmus, it created a relationship between the maritime exchange cycles of the Baltic with those of the Mediterranean (Fig. 14). During the course of its existence, the ‘amber route’ grew from a relay of exchanges supplying the magical *elektron* into a regular flow of northern products to the Mediterranean. Such products had previously circulated as parts of more localised complementarities, but were increasingly mobilised for long-distance transfer along with the original exotics. This increasing volume of supply was closely related to the political development of the areas along its route. Just as the medieval states of Poland and Russia were to be created at nodal points on these networks in the North European Plain, so the Hallstatt polities grew up around the Alpine approaches to Italy. Indeed, it was the medieval development of this north/south axis, linking the textiles of Flanders and the metals of central Europe to the Mediterranean maritime trade of Italy, that created the ‘medieval world-system’ (*mittelalterliche Weltwirtschaft*) described by Rörig (1933); and it was the emergence of the great ‘trans-isthmian’ routes across the continent which defined for Braudel the genesis of Europe itself (cf. Brun 1987: fig. 84). The Bronze-Age world system was the first, tentative exploration of the structures which were to underlie its later history.

Acknowledgements: This essay reflects work done in conjunction with Susan Sherratt, and has been stimulated especially by the work of Mike Rowlands and Kristian Kristiansen, and by discussions with Steve Shennan on central European matters. It is dedicated to the three Susans and Lotte. I am especially grateful to Greg Woolf and Cyprian Broodbank for patiently improving my drafts, and to Kristian Kristiansen for showing me early versions of his paper ‘The emergence of the European world system in the Bronze Age: divergence, convergence and social evolution during the first and second millennia BC’.

NOTES

1. This paper is one of three dealing with the relationship of temperate Europe to the east Mediterranean: Sherratt 1993a deals more fully with the transfer of meanings and the nature of Bronze-Age material culture; Sherratt 1993b explores its intellectual roots, in an imaginary conversation with a sceptic. All three draw on work undertaken by Susan Sherratt on the development of early Mediterranean trade.

2. Recent results pertaining to the European Bronze Age, including work by Becker et al., Bebbler et al., Billamboz et al., Gross, Osterwalder and Schwartz, Rageth, and Sperber, are referenced and briefly discussed in Sherratt and Sherratt (1991b).

3. Childe's model, and its inherent chronological assumptions, underlies the valuable surveys of material relevant to long-distance connections by Vladár (1973), Bouzek (1985a; 1985b) and Schauer (1984; 1985) – which, however, are vitiated (especially in the case of Schauer) by the conflation of material earlier than the Reinecke Middle Bronze Age into what is presented as virtually a single episode. On the other hand, the critical and minimalist interpretation of Harding (1983; 1984), while valuable for its scholarship and sound in its chronology, is frustrating in its resolute refusal to offer a coherent alternative.

4. The term 'world system' (or, rather, 'world-system' since it is essentially a translation of Fritz Rörig's *Weltwirtschaftsystem* or Fernand Braudel's *économie-monde*) was introduced by Immanuel Wallerstein (1974). His work brought together the Braudelian historical perspective and the views of economists like Andre Gunder Frank and Samir Amin on the 'development of underdevelopment'. These ideas were elaborated for the period of European expansion from the sixteenth century. More recently Frank has attempted to break out of the assumption (common both to Marx and Weber) of the uniqueness of capitalism and explore similar phenomena in earlier contexts (e.g. Frank 1993). These ideas were taken up within anthropology by Kajsa Ekholm and Jonathan Friedman (1979; 1985), and first applied to prehistoric Europe by Susan Frankenstein and Michael Rowlands (1978). See in general Rowlands, Larsen and Kristiansen (1987), and further bibliography in Sherratt (1993b).

5. The concept of a semi-periphery is in many ways a political as much as an economic one; and it is more important for historical contexts than the largely prehistoric ones considered here. In a crude economic definition, the Levant forms part of a core zone, although often dominated politically by Egypt or Mesopotamia and (on a logical extension of Wallerstein's definition) acting as a semi-periphery to them.

