# ANALECTA PRAEHISTORICA LEIDENSIA



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Figure 7. The house plan. In the top part of the drawing the postholes ascribed to the house plan are shown in black; the depths of the postholes are indicated in the bottom part. The remains of the wooden posts are indicated in white. The grey parts correspond to the thickness of the black layer (see the text). The postholes ascribed to the house plan are outlined in black.

ANALECTA PRAEHISTORICA LEIDENSIA 29

## ANALECTA PRAEHISTORICA LEIDENSIA



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## Ideology and social structure of stone age communities in Europe

### preface

This volume is the result of a conference held at the Netherlands Institute for Advanced Studies, Wassenaar, Holland, on April 28 and 29, 1994. The subject of the conference focussed on the social organisation and ideology of the stone age communities in Europe during the later Mesolithic and Neolithic periods (ca. 8000-4000 BP).

The questions of social structure, social organisation and ideology of hunting and gathering and early farming communities in the stone age are becoming increasingly central to our understanding of these societies and of their transformations. This realisation has provoked a lively debate on the subject in recent publications. At the same time, many archaologists and prehistorians approach this question from the position of their own period of research (either Mesolithic or Neolithic), and/or from the point of view of a particular paradigm they favour. This has resulted in many conflicting views which provide a polemical background to the subject of the volume.

The contributions to the volume focussed on three particular questions: 1) what do we know about the social organisation and ideology of these societies today, 2) how can we use archaeological evidence and our conceptual frameworks to gain greater knowledge of the social domain of the Mesolithic and Neolithic societies, 3) what patterns of social change attend the Mesolithic-Neolithic transition?

We would like to thank the Netherlands Institute for Advanced Studies (NIAS) for making the conference financially possible and the staff of both NIAS and the Institute for Prehistory of the University of Leiden for giving generously their time and resources which made the conference such a success. The preparation of the volume was made possible with the financial support of the Faculty of Archaeology, University of Leiden. Finally, the volume would not have come into being, were it not for the contributors from six different countries who gathered at Wassenaar. The presentation of papers and the lively discussions were enhanced by sun-drenched strolls along the beach in Wassenaar and sessions at St. Moritz aan de Zee. We would like to acknowledge the *genius loci* as a source of inspiration.

Annelou van Gijn and Marek Zvelebil

Annelou van Gijn Marek Zvelebil

## Stone age, ideology and scaling the ladder of inference

#### 1. The good intentions

Trying to understand the ideology of stone age communities has always been a major challenge, a view encapsulated by Ch. Hawkes in his famous 'ladder of inference' (Hawkes 1954). According to the 'ladder of inference', ideology is the aspect of human behavior so far removed from the more evident functional attributes of archaeological data that any inferences about ideology must be tentative, circumstantial and speculative. It follows, then, that ideology is the aspect least substantiated by empirical data and therefore the most difficult to interpret. The reaction to this position is wellknown: while some have been reticent to even address the issue of social structure and ideology, others have placed it at the center of their investigations.

The major purpose of this book is to break down dichotomies. The first is the one between so-called processualists and post-processualists, the other is the one between hunter-gatherer, Mesolithic societies and farming, Neolithic ones. For a whole range of reasons, including philosophical orientation of researchers, scholarly traditions, the respective antiquity of the Mesolithic and Neolithic remains, and the nature of the evidence, the Mesolithic has been treated mainly from a processualist perspective, whereas the later periods have attracted their full share of post-processual interpretations.

Much of our archaeological interpretations of the stone age reflect period-specific modeling and theorizing. The Mesolithic hunter-gatherers have been regarded as acephalous and egalitarian communities, as prisoners of their natural surroundings; what little has been written on ideology and social structure was from a processual perspective. Neolithic people, in contrast, were seen as engaging in complex social relations and were regarded as in control of their natural environment. One reason for this view is that post-processualists were attracted by the standing monuments, ditched enclosures and various forms of artistic expression, aspects of material culture which are clearly linked to the social and ideological focus of their research. In contrast, the Mesolithic appears to have a limited number of such remains. As this volume illustrates, this apparent absence is due more to paradigmatic indifference rather than being the reflection of past reality.

There are other reasons as well. The subliminal link, tacitly recognized by both post-processualists and processualists, between hunter-gatherers, nature and the priority of human biology on the one hand, and farmers, culture and the priority of cultural life on the other, recreates the Neolithic in our own image. This is the society of small individual farmers, located in neatly organized field systems as a replication of our own idealized farming landscape. Implicitly then, we are more capable of relating to Neolithic farming culture as our own ancestors; we cannot comprehend hunter-gatherer cultures as ancestral to our European heritage. Consequently, a large conceptual gap has been created between the Mesolithic and the Neolithic. In our view, both the Mesolithic and the Neolithic were internally far more heterogeneous than we have recognized. This is the major reason why this dichotomy needs to be abolished.

The associated separation between processualists and postmodern archaeologists has also been an artificial construct, generated by often competitive debates about the merits of each approach. In practice, very few processual archeologists are consistently adhering to their programmatic statements and, equally, very few post-modern researchers stick to their own proclamations. In practice, archaeologists eclectically pick and choose from both theoretical approaches. However, it is also true that there are fundamental differences in the use of some basic concepts (the existence of a real past, culture as meaningfully constituted, social action and behavior) between the two schools of thought. In theory they are irreconcilable. In practice, however, the variation in approaches to specific problems and case studies spans the entire spectrum between post-modern and processualist archaeologists, as exemplified in the present volume. This range is reflected in the differing scales of investigation and levels of abstraction. Processualists tend to operate on longer time scales and focus on larger organizational units, while post-modernists concentrate more on shorter time scales and smaller, more specific units of organization.

Within archaeology two themes are providing a forum for reconciliation and cross-fertilization between the two schools of thought: one is landscape, the other is social organization and ideology. The conference, of which this volume is an outcome, has been at least partly organized with the aim of bringing together representatives of different points of view.

#### 2. Conceptual issues

Both the culture-historical archaeologists and the New Archaeologists thought of the reconstruction of the past as value-free. Their investigations started from the premise that the past could be objectively reconstructed and that such reconstruction could be evaluated by the scientific examination of the evidence. As a part of the broader post-modern critique, this premise was challenged by the post-processual archaeologists. The basis of this challenge is the premise that archaeological evidence passes through at least two hermeneutical cycles of understanding and interpretation. Consequently, the nature of the archaeological record as an objective reflection of past behavior was questioned. For example, the discard of rubbish was no longer considered an incidental deposit reflecting, for instance, subsistence. It was instead an intentional and selective deposition of waste, a signature of concepts of dirt and purity and their ideological correlates. As such, it did not reflect directly past subsistence behavior. This is the first of the two hermeneutic cycles that affect the archaeological record (Shanks/Tilley 1987).

The second hermeneutic cycle rests in the interpretation of this evidence by the researchers who are prisoners of their own preconceived ideas and ideological prejudices. Because every archaeologist interprets the past in terms of his or her agenda the interpretations cannot be objective. Postmodernists believe that the evaluation of different interpretations of the past by means of formal testing of hypotheses (the hypothetical-deductive method) is impossible for two reasons: first, because of the hermeneutics inherent in archaeological inference, and, second, because the complexity of the archaeological evidence is such that there is no direct correspondence between the material remains and human behavior or social action. The removal of formal testing as an appropriate criterion for choosing between alternative interpretations, leaves the way open for the discriminating criteria being defined by the morality and ideology of the individual researcher.

We would certainly agree that no interpretations are value-free. All interpretations of the past are contingent on our own ideology and historical background; the interpretation itself is historically situated. From that it follows that there are several alternative interpretations of the past possible. However, the extent to which this idea has been promoted as the desirable form of discourse led to the emergence of the relativist dilemma (Binford 1987; Hodder 1988; Wylie 1989). The basis of the relativist dilemma is the existence of several competing interpretations, all of which are held to be of equal value. The problem then becomes how to identify a criterion by which to judge one explanation better than others: logico-positivism no longer supplies such a criterion.

At this point there is a divergence of views how to deal with this problem. There are those like Shanks and Tilley (1987, 1989) who do not appear disturbed by this dilemma: there is no inherently preferable or better explanation, the real past is an illusion, there are many different pasts which can only be apprehended through our own western viewpoint. In such a relativist situation, "the truth" becomes a matter of convincing the reader through rhetoric and presentation (the poetics of discourse). Shanks and Tilley never state clearly how they choose their favorite representation of the past, but the implication is that "the merit, or justness or accuracy of any reconstruction of the past is ultimately to be judged whether or not it is useful (in the political sense) in the modern world" (Renfrew 1989, 36, see also Shanks/Tilley 1987, 198). Chosen in concordance with their own political beliefs and prejudices, the past then becomes part of politically-motivated propaganda.

On the other hand there are others, such as Hodder (1982, 1986, 1990), who, although not believing in the reality of the past, nevertheless believes that some criterion of selection has to be applied. For Hodder such criteria can be found in Collingwood's concepts of coherence and correspondence (Collingwood 1946(1957)).

A third position is taken by Colin Renfrew (1990) for whom a real past does exist and is the object of inquiry. In his critique of Shanks' and Tilley's programatic statement, Archaeology into the 1990's (1989), Renfrew clarifies his choice of criteria by which to evaluate alternative archaeological explanations in the pursuit of systematic knowledge, or Wissenschaft (1989, 34-40). This includes the deliberate adoption of the scientific method, the rejection of extreme positivist position, the use of critical self-analysis, frequent appeal to the data by testing, the rejection of Hempel's deductive-nomological formulation (laws), but at the same time, the search for good generalizations as explanatory frameworks, the rejection of researcher's political stance as a criterion of validation, acceptance of 'correspondence' as stronger than 'coherence' as criterion of truth, and emphasis on processes rather than specific events.

In our view, the evaluation and validation of our understanding of past societies can be implemented only as a multi-dimensional exercise, carried out at several levels of resolution. Archaeological record refers to events of different duration, ranging from short or 'single event' episodes, to long-term events, more appropriately described as processes. Different sorts of evidence, so defined in a temporal sense, may require different means of evaluation.

For example, the evaluation of some aspects of a single event - the presence/absence of grinding, polishing or cutting at a site for example – may lend itself to rigorous testing by formal hypotheses. Other evaluations - such as the meaning of disarticulated human bone deposits in a surrounding ditch - will require a more ambiguous assessment in terms of coherence and correspondence. Other forms of evaluation still, for example that of 'the adaptive success' of a prehistoric community, will permit only an exercise in controlled speculation guided by the Darwinian theory of evolution, common sense and the record of the past. As is implied by this argument, different forms of interpretation operate at different temporal scales, and refer to different assemblages of archaeological evidence. It is the skill of the researcher in the reconstruction, evaluation and understanding of the past at such multi-dimensional level, employing both the 'processual' and 'post-processual' approaches, that marks, in our view, a desirable step forward from the earlier entrenched positions on both sides of the processual/postprocessual divide.

Why are we so concerned with the interpretation of archaeological evidence and with the validation of alternative views of the past? Because it has been argued for a long time that ideology and social structure of societies living in a remote past is, effectively, beyond the reach of archeological inquiry (for example, as in C. Hawkes' ladder of inference). One of the outcomes of the post-processual relativist approach to archeological interpretation was that ideology and social structure became accessible, because testing by way of formal hypothesis and proof was removed. In relationship to the subject of the book, our concern remains that ideology and social structure of stone age societies are comprehended as accurately as possible, in other words as close to the prehistoric reality as can be achieved.

#### 3. Implementation

The role of ideology and social structure in society in general, and in past societies of the stone age more specifically, is, of course, a vast subject, the summary of which is beyond the remit of this introduction and beyond our capacity. The pertinent philosophical positions range from regarding ideology as an all-inclusive, encapsulating phenomenon which determines the course of our lives, to attributing a specific place and role to ideology and social structure within a broader structural framework characterizing any social order (a.o. Durkheim 1938; Marx 1967; White 1949). An alternative view, which is gaining currency in archaeology , is that if the social fabric is undifferentiated in simple societies (Mauss 1954), it would be inappropriate to impose our modern Cartesian frameworks on social life of the past societies (Hodder 1982,

1990; Shanks/Tilley 1987, 1990; Thomas 1991, 1996). In practice, however, it is difficult not to adopt some form of presently known social or ideological structure as a heuristic devise for 'reading' – or interpreting – the archaeological record of the past and the operation of past societies as a system (i.e. Hodder 1990; Thomas 1991; Zvelebil 1992a, b).

From this it follows that the use of analogies is central to every archaeological interpretation. In our view concrete analogies and, more generally, analogical reasoning, is the most important vehicle for linking archaeological evidence with social structure and ideology and for understanding its dynamic role in transforming society. As this volume shows, different people deal in different ways in the use of analogies. What is common to all contributors is that they all use some sort of analogy, whether explicitly (Bradley, Verhart and Wansleeben, Zvelebil) or implicitly (Thomas, O'Shea). Each form of explicit analogy has its own justification and its own methodology, while implicit analogy is often presented either as an enlightenment, or it is imported into the argument as part of an already established idea.

There are different types of analogies, such as the generalcomparative analogy, direct-historical analogy or structural analogy. The general-comparative analogy is actually the most widely used, but also most strongly criticized. It provides the least convincing link between the observed and the inferred, because the only justification for the employment of this type of analogy commonly is the existence of some formal similarities between source and subject. An example is the relationship between size of a dwelling and number of inhabitants. More often than not general analogies are used implicitly and not subjected to a critical assessment in the light of the extant archaeological data.

The direct-historical analogy is based on the assumption that similarities between two chronologically distant societies have more validity if they share the same historical trajectory and geographical location. Such a form of analogy is generally held to be more convincing than the general analogy, but a crucial assumption is that of historical continuity. In this volume Zvelebil's contribution on prehistoric hunter-gatherer ritual landscapes uses direct-historical analogy in the interpretation.

The basis for a structural analogy lies in the belief or expectation that societies share a certain structure regardless of their historical situation or spatial location. The common nature of such structures provides the justification for the use of analogy. So, for example, in Marxist thought the underlying structure of societies is held to be always the same. Societies are organized in terms of relations and means of production and this framework is applied not only to the capitalist industrial societies for which it was originally

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developed, but also to pre-industrialized societies and indeed societies in the past on the assumption that the Marxist structure can be used to explain social relations in these societies as well. Structuralism of Lévi-Strauss and others can be used as another example where humanity is expected to share certain cognitive structures organized in terms of binary oppositions. As a third example, it could be argued that ideology and, more broadly, belief systems share certain structures and patterns which could be employed in linking ethnographic and prehistoric evidence for such systems. So, for example, the killing of a bear during a ritual symbolizing structural relationships between people and their resources will result in a certain patterning which may correspond with prehistoric configurations; such prehistoric patterns will then act as signatures of ideological structures known ethnographically. This latter example of a structural analogy also rests on the assumption of historical continuity and, from that perspective, is akin to the direct-historical analogy.

The fourth analogy is the chronological, temporal one, a type of analogy we may be hardly aware of and which, consequently, we tend to employ implicitly. Societies operate on different time scales, because the perception, division and measurement of time is a cultural construct. Moreover, even within the same society, different temporal scales are operative simultaneously as, for instance, sacred versus secular time (Bourdieu 1977): the secular time is linked to the seasonal round and the recurrent daily activities, the sacred time is related to the cosmology and to ritual practices which may have a time depth far exceeding our western conceptions of practical, measured time. These different time scales have a direct impact on the formation of the archaeological record: a ritual act, perhaps occurring at very long intervals, produces a different configuration of material remains than an activity which occurs on a daily basis. To complicate matters, our western one-dimensional concept of measured time is implicitly used in our interpretations of past remains and the chronological implications thereof. From that perspective long-term change could only be the result of natural, environmental (i.e. external) circumstances, whereas, using a different temporal analogy, we can now accept that such change can be due to social processes, guided by longlasting ritual constructs (Gosden 1994). An example pertinent to the contents of this book is the unidirectional evolutionary fashion in which we have long regarded the transition from the Mesolithic to the Neolithic (Zvelebil 1993).

Clearly, the source for most analogies, whether generalcomparative, direct-historical, structural or temporal, lies in ethnographic and ethnohistoric accounts. In that sense these two lines of inquiry provide most of the images with which we try to make the past 'come alive' so to speak. This seems especially pertinent to the subjects addressed in this book: social structure and ideology.

#### E-merging ideologies: the themes in the volume.

Anyone reading as far as here will not then be surprised to find that the variety of approaches, viewpoints and concerns which we have briefly introduced is matched by a variety of views among those who have addressed the area of social structure and ideology among stone age societies (compare, for example, Bradley 1984; Larsson 1989, 1990; O'Shea 1984; Thomas 1991; Van de Velde 1979; Zvelebil 1997). This situation is also reflected in this volume. Yet, there are also areas of common concern, issues that come to the fore repeatedly in different papers, and occasional areas of consensus. In a way, these themes represent, implicitly, the new, emerging agenda for future investigation.

Richard Bradley's paper addresses the evidence for patterned burial practices in the Mesolithic - burial traditions - at a pan-European scale, and discusses the differences in treatment of Mesolithic and Neolithic burial practices by the archaeologists. He notes that while the Mesolithic specialists emphasize adaptation to the natural environment, students of the Neolithic are more often concerned with ideology and social relations. This leads also to a difference of scale. While the Neolithic period is interpreted through close reading of the archaeological record, Mesolithic society is often interpreted through the ethnographic record. This may be, perhaps, because prehistoric hunter-gatherers in Europe are not perceived as ancestral to our own, European society; consequently, there is no sense of historical continuity or of analogues other than those in the ethnographic record outside Europe.

Bradley goes on to discuss the major features of Mesolithic burial traditions which are shared across large areas of Europe. These include the use of red ochre, organic artifacts, antler and food remains in the funerary rites, of dog bones and dog burials, of the circulation of disarticulated human bones and of votive offerings. Bradley notes that isolated human bones are treated in the same way as isolated animal bones and that dogs appear to have been treated as individuals in their own right, suggesting that the inhabitants of Skateholm made no distinction between the human and animal populations of the site. In fact, it was only dogs, the sole fully domestic animals at the time, which have been treated in such a way. This makes sense in terms of ethnographic analogies from among northern Eurasian huntergatherers, as discussed later by Zvelebil (this volume).

Bradley also notes the paucity of stone structures in the burial practices of the Mesolithic societies in Europe, which is in marked contrast with the megalithic traditions of the Atlantic Seaboard during the ensuing Neolithic. The implied discontinuity may be more apparent, than real, however. There are indications of mortuary houses made of wood at carefully excavated sites such as Skateholm (Larsson 1988), and slab-lined cists were constructed not only by Mesolithic hunter-gatherers in Brittany, but also by the hunter-gatherers of the Jäkärlä culture in the 4th millennium bc in Finland (Edgren 1966). In this volume, Thomas emphasizes the architectural antecedents, evident in the Mesolithic mortuary architecture, for the later Neolithic monuments.

Finally, Bradley's paper introduces two major themes which are subsequently discussed in most other contributions. One is the importance of fertility and regeneration in the symbolism of the Mesolithic burial traditions, symbolism which is in concordance with the prevailing perception of the natural world among modern hunter-gatherers as a creative force and as "giving environment" (Bird-David 1990). The second theme is the gradual nature of the transition to farming economy and the moderating role ideology of hunter-gatherer communities would have had on such a change: this issue is also addressed by Zvelebil, Jennbert, Thomas, Radovanovic and Voytek, and Edmonds.

Many of these themes are further developed by Ivana Radovanovic and Barbara Voytek in their treatment of the Djerdap Mesolithic in the Iron Gates Gorge along the Danube. The authors present a model which combines sedentism, subsistence and social complexity as a set of inter-acting forces, leading to social elaboration and the development of symbolic codes associated with increased social control, gender role/status differentiation and symbolic manifestation of group cohesion at the time when the identity of Iron Gorge communities was being eroded through contact with the neighboring farmers.

Radovanovic and Voytek emphasize a retreat from individualization, and the prevalence of the collective group identity over the individual in the later phases at Vlasac and Lepenski Vir I and II: developments which find parallels in other areas of Europe in the Neolithic and which are discussed by Thomas and Edmonds in this volume as well as elsewhere (i.e. Chapman 1993, 1994; Thomas 1991). They go on to discuss gender roles and gender-based status differentiation, suggesting that the preference of women for a different lifestyle - that marked by plant and animal husbandry - was an important factor in the eventual adoption of farming. The lesson here appears to be that ideological constraints, although capable of delaying the adoption of farming, failed to support the hunter-fisher lifestyle in the long run, because ideology could not deliver the practical benefits to women which had become available with farming.

Marek Zvelebil, in his contribution on hunter-gatherer ritual landscapes, employs a direct historical analogy of recent hunter-gatherer societies in western Siberia as a key to comprehending the meaning of ideology and of the ritual landscapes of the prehistoric hunter-gatherers in Northern Europe. The different conceptions of time (Gosden 1994; Vasicek 1994; Zvelebil 1993) and the conceptual framework of structure and agency (Giddens 1984) are applied in an effort to interpret the operation of social and ideological factors in a dynamic, historical perspective. In this perspective the use and meaning of symbols change as part of the process of negotiation for control between different segments of the society, by appealing to an enduring ideological code, shared by many northern hunter-gatherer societies, which provides the frame of reference for changes in interpretation. Nämforsen in Northern Sweden and Olenii Ostrov in Karelia are used as the examples of ritual landscapes, thought to have been at the center of such activities.

The contributions of Kristina Jennbert, Julian Thomas and Leo Verhart and Milco Wansleeben all address the same broad theme of the Mesolithic-Neolithic transition. Although they approach the topic from different perspectives and deal with different areas - Jennbert with Scandinavia, Verhart and Wansleeben with the Netherlands and Thomas with Britain. they all emphasize the continuity of subsistence practices across the Mesolithic-Neolithic transition, the importance of gift exchange, and of the shifting meaning and symbolism of material culture. In her contribution on mentality and the social world, Jennbert also focuses on gender roles in the Late Mesolithic and Early Neolithic in Scandinavia, on the conceptual tyranny of our terminology, and on the slow pace of social and ideological change in southern Scandinavia during the 'transitional' period between 3200 and 2600 bc. Thus, the gradual nature of the economic transition (Zvelebil/Rowley-Conwy 1984; Zvelebil in press) is conjoined with the social and ideological one.

Thomas considers the role of material culture in the Mesolithic-Neolithic transition in Britain. He argues that material culture "does not so much encode meaning through its fashioning as provide an apparatus for the creation of meaning" (Thomas, this volume). The introduction of the Neolithic material culture into Britain enabled the aboriginal inhabitants of Britain to redefine and manipulate social relationships, and to "transform the meanings of their landscapes through their engagement with material things", regardless of any particular economic regime. The adoption of the new 'Neolithic' traits, such as ceramics, polished stone axes and megalithic architecture occurred rapidly between ca. 3200-3000 bc, and did not necessarily correspond to the adoption of farming practices.

This is contrasted with the continuity in economic patterns in the Atlantic zone of Europe where hunting and gathering remained a major subsistence activity. In Britain in particular, there were whole areas of the country in which domesticates had only the most marginal of impacts (Armit/Finlayson 1992; Dennell 1983; Zvelebil/Rowley-Conwy 1986). The same pertains to the Netherlands (Louwe Kooijmans 1993; Van Gijn 1990). This leads Thomas to the interesting conclusion that the adoption of farming could be regarded as an 'optional extra' to Neolithic innovations in the material culture, such as ceramics, polished stone axes and megalithic architecture; these innovations represented a set of social and symbolic resources which was adopted by the indigenous hunter-gatherers and re-invested with meaning to fit the regional conditions.

Waste and Prestige, a contribution by Leo Verhart and Milco Wansleeben, focusses on the circulation of gifts and other forms of exchange across the Mesolithic-Neolithic frontier in the eastern Netherlands. The authors use the ethnographic evidence of a recent introduction of modern western artifacts in Papua New Guinea to impart meaning to the distribution patterns of Neolithic imports, such as pottery and polished stone axes among the hunter-gatherers of Late Mesolithic Netherlands. Despite the marked differences in approach, their conclusions often correspond to Thomas': the economic practice remained, at least initially, unaffected by these exchanges, the meaning of the objects shifted in passage from one social context to another, the social value of artifacts declined as their circulation increased, thereby creating a continual demand for other, more exotic valuables. This in turn creates a need for economic intensification, and eventually, for the transition to another economic system. In this scenario, the neolithisation process is seen principally as a process of social intensification, initiated by the exchange of (Neolithic) prestigious objects for raw materials in an exchange system based on kinship and alliances: a view that has a long and distinguished tradition (see for example, Bender 1978; Hayden 1990; Sahlins 1972).

Torsten Madsen examines the evidence from burial practices, physical anthropology, material culture and causewayed enclosures in Southern Scandinavia to obtain insight into the character of the transition from the Ertebølle to the TRB culture. He is using implicit analogical reasoning, employing such concepts as segmented or hierarchical societies. Madsen argues that in terms of social structure there does not seem to be a notable difference between the late Mesolithic and the early Neolithic. Both periods are characterized by the presence of a segmented society, existing of many smaller, strongly territorial groups, with their own specific material culture and their own burial grounds; communal rituals were very important in both periods. The relationships between groups seem to have had a violent undertone, considering the strong evidence for physical deformations on human skulls.

The second part of Madsen's paper deals with ideology. Here he does observe a discontinuity between the Ertebølle and TRB culture and for that reason he only discusses the evidence from the Neolithic (however, papers by Bradley and Zvelebil do address the Mesolithic). The TRB period sees the emergence of an enormous number of causewayed enclosures and monumental burial tombs. These formed the focus for a great deal of communal rituals, some of which, Madsen argues, are so alien and odd to us that it is very difficult to comprehend the underlying ideology: large quantities of high-quality pottery were destroyed and the floors of the tombs were covered with huge amount of burnt flint. Fire, both as destructor and creator of life, seems to have been important in ritual behavior.

Mark Edmonds, like most authors represented in this volume, adheres to the current point of view that the transition from Mesolithic to Neolithic was not a sudden one and that there is more evidence for continuity. He substantiates this point of view by looking at the 'biography' of those places which play a crucial role in the daily lives of prehistoric peoples: stone sources, shell middens, tombs and enclosures. To examine these places in their structural relationship, Edmonds uses Ingold's (1993) concept of a 'taskscape', itself a construct of ethnographic analogy. He notes a continuity in the importance accorded to certain places, across the Mesolithic/Neolithic transition. For example, stone sources which were already important for Mesolithic communities, formed the focus for the construction of megalithic tombs and enclosures for Neolithic groups. Rituals, procurement and exchange of materials, the use of pottery and domesticates all supported and modified the identity and the internal and external relationships of the communities. Edmonds considers that the archetypal succession of various phenomena, commonly adhered to by archeologists, does injustice to the complexity of the process of change.

With the paper by Piet van de Velde we have come to the full Neolithic, the Bandkeramik culture. Van de Velde adopts an explicitly positivist stand and, like O'Shea, uses implicit analogy to attribute meaning to the archaeological patterning he observes. On the basis of the type of grave goods present in the burial grounds of Elsloo (Southern Netherlands) and Niedermerz (Rhineland in Germany), he concludes that Bandkeramik society was matrilineal. There are no arguments in favor of an hierarchical ordering of Bandkeramik communities; an egalitarian society is more likely. In the second part of his paper he discusses the representativity of the Bandkeramik burial data, arguing that the presence of burial grounds is real only in the two above-mentioned settlements and not due to conservation or excavation circumstances. It remains to be explained, however, why only these two settlements have cemeteries. It is probably not incidental that they are also the two largest within their respective micro-regions, whereas the dead from other villages were given a different treatment.

Marjorie de Grooth addresses a very different subject matter, the social implications of the way flint was procured in Southern Bavaria, Germany. She compares the extraction and production mode during the Early Neolithic (Linearbandkeramik) period and the Middle Neolithic. During the first period chert, mostly of nodular kind, was procured at different places and only initially tested for suitability before being brought to the settlement; De Grooth refers to this as the 'domestic mode of production'. Gradually, tabular chert became the most preferred raw material and deep-shaft mining started. In analogy with the stone-using peoples of Papua New Guinea and Australia, De Grooth argues that the mining was not an organized enterprise by the privileged few having access to the minesite, but a seasonal activity for the people from about 30 known settlements located in the near vicinity of the mine. De Grooth's paper shows that by a careful examination of one data set, the stone implements, in relation to settlement location, distribution of raw materials, location of monuments and so forth, it was possible to explain the deepshaft mining in terms of the intensification of both regional and long-distance communication and inter-group interaction.

John O'Shea deals with the 'dawn' of the Early Bronze Age on the south Hungarian Plain. At that time there was a mosaic of regional cultures, probably reflecting the existence of a well-defined tribal landscape. The paper addresses the burial practices of the Maros-group, one of the regional cultures represented. These practices were highly structured, with age and gender being the primary organizing principles. The burial gifts and the patterning therein, combined with settlement information, give indications about the organization of the Maros-community. There is some social differentiation, at least four hereditary offices being differentiated and wealth being unequally distributed across the various households. Each community consisted of six to eight households and the communities were interrelated as a loose confederacy.

In keeping with the processualist, positivist paradigm, O'Shea advocates an anthropology of the past, whereby the patterns observable in the archaeological record will represent the consistent repetition of these behaviors by the living society. For this reason analogies to the ethnographic present are not required as a justification, because the coherence in the patterning should be self-evident. However, as O'Shea himself stresses, the burial practices of the Maros communities *happen* to highly structured, in a way, moreover, which is recognizable in the archeological remains. The question remains, however, whether we can dispose of analogies where the archeological patterning is less evident.

In contrast to O'Shea, John Barrett reaches into post-postmodernism, thereby leaping over some of the paradigmatic statements common to post-processualism. He starts with a moving account of a prehistoric family event and asks if the resolution of the archeological record will ever be good enough to reveal 'an archaeology of talk'. This is unlikely. As Barrett himself notes, "to assert that material culture is meaningfully constituted is one thing, to understand how those meanings were created and operated historically, and to establish the means by which archaeological analysis can explore such issues, is quite another" (this volume). He goes on to attempt to separate meanings located in the long term structural relationships, directly observable in the archaeological evidence from those which were a recognised part of the living experience of the people we as archaeologists claim to study. In a critical appraisal of the recent work by Tilley (1994) and Thomas and Tilley (1993) he shows how archaeologists tend to confuse the two phenomena.

The fall-out from Barrett's passage of arms is thoughtprovoking. Agency is regarded as the only-vehicle of change, while structures are "the conditions which exist and which humans recognize as resources with which they can work... Structure and agency do not form a duality because each interpenetrates the other through the consciousness of agency... Agency is therefore situated within particular structural conditions which it comprehends and through which it is able to act and to communicate the basis of that comprehension" (Barrett, this volume).

Douglas Lewis, an anthropologist who acted as a discussant at the original conference, has written an evaluative paper about the relative merits of anthropology and archeology in their attempts to make statements about ideology. Lewis notes that the objects of study of anthropologists and archaeologists are not that different. There are, however, important differences between the two disciplines in making inferential statements about social structure, ideology and culture of the societies in question. An anthropologist can infer social action directly from the statements of his informants - action for which the motivation, including ideas and beliefs, are known by interviewing the informants. An archaeologist has to make two inferential leaps: from material culture to behavior, from behavior to social action (including ideology). Lewis goes on to discuss the meaning and significance of culture, concluding ".... culture is not a *thing* an archaeologist infers (or an ethnographer observes). It is, rather, a theory devised to explain what can be observed and described (artifacts, in the most comprehensive sense, for archaeologists, action for ethnographers)" (Lewis, this volume). Lewis' remarks offer a healthy amount of caution, with which we should treat our inferential statements and our conclusions about the beliefs, motivation and social structure of prehistoric communities.

#### 5. Conclusion

All of the papers in this volume arrive at inferences about ideology and social structure. It seems that the dichotomy between the processual and post-modern approaches has been moderated by our common concern for the social structure and ideology of stone age society. However, with respect to the other dichotomy prevailing in this book, that between the Mesolithic and Neolithic, here distinctions remain. Perhaps, we are far too constrained and structured by our own terminology and chronological schemata and we should abolish the distinction alltogether, as Jennbert (this volume) suggests. But as Barrett has shown in his own paper, terminological and interpretative confusions are already endemic among archaeologists: given this situation, can we communicate if we grasp the degree of freedom of expression he is advocating? Our opinion is that we cannot do so, but that one solution out of this dilemma is to think more in terms of processes rather than events, and to deal with diachronic research questions rather than 'ethnographic instants' in the past. Not everyone is likely to agree with this recommendation: we invite you, the reader, to read through the volume and make up your own mind.

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### Domestication as a state of mind

#### 1. Introduction

Prehistorians are fascinated by transitions, but these transitions are of two different kinds. There are the changes that undoubtedly happened in the past, and these set the agenda for many programs of research. The development of academic archaeology has also been punctuated by abrupt changes of perspective. It is where the two converge that there is so much misunderstanding.

