

PROTO-INDO-EUROPEAN LANGUAGES AND INSTITUTIONS: AN ARCHAEOLOGICAL APPROACH

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The problem and its solution

The problem of the origin and spread of Indo-European (IE) languages during the Proto-Indo-European (PIE) phase has now defied a generally agreed historical explanation for more than 100 years. Although there have been periods of some consensus, they were soon followed by periods of refusal and new interpretations. It raises a more fundamental question as to the theoretical and methodological relationship between archaeology and historical linguistics. I outline the problems in brief (§§1-3), and then propose a solution (§§4-6).¹ This will be followed by an analysis of the relationship between archaeology and language in south Scandinavia during later prehistory. The results and their implications will be discussed in the conclusion.

§1. The first observation I wish to make is that historical linguistics have provided a relative historical framework for Indo-European and Proto-Indo-European languages that is only historically anchored for its later periods where written sources exist in historically or archaeologically datable contexts. They have further provided a typological framework that will probably not be dramatically altered in the future, if no new texts unexpectedly appear, such as Tocharian (Lehman 1992 and discussion in 1993:260ff.). Such new evidence is most likely to appear in connection with archaeological excavations for

¹ For a full up-to date review of Proto-Indo- European language and culture, see Mallory and Adams (2006), for a new impressive archaeological synthesis on the origin and early spread of PIE languages, see Anthony (2007a).

the earlier periods. A problem for the historical reconstruction of PIE is the temporal unbalance of written evidence between Western Europe (Germanic, Celtic, Italic, etc.) and Asia (Hittite, Greek, Indo-Aryan, Iranian, etc.). The western IE languages are attested much later than the eastern (1000 years or more), and therefore their earliest history within IE are not on equal footing (Mallory 1996, fig. 2). What is termed PIE for the western branches is a later version of that reconstructed language than for the eastern branches. Therefore, they may have run through several processes of extinction, divergence, and convergence during their earlier, undocumented history. This led Mallory and Adams to propose that

the difference in chronology between the European languages and those of the Aegean-Anatolia and Asia may be an illusion fostered by the lateness of our written sources for most of Europe, e.g. linguistics have a tendency to place proto-languages cautiously about 500 to 1000 years before first attestation, and hence the later the earliest written evidence, the more recent the estimated time depth (Mallory and Adams 2006:104).

§2. The second observation is, that a truly, contextualized historical explanation of PIE languages cannot be provided by linguistic methods alone. The method of glottochronology may provide a yardstick of time, but so many conditions have an influence on the speed of language change that we have to rule it out as a reliable method for tracing the time depth of language change and separation (Renfrew, McMahon, and Trask 2000). Influence in the form of loanwords from neighboring languages provides other historical links and dating, and they may also be helpful in locating the Proto-Indo-European homeland (Haarman 1996).² However, an interdisciplinary approach is needed to contextualize and localize early language changes historically. Here archaeology provides the only method beyond the time frame of written sources, by Mallory aptly termed the “Dark Age” of IE languages

² Early contacts between PIE and Uralic languages would seem to anchor a homeland in the Pontic steppe. “If the Proto-Indo-Europeans established contacts at that time with the Uralians in the north and the Caucasians in the south, then their homeland can be located neither in the Transcaucasia, that is south of the Caucasus, nor in Anatolia. The reality of early contacts between Proto-Indo-Europeans and Uralians is irreconcilable with any assumption of an Indo-European homeland in Asia” (Haarman 1996:9; also Carpelan, Parpola, and Koskikallio 2007).

(Mallory 1996:12ff.). So far it has provided no conclusive answers (recent discussions in Anthony 1995; Mallory 1998; Renfrew 1999; Kristiansen 2005; and Anthony 2007a for a new convincing synthesis for the steppe region, but excluding western and northern Europe).

§3. Archaeological interpretations of language groups in material culture are complex, and cannot be reduced to a single parameter of correspondence. Some form of correspondence exist between language and material culture as a symbolic form of communication, but it needs careful analysis and interpretation and so far this is a neglected field of study (Hall 1997; Mallory 2002b; and Anthony 2007a:ch. 6). In addition there are too many choices among archaeological cultures in Europe to delimit those that correspond to a certain stage of language spread or change. Finally, the mechanisms of cultural and language change in the form of trade/exchange, travels, and population movements were theoretically underdeveloped fields of interpretation in archaeology until recently (Anthony 1997; Burmeister 2000; Chapman and Hamerow 1997; Kristiansen and Larsson 2005, ch. 1 and 2). More recently it has been proposed that technological clusters of complex knowledge, as well as institutions with well-defined material correlates, provide testable correspondences between archaeology and language (Barber 1989; Kristiansen 2005).

In conclusion: only archaeology can provide the answer to questions about the historical context and dating of PIE and the later divergence of IE languages, but there are problems of identification. A partial solution can be proposed:

§4. There exist in Europe a few remote “end regions” with only few breaks in cultural continuity due to immigrations and/or social transformation. As social change and language change go hand in hand such transformations define the historical moments of language change. Two such regions are South Scandinavia and Ireland. In South Scandinavia there are two major and rather sudden cultural and social transformations in later prehistory: the beginning of agriculture in the earlier 4th millennium BC (the TRB Culture), and the arrival in Jutland of the Single Grave Culture (SGC) in the beginning of the 3rd millennium BC. Both intrude cultural and economic discontinuity and a new social order. Especially the later might well correspond to a major migration and language change, which later spread to eastern Denmark

and Norway (Kristiansen 1989; Prescott and Walderhaug 1995). Coastal maritime cultures in Central Scandinavia linked to the northern forest zone of Russia and Siberia also expanded westwards, but they belonged to a different DNA stock than the TRB and Battle Axe culture (Linderholm 2008). Only from the late 3rd millennium did these diverse regional differences in material culture integrate into a common archaeological culture with the beginning of mass production and distribution of flint daggers and later metal. It represents the first possible appearance of a shared (Nordic) language in south Scandinavia, based upon new forms of travels/sea journeys (Kristiansen 2004; Østmo 2005), and new forms of production and distribution of prestige goods that speeded up regional interaction tremendously. This time sequence will therefore be analysed in some detail in the next section.

§5. We will never know what language Neolithic pots spoke, and consequently we will never be able safely to identify and date Proto-Indo-European languages on archaeological grounds alone. Instead we need to employ textual evidence on social and religious institutions in IE speaking societies whose attributes can be identified empirically in the archaeological record. New institutions are evidence of fundamental changes in social organization that may also include language. This interpretative strategy has been applied recently for the Bronze Age (Kristiansen and Larsson 2005). The evidence shows that a number of so-called Proto-Indo-European or rather mature Proto-Indo-European institutions can be archaeologically dated in the 2nd millennium BC, some with possible antecedents in the 3rd millennium BC. This new evidence makes Colin Renfrew's model of language, farming dispersal look increasingly implausible (Kristiansen 2005), but more importantly it introduces a new interdisciplinary methodology for establishing correspondences between textual and archaeological evidence.

§6. Models of language change and social change need to be further developed, in order to create an interdisciplinary field of theoretical model building between historical linguists, archaeologists, and social anthropologists. One good example is John Robb's recent work (Robb 1993), or that of Mallory (2002a and 2002b). Another useful type of modelling is the comparative historical analysis of language spread in similar environments, as represented by Johanna Nichols work (Nichols 1998). It suggests that IE language spread was only the first example of a

recurring historical scenario in western Eurasia. Finally, we need model building on the relationship between material culture, ethnicity, and language based on comparative case studies (Anthony 2007a; Brather 2004; Clarke 1968, ch.9; Fernández-Götz 2008; Hall 1997 and 2002; Hedeager 2003; Jones 1997; Kristiansen 1998, fig. 221). These studies suggest that certain forms of widely shared ethnic identities are linked to a selective “package” of material culture that is symbolically charged with cosmological meaning. Material culture thus forms a variety of distributions, some overlapping some not, but each distribution with its own reference to historical conditions from local to global.

