

Technology, mythology and the travels of the agricultural package in Europe

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ABSTRACT – *A group of artefacts is used here to explore the possibilities of explaining how the spread of agricultural techniques affected the peoples of Northern Europe whenever and wherever they met the earliest farmers. An attempt is made to correlate movements of artefacts and their social and political contexts during the Neolithic.*

IZVLEČEK – *S pomočjo artefaktov raziskujemo možne razlage, kako je širjenje kmetovalskih tehnik vplivalo na prebivalce severne Evrope ko in kjer so se srečali z zgodnjimi kmetovalci. Poskušamo ugotoviti povezave med širjenjem artefaktov in njihovim družbenim ter političnim kontekstom v neolitiku.*

KEY WORDS – *Neolithisation; stone-tool assemblages; Central and Northern Europe*

INTRODUCTION

The debate on the mechanisms behind the spread of agriculture from the Middle and Near East, as summarised by Budja (1999), Aubán (1999) and others in the same volume, still provokes sharp expressions. The Scandinavian debate on this issue has partly suffered from lack of material explicitly supporting any of the "indigenist" or "diffusionist" hypotheses. In this respect, Scandinavia must remain one of the last margins of Europe where farming became an important issue only when all other really suitable regions had been exploited and established. Nevertheless, the "modern" ideas of exploitation of resources eventually reached even this end of the world. If we look at the problem from another point of view, i.e. that of the hunter-gatherers, we may say that Scandinavia was saved for millennia from the acquisitive, aggressive and nature-destroying policies which constitute the farming mentality. The faint traces which fit together with the remains from areas where domestication obviously first occurred relate to domesticated plants and animals, exotic raw materials and technology.

We can follow a route for the biological parts of the so-called agricultural package from the Middle and

Near East to northern Europe without encountering problems. We can also follow the spread of the first pottery, metal-working techniques and metal objects. The movement of stone tools is easy to follow, as it concerns exotic raw materials with well-defined sources. Flint-knapping technology has not yet been compared. The example that I give here is presented in an attempt to evaluate this aspect. Hitherto, in attempts to trace movements, stone-tool assemblages have been examined for tools made from imported raw materials. I would like to propose that special production modes could be "exported" or applied to local materials to serve the needs of "colonising or resource-surveying" groups. The point of departure is that long blades in southern contexts are closely connected with the appearance of agriculture, but they are also common in the Palaeolithic and Mesolithic forager settings of northern Europe. It is actually the mode of their production, which reveals the producers or the "customers" who ordered them. Furthermore, if it was important to apply a special mode of production, we may ask if and how it was transmitted to other groups and why it was so important. These considerations cannot be evaluated without consulting different kinds of non-archaeolo-

gical sources and making predictions about human behaviour in different situations and in different contexts, in other words, without using ethno-analogies.

THE SOUTHERN BLADES

In the Near East and southern Europe, the regular blade industry was recognised as belonging to the farming-society setting. The blades serve as a chronological indicator bound to agriculture (see *Cauvin 2000.36, 39ff*; *Kozłowski 1994.595–601*; *Özdoğan & Gatsov 1998.209–232*). The production of blades follows special methods and is visible in materials from at least Natufian and Pre-pottery Neolithic B (PPNB) up to the Uruk period in the Near East. Very early extraction of obsidian is documented in Cappadocia, and the consumption of the products in the Levant is dated around 9000 BC (*Cauvin 2000.93ff*; *Balkan-Atli et al. 2000.133–145*). The mines in Eastern Taurus at Bingöl and at Lake Van later complete this extraction area, which supplied wide areas with obsidian (*Cauvin 2000.96ff*; *Fig. 1*). The standardisation of blade production started as early as 8000 to 6500 BC. Between 6000 and 5500 BC the sizes of the blades and cores increased, as well as the quality of the raw materials and the products (both for obsidian and for flint/chert, both of which were imported when needed) (*Kozłowski 1994.143ff*). This production belongs to the phenomenon following the spread of agricultural techniques, which is sometimes called the “Agro-standard”. The standardised production of blades was carried out in specialised workshops, the raw material was brought from obsidian and flint mines, and these blades, among other products, seem to have been handled in widespread market networks. The end of production and the breakdown of the market networks have been dated to the same time as the breakdown of town-states at the end of the Uruk period at c. 3100 BC (*Kozłowski 1994.164ff*; *Rosen 1983.20ff*).

There also existed a much simpler production of blades, bladelets and tools from local raw materials which was carried out on the same site in parallel with the above described specialised industry. This production can be followed all along the path of the Agro-standard or the agricultural package from the Near East to central and northern Europe. At the end of the Copper Age, local production and standardised production may have merged into the production of so-called Canaanian blades, produced in local settings, but from imported, very fine-grained flint and good-quality obsidian (*Otte & Behm-Blanke 1992*; *Rosen 1983*). An example of a production site

bound to an “elite” setting is room 29 in the complex of Hassek Höyük on the Euphrates, where twenty-eight cores prepared for the production of Canaanian blades were found in a pile beside a wall, while twelve others and production waste were distributed throughout the room. The layers with flint cores in the room were dated to the Uruk period and the Early Bronze Age. Very few blades were found in one of the other houses. In a layer dated to an earlier period, a cluster of ten blades was found. The flint source that could have been used as a quarry at Hassek was found only one hour’s walk away from the settlement, but the obsidian used for the implements here came from Bingöl, which is a much more distant source. The products (the blades) of the same blade-knapping method used in Hassek were found at distances of 600–1000 km from the settlement (*Fig. 1*; *Behm-Blanke 1992.1ff, 216ff*). Canaanian blades seem to have been used in some tasks related to harvesting, as sickles and also as insets in threshing sledges which have been used up to modern times in some parts of the Near East (*Skakun 1993*; *Weiner 1992.225ff*; *Collin 1992.248ff*; *Skakun 2000*; *Gurova 2000*; *Anderson 2000*).

The situation during the Neolithic in Greece, as described by Perlès (1992), shows a similar complex picture. Local production occurred during the Early and Middle Neolithic, along with an emerging, long-distance movement of ready-made or semi-manufactured products from Melian (and Gialian) obsidian mines, western-Greek honey-flint products and other types of resource materials. Perlès states that the cores for prismatic-blade production were made in a few workshops around the consumption areas and the blades were then produced at the settlement sites, a few at a time, and the cores were moved to be used at other sites as well (*Perlès 1992.125ff*).