A classic example of these problems is provided by the Mesolithic/Neolithic transition, for this epitomizes both of these processes. Scholars working on either side of this threshold adopt quite different approaches. Mesolithic specialists emphasize adaptation to the natural environment, whilst those who study the Neolithic are more often concerned with ideology and social relations. There is also a difference of scale. The Neolithic period is interpreted through a close reading of the archaeological record, with the result that models can be particularistic and frustratingly diverse. Mesolithic society, on the other hand, is often interpreted through the ethnographic record. It seems hardly surprising that the transition between those periods is so difficult to discuss. This paper considers the interpretation of Mesolithic burials in Europe and is an attempt to break down some of these intellectual barriers. It treats Mesolithic ideology in the same manner as Neolithic systems of belief. In taking an even-handed approach it may also shed light on the adoption of agriculture.

Some of the earliest manifestations of Neolithic culture are provided by burial mounds, but we also find an important series of flat cemeteries in the Late Mesolithic period. We discuss them in quite different ways. We feel entitled to connect the Neolithic monuments with a wider cultural phenomenon: either with the tradition of long mounds that extends across northern Europe or with the still more extensive distribution of the first megalithic tombs. In either case we might interpret those structures as a symbolic transformation of domestic architecture. Yet faced with Mesolithic burials – and still more with entire cemeteries dating from that period – we engage in a completely different kind of discussion. We link the very existence of such graves with changes in the pattern of settlement, with economic intensification or with control over critical resources (Chapman 1981; Clark/Neeley 1987). In every case we fall back on generalizations drawn from ethnography. In contrast to the Neolithic burials, the symbolism of the Mesolithic graves is largely ignored.

That seems strange, and it does so for two reasons, one theoretical and the other empirical. The empirical reason is that the dominant symbols of such Mesolithic burials are actually shared across large geographical areas (Kayser 1990): areas that are just as extensive as the spread of early megaliths. Yet we are reluctant to come to terms with such similarities, although we do so with fewer inhibitions in Neolithic archaeology. The theoretical reason for my unease is that this is precisely the kind of evidence that might provide us with some information on the appropriateness of the models that we have drawn from ethnography. Was there a Mesolithic world view? Had it more in common with the ethic of sharing found among modern hunter gatherers? And did those perceptions change at the beginning of the Neolithic period?

#### 2. Mesolithic burial practices

Mesolithic burials in north and north-west Europe share a number of persistent features. Some of these originated in the Upper Palaeolithic, but is noticeable how few of them lasted into the Neolithic period. Not all of these features are present on every site, nor were they all used simultaneously, but beneath these local variations a number of more general patterns stand out. To emphasize the contrast with more conventional accounts of the period, this paper draws on the same sample of sites as Clark and Neeley (1987) in their study of social differentiation. These are supplemented by a few more recent discoveries.

Perhaps the most striking feature was the use of red ochre. This is a very widely distributed practice and one which has a lengthy history. It is also evidenced during the Upper Palaeolithic period and it continued to be followed during the Neolithic. It is not limited to burial sites, and red ochre is recorded from sites in Norway which belong to the same period as the establishment of cemeteries in areas further to the south (Bang-Andersen 1983). Even after the introduction of domesticates to southern Scandinavia red ochre continued to be deposited in graves, although these were generally located on or beyond the agricultural frontier (Wyszomirska 1984). The normal interpretation of such deposits is that they symbolized life-blood, although this view has been criticized by Hill in a wider review of the limitations of cognitive archaeology (1994, 90).

Another striking feature is the presence of a set of grave goods made almost entirely of organic materials. In the Late Mesolithic grave at Dragsholm in Denmark the most elaborate artefact was a decorated bone dagger, and the only tool in the grave was also made of bone. The assemblage was dominated by a great array of beads and pendants, formed from animal teeth (Brinch Petersen 1974). The common element among these finds is that they originate in the animal kingdom. In that sense they refer both to the natural world and to important components of the food supply. Such a connection is often evidenced by bone or antler artefacts from Mesolithic graves, but the distribution of these deposits overlaps with that of related artefacts, for perforated shell beads also occur in European Mesolithic cemeteries. Again these objects have a lengthy history, and like the use of red ochre, they can be traced back to the Upper Palaeolithic. By contrast, in the Neolithic period there was a much stronger emphasis on the deposition of stone artefacts. The distinction between the two assemblages might be that in these Mesolithic graves objects associated with the natural world were modified very little so that their original sources were still apparent. The creation of stone artefacts - ground stone axes in particular - obscured the orginal form taken by the parent material. A useful point of comparison is provided by those cases in which we can compare the funerary assemblage with the material that was used in everyday life. Although stone artefacts are by no means absent from Mesolithic graves, they form a much higher proportion of the domestic assemblage. The contrast is perhaps most apparent at Oleniostrovski Mogilnik where what I would call 'organic' artefacts are most frequent in the women's graves (O'Shea/Zvelebil 1984). The same seems to be the case at Skateholm (Larsson 1989).

Related to this is the provision of antler in the grave. It is a feature that links Mesolithic burials in widely separated areas of Europe, from north-west France to southern Scandinavia. Some of the antlers have been shed and so they do not seem to be a by-product of hunting expeditions. Others were converted into artefacts, and in both the regions that I have mentioned some of them were decorated. Their main function, however, seems to have been to provide a kind of framework for the body in the grave, and it may be no accident that they can be found together with deposits of red ochre.

It would be easy to suppose that these finds emphasize the importance of deer to the subsistence economy, but that would not explain the significance of the shed antlers in these burials. Nor does it provide a reason why the antlers should be favored rather than other parts of the body. On the other hand, the fact that antlers could be shed and replaced every year make them a very potent source of symbolism. The mature stag provides a powerful metaphor for fertility, as we know from later rock art, and the annual growth of its antlers makes them an ideal symbol of regeneration. That may be why they occur in Mesolithic graves over such a wide area.

These deposits of antler can hardly be compared with the other finds of animal bone in the burials. These appear to have been placed in the graves intentionally, and for the most part they seem to show that the dead were accompanied by offerings of food. There are also more substantial gifts of meat joints, as well as groups of fish bones which presumably result from the same process (Kayser 1990).

It is uncertain how we should interpret the comparatively widespread occurrence of dog bones in these graves. This is because of the distinctive ways in which these animals were treated. Some appear to have been sacrificed in the graves of members of the community, whilst others were buried separately within the cemetery at Skateholm and were even provided with red ochre and with offerings in their own right. In one of the graves at that site these items were arranged in the same configuration as they were in the human burials (Larsson 1990).

As Hayden (1990) has observed, the domestication of the dog is a widespread phenomenon among late hunter gatherers. In some cases they may have played an essentially economic role, used in hunting wild animals or even as a supplementary source of food, but the special treatment paid to the dogs at Skateholm suggests something else as well. Here they not only accompanied their owners to the grave; they seem to have been treated as individuals in their own right and were buried with at least as much formality as the humans found in the same cemetery. It would be quite wrong to invoke a specific ethnographic model, but one reading of this observation would suggest that the inhabitants of Skateholm made no distinction between the human and animal populations of the site.

That might also provide a reason why isolated human bones could be treated in the same ways as isolated animal bones. Occasional beads were fashioned out of human teeth, and there is also some evidence for the circulation of human bones during the Mesolithic period. This evidence is of two kinds. First, there are sites at which only parts of the body were buried, most probably after they had lost their articulation. In other cases the remains seem to have been rearranged. There is comparable evidence from other sites where isolated human bones are found (Larsson/ Meikeljohn/ Newell 1981). There seems to be evidence that certain parts of the body were selected deliberately, as the representation of different bones does not seem to result from differential preservation. Two examples perhaps illustrate these points. The famous nests of skulls at the west German site of Offnet are now known to be of Mesolithic date (Meikeljohn 1986), whilst recent excavations in the shell middens on Oronsay in Scotland show that it was mainly the extremities of the body that remained in the settlement (Mellars 1987, 9-16). The more substantial relics were presumably taken away.

This is one practice that certainly survived into the Neolithic period, when it forms a major feature of the mortuary ritual at megalithic tombs and other sites. There is one other characteristic of the later Mesolithic period which endures for an even longer period of time. Some years ago I commented on the way in which Neolithic votive deposits seemed to be most apparent around the agricultural frontier (Bradley 1990, 43-75). I now believe that I was not radical enough and that the practice of making offerings in natural locations was actually a Mesolithic development. There are a number of clues that point in this direction, although none of them is of particular significance when taken in isolation. There are occasional hoard finds. Let me quote two recent examples. A remarkable group of decorated bone and shell artefacts were buried together in the Breton settlement site of Beg-er-Vil and the position of this feature was marked by a deposit of antlers (Kayser/Bernier 1988). In the same way, a hoard of ground stone axes was found in another settlement in south-west Ireland, very near to a small group of cattle bones (Woodman/O'Brien 1993). In Scandinavia Lars Larsson has already pointed to possible hoards of Mesolithic artefacts and to what seem to have been deliberate deposits of antler placed in shallow water (1983, 78-81). There is evidence that complete deer carcasses might be treated in the same way (Møhl 1978), and it is clear that some of the stone axes imported into northern Europe before the adoption of agriculture are also found in rivers and bogs (Karsten 1994, chapter 12). The same is true of some isolated Ertebølle pots (Bennike/Ebbesen 1987), and here again we may be seeing an anticipation of a practice that was at its most intense at the start of the Neolithic period.

A new site in south-west Scania lends weight to these suggestions. This lies on the former shore of Lake Yddingen and is being exacavated by Per Karsten to whom I owe this information. It dates from about 6000 BP and, although it was undoubtedly a settlement, it does have a number of features that stand out from the normal range of activities. There are two lengths of shallow ditch, one of which contains an imported axe, whilst the other included an axe which had been set upright in the ground and burnt. In the edge of the lake two antler picks were discovered together with a large stone. One of these antlers had anthropomorphic decoration, whilst fragments of human skull, again accompanied by a stone, were found in a similar position. Elsewhere on the edge of the refuse layer an antler point was found in direct association with a mint condition axe, whilst Karsten has observed that the more elaborate flake knives also seem to have been discarded towards the limits of the occupied area. Some of the same features occur among the graves at Skateholm.

So far I have highlighted six recurrent features in the archaeology of Mesolithic Europe, none of which is related in any obvious way to the practicalities of food production. Five of them form a regular feature of the Mesolithic grave assemblage from Karelia to Portugal, although not all need be present at the same sites or even in the same regions. Those features are: the use of red ochre; the use of what I have called organic grave goods; the deposition of antlers with the dead; the special importance of food remains in the funerary assemblage; the significance of the domestic dogs in the mortuary ritual; and the circulation of isolated human bones. To this we can add increasing evidence for the creation of votive deposits in natural locations. The material deposited in these places overlaps with the contents of the graves. Given the wide distribution of these elements, it is perhaps less surprising that these finds share so many features with Lepenski Vir (Srejović 1972). Again we find deposits of human crania, together with offerings of fish and animal bones. There is evidence for the circulation of human bones and also for the use of red ochre in the burial rite. Still more striking is the emphasis placed on deposits of antler.

Of course there are other features that are not shared with sites in northern Europe, particularly the monumental sculptures and the curious buildings with which they are associated. Whether these were houses or altars, they stand out from the evidence in other parts of Mesolithic Europe where there are no structures of this kind. Indeed, there is little to show beyond the slab-lined cists of Brittany, the tiny cairns associated with human burials in southern France (Rozoy 1978, 1115-26) and the small ritual building at Skateholm (Larsson 1988). The very rarity of such remains after generations of fieldwork and may be one of the main features that distinguishes the Mesolithic from the Neolithic.

#### 3. Conclusion

How are we to understand these similarities? First, it is clear that Mesolithic ritual placed considerable emphasis on the natural world. We see this through the importance attached to organic grave goods, as distinct from the wider repertoire used in the domestic assemblage. It is particularly obvious when we consider how much of this material was based on bone and antler. The same attitudes may be evidenced by the cemetery at Skateholm where some of the dogs appear to have been buried as if they were human beings. This emphasis on the natural world is also consistent with the provision of votive deposits in locations such as rivers and lakes. Instead of the antagonism between culture and nature supposed by Ian Hodder (1990), we might think in terms of a reciprocal relationship, more akin to the animistic beliefs so often reported among hunter gatherers. If we need a European parallel we should turn to the Saami (Ahlbäck 1987).

Secondly, this material seems to emphasize the importance of fertility and regeneration. There is the pervasive symbolism of the red ochre which seems to stand for human blood. There is the equally powerful symbolism expressed by the use of antlers at sites as far distant from one another as Vedbaek, Téviec and Lepenski Vir, and there is a more tentative suggestion of the same emphasis on fertility in the association of organic artefacts with the burials of women. Again it seems as if the natural world was perceived as a creative principle rather than a source of danger. That is what Bird-David (1990) means when she refers to the 'giving environment'. Some hunter gatherers do not distinguish sharply between their own fortunes and the character of the world around them, and they may refer to the environment in which they live in terms of such metaphors as procreation and kinship (Bird-David 1993). That is a very different interpretation from Ian Hodder's reading of Lepenski Vir, with its striking opposition between death and life, the wild and the domestic (Hodder 1990, 21-31).

If so, we might come closer to recognizing the problems posed by the adoption of farming. It is not simply a matter of subsistence and nutrition. In my interpretation this form of partnership with nature is inconsistent with the direct ownership of resources, which is, of course, the social meaning of domestication. It also seems likely that in a world in which human identity was not felt to lie outside nature - a world in which natural places could take on a special significance - monuments would have little part to play. The same applies to the creation of a new range of grave goods based, no longer on bone and antler, but on the complete transformation of the raw materials; the obvious examples are pottery and ground stone axes. Zvelebil and Rowley-Conwy (1986) have discussed the reluctance of some hunter gatherers to take up farming even when the techniques and materials were available to them, and they suggest that in such cases economic change may have been very gradual. No doubt some of that reluctance did have its roots in the subsistence economy. I would add that some of it may also have been based on ideology. Until that belief system lost its force, domestication may have been literally unthinkable.

Having said this, I will make one last suggestion. Both the ownership of resources and the building of monuments reflect the eventual breakdown of such inhibitions, and both involve the development of different attitudes to the natural world: the adoption of new beliefs as well as the adoption of new techniques. If Mesolithic communities had engaged in a reciprocal exchange with nature, the metaphor certainly changed. The new idiom was concerned with power. Monuments were constructed to dominate the landscape and to withstand the process of natural decay. The domestication of plants and animals was another form of control, and the creation of arable and pasture involved a still more drastic modification of the natural terrain. In that sense both processes were really rather alike and once traditional beliefs began to lapse, as they did through contacts across the agricultural frontier, both could be found together.

In fact the process of ideological change was as long drawn-out as the process of economic change, and the two reinforced one another. I shall end by illustrating one aspect of that transformation. As we have seen, deposits of artefacts and animal remains seem to span the Mesolithic/Neolithic transition in northern Europe. They probably originated during the Mesolithic period, but votive offerings in bogs were much more common during the Neolithic. But if the choice of location was the same, the character of these deposits was changing. Organic material was still deposited, and so were human and animal remains, but a growing proportion of the finds consisted of stone axes and pots, for in some respects these were the key symbols of a new way of life. Gradually the situation was transformed. Artefacts were still used as votive offerings, but now the locations of some of these deposits shifted, and they were also found at earthwork or stone-built monuments. It is at this time that there is environmental evidence for intensified food production (Bradley 1990, 57-64). The two processes went together, but not through cause and effect. They ran in parallel because they were the two main features of a new socioeconomic system. They were the outcome of a process of economic change, but they were also the result of new ways of imagining the world.

That is why it is helpful to think of domestication as a state of mind.

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### Hunters, fishers or farmers: sedentism, subsistence and social complexity in the Djerdap Mesolithic

#### 1. Introduction

This paper focusses on the region known as the Iron Gates Gorge (the Djerdap) which has been described as a postpleistocene "refuge" along the Danube River. Motivated by the impending flood waters of a hydroelectric dam, Yugoslav and Romanian archaeologists uncovered sites on both banks of the river in a series of field projects beginning in the 1960's. The remains assigned to the Mesolithic in this region have been dated from the end of the eighth to the first half of the sixth millennia BC. A recent study by one of the authors (Radovanović) has provided an intensive analysis of 20 of these Mesolithic sites (Radovanović 1992, 1994, 1996a, 1996b, 1996c, in press). This paper incorporates some of the results of that analysis in a study of sedentism, subsistence, social complexity and the dynamics of interaction between two different socioeconomic communities. It also explores insights into the possible ideology of the Djerdap huntergatherer-fishers which would have been intricately tied to those factors.

#### 2. Defining the Mesolithic

The title of this paper, to a certain extent, reflects one of the difficulties (and one of the intrigues) of studying so-called Mesolithic societies – namely, defining the Mesolithic. As is generally the case with the divisions of prehistory, the Mesolithic has been defined in terms of economy, perhaps more specifically, in terms of "contrasts concerned principally with modes of acquiring food" (Sherratt 1995, 6).

Although it is fruitless to deny the importance of subsistence acquisition to the nature of human societies, such a defining concept is increasingly seen as limited in unraveling the complexities of prehistoric human behavior. It clearly underlay the traditional view that the hunter-gatherers of the Mesolithic, in contrast to those of the Upper Palaeolithic, had been impoverished because of the end of big-game hunting and accompanying degeneration of stone toolkits (Zvelebil 1993, 62) (fig. 1). Furthermore, it has tended to focus attention on contrasting Mesolithic hunter-gatherers and Neolithic farmers, imparting an undeserved degree of socioeconomic and cultural homogeneity to each and masking those areas in which they may be similar.

As a result, attempts to view the Mesolithic as a "period with a social and economic content of its own with huntergatherers that have a degree of social and economic complexity are generally not accepted" (Zvelebil 1993, 62). The Mesolithic is largely still defined in terms of what it is not. Anthropologists who study living hunter-gatherer societies have also remarked that such societies "have frequently been characterized by what they lack" (Hunn/Williams 1982, 6), namely agriculture and animal husbandry. However, the Mesolithic was not as homogenous as an economic definition might suggest and the variability of post-glacial hunting-gathering societies needs to be addressed.

Archaeologists will probably continue to use the term 'Mesolithic' to refer to the time period which followed the Pleistocene and preceded evidence for an economy based on food-production. We would argue, however, that the chronological boundaries should be perceived as gradual transitions (Zvelebil 1993, 63). For example, it can be argued that some post-Pleistocene hunter-gatherers should continue to be seen as Epipalaeolithic, especially in parts of southern Europe where hunting patterns did not appreciably change with the end of the glacial period and the hunter-gatherers remained mobile within extensive territories (Radovanović 1996a, 1996d). On the other hand, reduction of mobility leads to concomitant social changes which can differentiate some Mesolithic hunter-gatherers from those of the Upper Palaeolithic, although the chronological timeframe would not be appreciably different. As an example, we know from ethnographic studies that sedentary or semi-sedentary huntergatherers incorporate different mechanisms from those of mobile hunter-gatherers for coping with risk in their subsistence strategies (Hunn/Williams 1982). Such mechanisms can, over the long term, become embedded within the social as well as physical reproduction of the society.

To some degree, the mechanisms of the sedentary or semisedentary hunter-gatherers can more closely approximate those of food producers (food storage or fire-setting techniques, for example). However, although such responses to risk factors can illustrate some similarities between the food-producers and the hunter-gatherers (especially in terms



Figure 1. Image of the Mesolithic (from P. Fanlac 1965. *Heureuse Préhistoire*, Perigueux, p. 81).

of techniques), there are also critical differences. One of these is the relatively low density of population among the latter.

Low population density has been argued to be both a cause and a consequence of contemporary hunter-gatherer food production and at the same time, plays a role within hunter-gatherer social organization and ideology (Hunn/Williams 1982, 7). Population density would have also been an important factor within prehistoric societies. Furthermore, it is directly related to sedentism which can offset balances that had been established by more mobile lifestyles (Kelly 1991, 142). That is, changes in population density may be seen as a barometer of change. Although low population density may be a defining characteristic of contemporary hunter-gatherer society, factors within prehistoric hunter-gatherer societies appear to have challenged this feature. At least this is one process we see documented during the Djerdap Mesolithic. An additional factor of no small consequence was the presence of and interaction with food-producing societies within the region over what appears to have been several hundred years.

## Defining the Djerdap Mesolithic OVERVIEW

In the 1960's construction began of a dam on the Danube River in the area of the Iron Gates Gorge (the Djerdap) which was completed in 1971. Several settlements based on hunting, gathering and fishing were uncovered and excavated on both sides of the river. The Djerdap presents a singular ecology with a number of micro-zones whose climatic conditions vary according to altitude and location within the gorges. Extreme environmental changes within the Djerdap had not accompanied the post-Pleistocene and the gorge has been described by some as a 'refuge' for the hunter-gatherers who would have otherwise suffered from post-Pleistocene developments in the ecology (Radovanović 1996a). The topographic relief of the gorges is marked and there are limited patches of arable land for agriculture, although animal-herding would have been possible. Palynological studies provide a picture of a wide spectrum of plants available in the gorges during the mesolithic period which would have enriched and diversified the diet of the human population (Radovanović 1996a).

The Djerdap Mesolithic settlements date to a period between the 8th and 6th millennia BC (Radovanović 1994, 1996a, 1996b, 1996c, in press). During the course of the 8th millennium BC, the mobility of the population had been reduced for a number of reasons. The ensuing growth and expansion of population observed a linear pattern of spread along the Danube River. A detailed analysis of the material culture found in the Djerdap Mesolithic settlements has suggested at least three coexisting groups (fig. 2):

- the first group in the Upper Gorge with settlements of Padina, Stubica, Vlasac and Lepenski Vir;
- a second group which appears to have split off from the first and moved downstream with settlements at Kula and Ostrovul Mare;
- a third group (or perhaps more groups) settled in the Lower Gorge and the area of Ključ, including Icoana, Razvrata, Hajdučka Vodenica, Ostrovul Banului, Schela Cladovei and Ostrovul Corbului.

In 1989, Voytek and Tringham presented a scenario for the Djerdap Mesolithic which attempted to highlight the role of sedentism in the development of inter-social relations and the nature of socioeconomic changes affecting the populations living there. A brief summary of that work is required here. The article had presented a model which combined the three factors of sedentism, food storage, and exchange. The authors had argued that the archaeological evidence suggested that the indigenous hunter-gatherers in the Djerdap had become less mobile and that in doing so, they had intensified their use of local resources for tools and food. These claims were evidenced by structural remains, stone tools and facilities, and a quantity of cultural debris (Prinz 1987; Radovanović 1994, 1996a, 1996b, 1996c, in press; Voytek/Tringham 1989).

Stone rings found at Vlasac have been interpreted as tent rings (Prinz 1987) although they may have been used for food-processing activities such as wild seed removal (Voytek/Tringham 1989, 493). Pounders and mortars found at Lepenski Vir and Padina which although variously interpreted as shrines and altars may have been used for grinding and/or pounding of seeds and nuts which is suggested by the wear patterns on the stone implements (Srejović 1969 (1972)). Exploitation of plant foods is also reflected in other data: antler tools found at Vlasac have been associated with working the soil (Letica 1969). Pollen analysis of coprolites from Vlasac and Icoana shows Gramineae of cereal type (Carciumaru 1973). Finally, skeletal study of dentition shows that plant foods were an important part of the diet (Boroneant 1980; y'Edynak 1978; y'Edynak/Fleisch 1983). Faunal data also support the theory of year-round occupation. These remains come from fish, pig, deer, and wild ox.

It was further argued that the permanent facilities for acquiring resources and perhaps storing them could have become the foci of control by individuals and the bases for social differentiation. Animal-keeping would have accelerated this process, although there is admittedly no evidence for domestic animals among the hunter-gatherer sites except for dog. There is evidence, however, for domestic sheep/goat and cattle among the early Neolithic sites in the Danube Basin (north Balkans), and exchange in meat has been postulated by some archaeologists (Chapman 1994, 141; Voytek/Tringham 1989, 497) (fig. 3). Ethnographic studies have demonstrated the potential effects of the introduction and adoption of domestic animals as a source of exchangeable wealth (Bailey 1980, 67; Ingold 1980, 44). Social differentiation frequently is one of them, often accommodating the fact that the knowledge of domestication would not have been distributed evenly among the population (Meadows 1983).

Exchange relations between the indigenous huntergatherers and farming groups outside the gorges have been given 'a major role' in the socioeconomic transformation witnessed in the Djerdap (Voytek/Tringham 1989, 498). Evidence for exchange comes largely in the form of lithic resources and potentially ceramics. The possibility of subsistence resources being included within exchange operations has already been touched upon in terms of domesticated animals for meat. Concerning plant foods, one might speculate that the ceramics which might have been part of an exchange had principally served as containers for such substances which were the real items of barter.

To conclude this brief summary, we would note that the goal of the 1989 article was to understand elements that would foster socioeconomic change among both the hunter-gatherer and food-producer populations – that is, to explore the nature of transformation rather than transition. Since its publication, considerable research has been done on the hunter-gatherers in the Djerdap (Radovanović 1992, 1996a, 1996b, 1996c, in press). We now have a clearer picture of the extent of their social complexity and significance to the prehistory of the Balkans as a whole.

#### 3.2. SEDENTISM

As mentioned, one of the elements which goes toward defining the Mesolithic of the Djerdap is the evidence for sedentism. The evidence has been outlined above. The reasons are perhaps less clear. Kelly (1992) has summarized some of the possible reasons, encapsulating them within a comparison of "push and pull hypotheses" (Kelly 1992, 51-54). Although his study produced no definitive reason why some hunter-gatherers become sedentary, it did point out the importance of dealing with resource fluctuation during the process. That is, in areas with infrequent resource



Figure 2. Map of the Iron Gates Gorge (Djerdap). Circles mark general location of Mesolithic sites or sites with Mesolithic and Early Neolithic; triangles = Early Neolithic sites/finds (from Radovanović 1992; Voytek/Tringham 1989).

INDEX:

MESOLITHIC OR MESOLITHIC/EARLY NEOLITHIC SITES

Alibeg	Veterani terasa	
Padina	Hajdučka Vodenica	
Stubica	Icoana	
llisova	Răzvrata	
zlaz	Ostrovul Banului	
Lepenski Vir	Schela Cladovei	
Vlasac	Ostrovul Corbului	
Cuina Turcului	Ostrovul Mare	
Climente I and II	Kula	

fluctuation, the need to move would be less apparent (Kelly 1992, 53).

Although patterns of resource fluctuation cannot be invoked as causes for increased sedentism, they clearly play a role, especially in view of the fact that sedentism tends to produce increased population density (Harris 1977a, 1977b; Kelly 1992, 59, 1991, 141-144; Rafferty 1985, 120, 137). That is, regardless of the causes for increased sedentism (and in fact, there can be many, cf. Rafferty 1985), resource fluctuation must be addressed in methods other than mobility. By its very definition, sedentism precludes mobility as a mechanism for reducing risk (Halstead/O'Shea 1989, 3). When residential and/or long-term mobility can no longer be

#### EARLY NEOLITHIC SITES (\* evidence for domestic animals)

Pojejena Macesti Moldova Veche Sfinta Elena Gornea\* Liubcova\* Svinița

Donje Butorke Aimana Pesak Velesnica Biljevina Mihajlovac sites

perceived as 'viable solutions to local resource failure', sedentary hunter-gatherers must use other means (Kelly 1992, 58; Rafferty 1985, 119). In addition, sedentary huntergatherers do not have mobility as a mechanism to conserve resources (Hunn 1982, 17). That is, new means of preserving resources, especially over the long-term, must be developed.

Food-storage would serve as one possible development, although the evidence for food-storage in the Djerdap is not especially clear. Other means may include new alliances or manipulation of marriage (Kelly 1992, 58). Importantly, factors which contribute to egalitarianism between genders in mobile societies can become compromised among sedentary populations. In sedentary communities for whom food

storage has been the principal means of coping with resource fluctuations, females tend to be considered more valuable as a source of labor than as loci for potential alliances (Kelly 1991, 145-146). That is, maintenance of surplus for storage entails increased costs of resource-harvesting (of plants or fish) and resource-processing. In this way, subsistence activities become more labor intensive and increasing a unit's production requires increasing a unit's size.

Along the same lines, increased dependency on foraging, which can provide a stable food supply, can also lead to depletion of a resource area (Kelly 1991, 150). For sedentary/semi-sedentary communities, this factor then reinforces the need for food storage and other risk-avoidance strategies which are also labor-intensive. In addition, in a sedentary context, tasks become differentiated as labor time increases and children are brought into the labor force (Hitchcock 1982, 250). Social relationships are obviously affected.

These interrelated elements of sedentism suggest that gender roles are also influenced when a group 'settles down', a process that entails new economic and political conditions. Division of labor within small-scale societies is largely defined according to sex. While females come to inhabit a more restricted space (associated with the house or 'domus' of Hodder (1990, 67-78)), males tend to become more involved in extra-group affairs (Draper 1975, 78, 100-104). Some have argued that as the status of women became domesticated, it also decreased (Bland et al. 1978, 156; Hayden et al. 1986; Kelly 1991; Sacks 1974, 210). Whether such a correlation can be proven or not, it is reasonable to propose that with increased sedentism, the dynamics of changing gender roles within the society would have been operative. Furthermore, the effects of these dynamics would have impacted other gender-based developments - for example, in the area of biological reproduction and the increased significance of labor. We shall return to this point further on in the paper.

#### 3.3. FISH AND RISK REDUCTION

Before discussing these developments in the Djerdap in more detail, we should perhaps return to the subsistence base. The hunter-gatherers of the Djerdap had exploited a wide spectrum of wild animals and fish. The research by Radovanović into faunal remains analyzed from these sites suggests that fish had been an important food resource, but not necessarily a staple. In the Epipaleolithic and early Mesolithic occupations, there is evidence that all species of fish had been exploited, while during the late Mesolithic, fishing focussed more on cyprinidae and there is a lack of the larger anadromous fish (Radovanović 1996a, 1996c; however, see Brinkhuizen 1986 for discussion of sturgeon remains from Padina). The lack could be due to preservation, excavation, prehistoric choice, or perhaps ecological changes which affected the seasonal run of the fish. Although the evidence makes it difficult to answer many questions about the exploitation of fish in the Djerdap, the importance of this resource should be examined in a broader sense than its quantitative significance.

As mentioned, fish did not appear to have been a staple resource, but it is an important one in terms of seasonal abundance and its potential as stored food or 'food reserve' (Hunn 1982, 31-32; Rowley-Conwy/Zvelebil 1989, 52-53). It is also responsive to changes in population density. Contemporary hunter-gatherers have been known to adopt a 'specialized riverine orientation' to support increases in population density. The specialization can incorporate practices such as ritual and mythological 'marking' of seasonal resource areas so that only certain groups should exploit them and only at specific periods (Hunn 1982, 31). Opportunities for population agglomeration and sedentariness are offered by concentrations of migratory fish which can sustain a concentrated population, as suggested for the population of Olenii Ostrov (Zvelebil 1993, 57). Harvesting anadromous fish has been compared to gathering more than hunting, suggesting its importance in terms of scheduling and maintaining a sedentary or even semi-sedentary lifestyle (Kent 1989, 5).

In effect, fish can become the localized resource which allows a sedentary/semi-sedentary group to remain in place (Rowley-Conwy/Zvelebil 1989, 51). The relationship of this food source to other types shows interesting patterns. In her ecological model of Mesolithic-Neolithic interaction postulated for Southwest Germany, Gregg has argued that if the supply of red deer decreases due to competition with cattle and sheep, the interest in fish increases. At the same time, the addition of domestic resources reduces the need for fish in the diet and reduces the dependence on the seasonal glout associated with migratory fish (Gregg 1988, 171, 203, 228, 237). In a region that has no anadromous fish runs, non-migratory fish would have been the limiting factor in territory size. Territories would have had to increase by 7% to allow for sufficient fish. One alternative to increasing the territory size is a restructuring of wild resource exploitation to decrease the significance of fish in the diet (Gregg 1988, 203). Again, the addition of domestic resources accomplishes this goal as well. In brief, although the importance of fish in a population's diet is often difficult to prove or even measure, its significance in terms of group dynamics, enabling or facilitating sedentism and increasing population densities, is notable.

#### 3.4. SOCIAL COMPLEXITY

The Djerdap Mesolithic endured several hundred years after the appearance of the local Early Neolithic and may have persisted until the beginning of the early Vinča period in the region. It continued a relatively long historical trajectory in that certain elements of the Mesolithic material culture have been related to the preceding Epipaleolithic period which is better documented on the left bank of the river and related to the so-called Cuina Turcului/Shan-Koba/Belolesye complex (Radovanović 1996a, 1996d). This historical context is important to understanding the complexity of the Djerdap Mesolithic and its ideological manifestations (Radovanović 1996a, 323).

As mentioned above, through time, three separate but related groups developed. In common they shared architectural elements such as similar types of dwellings, and elements of burial procedure. Hunting, gathering and fishing were the dominant subsistence strategies within the Djerdap and the bone, antler, and boar tusk industries were almost identical throughout the region. Differences among the three groups included details of architectural elements, particularly associated with hearths. The appearance of 'altars' and sculptures in the Upper Gorge, which are especially numerous in the Lepenski Vir settlements contrasts with another variety of rare sculpture in the Lower Gorge (Radovanović 1996a, 1996d).