Archaeology and language: South Scandinavia 3000 BC to 1000 AD.

In the following I shall illustrate and discuss the formation of institutional and symbolic/cosmological identities in material culture and their possible relationship with language. I choose south Scandinavia as a suitable region for two reasons: it represent a northern “terminal region” to Europe that was not subject to frequent changes and discontinuities as was Central Europe and the Mediterranean. Secondly, we can trace the formation and the continuity of stable cultural borders in material culture towards the south. It resembles David Anthony’s findings on the Russian steppe of a cultural border during more than thousand years between Tripolje farmers and early Yamna pastoral farmers and herders (Anthony 2007b). The main difference between the Pontic region and Scandinavia is that the very same cultural borders display continuity right into early historical time, when we can demonstrate the existence of a Norse or North Germanic language. Although some discontinuities can be observed when new cultural and social influences penetrate south Scandinavia from the south, the very same cultural borders keep reappearing when social and cultural consolidation takes over. From this we may deduce that there existed an ethnic and/or language border between south Scandinavia and northern Europe that is rooted in later prehistory, as it shows continuity during several thousand years. I apply a definition of ethnic identity that assumes a shared cosmology of cultural origins, which can be demonstrated in a specific and shared symbolic language (Jones 1997; Kristiansen and Larsson 2005, ch. 6).

Assumptions and hypotheses

The following assumptions, based upon recurring observations in the archaeological record of the later prehistory in Europe, for later periods

under historical control, are used to identify social transformations and migrations, and the relationship between language and material culture.

- A strong relationship exists between burial ritual, social, and religious institutions, because a burial is the institutionalized occasion for the transmission of property and power (Oestigaard and Goldhahn 2006). Therefore a radical change in burial rites signals a similar change in beliefs and institutions. If such a change occurs rapidly, without transition it signals a transformation of society often under strong external influence, eventually a migration (to be supported also by settlement change and economic change). This does not rule out the effects of internal contradictions, which, however, often go hand in hand with external forces of change.
- An entangled relationship exists between language, ethnic identity, and material culture as forms of communication. The relationship is complex, and needs to be spelled out in concrete cases (Jones 1997; Hall 1997; Fernández Götzt 2008). When a package of material culture defines a shared symbolic identity that is linked to basic social and religious institutions (cosmology and general forms of ethnic identity) it presupposes frequent social interaction and a shared language for its continued reproduction. Several forms of ethnicity/identity may co-exist, like local dialects and “national” languages.
- The reproduction of a social and cultural tradition in material culture may create sharply defined borders against other social and cultural traditions, as demonstrated by Ian Hodder in ethnographic case studies (Hodder 1982). When such cultural boundaries can be documented over longer periods of time, and if they reappear after shorter breaks in cultural and social continuity, it represents most probably also a language boundary. In conditions of no major migrations language is thus one of the most stable cultural phenomena, followed by cosmology and ethnicity.

In the following I apply these assumptions as heuristic tools in a reinterpretations of cultural traditions in south Scandinavia from 3000 BC to 1000 AD. They are to be regarded as preliminary and rather

general approximations/hypotheses that should be modified and specified by future research.

*The expansion of the Single Grave Culture in Jutland and the Danish Isles 2850-2350 BC and the co-existence of different cultural and social traditions.*³

In the decades around 2850 BC large tracts of formerly unsettled forested territories of the central and western peninsula of Jutland were settled by groups of immigrating colonizers. Within two to three generations they burned down forests on a grand scale and created open steppe like grass- and heath land intersected with tracts of woodland outside the settled areas (Figure 1). In pollen diagrams it appears as the most rapid and massive deforestation in the later prehistory of Denmark (Figure 1). The rather open virgin forest cover and the light sandy soils, which meant that heath land immediately began to form, facilitated this economic strategy. On more fertile soils grasslands dominated, as in Thy (Andersen 1995 and 1998, here summarized in Figure 1), whereas in western Jutland heath land was created (Odgård 1994, fig. 121, the diagram from lake Solsø). Such a rapid and complete deforestation over huge territories of western Jutland could only be carried out by large groups of incoming people. Existing TRB settlements could not have

³ We have recently witnessed an upsurge of research on the Danish Single Grave Culture after a stand still of 50-60 years. Two major monographs have appeared within the last year, one on the East Danish Single Grave Culture by Claus Ebbesen (Ebbesen 2006), and a three volume monograph by Eva Hübner on the Jutlandic Single Grave Culture (Hübner 2006). Both works entail richly illustrated catalogues of finds that will enable other researchers to reanalyze the material and present new interpretations. Ebbesen's work is a 20 year old manuscript that is somewhat outdated on interpretation, whereas Hübner carries out a most detailed analysis and interpretation of the formation and expansion of the Single Grave Culture in Jutland. Also the classic works of Glob (1944) and Struve (1953) are still fundamental. We have also had an up-to-date analysis of the Bell Beaker phenomenon in Denmark (Sarauw 2007 and 2008; Prieto-Martinez 2008). In addition we now have modern, well-dated pollen diagrams that makes it possible to reconstruct the vegetation history (Odgård 1994; Andersen 1996 and 1998; Berglund 2006 for a north European overview). Based on this new research I present an updated historical scenario of the expansion of the Single Grave Culture (SGC), as it represents the most probable candidate for a language change in the later prehistory of Denmark. It should be added that my interpretation goes further than the works referred to above, which do not seriously consider the evidence from pollen diagrams and their implications for a massive economic and ecological transformation. They leave open the question of immigration versus social change.

provided such a massive demographic expansion within the short time span that is indicated by both C14 dates and by pollen diagrams. The population of Jutland doubled up several times during two to three generations, and within 450 years this new population constructed an estimated 30,000 family barrows according to a count made by Ebbesen (Ebbesen 2006, table 8), while others have proposed 60,000 (Mads Kähler Holst personal communication). Unfortunately the light sandy soils of central and western Jutland have not preserved skeleton remains, except as organic substance, which allows us to reconstruct the position in the grave, which is always hocker, and to some degree height (adult or child). The newcomers employed a burial ritual, a material culture, and a

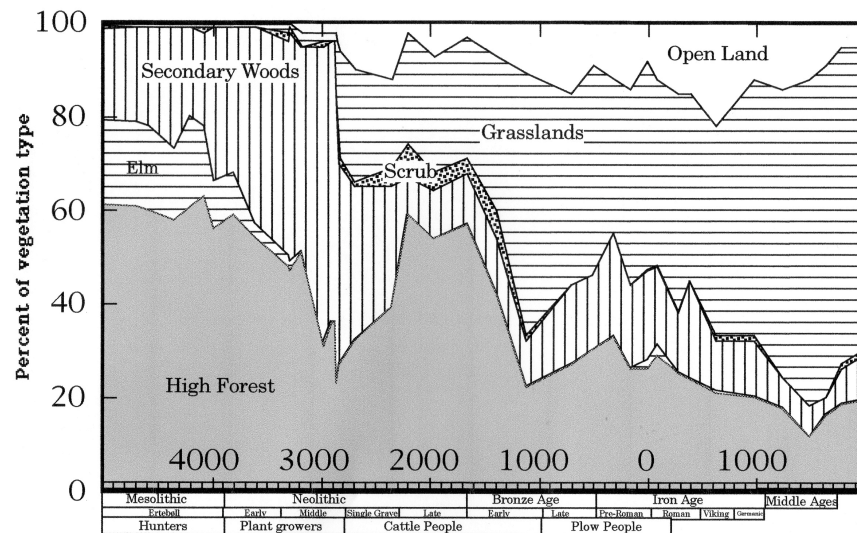


Figure 1: Summary pollen diagram southern Thy in northwestern Jutland. The diagram has been redrawn from Andersen (1995) by John Steinberg for his PhD, and I thank him for permission to use it (Steinberg 1997, fig. 2.19). The evidence corresponds rather closely to a diagram from Lake Solsø in western Jutland (Odgård 1994, fig. 121).

technology fundamentally different from that of the TRB Culture. Although attempts have been made to derive at least some of these changes from a TRB culture in northwest Jutland that was already on its way towards a herding economy and had changed its burial ritual to stone packing graves (Damm 1993), there is a complete break in cultural continuity at all levels. Those few elements that show familiarity with

TRB tradition, can just as well be ascribed to local exchange, e.g. of flint axes (Ebbesen 2006:229f.), as the SGC did not master the technology of making good polished flint axes. They developed a rather more simple technology for flint axe production, that demonstrate their lack of access to the flint mines, which were still controlled by the TRB people. There exist a handful of preserved skeletons from the middle phase of the SGC, and they show physical traits distinctly different from the Megalithic people of the TRB Culture, but which would account for the mixed and much taller population known from the subsequent Dagger period that (Petersen 1993). Also in Poland we find a new taller population alongside with the original population (Dzieduszycka-Machnik and Machnik 1990).