6. The period sometimes termed 'protohistory' (but better, perhaps, 'parahistory' to indicate its *contemporary* relationship to historical societies).

7. The first formulation is Sherratt (1981), updated in (1983) and (1987).

8. It is important to note that 'Copper-Age' societies in south-eastern Europe existed at the same time as 'late Neolithic' ones in the rest of Europe, and with whom they were in contact. The terms do not refer to discrete blocks of time in a way which is valid for Europe as a whole, in the way that 'Bronze Age' does. Terminologies are not only time-transgressive in different parts of Europe, but also inconsistent. The cultures of the period from 3500-3000 BC in the Carpathian Basin are called 'late Copper Age', while their closely related contemporaries in the Balkans follow Aegean practice in using the term 'early Bronze Age'. (This is resolved in Romania by using the phrase 'Period of Transition!') Internal divisions of the Neolithic in western and northern Europe are equally inconsistent, so that the Danish middle Neolithic is contemporary with the French and British late Neolithic. These local usages are arbitrary in that they do not reflect common criteria for period divisions.

9. I am unhappy with the word 'prestige' as perhaps anachronistic in this context, since (as with 'elite') its connotations are so closely associated with the situation of peripheries rather than margins; the word 'cult' – though with its own difficulties! – might equally well be employed. This usage would situate the spread of wheeled vehicles in the same interpretative framework as (say) megaliths. What are now automatically perceived as utilitarian innovations must be equally seen as cultural phenomena, treated in different ways by different groups both within and between societies. (Similar remarks would apply to the spread of farming itself.)

10. Their reception was thus dependent on pre-existing social structures, and this accounts for the rather different patterns evident in south-eastern and central Europe, where 'individualising' elites already existed, and 'outer' (northern and western) megalithic Europe, where 'comunal'

patterns prevailed. In the latter case, the appearance of an 'individualising' pattern had a revolutionary character, with the beginning of Corded Ware and Bell-Beakers. In the former case, the traction complex was accompanied by the drinking complex; in the latter, the two were offset.

11. See Chernykh (1992) for an account of the history of metal working in the Caucasus and Pontic steppes (and beyond): the appearance of this work in English should considerably widen the perspective within which these problems are often discussed.

12. Such specialised 'ingot-currencies' typically exist on the edges of standardised (usually silver-based) media of exchange – for instance the iron spits (*obeloi*) of the Greek world, from the tenth to seventh centuries BC, or the 'currency bars' (sword-blanks) of lowland Britain in the later Iron Age. Bronze in Bronze-Age Europe had attributes of both silver and iron in these later systems, but was less specialised than either.

13. It is impossible to resist the comparison of the first phase with technological modernism – the spread of Coca-Cola and concrete office-blocks – and the second phase with post-modernism and the rediscovery of ethnicity!

14. The terminology, although more straightforward than that of the Neolithic/Copper Age, has its pitfalls (see Fig. 5a). The beginning of the 'Bronze Age' in the Near East and eastern Mediterranean is a largely conventional usage, and in fact starts in a period when copper-arsenic alloys were in use. The regular use of copper-tin alloy (bronze) becomes marked in EB II and III (c. 2600–2000 BC) in the later third millennium (though arsenical alloys continued to be used). Copper-arsenic alloys were used in Europe from the fourth millennium, and tin appears in a small proportion of the objects in the later third millennium. The beginning of the 'Bronze Age' at c. 2300 BC in central Europe is an equally conventional usage, since bronze alloys only became common in the early second millennium. The central European periodisation of the Bronze Age is due to Reinecke and his elaborators, and its early/middle/late divisions are out of step with those of the Mediterranean, although significantly using some of the same break-points. The Mediterranean middle Bronze Age begins c. 2000 BC, and the late Bronze Age c. 1600 BC; the Reinecke middle Bronze Age begins in 1600 BC. The Reinecke late Bronze Age (here used as synonymous with Urnfield period) begins c. 1300 and lasts down to c. 700 (in round centuries); the Iron Age is conventionally begun at different times in the Mediterranean, broadly following an east-west process of conversion to Iron between c. 1200 (Levant) and c. 900 (Italy).