The use of obsidian as raw material for tools in the central and western Mediterranean regions is “strictly associated with pottery-using agro-pastoralists” from the Early Neolithic onwards (*Tykot 1996.46*). Obsidian from four sources (Monte Arci in Sardinia; the island of Palmarola, west of Naples; the island of Lipari north of Sicily; and the island of Pantelleria in the Straits of Sicily) supplied an area from North Africa through Corsica and Italy, and from the Dalmatian coast to south-western France. Tykot states that the movement of obsidian was involved in a prestige-goods exchange or market in the area tied to the development and establishment of the Neolithic economy. Tykot’s source determinations show some

main directions in the movement of obsidian objects, mostly from Sardinia and Lipari towards the north, and some additional "exports" from the other sources in different directions (Fig. 1).

In summary, it is possible to follow a development through the Mediterranean region, similar to that in the Levant and the Middle East, towards the specialised Neolithic production of large blades and use of raw-material resources in the establishment of a wide "production-consumption" network.

CENTRAL EUROPEAN BLADES

Although found already in the Palaeolithic, blades and blade production may also have been tied into a prestige-goods exchange in central Europe. A set-

tlement-based production of blades occurs at the Gravettian and Magdalenian sites. A whole chain of production is detectable in the assemblages of these sites involving local materials. But there is also a tendency to bring ready-made products from distant sources, for example flint from mines in the Cracow region or chert from Bavaria (Svoboda *et al.* 1994: 129ff; Klima *et al.* 1997; Czesla *et al.* 1990). The method of extracting the blades was via preparation, in which the facets on platforms produced suitable angles for detachment (Fig. 2).

The Mesolithic groups of central Europe rejected the production of long blades. Instead, the technology concentrated on the production of microblades, microliths and to a certain extent the use of the bipolar method for other types of tools. The connection be-

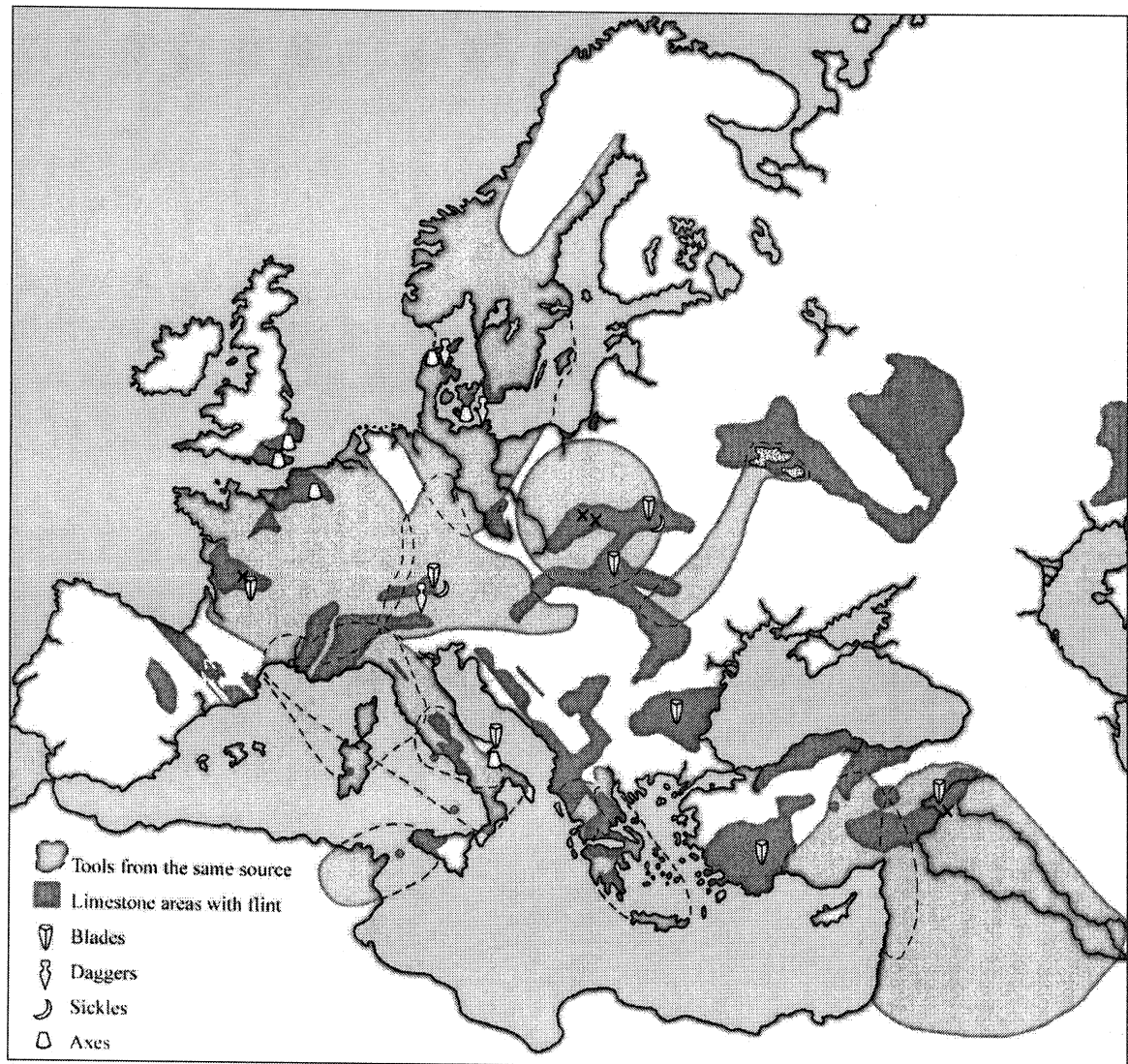


Fig. 1. Some of the European flint, chert and obsidian sources used during the Neolithic period and the approximate areas of distribution of artefacts from the sources.

tween long blades and their systematic use as harvesting tools is not described from the Palaeolithic and Mesolithic contexts of central Europe.

During the Neolithic, a more systematic production of long blades seems to have followed the agricultural package from the south-east. The blades were found on the early Band Ceramic settlements, and the same mode of production can be followed via the Pre-pottery Neolithic, Sesklo, Karanovo (the white-painted pottery), Starčevo and Körös groups. An interesting fact is that production sites for these types of long blades are still missing. The conclusion must be that the blades were produced outside the settlements and that both the blades and the method of their production were imported into central-European settlements (*Kaczanowska 1982; Kozłowski 1982; Galsov 1982; 1993; Perlès 1987; Moundrea-Agrafioti 1981; 1983; Tellenbach 1983; Todorova 1989; Özdoğan 1999*).