Differences have also been noted in some aspects of the chipped stone industry, principally in the raw materials used. Concerning subsistence strategies, faunal analyses have shown a more prominent orientation toward hunting red deer and wild pig in the Lower Gorge, while red deer and aurochs were the main species evidenced in the Upper Gorge. It also seems that fishing played a more important role in the Upper Gorge probably because of the productive whirlpools such as the Gospodin Vir and Lepenski Vir (Radovanović 1996a, 1996d).

A large number of burials have been registered at eight sites of the Djerdap Mesolithic. The variations and formal disposal areas suggest a complex horizontal and probably also vertical social stratification within the Djerdap Mesolithic community. Details can be found in Radovanović 1992, 1994, 1996a, 1996b, 1996c, in press). Vlasac provides the most extensively published data concerning archaeological and bio-anthropological aspects of the burials. In the other cases, the archaeological data are partially published. Apart from Padina A2, the oldest type of burial procedure is found in the earlier burials at Vlasac in the Upper Gorge, and at Schela Cladovei in the Lower Gorge. The deceased were buried in groups at particular locations, often around hearths and habitations.

Research by Radovanović into sex and age structure of the skeletons revealed that they included males, females and subadults although not in uniform proportions among the settlements (Radovanović 1996a, 1996c). The sample from Padina obtained from field documentation is marked by a dominance of males (48%), followed by females (36%) and

a small sample of children (16%). The data from Lepenski Vir derive from Srejović (1969 (1972)), an analysis of skeletal remains by Zoffmann (1983) and the unpublished field documentation. The proportion of children at Lepenski Vir is notable at 70% of identifiable burials, while male burials are 18.5% and females 11.4%. The female burials are actually rarer since this proportion includes female skeletal remains (mandibles) which had been incorporated in hearth construction at LV I. For LVII, female burials dominate, although the sample is relatively small (8 females out of 13; 3 male; and 2 sex undetermined). Analysis of the published data by Srejović and Letica (1978) on Vlasac provides a sample larger than Padina, but the general breakdown of sex and age structures is similar. Male burials dominate (46.1%) in Early Vlasac phase; 45.5% in later) followed by females (25% in early phase, 32.7% in later) and subadults (28.8% in early phase, 21.3% in later). The sex and age structure at Hajdučka Vodenica resembles the pattern of Padina and Vlasac with principally male burials (54.5%) followed by females (22.7%) and children (22.7%). The data from other Djerdap Mesolithic settlements provide rather small samples. Schela Cladovei is an exception to this pattern with at least 33 burials, but it cannot be included due to a lack of published data.

In sum, the large formal burial areas in the Djerdap Mesolithic, which can be reported, contained a majority of male burials 45-54%, females 22-36%, and children 16-29%. In this picture the Lepenski Vir I burial pattern is an exception, containing 70% children with rare female burials apart from mandibles within hearth constructions.

A study of the grave goods associated with the burials has been done as well and can only be summarized here (Radovanović 1996a, in press). This study suggested that certain traits were significant chronologically as well as spatially. A great variety of grave good forms was observed at Vlasac and Lepenski Vir I, Padina and Lepenski Vir II. All these sites are located in the Upper Gorge. The sites of the Lower Gorge and downstream sites contained few grave goods. Certain forms of grave goods seem to be exclusive to Vlasac (graphite, ochre) and Vlasac and Kula (cyprinidae teeth). The latter appear to have been fixed to garments, which had feasibly been markers of status.

Ochre was found regularly at Vlasac and Schela Cladovei I. The early type of burials at Vlasac contained ochre regardless of sex and age of the skeletons. The adults had been sprinkled or painted with ochre at various spots, while the subadults and sometimes females are completely sprinkled with ochre. Later burials witnessed a significant change in that males were excluded from this aspect of the burial procedure. Females were sprinkled with ochre exclusively over the pelvic area which may be related to death in the process of giving birth.



#### INDEX:

(\* indicates presence of domestic sheep/goat and/or cattle):

- 1. Balta Sarata
- 2. Turdas\*
- 3. Circea\*
- 4. Fratelia
- 5. Kozluk
- 6. Vršac sites: Beletinci and Pavlis; Potporanj sites: Kremenjak and Utrine
- 7. Starčevo\*
- 8. Golokut Vizici\*
- 9. Vinča\*
- Biserna Obala-Nosa\*; Budzak-Ludos\*, and Curga-Ludos
- Gura Baciului\*
- Moldavian sites, e.g., Poieneşti, Grumăzeşti, Vermeşti, Baiş, Trestiana
- North Banat sites, e.g., near Novo Miloševo, Bocar, Coka, Mokrin, Idos; site of 'Dombos' near Sajan\*
- 14. Grivac, Divostin\*

The Vlasac burials with this ochre pattern date to the 7th millennium BC. The Lepenski Vir I burials are dated to the 7th and perhaps the beginning of the 6th millennium BC. They contain animal bones, skulls (bovid, deer, human) and mandibles (herbivore, dog, human). None of these grave good forms symbolize the act of birth such as seen in the later Vlasac female burials. The same is true for Padina and Kula. However, imagery connected with the act of birth, or more generally sexual reproduction, was clearly symbolized at Lepenski Vir I and II but in aspects other than ochre. For

example, vulva sculptures had been incorporated into hearth constructions or associated with hearths (Radovanović 1996a, in press; Srejović 1969 (1972), fig. 25, fig 48).

The contrast between Vlasac and Lepenski Vir I and II has been discussed as indication of removing the birth symbol from an individual level and interweaving it into a complex set of other symbols belonging to the collective (Radovanović in press; Srejović 1969 (1972)). Prevalence of the collective over the individual has been noted at other Iron Gates settlements in terms of the burial procedures. Early



types of burials are individualized and variously oriented, although in the later burials there is an orientation that follows the Danube river course. The head of the deceased is always directed downstream. Variety is tolerated only in the domain of vertical ranking within the community (Radovanović 1996a, in press).

#### 3.5. IDEOLOGY

As mentioned, some elements of the Djerdap Mesolithic material culture relate to the preceding Epipaleolithic period. During the 8th millennium BC, the mobility of the hunter-gatherers was reduced and led to a more permanent settlement of the most favorable zones of the region. Based upon studies by Radovanović, referenced above, as well as a series of calibrated radiocarbon dates, a chronological scheme with several phases has been proposed (fig. 4; Radovanović 1996d).

The phases are unequally represented in the region, possibly due to a process of territorial expansion and/or restriction. That is, while populations within certain zones of the Djerdap maintained traits of the local Mesolithic, others lacked them or combined new traits, including details of hearth construction. Needless to say, this variation may reflect the cultural identity of the groups within the Gorge.

The question of cultural identity cannot be discussed apart from the archaeologically visible signs reflecting ideological integration of the community. Elements of ideological integration are reflected in settlement architecture, but these elements are especially well-represented and repeated in manifold aspects of the Upper Gorge settlement features, notably at Vlasac and Lepenski Vir. These features include the particular settlement pattern, sophisticated building techniques, large formal burial areas, complex burial procedures, quantity of 'symbolic' artifacts, and sculptures. Thus, the Upper Gorge settlements, and Lepenski Vir above all, manifest a focus of social and ideological forces within the entire community.

The long lifespan of the Djerdap Mesolithic provides an opportunity to postulate two related but separate 'steps' in the process of ideological integration (fig. 4). In phases 1 through 3 (the 8th to first half of the 7th millennia BC), the first 'step' was related to the set of changes related to the restriction of hunter-gatherer mobility, subsistence strategies to deal with resource fluctuations, and elaboration of social relations, suggesting status differentiation on the basis of sex. In addition, discriminate ochre use among female burials at Vlasac dates to this period. As we tentatively suggested, the sprinkling of ochre on the pelvic region may reflect a concern with birth and reproduction, perhaps related to the restriction of breeding networks associated with reduced mobility.

Another 'step' is marked in phases 4-6 (the second half of the 7th millennium BC until ca. mid-6th millennium BC)

which ushers in new elements, found in the archaeological record. These new elements are related to the 'portable inventory' and include the following:

- Flint from Prebalkan Platform sources (so-called Balkan honey flint) appears in the chipped stone industry, particularly at Padina B, Lepenski Vir, and Vlasac. Earlier assemblages were comprised only of local flints and quartz/quartzite. Balkan honey flint is common in Early Neolithic Starčevo culture contexts, usually in the form of complete blades (Voytek 1985, 250-255). It contrasts with the generally poor quality of other Early Neolithic chipped stone materials in the Danube Basin. Furthermore, flakes and blades of Balkan honey flint have been found in Early Neolithic contexts in pots, as though having been stored (Voytek 1985, 250). Obsidian is another raw material which appears to be entering the Djerdap through exchange after the second half of the 7th millennium BC.
- At Vlasac, Lepenski Vir, and Kula, chipped stone blades of the so-called 'Montbani type' appear in the assemblage along with geometric microliths (Radovanović 1992). These elements contrast with the flake-based technologies of earlier levels.
- Shoe-last axes of andesite are found in the levels of Lepenski Vir IIIa, while small trapeze axes of serpentinite are found within a clay pot from Lepenski Vir IIIb. From Lepenski Vir IIIa, beads of azurite and malachite were also uncovered (Voytek/Tringham 1989).
- Changes in the technology of manufacturing tools made of antler and tusk have been noted for Padina B (Radovanović 1992).
- 5. Pottery appears at some sites within the second half of the 7th millennium BC. In general, the manufacture, shapes, and decoration of the pottery in the Djerdap fit within the larger regional context of the Danube Basin. However, the periodization and distribution of Early Neolithic pottery (of the so-called Starčevo-Körös-Criş archaeological cultures) require serious work before the ceramics of the Djerdap can be better related to the regional development of the Early Neolithic communities.

One can argue that the presence of the materials signals more intensive participation of the Djerdap sites within a large regional exchange network. The introduction of these new elements is more or less concomitant with variations in architecture and burial procedure, including the change of orientation of burials toward the river. As mentioned, the structure of burial orientation, along with other elements of burial procedure, can relate to the increasing prevalence of a collective mentality within the culture – that is, the sense of individual identity had been subsumed within a collective (Radovanović 1992, 1996d; Chapman 1993, 80-84). At the

#### I. RADOVANOVIĆ AND B. VOYTEK – THE DJERDAP MESOLITHIC

Table 1. Chronological chart - Djerdap Mesolithic (taken from Radovanović 1996a; Voytek/ Tringham 1989)

Early Neolithic: Vlasac IV, Lepenski Vir III, Cuina Turcului III, Schela Cladovei III, Icoana III, Ostrovul Banului IV (and others shown on fig. 2).

Phase	Upper Gorge Sites	Lower Gorge Sites	Downstream Sites
Mid 6th N	MILLENNIUM BC		
6	Padina B (III) Lepenski Vir II/IIIa	Hajdučka V, IB Razvrata II O. Corbului II	O Mare km 873/875
 7.511/6.511 N			0. Marc kiii. 875/875
/IH/OIH N	C changes)		
5 (appe	Alibeg II Padina B (II) Lepenski Vir I (3) arance of ceramics)	Hajdučka V. Ia O. Banului IIIb	Kula I-II O. Mare km.875
Second H	alf of 7th Millennium BC		
4	Padina B (I) Lepenski Vir I (2) Vlasac III	Icoana II Hajdučka V, Ia O. Banului IIIa-b Schela Cladovei II O. Corbului II (h. V-VI)	Kula I
FIRST HAL	f of 7th Millennium BC		
3	Padina A-B Lepenski Vir, I (1) Vlasac Ib-II		
8тн/7тн <b>N</b>	IILLENNIUM BC		
2	Padina A/A-B Vlasac Ia-b Proto-Lepenski Vir	Hajdučka V, 1a O. Banului IIIa Schela Cladovei I O. Corbului I (h. III-IV)	
8TH MILLE	NNIUM BC		
1	Padina A Alibeg I Vlasac Ia	Veterani-terasa Icoana Ia-b Razvrata I Schela Cladovei I O. Corbului I (h. II)	
POST PLEI	STOCENE		
		Cuina Turcului II Baile Herculane II O. Banului II	
TERMINAL	PLEISTOCENE		
		Climente II O. Banului I Cuina Turcului I Climente I Baile Herculane I	

same time, however, the exchange transactions and introduction of new resources, occasioned by contact with the Early Neolithic groups known from the Danube Basin (fig. 3), would have orchestrated new institutional responses of control over that collective (Voytek/Tringham 1989). Perhaps almost paradoxically, although a collective conscience may have been forming, only a few particular individuals would have had social access to the 'outside' group, through which access to resources of that group would be funneled (Kelly 1991, 143).

Perhaps not surprisingly, an ideological symbol of the Djerdap Mesolithic is fish, as seen in the fish-like sculptures, 'altars', and symbolic artifacts ornamented by motives that perhaps represent symbols of water. As mentioned, although fish were not a vital resource in the diet, their exploitation can be tied to the spatial territory and its maintenance as a habitation. The fact that some species had possibly not been exploited as a food resource among the Mesolithic Djerdap community does not negate the fact that fish and the river itself had come to serve as a symbol of the integrity of the community. That is, had fish historically been a factor in the process of sedentism, eliminating or mitigating the risk factors mentioned above, its ideological value would have been secured - especially given the appropriate social forces to promote its meaning within the community. As mentioned above, exchange relations with 'outside' groups would have fostered the advance of particular individuals through whom such exchange would have been channeled, possibly through new institutions such as trade partnerships (Kelly 1991; Voytek/Tringham 1989). The fact that certain commodities and social relationships would have been accessible only to particular individuals would have weakened the egalitarian distribution system within the society and set the conditions for control.

#### 4. Discussion and conclusions

("So long, and thanks for all the fish..." [Adams 1986:471])

We have painted a picture of the Djerdap Mesolithic as the setting of a sedentary hunter-gatherer population engaged in exchange relations with neighboring populations who 'introduced' new resources – both in terms of subsistence and non-subsistence goods. Although the picture is one of apparent stability, the seeds of change have been noted.

Some recent studies of mesolithic hunter-gatherers have stressed the ideological component of the societies which occupied certain regions and certain times. Processual analyses of economic stress and adaptation have been superseded by discussions of power and social control (Chapman/Dolukhanov 1993; Tilley 1994). These discussions provide engaging descriptions of social power as being manifest in control over place. The descriptions are narratives which attempt to reproduce prehistory; at the same time, narratives are stories of human experience and human relationships. In this sense, social control needs be examined as what it really is – control over human relationships (Chapman 1993, 71). An ideology which promotes power over a landscape masks control over people by placing it in realms that are further removed from the human actors. Romantic views about the ancients' concern for the spirits, "the ritual imagery of the woods and the river" (Chapman 1994, 141) are not necessarily false, but it is also important to delve beneath the mystification which is the process of ideology (Barrett 1991, 167).

Nonetheless, we would not argue that ideology is subsistence based. There are historical and locational factors involved in its conception (Barrett 1991, 18-34; Chapman 1993). Along these lines, we have argued that fishing although apparently not vital as a subsistence resource, had come to be a major factor tying the Mesolithic community to spatially limited territories along the river. The significance of fishing, seen in this light, would have come to hold greater influence in the ideological than in the economic sphere of the Djerdap Mesolithic (Radovanović 1996a; Halstead/O'Shea 1989, 5).

The degree of ideological integration seems to have been greater in the Upper Gorge than in the Lower Gorge and downstream settlements, likely due to the earlier appearance of a complex and elaborate social and ideological system which had been intensified during the course of contacts between these settlements and the populations assigned to the Early Neolithic of the region. To a certain extent this system would have allowed the Upper Gorge group to resist assimilation by the new population longer than in the case of the Lower Gorge and downstream groups (Dennell 1984, 111). Based on the archaeological record, this does seem to have been the case (Radovanović 1996d).

Modeling the effects of the contact between the Mesolithic and Early Neolithic communities in the Djerdap takes us somewhat beyond the scope of this paper. Such interaction clearly played a role in the transformation of both. The innovations introduced by the early food-producers are only one part of the puzzle. As elegantly discussed elsewhere, the social context of such innovations must be considered (Zvelebil 1996b, 157). The effects of inter-group exchange on the development of new intra-group relations have been suggested and related to the opportunities for control within an increasingly collectivized society (Voytek/Tringham 1989). As mentioned above, these opportunities would have upset an egalitarian structure by affording certain individuals access to outside commodities and social relationships. Furthermore, as discussed earlier, in a sedentary society, such individuals would have likely been male. For the Djerdap Mesolithic these effects had been operative during a

period of intensive ideological integration, incorporating symbols that reflect an historically important resource and the significance of the riverine location. The strength of the ideology may have forestalled assimilation by 'outsiders', but at the same time, it developed in response to the threat of their presence (Chapman 1993, 105).

That is, the process of ideological integration tries to maintain both the biological and the social reproduction of the community. For the Djerdap Mesolithic an expanded exogamous breeding network may have been initially helpful in the area of biological reproduction. We have tentatively postulated that the ochre burials at Vlasac and the later symbols at Lepenski Vir might have been related to concern with fertility and childbirth. However, an expanded breeding network would have come to play a detrimental role in terms of social reproduction of the hunter-gatherer society. On one level, it would have contributed to increased population density, a factor which would have put strain on resource requirements and led to intensified subsistence efforts. Ultimately, these would have included emphasis on domestic resources. Along these lines, a dependency on fish and its use as a food reserve may have gradually been replaced or at least reduced by the availability of domestic resources.

On another level, the abstract term, 'breeding network', basically refers to human interactions and to some extent, human choice. Needless to say, this level of analysis is more difficult to document for prehistorians. It has been argued that obtaining mates from hunter-gatherer communities may have been attractive to male food-producers and in the end, brought about the apparent disappearance of the former (Dennell 1984, 110-111; Chapman 1994, 116). One might also ask whether this situation would have been attractive to female hunter-gatherers.

It could be argued that the controls of the Djerdap Mesolithic society, masked in an ideology that offered little real advantage to female actors, could not in the end forestall the process of assimilation because of its limited gender appeal. If, as suggested above, the gender relations of that society had moved in the direction of increased inequalities between the sexes, the adoption of a different lifestyle and/or social role might have seemed preferable. With labor assuming real value, the importance of biological reproduction would have had new significance for the unit of production. The connection between fertility symbols and the importance of birth to the collective was drawn above. If the controls of the collective were increasingly unfavorable to females, perhaps by attempting to control aspects of biological reproduction, the advantages of changing the unit of production - from the collective to the household - may in fact 'have looked attractive'. Such changes would have obviously promoted the growth and spread of those practicing food-production and contributed to the demise of the hunter-gatherers.

Again, these arguments are difficult to prove. The burials from Lepenski Vir I, with an inordinately high proportion of children and lack of females, might be relevant here. Perhaps further anthropological study of the Djerdap skeletons might help shed light on these questions. Previous analyses seem to suggest the meeting and mixing of two separate populations (Mikić 1988, 23).

A regional Early Neolithic in the Central Balkans and Transylvania dates to the last century of the 7th millennium BC. Its scanty remains together with problems of periodization generate problems for a precise interpretation of the finds. The Djerdap provides a good opportunity to study the interaction of groups assigned to the Neolithic with those considered Mesolithic, and many such studies have been done. Unfortunately, this region remains a relatively isolated phenomenon – significant but almost unique. Systematic research of the Late Mesolithic and Early Neolithic of the Central Balkans is still required, together with a reinterpretation of 'old' sites and their context. Such studies will surely be done and hopefully done with the same attention to social context which we have tried to argue for here.

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#### Marek Zvelebil

### Hunter-gatherer ritual landscapes: spatial organisation, social structure and ideology among hunter-gatherers of northern Europe and western Siberia

#### 1. Introduction

In my contribution, I would like to address the problem of interpretation, or understanding, of social structure and ideology of hunter-gatherer stone age communities in Europe, and illustrate, on the case studies from Northern Europe and Western Siberia, the problems and possibilities involved in such an undertaking. I would like to approach this theme from the point of view of landscape. In my opinion, spatially referenced human activity - and the cultural signatures such activity leaves on the physical landscape - provide a frame of reference which combines the practical concerns and the more abstract aspects of ideology and social organisation. It may be possible to 'read', in other words, to understand and interpret such cultural features in the landscape within its spatial-temporal frame of reference and with the aid of the appropriate conceptual frameworks. My aim, then, is to develop the concept of landscape, which combines the practical and the ritual aspects of landscape use, and to use this as a framework for understanding the social structure and ideology of hunting and gathering communities in Europe, and in particular, Northern Europe.

Landscapes reflect the use of geographical space by individuals and communities over extended periods of time, which includes the organisation of settlement in terms of seasonality, hierarchy and function, the prosecution of resource use strategies and the enactment of ritual activities. Landscape is modified and enculturated though such activities. As landscape antecedents and landscape successors, features of the landscape can impose constraints and opportunities on the communities involved (Roberts 1987).

How far can we go in our attempts at structuring such hunter-gatherer use of landscapes in the past? After first discussing some general features concerning landscapes, I address this question using three case studies from the northern forest zone of Europe and western Siberia.

#### 2. The structure of past landscapes

There is not much point in going through the many, often contradictory, meanings of the notion landscape. To appreciate the range of meanings, one only needs to look at Tilley's all inclusive definition of the phenomenon (Tilley 1994, 25, 34). To me, landscape is succinctly defined as a set of real-world features, natural and cultural, which give character and diversity to Earth's surface (Roberts 1987). Archaeological landscapes, then, can be defined as a land surface within a specified span of time, which are modified by their own history. In summary, landscapes are not passive recipients of human activities, but dynamic and interactive elements in the evolution of past societies.

Within this framework, we can assume that landscapes are structured by their users, and reflect the practical and ritual activities in the landscape. This is true regardless of the extent to which our understanding of such past use is mediated by our own modern perception and concerns, although we do need to keep in mind that the very distinction between the practical and ritual use is a modern, heuristic device.

Landscapes are structured in time and space. Both of these dimensions are real, and at the same time perceptual, entities, social constructs modified by the conceptual frameworks of the users. Both dimensions, in their modified, historically and socially situated form, influence in a fundamental way the structuring of landscapes: let us first briefly look at time.

Time is a continuous phenomenon, packaged into different conceptual frameworks for the benefit of self-orientation, communication and comprehension (a.o. Clark 1992; Gosden 1994; Ingold 1993; Zvelebil 1993). As Edmund Leach observed:

"Time, as we experience it, is continuous; it contains no discrete 'events'. The events are put there by reflection on the past" (1990, 227).

So, concepts of time are cultural constructs, and different concepts of time have acted through human behaviour on the structure of the archaeological record (Clark 1992; Gosden 1994; Zvelebil 1993). Time is also the condition of social practice and of history. It follows, then, that both *the past and present* temporal frameworks are reflected in the archaeological record: the first in the creation of its structure, the second in its interpretation (fig. 1). In terms of past land use, a distinction can be made between regular, abstract time, and personal, substantial time, the latter mediated more


Figure 1. Concepts of time and archaeological record

directly by human experience. Substantial time can be further subdivided into secular and ritual; the former, according to Bloch (1977) is associated with "the systems by which we know the world", the latter, ritual and mythological, with the systems by which we hide it" (1977, 290).

It can be argued that the organisation of hunter-gatherer activities in space reflects the different temporal frameworks at their disposal, in particular the operation of secular and sacred time dimensions. At the practical level, huntergatherer land use is guided by practical considerations such as the ecological structure and productivity of their resources, seasonality, the balance between the population and their resources, technology, and motivation guiding resource use strategies: i.e. adequate provision of food, longterm risk minimisation, procurement for market and exchange, or social competition.



Figure 2. Practical organisation of hunter-gatherer mobility in the landscape. Systems A, C and D in this figure correspond to the reconstructed organisational arrangements A, B and C respectively in northern Europe in figure 6. After Rowley-Conwvy and Zvelebil 1989.

In temperate and boreal regions, hunter-gatherer choice of resource-use strategies is constrained by the marked seasonality of the environment and by uneven distribution of resources over the landscape. Late winter/early spring tend to be leanest times of the year, and, throughout the year, food resources tend to concentrate in water edge locations along rivers, lake shores and coastal zones. In many areas, the concentration of water edge resources is raised in the summer half of the year by seasonal migrations of anadromous fish, waterfowl, and sea mammals. Typically, hunter-gatherers respond to this situation by residential mobility, logistical mobility, storing of food, and social storage: reciprocity and storing of social obligations with other groups (fig. 2) In practice, few hunter-gatherers follow a single strategy, but employ a combination of these. The reduction in residential mobility and increase in logistical mobility, accomplished by means of sending out task groups, rather than moving as a group, entails an increase in



Figure 3. Map showing the location of territories of non-Russian inhabitants of Siberia. Kets of Podkamennaya Tunguzka are marked by a black rectangle number 10 near the confluence of Yenisey and Podkamennaya Tungunzka.

Black circles: winter basecamps of reindeer herding groups; open circles: summer basecamps of reindeer herding groups; squares: logistically organised, partly sedentary coastal and riverine hunter-fisher-gatherers; rectangles: reindeer-keeping hunter-gatherers of the Siberian interior; dotted space: coniferous taiga forest; lined space: upland grassland and parkland; dashed space: upland tundra. Lowland polar tundra around the shores of the Polar Ocean is denoted by white space.

sedentism, development of territoriality, and greater interference in – or enculturaliton of – the landscape. These are practical landscapes, generated in keeping with the seasonal and inter-annual rhythms of secular time.

At the same time, practical landscapes are also ritual landscapes. Practical activities are embedded in a broader framework of ideology and ritual; profane time is linked to ritual time. Cosmology and ritual impose a web of meaning on the landscape, and in its turn, landscape enculturated through symbolism and ritual plays a role in the processes of social production and reproduction (Giddens 1984; Tilley 1994). There is now an extensive ethnographic record of hunter-gatherers using features of a landscape as a means of communication, as claims to ownership, as structures of meaning and as structures of power (Ingold 1993; Morphy 1993; Tilley 1994). Such social strategies are usually legitimised through ritual and by reference to cosmology and mythology, where ancestors play a major role. Ritual landscapes then, possess symbolic, ancestral and temporal significance, which is complementary to, and dialectically interactive with, the practical, economic landscapes (*contra* Tilley 1994, 67).

### 3. An ethnographic case study: the Kets of Podkamennaya Tunguzka

To develop this argument in a more concrete form, I would first like to turn to an ethnographic case study from western Siberia. The Kets of Podkamennaya Tunguzka (fig. 3) are one of the traditionally hunting and gathering groups settled in the basin of Yenisei and Ob rivers in western Siberia (others are Selkups, Nentsy, Mantsy and Khantsy). Among the Kets, those settled along the river Pokamennaya Tunguzka (ca. 160 people in the first census ca. 1600) are said to have remained pure hunter-gatherer people without reindeer herding or reindeer transport until the end of the 19th century (Aleksenko 1967; Resketov 1972).

The calendar year of the Kets – their secular time – was divided into 12 months and reflected the subsistence

activities and mobility patterns of the group (fig. 4). The autumn was spent in tents along Yenisei, Tunguzka and tributaries fishing, fowling and gathering berries. With first frosts people moved to their winter settlement upriver. The early part of the winter was spent hunting bear and fur game in a logistical pattern of resource use: hunting parties of 3-4 men would leave the settlement for 4-5 days in search of prey, following a system of paths known as 'small roads'. This was followed by a festive season, the month of 'short days', marked by aggregation, mid-winter festivals and social activities. From the mid-January, the entire group broke into smaller units and set out on the 'great road' in the major residential move of the year. The entire move lasted about 3 months and involved movement from one temporary camp to another. Elk, reindeer and fur animals were the main game. At the end of this period people returned to the main settlement, where they remained during the snow-melt and the break-up of ice. The month of the pike – May – was marked by a dispersal to the traditional fishing grounds, owned by each household. There people built fish and waterfowl dams, fish weirs, fish traps, as well as fishing by hook and net. The main summer activities were fishing, fowling and gathering of plant food. Midsummer also marked the second social season, marked by the organisation of fairs along the main river - Yenisei. Fairs served as a focus for the exchange of goods, long-distance trade, interaction with other groups, the making of marriages and ceremonial activities marking rites of passage.

To summarise, in terms of residence and mobility, we have four organisational structures: residential aggregation at the main settlement (early winter, early spring), logistical mobility (early winter hunting parties), group residential mobility on the 'great road', and household based dispersal in the summer. Each group had at its disposal several hunting districts marked out by the small and great roads, so different journeys were taken in different years. How does the practical use of space among the Kets relate to the generation of socially constructed landscapes?

The cosmology of the Kets is a part of a broader foragers' belief system, which, in summary, seems to focus on two basic structures (Aleskenko 1967; Balzer 1980; Ingold 1986):

- 1. The division of the universe into three horizontal layers: sky, earth, and the underworld, which correspond to air, land and water respectively. These layers are linked by a 'cosmic pillar', or 'cosmic river', symbolised in the shaman's *turu*, or a tree often placed in the centre of the shaman's tent (fig. 5).
- 2. The division of humans and animals into the physical self, the body-soul and the free-soul. Human beings and those animals who are masters of their animal charges, such as the bear, possess all three substances; wild



Figure 4. The annual territory of the Podkamennaya Tunguzska Kets. *Square*: main (winter) base camp; *triangle*: trading site on Yenisey (Russian settlement); *dotted squares*: temporary seasonal base camps; *black dots*: temporary procurement camps of a few days' duration (After Aleksenko 1967, Resketov 1972).

animals normally possess physical self and the body soul (their collective 'free soul' residing in the animal master), while among domestic animals "the spirit of the domestic animal is the soul of man, controlling the animal from without" (Ingold 1986, 255); domestic animals have no soul.

Within this cognitive framework, elk, bear and water birds play clearly defined roles as guardians of other animals and as channels of communication with the other, non-terrestrial worlds. The 'heavenly elk' for example, is an inhabitant of the heavens, and a central actor in the myths of revival and regeneration, as well as in the mediation between the world of the spirits and of humans. The bear plays an analogous but somewhat different role as the chief guardian of wild



Figure 5. A summary diagram depicting some aspects of the cosmology of the peoples of Western Siberia (for explanation, see text. 5A: after Anisimov 1963, Tilley 1991; 5B: after Ingold 1986).

animals and a mediator between animal beings and human beings. Water birds are perceived as messengers between the other-world and the earth, guarding the entrance to the lower world, and acting as guides to the 'sea of the deceased' in some myths, to the 'burial beyond the water' in others (Aleksenko 1967; Balzer 1980; Ingold 1986).

With this background information in mind, we can recognise aspects of landscape as a social and ritual construct among the Kets:

- The Ket 'small roads' and 'great roads' were more than just migration routes. They imposed a network of paths through which the landscape was enculturated; they represented a pattern of activity, seasonal strategies by which a particular time of the year was defined (see also Tilley 1994, 29-31).
- Physical marks of enculturation were present along these paths. They included site locations themselves with temporary structures such as tents and more permanent ones such as the earth-houses of the main settlement. They included fixed facilities, such as fish weirs, traps and dams, pits and traps for fur animals. They also included marks made on trees, or ski and sledge remains placed to communicate specific claims of ownership or exclusive rights of use (Aleksenko 1967; Resketov 1972). So such features symbolised collective ownership of the landscape by the Kets as a group, and the ownership of locations in the landscape by individual households. They symbolised social order in the landscape and relations between households, groups and political units.
- Such symbols of enculturation were legitimised by reference to ancestors and linked to the overarching cosmology of the Kets. At the first camp of the 'great road', at the beginning of the journey, ceremonies were performed to communicate with a female ancestral being (the 'old woman of the road' (Resketov 1972)). Similar ceremonies were performed on return. Rituals linked to death and regeneration were also performed at summer fairs.

Rituals linking cosmology and landscape were also embedded in the course of regular subsistence activities. For example, after the first killing of animals serving as guardians or messengers in Ket cosmology, the soup remaining after cooking such animals (bear, elk, reindeer, waterfowl or fish) was returned to the river at specific holy places in an act of symbolic regeneration (i.e. the essence of messenger animals returned to the 'cosmic river'). Ceremonies associated with the bear hunt defined sacred, ritual places in the landscape by reference to bear as the guardian of other animals and a creature responsible for ensuring hunting success: this was for instance symbolised by specific bear bones (jaws, scapulas) being hung from trees (Aleksenko 1967; Resketov 1972).

## 4. Archaeological case study 1: Nämforsen in Northern Sweden

How far can we go in recognising such landscapes in the archaeological record? Rock carving and rock painting sites represent one major type of location, which, with its surrounding landscape, constitutes a landscape unit invested with symbolic meaning which must have served as a focus of ritual activities. This is borne out by ethnographic case studies of rock carving sites among, for example, the Australian Aboriginals (Bahn/Rosenfeld 1991; Flood 1987; Layton 1985; Morphy 1978), hunter-gatherers in South Africa (Lewis-Williams 1981, 1983) as well as by the pictographic and depositional evidence associated with prehistoric rock carving sites in Europe (a.o. Bradley *et al.* 1993, 1995; Hallstrom 1960; Kuhn 1956) and elsewhere (for example, Lee 1992).