15. There is an inconsistency in Childe's thought on this matter. While correctly pointing (1957:44, 128) to Trojan (and specifically Troy II) analogies for features appearing at the beginning of Reinecke A, especially in the Middle Danube, ('So many types common at Troy recur in central Europe as to prompt the suspicion that Trojan tin came from Bohemia', *ibid.*: 44), he nevertheless dated the onset of Reinecke A at 1800 – despite setting EH III (and by extension Troy II) at c. 2300! Since he firmly believed that Mycenaean were responsible for beginning central European metal working, through contacts via north Italy, the apparently earlier Trojan ('Oriental') episode was a puzzle, only to be shuffled off without a proper explanation (*ibid.*: 129-30). The chronological depth given by radiocarbon resolves this puzzle.

16. The Óbéba (Beba Veche, Romania) cemetery belongs to the Pitvaros group, the first phase of the rich cemeteries at the mouth of the Maros (see Fig. 5b). It is contemporary with early Nagyrév, itself coeval with Bell-Beaker material of the Csepel group, and precedes late Nagyrév, which is contemporary with Nitra, Straubing and early Únětice, which are dated to 2300–2100 BC cal. (Kalicz 1982; see now also the useful summaries of sequences and ¹⁴C dates in *Bronzezeit in Ungarn* 1992). Recent dates from the settlement of Kiszombor Új élet, contemporary with the early phase of the Maros cemeteries, suggest a beginning around 2500 BC cal. (O'Shea 1992). This strongly suggests that input from the Lower Danube, and ultimately from north-west Anatolia, preceded the emergence of the latter metal working centres in central Europe.

Besides the pins and head/hair ornaments, the main arguments for an external input are related to the following objects.

1) Faience beads: the significance of the spread of this technique has recently been neglected by archaeologists as part of the reaction to the view that all faience beads were Egyptian imports (Harding 1984:87–103). There is no reason not to seek a sensible middle view: that they were locally made, but by an introduced technique. Again, the obvious source is Troy and north-western Anatolia.

2) *Ösenringe*: the coincidence of the appearance of similar forms in Europe and in Syria (at Byblos, Ugarit, and elsewhere) has long been noted (especially by Claude Schaeffer, who interpreted

them first as Syrian imports to Europe, and then – as a result of a conversation with the author – the converse!). Their contemporaneity on a radiocarbon chronology was remarked by Harding (1984:4). Transport over these distances in the late third millennium is highly improbable (which is why the periphery/margin distinction is so crucial); yet the coincidence remains. The most probable hypothesis is a common *Anatolian* origin (reflected only in a single find from Alişar, and not showing up as stray finds because of different recovery circumstances from those in central Europe), with *imports* in the Near East and *imitations* in Europe. It is notable that the European *Ösenringe* can be divided into two types: a south-eastern type in the eastern Middle and Lower Danube, which is thinner and more comparable with the 'Oriental' examples, and a central European type that occurs in large numbers in Únětice and related contexts (Bóna 1975:282–4 and map 7). The south-eastern type is chronologically earlier; and this reconstruction would fit with a horizon of Anatolian input.

3) Finally, it is noteworthy that the marine shell *Columbella rustica* also occurs as part of the ornament set in these Maros-group early-Bronze-Age graves for the first time.