The new people applied an economy of herding that demanded large tracts of grassland, but they also cultivated some barley in small plots (Robinson and Kempfner 1987). Detailed pollen botanical analyses from megaliths and SGC barrows in western Jutland have demonstrated that the SGC economic strategy was radically different from that of the TRB Culture. The TRB Culture employed a shifting economy where secondary forests were maintained for later burning and fields, whereas the SGC Culture would burn down all forest vegetation and maintain open grasslands that were heavily grassed, just as they created and maintained heath land for winter fodder by regular burning (Odgård and Rostholm 1988; Andersen 1998). The SGC were mobile, employing wheeled vehicles (van der Waals 1964), and during the same short period they colonized the lighter soils of north-western Europe from Holland to central Jutland, employing the same economic strategy of animal husbandry and pastoral farming. These groups, variously labelled Single Grave Culture or Battle Axe Culture, were an off-spring from the larger pan-European Corded Ware Culture, and they shared with the steppe cultures further east a burial ritual of small family barrows, where individuals were buried mostly in hocked position, males on their right side, women on their left side. The head normally faced their possible tribal point of origin, south in Jutland, east or southeast in central and east Europe (Kristiansen 1989, fig. 2). There is much to suggest, however, that the colonizing groups from Holland to central Jutland originated in the densely populated settlement area south of the Elbe knee around the Saale river (Ebbesen 2006, fig. 134). This is based upon close similarities in early axe types and pottery (Ebbesen 2006, fig. 120). But it could also be argued that the Elbe-Saale groups were the first to

settle from a larger migration train that continued further north. They moved up along the Elbe, some groups turned south towards the Netherlands, and the largest groups turned north and followed the now drowned coastal stretches up to Esbjerg. Here they moved inland and colonized the central part of Jutland, while smaller groups continued north along the coast to Thy, the same route that was later followed by Bell Beaker groups (Vandkilde 2005; Pilar 2008).

The immigrants avoided the central settlement areas of the late TRB culture, when possible (Davidsen 1973/74, fig.; Jørgensen 1985), and soon there existed three radically different cultures with a different social organization and economy in Denmark, and indeed south Scandinavia. Along the coastal areas of Sweden and northern Jutland a maritime fishing economy developed with a distinct material culture, the Pitted Ware Culture, with an origin in the northern forest zone of Eurasia. In eastern Denmark the TRB Culture prevailed and only gradually gave way to the Single Grave Culture (Ebbesen 2006). Thus during the next 400 years south Scandinavia was a pamphlet of different, geographically mutually exclusive cultures and economies, which most probably also pertained to ethnic origins and language. However, only the Single Grave and Battle Axe cultures were linked to similar cultures and economies south of the Baltic, which were again part of the pan-European Corded Ware cultures that now included most of the temperate zone. Thus the prospects for the remaining TRB and Pitted Ware groups to maintain their culture were not good, as they became increasingly isolated through time.

From Holland to central Jutland these new colonizing groups of northwest Europe employed the same material culture, mostly known from the tens of thousands of family barrows, in Jutland alone more than 30,000 (Ebbesen 2006, table 8). Very few settlements are known, and then from the latest phase. They show that houses were rather flimsy constructions, and thus support the picture of a herding economy originating in a social organization of mobility that now settled down. Expansion, however, did not stop. After the initial phase of colonizing the western and central parts of Jutland, off-spring groups went on colonizing northern and eastern Jutland and the Danish Islands (Glob 1944, figs. 115 and 116), especially, northern Zealand and northern Funen (Ebbesen 2006, figs. 46-47). Other groups penetrated southeastern Jutland, southern Funen and the Baltic including Mecklenburg (Ebbesen 2006, figs. 18 and 21). We can trace this gradual eastward expansion in

several pollen diagrams, as forest decline occur later in east Jutland and on the Danish islands than in western Jutland (Aabye 1985; Odgård 1994, fig. 121 with a comparative diagram), just as it is less dramatic than in western Jutland (Odgård 1994, fig. 121, Solsø, plus Figure 1 above). In eastern Denmark and Scania it was not until the later Bronze Age that a completely open landscape for grazing emerged (Berglund 2006). This west-eastern gradient of delayed forest decimation in all probability represents the expansion of the new SGC economy in a process of acculturation with the final TRB groups, in eastern Jutland and Scania documented in some detail (Sørensen 1995; Larsson 1993). It was thus unlike the full-scale colonization of central and western Jutland. Only the rather few initial colonizers in eastern Denmark employed the SGC burial rite (Ebbesen 2006, fig. 96), whereas the acculturated TRB people continued to use the megaliths, which is by far the most frequent burial rite of this period (Ebbesen 2006, fig. 93).

The social organization of the SGC was based on an ideology of male warriors being head of the family or kinship group, and warfare was integrated in the social matrix of Corded Ware and later Bell Beaker societies (Guilaine and Zammit 2005, ch. 4). Beautifully executed war axes in stone, based upon Central European prototypes in copper, appear in rapid typological succession. They are placed in front of the head of the deceased. Beakers became more frequent over time, and an analysis of an early type A beaker from Jutland showed that it had, in all probability, contained beer and originated in the Elbe-Saale group (Klassen 2005). Women were adorned with amber necklaces and pendants, sewn onto the dress (Glob 1944, fig. 103; Ebbesen 2006, figs. 18 and 21). The archaeological evidence presents us with a fundamentally new type of social organization that was shared from the Urals to Northwestern Europe, and which was to prevail into the Bronze Age (Kristiansen 2007). I shall now outline in brief its basic components and their meaning.

A social model of the Single Grave Culture and related cultures.

I propose that the origin of the monogamous family, gender divisions, and mobile property originated in the social transformations that characterized western Eurasia from the late 4th millennium BC into the 3rd millennium BC. I further propose that this became the foundation for all later developments. This transformation, named Corded Ware and Battle Axe cultures in central and western Europe, and Yamna cultures in

the Pontic steppe, involved altered definitions of family, property, and inheritance, and it facilitated the formation of a mobile, agro-pastoral society in the steppe region and beyond (Anthony 2007a, ch. 12-14; Kohl 2007, ch. 4; Vandkilde 2006; Harrisson and Heyd 2007, fig. 45). It focused on the monogamous extended family as a central social and economic unit, based on a patrilineal Omaha kinship system (see discussion in Kristiansen and Larsson 2005, ch. 5.5), favoring the accumulation of mobile wealth through expansion and exogamous alliances, and its transmission between generations. The individualized *tumulus* burials furnished with these very same symbols of wealth, represented the ritualized institutionalization of these new principles, now also transferred to the land of death. At death property had to be redistributed through inheritance, and alliances with partners and clients from near and far away had to be re-negotiated (Oestigaard and Goldhahn 2006). Therefore the burial became an arena for a highly formalized ritual that displayed basic principles of social standing. It was embedded in a corresponding religious cosmology that developed into a complex religious system by the 2nd millennium BC, when it is manifested in written sources (Kristiansen and Larsson 2005, ch. 6).