An important factor in the spread of production methods may have been the search for new sources of available raw material. As we have seen in the case

of Hassek Höyük (and several other mines and production sites in the Near Eastern region), some raw materials and some products showed a tendency to spread throughout wide areas (*see also Özdoğan 2000; Cauvin 2000*). During the Early Neolithic, a systematic exploitation and spread of products from several flint, obsidian and other raw-material mines in Europe seem to have started (Fig. 1). As mentioned above, some of the sources, like the chert and flint deposits in Poland and Germany, were already exploited during the Late Palaeolithic. However, between 6000 and 2400 BC, mining was intensified and specialised production in the mining areas, with wide distribution areas, began. Some of the mining districts housed the production of blades; the best-known are Swieciechów, Saspów and Jerzmanowice in Poland and Le Grand Pressigny and Mouthiers "le Martins" in France (*Balcer 1981.310-317; Babel et al. 1981.578-627; Desloges et al. 1981.474-509; Kelterborn 1981.228-232; Weiner 1981.233-235*). Production sites for daggers, axes and adzes appeared in several parts of Europe, and whole flint nodules were brought to central Europe from north-eastern flint sources in the Volhynian mountains

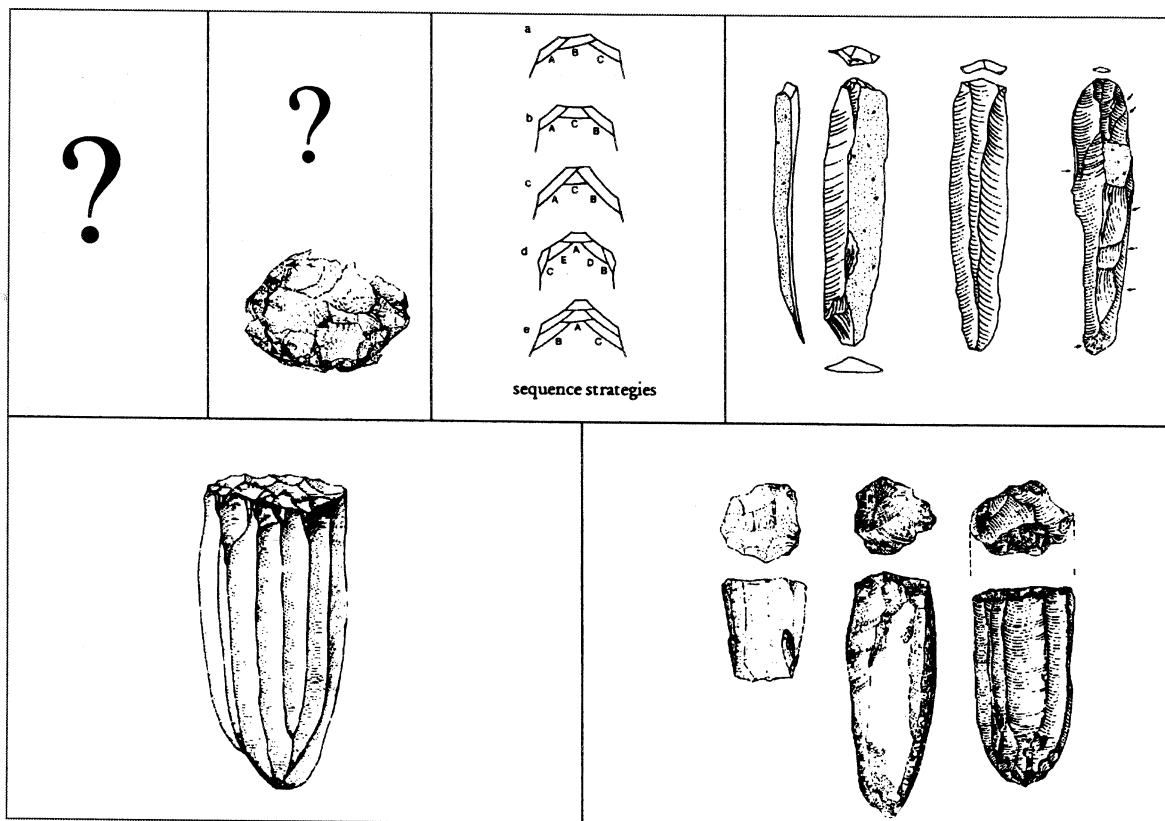


Fig. 2. The production chain of Neolithic blades made on one-sided platform cores. Some of the production steps have left no remains or waste. The method of decortification is not known. The reduction for platform is unsure. The blades and some cores are the only clear remains of production. The Swedish cores pictured are old stray finds.

(Modderman 1981.308f; Schmid 1981.141-165; Olauson *et al.* 1981.183-204; Becker & Weisgerber 1981.456-473; Apel 2000). Midgley (1992.239f) has proposed that systematically organised prospecting and extracting of flint around Europe based on specialisation, consumption groups and regional markets existed since the Early Neolithic, Band Ceramic period. Specialists such as flint prospectors and "middlemen" or "agencies" were responsible for the production and distribution of goods.

The flint mines and other extraction places in central Europe were found and described, with some exceptions, during the latter half of the 20th century. New ones are still being found and there are probably more to come. So the picture of their frequency and distribution across the continent is still to some extent guesswork. Intensively used sites for the production of specialised tools usually surround the known mines - we could call them factories. The extraction seems to have started in some places in the Late Palaeolithic (Midgley 1992.239f; Balcer 1983), but the main period of use and systematic production was from the Early Neolithic to the Copper Age (Lech 1971; 1972; 1975; 1979; Dzieduszycka-Machnikowa 1976; Balcer 1971.71-132; 1975; 1976.179-199; 1981.310-317; Zimmermann 1982; Smolla 1987.127-129).

The use of these sources seems to run in parallel with the use of gold and copper ores, which were extracted in other types of mines already in the Early Neolithic. We may speak of two different industries, in which the extractors were well aware of the possibilities of finding raw-material deposits in Europe as early as Neolithic times. Specialists were surely needed in these types of enterprises (Lichardus 1981.265-270; Lech 1981.274ff).

The central European blades are found in all possible contexts. They are usually broken on the settlement sites, and they are usually whole, often in clusters, in hoards and graves, especially in the Copper Age. There are some graves in which the contents have been associated with flint extraction and/or knapping (Lech 1981.272-278; Kruk 1969.399-403). Many graves of the Copper Age, Tisza-Polgár Culture in Slovakia and Hungary contain, as an important part of the grave goods, blades and cores of flint brought to the settings from the Volhynian-Podolian mountains, about 400 km to the north-east as the crow flies. Some also contain raw nodules, weighing up to 3 kg, of the same type of flint (Lichardus-Itten 1981.279-283; Bognár-Kutzián 1972; Šiška 1964. 293ff; Fig. 3).