Let us turn to Northern Europe, and summarise briefly the settlement-subsistence patterns reconstructed for this area from palaeoeconomic and settlement evidence. The period in question covers the later part of the hunter-gatherer Stone Age, just prior to the gradual adoption of farming, ca. 5500-1500 bc. Practical landscapes are structured around major settlements and the seasonal mobility schedules where these sites play a major role (fig. 6). At the same time, ritual locations are marked out by at least two types of sites: burial grounds and rock carving sites (shown as rectangles and squares respectively on the map in fig. 6).

Let us now focus our attention on Nämforsen. Nämforsen is a location of major rapids on the river Ångerman and a major rock carving site, dated very broadly to between 3000-1500 bc. It is the last rapids before the river enters the sea. situated at the junction of the interior uplands and the coastal plain. About 1750, petroglyphs were carved into the smooth rocky surface of three islands in the centre of the river (Hallström 1960; Malmer 1975; Tilley 1991). Nämforsen is central to some 600 stone age sites within the Ångerman river system, and about 60 to 70 km from the next rock carving/painting sites. Hunting elk and beaver, fishing and bird hunting appear to have been the main subsistence occupations, in a combination of residential and logistic mobility pattern, with sites near Nämforsen, located at the juncture of the mountains and the plain, as the main spring and summer settlements. The seasonal occupation during the summer half of the year at Nämforsen is suggested by the presence of bones of pike, salmon, seal, waterbirds and beaver - typically a spring/summer prey - while the elk, usually hunted during the winter, is absent (Forsberg 1985; Zvelebil 1981). As a location in the practical landscape, then, Nämforsen may have been analogous to the summer fishing, fowling and aggregation sites of the Kets (see above). One of the largest known settlements is located by the Nämforsen rapids, and was discontinuously occupied from 3000 bc. to

the Iron Age, with the most intensive occupation dating to the late stone age (ca. 2500-2000 bc), marked by the presence of asbestos-tempered pottery (Malmer 1975, 1981).

The rock carvings at Nämforsen depict elks, boats, people, fish, birds, shoe/foot imprints, and tools, arranged into compositions which are remarkably lacking in hierarchical structure (fig. 7). The meaning of the rock carvings in general, and of carvings of elk - the most common motif in particular at Nämforsen was interpreted in several ways: as a case of sympathetic magic designed to ensure hunting success, as totemic representations, as a 'tribal encyclopaedia' - a record of social knowledge, a "visual statement of myths, cosmic categories and associations held to structure both the supernatural world and human existence" (Tilley 1991), as a ritual confrontation between different interest groups within the community, and as a symbol of power and control by male elders over the others. The function of the site was identified as a major ritual centre (Badou 1977), a seasonal aggregation centre and a centre for exchange with the farmer traders from the south (Hallström 1960; Malmer 1975; Tilley 1991). Without going into the detail of various arguments, it is clear that Nämforsen was not only an important fishing location, occupied during the summer half of the year, but also a major ritual centre, featuring in an extensive exchange network between southern and northern Sweden.

In his analysis of Nämforsen, Christopher Tilley (1991) found parallels between the cosmological system of northern hunter-gatherers and the landscape features of Nämforsen. These can be summarised as follows:

- The importance of rivers in the cosmological system and their links with specific clans – as was, indeed, the case with Podkamennaya Tunguzka Kets, because this group of Kets is specified by the river which is central to their territory, the Podkamennaya Tunguzka.
- The notion of a cosmic river flowing from east to west and mediating between the different worlds of cosmos; and the symbolism of the rapids as openings to the other worlds: N\u00e4mforsen is located by the rapids.
- The liminal symbolism associated with the shaman's island in the cosmic river: the rock carvings at Nämforsen are located on three islands in the river.
- The idea that the point at which the cosmic river flows into the sea is marked by the most violent rapids marking the entrance to the underworld: Nämforsen is located by the last rapids before the sea.
- The link between the shaman's *turu* and the elk, symbolised by the figures at N\u00e4mforsen holding elk effigies.
- Use of birds and fish as a part of oppositional meaning structure in the shaman's ritual tent. Such a structural opposition was identified at N\u00e4mforsen.

Figure 6. Hunter-gatherer settlement-subsistence patterns and the location of major burial and rock carving sites in Northern Europe, 6 000-1 500 bc.

A = Mobile pattern of land-use: Frequent re-location of the base camp as people move as a group from one resource to another in a foraging pattern of resource use. B = Semi-sedentary pattern: People move as a group between two seasonal base camps, most resources are obtained by task groups sent out of the base camps to procure these in a logistical pattern of resource use. C = Sedentary pattern: resources

obtained by task groups from a base camp occupied permanently by at least some members of the community.

Symbols: open circle: triangle: specialised hunting-fishinggathering site, temporary base camp, half-closed circle: seasonal base-camp, black circle: permanent base camp, slashed square: rock carving site, butterfly symbol: cemetery.

Letters: denote principal food resources found on sites, which have also provided information about the season and permanence of occupation. Fu = Fur animals, C = Wild cattle (Aurochsen), D = Deer, P = Pig, F = Fish, SF = Shellfish, S = Seal, WF = Wildfowl, PI = Plant food (collation of a wide range of sources).







 The cosmological significance accorded to the elk conceived as a female elk. Most elk at Nämforsen are depicted without antlers.

In summary, Nämforsen played a role of a central ritual, aggregation and exchange site of a hunter-gatherer social group, each associated with and symbolically relating to a major river system (Forsberg 1985). The symbolism at Nämforsen can be comprehended by reference to the northern hunter-gatherer cosmology. The landscape analogies to the ethnographic situation of the Kets are also clear, and a similar pattern has been also historically documented for Saami groups (Vorren 1980).

In a diachronic perspective, Nämforsen may have began as a small rock carving site and a summer fishing location, which developed later into a major regional aggregation centre, in which elk hides and furs were exchanged for prestige goods and imports from the south. Contact with the traders from the south and the incorporation of Nämforsen into an exchange system linking northern and southern Sweden must have inevitably caused strain within the huntergatherer society, creating structural conditions for increased social competition and social dependency (Tilley 1991).

The carvings at Nämforsen are notable for their absence of status, rank, or hierarchical ordering of motives, reflecting, perhaps, the idealised social order of the hunter-gatherer society, in contrast to the evidence for social ranking evident in the burials (Bradley this volume; Clark/Neeley 1987; Meiklejohn/Zvelebil 1991; O'Shea/Zvelebil 1984). By symbolic representation, people may have masked the existence of social distinctions, acknowledged in social

practice and in individual burials, but denied by the nominal adherence to the egalitarian ideology. Ritual time was employed to obscure the social reality. Tilley (1991) argues that contacts with traders- outsiders required the incorporation of a new set of symbols into the existing repertoire at Nämforsen, such as the new boat types and the circle cross, resulting in a structural change:

"Not only did the hunter-fisher-gatherers at Nämforsen accommodate their economic system to the demands of an exchange system for which they received very little in return, but they even restructured their cosmological and symbolic system" (Tilley 1991, 164).

But the key point, surely, is that despite, or perhaps because of this accommodation, the hunter-gatherer society continued to flourish. The farming way of life had been rejected both symbolically and in practice for another 500 years or more until the abandonment of Nämforsen and the subsequent demise of hunting-gathering societies between 1500 and 500 bc (Anderson 1976; Badou 1973; Christiansson/Broadbent 1975; Nygaard 1989). Is it possible to argue, then, that the symbolic and ideological framework – in combination with ecological factors, to be sure – prevented or proscribed the adoption of farming?

### 5. Archaeological case study 2: Olenii Ostrov, Karelia

Olenii Ostrov (or Oleneostrovski Mogilnik, Deer Island Cemetery) is the largest single Mesolithic cemetery known in Europe, and, at ca. 5500 bc, by far the oldest of the several Mesolithic cemeteries discovered so far in Northern Europe



Figure 8. Location of Olenii Ostrov cemetery.

(Price/Jacobs 1990). Located on a small island in the northern part of Lake Onega (fig. 8), the cemetery was excavated by Gurina and published in 1956. Subsequent analyses by Khlobistina (1978), O'Shea and Zvelebil (1984) and Jacobs (1995) end in divergent interpretations.

Our reconstruction of the Olenii Ostrov cemetery and its society suggests that a community of about 400-500 people was using the cemetery, and that this group was subdivided into several groups, each numbering 90-100 persons (Fig. 9). The duration of use was relatively brief, probably 80-120 years, i.e. 4-6 generations (O'Shea/Zvelebil 1984). The estimates are of course very approximate, but in line with other indications of short-term or intermittent burial practices, such as at Skateholm (Larsson 1989, 1993) or Zveinieki (Zagorkis 1987), even though the use of the same *location* may have extended over several millennia.

The symbolism evident in the burial rite at Olenii Ostrov links the cemetery to a broader corpus of ritual and cosmology of the northern hunter-gatherers. Material representations in the burials include zoomorphic figurines, axes and maceheads, and elk-headed terminals of the kind depicted at the rock-carvings at Nämforsen (even though Olenii Ostrov is 3000 years older, and 1000 km away from Nämforsen). Elk, bear and waterbirds are the most common designs (fig. 10). The shores of Lake Onega, where Olenii Ostrov is located, also contained rock carvings with the same range of designs as those found at Nämforsen, using the same symbols as those found in the burials at Olenii Ostrov. Again, elk, deer (reindeer?), fish and waterbirds, and swan in particular are the most common designs. Humans are represented as engaged in hunting, harpooning, skiing and copulating with deer (Gurina 1956; Maula 1990; Savvateyev 1973).

Within this symbolic context, the meaning of ritual sites such as Olenii Ostrov and the rock carving sites at Zalavruga and Besov Nos on lake Onega can be again comprehended by reference to the northern hunter-gatherer cosmology. For example, the elk-headed terminals, four of which were found at Olenii Ostrov, and which are depicted as being carried around on sticks and poles on petroglyphs of both Onega and Nämforsen, find a direct parallel in the shaman's *turu*, a ritual rod used to mediate between the natural and supernatural worlds.

Scenes of copulation between hunters and deer/elk may refer to the role hunters play in the reproduction of wild animals which involves symbolic copulation between hunters and their prey: through the act of copulation, hunters return the animal soul of the killed animal to the animal master, thereby ensuring its physical reproduction in the near future (Ingold 1986)

Through similar referential reasoning, special shaft graves at Olenii Ostrov become more explicable as the graves of shaman, or ritual specialists: first, their western orientation



Figure 9. Layout of Olenii Ostrov cemetery. After Gurina 1956.



Figure 10. Sculpted artefacts from Olenii Ostrov and other areas. 1 = Olenii Ostrov, Karelia; length 54 cm; 2 = Sventoji, Lithuania, length: 43 cm; 3 = Sventoji, Lithuania, no scale; 4 = Olenii Ostrov, Karelia, length 50 cm; 5 = Tulguba, Karelia, no scale; 6 = Ravi, Säkkijärvi, Karelia, length 13 cm (fragment). After Carpelan 1975, Kivikoski 1967, Maciene 1990.

(while everyone else was facing east) can be explained as facing the entrance to the lower world, the domain of spirit ancestors of the shaman and of the rulers of the underworld. The souls of the rest of the group inhabited the upper world, associated with fish symbolism and entered from the east. The presence of beaver incisors, a category of pendants normally associated with females at Olenii Ostrov, in the shaft graves irrespective of sex, can also be explained, since the shaman's role as a spiritual mediator with the underworld represented both men and women; consequently, his or her robe retained symbols of both genders (Anisimov 1963; Czaplicka 1914).

The enclosure by water of the Oleneostrovski island location itself is typical for burial location in northern Europe, and has persisted into the Christian period in some areas such as Finland, where the term kirkkosaari – or church island - denotes ancient burial locations claimed by Christianity. It reflects the ritual distinction between land and water, with burial of the dead taking place "beyond the water" as noted in the Kalevala, the Finnish national epos (Lönnrot 1963. See also Jacobs 1993). The association of waterbirds with the dead, and the frequent occurrence of waterbird designs on lakeside petroglyphs and on containers refer to the same set of associations (i.e. Maula 1990). Waterbirds are often the sole bird remains found in burials; the interment of a child on a swan's wing at Vedbaek is particularly pregnant with symbolism (Nielsen/Brinch Petersen 1993).

As with Nämforsen, the burial ground at Olenii Ostrov appears to have been a central ritual and aggregation site for a group of hunter-gatherers, divided into two clans, each defined by a totemic symbol – an elk and a snake. The territory of this group can be defined by particular features of its lithic assemblage, and by the regular use of three lithic materials: green slate, quartz and flint. The ritual and the secular activities were interlinked, and the ritual, unchanging time of hunter-gatherers such as the Oleneostrovski group was embedded in hunter-gatherer practice; both were rationalised by the overarching belief system. Neither the belief system nor the practice required change; on the contrary, they emphasised the perpetuation and replenishment of resources through the perception of nature as a giving environment (Bird-David 1990).

Tentatively, we have reconstructed the subsistencesettlement pattern as a dispersed and mobile one during the later autumn and winter, and an agglomerated and more sedentary one during the summer half of the year. In summer, concentrations of waterfowl and migratory fish offered an aggregation of resources which would sustain a concentrated population. Olenii Ostrov was probably used only during this time of the year, and not in winter, when people broke up into small groups for ungulate hunting and trapping. The secular time of the Oleneostrovki group revolved around the seasonal practice of these tasks, and the practical landscape was structured by them.

Although inter-linked, the essential timelessness of the ritual time acted in contradistinction to the practical contingencies of secular time. For example, Jacobs noted the large number of truncated skeletons at Olenii Ostrov, attributing this to poor preservation and secondary disturbance of burials. An alternative explanation is that these individuals died away from the cemetery and were brought to the cemetery for burial in an incomplete state. Ethnographic analogues for such practices exist in Siberia, where those dying during the winter were left exposed, often on wooden platforms in trees, before burial in the spring (Czaplicka 1914). If this was the case, such practice reflected accommodation between the requirements of practical time which dictated a mobile, dispersed lifestyle in winter and of ritual time, which required burial of the dead at the ancestral location as a way of merging the past with the present and as an affirmation of the link with ancestors.

The choice of animal teeth as perforated pendants can provide another example. Although teeth were available from a large number of both terrestrial and aquatic species, procured during practical time in the course of hunting, trapping and fishing, only three species were utilised to make perforated tooth pendants, which were either made into necklaces or suspended from belts laid across the body of the deceased: bear tusks, elk incisors and beaver incisors. All three animals play an important part in the ritual symbolism of modern Siberian groups: those of elk and bear were noted above, while beaver was held to have medicinal properties among many boreal people (Eidlitz 1969). Beaver mandibles formed a part of shaman's outfit among some Siberian groups (Gurina 1956). Similar selection was exercised in carving objects from stone, wood or bone which feature principally elk, bear, beaver and waterbirds. Here again, the ideology has acted on the resources procured in practical time to make then into symbols of the ritual, sacred time.

The location and the rhythm of use of the burial ground itself may be used as another example. The limited period of any one episode of use can be contrasted with repeated use of the same locations. Although at Olenii Ostrov we have evidence of only single episode of use, more extensively investigated locations such as Skateholm or Zveinieki show several episodes of use. At Zveinieki, for example, the burial ground was used intermittently over 3 000 years, between ca. 4800 and 1800 bc (Zagorskis 1987). While the episodes of actual use may have been dictated by the history of events and by the practical, secular time of hunting and gathering communities, the *longue durée* in the use of the same locations reflects the ritual time scale and the persistence of demarcated ritual zones within the landscape (see also Bradley 1991, 210).

Finally, the operation of the two different time scales can be seen in the contrast between the evidence for social structure inferred from the mortuary analysis and the symbolism of Oleneostrovskii society. Mortuary analysis has revealed the existence of at least seven social dimensions, expressing band membership, age, sex, personal wealth and three specialised ranks (O'Shea/Zvelebil 1984), suggesting a descent-based society organised into a sequential hierarchy (Aldenfelder 1993; Johnson 1982), which was linked to ritual, but which operated independently from one another. Although ritual roles appear to have been inherited, wealth was not: it tended to decline with age (O'Shea/Zvelebil 1984). Differences in mortuary wealth and horizontal social differentiation were identified in other mortuary contexts in temperate Northern Europe (Clark/Neeley 1987; Larsson 1989; Meiklejohn/Zvelebil 1991; Zagorskis 1987). Although these identifications remain to some extent ambiguous, the elaboration and differentiation of burial practice in the late Mesolithic appears to be much greater than among the ethnographically known hunter-gatherers of Siberia, suggesting that social structure was more hierarchically ranked than was the case among the hunter-gatherers of the ethnographic record. As such, social practice, marked by ranking, conflicts with the egalitarian ideology of the huntergatherer mode of production, embedded in the world-view of the boreal hunter-gatherers (Ingold 1986, 1988), and linked symbolically with Olenii Ostrov and other Mesolithic cemeteries through the use of the same symbols and burial rites.

Bradley remarked that "by denying the passage of time, people can mask the effect of revolutionary developments" (1991, 217). As at Nämforsen, people at Olenii Ostrov may have masked the existence of social distinctions, acknowledged in social practice and in individual burials, but obscured by adherence to the symbols of egalitarian ideology required by the world-view of northern hunter-gatherers.

### 6. Discussion and conclusions

How can I justify such literary use of direct historical, or relational, analogy spanning 7000 years? To begin with, the use of the analogy in this case seems valid because the societies in question are historically linked and because they operated in similar ecological and economic conditions (see also Tilley 1991). This argument is considerably strengthened if we trace the historical continuity and change between these societies broadly in terms of structure and agency (Bourdieu 1977; Giddens 1984; Layton 1985, 1991). In my view, prehistoric and recent ethnographic societies share the same spatial and organisational structures. Two sets of structures are apparent:

- 1. Practical structure conditioned by the ecology of the resources, climate, geomorphology of the natural environment. Seasonal regimes of resource use, the organisation of the practical time, technological traditions in their relations to the division of labour and social organisation belong to this category of structures.
- Ideological cosmological structure arising from the hunter-gatherer ideology and as a consequence of boreal hunter-gatherer cosmology.

In other words, the remarkable symbolic continuity is an expression of the underlying conceptual structure; it is a function of an ideological system which emphasises timelessness and circulation of animal resources in regeneration cycles by means of having three substances – physical self, body soul and free soul, managed by human and animal masters in an act of collective appropriation (Ingold 1986); by the perception of nature as a giving environment, and by the prosecution of the egalitarian ideology of sharing (Bird-David 1990). Bearing this in mind, we can begin to understand the *longue durée* of such ideology.

The social (and economic) organisation of the societies in question, embedded within these structures, changes through the operation of dynamic factors: agency - by which I mean historically situated negotiation for power, control and attainment of goals between different segments of the society. This discourse takes place at different scales of organisation, starting with individuals, moving onto households, groups bound by kinship ties, communities and larger units. The use and meaning of symbols will change as a part of this process of negotiation – within the ideological structure which provides the frame of reference for changes in interpretation. In my opinion, although the agency modified the use of symbols, the ideological structure itself did not change until the corpus of symbols associated with hunter-gatherer societies was replaced by those associated with farming: i.e. not till about 1000 bc in northern Sweden and Finland, not till about AD 500 in Karelia, and not till the present century among the Kets of Western Siberia.

What does this tell us about the perception and use of landscapes by prehistoric hunter-gatherers and about their social structure? The examples which I have discussed emphasise not only regular patterning in the practical use of the hunter-gatherer landscapes, but also the existence of ritual and burial zones. To some extent such zones are overlapping: sites used for practical purposes also have social significance and ritual meaning: landscape is a socially constructed phenomenon. In addition, there are areas such as Olenii Ostrov or Nämforsen where the ritual and social roles are emphasised and symbolised in the landscape. These locations are central to the economic and social life of the groups using them.

Comparing the economic, the symbolic and the burial evidence, I have argued for a tension developing between the imposition of a normative egalitarian ideology and the social reality marked by an increase in social stratification and social competition. In areas such as Nämforsen, this occurred towards the end of the hunter-gatherer stone age. To my mind, this represents a good illustration of the dynamic forces of agency, in the case of Nämforsen provoked by contact with farming groups in southern Sweden. In the case of Olenii Ostrov society, cultural elaboration and incipient



Figure 11. Ideology as an agency of social change.

stratification may have been linked to its central role in the regional trade in flint and the highly valued green Olonetz slate (O'Shea/Zvelebil 1984).

The historical explanation, then, is based on the premise that the ideology of sharing, although adhered to nominally, increasingly did nor reflect social practice in the late Mesolithic. The tension between ideological prescription and practice increased with technological innovation, increase in territoriality and, later, contact with farming societies. Territoriality and delayed-return technologies imply restriction of access to resources, and encourage resource ownership: their appropriation appears no longer collective, but a product of individual labour.

Within this context, the impact of the agricultural frontier would have been felt in many aspects of hunter-gatherer social life. Farming goods and products such as polished stone axes, ceramics, etc. contained a component of added value, arising from their exotic origin and prestigious – subversive perhaps – ideological association. As we know, stone axe imports were traded widely in Northern Europe, and there were other items of trade (fig. 6) (Zvelebil 1996). Unless re-interpreted in the context of hunter-gatherer ideology, such exchange goods were bound to promote social elites. Together, these developments created structural conditions for social dependency, and 'simultaneous' rather than 'sequential' hierarchies (Johnson 1982).

What effect would this have on the hunter-gatherer belief system? In the archaeological record, we can, perhaps, identify both ideological censure and transformation (fig. 11).

Several people have noted the incompatibility of foraging and farming symbolic codes: Chapman, for example, argues that products which symbolised farming were excluded from the late Mesolithic site of Lepenski Vir in the Danube Gorges (1993). As pointed out earlier, the hunter-fisher communities at Nämforsen adjusted their economy to the demands of an exchange system controlled by farmers, and recorded this in their symbolic system. In both cases, though, farming was rejected symbolically and in practice. The subsequent cultural simplification, evident at Lepenski Vir, as well as in the final phases of hunter-gatherer settlement in many parts of Scandinavia, suggests a sort of prehistoric "encapsulation" - a situation noted among ethnographic hunter-gatherers after a period of contact with farmers (Woodburn 1982, 1988). Alternatively, tension between the ideology of sharing and the practice of accumulation, promoted by contacts with farmers, would have been resolved by ideological transformation, allowing for the ownership of domesticated resources, formalised ranking, and the accumulation of wealth (fig. 11).

As we know, hunter-gatherer communities in northern Europe adopted farming at very different speeds: ranging

from 100-300 years in the West Baltic to 500-1000 years in the east (Zvelebil 1996). It is commonly assumed that social and ideological structures were transformed in the process But how much change was actually involved? The emphasis on communal territories and communal ritual, characteristic of the early Neolithic in north-west Europe, emphasises the continuation of Mesolithic traditions. Other features common to both the hunter-gatherer and early farming communities include deposits of food and antler in graves, dog burials, mortuary houses, circulation of human bones, votive deposits in aquatic locations and the use of stone in grave architecture (see also Bradley, this volume; Jennbert, this volume; Thomas, this volume; Madsen, this volume). At the same time, there is evidence for social elites and exclusion from ritual practice, the extent of which, to my mind, has not been agreed upon. Could it be that, in some ways, communal ritual, symbolised by causewayed enclosures and megalithic tombs served as an elaborate ideological practice intended to safeguard the practice of sharing and communal identity by moving it from a personal and universal ideology (embedded in hunting-gathering) to a different level of social organisation: to a level of public ritual. This was perhaps the transformation which facilitated, ideologically, the adoption of farming.

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### Mentality and the social word. The Mesolithic/ Neolithic transition in Southern Scandinavia

### 1. Introduction

Mentality and the social world can be approached from two different angles. The first is about our own mentality and our social world and our preconceptions in tackling prehistoric societies. Our perceptions of humankind and culture are of major importance if we are to approach social structures and ideology of Stone Age societies. The second direction is to ask what kind of mentality and social world those people may have had in the time of the Late Mesolithic and the Early Neolithic in Southern Scandinavia. I suggest a deep time perspective in order to have a chance to perceive the significance of material culture and society.

The Mesolithic-Neolithic transition in Southern Scandinavia is extremely complex in nature, and involves many dimensions to be evaluated. The archaeological evidence and our conceptual frameworks concerning the situation in this area will be discussed in this context. I am going to present my perception of what may have happened during the period in question in Southern Scandinavia.

### 2. The modern world and the mentality of looking at other societies

In recent years there has been a considerable debate in archaeology and other disciplines about our possibilities of understanding societies of today and societies in the past. One of the topics concerns 'Us and the Others'/'Us and Them' (Fabian 1983). How do we force these ideas on the 'Ertebølle people' and on the 'Funnelbeaker people'?

The division between the Mesolithic and the Neolithic is also a division between two ideas about people. The Mesolithic individual is characterised, as Julian Thomas wrote, "in terms of adaptive responses to environmental pressures". The 'Neolithics' were described "as purposive subjects, acting in pursuit of socially-defined goals" (Thomas 1988, 59). The idea of humans characterizes the understanding of society and how it is analysed.

Elisabeth Rudebeck has presented an interesting study, revealing how six participants in the debate on Neolithisation in Southern Scandinavia (published in Journal of Danish Archaeology 1982-1986) argue in very different ways. She concerns the images of human beings explored in the archaeological texts using concepts such as teleology, structural continuity versus structural change, human motives, centre-periphery, time orientation, and the Other. Inspired by H. White's classifications of historical narratives she founds both heroes and tragic figures in the narratives of the transition to the Neolithic. There is an underlying tendency either to emancipate the Ertebølle culture from our preconceptions or to make it more primitive (Rudebeck 1996). Concerning my own discussions of Neolithisation for example, I emancipated the Ertebølle culture, making it more modern, according to the analysis made by Rudebeck.

The stereotyped assumptions about people, and also about women and men, old and young should be questioned in order to discuss social dynamics, mentality and the social world. Our ethnocentric bias, our Eurocentric bias and our androcentric bias leave their distinct mark on the archaeological perception of past societies. The mentality of the modern social world evidently affects the perceptions of ideology and social structures in past societies.

Mentality and the social world correspond to ideology, which I regard as a cultural perception of the world including cultural norms of individuals and society. In mentality I also include the everyday life of human beings. In order to get some ideas of societies in Stone Age Europe the focus should be on the long-term structure of mentality and the social world. If we are to have a chance to grasp the ideology and social structure, we have to go to the inside of these societies. All cultural realities should be integrated in the understanding including such as living, eating, working, feasting, diet, health and dying. The way individual minds and collective norms work is a prerequisite for understanding ideology and social life.

From the archaeological point of view, that means that all kinds of archaeological evidence should be brought into the discussion. Trying to explore mentality and the social world calls for both the social and the economic context. The central concepts in this understanding and the study of material culture, settlements, burials and votive offerings are territoriality, communication, social differentiation, gender and people themselves.

## 3. The mentality and social world of the Stone Age societies

Concerning the Mesolithic-Neolithic transition in Southern Scandinavia examinations of the different archaeological sources and considerations of current theories were recently made by Anne Brigitte Gebauer and Douglas Price (1992). The debate on the transition in this part of Europe has a long tradition where different interpretations have been presented, often in a very value-charged way. In the following I would like to discuss my present view of Neolithisation in this area, focusing on the inside of these societies. In a way, I would like to populate the past in order to have potentials to obtain perspectives on attitudes and conceptions within the past.

Over time, there are different traditions in the west and east of Southern Scandinavia respectively. I do not believe that the whole area of this region can be analysed as one entity as there are many different local traditions. The existence of the Mesolithic local groups can be interpreted according to different local traditions in the material culture within different regions (Jennbert 1984; Vang Petersen 1984). In the earliest part of the Neolithic there was perhaps a trend towards a more pronounced territoriality (Brysting Damm 1991; Madsen 1982, 1993). The archaeological evidence from artefact styles and pottery design points to a regionalisation in the Southern Scandinavia from the Mesolithic, perhaps also confirmed with human morphological studies (Petersen 1992).

I have suggested that the Late Mesolithic societies in Southern Scandinavia were not dependent on farming and that the use of farming products was mainly for social prestige and for feasting (Jennbert 1984, 1985). Social dynamics and exchange of gifts, with the metaphor of 'the fertile gift', characterise my work about the transition from hunting-gathering to tillage.

People in the Late Mesolithic were permanently settled in favourable ecological environments. The density of settlement sites in Scania (southernmost Sweden) at this time gives no indications that people were forced to adopt agriculture because of shortage of space for hunting or fishing. Grain did not occur naturally in the local Ertebølle communities, since the ecological prerequisites were lacking. Grain may therefore have been given to communities in Southern Scandinavia through exchange relations. Agricultural production is assumed to have been exclusive, of minor importance for people's survival.

So, if it is claimed that the first agriculture was important in survival I cannot agree. An evaluation of economic practices is a qualitative research process, where we have both archaeological and palaeoecological information. The archaeological and palaeobotanical records are too vague in order to make such quantitative interpretations. And from an archaeologist's point of view the discipline does not at all give any objective picture of the past.

Since people cannot live in isolation, there must be contact areas between groups of people. Gifts and return gifts can be important elements in the contact network. Gift exchange often depends on prestige or diplomacy, or is motivated by both. Gifts can circulate, or they can be handed over as tribute; they can be given for reasons of both peace and war. They are not in themselves functional. Another important aspect of exchange relations is the exchange of women or men in marriage alliances. I therefore see marriage alliances as a significant feature of the pattern of alliances that must have existed between the fully fledged Neolithic societies in Europe and the hunter-gatherer societies in the late Ertebølle period in Southern Scandinavia.

Social differentiation and social structure cannot be discussed without considering gender. It is a way of thinking about the world. I am well aware of the difficulties of interpreting social gender, since today's outlook inevitably dictates our picture of prehistory. Following the gender perspective, unfortunately, women and men often have been concealed behind concepts like structures, spheres, rich and poor, rulers and ruled. Women and men, young and old, should therefore be made visible and given a more prominent role in archaeological interpretations. Are women creative or passive individuals? Are they tied to the household and the work of taking care of others? Are they goddesses and fertility symbols? Do men conform to, for instance, the myth of 'man the hunter' or 'man the strong farmer'? (Jennbert in press). No matter what we choose, we consciously or unconsciously construct different gender roles and different types of family structure. Gender roles, particularly in the Late Mesolithic and the Early Neolithic, are trapped in an evolutionist outlook with its stereotyped male and female roles. There is much more work to be done on this topic.

What about the people themselves? Medicine, magic and religion are concepts which were more important to people in ancient times than in our modern, secularised world. Another field which could be discussed in this sense and in terms of mentality is diet, health and attitudes to diseases. Stable-isotope and trace-element analysis of bones from the Mesolithic and Neolithic in Sweden have shown that the dietary patterns are not correlated to any specific archaeological culture or period (Lidén 1995). Studies in pathology in osteological evidence within Mesolithic and Neolithic populations have suggested that there is no major difference in status of health. No biological evidence suggests that stress was involved in the transition to the Neolithic (Meiklejohn/Zvelebil 1991; Lidén 1995). Another perspective is population density. Gebauer and Price presumed that around 3100 bc there is no evidence of increasing population in Southern Scaninavia. They presume that not until around 2900-2800 bc, particularly around 2600 bc did the population increase (Gebauer/Price 1992, 108).

There is great potential in burials in terms of an interest in mentality and ideology. Changes in burial practices took place throughout the Stone Age in the form of constructions, the handling of the body, and the types and composition of grave goods. Continuity and the width of variation in burial practices reveal tradition and renewal in society. This probably occurred in conjunction with changing family relationships and new areas of contact, and with other cultural links and other associated religious and ceremonial influences. The burial customs shed light on the relationship between social and ideological concepts. Analyses of burial rituals would then supplement other important categories of archaeological sources with interpretations of the customary concept of death.

The view of death and religious expressions were subject to slow and successive change during the Stone Age, within individual attributes and a collective consciousness. The archaeological material, albeit of limited extent, illustrates people's reactions in relation to death, or life *in senso*.

Looking at graves as memorials gives us an opportunity to trace tradition backwards and have some ideas about the changing ideas regarding death. Changing mortuary customs reflect changing traditions, that is the mental norms, which were important to the reproduction of the society. Graves and mortuary practices are projections of mentality and the social world which bind individuals together as a consequence of social fellowship. Death as one of life's "rites of passage" and the societal conditions together with other ritual practices offer a possibility to apprehend a picture of mentality and social norms.

For nearly 20 years now, we have had rich archaeological evidence of graves and mortuary practices in Mesolithic times. At the moment, there are 3-4 large cemeteries, altogether about 130 graves (Kannegaard Nielsen/Brinch Petersen 1993; Larsson 1993). Our knowledge of Neolithic mortuary practices has also been modified during the last few years. Especially in the west of Denmark, excavations of long barrows have given us other perspectives on mortuary practices (Madsen 1993), also in south Sweden excavations have given new results (Larsson 1992). In the earliest part of the Neolithic there are a few earthen graves, which have similarities with the earlier mortuary practices. With the occurrence of the long barrows we have perhaps a status differentiation even more marked than hitherto. Still the situation is hard to evaluate, since the empirical facts are few in number. There is, however, a trend of continuity, rather than a major break in mortuary practices, thus reducing our conceptual gap between the Mesolithic (more primitive) and the Neolithic (more advanced) mortuary practices.