On Figure 2, I present a model of this social organization and its basic components. They are composed by the family barrow or tumulus, which became the ritualized extension of a new kinship system where the transmission of mobile property (herds) played a crucial role through inheritance and partnerships. The barrow thus defined ritually the free man, his family and his property, and it also defined the male warrior as heading a new institution of chieftainship (Vandkilde 2007). Male and female gender are strictly and rigorously demarcated in burial ritual through the orientation of the body, laying on left or right side, and this system remained stable throughout western Eurasia. There can be no doubt as to the important role of gender, although male burials always outnumber female burials (Dornheim et al. 2005). Mobile societies of herding often exhibit a strongly gendered division of labor, and this we see reproduced in burial rituals throughout the 3rd, and 2nd millennia in Eurasia. Although some agriculture was part of the economy, more so in central and northern Europe, herding was the dominant economic strategy. In an agro-pastoral society of herding based upon property of animals and their produce rules of transmission and of inheritance become important. Therefore, there had to be chiefs in charge of maintaining and performing a corpus of ritualized rules. It was

materialized in the ubiquitous, carefully executed war axe in precious stone, copper, silver, or gold. We can now begin to see the contours of a more complex division of social roles and institutions (Müller 2002; Vandkilde 2006). Specialists, such as the metal smith, can be identified in burials, and ritualized, priestly functions are also indicated in grave goods. A complex society of warriors, priests, specialists, and herders/farmers is emerging, albeit in embryonic form.

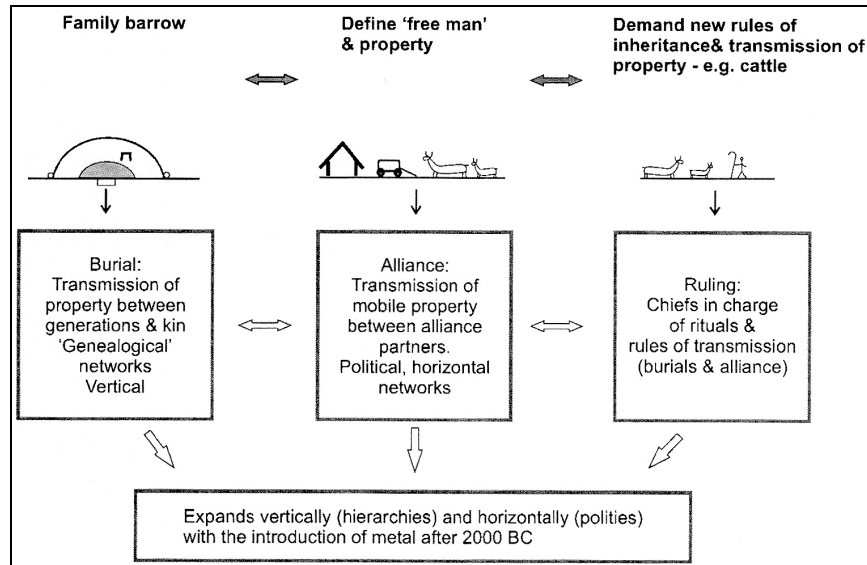


Figure 2: Model of basic material and institutional components of western Eurasian societies of the 3rd millennium BC.

The expansion of this mobile agro-pastoral economy was rapid and sometimes dramatic. During the early and middle Neolithic periods there were still large forest reserves preserved in Europe, although mainly on lighter soils. However, during the early 3rd millennium BC these areas were colonized by expanding pastoral herders and warriors with an apparently never ending appetite for new pastures (the secondary products revolution in Andrew Sherratt’s terminology), who rapidly burned down the forests to create grazing lands for their animals (Andersen 1995 and 1998; Kremenetski 2003; Shishlina 2001). As land-use was extensive it demanded much larger tracts of open land to feed people and animals than in a more sedentary agrarian economy. The newcomers practiced some cultivation of cereals, but the economy was

based on animal products from wool production to milk and meat (Sherratt 1997). They expanded through a combination of warfare and recruitment of new members through clientships and other means of social dominance, including language. This was in some areas replaced by mass migrations, as in the case of western Jutland.

From the late 3rd millennium this inland economic system, variously termed Corded Ware, Single Grave, and Battle Axe cultures, was complemented by a maritime counterpart in the form of the Bell Beaker cultures that expanded along the western Mediterranean and along the Atlantic façade before they moved inland, but they never reached further east than Hungary. They brought with them metallurgical knowledge, in addition to maritime skills, and they migrated as skilled artisans according to recent strontium isotope analyses of teeth and bone (Price et al. 2007; Heyd 2007; Vander Linden 2007). The beginning of the 2nd millennium saw the integration between these two social and cultural traditions, supplemented with a new bronze technology that was able to mine and distribute large quantities of metal throughout Europe (Harrison and Heyd 2007).

To summarize, during the 3rd millennium BC there emerged a new social and economic order in Eurasia. Widespread travel, seasonal transhumance, and some migrations accompanied these changes. By the mid 3rd millennium BC common ritual and social institutions were employed from the Urals to Northern Europe within the temperate lowland zone (Kristiansen 2006c; Prescott and Walderhaug 1995). They laid the foundation for later developments in social and economic complexity within the same regions during the first half of the second millennium BC. After 2000 BC this social formation was wedded to a new metal economy based on mining and the distribution of copper and tin from a few source areas to the societies of western Eurasia. It introduced new divisions of labor and new specialist skills, a new concept of commodity trade parallel to trade in prestige goods

The expansion of Bell Beakers and flint daggers in south Scandinavia 2350-1750 BC and the formation of a Nordic prestige goods sphere of cultural integration

From ca. 2300 to 1700 BC a new historical period of cultural integration prevailed in south Scandinavia. It was initiated by the migration of Bell Beaker groups into Jutland, who brought with them new skills in mining and sailing, and who started to mine flint in northern

Jutland for mass production of flint daggers that were soon distributed to most of Scandinavia. It was later followed by a similar production in southeast Denmark (Apel 2001). This period marks the first introduction of metal into Scandinavia, and the dagger production represented an imitation of copper and bronze prototypes. It also represents the introduction of a new more ranked social organization (Lekberg 2002; Prieto-Martinez 2008; Sarauw 2007; Vandkilde 2005). Large chiefly houses similar to those found in the Unetice Culture appears in south Scandinavia (Artursson 2005), and speaks of a radical reorganization of economy and social organization which wiped out or integrated the diverse cultural and economic traditions of the previous period into a single south Scandinavian cultural sphere, although with regional variations in burial ritual (Stensköld 2004). Thus the old core of the SGC in Jutland maintained itself in burial ritual with a preference for barrows, whereas a new semi-megalithic tradition of long stone cists for multiple burials prevails in southeast Scandinavia. In pollen diagrams this is a period of continued expansion of open land, as well as colonization of new areas, such as south central Sweden (Lekberg 2002). There is much to suggest that the Dagger Period represents not only social and economic integration but also the formation of a shared Nordic language based upon the frequent interaction that followed from the distribution of flint daggers. It was in part based upon new maritime skills, allowing crossings over the Skagerak between northern Jutland and southern Norway (Østmo 2005).

What we witness during the 3rd millennium BC in Scandinavia is a pattern to be repeated during the 2nd and 1st millennium BC. New foreign influences create a period of divergence in social and economic organization, most probably also in terms of languages spoken. This is followed by a long period of integration of these diverse traditions and languages into a single Nordic tradition. As this cyclical development recur during the subsequent millennia, I shall only present a brief sketch of developments during the 2nd and 1st millennium BC, to underline the argument.

The introduction of foreign bronze metalwork and the disintegration of the Nordic prestige good sphere into a western and an eastern zone (1750-1500 BC).