17. This is not to say that Troy itself was uniquely responsible: I take it as an example.

18. In the northern Aegean at this time the shoe-socket (essentially an all-metal version of the slotted form) developed, while the form with the folded socket appeared in Crete (though slotted examples survived into the second millennium). Only in the Aegean late Bronze Age, after 1600, did socketed forms appear on the mainland; and these were the Near-Eastern type of folded socket (with the exception of a single, possibly solid form in the Shaft Graves). Solid, hollow-cast forms only appeared more generally in the Aegean and east Mediterranean (along with other forms of temperate European fighting equipment such as flange-hilted swords and round shields) in the thirteenth century.

19. For a colour picture, see *Epocha bronzj lesnoj polosy SSSR* (Archeologiya SSSR, 1987) between pp. 80 and 81; and the same volume pp. 89–92 for the continuity of metal distributions between the upper Volga and Lake Baikal. The nephrite from the Borodino hoard has been identified as characteristic of the Sayan region, near to Baikal. The silver pin, with lozenge-shaped wings, bears curvilinear ornament in the manner of the Hajdúsámson bronzes; its top is a *durchlochte Kugelkopfnadel*, with analogies in Reinecke A2.

20. Basic references to fortifications in Slovakia and neighbouring areas are: Vladár 1973; Točík 1981; Jockenhövel 1990; and for Romania: Bader 1990. For the distribution of exported eastern Carpathian bronze work, see maps in Hachmann 1957a; Mozsolics 1967; Struve 1979; Kristiansen 1981.

21. For Bronze-Age amber, see in general Rottländer (1973, with bibliography), Shennan (1982), and Jensen (1982, with pictures). The classic discussion of a Bronze-Age 'amber route' (though omitting any consideration of the Greek evidence) is by de Navarro (1925). The northern connections of the Greek material have been considered by Hachmann (1957b), Gerloff (1975:215–22, appendix 8 and pl. 63), and Harding (1984:68–87). Among the amber finds from LH I Greece is a minority of (re-used) pieces, which, to infer from the complex pattern of borings, were originally used as spacer-plates and terminals in crescentic necklaces. This specific type occurs both in early-Tumulus contexts in southern Germany and Wessex contexts in Britain. (Late-Tumulus-culture amber pieces were usually arranged as a series of vertical pendants.) The crescentic form of neck-ornament has its origins in western, Bell-Beaker styles of *parure* (and is paralleled by gold lunulae), and was most common in the west. While it is not impossible that the pieces that reached Mycenae were first made in Britain, and transmitted southwards via the Tumulus culture network, they might also be considered as representatives of a widespread early type emerging from a broadly Bell-Beaker background, like several features of the Tumulus complex. There is absolutely no reason to postulate any direct Wessex/Mycenae connection via an Atlantic and western Mediterranean route. It should be noted that the types that were put into graves were only a selection of the pieces that were then in circulation: amber is notably absent from the many Scandinavian tumulus burials of this period (though known in raw form as hoards, e.g. Understed – three kilos!); and spacer-plates have not been identified among the numerous amber finds in northern Italy at this time, even though the Mycenae examples must have travelled along this route.

22. Susan Sherratt (following suggestions by E. J. W. Barber) speculates that not just clothing styles, but also finished textiles and weaving techniques were involved, and are reflected in the shift from a curvilinear (Minoan/Mycenae) decorative style to a rectilinear 'Geometric' one, comparable to the ornamental repertoire of eastern Urnfield bronzes with its roots in earlier Danubian Bronze-Age traditions (cf. Barber 1991:370).

23. This should also correlate with a spread of different weapons and fighting techniques, related to the need to defend hillforts and more centralised production facilities, with different forms of tactics. It may be symptomatic that slashing swords (known in the east since Hajdúsámson) and throwing-spears now extended westwards into a zone formerly characterised by rapiers, daggers, and arrows. The equipment for this 'east European' style of fighting was now completed by shields and armour. What may be envisaged is some form of more organised close fighting, as opposed to razzias and the occasional close skirmish.

24. In the north, however, the route is marked not by hillforts but by rich graves (Seddin, Lusehøj), suggesting that the older modes of organisation persisted there.