It has been said that with the beginning of the Neolithic, there is evidence of votive offerings. But in the Mesolithic there are also votive offerings. In the offerings, we have a continuity in traditions, not a break between the Mesolithic and the Neolithic in a European context (Bradley 1990). According to Per Karsten the Mesolithic offering deposits in



Figure 1. Currents of time and the variation of aspects of society.

south Sweden are found in the same context and areas as the Neolithic ones – in wetlands and in context of large stones on firm ground. The archaeological evidence is, however, limited, but Karsten suggests that a change in the character of votive offerings took place in the Late Mesolithic and that the transition from the Mesolithic to the Neolithic shows a continuity in offering customs (Karsten 1994).

### 4. What may have happened?

Concerning the scenario in southern Scandinavia, many discussions and ideas have been put forward. The main interest, as I understand it, is to look at the transition as a slow and gradual process from the Mesolithic. I would like to use the concepts of mentality and ideology in terms of currents in the flow of time (fig. 1). The figure shows the flow of time where the concept mentality is understood as slow altering. Different aspects of individuals and societies change at different rates, either slower or faster. In this perspective the abstractions such as cultures, periods, economic practices, mortuary practices have no privileged position in research. The many archaeological boxes we employ restrict the reasoning of the past.

To obtain ideas about mentality and the social world we need a complete source material about the different parts of society. However, there are lots of questions according the significance of the archaeological sources. Due to the archaeological evidence from 5000-2000 bc we do not, of course, have a comprehensive knowledge of all kinds of



Figure 2. Continuity in Late Mesolithic and Early Neolithic.

archaeological data. Looking over time, we can, though, distinguish certain tendencies in our apprehension of what was actually changing in 5000-2000 bc (fig. 2). During the course of time there is a slow altering of mentality and ideology.

Personally, I do not think that the first agriculture had any strong effect on vegetation, as I understand farming to be a more exclusive production in society. Perhaps, later on, during Neolithic times, farming may have interfered more in the landscape (around 2600 bc). The real difference in social competition may have been around 2700-2600 bc. The shift that has been of central importance for the archaeologist, that around 3200-3100 bc, is not a major shift in the social domains or social organisations.

### 5. A conclusion: all in a name?

The views I have put forward here have of course not led to any ready answers about mentality, ideology and social structures. It is hard to find a solution to what happened in mentality and the social world during the Mesolithic-Neolithic transition in southern Scandinavia. It is obvious, however, that discussion of the whole process in a long-term perspective is a more convincing way than just comparing the two periods as largely different cultural entities.

Finally, I would like to make some critical remarks about the concepts that are essential to our understanding of the mentality and the social world and to the perception of the Stone Age societies in question. Words have different meanings to different people. We do not have a common language. I think that 'the change from the Mesolithic to the Neolithic' is a very good example of this. We need to theorise the use of language. The thought and modern mentality are in 'unfree freedom'. Take another example: the concept Neolithisation. What a

word – with such a pessimistic attribution to the decisionmaking by human beings! Hunter-gatherers allowed themselves to be 'ized', not as conscious social actors, but by default, through no activity of their own. There are several other concepts, as for example hunting-gathering, farming, Ertebølle culture, Funnel Beaker culture, just to name a few.

I would like to suggest that these concepts are undermining our scope for going beyond our preconceptions and further, of gaining a more holistic view of societies in a long-term perspective. The understanding of past societies is problematic and this is among other things connected with the language and mentality of our modern world. I think that the words and concepts we use should be given serious consideration.

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## The materiality of the Mesolithic-Neolithic transition in Britain

### 1. Introduction

As Alasdair Whittle once pointed out (1990a, 209), the direct evidence for the transition to the Neolithic in Britain is limited, and the classes of material which might provide conclusive indications of the character of this transformation remain scarce. Stratified residential sites with both Mesolithic and Neolithic artefacts, sealed assemblages from the terminal Mesolithic, or Neolithic assemblages which demonstrate clear affinities with material from a distinct area of the European continent stubbornly continue to fail to come to light. Yet, as Whittle goes on to suggest, recent debate on the transition has continued to be lively, simply because a range of different theoretical perspectives have been applied to the existing evidence (e.g. Armit/Finlayson 1992; Whittle 1990b; Williams 1989; Zvelebil/Rowley-Conwy 1986). I would suggest that it is quite possible that we will never have sites which provide the kind of evidence which tells us in an unambiguous way whether a migrating continental population brought Neolithic innovations to Britain, or whether mixed agriculture was widely practiced from the earliest inception of the Neolithic. But in a sense this does not matter. What I wish to argue is that we have systematically underestimated the value of the evidence which is already available to us. This is because we tend to look upon the material culture which characterises the opening of the Neolithic period in Britain - polished stone axes, leafshaped projectile points, pottery, flint mines, earthen long barrows, causewayed enclosures and megalithic tombs - as a superficial manifestation of some other and more fundamental phenomenon. This other thing is the presumed essence of the Neolithic, which, while it is more profound that its surface effects, remains invisible to us in the present.

It can be argued that this distinction between essence and substance is characteristic of post-Enlightenment thought, which continually sets up conceptual dichotomies, only to valorise one term over the other (Jordanova 1989; Latour 1993). Once an opposition between depth and surface has been established, the distinction between a materialist and an idealist archaeology is relegated to a subsidiary status. Both materialism and idealism propose that history is determined by the operation of a causal motor which operates behind the scenes, leaving the archaeologically visible trace as the consequence of a process which can only be inferred indirectly. In this fashion, materialist archaeologies presume that changes in material culture denote a change in the dynamic relationship between resources and population. Often, the fundamental process proposed is a demographic one, involving the growth or expansion of population. In some cases this rise in population is the consequence of agriculture, so that there is some overlap between demographic models and those which stress the geographical expansion of agriculture itself, whether by diffusion or population movement (e.g. Ammerman/Cavalli-Sforza 1971, 1973; Clark 1966; Case 1969; Renfrew 1976, 1987). In other cases, ecological processes determine an intensification of subsistence practice on the part of indigenous huntergatherers (e.g. Dennell 1983; Zvelebil/Rowley-Conwy 1986). Where changes in the subsistence base are seen as determining (or at least underlying) cultural changes, there is a tendency to use the term 'Neolithic' as a synonym for 'agriculture'. In the case of Ammerman and Cavalli-Sforza's papers at least, this can lead to a certain circularity of argument: the spatial expansion of agriculture is demonstrated by the presence of any trait of Neolithic culture. Moreover, either Neolithic artefacts or cultigens are taken to demonstrate the spread of a genetically distinct human population. This practice becomes most problematic in the case of Britain, where the direct evidence for an abrupt change to domesticated resources is not strong (Thomas 1991). One is tempted to question whether the models of economic transformation which have been proposed for Britain would not have been very different if they had had to rely upon the seed and bone evidence alone.

Idealist archaeologies amount to the twin of materialist ones: rather than seeing the transition to the Neolithic as either a replacement of population or a change in economic practice, they argue for a change in ideology. Following the proposition that material culture is meaningfully constituted (Hodder 1992, 12), changes in material culture have been presented as denoting a new ideational structure (Thomas 1988), while the practice of agriculture and the construction of field monuments have been interpreted as having been made possible by the introduction of a conceptual separation between culture and nature (Bradley 1993; Hodder 1990). In these arguments, the Neolithic still has an essence, although this lies in a new set of ideas, which might involve a categorical separation between the domestic and the wild. These perspectives tend to favour an indigenous transformation rather than any incoming population: having adopted a new ideology, the Mesolithic communities of Britain would begin to make pottery, construct monuments, and exchange polished stone axes. Idealist archaeologies take it for granted that, as Hodder (1984a, 29) puts it, "if we want to say anything interesting about the past, we must include statements about past ideas". Of course, from a processualist point of view the disadvantage of such an approach is that it amounts to a form of palaeopsychology: an attempt to get at ideas lodged in the heads of long-dead people (Binford 1987, 398). Yet so long as we perceive material culture as representing the product or consequence of actions and ideas, archaeological interpretation will generally have this metaphysical quality. Migrating populations, shifting economic regimes and changing ideologies are all intangible entities which are merely reflected in the archaeological record.

To compound the problem, the notion that ideas are reflected in material culture effectively relies upon a theory of representation in which a formal relationship exists between signifier and signified, between the artefact and the meaning which is vested in it. For the Neolithic to constitute a structure of meaning which underlies material manifestations dispersed over thousands of kilometres of space and hundreds of years of time requires an extraordinary degree of fixity in such meaning. It might be objected that material culture does not so much encode meaning through its fashioning, as provide an apparatus for the creation of meaning. Thus meaning is not a static quality of things, but is constantly being created and reproduced (Olsen 1990; Tilley 1989). Even if the styles of material items and monuments being created were identical across the whole of Europe, we could not necessarily assume that they 'meant' the same thing in each different social context, or even to all members of a given community. The meaning which a particular person creates for a particular artefact depends upon the resources of experience and knowledge which they bring to the encounter, and the context within which the encounter takes place.

### 2. Characterizing the Neolithic

I would like to suggest that we should abandon the attempt to search for a metaphysical entity which underlies the cultural innovations which were introduced to Britain at the start of the Neolithic period. This belief in a hidden essence to the Neolithic (and equally, underlying numerous other cultural processes in the past) has the effect of promoting a pessimistic view of archaeology, in which the material things which we excavate, see, and feel are simply a pale shadow of something more important which we cannot directly experience. Now, admittedly, Binford (1987, 393) was quite correct to point out that archaeological evidence exists in the present, and that the past is gone from it. And equally, we cannot see the people of the past (whether they were indigenous Mesolithic folk adopting new ways, or incoming migrants), we cannot interrogate them concerning their social organisation, we cannot watch them undertaking their daily economic tasks, and we cannot reach inside their heads for their ideas. However, it is a mistake to consider the material things which are available to us as a mere by-product of all of these happenings (Barrett 1988). Material culture is integral to most human undertakings, and forms the context for all of them. Material things are not simply a record of hunting, farming, cooking and eating, but are the means through which these projects are carried out. Similarly, people do not walk around with abstract ideas in their heads, which they then introduce to the world by decorating pots and building monuments. In this sense the division between an internal mind and an external material world is another modernist duality which has been extremely unhelpful to archaeology (Thomas 1996a). Thinking does not take place in a separate metaphysical world. People carry out projects and create meanings through their engagement with material things and places.

A recent example from the literature will serve to make the point. Sherratt (1995) observes the emergence of megalithic tombs around the Atlantic fringe of Europe, and consequently suggests that these monuments are in some way implicated in the Mesolithic-Neolithic transition. Following Dennell (1983) and Zvelebil and Rowley-Conwy (1986), he notes that this is a particular geographical area in which foraging and farming communities will have been in prolonged contact. In contrast with Renfrew's (1973; 1976) argument that megaliths emerged as territorial markers under conditions of population stress on land, Sherratt suggests that the critical resource in early Neolithic subsistence practice will have been labour. Under these circumstances, early agricultural communities will have been at pains to recruit personnel. Megalithic tombs are ceremonial structures, with an accessible internal space in which activities may have taken place which involved access to the remains of the dead, the use of consciousness-altering substances, and perceived encounters with other dimensions. Thus Sherratt argues that these ritual centres may have constituted 'instruments of conversion', through which foragers may have been initiated and assimilated into farming populations. But here again, the monuments are presented as an epiphenomenon. They may have had a socio-economic role to play, yet the fundamental process which throws them up is that of the gradual change from hunting, fishing and gathering to farming. Megaliths facilitate this change, but they are subsidiary. I would rather argue that while a

particular subsistence economy may have been fundamental to the character of the Neolithic in south-east and central Europe, in the Atlantic zone the transition did not always involve pronounced changes in economic practice. Material things did not *attend* the Neolithic, they *were* the Neolithic.

Naturally, this line of argument will prompt the question of precisely what the Neolithic was, if one is to deny that there is a single process or structure of ideas underlying all of the changes which overtook Eurasia between the end of the last glaciation and the introduction of metals. An only partially facetious answer is that 'the Neolithic' is a concept, a linguistic category which has been created by modern archaeologists. Concepts are made to think with, and in the process they help us to understand the world (Deleuze/Guattari 1994, 8). However, we do well to remember that as forms of redescription, concepts are entirely separate from the worldly phenomena which they are created in order to attempt to express (Rorty 1989, 5). Through its history, the precise signification of the word 'Neolithic' has shifted subtly (Thomas 1993). This is probably a measure of the extent to which having a language which enables us to describe archaeological phenomena and historical processes has helped debate to move on. However, as Richard Rorty (1989, 9) has argued, there often comes a time when a set of terms which have served very effectively as a means of articulating a particular debate ceases to be helpful. At this point, academic argument may come to involve "a contest between an entrenched vocabulary which has become a nuisance and a half-formed vocabulary which vaguely promises great things" (ibid.). In that we still find ourselves attempting to cover a range of very disparate contexts with the term 'Neolithic', it may be that the word has now become just such a nuisance.

None the less, let us proceed by using the existing language: the Neolithic which began in Britain at around 3200 BC (4000 BC) was a new kind of Neolithic. The material things which represent the principal innovation of this horizon were not a reflection of this development: they were the Neolithic. It has been argued that material culture has an active role, that it can articulate society (Hodder 1982). This was pre-eminently the case with the inception of the British Neolithic. As Sherratt implies in the case of megaliths, all of the new material forms of the period both express and transform social and economic relationships. What I am suggesting, though, is that apart from the adoption of these various kinds of material culture there was no uniform change which overtook the whole of the British mainland. I would emphasise that I am not claiming here that all of the inhabitants of Britain continued to practice a mobile foraging economy throughout the Neolithic period. It may be that a gradual trend toward a more intensive use of food resources had already begun before the appearance of

Neolithic material culture, if we are to consider any of the evidence for pre-elm decline cereal pollen credible (Edwards/Hirons 1984; Williams 1985; Williams 1989, 512). The process by which the use of domesticated resources replaced hunting and gathering was a lengthy one, and many communities did not adopt an arable economy until the widespread introduction of enclosed fields and sedentary settlements in the Middle Bronze Age (Barrett 1980; Barrett/ Bradley/Green 1991, 143). Indeed, if we wished to be pedantic on the point we could note that many people continued to practice hunting until the Medieval period. If we look at contemporary non-industrial areas of the world, it is generally the case that individual communities will be involved in different subsistence regimes, and that reciprocal relationships may exist between horticulturalists, hunters, swiddeners and pastoralists. I submit that it is because we choose to see mixed agriculture as the fundamental essence of the Neolithic that we fail to recognise the potential range of economic variability which might characterise the period. In this respect, the apparent economic homogeneity of the European Bandkeramik is every bit as remarkable as the uniformity of house plans and pottery styles which it maintained across central Europe (Bakels 1982; Coudart 1991).

As a result, a single field system or an individual example of plough marks found beneath a barrow comes to be interpreted as being diagnostic of a 'Neolithic economy', and this economy is taken as having been characteristic of Britain (or Britain and Ireland) as a whole. The exceptional is taken as the rule. Certainly, at any point in the Neolithic period some groups of people will have been practicing cereal agriculture, but we should see this as one element of a patchwork of food-producing and food-gathering activities which tended to increase in diversity over time. This slow trend towards agrarian subsistence had superimposed upon it a much more rapid introduction of Neolithic material culture (fig. 1). Similarly, in Ireland Neolithic artefacts seem to have been used in the farthest part of the island from the very start of the Neolithic period (Green/Zvelebil 1990, 58). Of course, while the processes of economic and cultural change are distinct, they are also mutually influencing. Several species of domesticated plants and animals probably were introduced to Britain at the same time as pottery, polished stone tools and monument-building. I would argue, though, that their initial significance was a cultural one, and that the incentive to adopt them was social. Domesticated plants may have constituted 'special foods', while cattle would have constituted both mobile wealth and a source of meat for ceremonial feasting. It is arguable that domesticates of all sorts are comparatively rare from non-monumental contexts in the earlier Neolithic, and that although we have large assemblages of animal bones for the period, they almost all





come from causewayed enclosures, barrows and tombs (Thomas 1991, 28). But this is not to deny that this introduction might have had a knock-on effect in which individual communities might have opted to take up cereal farming or stock-herding, after these resources had been available for one or two generations. Clearly, though, there were whole areas of Britain in which domesticates had only the most marginal of impacts. In western Scotland, for example, Armit and Finlayson (1992, 668) argue for a Neolithic with a broad-spectrum, logistic subsistence pattern, where small-scale dwelling structures are found in camps which were occupied sporadically or seasonally. In this region, sedentism appears not to have emerged until the Iron Age. Yet despite this, the Western Isles have numerous small megalithic tombs, pottery and polished flint and stone axes, demonstrating that an abrupt adoption of Neolithic material culture need not be based upon economic change.

This argument effectively turns on its head one which was put forward by Humphrey Case (1969, 181). According to Case, cultural innovations like pottery, earthen long barrows and causewayed enclosures should be seen as a set of 'optional extras', which might be added to the more fundamental economic elements of the Neolithic package once a necessary level of economic surplus had been generated. "Demanding refinements are unlikely to have belonged to the period of early settlement, but rather to stable adjustments of mature and fully extended economies on favourable environments" (ibid.). This picture of material culture gradually being added to an increasingly stable way of life provided a means of arguing that the first Neolithic presence in Britain might be earlier than the existing radiocarbon dates from monumental contexts, and also explained why Neolithic artefacts and structures in Britain lacked exact continental parallels. Once we concede that

material culture was of critical importance to the changes which overtook the indigenous population of Britain, it is less easy to argue for this 'archaeologically invisible Neolithic'. It seems probable that the later Mesolithic communities of Britain were exceptionally diverse in their ways of life and use of wild resources, yet as more radiocarbon dates become available the picture of a more or less synchronous adoption of Neolithic material culture continues to be strengthened (Thomas 1988, 60; Kinnes 1988). What is striking is that although the construction of monuments appears to have begun more or less synchronously throughout Britain in the years between 3200 and 3000 bc (4000-3700 BC), the evidence for human impact on the environment is extremely variable from region to region. In some areas open conditions may have been established quite rapidly, while in others extensive areas of woodland remained untouched (Entwistle/Grant 1989; Waton 1982). Moreover, there is considerable evidence that wild plants and woodland resources remained of considerable importance until the late Neolithic and beyond (Grigson 1982). Thus the evidence for rapid and widespread cultural change stands alongside that for economic and ecological diversity.

#### **3.** The archaeological context

I have argued elsewhere (Thomas 1996a, 1996b) that Mesolithic communities in Atlantic Europe should be seen as active participants in the creation of this new kind of Neolithic. As we have mentioned, the introduction of Neolithic material forms into Britain and Scandinavia was preceded by a prolonged period in which Mesolithic and Neolithic communities were routinely in contact with one another. The effects of this exchange and interaction seem to have been different at different points in time. It seems possible that the Limburg and La Hoguette pottery styles document the adoption of ceramic technology by indigenous communities from the very earliest Bandkeramik incursions into western Europe (Lüning/Kloos/Albert 1989). Later, groups like the Ertebølle and Swifterbant seem to have appropriated various elements of the Neolithic repertoire (pigs, pottery, shafthole adzes etc.) from the *Bandkeramik*, Rössen and Lengyel communities of central Europe, although these appear to have used to augment a mobile foraging way of life, rather than to transform it in any decisive way. However, with the emergence of the Cerny group in central northern France and the earliest TRB on the North European Plain, a rather different process may have been beginning to operate. Both of these entities are generally described as 'Neolithic cultures', although both involve an expansion of activity beyond the loess zone. Indeed, the material relating to these two traditions has a distribution which spans what had hitherto been areas of both Mesolithic and Neolithic settlement (fig. 2). Both of these



Figure 2. The spatial relationship between post-*Bandkeramik* settlement and the earliest TRB assemblages in central/northern Europe (re-drawn from Midgley 1992, figs. 6 and 67).

groups have been suggested in the past to have been the outcome of a merging of Mesolithic and Neolithic communities (Midgley 1992). It certainly seems plausible that these distinctive new cultural formations emerged from a phase of heightened interaction between foragers and farmers. This is perhaps preferable to the bald choice which Solberg (1989, 276) presents us with, in which TRB ceramics in Scandinavia must be either an internal development from the Ertebølle, or the result of a population movement from the south.

Significantly, it is within the early TRB and Cerny contexts that many of the distinctive elements of the Atlantic Neolithic can be recognised for the first time. These seem to involve a drawing-together or hybridisation of elements which derive from both the Atlantic Mesolithic and central European Neolithic traditions. Very often, when we compare the Atlantic Neolithic with its predecessors, it seems that artefacts of distinctively 'Neolithic' form came to be incorporated into practices which are 'Mesolithic' in inspiration. Repeatedly, themes like the deliberate deposition of objects, conspicuous feasting, the complex treatment of the dead, and the introduction of symbolically-charged places into the landscape occur in the later Mesolithic record of north-west Europe. These are exactly the kinds of practices which we might consider to be characteristic of the Neolithic in Britain or Scandinavia. To give some examples, we could mention the cist burials, animal bone deposits, fires and stone cairns at the Breton shell middens of Téviec and Hoèdic (Péquart/Péquart 1954), and the formal pit deposit containing animal bone, antler, decorated shell and bone from Beg-er-Vil, also in Brittany (Kirk 1991). In south-east England, enigmatic later Mesolithic pits at Abinger,

Farnham, Hassocks and Selmeston, some of which contain very large quantities of struck flint (Drewett/Rudling/ Gardiner 1988, 17-20), may represent antecedents of the formal pit deposits of the Neolithic (Thomas 1991, chapter 4). This kind of deliberate deposition is much less easy to substantiate in western *Bandkeramik* contexts. Equally, we might mention deliberately deposited artefacts, like the arrow shafts from Loshult in Scania (Larsson 1990).

Most of the burials of the Bandkeramik were simple pit graves, sometimes in cemeteries, but late Mesolithic funerary practices seem to show more affinity with the British or Scandinavian Neolithic. Graves at Skateholm in Scania, for instance, are surmounted by burnt timber structures, and there is evidence of funerary feasting, dismemberment and disarticulation. The Janislawice grave, in Poland, contained a crouched burial with traces of red ochre, numerous worked and unworked animal bones and at least 42 struck flints (Tomaszewski/Willis 1993). Mesolithic settlement sites like Ageröd I in Scania have produced isolated human skeletal elements, suggesting the circulation of body parts. Also at Skateholm, the so-called Structure 24 seems to have been a monumental focus of some sort, perhaps used for the processing of the dead, involving burning and deliberate deposits of flints and animal bones. Here, the excavator explicitly compared the structure with the timber structures which have been found beneath Neolithic earthen long barrows in Britain and Scandinavia (Larsson 1988). And of course, while arguments can be made which derive the earliest earthen long mounds and megalithic tombs from the domestic structures of the central European Bandkeramik, Rössen and Lengyel (Hodder 1984b), the burials which are found beneath them are deposited according to Mesolithic practice (Midgley 1985). The earliest long mounds and long enclosures are found in Cerny and early TRB contexts, and represent a materialisation of the fusion of Mesolithic and Neolithic traditions.

If we can imply that the introduction of formally Neolithic traits into Britain, Ireland and Scandinavia follows on immediately from this heightened interaction in western France and on the North European Plain, it is evident that the kind of Neolithic which was being adopted in these areas was different in character from the Neolithic of central Europe. We have seen that while changes in subsistence practice were taking place in Britain at this time, they were not universal. Very similar forms of material culture were being adopted throughout Britain, and I would argue that these had a transformative role to play in social relationships. However, I suggest that the changes which took place were by no means uniform, and that the new artefacts and structures were used in different ways in different social and geographical contexts. As Armit and Finlayson (1992, 672) argue, the varying conditions into which new forms of

material culture were being introduced were to some degree conditioned by the previously existing regional traditions of the Mesolithic. The new material forms had no fixed or embedded meaning: they represented a resource, a means by which meanings might be created and reproduced at a local scale. This suggests that future work on the Mesolithic-Neolithic transition in Britain should be directed particularly toward the investigation of differing patterns of change which are likely to be manifested at the regional level (Whittle 1990b, 103).

### 4. Conclusion

What had emerged from the encounter between Mesolithic and Neolithic traditions in northern Europe was an acute recognition of the way in which the material world might be used as a system of symbolic elements. These could be manipulated and reconfigured in such ways as to introduce very specific significances into particular locations. This is not to argue that the Neolithic was simply a symbolic system: these were physical things which were involved in the activities and transactions of everyday life. But the integration of the Neolithic in the form in which it arrived in Britain lay in the way that artefacts facilitated the attribution of significance to places, people and things, and the establishment of relationships between them. The particular objects and practices which were being introduced all fit into this pattern. Pottery vessels were implicated in the interpersonal transactions of food preparation, serving, and feasting. Flint mines, which are an innovation of the post-Bandkeramik period in northern Europe, created a formal context for the production of valued items, and also represented an enduring transformation of landscape. Similarly, earthen long mounds and causewayed enclosures were created by opening the earth and creating a significant place. Polished flint axes were taken out of the flint mines and circulated from hand to hand before they were returned to the earth, along with broken sherds of pottery and animal bones, in the ditches of the enclosures or in isolated pits. These pits, sometimes forming clusters resulting from a series of intimate acts of deposition (Brown 1988; Healey 1988), might then serve to preserve in memory particular places to which people would repeatedly return. Human bones were placed in the chambers of the barrows, and the ditches of the enclosures. There is a certain symmetry about the relationships which were being established between living people, dead people, artefacts and the earth, and yet I would resist the temptation to assert that they were underlain by a uniform structure of belief. These objects and practices were the material equivalent of a language, and they might be used to express a range of different messages.

Neolithic material culture afforded for the aboriginal inhabitants of Britain the opportunity to create these

relationships, and to transform the meanings of their landscapes through their engagements with material things. The question is, why, after they had resisted for hundreds of years any temptation to adopt a Neolithic which was principally agricultural, should they now adopt a Neolithic composed of material symbols? A simple answer lies in the flexibility and ambiguity of the material itself. If Neolithic material culture facilitated the creation of connections between persons and places without implying any particular economic regime of ideological system, it might enable the integration of very diverse communities. A Neolithic monument does not mean any one thing (Olsen 1990, 200), is not connected with any one practice, yet its physical presence can occasion the co-ordination of a rage of different practices. A polished stone axe can be given as bridewealth, or to establish a debt, or can maintain an alliance. As soon as these connections and relationships are in existence, they can serve as the basis for mutual assistance in times of hardship, but they can equally be manipulated by individuals or groups as a means of building up influence and authority. The perceived benefit of a repertoire of new cultural forms could be at once altruistic and selfish, at once relating to the interests of communities and segments of those communities. But above all, the significance of the kind of Neolithic that was introduced to Britain lay in its materiality, and thus in the persistence of its various elements. Monuments and artefacts do not merely transform social and economic relations, they serve as a repeated reminder that things have changed, through their continual presence in people's everyday lives.

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# Waste and prestige; the Mesolithic-Neolithic transition in the Netherlands from a social perspective

### 1. Introduction

The regional Meuse Valley Project has been in operation Since 1987 (Wansleeben/Verhart 1990, 1995). This is a cooperation between the National Museum of Antiquities in Leiden and the State University in Leiden. The central aim of this project is to study the Mesolithic-Neolithic transition in the southern part of the Netherlands. One of the themes is to analyse the nature of contacts between hunter/gatherers and farmers and what this has meant for the transition from a food-consuming to a food-producing economy.

In literature, the ideas and models about contacts range from peaceful coexistence to a complete state of war, or from an intensive interaction to a forbidding separation (Blackburn 1982; Hart/Hart 1986; Turnbull 1961, 1965, 1983; Woodburn 1968, 1988). The final result of these contacts was that hunter/gatherer communities rapidly or gradually incorporated elements of that farming economy.

The neolithisation models often assume that there is one single decisive factor in this process, such as changes in climate, population pressure, outside economic pressure or social relationships (Bender 1978, 1981, 1990; Bender/ Morris 1988; Binford 1968, 1984; Gebauer/Price 1992; Gregg 1988; Zvelebil 1986). Others hold that in the transitional situation a combination of factors is operating (Dennell 1985). The aim of this article is to focus on the social elements in the transition from Mesolithic to Neolithic by studying ethnographic data.

### 2. Ethnographic information

Most of the models for the change from Mesolithic to Neolithic are backed up by ethnographic data of societies which are at this moment in a transitional stage from hunter/gatherer to farmer. Well-known names in this respect are the Hadza (Woodburn 1988), the Okiek (Blackburn 1982; Woodburn 1988), the Aka and Mbuti-pygmees (Bahuchet/Guillaume 1982; Turnbull 1961, 1965, 1983; Waehle 1986) the San Bushmen (Barnard 1992; Hitchcock 1982; Kent 1989; Lee 1979, 1992; Wiessner 1982, 1983; Wilmsen/Denbow 1990) and the Agta (Griffin 1984; Griffin/Estioko-Griffin 1985; Peterson 1978). However, these societies all appear to have had contacts with outsiders for a long time. As a matter of fact, these are second-stage contacts: a stage where the mutual desires of the different societies involved are met. As archaeologists we must conclude that these ethnographic descriptions are unsuitable for the reconstruction of the first stage of contact between farmers and hunter/gatherers in northwestern Europe. They do, however, provide us with very useful information concerning the development of contacts over time.

How else to discover what happened in a first stage of contact, what was the nature of these contacts and what were the implications for the neolithisation process? To solve this problem an attempt has been made to study the contacts of mutually different socio-economic systems in more detail.



Figure 1. Azaro man, New Guinea (Coll. Leahy).

This research was specifically aimed at the first stage of contact, the responses and the development of mutual relationships, the material reflection of these contacts and the changes in the role and meaning of objects that can be related to these contacts. From this, general models can be developed for the relationship between Mesolithic hunter/ gatherers and farmers in northwestern Europe and more specifically in the Netherlands. The results of this analysis are compared to the models and ethnographic data of the second stage of contact, i.e. the stage still to be found today in for example Africa.

Most descriptions of contacts between different socioeconomic societies are of sub-recent age, like the Greenland Inuit and Vikings (McGovern 1980, 1985), Greenland Inuit and Europeans (Israel 1969), Canadian Inuit and European whalers and fur traders (McFadden Clark 1977; Ray 1974, 1975), Australian Aborigines and English colonists (Lourandos 1985; Mulvaney 1989), American Indians and Europeans (Pagden 1993; Smith 1987). These descriptions are often coloured, incomplete and poorly documented. Strangely enough there is one exception. This fascinating description of contact is by no means ancient and, by our present criteria, can even be called modern. As an example, and not as an analogy, we will discuss this contact in more detail now.

### 3. An Australian in Papua New Guinea

In 1930 the Australian Michael Leahy set out with a group of Papuans from the coast into the interior of the former Australian New Guinea, prospecting for gold. All his experiences have been recorded in diaries, articles, photographs and on film (Connolly/Anderson 1988; Leahy 1936, 1991). In the five years he repeatedly visited the area, he found hardly any gold but did collect a treasure trove of ethnographic information.

The interior of New Guinea had always been regarded as uninhabited and uninhabitable. By the late twenties a slow trickle of information started, suggesting that people were living there after all. Leahy attempted to trace upstream, so deep into the interior, the source of the gold that was won in the lower courses of the rivers. To his amazement the interior proved to consist of a very fertile agrarian area in which tens of thousands people were living.

The white prospectors attempted at the first contacts to secure first of all good relations with the local population and secondly to obtain food by way of gifts. They had taken along beads, salt, textiles and metal objects. Initially the Papuans were only interested in the salt and textiles. It turns out that in a situation of first contact only the objects recognizable to the own culture can be exchanged. The metal objects, however superior in quality and effectivity, at first do not play a significant part. Most interest is directed at the shells, or a substitute in the shape of porcelain saucers (fig. 2). It turns out that what is most important is not the primary function of the exchanged object, but the part it can play in their own competitive exchange system. The exotic character of the exchanged objects and their association with the outsiders make them valuable. This leads to the phenomenon that anything exotic and associated with the outsiders may start to play a part in the exchange system. At this stage even the waste of the visitors, like empty tins (figs 1 and 3), bottles, coloured labels, old razor blades, empty boxes, cartridge cases, coloured textiles, metal keys and car parts, assumes a certain value and is used in the exchange system or worn as personal decoration.

Over the next years Leahy spends in the area, the import of highly desirable objects grows tremendously. With these, to outsiders cheap, objects labourers can be recruited to win the gold or to provide other services and food can be exchanged. The effects on the traditional exchange system are disastrous: a gigantic inflation occurs. Furthermore there is a development we would like to call a kind of delayed prestige. The acquisition of economically useful commodities, as the iron axes and commercial food crops, leads to a greater surplus production which in its turn may be used to gain more prestige.