After a long consolidated period of demographic and economic growth during the Dagger period, there now followed a dynamic period

of technological and probably social change, which represents the full-scale adoption of bronze production. It was based upon the introduction of new skills and metal from travelling chiefs from the Carpathian region and from mainly south Germany and England (Vandkilde 1996). They introduced new weapons, most importantly the sword and lance, and with that also followed new social institutions of a chiefly warrior aristocracy. But more importantly they rendered the large-scale production of flint daggers obsolete, and replaced it with new networks that linked south Scandinavia with regions of much greater social and economic complexity to the south. The eastern network comprised south Sweden and the Danish Islands, plus northern Jutland, the old core area of the megalithic culture. The southwestern network comprised mostly central Jutland, the old core area of the Single Grave Culture. In the eastern zone hoard deposition prevailed in the western zone tumulus burial. There can be little doubt that some chiefly persons and their retinue from Germany settled in Jutland, just as travellers from the Carpathians reached southeast Scandinavia. Marriage alliances can also be documented in the appearance of female ornament sets in some burials (Bergerbrant 2007). This was a period of strong foreign influences and local reception, which in the end would lead to the formation of a new Nordic culture and society.

Social transformation and the formation of a Nordic culture and cosmology around 1500 BC, and its long-term continuity until 450 BC.

After 1500 BC a rapid internal social and cultural change transformed Scandinavia into a fully developed Bronze Age society with its own distinct Nordic cultural style. It represents an explosion of creativity at all levels of society, from house construction, to the construction of tens of thousands of barrows. A diverse range of new bronze tools, weapons, and ornaments make their appearance, and they are lavishly deposited in thousands of burials and hoards during the 1000 years to come. Certain phenomena characterize the early phase of this remarkable period of Nordic integration and prosperity. Thus, a minimum of 50-60,000 barrows were constructed in Denmark during the period 1450-1150 BC, that is a period of ca. 300 years. Some estimates suggest even higher numbers. A new three aisled construction of houses were adapted from Holland to Scandinavia, and it allowed a more varied use of space, among them the stalling of cattle (Arnoldussen and Fokkens 2008). Although farms and hamlets were evenly spread in the

landscape, we see a distinct hierarchy in the size of farms, which spans from large chiefly farms with stalling for cattle to rather small houses without stallings (Artursson 2005; Kristiansen 2006b). Chiefly halls were 8 to 10 meters wide and length could be from 30 to 50 meters. The Nordic Bronze Age culture was based on a high frequency of interaction, among other things necessitated by the distribution of metal. A shared language was a necessary outcome of this new social and cultural integration. A shared Nordic cosmology is also evidenced in iconography on metal and in rock art. These shared identities in culture, language, and cosmology, including social institutions, make it plausible that there existed a common Nordic ethnic identity of some form.

However, there is also a distinct influence from the south German Tumulus Culture in the formation of this new Nordic Bronze Age society. Warrior swords of the flange hilted type, as well as octagonal hilted swords, were shared between south Germany and Denmark (Kristiansen and Larsson 2005, fig. 107). It demonstrates how foreign trade and political alliances linked Scandinavia to the common European Bronze Age, at the same time as it developed its own Nordic identity in culture, cosmology, and language. It further demonstrates a complex and sophisticated use of material culture to serve as an identity marker for different social groups with different geographical distributions. The Tumulus Culture may thus represent an early form of Germanic, but the interaction between the two regions suggests that language differences were easily overcome.

The introduction of iron technology and break down of Nordic interaction followed by cultural disintegration. Reorganization of settlement and economy (450-150 BC).

The introduction of iron technology and the decline of bronze technology led in some regions to a major social and economic transformation (Jensen 1997). The old Bronze Age regime had caused overexploitation and exhaustion of soils, especially in Jutland, and when the supply of bronze ceased the Nordic chiefly networks collapsed. In Jutland thousands of Bronze Age farmsteads and hamlets were given up, and moved together into villages (Rindel 1999). In eastern Denmark and southern Sweden changes were apparently more gradual, but numerous local groups replace the previously shared Nordic culture, each with their own distinctive variations in material culture and burial rituals. The ritual and social ethos is one of egalitarian communities, and new cemeteries

are being formed to replace the use of the old Bronze Age barrows. These changes suggest a major social transformation, or even revolution, most pronounced in Jutland. Here new links were soon forged with the emerging Jastorf Culture of northwest Germany (Brandt 2001), and after 150 BC a new period of economic prosperity begins, which was linked to a reopening of trade with the southern La Tène Culture (Bockius and Luczkiewicz 2004), and later the expanding Roman Empire.

Cultural and economic integration from 150 BC to 1000 AD.

From the beginning of Roman influence in Scandinavia around 150 BC until the end of the Viking period, Scandinavia was increasingly integrated by trade, political alliances, and the distribution of Roman imports (Hedeager 1987), later followed by the spoils of warfare and trade that ended shortly after 1000 AD (Jensen 2004). During the last centuries of the Pre-Roman period most of the former unsettled heavy moraine is settled, and the landscape is organized into bounded fields for agrarian production, grazing land, and meadows for hay production and winter fodder. After 200 AD farms grow in size and culminate during the Viking period, reflecting a prolonged period of economic and demographic growth, although a setback occurred after the fall of the West Roman Empire. The demographic growth led to migrations and colonizations, based upon the maritime capacity of the Viking ship. It is thus a period of increasing interaction, leading to the formation of a Nordic culture, which is reflected in a similar development of a shared Norse language. Roman prestige goods were shared during the Roman period, whereas a specific Scandinavian style only developed after the fall of the Roman Empire (Hedeager 2003).

Model of language change in later Scandinavian prehistory

Below I summarize developments in material culture and language in south Scandinavia from 3000 BC to 1000 AD, showing a cyclical change between shorter periods of disintegration and long periods of integration. I suggest some tentative names for the changes of language. My findings suggest that Mallory and Adams are correct in their suggestion of a much older age for Germanic and Norse (referred to in §1). In conclusion I shall discuss in more detail the historical and theoretical implications of the model.

2850-2350 BC	SGC, Pitted Ware and TRB	Disintegration, SGC = Proto-Germanic
2350-1750 BC	Dagger period	Integration = formation of Proto-Norse
1750-1500 BC	Early Bronze Age	Disintegration = west/east Germanic
1500-450 BC	Nordic Bronze Age	Integration = mature Norse/Gothic
450-150 BC	Pre-roman Iron Age	Disintegration = west/east Germanic
150 BC-1000 AD	Roman and Viking Age	Integration = traditional Norse

Conclusion: language, cosmology, and ethnic identity revisited

In this article I have analyzed the later prehistory of south Scandinavia from a specific perspective of cultural integration/disintegration, including cosmology, ethnicity, and language. Other perspectives will surely be able to provide other results where the dagger period or the early Bronze Age will reveal many nuances and variations that I have not employed. However, I believe that the type of analysis I have conducted may provide a more critical starting point for a discussion of the relationship between material culture as symbolic communication, language, ethnic identity, and cosmology. And I hope this may also have some interest for current debates and research into the history of Indo-European languages and indirectly also their relationship with a specific cosmology and the related notion of ethnic identity or cultural self-consciousness. A main thrust of my presentation is the historical introduction and European wide expansion of a new institutionalized perception of family, gender divisions and property in the early 3rd millennium BC, which became the foundation for all later developments. It implies that the social and cultural dynamics of later European prehistory were conditioned by the relative autonomy of family based households, but with a potential for forming large scale social and economic networks where especially male warriors/traders travelled long distances along alliance networks. Clientship systems have been proposed to be at the heart of such networks (Olmsted 1999; Anthony 2007a:349ff.). They account for the capacity of certain forms of “international” weapons to crosscut “local cultures” (Kristiansen and Larsson 2005, fig. 107). In this way different parts of material culture served different purposes for local, regional, and interregional identities. It further demonstrates that there are no clear-cut correspondences between material culture and various forms of identities, as they need to be spelled out in concrete analyses and interpretations of social institutions/groups. Long-term social and economic trajectories,

however, determined the degree of cultural and political divergence/convergence, which also had implications for language change.