In summary, a change of blade production and consumption is detected even in central Europe which relates to the spread and establishment of agricultural techniques from the South East and the following material changes. There seems to have been a shift in detection and utilisation of available raw material sources around the area during this time. There are two possible interpretations of the production and consumption patterns in central Europe. When people moved to another place, the settlements were carefully cleared of any knapping waste, or there were rules about who was permitted to produce the tools or blades and where they could be produced. In the second case, the tools or blades were mainly produced to maintain a ritual-mythical tradition of a group in the society, the group not necessarily being the producers.

THE NORTHERN BLADES

The situation in the northern-European contexts is different. Excellent, regular, blade production is indicated in the Villingebæk phase of the Kongemose culture of Scandinavia (*ca.* 6000-5000 BC cal) (Sørensen 1996; Vang Petersen 1993.14). The establishment of the Linear Pottery Culture in Poland happened in the period corresponding to the other half of the Villingebæk phase. The excessive production of blades indicated in the newly excavated settlement of Tågerup may be interpreted as production corresponding to new contacts and new needs expressed by these southern (continental) groups. This is a behaviour documented in many contact situations between hunter-gatherers and different, land-colonising groups. (For example, the painter Albert Namatjira in Alice Springs, Australia, and his family group, have delivered water-colour paintings in English "landscape style" in great numbers to galleries and collectors. A production of Kimberley points is also known in the prisoners' colony on Rottnest Island on the Australian west coast. The points were sold to museum employees, among others) It is necessary, however, to mention that the production methods of the Kongemose blades are defined as endemic in southern Scandinavia. They were produced by locals, although responding to some needs expressed by groups living further south, who looked for new, exploitable resources.

In the Ertcbölle time (the end of the Mesolithic) the blade-production industry disappeared from the settlements, and regularly produced blades did not appear before the Early Neolithic TRB and the Middle

Neolithic Battle Axe and Pitted Ware Cultures. The lack of blades at Late Mesolithic settlements and the evaluation of the flint industry as generally crude are interesting phenomena which I shall address later.

The blades are found in burial assemblages in both the latter contexts. They are also parts of the settlement assemblages, but there are some differences. In the Mesolithic graves, we find tools used in different ways (according to the results of use-wear analysis) as parts of the personal possessions of the deceased. This seems to be the case also in the graves of the Neolithic Pitted Ware Culture. The situation is complex; hitherto, the Pitted Ware Culture graves have been found in settings very distant from the nearest flint sources, and the number of blades, both in the related settlements and in the graves, is small. The settlements belonging to this tradition in flint-rich areas are full both of blades and of the waste from their production. The method of their production is defined as "cylindrical". The cores have two platforms, and blades are extracted around these in order to make them as straight as possible. A number of the blades have been transformed into large arrowheads with tongues. The raw material is not the best sort of flint – rather small beach nodules have often been selected – and most of the cores have been used to exhaustion (Fig. 4).

The Corded Ware Culture graves (the Boat Axe Culture in Sweden and Norway, the Battle-Axe Culture on the Danish islands and in northern Europe, and the Single Grave Culture on Jutland) form another type of context, which contains blades. The same type of blade has been found in some graves, as well as in hoards around the flint-bearing areas, sometimes together with thick-butted, flint axes (Karsten 1994). Most of the Swedish Boat Axe Culture blades have been subjected to a technological and functional analysis. They were subsequently compared with samples from Mesolithic blade production and samples from the central-European, Corded Ware Culture blades. The Swedish Neolithic blades

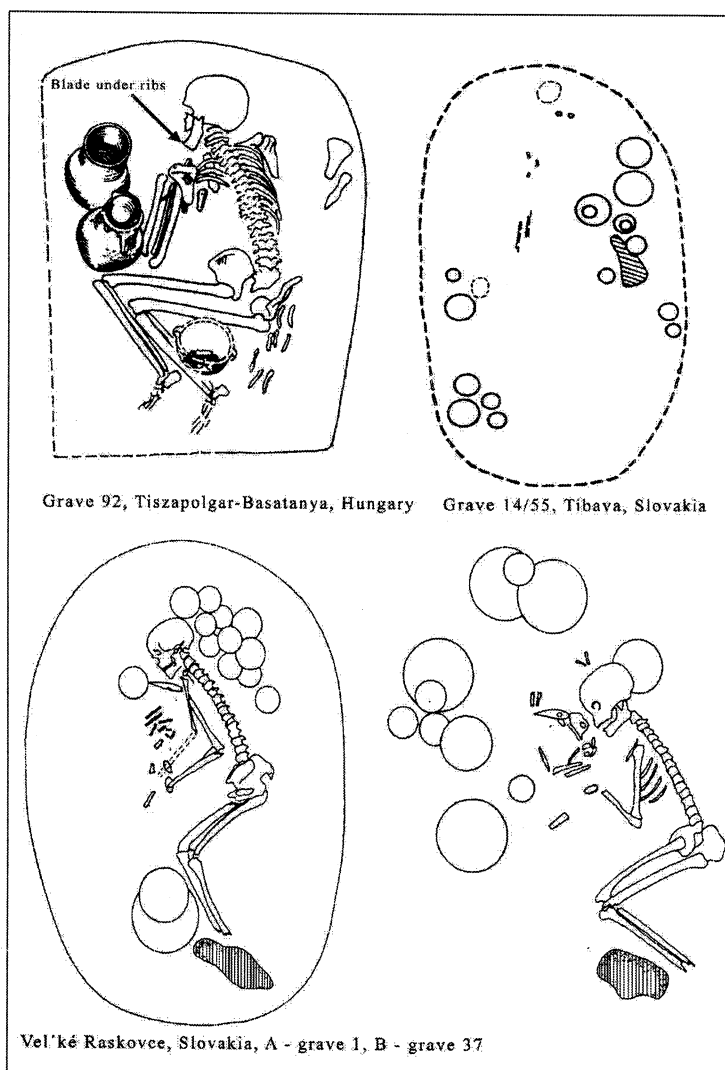


Fig. 3. Some graves of the Tiszapolgar group, with finds of flint blades and nodules of Volhynian-Podolian flint.