### 4. Conclusions from the ethnographic data

From the New Guinea examples (Healey 1990; May/Nelson 1982; Nelson 1976; Radford 1987; Salisbury 1962; Schieffelin/Crittenden 1991) and the other situations of first contact we studied, a number of preliminary conclusions can be drawn:

- 1. The results of first contacts are mainly apparent within the social subsystem and hardly or not at all within the economic subsystem.
- 2. The meaning the outsider attaches to an object often does not match the meaning given by the local population.
- 3. To a large extent the value of these objects proves to be subject to inflation (fig. 4). This results in a quantitative increase in the number of objects or in the appearance of other valuable objects to play a part in the exchange system.
- 4. The flow of commodities between two different sociocultural systems is highly different. The local population is interested in objects, almost never in food. Their own food is sufficient for their daily subsistence; only the food that has a value in the prestige system is exchanged. The outsiders, on the other hand, are exclusively interested in food and profitable raw materials, never in artefacts, which are often regarded as inferior.
- 5. Only at a much later stage which we referred to as the second phase of contact in the case of the modern hunter/



Figure 2. Presentation of wealth. The left man is wearing a porcelain saucer on the front of his head as substitute for a shell (Coll. Leahy).

> gatherers – economic motives come into operation, and then mainly as a possibility for 'delayed prestige'. At this stage the transition to another economic system may occur.

Are the developments and characteristics described above also evident in northwestern Europe? In the situations of contact we studied the local population exchanged among other things shells, feathers, hides, fur, textiles, fish, meat, food crops, medicinal herbs, resin, pigments, honey and salt. All of these are products unlikely to have been preserved and we will not find evidence for their former presence. In testing these conclusions we shall therefore have to restrict ourselves to the imperishable component of the material culture, i.e. stone and pottery.

5. The Netherlands and northwestern Europe In the south of this country the presence of Bandkeramik colonists and their successors, the Rössen Culture, seems to have had hardly any economic effects on the local population (Louwe Kooijmans 1993a, 1993b; Wansleeben/Verhart 1990, 1995). The transition to a farming way of life has not occurred until the end of the Rössen phase. In the succeeding Michelsberg phase a farming economy does exist, with strong Mesolithic overtones.

We can infer this from the distribution patterns of artefacts and the location of the settlements in the Meuse Valley. In the Bandkeramik phase we find a concentration of settlements in the loess region, small settlements in the adjacent coversand area and a distribution of pottery and adzes in a northerly direction (fig. 5 and 6). In the Rössen phase there are no settlements in the loess region. In the coversand area we find a pattern identical to that of the previous phase: a thin distribution of pottery and Breitkeile. In the Michelsberg phase there is a completely different pattern: settlements abound in the entire coversand area.



Figure 3a. Man wearing a tin as decoration (Coll. Leahy).



Figure 3b. Man wearing a biscuit bag as decoration (Coll. Leahy).



Figure 4. The amount of personal decoration of Mount Hagen women arround 1933 (left) and Mount Hagen children in 1936/37 (right) (Coll. Leahy).



Figure 5. Northwestern Europe and the distribution of Bandkeramik pottery outside the loess zone. Bandkeramik occupation clusters hatched; loess dotted.

During the periods of the Bandkeramik and the Rössen Culture we therefore have a phase of contact, without any visible effects on the economic subsystem. We do find their artefacts in the coversand area, well away from their settlements. Most of these are stray finds, but some are not. From Dürrenberg, Germany, the existence of a Late Mesolithic grave sprinkled with red ochre is known, containing microliths and an adze (Bicker 1936). In addition there are Late Mesolithic find spots with adzes, Breitkeile and occasionally pottery, as for example Schletau (Breest 1988), Grabow (Breest 1987) and Weidenthal-Höhle (Cziezla 1992) in Germany and Ysselstein, Helmond and Gassel (Brounen/De Jong 1988) in the Netherlands. How to interpret these finds?

Numerous explanations have been put forward by other researchers. The distribution of these artefacts is thought to be the result of the settling of Early Neolithic farmers, scouting expeditions by these farmers, cattle transhumance camps, or theft or exchange of objects by Mesolithic hunter/gatherers. The first two options seem not very plausible. Outside the loess zone no settlements have been found in these parts so far that can be compared to those we know from the loess itself. The scouting expeditions may have played a part in the distribution, but it must have been limited. The material reflection will have been small, in contrast to the actual distribution pattern and the mutual differences in the distribution of pottery and adzes. The third option, cattle camps, may explain the distribution of artefacts in the immediate adjoining coversand area. The model Bakels (1978) has developed for the Graetheide cluster suggests a shortage of pasture in the loess zone and necessitates a transhumance system for cattle. In this way the coversand area around the loess may have been exploited. However, this option is only valid in the area immediately adjoining the loess. The finds that were located more to the north and west seem to be the result of another mechanism. We consider this distribution to be the reflection of contacts between hunter/gatherers and farmers and of an exchange among hunter/gatherers. This may refer to robbed material as well as exchanged objects.

In the case of robbed material we may think of raids, but also of collecting or scavenging waste, like pottery sherds, in abandoned settlement areas, more particularly in those small temporary settlements or camps in the coversand region (fig. 5). Part of the distribution pattern of the pottery can be explained in this way. Another part, however, is sure to be the result of exchange. For Mesolithic hunter/gatherers pottery will be associated with the new arrivals and therefore



Figure 6. Northwestern Europe and the distribution of Bandkeramik adzes outside the loess zone. Bandkeramik occupation clusters hatched; loess dotted.



Figure 7. Northwestern Europe and the distribution of Rössen Breitkeile outside the loess zone. Rössen occupation clusters hatched; loess dotted.
have an exotic appeal. This association gave it an added value. To the farmers it was a cheap commodity, but as the potential new owner should be able to associate the pottery with the original user – in other words should know that original user – it would have had a restricted distribution. The archaeological distribution pattern supports this hypothesis. A second factor that may play a part in the limited size of the distribution pattern is the fragility of pottery.

The distribution of adzes shows another pattern (fig. 6). We notice a concentration in the vicinity of the Bandkeramik settlements and a fanning out in a northerly direction. The adzes represented a relatively high value in Bandkeramik society, as demonstrated in the study of grave inventories (Van de Velde 1979). So the chances are remote that they were left behind on abandoned settlement areas. The distribution seems more likely to be the result of exchange. Functionally comparable artefacts occur among the implements of Mesolithic hunter/gatherers. So to them this artefact was a recognizably functional object made more valuable by its exotic character. It did not have to be associated directly with the original owner or maker. This resulted in a wider distribution. To explain the concentration of adzes in the outer loess zone an inflationary process might be put forward. Pottery became a less desirable exchange object in favour of adzes.

In the next chronological phase, the Rössen Culture, we see that pottery, in the shape of complete pots, is exchanged over a limited distance. We think it likely that a change in meaning occurred here, from primarily prestigious object to more functional object. The exchange is very well documented, as demonstrated by the find of imported Rössen pots at Hüde on the Dümmersee (Schwabedissen 1966, 1979). The restricted distribution pattern may have been caused by the fragility of the material here as well. The distribution of perforated adzes and Breitkeile (fig. 7) seems to indicate the growing importance of these implements in the prestige system. The pattern becomes noticeably more dense and extends even to the south of Scandinavia.

The first indications of economic changes date from this phase as well. In the settlements of Bergschenhoek, Brandwijk, Hazendonk, Swifterbant and a German site as Hüde we encounter the first food crops and bones of domesticated animals (Deichmuller 1969; Louwe Kooijmans 1993a, 1993b; Schwabedissen 1979).

#### 6. Conclusion

In the circumstances described above the neolithisation process may initially be considered a process of intensification. This intensification was directed in the first instance at increasing the opportunities within an exchange system based on kinship and political alliances. This first phase is characterized by, among other things, an exchange of prestigious objects. This is followed by a second phase with the emphasis on delayed prestige. During this phase the interactions with Neolithic groups intensify and gradually economic elements are incorporated into Mesolithic society. Finally, this will result in a Neolithic society.

As a final remark we put forward that these ideas and data may suggest that we consider the social element to be the sole crucial factor in the neolithisation process. This is by no means true. We merely wanted to emphasize the often underrated importance of social factors. We think that the neolithisation process is an interplay of several factors: demographic, economic, perhaps climatological and social. But we do think that the social factor has a leading part, especially in a first stage of contact.

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# Ideology and social structure in the earlier Neolithic of south Scandinavia. A view from the sources

### 1. Introduction

The purpose of this paper is to outline the structure of various sets of data of importance to the understanding of ideology and social structure in the earlier Neolithic (and partly Mesolithic) in South Scandinavia, or in terms of archaeological cultures the Funnel Necked Beaker (TRB) and the Ertebølle culture.

The paper is divided in two parts. First I will look at some selected evidence bearing on the social structure of the Ertebølle and the TRB culture. The evidence, I believe, tend to suggest that in certain aspects there was little structural change from the Mesolithic to the Neolithic. In the second part I will look at evidence for the ideology of the TRB culture. I will not include the Ertebølle culture into this part, as it appears as if there is a considerable shift in ideology at the transition from the Mesolithic to the Neolithic.

The Ertebølle as well as the TRB culture can be divided chronologically into a number of phases (e.g. Brinch Petersen 1993, 47; Nielsen 1993, 85). For the purpose of this paper, however, I will work with the following division where the dates are based on calibrated C-14:

- Ertebølle: 5400-3900 BC
- Early Neolithic I: 3900-3500 BC
- Early Neolithic II: 3500-3300 BC
- Middle Neolithic A I: 3300-3100 BC
- Middle Neolithic A II-V: 3100-2800 BC

### 2. Sources on social structure

2.1. PATTERNS OF TERRITORIAL BEHAVIOUR The strength of territorial behaviour and the size of territories marked, are important elements for the understanding of social structure in the Mesolithic and Neolithic. The evidence is one sided of course. Elements of territorial behaviour may be recognised as such, whereas lack of evidence cannot be translated into statements of lack of territorial behaviour.

The settlement pattern of the Ertebølle culture exhibits a distinct clustering in coastal areas, and a marked tendency for large settlement sites is obvious (S.H. Andersen 1993, 66). This, however, does not by itself indicate a strong territorial behaviour, since the clustering must in part be due to the concentrations of the sea-based resources favoured. On the other hand, especially prominent concentrations of stable

resources can be a strong instigator of a territorial behaviour in a hunter-gatherer population.

The material remains, however, show evidence for marked regional divisions. This is most clearly seen on Zealand. Here a study of stylistic elements on flake axes has shown that along the eastern coast of the isle three distinct groups can be distinguished and that the area of each group measures no more than 30-50 km across (Vang Petersen 1984, fig. 15). Another indication of regional differentiation is the marked variation in burial tradition between east Zealand (Albrethsen/Brinch Petersen1977; Nielsen/Brinch Petersen 1993) and southern Scania, as evidenced by the Skateholm burials some 50 km away (Larsson 1988, 170-72). On a somewhat larger, yet still local scale, we find considerable variability in the material remains, especially on an east-west axis, with the Great belt as the major divider.

At the beginning of the Neolithic an inland dispersal of the settlement areas occurs. The old coastal areas are not abandoned, but all over we find new small sites on mainly well drained sandy soils, and especially the distribution of burials indicate a very marked movement inland (Madsen 1993, 96; Thorvildsen 1941, fig. 41). Even close to the coasts the sites tend to shift location from beach positions to sandy patches behind the coast (Madsen/Jensen 1982).

In the earliest phase of the TRB culture we are dealing with two different pottery traditions (Madsen 1994, 235). One is named the Oxie group. It has the most limited distribution, chiefly in the eastern parts of South Scandinavia, and is the one with the most obvious roots in the Ertebølle Culture. It is the other, however, which in this context is of major interest, as it is the bearer of what may be seen as the ideological characteristics of the TRB culture. Volling, Svaleklint, Havnelev, Svenstorp, Mossby, Vrå, Stengade II, Siggeneben Süd, are names applied to it. The many names are not due to a rivalry of who has the right of the name giving site, but is a result of a high degree of regional variation in the decorative style of the pottery. Our knowledge of the data is still too limited to allow us to say exactly how local the style variation really is, but it seems surprisingly localised considering the fact that we are dealing with pottery occurring immediately after a major cultural transition.

With the EN II and further into the MN A I we see a unification of the pottery styles covering all of South Scandinavia, and even the Northern lowland fringes of central Europe: uniform, basic style schemes with a possible ideological background dominate our perception, but below, there seems to be minute style variations that may be attributed to a basic territorial patterning. They are not at all well studied, however, and for the moment being must remain hypothetical.

If, however, we look at the distribution pattern of causewayed enclosures and megalithic tombs, we find very convincing evidence for even very small scaled regional divisions. This is most clearly demonstrated in a study in eastern Jutland, where megalithic tombs cluster densely around known and presumed enclosures, with distances of only 5-10 kilometres between clusters (Madsen 1982). Comparable clusters are found around many of the known enclosures. At Sarup, where a lack of known tombs near the site originally led to the assumption of a regional status of the enclosure (N.H. Andersen 1981, 82), surveys followed by excavations have now revealed 35 megalithic tombs within one km from the site (N. H. Andersen 1993, and personal communication).

In the MN A II-V the pottery degrades gradually. During this process the regionalisation in the pottery decoration styles (as long as there are any decorations left) becomes very obvious again. Thus even between neighbouring clusters of megalithic tombs differences may be noted (Gebauer 1988, 115). Apart from this there is a tendency for nucleation in the settlement pattern with huge and rather permanently settled sites (Madsen 1982). Further there is a strong continuity in settlement areas (Davidsen 1978, 159-160) and in burial areas (Gebauer 1988, 117) with a frequent re-use of existing megalithic tombs.

### 2.2. Physical violence

In the Ertebølle and the TRB culture there is an astounding amount of evidence for violence, often of a fatal nature. On face value the evidence points to about the most violent period in Danish Prehistory.

Arrow shots seem to be a frequent cause of death (Albrethsen/Brinch Petersen 1977, 14; Larsson 1988, 91; Madsen 1990b, 40), but even more common are lesions to the skull. We find several skulls with fractures as well as clear marks from impact of axes. A special group of evidence are trepanations, many of which were successful. They cluster on the upper left part of the head, and are today considered to be surgical operations to save victims from open fractures of the skull inflicted by striking weapons (Bennike 1985, 92 ff.). A third group of finds consists of skeletal material from bog offerings (Bennike/Ebbesen 1987). There are quite a few human skeletons associated with offerings in the bogs, and at least some of these were deliberately killed. In two cases strangulations with cords are attested, and in other cases slaying with axes seems highly probable.

It is tempting to see this ample evidence for violence in direct connection with the evidence from the material culture for small scale regional divisions. Thus, it may be that the tendency for an atomised group pattern is associated with a high degree of negative reciprocity on the inter-group level.

### 2.3. BURIAL PRACTICES

The major part of the Mesolithic burials are from the beginning of the Ertebølle culture or from the end of the preceding period. Here we find ochre colouring as well as sex and status differentiation's in the burials. In the later part of the Ertebølle culture the burials are rather few and generally unfurnished and without ochre (Nielsen/Brinch Petersen 1993, 77). In Denmark skeletons nearly always lie in a supine position, extended with the arms along the side, whereas in Scania there is a greater variability, including burials in hocker as well as sitting position (Larsson 1988, 103 ff.). Although most graves contain individual burials, more than one person in a grave is not uncommon: as many as eight persons have been found in one grave (Brinch Petersen 1988).

From the TRB culture we have only a few burials, where we can identify the individuals through the skeletal material. Thus in EN I there are only three graves, where we can be positive of having the full internment. Surprisingly, two of these graves contain four and five individuals respectively, buried at the same time in supine extended position with the arms by the sides (Madsen 1993). All evidence from other less well preserved burials suggest the same type of interment, although we do not know whether multiple burials are the exception or the rule.

A study has been carried out to establish sex and status differentiations in the EN I burials, but in vain. The richness of the furnishing varies considerably, but there does not seem to be a consistency in the combinations. This may reflect that there are no overriding rules, but it may also mean that multiple burials are more common than we tend to believe. Most of the burials are found in wooden chambers or coffins in long barrows. A tradition of placing pottery, mostly richly decorated lugged beakers, at the terminal facades of the barrows is prominent.

In EN II we still can follow the tradition of supine extended burials. At the same time a custom of placing one or two flasks (either lugged or collared) at the feet of the deceased develops. Other items are rare and, again, there is no particular structure showing sex or status differentiations. In addition, pottery (lugged beakers, bowls, and funnel beakers) is placed at various positions along the periphery of the mound. In MN A I we completely loose track of the nature of the burials. It is the main but also the final phase of building megalithic tombs, and unfortunately the subsequent reuse of the tombs has completely obliterated the primary burials. Cleared materials from the chambers, however, indicate a frequent furnishing with pottery. Pottery depositions outside the tombs increase substantially, and they are, as a rule, placed at the entrance.

The large clusters of megalithic tombs, and the short distances between the clusters, suggest a very high rate of tomb building. Indeed an estimated 25.000 megalithic tombs in Denmark (Ebbesen 1985, 40; Skaarup 1993, 104) have been built within 400 years, averaging more than 60 tombs a year. Within the major clusters numbering 30 tombs or more it would have meant an average building rate of one tomb every 10 to 15 years, and probably more in the peak periods.

Megalithic tombs in South Scandinavia have been interpreted as evidence for a stratified society, and indeed for chiefdoms (Kristiansen 1984; Skaarup 1990). Together with the wooden chambers in long barrows from the preceding period they certainly seem associated with the death and burial of particular individuals, in contrast to for instance Great Britain, where clear indications for ossuary functions are observed (Hedges 1984,133 ff.; Kinnes 1992, 98 ff.). The multiple burials and indeed the frequency of the tombs, however, does not speak in favour of a marked stratification.

From MN A II the construction of megalithic tombs ceased. There was, however, an extensive re-use of the tombs. Considerable amounts of material in the chambers date from MN A II and onwards, and at the entrances the practice of depositing pottery continued. In a few well-investigated cases we can count 7-8 distinct depositions<sup>1</sup>, probably indicating the same number of interment episodes, covering a period of approximately 100 years. Towards the end of the TRB culture deposition of pottery outside the tombs ceased, but instead a new tradition of depositing fire cracked flint axes appears (Skaarup 1993, 109). At the same time the importance of axes inside the chambers markedly increases.

Due to the continuos re-use of the megalithic tombs during the rest of the Neolithic and into the Bronze age, we know very little of the character of the burials. In Scania it seems quite certain that by the end of MN A the tombs are used as ossuaries, as evidenced from the presence of sorted heaps of bones on several tomb floors (Strömberg 1971a, 1971b). There is even a case of dismembered bones in a pit under the floor of the passage grave Carlshögen, dating to the early MN A, and probably contemporary with the building of the tomb (Strömberg 1971a, 58 ff.). Scania, however, is different from the rest of South Scandinavia. The number of tombs is extremely low, and the dense clustering is not present. It is presently uncertain to which extent the development towards an ossuary function of the tombs also took place in Denmark, although at Klokkehøj on Southern Fyn heaps of bones from many individuals dating to the end of MN A were found (Thorsen 1981).

### 2.4. CAUSEWAYED ENCLOSURES

There is currently a little more than 30 known enclosures in Denmark, but with the knowledge we have now, we can expect every major cluster of megalithic tombs to have an enclosure associated with it. Certainly, we can expect the number of enclosures to amount to several hundred.

Obviously, much emphasis has been placed on the huge, seemingly planned and organised construction works. At first sight, this seems to indicate a strong central authority, reigning a considerable number of subjects. But things may not be that straight forward. All enclosures were built within EN II and MN A I, contemporary with the megalithic tombs (Madsen 1988). Generally they consist of one or more rows of interrupted ditches and occasionally also palisades. A closer investigation of those cases with multiple rows of ditches suggests that they may not all be contemporary. Furthermore, when we look at the individual ditch segments within a row of ditches we find an often complex pattern of reuse. Cuttings are followed by a sequence of refilling and subsequent re-cutting (N.H. Andersen 1993; Madsen 1988).

The enclosures are of course monumental constructions but, more importantly, they are the foci of continuous action: digging holes, doing some rituals associated with the holes, and covering everything up again. We have, of course, difficulties deciding whether activities in different ditch segments are contemporary or not, but at least the activity pattern is segmented in the sense that every ditch segment constitutes an activity area by itself. Combined in time and space across the enclosure we get an aggregate of segmented activity. It is this aggregate which is really the monument, and I doubt very much that we can see this aggregate as evidence of a central authority. Rather, I would like to stress the segmentation as important, indicating a co-operative venture of segmented populations.

2.5. SOCIAL STRUCTURE: HIERARCHY OR SEGMENTATION? It is obvious that the spectacular megalithic tombs and the impressive causewayed enclosures can induce the casual investigator to conclude a highly hierarchical society. This has been taken to extremes, with some authors even speaking of kingdoms (Körner/Laux 1980). Personally, I find very little evidence for a hierarchical structure in the TRB culture (see also Madsen 1990a). On the contrary, I feel that the evidence generally points towards a strongly segmented society with a high degree of negative reciprocity. Balancing the negative reciprocity, however, requires a number of important communal transactions, all heavily ritualised. The causewayed enclosures may have played an important role in this connection, but also exchange, which I haven't dealt with here, must have been important (including mined flint for magnificent axes, amber for ornaments, and indeed quantities of exotic copper) (Madsen 1991, 494). A segmented society seems to have prevailed during the Ertebølle period as well, and it is questionable whether any major changes in the overall pattern of social organisation occurred with the transition from the Mesolithic to the Neolithic.

### 3. Sources on ideology

3.1. MONUMENTS – A KEY TO IDEOLOGY? There is no doubt that the monuments – tombs and causewayed enclosures – played a dominant role in society. Apart from whatever practical purposes these monuments may have had in TRB economic and social life, it seems safe to assume that key features of the ideology were associated with and deeply embedded in these monuments.

We are, I believe, far from understanding this ideology. Compared to the later cultural development in South Scandinavia, the impressions we get from the sources are odd and alien. We can only hesitantly attempt to understand the hinterlying ideas. One point to start from could be the universal appearance of the two types of monuments in northern and western Europe. Not only do they appear all over, but a comparison shows an astonishing similarity in structure and activity patterns in widely separate regions. Thus despite the distance between South Scandinavia and southern England, and despite the vast differences in material culture that may speak against any closer contact, there is a surprising agreement in the structure of the long barrows in both regions (compare Kinnes 1992 with Madsen 1979), and the same is true with part of the activity patterns within the enclosures (Madsen 1988, 332).

An explanation for these similarities could be that the monuments are the carriers of virtually the same ideas ideas with a common origin. This origin could very well lie along the fringes of the late linear pottery cultures, and in those areas which have been part of the process that created the cultural and economic practices for the type of agriculture that spread into North and Northwest Europe around 4000 BC, well adapted to the forested moraine landscapes. Hodder (1990) has suggested that the early trapezoidal long barrows are structural copies of the late linear pottery houses, an idea that I am willing to share. He also suggests that the barrows were considered as houses by the various groups in North and Northwest Europe. This old and often stated idea is less likely, I believe. The form of the houses varied considerably within the area, but none of them seems to have been of a form that resembles the linear pottery houses. In South Scandinavia we find, for instance,

small oval huts (Eriksen 1992). The long barrows more likely represent a structure associated with ideas of an archaic home, and ideas of passage to this.

The enclosures may also be seen in relation to linear pottery enclosures, but we are currently on uncertain ground. We should note, however, that enclosures and monumental tombs in North and Northwest Europe are very intimately associated, and that we cannot understand the one without the other. This is not only because of the frequent occurrence of human bones, particularly skulls, in the enclosures, but it is also borne out by similarities in ritual activities performed at the two types of monuments. Basic elements in South Scandinavia are pottery and fire.

#### 3.2. The Unification of Pottery

The pottery of the northern and western groups of the TRB culture is renown for its high quality, technically as well as artistically. For those not primarily studying the TRB culture it is less appreciated, I believe, that there is a marked uniformity of style from Holland in the Southwest to Scania in the Northeast, a distance of 800 kilometres. This is especially true of the great styles of the early Middle Neolithic. Thus bowls from one end of the area are hardly distinguishable from bowls from the other end, and the same is true slightly later with shouldered vessels (for a general overview of the TRB pottery, see Midgley 1992).

A case of fashion? Hardly! First of all, the decorative styles are strictly bound to specific forms. A bowl has one type of decoration, a pedestal bowl another, and a shouldered vessel a third. With a few specific exceptions, decorations never cross from one type to another. Secondly, particular types have a tendency to occur in particular contexts. From the very beginning of the TRB culture in Denmark we find richly decorated lugged beakers with repeated decoratiove patterns on neck and belly. These lugged beakers are most frequently found at the facades of the long barrows, and seldom in other contexts.

In the following EN II phase the decoration style changes considerably. Yet the tradition of the richly decorated lugged beakers is maintained, and even if the decoration patterns themselves have changed considerably (now dominated by chevron bands in the so called Fuchsberg style), the repetition of patterns on neck and belly continue. The bowl is introduced at this time, and it receives the same chevron band type of decoration. Both the lugged beakers and bowls in Fuchsberg style are now increasingly found at the kerbs of megalithic tombs. They are also frequently found at the enclosures, where at Sarup, for instance, we find them at the palisade, and in the peripheral ditches (N.H. Andersen 1993, 102).

The Fuchsberg style directly develops into the style of vertical bands characteristic of bowls and lugged beakers in the MN I-II. In South Scandinavia the bowls are most frequently found in the pottery deposits at the entrances. It is probable that a specific meaning was attached to this pottery. The close association of rich decoration with the lugged beaker and later the bowl form for almost a millennium, and the repeated patterns on neck and belly, as well as the consistent use of these types in connection with depositions at the facades, whether of tombs or causewayed enclosures, stresses this point. The prospect becomes no less interesting when we consider that the social structure probably involved a marked territorial behaviour among rather small groups, and with a marked tendency for negative reciprocity.

Thus the cogent style/form combinations probably had a very clear meaning that was well understood across the socio-political landscape. The huge amount of high quality pottery that was 'consumed' and destroyed in large scale rituals that may frequently have gathered many more than the local social group, seems to support the idea of an inherent meaning, which may well have been activated on these occasions.

### 3.3. The importance of fire

Whereas the meaning of the pottery may be hard, if not impossible, to understand, we may be a little better off with fire. Fire is an often overlooked, yet possibly important element in the TRB-culture when we talk about ideology. Seemingly, fire is present everywhere to a degree of pyromania. It is a constant element in association with the monumental tombs, and it plays a dominating role in connection with the enclosures.

In the EN I long barrows, fire was used to destroy the wooden chambers, before they were covered over with earth. Likewise the heavy terminal timber facades were, if not destroyed, then heavily scorched by fire. In the EN II and MN I megalithic tombs fire was used to crack the floor tiles and burn the clay beneath the floor to a red colour. It was further used to crack flint nodules which were used as packing around the chamber or in crushed small fragments as a fine white floor layer. The fire cracked flint could further be placed in small quantities inside vessels, or along with vessels in small heaps at the pottery depositions in front of the tombs. At this time only unused nodules of flint seems to have been cracked by fire.

At the enclosures there are heavy traces of fires in the ditches, often as it seems covered up while burning. There are major pottery deposits that have been destroyed by overheating, possibly deliberately. There is masses of burnt daub, more than in any other period of Danish prehistory, and probably more than can be explained by accidental firing of houses.

Towards the end of the TRB culture the use of fire cracked flint becomes massive. We have passage graves,

where a 30 cm thick layer of burnt flint nodules surround the burial gifts of late TRB burials and covers up bone material from previous burials. Outside the tombs the pottery depositions are substituted by a deposition of fire-cracked flint tools, mostly axes.

To understand this excessive use of fire we have to realise the nature of the TRB economy. The natural environment was heavily forested, and a slash and burn economy has been assumed for many years. For various reasons this assumption was strongly discredited in the seventies and eighties (Rowley-Conwy 1981). From recent pollen investigation beneath barrows from the early Neolithic and the early middle Neolithic, it has now been proven that slash and burn constituted a very important element in the land management (S.Th. Andersen 1993a, 1993b). Indeed, as it looks now, the settled areas was dominated by a secondary forest of first birch and later coppiced hazel, used as the basis for the slash and burn activities.

Against this background fire may well have attained a meaning as a life creator through destruction. Fire was a destructive force, but in the process of destruction the foundation of new life was laid down. Thus, when fire was used extensively in burial contexts, it may well be a reflection of how the nature of life was understood. Furthermore, fire was indeed the force that created and preserved the pottery. Firing may well have been considered the action that created meaning and importance to the pottery. If I should give a bid for a single basic element on which the ideology of the TRB society was build, it would be fire. Together with pottery, it is the element that dominates our evidence for rituals, and seen in relation to the economy it is an element of potentially understandable meaning.

### 4. Conclusion

In conclusion, I regrettably have to admit that there is little to conclude. I have tried to point out that there is nothing to suggest a change of the basic social structure from the Mesolithic to the Neolithic. Throughout, I believe, we deal with a strongly segmented, competitive society. Apart from this, I fear we are still far from a closer understanding of the social structure.

Even more speculative is our understanding of the ideology. The seemingly irrational nature of the evidence prevents our understanding of the ideas governing TRB society. With the corded ware culture and further on through prehistory, people start to behave in a more "normal" and understandable way. In the TRB culture, however, we are left with a few hints of meaning only. Even if we may believe that we are capable of understanding these individual elements, I fear we may never reach a point, where we can claim that we have a coherent understanding of the TRB universe.

### note

1 As at Nørremarksgård close to Horsens in Eastern Jutland. The site was excavated by the author. It is still unpublished.

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### Much ado about nothing: Bandkeramik funerary ritual

A victory is twice itself when the achiever brings home full numbers. W. Shakespeare: *Much ado about nothing*.

### 1. Introduction

My aim in the present paper is to discuss local burial practices in the Central European Neolithic and as a sideline to criticise some of our approaches to those practices. The setting consists of two contemporaneous Bandkeramik communities at less than a day's walk from each other, located on two separate loess patches – the Graetheide in Dutch Southern Limburg, and the Aldenhovener Platte in the German Rhineland, about twenty kilometres to the East; in time the later half of the Younger Bandkeramik, roughly seven thousand years ago.

In a number of texts I have attempted to deduce Bandkeramik social structure from the inventory of one of their graveyards (Van de Velde 1979; 1990). With the intention to test my earlier ideas I have recently expanded my data basis to include a second cemetery, Niedermerz in the Rhineland, located approximately 40 km east of Elsloo, and of similar date (Van de Velde 1996).

The representativity of my data has sometimes been questioned, the argument being that the number of recovered Bandkeramik graves is short – indeed, very short – of what is to be expected on the basis of demographic estimates; moreover, from a small sample only limited inferences can be drawn. Apart from this methodical problem, objections have been raised regarding content, too. Of course it is impossible to go into all of them (Van de Velde 1996 provides an extensive discussion), but from among them I will briefly discuss gender and kin as important bases for further inferences. I will also go into the representativity problem here, to see whether the quantitative critique holds water, and if so, what can be done about it. But first I will say a few words on the substantial issues of sex, gender, and lineage alignment.

### 2. Sex, gender and kin: much ado

To me, 'social structure' has an ethnological or sociological ring: in the archaeological field of funerary analysis there is more to it than chronology (relative or absolute), sex, and wealth of the graves in a cemetery. Rather the relations between the burials are involved, with hierarchy, group membership and kin relations as major focus: *syntax*, not *semantics* in the words of Eco (1973, 61). Single graves, as

isolated data sets, cannot elucidate social structure at all as the latter is rooted in relations and their reproduction by society. Individuals may be instrumental there, possibly even be agents (*sensu* Giddens 1984, 9), yet agency works in and through relations.

The first time I attempted a funerary analysis (Van de Velde 1979) it was of the cemetery of Elsloo, in the southern Netherlands, excavated in the 1960's (Modderman 1970). There, the ground water had dissolved all of the skeletal material and no physical anthropological determination of sex and age was possible. However, sex, i.e., physical anthropological sex, is a biological category whereas my interest is with the social world, gender being often wrongly equated with sex. As a social construct (La Fontaine 1978), gender should be approached through the investigation of social data; physical anthropology can only be indicative rather than conclusive<sup>2</sup>. Almost two thirds of the graves in the Elsloo cemetery held grave gifts, so clues to social categories were available. In the Niedermerz data (which will also be examined here), tooth enamel from thirty graves could still be analysed as to the biological sex of the deceased (Dohrn-Ihmig 1983, 107); here, too, about two thirds of the graves held grave gifts.

In a statistical analysis of the Elsloo cemetery it was possible to relate the gifts and the distribution of the graves to the division of labour (i.e., gender) in Bandkeramik society: high adzes and arrowheads pointed to male occupations, red ochre and rubbing stones indicated female pursuits. Several other categories were 'freely' sprinkled over the two gender classes (tab. 1). It is important to note that not every category from the relevant 'kit' (Pader 1982, 98) is present in every grave, but only a selection<sup>3</sup>. Thus, female graves did occasionally contain both a rubbing stone and red ochre, more often either of the two, and sometimes none. Similarly so for the other kits. Also, graves of different gender were clearly paired although single graves also occurred; most of these latter were not marked to gender and therefore may have held the remains of un-initiated, or of old people.