Another conclusion from the archaeological case study was that Germanic and Old Norse, when first attested in the Iron Age, is a several thousand year old language that had already been divided into a northern and southern branch two thousand years before it is historically attested. I further demonstrated a recurring historical dynamic between a south-western and a south-eastern interaction zone, which may account for what is later termed West and East Germanic. The south-western zone corresponded in many ways to the original Single Grave Cultural zone from Holland, the Elbe-Saale region to northern Jutland at the Limfjord. It thus contained a language substratum reaching back to the oldest phase of Proto-Germanic or western PIE. However, after each such period of profound external influence the south Scandinavian or Nordic zone would again be re-established and last for a long time, which suggests that it represents a very old tradition in both language and cosmology. The Pre-Roman Iron Age is just another such recurring period after a social transformation (the end of the Bronze Age, analyzed by Jørgen Jensen 1997), where North Germanic and La Tène (Celtic) traditions penetrate Jutland, and become North- or Northwest Germanic (sometimes termed the Jasdorf Culture). The old Nordic Bronze Age tradition is preserved in Sweden and on the Danish Islands for another hundred or two hundred years and as these regions were not subject to drastic changes it would be a logical conclusion that the Bronze Age language survived as Gothic after the migrations to the Black Sea area.

Thus, North Germanic is a historically late construction formed after the collapse of the Nordic Bronze Age tradition, but albeit with ancestral traditions. It would later be superseded by the development of the Scandinavian language or Old Norse in the course of the Iron Age, once again re-establishing the Nordic zone, as it had happened previously in the late 3rd millennium BC and in the mid 2nd millennium BC. It is suggested that this historical dynamic between convergence and divergence of cultural traditions in the widest sense have always existed. The formation of a new regional tradition would depend on the social and economic force of one of the previously local traditions, whose tradition and language would then dominate the larger tradition (Kristiansen 1998, fig. 221). That would explain why North Germanic became the dominant language of the later Iron Age, whereas Gothic died out as a living language when it ceased to be spoken in Scandinavia.

From the Neolithic to the Bronze Age we may postulate an increasing trend towards larger regional traditions (Robb 1993), which consolidated in the Bronze Age. From then on cultural dynamics are rather repetitive, with the exception of empire formation.

We can observe that during the early Iron Age a certain regional identity in material culture most probably corresponded to a language group (Northwest Germanic/Jasdorf Culture). Whether this was also an ethnic identity is difficult to know. However, we note that many local ethnic identities are mentioned by classical Roman authors, such as Tacitus during the earlier Iron Age, which corresponds quite well with the patchwork of archaeological local groups of the early Iron Age (typical for a period of reorganization). They are then overtaken by much larger ethnic groupings during the later Iron Age, a development that in many ways can be sustained archaeologically and in language, where also the new runic alphabet is introduced (Stoklund 2006). Similar observations of a correspondence between archaeological groupings and language can be observed during the early Iron Age in the Mediterranean (Kristiansen 1998, fig. 219). Thus, we can conclude that at least in certain conditions, language/dialects and material culture overlaps (Hall 1997:177ff.). But what about the larger ethnic consciousness, such as Greek or Nordic, terms we know were actively used in later historically attested situations. This is still a matter of debate (discussion in Hall 1997; Finkelberg 2005). I consider it most likely that such overarching ethnic identity was employed also during later prehistory, otherwise it becomes difficult to understand the clear demarcation of borders in material culture and cosmology between Nordic and non-Nordic during the Bronze Age. It can further be demonstrated that the defining elements in this shared Nordic culture were linked to a symbolic identity of myth and cosmological origins (Kristiansen and Larsson 2005, ch. 6 and 7).

The long periods with an established Nordic tradition (convergence) are thus to be considered “normal” during this three thousand year long interval, and the periods with cultural divisions and language divisions/dialects (divergence) are intermediate periods of social and economic reorganization and cultural hybridization. Such periods would also profoundly change religion and cosmology, and therefore it is not surprising that Norse mythology contains rather little of its Bronze Age origins (Kristiansen 2006a), in opposition to Celtic mythology in Ireland, because south Scandinavia was much more influenced by the turmoil and the historical changes on the European continent. On the other hand these

changes rarely implied immigrations of new people with new languages, as it happened on the continent. Therefore a Nordic cultural and cosmological self-consciousness in material culture, and ethnic identity I suggest, could develop and be maintained for thousands of years. It is worth noticing, however, that it was not until the beginning of the Bronze Age that such larger regional traditions in language, cosmology, and probably an overarching ethnic identity, would develop, due to the highly increased capacity and need for interaction in order to distribute metal, which also implied a highly increased information flow. In that sense the Bronze Age represents something radically new compared to the preceding Neolithic period.

Bibliography

- Aabye, B.
 1985 Norddjurslands landskabsudvikling gennem 7000 år. Belyst ved pollenanalyse og bestemmelser af støvindhold i højmosetørv. In: *Fortidsminder 1985*, K. Kristiansen (ed.). Antikvariske Studier 7:60-84. København: Fredningsstyrelsen.
- Andersen, S.T.
 1995 History of Vegetation and Agriculture at Hassing House Mose, Thy, Northwest Denmark. *Journal of Danish Archaeology* 1992-1993:39-57.
 1998 Pollen analytical investigations of barrows from the Funnel Beaker and Single Grave Cultures in the Vroue area, West Jutland, Denmark. *Journal of Danish Archaeology* 12(1994-95):107-33.
- Anthony, D.W.
 1995 Horse, wagon & chariot: Indo-European languages and archaeology. *Antiquity* 69:554-65.
 1997 Prehistoric migration as social process. In: J. Chapman and H. Hamerow (eds.), 21-32.
 2007a *The horse, the wheel and language: how Bronze-Age riders from the Eurasian Steppes shaped the modern world*. Princeton: Princeton University Press.
 2007b Persistent Identity and Indo-European Archaeology in the Western Steppes. In: C. Carpelan, A. Parpola and P. Koskallio (eds): *Early Contacts between Uralic and Indo-European: Linguistic and Archaeological Considerations*. Memoires de la Societe Finno-Ougrienne No 242. Helsinki, 11-36.
- Apel, J.
 2001 *Daggers, Knowledge and Power: The Social Aspects of Flint-Dagger Technology in Scandinavia 2350-1500 BC*. Uppsala: University of Uppsala.

- Arnoldussen, S., and H. Fokkens (eds.)
2008 *Bronze Age Settlements in the Low Countries*. Oxford: Oxbow Books.
- Artursson, M.
2005 *Byggnadstradition & Gårds- och bebyggelsesstruktur*. In: Bronsåldersbygd, 2300-500 f. Kr. :84-159. Skånska spar – arkeologi längs Väst kustbanan. P. Lagerås and B. Strömberg (eds.). Lund: Riksantikvarieämbetet.
- Barber, E.J.W.
1989 Archaeolinguistics and the borrowing of old European technology. *Journal of Indo-European Studies* 17(3&4):239-50.
- Bockius, R. and P. Luczkiewicz
2004 *Kelten und Germanen im 2.-1- Jahrhundert vor Christus*. Archäologische Bausteine zu einer historischen Frage. (Römisch-Germanisches XZentralmuseum, Monographien, Band 58). Bonn: Verlag des Römisch-Germanischen Zentralmuseums in Kommission bei Dr. Rudolf Habelt.
- Bergerbrant, S.
2007 *Bronze Age Identities: Costume, Conflict and Contact in Northern Europe 1600-1300 BC*. (Stockholm Studies in Archaeology No 43). Stockholm: University of Stockholm.
- Berglund, B.
2006 Agrarian landscape Development in Northwestern Europe Since the Neolithic: Cultural and Climatic Factors behind a Regional/Continental Pattern. In: *The World System and the Earth System. Global Socioenvironmental Change and Sustainability Since the Neolithic*, A. Hornborg and C.L. Crumly (eds.). Walnut Creek, CA: Left Coast Press, 111-21.
- Brandt, J.
2001 *Jastorf und Latène. Kultureller Austausch und seine Auswirkungen auf soziopolitische Entwicklungen in der vorrömischen Eisenzeit*. Rahden/Westfalen: Verlag Marie Leidorf.
- Brather, S.
2004 *Ethnische Interpretationen in der frühgeschichtlichen Archäologie. Geschichte, Grundlagen und Alternativen*. Berlin/New York: Walter de Gruyter.
- Burmeister, S.
2000 Archaeology and Migration. Approaches to an Archaeological Proof of Migration. *Current Anthropology* 41(4):539-67.
- Carpelan, C., A. Parpola, and P. Koskallio (eds.)
2007 *Early Contacts between Uralic and Indo-European: Linguistic and Archaeological Considerations*. Memoires de la Societe Finno-Ougrienne No 242. Helsinki.