showed traces of detachment from conical cores of good-quality flint; the waste from the production could not be detected either in the graves, or in the contemporary settlements. After a thorough investigation, only three cores were detected among the stray-find collections in Sweden, their patina indicating depositions in bogs. The type of cores used for the detachment of blades found in the Corded Ware Culture graves is easy to recognise and distinguish from the cylindrical and even the Mesolithic blades. They are of a conical type, with bases slightly wider than the platform part. The platform is prepared for blade detachment by striking blows into the platform (and not, as in the Mesolithic methods of preparation, by blows from the platform towards the sides), the platform showing facets and ridges shaping angles suitable for the knapping of blades. The blades from these cores are also easily recogni-

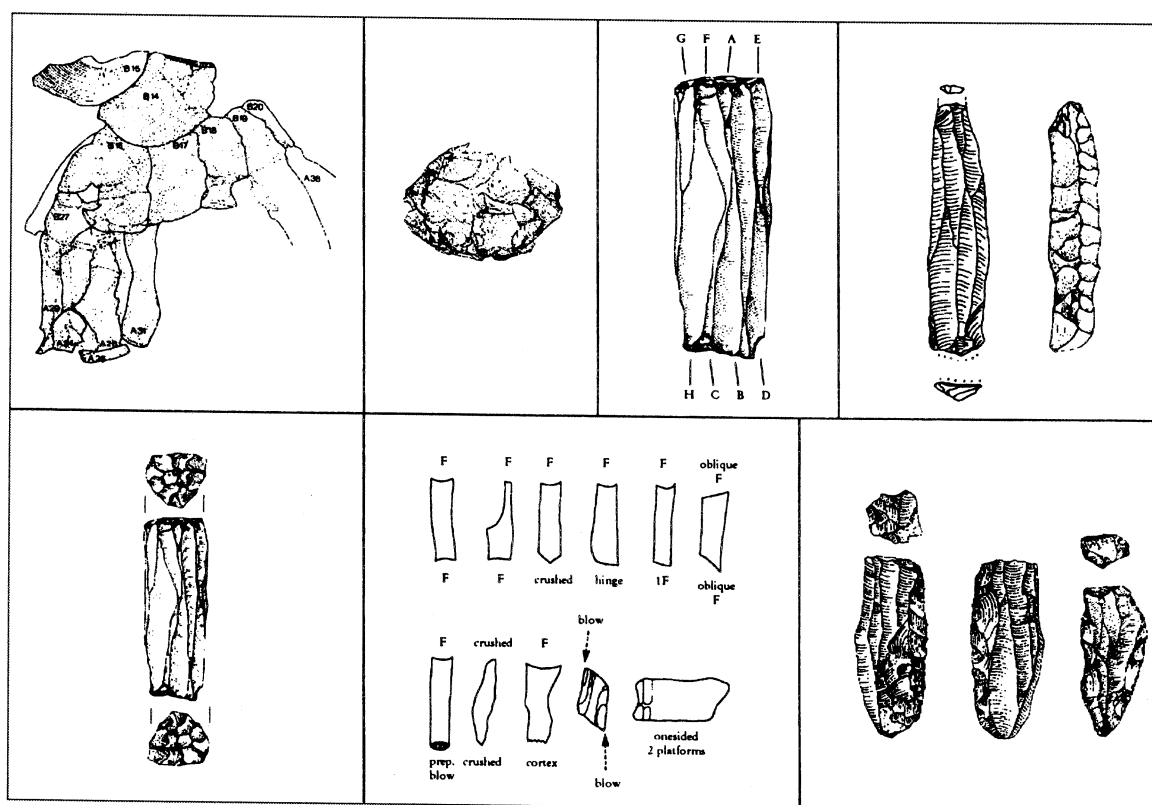


Fig. 4. The reduction strategy used in the production of Scandinavian Pitted-ware Culture blades. All the steps are represented in the settlement materials. The reduction sequence could be as shown in the figure. Several types of cores were recognised in the production waste.

sable: they have facets on the platform; they show traces of detachment with punches and are curved (Fig. 2; Callahan 1995:224ff). A microwear analysis of the available blades from Sweden showed two distinctly separate patterns. In the graves situated close to the flint sources, there was often more than one blade and they were either unused or had unrecognisable traces. In the parts remote from the flint areas, there was normally only one blade in a grave and most of them were heavily used for harvesting purposes (Larsson 1988; Lekberg et al. *manus*; Knutsson 1995:150ff; Fig. 5). In Denmark, a similar situation has been described (Vang Petersen 1993:56). A comparison with the material from a Corded Ware Culture burial ground in Vikletice in northern Bohemia showed a similar pattern of use and burial gifts in the graves (K. Knutsson 1995:221ff; H. Knutsson 1995:108f). A summary of the production and the deposition of flint blades in Scandinavia is presented in Figure 6. Further studies showed that the Scandinavian (and the central-European) blades were probably produced in the same manner as the blades that came to Europe together with the "Agro-standard" or the agricultural package from the Near East.

INNOVATIONS, TRADITIONS AND HIERARCHIES

There are, of course, several different reasons for the movement of tools and technologies. One of these is scarcity or an uneven distribution of resources. This type of tool and technique movement is well documented among different groups of mobile, egalitarian societies without agriculture. The preferential use of artefacts made from materials from distant sources is documented by McBryde and Lukin Watson from among other places, the hostile environments of the Simpson Desert in eastern Australia (Fig. 7). Grindstones, native tobacco (*pituri*), ochre, adzes and shells have been found hundreds or thousands of kilometres from the places where they were gathered or made. McBryde describes an intricate system of exchange networks, which, like the system of *Xhoro* among the African Bushmen, had, apart from purely functional reasons, the important purpose of strengthening and building positive social relations between individuals and groups (McBryde 1988; Lukin Watson 1980; Wiessner 1986). The movement of grindstones hundreds of kilometres from quarries is especially interesting. Their weight was considerable. We may compare it