For the Niedermerz cemetery the derivation of gender was only partially possible: while 30 male graves could be deduced from the accompanying grave gifts (in this cemetery arrowheads and flat adzes), female graves had no such

45

other single

Table 1. Grave gifts by gender at Elsloo, presence/absence data; in grey gender-neutral categories (from Van de Velde 1996, table 5).

	female	male	other
lumps ochre	15	2	_
rubbing stones	12	_	_
arrowheads	-	10	_
thick adzes	1	16	-
plain ceramics	11	17	7
decorated ceramics	14	15	8
blades	12	7	1
flat adzes	7	7	1
	34	38	41

Table 2. Gender marking and pair-bonding in the Elsloo and Niedermerz cemeteries (data mainly from Van de Velde 1996 plus references).

	male	ELSLOO female	other
gender marked	25	22	
not-marked	13	12	41
totals	38	34	41
marked, paired	30	31	
marked, single	8	3	
other single			41
	NIEDERMERZ		
	male	female	other
gender marked	29	?	
not-marked	11	27	45
totals	40	27+	45-
marked, paired	27	27	
marked, single	13	?	

Table 3. Distribution of decorative designs by gender in two Bandkeramik cemeteries; C: curvilinear design; R: rectilinear design (data for Elsloo from Van de Velde 1979, 195).

		ELSLOO		
	М	F	х	
C or R	7	16	3	26
C & R	6	_	2	8
	13	16	5	34
		NIEDERMERZ		
	М	F	Х	
C or R	9	8	14	31
C & R	4	-	3	7
	13	8	17	38

markers, and only 16 could be inferred from their being closest partner to a male grave<sup>4</sup> nearby. Therefore, the number of both male and female graves in this cemetery should be higher than these counts: unidentifiable male graves may be companion to unrecognisable female burials in at least another 11 pairs of graves.

As noted above, sex and gender are rarely differentiated in archaeological burial analyses although "... the cultural use of the body is part of any society's social construction of reality" (Shanks/Tilley 1982, 134; also cf. Barrett 1990). Thus, Dohrn-Ihmig (1983, 107) notes that among 22 graves from Niedermerz which could be anthropometrically determined, four odontological attributions were at odds with the grave gifts. From her text it can be inferred that the discrepancies are attributed to problems of measurement rather than to a prehistoric cultural reworking of biological categories. Even in a sophisticated study as Shanks and Tilley's of Swedish and British megalith funerary customs gender is glaringly absent and implicitly equated with anthropometric categories (Shanks/Tilley 1982). In more general accounts, the sex/gender issue is usually immediately passed over (see esp. Pader 1982, 16-17, 90; or Morris 1992, 261 where the index says: 'gender, see sex'). In my opinion this silence is an instance of what Murray has described as 'the threat of the past' (Murray 1993): if gender definition in other societies is not as rigid as it is in ours, then our society's definition of gender may be/is culturally biased. Lacking a thorough discussion of gender in archaeological burial contexts (as, e.g., Gero/Conkey 1991 for pre-funeral archaeological societies) the important dimensions are not readily apparent. However, for both Niedermerz and Elsloo I would maintain that - at least in burial - Bandkeramik gender classes were on an equal footing as the quantitative and qualitative distributions of grave gifts over gender are very similar within these cemeteries, contrary to Dohrn-Ihmig's assertion. Moreover, although gender differences are marked they are not very much emphasised: quite a number of graves attributable to either role on other grounds (mainly pair-bonding) have no gender-specific furnishings (tab. 2).

I also tried to ascertain the kin relations between the people interred in the Elsloo Graveyard. Here, the decoration of the pottery appeared indicative (fig. 1): in female graves either curvilinear or rectilinear designs were found, in male graves the two often occurred together (tab. 3) – precisely the kind of "nonvaluable distinctions" predicted for horizontal differentiation (O'Shea 1984, 46). The very same pattern is repeated in the Niedermerz cemetery. Such a 'strong pattern' (Morris 1992, 202) demands an explanation.

To start with, in a society practising exogamy either the males or the females will leave their birth group at marriage and become ascribed to the group of their partner (Fox 1967; Lévi-Strauss 1967). At their life's end those who moved out



Figure 1. Basic structures of Bandkeramik pottery decoration design (after Van de Velde 1979, fig. 5 and 1986, fig. 1).

will therefore be associated with two groups (those of birth and marriage; in technical terminology: of affiliation and affinal association). In a patrilinear society the females will move out of their kin group, and become associated with the other moiety; in a matrilineal situation the males do so (cp. the traditional change or doubling of the name of the female partner in our societies at wedding as a token of the new patri-like affiliation; in the Bandkeramik it is not names, but the design of pot decoration which is used instead. Of course these signs are tokens only for arrays of rights and duties). In the Elsloo and Niedermerz cemeteries alike the males have been simultaneously associated with both attributes whereas females are marked with either of the two by exclusion. Therefore, the men must have changed their allegiance – as with matrilineal arrangements. The clear differential distribution of the decoration on pots in these graveyards must be interpreted, I think, as a kind of 'ideal' representation of their social practice<sup>5</sup>. They used, and were used by their artefacts to demonstrate conformity to tradition.

As a matter of fact the subject of kin affiliation is hardly ever broached in archaeological literature. After a few early attempts (Longacre 1968; Whallon 1968) interest has turned towards hierarchy. O'Shea noted in a thoughtful paragraph on the topic that status hierarchy is much easier to retrieve than is horizontal differentiation such as kin or clan affiliation. This is due to the archaeological characteristics of the associated symbols (O'Shea 1984, 252-254). Similar statements can be found elsewhere (e.g. Chapman/Randsborg 1981), and even negative pronouncements: "... one ... *definitely* cannot reconstruct descent or post- marital rules, be they the real or the ideal version" (Pader 1982, 54; emphasis added). Certainly, the subject has its own difficulties, and enquiry into the subject may not be possible for every society, yet an *a priori* negation is premature: our limits are not set by the archaeological record but by our (lack of) imagination, as Binford has reminded us (1975, 251).

### 3. Representativity: much ado about nothing?

To the East of the Graetheide where Elsloo is situated, lies the Aldenhovener Platte, where extensive excavations have brought to light many Bandkeramik remains. Of late, Lüning and Stehli (1989) wrote that the single cemetery discovered there, Niedermerz (Dohrn-Ihmig 1983), cannot be considered representative (being "außerordentlich", 'extraordinary' in their words) of the Aldenhoven Plateau Bandkeramik: only 112 graves should stand for an estimated five to ten thousand people. The Aldenhovener Platte has entirely been removed by open pit mining of lignite, supervised archaeologically by a team led by Lüning. So it is virtually certain that only one Bandkeramik cemetery has been laid out on the plateau, catered for by perhaps ten or more hamlets. Hence it can be inferred that a large number of presumably fairly shallow graves must have fallen victim to agriculture between then and now, according to Lüning & Stehli (1989, 88).

The Elsloo cemetery (with 113 graves) is situated on the adjacent loess-plateau to the West of the Aldenhovener Platte. Presently, the Graetheide is densely inhabited, and although it has not been shovelled away, we may be pretty certain that a second Bandkeramik cemetery would not have escaped notice. But even if it had, then the fact remains that there are far too few graves in comparison with an original population of, say, 10,000 Bandkeramians (summed over 12 generations). Therefore Lüning & Stehli's remarks on representativity are also applicable to the Dutch data, although I have reservations about their approach.

Being in the order of 1% the paucity of graves in relation to the vast number of original inhabitants may seem fatal to any attempt at generalization, yet statistical theory says that a sample of 100 elements is generally sufficient to pronounce upon statistical issues (Hays 1973) – not the sampling level (the relative proportion of the population that is incorporated) is important but rather the absolute number of elements, the size of the statistical universe being of no consequence in this respect. There is only one condition, that the elements have been randomly selected in relation to the dimension under scrutiny. And here lies a problem, for I do not believe that the selection of the people to be buried in a Bandkeramik cemetery was random in any statistical sense. When sociological, ethnographical, or demographic research questions are to be answered from a graveyard, it should first be established that the relevant funerals have occurred randomly, as regards precisely these dimensions. And this is well-nigh impossible. On that score Lüning & Stehli are apparently right, after all.

But there is more to this problem, for it can be suggested that these cemeteries contain nearly complete populations instead. The Elsloo Graveyard, for instance, lies on a spur to the NW of a settlement (Elsloo) about 250 or 300 metres away; other Bandkeramik villages are all much farther away, truly 'behind' Elsloo. In the latter village between 8 and 11 houses have stood, with approximately 5 or 6 occupants each, together some 40 to 60 people. As the use life of the cemetery can be put at about three generations between 120 and 180 people have died in the village during this period – not many more than the 113 burials uncovered by Modderman. No proof can be presented, yet the fairly likely implication is that only the people from Elsloo have used the nearby cemetery. If so, the figure of the missing dead is quite low. Therefore, those that have been uncovered are not so much representative of a background population as of themselves only.

The Niedermerz situation is much more complex: the distance to the nearest settlement (Langweiler 8) is about 500 metres, and another two or three hamlets (rather single farmsteads; cf. Stehli 1989) are at 700 to 800 metres away (unlike the Elsloo situation) and many more are at greater distances. From this the archaeologists inferred that the cemetery might have served the whole Siedlungskammer or settled area, comprising some 5 to 10 hamlets, and counting cumulatively more than 1,000 people over the six generations during which the cemetery has been in use. Yet only 112 graves have been recovered; the other people should have ended up cremated in shallow grave pits - many times ploughed over since those days, so that no traces have been left. This view is expressed in the Niedermerz excavation report (Dohrn-Ihmig 1983), and repeated in the overview article by Lüning & Stehli (1989). However, even if they are right, then still there is statistical theory, but also the (psychologically important, statistically uninteresting) sampling rate has been raised from one hundred over ten thousand (1%) to 112 over 1,000 (11%). Conversely, if the situation were like that in Elsloo, then only Langweiler 8 should be taken into account with between 7 and 11 houses at any one moment. The cemetery was in use for 6 generations, so between 250 and 350 corpses<sup>6</sup> have had to be disposed of in that period, double or triple the number of excavated graves. In that case, Niedermerz is no more exceptional than Elsloo, and in both cases the inferences from the graveyards can be related to the nearby settlements without much ado.

Of course this matter cannot decisively be settled, neither in Niedermerz nor in Elsloo, and my model remains quite hypothetical; yet I think that the two arguments presented here (statistical theory, and archaeological specification) go a long way to diminish the weight of Lüning & Stehli's statements regarding non-representativity and the implied unreliability of the cemetery data. However, not all problems are solved: one might now inquire about the representativity of Elsloo Village for the entire Graetheide settlement area or of Langweiler 8 for the Aldenhovener Platte – those villages are precisely the largest settlements there, they have been inhabited longer than any of the other ones, they alone have a cemetery, etc. Therefore they certainly are not representative of the regional situation in general (for further discussion, see Van de Velde 1990).

# 4. On polymodal funerary rituals: something ado about nothing

When, for the sake of argument the previous propositions are provisionally accepted, there still is the problem of the missing dead from Elsloo and Langweiler 8. This absent community can be broken down in at least two components: (a) those from the earlier periods, approximately six to nine generations in the two areas; and (b) those departed in the other villages and hamlets while the cemeteries were in use, perhaps for three to four generations. A biased research record can be dismissed as cause, as discussed above.

Usually, the low figures are explained with the following argument: Since we do have a fair amount of cremations (e.g., at least 47 from Elsloo, 10 from Niedermerz), and as the ashes are generally in shallower pits than are the corpses (e.g., corpses on the average at 125cms, cremations at 55cms<sup>7</sup> at Elsloo), it is to be expected that most cremations have been lost before their archaeological resurrection. And the conclusion drawn is that apparently most Bandkeramians have been cremated and buried in the topsoil to be ploughed out later (e.g., Lüning/Stehli 1989, 88; Modderman 1970, 71; Neumann/Wiegand 1940).

As our current western mortuary practices are rather similar to those of the Bandkeramik at first sight (except for the gravegifts, of course; or the odd massacre: Wahl/König 1987; Windl 1996), the argument is readily accepted. In my opinion, though, it is seriously flawed, as several questions remain unanswered: (a) why do we have cremations from the Younger LBK period, and hardly any from the Older and Oldest periods (cf. Modderman 1970, 71-72)? Or (b), why do we have many more graveyards from the Younger LBK than from the Older/Oldest phases? And (c), restating a previous paragraph, why is the number of burials so diminutive with respect to the presumed population, even in the Younger LBK? Thus factored out, the argument is suggestive of an alternative conclusion: LBK societies generally (and originally exclusively) disposed of their dead in yet another, third way, which in the course of time came to be supplemented with cremation and corpse *burial*. That is, we should assume an additional ritual which leaves hardly any substantial traces in the archaeological record, apart from the well-known interment in graves.

From a general perspective it can be observed that alternative customs (including funerary rituals) have more to do with social aspirations and emulation than with ideology or religion (Metcalf/Huntington 1991, 17; Morris 1992, 46-47). For instance, the recent shift from inhumation to cremation in many western societies has no counterpart in a changing deology but rather goes with capitalism's uprooting of kin and neighbourhood relations. Also, it is ethnographically well attested that the ritual disposal of the dead is independent of the ideas about life and death among the mourners (e.g. Metcalf/Huntington 1991; Ucko 1969; Van Gennep 1909). So, in one single community the first corpse may be disposed off in a coffin burial, the second may end on a pyre with the ashes collected and buried, the third one may be shipped to the End of the World in an old canoe, all with similar ideas about Afterlife and/or Rebirth (e.g. Kinnes 1981). Causes for different treatment have to do with contingency as much as with custom: the availability of wood for a pyre, the agricultural season, the cause and kind of death, or the social position of the deceased (a.o. Binford 1972; Van Gennep 1909). Earlier burials serving as examples to provide a sense of continuity through ritual (Barrett 1994) and custom.

For the Bandkeramik I suggest that their original and always most frequent custom of disposal was exposure of the corpse to the birds and the other natural elements on a scaffold in the field outside the settlement<sup>8</sup>. This hypothesis is not (directly) testable in a Popperian way, but it is more specific as it explains the chronologically differentiated counts of Bandkeramik burials, while fewer pre-conditions are implied; consequently it is more attractive than the traditional post-depositional alternative. Possibly, the frequent Bandkeramik stray finds in the fields around the settlements might even be read as traces of this practice (J. Lüning, pers. comm. April 1994), but this phenomenon should still be systematically investigated, also from the viewpoint of the present hypothesis. The point is that such a practice would not be acceptable in our own culture: consequently we are not disposed to expect it among other groups, including the Bandkeramians. This certainly is a rather ethnocentric objection, and thus irrelevant (also refer to Morris 1987).

There are a few somewhat abstract developments of the present hypothesis: cremation and subsequent burial of the ashes, as well as inhumation in a formal cemetery can be described as literally *marked* funerals. In the Bandkeramik



the graveyards were apparently not used for other purposes since there are no other finds in these areas; also the graves remained visible for a long time as there are no cross-cutting pits. From our present point of view the hypothetical original ritual can be characterised as *un-marked* as no specific hallowed grounds seems associated with it – which does not speak out on the amount of ritual observances and behaviour that were ever associated with it. As such this traditional deposition of the dead provides the stage on which the rituals of cremation and corpse burial introduced in the Younger Bandkeramik period were set.

One could also relate to a structuralist argument here: burning and coffins as *cultural* treatments of the corpse may be seen opposed to the exposition of the body to a *natural* transform, providing a neatly closed, complete conceptual and classificatory scheme (fig. 2). The opposition of cultural (marked) disposition to nature (un-marked) can even be reconstructed as a funerary triangle: the natural transformation at the top, and the basis further differentiated in a fiery and an earthly transformation of the deceased, quite reminiscent of the culinary triangle (Lévi-Strauss 1968, 406).

# 5. Final remarks: there is something to do about nothing

Obviously most of my statements cannot be 'proven' directly against archaeological data. However, speculation has its place in science, too (Popper 1972). I summarise my main points and add some more arguments.

Firstly, regarding gender – as emphatically different from biological sex – it can be observed that in the Elsloo cemetery the burials are quite often found in pairs, and that these pairs are always constituted by burials of opposite gender. The distances within these pairs are on the average slightly more than two metres, and between graves of equal gender almost six metres; in my view this pairing is suggestive of marital couples. In the Niedermerz cemetery the women cannot positively be identified, I fear that the relevant gifts have dissolved in the soil. Still, from a distance analysis at least 27 pairs of graves can be singled out, within each of them one interment which may tentatively be identified as male (Van de Velde 1996). In line with anthropological understandings I consider gender categories relevant for and pertaining to fully initiated (adult) people only, with children and old people beyond (re)productive age separate categories. The three kits of gifts with which the deceased were indexed in Elsloo, can be considered representative of three major social fields: the ritual or ceremonial (for the females), field labour (for the males), and the house (a general set, also occurring in non-gendered graves); constituting a thumb nail picture of Bandkeramik social life.

Secondly regarding matrilinearity the argument is already one removed from the directly observable, the inference being dependent upon the gender classes. Possibly, the dissimilarity of the distributions of the defining characteristics (recti- and curvilinearity of pot decoration) over the gender classes might be accidental. However, to bring about such an accident something very strange must have happened either in the past or in my analysis: the probability of such a distribution being accidental is 6 in 1,000 for Elsloo, whereas for Niedermerz the chances are 2,5%. Counter examples have not been found in the data, and there are no misfits. Given that matrilineal customs have consequences throughout society, they are articulated and thus reproduced in many social fields. The implication is that these customs are fairly resistant to change over time. Therefore, since Graetheide and Aldenhovener Platte Bandkeramik probably evolved from a common ancestral society, similar kinship customs are to be expected, as indeed demonstrated by the two cemeteries<sup>9</sup>. The coherence of the argument plus its several empirical corollaries may be taken to back up the inference of the gender specific grave gifts.

Thirdly, in Bandkeramik studies the inference of another, distinct funerary ritual next to cremation and inhumation is new. I wondered why the large majority of their graves should have been eradicated by the plough – given that the few burials and cremations we do possess have been quite well preserved. The known cemeteries are associated with large and long-lasting settlements (perhaps the largest and the longest inhabited in each settlement area), and burials from the smaller hamlets and from the older phases are missing altogether. As an explanation, a funerary ritual which was general in the older phases is proposed which was partially replaced in the younger phases by inhumation or cremation. This earlier, alternative ritual may have been officiated around the corpse laid on a scaffold or a tree - which does not imply the absence of *rites de passage*, as from the known burials these rites have not been (directly) ascertained either. In addition, it can even be proposed that the stray finds of Bandkeramik tools and sherds outside the

settlements should be read as remnants of these otherwise untraceable rituals, which suggests a future line of research.

Fourthly, a third ritual occurred to me when thinking about the representativity of the Elsloo cemetery, where apparently only a minute part of the original population has been buried. A closer look reveals that perhaps the inhabitants of one nearby and contemporary settlement must have been deposited there and not the complete population of a region. A similar proposition can be formulated for Niedermerz/Langweiler 8. If so, these cemeteries do not consist of small samples from the background populations, but rather represent specific villages in their entirety; the problem of representativity is transferred then to the relations between these cemetery/settlement couples and the remainder of the Bandkeramik hamlets on their respective plateaux (Van de Velde 1990).

Fifthly and finally, I inferred an equal footing of males and females at Elsloo from the quantitative and qualitative distributions of grave gifts over gender. However, when in Niedermerz female markers have disappeared, so male (or female) appurtenances may have vanished from the former cemetery, too. In that case an hierarchical opposition should be considered with one element general or all-embracing, and the other specific and topmost (Allen 1985). Thus, from the Niedermerz data the latter element may have been male gender and the general one female - in fact a possible implication of Dohrn-Ihmig's interpretation of that graveyard. While there is certainly no a priori reason to prefer the egalitarian opposition over the hierarchical ordering of gender, an argument against this model is that there are at least 11 unmarked 'male' graves at Niedermerz, and 13 at Elsloo, squarely at odds with the proposed male speciality and superiority. Therefore the former should be retained.

### notes

1 I am pleased to acknowledge discussions on the present subject with Marjorie de Grooth, Alexander Häusler and Jens Lüning; also my text has much benefited from comments by Ineke Abbink and Diederik Meijer.

2 There are considerable problems with physical determination; see Shennan 1975, Wahl 1981/1984, or Welinder 1989.

3 Cf. David Clarke's notion of 'polythetic set' (Clarke 1968, 37). From it, the generally low correlations among gift categories in Bandkeramik graveyards can be understood.

4 In the excavation report Dohrn-Ihmig also presents a determination of gender/sex (she is not explicit on this topic) of the burials at Niedermerz. For various reasons I disagree with several of them chiefly, because the wealthier graves are all considered males *because of* their wealth, but also because gift categories are lumped

in her analysis (a fuller discussion is to be found in Van de Velde 1996). In three cases my gender determination is not in accordance with the anthropometric analysis.

5 This is not to say that they do leave their homestead in all cases; the changeover may also be signified by the adoption of the name of their new partner, as in western societies. An eventual change of address is tied to the rules of locality: patrilocal arrangements oblige the bride to move over to her husband, matrilocal rules have the male shift hearth. The rules governing locality need not be identical to the incest/exogamy custom. Moreover, not everybody will reproduce previous custom, but generally will try to get the best of the situation as she may seem fit – one can speak of tendencies only. Hence, in a matrilineal society actual marriages will be found arranged more frequently according to a matrilineal pattern than following any other rule; but diverging instances will always be present.

6 In private communication by people of the Aldenhovener Platte Project the use life is estimated at probably four generations, instead of six; especially the synchronisation of the earlier graves is contested as they have been dated by shards in the pit *fillings* instead of through gravegifts. If the four generation figure is accepted, then considerably less deceased are to be accounted for: 175-230 people, at the most twice the number of occupants in the cemetery.

7 Corresponding figures for Niedermerz are 95 cms and 55 cms respectively, all corrected for erosion and alluviation (Dohrn-Ihmig 1983, 48-50; Modderman 1970, 4). Depth differences are not significant, though, as the variances are large.

8 In a personal communication, Dr A. Häusler suggested anthropophagy as an alternative. According to him, there is abundant evidence for cannibalistic practices among the Bandkeramians. In my reading of the ethnographic literature, anthropophagic practices are most often associated with the corpses of people from *other* communities, exogamously, and not with regularly deceased members of the own group. Even in the most belligerent societies, in the large majority of cases death is incurred by natural causes, not by slaughter.

9 The settlement data appear to corroborate the present inference: a patrilocal and matrilineal structure of kin relations fits best to the observed distribution of pottery decoration in the village of Elsloo (Van de Velde 1979).

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### Social and economic interpretations of the chert procurement strategies of the Bandkeramik settlement at Hienheim, Bavaria

### 1. Introduction

This paper will discuss problems of social organization during a period when permanent settlement and subsistence farming had become part of the traditional way of life, and supralocal communication networks had already been well-established.<sup>1</sup>

The research reported here started with a study of the chert assemblages at the Neolithic settlement site of Hienheimam-Weinberg (Ldkr. Kelheim, Niederbayern). This site was excavated between 1965 and 1974 by the Institute of Prehistory, University of Leiden (The Netherlands). It lies on the left bank of the river Danube in a rather isolated loess-covered region. The main settlement started in the Early Neolithic at 6200 BP (or 5150 cal. BC<sup>2</sup>) and ended c. 700 BP (or 4600 cal. BC) in the Middle Neolithic (Modderman 1977, 1986; Van de Velde 1979). In the earlier settlement phases Linearbandkeramik (LBK) pottery was in use. Later on we find decorated pottery belonging to the Stich-Strich-Komplex (Van de Velde 1979), also known as the Oberlauterbach Gruppe (Bayerlein 1985) or the 'Middle Neolithic of Southeastern Bavaria' (Nadler/Zeeb et al. 1994). This post-Linearbandkeramik group - to be named Middle Neolithic (MN) in this article - is to a large extend contemporary with the Großgartach-, Stichbandkeramik-, and Lengyel-horizon, and may also overlap with the earlier stages of the Rössen Culture. The Hienheim excavation also yielded traces of inhabitation by the Late Neolithic Münchshöfener, Altheim and Cham groups (Modderman 1977, 1986), dating to c. 4600-3800 cal. BC, c. 3800-3300 cal BC, and c. 3300-2600 cal. BC respectively (Matuschik 1992; Tillmann 1993). In terms of house plans, settlement structure, pottery decoration and stone tools there are only differences of degree between Linearbandkeramik and Middle Neolithic (Van de Velde 1979; Modderman 1986; De Grooth 1994c).

### 2. Chert resources

The subsoil of the area around Hienheim consists mainly of Jurassic Chalk deposits, which contain many varieties of chert (fig. 1). The cherts occur in nodular and in tabular form. Within the site territory of Hienheim, (*i.e.*, the area exploited on a daily basis, Bakels 1978) no outcrops of chert

Table 1.	Hienheim:	shift in rav	v material	use	through	time
(after De	Grooth 19	94c).				

	Nodules	Tablets Baiersdorf	Tablets Arnhofen	
LBK				
early	81.2	8.2	10.6	100.0%
late	67.2	16.5	16.3	100.0%
Transition	34.3	40.4	25.4	100.1%
MN				
early	9.4	86.4	10.2	100.0%
late	13.2	62.0	24.8	100.0%

are known. In its home range (the area with a radius of six hours' walking distance, exploited extensively together with other groups, Bakels 1978), however, different kinds of highquality cherts can be found. At Schwabstetten, 7.5 km to the west of Hienheim, the eluvial clays contain grey nodular cherts (Bakels 1978). This same type of chert was also available at many other localities in the region. Eleven kilometers to the north, i.e. north of the river Altmühl, lies the area of Baiersdorf, where brown to greyish brown tabular chert was exploited (Binsteiner 1989). Finally, 9 km to the west, on the other bank of the river Danube, the outcrops at Arnhofen supplied a very fine-grained, banded grey tabular chert.

All three types of chert were used continuously by the inhabitants of Neolithic Hienheim. The initial preference for nodular chert changed gradually, and in the Middle Neolithic tabular chert was used almost exclusively (tab. 1). The main technological advantages of tabular chert are twofold: cores need little preparation and it is easy to produce standardized naturally backed blades. Although the two outcrops of tabular chert are situated at almost equal distances from the site, over 60% of the excavated waste material belongs to the Baiersdorf variety.

A preliminary analysis of a sample of 138 tabular cores from 12 well-dated MN refuse pits showed little difference in the way both types of tablets were worked (tab. 2).



Figure 1. Early and Middle-Neolithic settlements and important chert extraction sites in the Kelheim region (after Bakels 1978; Bakels/Modderman 1986; Bayerlein 1986; Engelhardt 1990). 1: loess; 2: Jurassic chalks; 3: Hienheim; 4: other – mainly Middle-Neolithic – settlements; 5: extraction points, A=Arnhofen, B=Baiersdorf, L=Lengfeld (from De Grooth 1994c).

Unworked pre-cores occur in exactly the same percentage (5.3%) in both types. There are no significant differences in the average number of negatives (larger than 20 mm) on the core faces, or in the number of planes used as striking platforms and/or core faces. On Arnhofen cores, however, the direction of reduction was changed more frequently: they show a higher percentage of planes serving both as core face and as striking platform. This difference indicates that Arnhofen tablets were worked slightly more intensively, but further analysis is needed to decide whether this raw material

allowed for higher technological efficiency or whether it was specially valued in terms of symbolic connotations and/or high costs of acquisition.

### 3. **Procurement strategies**

For a better understanding of the chert procurement strategies practiced, the assemblages of settlements should be studied in an integrated approach, together with those of both extraction and workshop sites (Ericson 1984; De Grooth 1991, 1994b; Torrence 1986).

	Tablets Baiersdorf	Tablets Arnhofen
Average number of negatives (larger than 20 mm)/tablet	x = 3.2 $\sigma = 2.6$ range 0-20	x = 3.4 $\sigma = 2.4$ range 0-10
Average number of planes used as striking platforms and/or as core faces	x = 2.9 $\sigma = 1.0$ range 2-8	x = 2.8 $\sigma = 0.8$ range 2-5
Percentage of cores with planes used both as striking platform and as core face	28%	34%
Average number of bi-functional planes (when present)	x = 1.8 $\sigma = 0.7$ range 1-4	x = 1.9 $\sigma = 0.6$ range 1-3

Table 2. Hienheim: comparison of technological data for Arnhofen and Baiersdorf tabular cores from 12 Middle-Neolithic refuse pits (NB the typical 'block-like' tablet has six potentially reducible planes).

For the LBK period some six settlements are known in the Hienheim region (Bakels 1978; Bakels/Modderman 1986; Binsteiner/Pleyer 1987). The inhabitants of Hienheim exploited a number of different resources, seemingly in a rather haphazard way. Access to all regional resources was apparently unrestricted (De Grooth 1994c).

All chert was brought into the settlement in an early stage of the reduction sequence, as precores or as initially prepared cores. In other words, at the various extraction sites the raw material was only tested for suitability. The production of blanks and tools and the use thereof took place in the settlement. In socio-economic terms, this procurement strategy corresponds to a *domestic mode of production*, in which the family, living in a single household, is the main unit of production and consumption (De Grooth 1987; Van de Velde 1979).

The only artifacts arriving from the 'outside world' were adzes made of amphibolite, a raw material stemming from - as yet unidentified - outcrops located at least 100 km to the north of Hienheim (Bakels 1986). If chert circulated at all, this occurred over relatively short distances not exceeding c. 80-100 km (De Grooth 1994a). In this respect Niederbayern seemingly had a somewhat isolated position within the Linearbandkeramik world: elsewhere extensive networks are documented, through which flint and chert were systematically distributed over very long distances. Rijckholt-type flint from Limburg (in the southern part of the Netherlands) was transported as far as Hesse and Baden-Württemberg (Zimmermann 1995), whilst in eastern Central Europe different Polish chert types, as well as obsidian, circulated over distances of more than 1000 km (Lech 1987).



Figure 2. Hienheim, blade core of Baiersdorf chert with refitted borer discarded together in a Middle-Neolithic refuse pit.

Whilst the basic spatial organization of chert production at Hienheim remained the same during the Middle Neolithic (fig. 2), important changes occurred as regards both the acquisition of raw material and the regional distribution mechanism. An increase in the number of settlements in the Kelheim region was combined with a decrease in the number of worked extraction sites. At Arnhofen, a large mining complex with shafts up to 8 m deep, investigated by Engelhardt and Binsteiner, dates from this period (Engelhardt/Binsteiner 1988; Moser 1978). The tabular cherts at Baiersdorf were probably already exploited by open cast mining at this time (De Grooth 1994c).

The regional distribution mechanism changed as well, at least for Arnhofen tabular chert: cores and substantial amounts of debitage are present only in settlements located at a distance of less than 20 km from the mines. Outside this area, Arnhofen striped tabular chert occurs almost exclusively as blades and finished tools. It was transported as far as Eastern Bohemia and Lower Silesia to the north-east (250-350 km, Lech 1987), Thuringia to the north (c. 200 km), and Hesse and Westphalia to the northwest (over 300 km, Binsteiner 1990; Zimmermann 1995).

The estimates on the overall duration of deep shaft exploitation at Arnhofen vary between 700 years (from c. 5000 cal BC to 4300 cal BC) and 250 years. In the former case, this type of intensive extraction was practiced during the younger LBK and the whole Middle Neolithic period (Engelhardt 1990); in the latter case it was limited to the period of the raw material's main use at Hienheim (De Grooth 1994c), during which its long-distance distribution also was at its peak (Zimmermann 1995). The excavation report on the Arnhofen mines allows one to make estimates on both the yearly output of raw material – min. 32, max. 197 kg of tablets, from 12-76 shafts – and on the workforce required for its extraction – a two-person team working for 160 hours per shaft (Binsteiner 1990; Engelhardt 1990). On the other hand, the evidence from Hienheim and other sites in the Kelheim region may be used for estimates on the available workforce and the rates of chert consumption. The average Middle Neolithic settlement may have consisted of *c*. five contemporary houses, with 20 adults and 30 children (Bakels 1978). Most chert recovered in LBK and Middle Neolithic settlements must be regarded as secondary rubbish (Schiffer 1976), and ideas on its yearly consumption depend mainly on estimates of the amount of material lost because of both depositional practices and post-depositional processes (among which excavation methods, notably the mechanical removal of topsoil, figure prominently). Attempts to refit Middle Neolithic assemblages at Hienheim, showed the loss to have been considerable -at least 75% (De Grooth 1994c).

Combination of these different types of estimates leads to an interpretation in which extraction at Arnhofen was a short-term, seasonal activity, performed jointly by – male – inhabitants of the c. 30 known coeval settlements located within a 20-km-radius around the mine (fig. 1; fig. 3). The distribution outside this 'production area' was partly directed at immediate neighbors, i.e. at immediate kin. A structural long-distance circulation, however, was clearly present as well (De Grooth 1994c). This type of exploitation can be practiced under a *lineage mode of production*, where the unit of production and consumption is formed by a group of related families, belonging to the same lineage or 'clan' (De Grooth 1987; Van de Velde 1979) and temporarily aggregated into a larger workforce.