- Clarke, D.L.
1968 *Analytical Archaeology*. London: Methuen.
- Chapman, John, and Helena Hamerow
1997 *Migrations and Invasions in Archaeological Explanation*. Oxford: BAR International Series 664.
- Damm, C.
1993 The Danish Single Grave Culture – Ethnic Migration or Social Construction? *Journal of Danish Archaeology* 10(1991):199-204.
- Daidsen, K.
1973-74 Tragtbægerkulturens slutfase. Nye C14 dateringer. *Kuml*: 165-78. Aarhus.
- Dornheim, S., et al.
2005 *Sex und gender, Alter und Kompetenz, Status und Prestige: Soziale Differenzierung im 3. Vorchristlichen Jahrtausend*. In: *Alter und Geschlecht in Ur-und frühgeschichtlichen Gesellschaften*, J. Müller (ed.). Universitätsforsch. Prähist. Arch. 126. Bonn, 27-71.
- Dzieduszycka-Machnik, A., and J. Machnik
1990 Die Möglichkeiten der Erforschung der sozialen Struktur frühbronzezeitlicher Menschengruppen in Klempolen - am Beispiel der Nekropole in Iwanowice. *Godisniak*, Knjiga XXVII, Centar za Balkanoloska Ispitivanja, Knjiga 26:185-196. Sarajevo: Akademija Nauka I Umjetnosti Bosne I Hercegovine.
- Ebbesen, K.
2006 *The Battle Axe Period*. Copenhagen: Attika.
- Fernández-Götz, M.A.
2008 *La construcción arqueológica de la etnicidad*. Prologo de Gonzalo Ruiz Zapatero. Editorial Toxosoutos. Serie Keltia 42. Coruna.
- Finkelberg, M.
2005 *Greeks and Pre-Greeks: Aegean Prehistory and Greek Heroic Tradition*. Cambridge: Cambridge University Press.
- Glob, P.V.
1944 *Studier over den jyske enkeltgravskultur*. Aarbøger for Nordisk Oldkyndighed og Historie. København: Kgl. Nordiske Oldskriftsselskab.
- Guilaine, J., and J. Zammit
2005 *Origins of War*. Oxford: Blackwell Publishing.
- Hall, J.
1997 *Ethnic identity in Greek antiquity*. Cambridge University Press.
2002 *Hellenicity: Between Ethnicity and Culture*. Chicago/London: Chicago University Press.
- Haarmann, H.
1996 Aspects of early Indo-European contacts with neighboring cultures. *Indogermanische Forschungen*, Zeitschrift für

- Indogermanistik und allgemeine Sprachwissenschaft, 101. Band:1-14. Berlin/New York.
- Harrison, R. and V. Heyd
2007 The Transformation of Europe in the Third Millennium BC: the example of 'Le Petit-Chasseur I+III' (Sion, Valais, Switzerland). *Præhistorische Zeitschrift*, 82. Band. Berlin/New York, 129-214.
- Hedeager, L.
1987 Empire, frontier and the barbarian hinterland: Rome and northern Europe from AD1-400. In: *Centre and periphery in the ancient world*, M. Rowlands, M. Larsen and K. Kristiansen (eds.). Cambridge: Cambridge University Press, 125-40.
2003 Beyond mortality - Scandinavian animal style AD 400-1200. In: *Sea Change: Orkney and Northern Europe in the later Iron Age AD 300-800*, J. Downes and A. Ritchie (eds.). Balgavies, Angus: The Pinkfood Press, 127-36.
- Heyd, V.
2007 Families, Prestige Goods, Warriors and Complex Societies: Beaker Groups and the 3rd Millennium cal BC. *Proceedings of the Prehistoric Society* 73:327-81.
- Hodder, I.
1982 *Symbols in Action: Ethnoarchaeological studies of material culture*. Cambridge: Cambridge University Press.
- Hübner, E.
2005 *Jungneolitische Gräber auf der Jütischen Halbinsel*. Typologische und chronologische Studien zur Einzelgrabkultur Band I-III. Nordiske Fortidsminder Serie B, Band 24-1. København: Det Kgl. Nordiske Oldskriftsselskab.
- Jensen, J.
1997 *Fra Bronze- til Jernalder – en kronologisk udnersøgelse*. Nordiske Fortidsminder, Serie B, Bind 15. København: Det Kgl. Nordiske Oldskriftsselskab.
2004 *Danmarks Oldtid. Yngre Jernalder og Vikingetid 400 e. Kr.-1050 e.Kr.* Gyldendal. København: Gyldendal.
- Jones, S.
1997 *The Archaeology of Ethnicity. Constructing identities in the past and the present*. London/New York: Routledge.
- Jørgensen, E.
1985 Brydningstid. *Skalk*, Nr. 2: 3-8. Århus: Skalks forlag.
- Klassen, L.
2005 Refshøjgård. Et bemærkelsesværdigt gravfund fra enkeltgravskulturen. *Kuml*:17-59.

- Kohl, Philip
 2007 *The Making of Bronze Age Eurasia*. Cambridge: Cambridge University Press.
- Kremenetski, K.
 2003 Steppe and Forest Steppe Belt of Eurasia: Holocene Environmental History. In: *Prehistoric steppe adaptations and the horse*, M. Levine, C. Renfrew, and K. Boyle (eds.). Cambridge: McDonald Institute Monographs, 11-29.
- Kristiansen, K.
 1989 Prehistoric migrations - the case of the Single Grave Culture and Corded Ware Cultures. *Journal of Danish Archaeology* 8:211-25.
 1998 *Europe before History*. Cambridge: Cambridge University Press.
 2004 Sea faring voyages and rock art ships. In: *The Dover Boat in Context : Society and Water Transport in Prehistoric Europe*, P. Clark (ed.). Oxford: Oxbow Books, 111-22.
 2005 What language did Neolithic pots speak? Colin Renfrew's farming-language-dispersal model challenged. *Antiquity* 79(305): 679-91.
 2006a The Twin Rulers as a Religious and Political institution during the Bronze Age. *Cosmos* 19(2):181-211.
 2006b Cosmology, economy and long-term change in the Bronze Age of Northern Europe. In: *Ecology and Economy in Stone and Bronze Age Scandinavia*. K.G. Sjögren (ed.). Skånska spar- arkeologi längs västkustbanan. Lund: National Heritage Board, Sweden, 170-94.
 2006c Eurasian Transformations: Mobility, Ecological Change, and the Transmission of Social Institutions in the Third and Early Second Millennium BCE. In: *The World System and the Earth System. Global Socio-Environmental Change and Sustainability Since the Neolithic*, A. Hornborg and C. L. Crumley (eds.). Walnut Creek, CA: Left Coast Press, 149-62.
- Kristiansen, K., and T. Larsson
 2005 *The Rise of Bronze Age Society*. Travels, transmission and transformations. Cambridge: Cambridge University Press.
- Larsson, L.
 1993 From MNA to MNB – A South Swedish Perspective. *Journal of Danish Archaeology* 10 (1991):202-12.
- Lehmann, W. P.
 1992 *Historical Linguistics*. New York: Routledge.
 1993 *Theoretical Bases of Indo-European Linguistics*. London: Routledge.