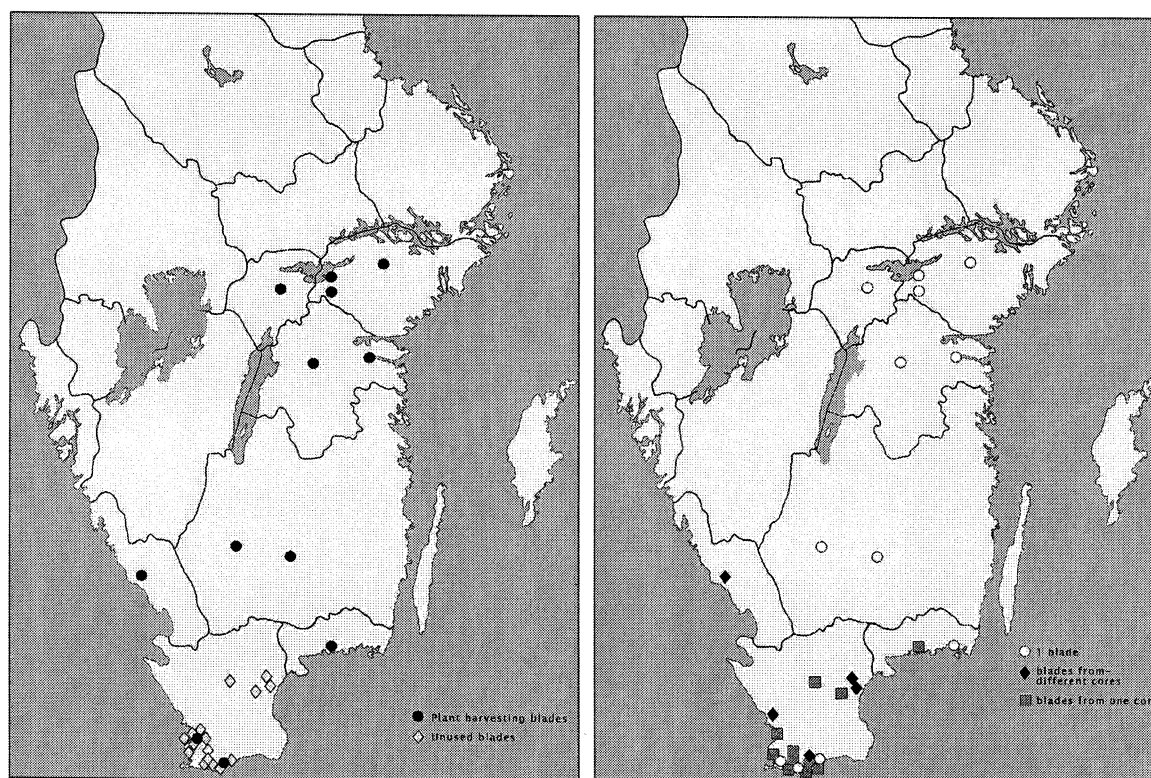


Fig. 5. The distribution of blades from the Swedish Battle-axe Culture and the use-wear identified on them. All the blades were found in graves.

with the weight of the flint nodules which were brought to Hungary and Slovakia from the Volhynian flint areas during the Copper Age and then buried, together with dead members of the Tiszapolgar and other communities (Fig. 3 and 7).

I would suggest an alternative explanation of the traits visible in northern and central-European material from periods before the Neolithic. I would also like to relate the picture to the beginning of blade production in the Middle and Near Eastern traditions of the Natufian culture and its contemporary and preceding groups.

While the Australian (and probably also the European Palaeolithic and Mesolithic) objects were intended for practical use and the construction and reconstruction of social contracts, the European Neolithic objects ended up in graves often unused, being most probably designed to mark social possibilities and differences between individuals and groups. Another reason for the movement of tools and technologies was consequently a need to mark and enhance the status of the owner, dead or living, with the help of valuable objects made from materials from distant sources (Helms 1988; Swadling 1996; Taffinder 1998).

The production of symbolic objects which show the status of the bearer, the "customer" or sometimes even the producer, seems to be a normal way of thinking from the modern, western-European point of view. But, as I see it, a culture that promotes individual competitive behaviour is needed as a starting-point for this type of technology movement. When human societies develop a culture which measures the status of individuals, then the tools and objects, as well as the technologies as media for communication, start to be used in a competitive way to ensure a better position for the individual and his family or clan. A complex relation to material culture develops; its "value" supported and enhanced by mythology, increases, which may justify also a "non-use" of tools specially produced for burial purposes only (Weiner 2000).

Hayden (1998) offers an explanation of changes and differences in the use of technology in the social structuring of societies. He is of the opinion that technology is primarily to be seen as a practical phenomenon and that in all societies it is used in that way. But, very early on in human "evolutionary history", there begins a development towards the use of technology as an object of competition between individuals and groups of peoples. He concludes that

there is a development of prestige technology and the use of objects as competition items, driven by ambitious, aggressive and acquisitive individuals, *aggrandisers*, based on the opportunity for them to act, with the help of groups of supporters, in the interest of their own needs. In other words, these *aggrandisers* operate on the basis of the decline of common, societal and cultural barriers to such individual interests. The material culture will be used in such societies to support the power positions of individuals or their classificatory or biological families, and not the need of co-operation between individuals and groups. If a need of co-operation arises in such a society, a network will be constructed, but still the need of the primary group will be maintained before the common needs or the needs of other groups in the network. If we try to interpret the archaeological findings from the Neolithisation period, we have to bear in mind that a shift from "collective" needs to more "individual", prestigious needs may have taken place during this period. It is, however, important to see the cultural remains in the light of such a change. But it is also important to acknowledge the need of community support and networking for the development of specialist production and specialised extraction.

What aspects of the archaeological material could be interpreted in this way? To begin with, there would be rather faint traces of such behaviour. If we look at the production of Neolithic blades in the Middle and Near East and later in central and western Europe, which is the concern of this article, we can follow some important changes. The systematic production of large blades concentrated in some production centres in the Middle East developed at this time. These blades were used for arrowheads and especially as harvesting tools and were widely exported and marketed around the region (see Fig. 1; *Cauvin 2000.35ff, 94f, Fig. 33, 102f, 145ff, 174ff; Özdoğan 2000; Behm-Blanke 1992.176; Kozłowski 1994*). The production of such blades spread to Europe as a part of the "agricultural package", but partly to areas where the production of blades was already established, for other purposes. However, with the help of technological analysis, we can follow the "original", south-eastern, blade-production mode as far as to the southern parts of Scandinavia. There the blades arrived with other "agricultural traits", for example, special burial customs with grave gifts symbolising control of nature and control of other groups of people (storage, harvesting, clearing of forests, killing of animals and men, i.e. war).