25. These are the real 'trade-' or 'prestige-goods' of the original formulation, even though the term has now escaped to wider (and looser) usage in the archaeological vocabulary. They would have included organic products, such as harness-leatherwork apparently imported from Italy to Bohemia (Piggott 1983:172).

26. Larger horses, suitable for riding, were becoming available from the steppe region, and spreading west. Sándor Bökönyi (1968) has identified a larger 'eastern' and a smaller 'western' type in the Hallstatt period, with a dividing line corresponding roughly to that between eastern and western Hallstatt. The eastern Hallstatt group were not only nearer to the source of these new breeds, but also more prosperous than the western group, at least in Hallstatt C; and it is likely that the Carpathian Basin supplied horses to Italy, as in the Roman period (Bökönyi 1983; Jerem in prep.). The spread of larger horses westwards from the Carpathian Basin (along with characteristic eastern horse-gear) thus reflects trade, not conquest. (The importance of horses in warfare and status formation in such conditions anticipates certain aspects of European feudalism: cf. Piggott 1992.)

27. The Hallstatt phenomenon has been a focus of recent discussion about the application of anthropological and world-systems models. The debate began with Frankenstein and Rowlands (1978) and has been amplified by Nash (1985) and Brun (1987), as well as a major series of detailed chronological and regional studies. The world-system interpretation has been criticised by Gosden (1985), whose own model (as elaborated in a later article: 1989), however, suffers from an exaggerated primitivism that derives from too literal a reading of Mauss – in a mode now increasingly rejected by anthropologists themselves (e.g. Hugh-Jones and Humphreys 1992).

28. Iron-Age amber routes were discussed by Navarro (1925) and have been treated (though not synthetically) in a variety of more recent sources (e.g. Malinowski 1971; see e.g. maps in Horst 1986: fig. 1 and Niesiołowska-Wędzka 1989: fig. 24). The amber route to the upper Vistula ceased in the La Tène period, but was resumed in Roman times. It was described in Pliny (*Nat. Hist.* 37. xi, 41-51), who remarks both on its abundance ('a substance that every day of our lives is imported and floods the market [*mendacium coarguat*']) and its value ('its rating among luxuries is so high that a human figure, however small, is more expensive than a number of human beings [i.e. slaves]'). He records the route in some detail, since it had been recently traversed by the Roman eques of Julianus, in order to procure supplies for a gladiatorial display given by the Emperor Nero. Archaeological finds of this period are excellently mapped in Wielowiejski (1980), and discussed in Bukowski (1988).

29. This has sometimes been over-generalised (by those whose attention is fixed on the west) into a pan-European Ha C collapse or regression into warrior nomadism: but East Hallstatt remained prosperous, and even benefitted from a horse-trade with the Scythians newly arrived in the eastern Carpathian Basin, and only a local explanation is required.

30. In the emergence of the first temperate European 'towns', the *oppida*, the urban centres of northern Italy played a comparable role to those of Syria and south Anatolia in the rise of the Cretan palaces; but the different transport infrastructure of temperate Europe – based on riverine and overland trade routes – meant that this process took a more diffuse form which was only converted to a Mediterranean urban model by the direct military and political intervention of the Romans (Woolf 1993). Nevertheless temperate European urbanism (except in the case of coastal and riverine centres) remained a largely artificial phenomenon down to the growth of overland trade in the later Middle Ages.