- Lekberg, P.
2002 *Yxors liv. Människors landskap*. En studie av kulturlandskap och samhälle i Mellansveriges senneolitikum. Uppsala: University of Uppsala.
- Linderholm, A.
2008 *Migration in Prehistory. DNA and stable isotope analyses of Swedish skeletal material*. Thesis from Stockholm University, Stockholm.
- Mallory, J.P.
1996 The Indo-European Homeland Problem: a Matter of Time. In: *The Indo-Europeanization of Northern Europe*, Karlene Jones-Bley and Martin Huld. (JIES Monograph No. 17). Papers Presented at the International Conference held at the University of Vilnius, Vilnius, Lithuania. Washington, DC: Institute for the Study of Man, 1-22.
1998 A European Perspective on Indo-Europeans in Asia. In: *The Bronze Age and Early Iron Age Peoples of Eastern Central Asia*, V.H. Mair (ed.). vol. 1. (JIES Monograph Series 26) Washington, DC: Institute of the Study of Man, 175-200.
2002a Indo-Europeans and the steppelands: the model of language shift. In: *Proceedings of the Thirteenth Annual UCLA Indo-European Conference* K. Jones-Bley et al. (eds). (JIES Monograph No. 44) Washington, DC: Institute for the Study of Man, 1-27.
2002b Archaeological models and Asian Indo-Iranians. *Proceedings of the British Academy*, 116: *Indo-Iranian Languages and Peoples*, 19-42.
- Mallory, J.P., and D.Q. Adams
2006 *The Oxford Introduction to Proto-Indo-European and the Proto-Indo-European World*. Oxford: Oxford University Press.
- Müller, J. (ed.)
2002 *Vom Endneolithikum zur Frühbronzezeit: Muster sozialen Wandels?* Tagung Bamberg 14.-16. Juni 2001. UPA 90. Bonn.
- Nichols, J.
1998 The Eurasian spread zone and the Indo-European dispersal. In: R. Blench and M. Spriggs (eds.): *Archaeology and Language II*: ch. 10. (One World Archaeology 29). London: Routledge.
- Odgård, B.V.
1994 The Holocene vegetation history of northern West Jutland, Denmark. *Opera Botanica* 123:1-171.
- Odgård, B.V., and H. Rostholm
1987 A Single Grave Barrow at Harreskov, Jutland: Excavation and Pollen Analysis of fossil soil. *Journal of Danish Archaeology* 6:87-100. Copenhagen.

- Oestigård, T. and J. Goldhahn
 2006 From the Dead to the Living: Death as Transactions and Renegotiations. *Norwegian Archaeological Review* 39(1):27-48.
- Olmstedt, G.
 1999 Archaeology, Social Evolution, and the Spread of Indo-European Languages and Cultures. In: *Miscellanea Indo-European*, E.C. Polome (ed.). (Journal of Indo-European Studies Monograph Series No. 33) Washington D.C.: Institute for the Study of Man, 75-116.
- Østmo, E.
 2005 Over Skagerak i steinalderen. Noen refleksjoner om oppfinnelsen av havgående fartøyer i Norden. *Viking* 2005:55-82. Oslo: Norwegian Archaeological Society.
- Petersen, H.C.
 1993 An anthropological investigation of the Single Grave Culture in Denmark. In: *Populations of the Nordic Countries: Human population biology from the present to the Mesolithic*, E. Iregren and R. Liljekvist (eds.). (Institute of Archaeology Report Series No. 46.) Lund: University of Lund, 178-88.
- Prescott, Christopher, and Eva Walderhaug
 1995 The last frontier? Processes of Indo-Europeanization in Northern Europe: The Norwegian Case. *The Journal of Indo-European Studies* 23(3&4):257-78.
- Price, D., C. Kniper, G. Grupe, and V. Smrcka
 2004 Strontium Isotopes and Prehistoric Human Migration: the Bell Beaker Period in Central Europe. *European Journal of Archaeology*, vol. 7(1):9-40.
- Prieto-Martinez, M. P.
 2008 Bell Beaker Communities in Thy: The First Bronze Age Society in Denmark. *Norwegian Archaeological Review* 41(2):115-58.
- Renfrew, C.
 1999 Time Depth, Convergence Theory, and Innovation in Proto-Indo-European: "Old Europe" as a PIE Linguistic Area. *The Journal of Indo-European Studies* 27(3&4):257-93.
- Renfrew, C., A. McMahon, and L. Trask (eds.)
 2000 *Time Depth in Historical Linguistics*. Cambridge: McDonald Institute Monographs.
- Rindel, P.O.
 1999 Development of the village community 500BC-100AD in west Jutland, Denmark. In: *Settlement and Landscape. Proceedings of a conference in Århus, Denmark May 4-7, 1998*. C. Fabech and J. Ringtved (eds.). Århus: Jutland Archaeological Society, 79-99.

- Robb, J.
1993 A social prehistory of European languages. *Antiquity* 67(257):747-61.
- Robinsons, D., and D. Kempfner
1987 Carbonized grain from Morten Sande 2 – a Single Grave site in Northwest Jutland. *Journal of Danish Archaeology* 6:125-29.
- Sarauw, T.
2007 On the Outskirts of the European Bell Beaker Phenomenon – the Danish Case. HYPERLINK www.jungsteinzeitSITE.de:1-52
2008 Danish Bell Beaker Pottery and Flint Daggers – the Display of Social Identities. *European Journal of Archaeology*, Vol. 11(1):23-44.
- Sherratt, A.
1997 *Economy and Society in Prehistoric Europe. Changing Perspectives*. Edinburgh: Edinburgh University Press.
- Shislina, N.I.
2001 The seasonal cycle of grassland use in the Caspian Sea steppe: a new approach to an old problem. *European Journal of Archaeology* 4:323-46.
- Steinberg, J.
1997 *The Economic Prehistory of Thy, Denmark. A Study of the Changing Value of Flint Based on a Methodology of the Plowzone*. PhD, University of California, Los Angeles.
- Stensköld, E.
2004 *At berättat en senneolitisk historia. Sten och metal I södra Sverige 2350-1700 f. Kr.* Stockholm Studies in Archaeology. Stockholm: University of Stockholm.
- Stoklund, M.
2006 Chronology and Typology of the Danish Runic Inscriptions. In: *Runes and their Secrets*, M. Stoklund, M.L. Nielsen, and G. Fellows-Jensen (eds.). Copenhagen: Museum Tusulanum Press. University of Copenhagen.
- Struve, K.W.
1955 *Die Einzelgrabkultur in Schleswig-Holstein und ihre kontinentale Beziehungen*. Offa-Bücher 11. Neumünster: Karl Wachholtz.
- Sørensen, H.
1995 Emergence of the Single Grave Culture – a Regional Perspective. *Journal of Danish Archaeology* 11(1992-93):150-57.
- Vandkilde, H.
1996 From Stone to Bronze. The Metalework of the Late Neolithic and Earliest Bronze Age in Denmark. *Jutland Archaeological Society Publications XXXII*. Aarhus University Press.
2005/07 A Review of the Early Late Neolithic Period in Denmark: Practice, Identity and Connectivity. <http://www.jungsteinzeitSITE.de>

- (accessed 2 February 2007). Published also in 2007 in *Offa* 61/62:75-109.
- 2006 Warriors and Warrior Institutions in Copper Age Europe. In: *Warfare and Society*, T. Otte, H. Thrane, and H. Vandkilde (eds.). Archaeological and Social Anthropological Perspectives. Aarhus University Press.
- Vander Linden, M.
2007 What linked the Bell Beakers in the Third Millennium BC Europe? *Antiquity* 81:343-52.
- van der Waals, J.D.
1964 *Prehistoric Disc Wheels in the Netherlands*. Groningen: JB Wolters.

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