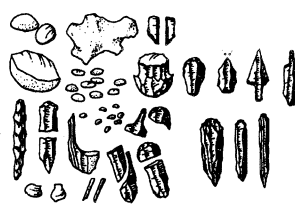
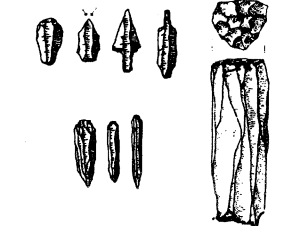
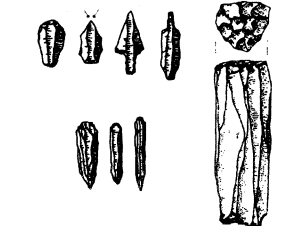

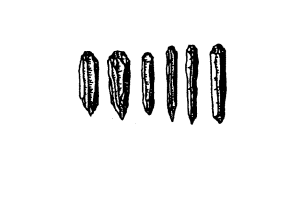
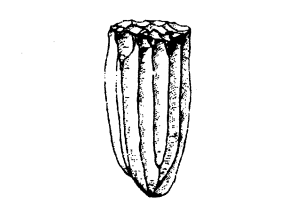
| | Settlements | Graves | Bogs |
|--|---|--|---|
| Mesolithic |  |  |  |
| Neolithic Pitted Ware Culture |  |  | |
| Neolithic Corded Ware Culture |  |  |  |

Fig. 6. Model proposed for the production and deposition of Mesolithic and Neolithic blades in Scandinavia.

All these features together indicate a change in social structure. Returning to the blades, in the Scandinavian material, as well as the central-European, the use-wear analysis tells us that the burial gifts were not used or that they were used in special, recurrent tasks, i.e. the harvesting of silica-rich plants. The production of such blades went on through Europe and the Orient for millennia and ended at the beginning of the Bronze Age (for example, Knutsson 1995; Sherratt 1997; Price 2000).

TECHNOLOGY AND MYTHOLOGY

What is needed to keep up and give value to a technology already known and used by local specialists to produce a rather simple type of tool and to authorise the superiority of just this sole technology over other production techniques for use in rituals like burial? What further inducement was required, and what was needed to help the spread of ready-made products into areas where they were "not needed" and, even more, into areas where other equal techniques had been known for millennia?

One of the answers to this question may be a conscious or even subconscious use of cosmological concepts, mythology and ritual rules. Agriculture, including animal husbandry and breeding, must have been a complex structure of technologies, techniques and methods, which grew in one or a few specific, environmental settings. This complexity of tasks needed a "Farmers' Almanac", and these growing and pasturing rules had to be reconstructed for every move that the farming groups or techniques made and produced. If the agricultural groups had remained few and small, there would never have been a need to move into more and more hostile or unsuitable environments, or environments containing new and different types of resources. The reconstruction or recollection must have been connected with the feeling of togetherness of the moving groups. In such situations, mythology pointing out common ancestors and their ways of "doing the life" might

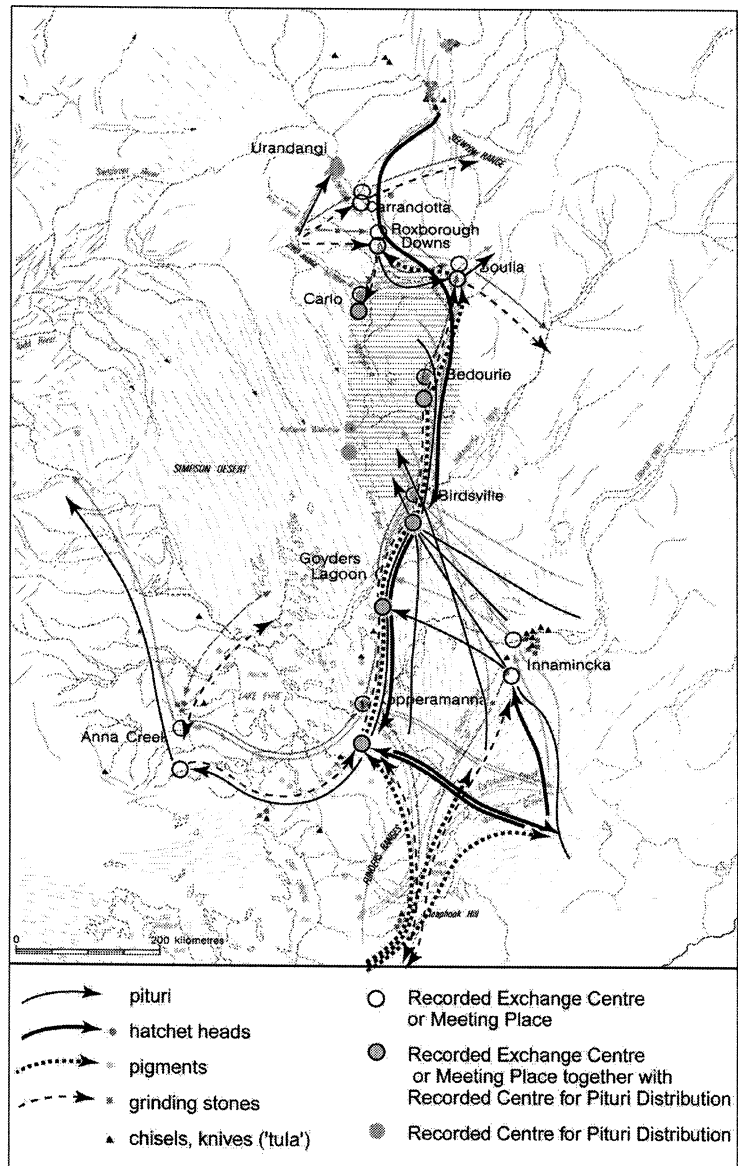


Fig. 7. A map showing the travels of different artefacts and materials in the Simpson Desert area in Australia (After McBryde, 1988).

be a powerful tool. It could create a feeling of security and identity; it could explain the necessary routines and mediate connections with former homes and ancestors. At the same time, it could be used to create a feeling of superiority over the groups which inhabited the coveted land and, if needed, could motivate the violent conquest of new territory. References to the central part of a cosmology through mythology are a necessary instrument in forming elite groups, as well as for their survival and reproduction.

In this connection, it may be valuable to describe the differences between modern and historical foragers and farmers' mythologies in an analysis writ-

ten by Eliade (1979:27f, 47ff). He summarises the focus of foragers' mythology in the following terms: fire, sex and sexual passion, the sky and cosmic phenomena, darkness, hunting, killing, death, madness, human cruelty and voraciousness (*for a similar view, see Duerr 1987*).

In contrast, the farmers focus on fertility, birth equal to rebirth, the cult of dead ancestors, the connection between women and growth in cultivated earth, the inhabited space as *imago mundi*, centre of the universe symbolism and beliefs in an after-life or rebirth.