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ABSTRACTS

What would a Bronze-Age world system look like? Relations between temperate Europe and the Mediterranean in later prehistory

This paper examines differences in the nature of inter-regional relations in the Neolithic, Bronze Age, and early Iron Ages, in an attempt to define the specific characteristics of Bronze-Age world systems. It distinguishes between the slow spread of innovations and the active intervention of trade networks related to the expansion of urbanism. The former dominate in the Neolithic, and similar phenomena continue to occur in later periods. Following a suggestion by Jane Schneider, a distinction is drawn between a core area of urban consumers, a periphery that is actively altered by its role as a supplier of raw materials to the core, and an outer margin that is indirectly affected through the spread of innovations. For most of prehistory, temperate Europe acted as a margin to a Near Eastern/Mediterranean core-periphery system. The formation of long-distance routes linking northern and southern Europe (successive axial routes along the Danube and Black Sea, and from Italy to Scandinavia) was critically affected by the spread of urban-centred trading systems along the Mediterranean. The 'amber route' was an important precursor of the structures underlying the later development of European polities.

Wie sah ein Weltsystem der Bronzezeit aus? Zusammenhänge zwischen warm-gemäßigten Europa und dem Mittelmeerraum in der späten Urgeschichte

Diese Arbeit untersucht Verschiedenheiten in der Art interregionaler Beziehungen in der Jungsteinzeit, der Bronzezeit und der frühen Eisenzeit, um versuchsweise die spezifischen Weltsystemmerkmale der Bronzezeit zu definieren. Sie differenziert zwischen der langsamen Ausbreitung von Innovationen und der aktiven Intervention von Handelszentren im Zusammenhang mit der Expansion von Urbanismus. Das erstgenannte Phänomen dominiert in der Jungsteinzeit, und ähnliche treten weiterhin in späteren Perioden auf. Leistet man einem Vorschlag von Jane Schneider Folge, so ist zu unterscheiden zwischen einem Kernraum städtischer Konsumenten, zwischen einer Peripherie, die durch ihre Rolle als Rohstofflieferant für den Kernraum aktiv verändert wird sowie zwischen einem äußeren Randgebiet, das indirekt beeinflusst wird durch die Ausbreitung von Innovationen. In der Urgeschichte fungierte Europa mit seinem gemäßigten Klima größtenteils als Rand hinsichtlich des Kernraum-Peripheriesystems im Nahen Osten, bzw. dem Mittelmeergebiet. Auf die Entstehung von Routen, die über weite Distanzen hinweg Nord- und Südeuropa miteinander verbanden (und auf hieraus späterer Routen, die eine Achse zueinander bildeten, entlang der Donau und dem Schwarzen Meer sowie von Italien nach Skandinavien), wirkte sich die Ausbreitung von Handelssystemen, die von städtischen Orten beherrscht wurden, negativ aus. Die 'Bernsteinroute' war ein wichtiger Wegbereiter für jene Strukturen, welche der späteren Entwicklung europäischen Gemeinwesens zugrunde liegen.

A quoi ressemblerait un système mondiale de l'Age du Bronze? Relations entre l'Europe tempérée et la Méditerranée dans la préhistoire tardive

Cette étude examine les différents types de relations inter-régionales au Néolithique, à l'Age du Bronze et au début de l'Age du Fer, afin d'essayer de définir les caractéristiques propres aux systèmes mondiales de l'Age du Bronze. La distinction est faite entre la lente propagation des innovations et l'intervention active des réseaux commerciaux liés au développement de l'urbanisme. La lente propagation domine au Néolithique et on retrouve des phénomènes similaires dans des périodes plus tardives. Selon une suggestion de Jane Schneider, on doit différencier le noyau avec ses consommateurs urbains, une périphérie qui est activement transformé par son rôle de fournisseur de matières brutes à la région central et les régions en marge qui sont indirectement touchées par la propagation des innovations. Durant la plus grande partie de la préhistoire, l'Europe tempérée a joué le rôle de la marge face au système centre-périphérie du Proche-Orient et de la Méditerranée. La mise en place de longues routes reliant le nord et le sud de l'Europe (et une série de routes autour d'axes importants le long du Danube et de la Mer Noire, de l'Italie à la Scandinavie) a été sérieusement touchée par le développement, le long de la Méditerranée, des systèmes de commerce centrés sur la ville. La 'amber route' fut un précurseur important des structures à la base du développement des Européennes communautés politiques.