This shows quite clearly how the focus of mythology moves from nature towards people as the centre of the world and how this construction makes it possible for individuals to manipulate mythology to promote themselves and their closest family members and friends. A very interesting fact is that ideas about human cruelty disappear from the focus of myths at the same time as wars become frequent or casual. Eliade himself does not hesitate to transfer his reasoning to prehistory and he supports this opinion in his own survey of the earliest, Old World mythologies, which fit very well into the farming-mythology model.

Ian Hodder (1998) gives some reconsiderations of his thoughts on the concept of *domus* and house-building in the Early Neolithic cultures of western Asia and Europe, as defined in his 1990 work. Here, he states that the division between the wild and the domestic among the "fresh" farmers was necessary both technically (to enclose domestic crops and animals, and to separate them and keep them away from "wild nature") and "metaphorically" (to remember and strengthen the technology or practicality). To him, the regularity in building new houses on the walls of old ones through long periods (as exemplified by the different traditions in Asikli Höyük and Catal Höyük) is striking. His interpretation of this phenomenon involves three aspects. His first suggestion is that principles for the structuring of local cultural geography, i.e. house-building and settlement structuring, were general and simple. This allowed their transformation into a variety of contexts. The second is the narrative aspect of human living, i.e. coherence was sought between the tradition of, in this case, building and new conditions appearing in time and space. A mythology was created around the phenomenon of house-building. This mythology was adjusted to new conditions through the restructuring of the myth. The third aspect, according

to Hodder, is the implicit use of technology and the mythology connected with it. This, in turn, allowed the dominant groups to manipulate society towards the conservation of these habits. In his article, Hodder describes the spread and conservation of house-building and rebuilding due to these structuring principles over large areas and long periods. These explanations and principles can be applied to other kinds of technique, for example, those relating to harvesting habits. As we see, there is both a wide space and a long time span for the above-described, blade-production technology. There is also a bond between the production of "harvesting blades" and the production of cereals. Although this production is not so monumental as house building, it may provide a finer or better instrument for detecting and understanding exactly the structuring behaviours or principles, which Hodder suggests. The fascinating aspect of the "harvesting blade" production in northern Europe is the use of the special method in areas where blades had been produced for long periods (for millennia, in fact) by other means and methods of production. As suggested above, the intensification of blade production in the Villingebæk phase of the Kongemose Culture in Sweden may be understood in the light of the need for good raw material for harvesting tools among central-European (or continental) farming groups. The need was strengthened by the mythological importance of the tools.

There has been an intensive debate about the complexity of late Nordic, hunter-gatherer groups during recent decades. Some questions still haunt me like the ghosts who haunted my ancestors. One such question concerns the feelings of the Scandinavian and northern-European hunters, fishermen and gathering women, when they encountered the everyday life of their farming neighbours, or the women or men who joined their own groups. Attempts had to be made to make their own mythology coherent with the new traits and structuring principles, which certainly needed a great deal of adjustment, by the mobile landscape maintainers that they were. The life of hunter-gatherers of the Mesolithic certainly did not consist of only subsistence. There were traditions, relations, world-views, memories, narratives, culture, empathy, humanism and so on. Now, the following question would be, what mechanisms could make hunters and gatherers adopt a new cosmology and interpretation of the world, which should be a part of the transformation of the new habits, techniques, plants and animals used in their everyday lives?

THE WILLINGNESS OF HUNTER-GATHERERS TO ADOPT NEW LIFESTYLES

The reading of ethnographic reports usually shows that hunter-gatherer groups exhibit a great deal of integrity in their contacts with, for example, surrounding groups of settled farmers. The examples mention an acceptance of items and even rituals to some extent. Both in Africa (*for example, Schebesta 1941; 1950; Turnbull 1965; 1979*), and in Australia and New Guinea (*Strehlow 1915; Myers 1986; Knutsson 1995; Verhardt 2000*), there are documented abrupt departures of whole groups involved in ongoing rituals or other transactions with the settlers (at missions, in native villages or meeting-places). This behaviour is very easy to understand, knowing that hunter-gatherer groups usually reduce aggression by separating themselves or by moving away from the group, and forestall violence by cracking jokes (*Knutsson 1995*). Moving as a means of settling aggression is documented among Indian groups (*for example, Fürer-Helmendorf 1943*) and, as especially the early authors noted, by roaming and unpredictability, which caused a great deal of trouble for the colonising groups. Usually, the mobile groups disappeared into environments regarded as hostile and dangerous by the settlers. It would not be easy to dominate or change the world-views of such groups. But, on the other hand, the other groups' needs for land were intense, and the methods of approaching neighbours and solving conflicts among these groups followed other routes, so usually the problems were solved by the demonisation of the hunter-gatherers and by their subsequent liquidation. It took about 50 years to colonise the whole of Australia in the early 19th century, with no other vehicles than oxen-hauled carts and horses (*Mulvaney & White 1987; Cam et al. 1987:45ff*). A noteworthy episode was described to me by a young Russian archaeologist. During the industrial colonisation of Siberia, and even today, it was very hard to engage the local populations of hunters in the business of mining, even if there is a great attraction in earning a lot of money. It was easier to take people from the Ukraine by air 9000 km to the gold mines of Chukchee peninsula than to find and employ the local Chukchee people (*Dimitri Gerasimov, Museum of Ethnography, St. Petersburg, personal communication*). It might have been the hardships of the work, which they saw, that stopped these people from joining the miners; it might have been mobility that was important to them. Nevertheless, they resisted the temptation for 150 years. That is a time

span that can be grasped from an archaeological point of view.

It is necessary, I think, to explore the nature of mobile hunter-gatherers more deeply to understand the possible mechanisms for the adoption of farming, using non-endemic plants and animals. There must have been a very strong incitement to move the "agricultural package" around from the Middle East to Europe, and the move must have been combined with very positive, environmental and climatic circumstances. It would be more logical to adopt the idea and to use it on endemic species, as proposed by Hansen (1991) and summarised by Budja (1999) for the Franchthi cave in southern Greece and the Uzzo cave in Sicily. This concerns especially Scandinavia, where the keeping and harvesting of Mediterranean species must have been quite unpredictable. However, so far, a process of domestication of native species has not yet been identified.

In this respect, it is tempting to see the movements of a ready-made, ritual-mythological prescription tied to a material package to support and prepare the necessary movements of slowly but steadily growing groups of people. In the same way, the first European colonisers in America or Australia had their homes and personal equipment justified and explained by a package of beliefs and prescriptions which clearly showed them their own superiority and legitimised their right to take the land.

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