This interpretation differs markedly from the views on the organization of extraction at the Arnhofen mining complex as presented by its excavators (Binsteiner 1990; Engelhardt/Binsteiner 1988). In accordance with most of the existing accounts of Neolithic deep-shaft mining (De Grooth 1991, forthcoming), they depict it as a strongly organized enterprise, run by the inhabitants of just a few privileged settlements close to the mines, who worked them for commercial purposes, and traded the output 'ex works' to eager customers. The alternative interpretation offered here is, however, compatible with the few ethnographic accounts of deep-shaft mining and stone tool production in societies with a 'Neolithic' level of technology and socio-economic integration (De Grooth 1994c; McBryde 1986; Torrence 1986). In the small sample of New Guinean and Australian Stone Age societies, mining and quarrying were never continuous activities, performed by professionals. The ownership of resources was extremely varied. But even where outcrops were recognized as the property of a special group, outsiders could generally acquire permission to use them, for example by the establishment of an alliance relationship of some sort (Dalton 1981). These examples also show that the mere presence of deep shaft-and-gallery mines per se is not "a sufficient criterium from which to infer the

existence of a complex economic or socio-political organization" (Torrence 1986): simple tribal communities are well capable of performing time-consuming and laborintensive tasks, requiring a considerable level of technical skill, under informal 'ad hoc' (low level) leadership (e.g. Burton 1987; Gould 1978; Jones/ White 1981; McBryde/Harrison 1981).

# 4. Interpreting chert mining in the Kelheim region

If one tries to understand the Middle Neolithic deep-shaft mining at Arnhofen in purely economic terms, a rather confusing picture emerges. The acquisition of striped tabular chert was extremely time- and labor consuming – an estimated 160 person-hours were needed for the extraction of 2.7 kg of high-quality tablets. Large amounts of nodular cherts encountered during its extraction were discarded 'out of hand', regardless of their quality (Binsteiner 1990). Moreover, at Baiersdorf an alternative raw material was both known – at least to Hienheim's inhabitants – and available in ample quantities – as witnessed by the fact that exploitation here reached its peak only during the Late and Final Neolithic (Binsteiner 1989; De Grooth 1995).

An attempt will therefore be made in the following to interpret the Middle Neolithic shift in extraction and distribution mechanisms for Arnhofen tablets in terms of social reproduction and ideology rather than in terms of purely economic behavior. To achieve this one must place deep-shaft mining and the creation of long-distance distribution networks in a broader context, combining them with other characteristics of the societies involved. These are: first, the marked increase of Middle Neolithic settlement sites compared with the number of LBK sites in the whole of Southeastern Bavaria.

Secondly, at about the same time all over Southeastern Bavaria and in the adjacent regions, Middle Neolithic groups created a whole series of impressive enclosures (Petrasch 1990). In several cases they are situated at regular intervals, and they seem to have served as a focus point for groups of small settlements in the area. No normal habitation took place in them, nor are the other utilitarian functions recently suggested for them very plausible: e.g. defensive structures, cattle-kraal, central places controlling neighboring lithic resources and the redistribution of commodities. As their construction as well as their regular renewal necessitated the combined efforts of several settlements, they may be seen as examples of episodic, institutionalized, and in this case clearly ritually inspired collective efforts of normally segregated groups.

Thirdly, the originally very uniform Linearbandkeramik pot decorations, which probably served as social and cultural markers (Van de Velde 1979, 1993) had diversified into



Figure 3. The region around Hienheim showing important settlements, chert extraction sites, and other chert and stone sources (from De Grooth 1994c).

completely separate, idiosyncratic regional traditions. In this case the archaeological distinction of different 'groups' and 'cultures' may well correspond to past expressions of group identity.

As stated above the striped tabular Arnhofen chert has no intrinsic technical qualities, so there does not seem to be any compelling technological reason for its extremely laborious extraction. It is, however, highly characteristic and attractive: once seen, never forgotten. As such it may have served as a means to express the extractors' group identity in their increasingly important communications with the outside world. On the other hand, internally, its controlled extraction would offer a means of maintaining communication, and of regulating social relations between kin groups which had to reconcile the need to uphold a settled way of life in distinct, isolated territories with the need to maintain shared unrestricted rights of access to localized resources, while at the same time strengthening traditional kinship ties. Thus, enclosures, systematic mining, and structured long-distance exchange may all be regarded as efforts to re-define and re-emphasize group identity both internally and externally after a period of rapid change and upheaval visible in large parts of the Bandkeramik world.

Although exploitation at the Arnhofen mines is mainly connected with the Middle Neolithic, the long-distance circulation of chert artifacts manufactured in the Kelheim region continued during the Late Neolithic Altheim and Cham periods. Extraction was concentrated at Baiersdorf and Lengfeld (Binsteiner 1989; Rind 1992). The debris recovered at these extraction sites documents two major changes in

technological behavior. Firstly, the tablets were no longer turned into blade cores, but shaped into bifacially worked core implements, such as sickles and knives or daggers. Secondly, both preforms and finished artifacts were made at the mines. I do not think, however, that this change in technological behavior must be regarded as evidence for a change in social organization: in terms of expenditure of raw material, these bifacial tools are no improvement on the Middle-Neolithic blades. Their Cutting Edge/Mass ratio (Torrence 1986) is much lower, as only a single implement can be made from each tablet and the risk of failure during manufacturing is high. Technological advantages may have consisted of an increase in length of the actual cutting edge on single artifacts and a possibly higher potential for the resharpening of these cutting edges by consumers. Making them at the mining sites, then, may have been an efficient strategy to minimize manufacturing risks (Torrence 1989). The domestic tools meanwhile were still made out of flakes, and in regions close to the resources the raw material for these seems to have been brought into the settlements in the traditional way, as nodules or initially prepared cores (Driehaus 1960).

The main reason for this technological change again may have been of a social rather than of a functional nature. The evidence from settlement sites shows that these bifacial tabular artifacts formed only a minor part of the chert assemblage. They circulated, however, over long distances in the same way as did the blades and tools of striped Arnhofen chert, traveling as far as Westphalia and Lesser Saxony, for example (Blank 1994; Werben/Wulf 1992). Thus the bifacial sickles and knives could have functioned as special-purpose tools, forming the reaction of a region lacking in large chert nodules to a pan-European trend in which polished axes and knives or daggers made on long regular blades functioned as prestige objects in long-distance exchange networks (De Grooth forthcoming).

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### notes

1 Throughout this paper the term Neolithic (i.e. Early and Middle Neolithic) is used strictly in a chronological sense, without any preconceived economic or ideological connotations. 2 All calibrations were performed by the Seattle/Groningen Method, using *Cal 15* (J. van der Plicht, Centre for Isotope Research, University of Groningen).

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### Taskscape, technology and tradition

### 1. Introduction

Few would deny that the Mesolithic/Neolithic transition in Britain has been difficult to capture. Despite a long established status as a watershed in prehistory, one of the few things upon which most agree is that there remains no firm consensus regarding its' character and significance. Most would also probably agree that this situation is as much a product of conceptual problems as it is of difficulties with material evidence. Beyond a relative lack of secure radiocarbon dates and apparent lacunae in our data, argument and confusion still surround questions of definition, scale and procedure.

To some extent at least, this situation has persisted because of academic divisions of labour. For the most part, the two periods have been studied within different traditions of enquiry, and this has created rigid boundaries. Criticising this state of affairs over a decade ago, Richard Bradley talked of a discipline which saw Neolithic communities engaging in social relationships while their Mesolithic forbears bonded with hazelnuts (Bradley 1984). And in much the same way, Julian Thomas argued that our understanding was constrained by the opposition of two models of humanity - one predicated on the importance of ecological relations, the other on concepts of social reproduction (Thomas 1988). Further problems have arisen because our definitions of the two periods have been far from constant. Some accounts have used the terms to talk of definitive traits such as hunting and gathering, pottery production or farming, that are independent of time and space. Others use them to denote phases in a specific historical process, and it is not uncommon for people to shift back and forth between the two. Originally labels attached (at different times) to stages in general evolutionary schemes, the terms came to denote cultural phenomena marked by distinctive repertoires of artefacts. Many of these repertoires had continental parallels and this laid the foundation for models of colonisation and migration across the channel. Talk of cultures, in its turn, gave way to discussions of economic change and social evolution, either as an inevitable - if sometimes protracted tendency, or as the outcome of material contradictions and conflicts of interest between communities (Bender 1978: Pluciennik in press; Zvelebil in press). More recently still, attention has turned to the idea that the transition was

something that happened in the minds of people rather than in the ploughsoil per se. Concepts of a unitary economic 'package' have been pulled back in favour of a view of the Neolithic as a pool of ideas and resources, drawn upon in varied ways by largely indigenous communities (Bradley 1993; Hodder 1990; Thomas 1996).

These recent studies have done much to question some of the familiar landmarks of thought on the transition. Yet it remains to be seen whether we have moved very far beyond the idea that it was a specific juncture at which one rigid archetype gave way to another. Over the course of this paper, I want to suggest that our difficulties in coming to terms with social reproduction in the fifth and fourth millennia stem from a variety of sources. We still tend to treat the break between the two periods as a substantive and unitary entity, rather than as an artefact of research. We have reified what should at best be regarded as a heuristic device. At the same time, we have often paid no more than lip service to the complexity of material traditions across the later fifth and early fourth millennia BC (see Kinnes 1988 for similar criticisms). In both Mesolithic and Neolithic research, we rarely talk in detail about the structure of the 'taskscapes' that people inhabited (Ingold 1993). This has meant that detailed and imaginative studies of sites such as shell middens, stone sources, tombs or enclosures can seem abstracted from their broader material context. It can be difficult to trace the paths of people once they stray beyond these particular times and places and this limits our understanding of the significance that they held. It has also meant that we often say little about the ways in which the character and rhythm of different routine practices may themselves have been keyed into social life and social change. One way of addressing this problem would be to explore the specific genealogies of these more basic material traditions, emphasising both continuity and change in patterns of routine activity across the landscape. In what follows, I want to try to take this path by tracing the outlines of traditions of settlement practice and stoneworking in Southern Britain.

### 2. Taskscapes in transition

In a recent study of tombs in the Black Mountains of Wales, Chris Tilley argued that our treatment of the transition as a rigid divide went against the grain of at least some of our data (Tilley 1994). Using the evidence of Mesolithic and Neolithic surface scatters, he suggested that the first tombs in the area were not inscribed on a blank canvas. Rather, their foundation involved a reworking of the histories and values that certain places had accrued over many generations. Echoing observations made elsewhere, Tilley argued that early tombs were sometimes orientated towards prominent landscape features and/or Mesolithic scatters. On occasion, they even sealed traces of earlier activity: Mesolithic flintwork and subsurface features; Neolithic settlement; grassland, or earth that had been broken during hand cultivation (Barrett 1988; Edmonds 1995). Crucial to Tilley's argument was the idea that it was difficult to follow the biographies of certain places across the transition, so long as it marked a meeting point between two opposed archetypes. For him, the evidence suggested both continuity and change in the topography of the cultural landscape.

Although the conditions which gave rise to the foundation of tombs are not explored in full, Tilley's stimulating study nonetheless highlights a fundamental problem. For the most part, settlement and subsistence models for the two periods have remained archetypal; dealt with separately and conceived at large, abstracted scales. On the one hand, we find 'groups' of seasonally mobile gatherers and hunters who moved from coast to inland or from lowland to upland in step with rhythms of resource availability. Other imperatives for movement are seldom discussed, and more often than not, the constitution of these groups is held as a constant at all places and times. Only in the case of so-called 'special purpose' or 'task specific' camps do we allow for a different roll call (Darvill 1987). On the other hand, we often find a view of the Neolithic as the point in time at which it becomes possible to identify ourselves; to trace in the evidence the signature of attitudes that seem timeless and familiar. Despite arguments to the contrary (Bradley 1993; Thomas 1990), it is still a commonplace to see the onset of the Neolithic portrayed as a time when people became sedentary, switching their allegiance from hunting and gathering to farming. Settling down is often emphasised, as is the role of food production, and the period marks the point in time where reconstructions evoke a familiar impression of 'community' and fixed settlement, cornfield and mixed agriculture. Beyond discussions of labour involved in monument construction (Renfrew 1973), the pattern, tempo and roll-call of routine experience often remains underexplored (Holgate 1988).

Neither of these portraits is entirely wrong. But in both cases, what often seems lost in our translations is a sense of past landscapes as inhabited times and places. We play down the variability of our patterns and say little about the ways in which people moved and acted or 'thought through' the landscapes that they occupied. In the Later Mesolithic, for example, our evidence suggests a varied landscape inhabited by communities bearing many of the characteristics of Brian Hayden's 'accumulators' (Hayden 1989). Details are difficult to establish, but these were people whose lives were probably structured by concepts of close kinship and perhaps clan membership. Many 'horizontal' distinctions would have also been recognised - concepts of age and gender, and perhaps ties of affiliation that cross-cut the boundaries defined by kinship and descent. While they may have lacked the forms of institutionalised hierarchy emphasised in many social evolutionary models, these social formations would have been far from undifferentiated. Despite ideologies of sharing that often emphasise a sense of commonality amongst gatherers and hunters, complex social distinctions may nonetheless exist. Concern with the definition of kin and non-kin and with lines of descent; of women and men; of the elders and their subordinates, and of tenure and personal renown: these are common themes that animate social life and it is around these themes that tensions often arise. Rooted in myth and origin stories, and inculcated in various forms of formal ritual, these themes may also be woven into the fabric of routine experience.

It is with these ideas in mind that we can consider some of the characteristics of later Mesolithic taskscapes. Environmental data from a number of areas suggest that people were exploiting a wide variety of resources and modifying the land through limited woodland clearance during the fifth millennium, much as they had done for generations. The period also saw a significant emphasis upon routine, perhaps seasonal, movement, by some, if not by all. Moving between coasts, river valleys, fens and varied uplands, the annual round carried people along well-worn paths that linked one place and one season to another. Distinctions between 'balanced' and 'unbalanced' assemblages also point to variations in the scale, duration and character of the activities conducted at these different times and places (Myers 1989). Some scatters or excavated assemblages comprise no more than a handful of microliths and/or a few blades or cores. Others are rather more substantial, containing the debris associated with a wide range and large volume of stoneworking tasks. Palimpsests or large concentrations of tools and waste suggest that some of these places may have been returned to over many generations (a.o. Tilley 1994). Variations in the character and distribution of microliths may also reflect the emergence of a measure of regionality in the Later Mesolithic. For example, contrasts can be drawn between areas such as the Weald, East Anglia, the Pennines, the Midlands and the South West, each defined in terms of an emphasis upon particular microlith forms (Jacobi 1976; 1979). Whether these regional traditions were recognized as such remains open to question.

But their existence does suggest a recurrent relationship between generations of particular communities and broad areas. Equally deep-rooted links between people and landscape may also account for patterns in areas such as the North Yorkshire Moors, where lithic scatters in adjacent zones appear to reflect the consistent use of different raw materials.

Under these broad conditions, people may have thought about the landscape and themselves in ways rather different to those we take for granted today. To begin with, relatively mobile communities often tend to think in terms of the tenure that they have over particular places and pathways, rather than ownership of discrete and demarcated territories (Casimir 1992; Ingold 1982; 1986). Social boundaries within and beyond extensive kinship systems are often recognised, just as certain resources can be thought of as the effective preserve of clans or sub-clans. At times they may be actively contested. But there is often a flexibility in connections between people and place that is manifest across the seasonal round and at the timescale of generations. Traditional patterns of movement and activity involve a continual, often cyclical, process of renewing and reworking those connections. At the same time, taskscape traditions are often bound up in the reproduction of more specific discourses. Cut through with myth and with stories of the ancestral past, familiar places and pathways can have varied biographical associations with kin and non-kin, with women and men and with adults and children (Gell 1985; Morphy 1995; Tacon 1991). Particular resources or prominent landmarks can be accorded a totemic significance, and it is not uncommon for people to draw metaphors and mnemonics from features and rhythms of the natural world. Forests may hold the eyes of the dead and the configuration of the taskscape may be explained by reference to the acts of earlier generations or ancestral forces (Basso 1984). These understandings do not, and could not, persist as rigid and abstracted codes. Like the biographies of people, they are carried forward via oral tradition and through a practical, often bodily, engagment with the world and with others.

How were these and other themes woven into the taskscapes of the Later Mesolithic? Variability in the scale, composition and location of many surface scatters suggests not just a diversity of camps and tasks, but also a flexibility in the roll call of certain places and times. Communities divided and combined at different times of the year, and there would have been junctures at which members of more than one broad kin group came into routine contact with each other. Connections between people and place were also reworked across generations. Some settlements or camps were returned to again and again, persisting as dominant locales in much the same way as the coastal shell middens that survive further to the north. In a varied, but often heavily wooded landscape, other places were set apart, seeing only sporadic use by relatively small numbers of people. Stretched across time as much as space, these patterns of routine activity provided frames across which various themes and values could be mapped. For example, routine separation from the community may have been keyed into concepts of rites of passage, and into the negotiation of the thresholds that separated the young from the old. At other times, a particular task or resource brought people together in larger and more varied combinations. Anticipated as part of an annual cycle, these events created potentials for the realisation of social relations that stretched beyond the boundaries of immediate or close kinship.

Traditional cycles of activity also brought people into routine contact with evidence for the past that lay behind their actions and, at times, for the presence of others. For example, browsing conditions created by firing would have left a tangible trace to be seen by others. Here was a place that had been shaped by others. Who were they? What had they done? How long had they stayed? Such conditions also needed to be maintained. Cleared land can regenerate in a handful of years and even an annual round would bring changes in the physical appearance of a particular place. Like other forms of woodland management, the routine, cyclical process of 'tending to land' would have reiterated the ties that bound people and place (Cronon 1983; Head 1994). The return to a camp of the previous year involved the clearance of low cover and an acquaintance with the traces of past activity. Even long vacated clearings would have been recognisable as places with a history, even if that history had become blurred and suffused with myth. Often rooted in oral tradition, the significance that people attached to particular areas would have been shaped by their encounter with these traces. This 'archaeological' evidence provided cues for narratives that linked past to present and people to each other.

We can follow these ideas in the evidence of stone tool assemblages and can begin with the stone itself. In raw material terms, Later Mesolithic assemblages often reflect the consistent selection of good quality stone. This is particularly evident in areas such as the Peak District, where a range of materials were available. Here, good quality flint and fine grained dark cherts dominate assemblages to the virtual exclusion of poorer stone. We often explain this tendency by suggesting that mobile groups need good stone because movement involves a stress on time and resources (Torrence 1989). On occasion, we also use raw material characterisation to talk in terms of the scale and direction of mobility in different areas. What can also be said is that these patterns of procurement reflect a consistent use of particular sources or source areas over generations. In the course of their lives, people built up knowledge of where the good stone lay, and

of how to read a river bank, cliff or tree-throw in the search for more material. At the same time, they learnt of the ancestral past that lay behind particular sources, and of the conventions that determined who could visit and work and who could not. And in this way they also learnt about themselves, and about their place in world. The use of a familiar source renewed the genealogical and mythic connections that bound people to particular parts of the landscape and to their kin. Here was a place that had always been there, shaped, perhaps, by ancestors. Generations before had come to this place, and the marks of their presence were all around - old hearths, scatters of stone and regenerated trees. As much a part of nature as a product of history, these sources endured. On occasion, seasonal visits to sources, and the hearing of stories, might have been undertaken only when a person had reached a certain age. It is also likely that some source areas – pockets of clay-with-flints or fine grained chert outcrops - were visited by both kin and relative strangers. Under these circumstances, the negotiation of access and other, more chance, encounters created a medium through which relations between communities were renewed and reworked over time.

It may have been under conditions such as these that the distinctive chert of the Isle of Portland was carried into Central and Western England (Bradley 1984; Darvill 1987). Visits to these long known outcrops may have been signal events where many met, and where the broader outlines of the social landscape were brought into sharper relief. However, the archaeological distribution of this material may also reflect the passage of stone between people. Just as many tranchet axes were distributed away from the chalk where they were made, so cores and even raw materials may have moved between, as well as with, communities (Care 1979; 1982). Such transactions may have often had a pragmatic aspect. But persistent trading partnerships created lasting bonds between groups. Other exchanges were crucial for the reproduction of ties of kinship, affiliation and even obligation. Where exchange was also means of inflicting debt, the practice of 'keeping while giving' (Weiner 1992) played an important role in reproducing relations between kin groups and between elders and their subordinates.

Further details of Later Mesolithic assemblages offer clues as to the ways in which the practical and the social were interwoven. Almost by definition, assemblages display a consistent emphasis upon the controlled working of small blade cores and the creation and use of small, 'geometric', microliths (Jacobi 1976; Pitts/Jacobi 1979). These were often the products of accustomed hands. While the retouching of a microlith is simple in itself, it is a task that comes at the end of a complex and potentially varied chain of operations that begins with the selection of stone. Platforms need to be prepared and maintained, and flaking often requires precision, anticipation and a sympathy between hand and stone. Homogenous raw materials lend themselves to this way of working, and this is one reason why we see considered patterns of selection and procurement.

Here again, we have tended to explain these characteristics as a function of mobility. In circumstances where people move on a routine basis, traditions of working which favour portability appear to confer certain advantages. By the same logic, microliths are taken to reflect an efficient way of using stone, and, because of high component redundancy, a low risk strategy in 'gearing up' for hunting trips. As Nyree Finlay has noted, this sort of explanation betrays something of a 'boys and arrows' bias, playing down the use of microliths in a much wider range of tasks (Finlay pers comm). What it also plays down is the idea that these particular ways of working and using stone were meshed into other concerns. These traditions endured for many generations and archaeologically, they stretch across large parts of the country. They reflect the persistence of specific forms of knowledge and technique - particular ways of working amongst many alternatives. This suggests that the act of working was itself an object of discourse - a medium through which ideas about identity and community were addressed.

This idea is not entirely original. For some, regional differences in microlith typologies have been taken as evidence that these items were drawn upon to signal group identity to others. Carried and used in seasonal routines, these tool components provided a physical expression of distinctions between people at a relatively broad social scale. This argument has its attractions. But it may be that we have missed both the themes that these items addressed and the particular manner in which this process operated. To begin with, these regional traditions are more than a little blurred. We could explain this away as a product of time depth. But this blurring may actually indicate that the boundaries of different social traditions were far from static. They may have shifted back and forth through patterns of exogamous marriage, through the negotiation of varied social relationships, and as a result of changes in the fortunes of different generations of kin. In addition, it is unlikely that differences in the trimming of tiny bladelets provided a medium for explicit expressions of group identity, particularly since they were mounted, and more or less hidden, in composite tools. Instead, 'regional' microlith traditions may reflect a more tacit consensus, sustained over time, regarding the customary manner in which such artefacts were to be made. Much the same might be said of the structured routines of flaking bound up in the creation and working of blade cores themselves.

What themes were sustained by these traditions? Broad similarities in ways of working may have offered quiet

confirmation of the ties that stretched between different groups. But knowledge of particular routines would have been acquired through observation and practice at a relatively local scale. Learning would have required instruction, and from that process would have come a localised sense of position and, perhaps, of progression across the thresholds that defined different stages in the life of a person. In other words, the acquisition of technical know-how may have been keyed into the reproduction of quite basic social categories, from close kinship to distinctions of age and gender. During the Later Mesolithic, the working of cores and the production and use of microliths may have been important media through which these facets of a person's identity were given expression.

These observations may not take us very far. However, they do suggest that the landscape was already inscribed with social and historical significance prior to what we call the Neolithic. The land and its resources had taken on complex associations with particular groups of people, and networks of contact and communication cut back and forth across regions. As relations within and between kin groups shifted over time, so those associations and networks were themselves reworked. At the same time, particular traditions of procuring and working stone seem to have been shaped as much by concepts of identity and community as by practical demand. Ties of obligation and affiliation were reworked through the exchange of tranchet axes and perhaps other materials. Customary patterns of source use helped sustain close kinship and an affinity with particular places. And core working itself contributed to the reproduction of basic social categories. It is against this varied background that we can turn to the taskscapes of the Earlier Neolithic, and to the idea that the transition involved both continuity and change in the character of routine experience.

We can begin with the evidence of continuities in the broad pattern of people's daily and seasonal lives. So far as we can tell, much of Southern Britain saw only limited woodland clearance at this time, with many sites established in clearings or on the margins of woodland. Across valleys and uplands, the land took the form of a varied and shifting patchwork. Rather than a tradition of mixed agriculture with all that this entails, communities followed routines of a different character, their pattern sometimes varying from one region to another. Where practiced, cultivation generally took the form of 'garden plot' horticulture, and this was often an adjunct to the husbandry of animals and the hunting and collecting of wild resources by small groups. More often than not, those groups probably comprised close kin. As in the Later Mesolithic, all that often remains of the settlements and camps of the early fourth millenium are surface scatters that vary in their scale, location and internal characteristics. Where excavated, few produce features indicative of

substantial structures, and it is common to find sites defined by the presence of a few bowl-shaped pits. Many of these pits show signs of purposive filling, involving the careful deposition of pottery, tools, midden material and, on occasion, fragments of people (Thomas 1990). No doubt other sites remain to be discovered, in the bottom of river valleys or beneath peat or hillwash. We must also allow that stake holes and other shallow features have been lost in many cases. Nevertheless, many of our scatters fit uneasily within a model of mixed agriculture and stable residence. They vary considerably and it is this variability that we need to acknowledge.

Some scatters are small indeed. Identified through fieldwalking, they can be no more than twenty or thirty metres in diameter, comprising cores and waste, endscrapers, blades and narrow flakes. An Earlier Neolithic presence can even be marked by no more than one or two tools - often the leaf-shaped arrowheads that appear at this time. Distributions such as these reflect the limited and sporadic use of particular locations: small camps established for a season, or places through which people passed. Other scatters display different characteristics. Some take the form of more extensive spreads, their distribution being all that survives of settlements comprising one or two structures that persisted for perhaps a generation. In settings such as these, the range of artefacts can also be extended. Cores and waste occur with burnt flint, scrapers, serrated flakes and other retouched pieces - a range that suggests a wide array of tasks and a sense of duration (Ford 1987; Gardiner 1984; Holgate 1988; Richards 1990; Woodward 1990). Sometimes the waste itself will indicate specific acts; the thinning, shaping and maintenance of axes or adzes, the working of cores, or the fashioning of arrowheads and laurel leaves.

Other scatters are larger still. At places like Broome Heath in Norfolk or Tattershall Thorpe in Lincolnshire, excavation has revealed evidence for more extensive clusters of pits, stakes holes and other features, and a correspondingly larger volume of worked stone (Bradley et al. 1993; Wainwright/Longworth 1972). Similarly, along the Snail Valley in Cambridgeshire, survey has identified an extensive yet discontinuous spread of Earlier Neolithic tools and waste. Echoing patterns seen elsewhere, the spreads of material along this valley seem to follow the path of a now relict river channel, hidden until recently by a blanket of eroding peat. These larger scatters can be interpreted in a number of ways. On the one hand, the scale of a 'site' may reflect the existence of a settlement that comprised a handful of extended families. Alternatively, the distribution of features and artefacts may be a product of time depth: These may have been places to which people returned, each phase of occupation adding to the sense of attachment that it held for an extended family.

Found in a variety of settings, from river valleys, fens and coasts to modern downs and moors, patterns within and between Earlier Neolithic scatters invite several interpretations. On the one hand, they prompt the suggestion that many communities retained a measure of mobility. Rather than being permanently fixed to a specific location, people followed routines which often took them between uplands and lowlands and between different places (Barnatt 1996). Many practiced what was in essence, a long fallow system alongside the herding of stock, and this meant that occupation could shift on a seasonal basis and at the time scale of generations. Differences in the scale and composition of scatters also point to variations in the roll call of different places: short term camps for a handful of people; settlements occupied by an extended family, and places where families gathered, perhaps for a season, perhaps for a generation or more. Beyond these places lie the palimpsests of material created at some of the field monuments that emerged during the Earlier Neolithic tombs, prominent stone sources and ceremonial enclosures that were visited periodically.

We shall return to these places later on, but first we should acknowledge that many of these characteristics recall the broad patterns identified across Later Mesolithic landscapes. Here too, it seems that the structure of daily and seasonal experience brought people to different places and into different combinations. This created the potential for the reproduction of relations within and between communities of close kin. And again, we must allow that the varied patchwork of woodlands, cleared ground and paths provided evidence for the past and present order of the social landscape (Gow 1995; Kahn 1990; Kuchler 1993). These parallels gain greater depth when we recognise that routines of movement and action brought people to places that had a long ancestry. Scatters containing both Later Mesolithic and Earlier Neolithic material have been identified in many areas. In some cases, the overlap is marked by no more than a handful of tools. In others, it is evidenced by the placing of a tomb on a camp established long before (Kinnes 1992; Saville 1990). Patterns of raw material selection in a number of regions also remained relatively unchanged. Communities followed long-standing traditions of selection that brought them back again and again to particular sources - to beach cliffs, rivers, outcrops and pockets of good flint.

These apparent continuities find echoes in traditions of stoneworking themselves. Microliths appear to have fallen out of use by the end of the fifth millennium BC, but patterns of core working in the Earlier Neolithic display a persistent concern with the production of blades and narrow flakes. This too has been taken as evidence for the continued importance of routine patterns of mobility amongst Earlier Neolithic communities (Bradley 1987; Edmonds 1987). I do not wish to challenge this argument here. Similarities in raw material selection and in core working traditions between the two periods do suggest broad continuities in the pattern of people's lives. However, close inspection suggests that we cannot always compare like with like. Together with the disappearance of microliths, traditions of core working do display some changes and these are no less important. For example, the inventories of stoneworking waste in Earlier Neolithic assemblages can be quite varied. Sometimes this reflects the production of different classes of artefact, such as those that required patterns of bifacial working (Burton 1980). In other cases, there is a greater degree of variability within the products and by-products of core working itself. Many single and opposed platform cores were carefully worked to produce narrow flakes and blades. But size ranges are wider than before, and flake morphology a little more irregular (Pitts/Jacobi 1979). Despite similarities in the end product, the knapping routines that produced many flakes and blades in the Earlier Neolithic were not as tightly structured as they had been in the Later Mesolithic. These rather subtle changes in core technology are difficult to understand. However, they may reflect a gradual shift of emphasis away from core working, and perhaps the creation and use of microliths, as media through which basic concepts of social identity were carried forward.

What conditions gave rise to these changes? One response would be to take developments in stoneworking, like the first appearance of pottery, polished tools and monuments, as byproducts of a dramatic economic transformation. Yet many features of the taskscape seem to have remained relatively stable across the transition. As an alternative, we might follow the argument that these changes represent the introduction of new ways of thinking about the self and about society (Hodder 1990; Thomas 1988). This has its attractions. But we actually say very little so long as we play down two issues. First, ideas about 'being Neolithic' did not simply float in the ether. They were grounded in material traditions, some of which had a long and complex ancestry. Second, the Neolithic was not a tightly drawn or unitary ideological package any more than it was a simple economic transformation. In other words, it may be unwise to talk in terms of a single way of thinking or a new, singular, definition of culture and nature. These are overly simple rationalisations of a far more complex process that varied from one place and time to another. Rather than follow that line, we should allow that the Neolithic consisted of a series of elements, drawn upon in different ways under different historical and material conditions. It was not the same thing from one place or time to another (see Barrett this volume; Pluccienik in press; Thomas 1996; Whittle 1996; Zvelebil in press). In the face of tensions within and between communities, questions of access, tenure, standing or renown were addressed with reference to new ideas and new resources. The creation of ancestral houses, the herding of cattle, the production and consumption of pottery and polished stone tools: Each provided new potentials for the reproduction of concepts of identity, community and authority.

Resolving itself over several centuries and in different ways from one region to another, this process brought with it consequences for the taskscape that were no less profound for being unforseen. Cattle, for example, had an impact that went far beyond their value as a source of protein. Having herds created new media for the expression of identity and the negotiation of standing. Cattle could be owned and exchanged in novel ways, and this introduced a new dynamic into relations that stretched between communities. They also provided a rich new source of metaphors; the constitution of herds offering cues for people's understandings of their place in the social landscape. Inclusion of cattle bones in certain tombs also suggests that they may have sometimes had the capacity to stand for particular qualities of people. At the same time, the rhythms of herding brought with them new patterns of movement and new practices through which to draw distinctions such as those that separated the young and the old. The seasonal round carried people to and from the land of their birth, their feet in step with the hooves of their small herds. No doubt these journeys were often made by all, but there would have been junctures at which trips to pastures were made by only a few.

With cattle also came the consolidation of pathways, the persistence of grasslands and new tensions between communities. Questions of access and tenure remained important. But the subtle reworking of the land that cattle entailed would have engendered claim, counter claim, and on occasion, perhaps even rustling. And cattle, like other domesticates, encouraged the redefinition of attitudes towards the natural world (Hodder 1990). It may have been the potentials offered by the ownership and herding of cattle that contributed to changes in stoneworking traditions.

Traditional attitudes and ways of working were further eroded by important changes in the inventories of Earlier Neolithic assemblages. Leaf shaped arrowheads and sickles suggest a concern with hunting, harvesting and perhaps fighting, however graded and ritualised the latter may have been (Edmonds/Thomas 1987). But like laurel leaves, they also betray an increased concern with the execution of careful patterns of bifacial working, pressure flaking and invasive retouch that often went far beyond the satisfaction of practical requirements. The production and the use of these tools may have emerged as new media for the definition of people.

Beyond these items, the Earlier Neolithic also saw the emergence of discrete and often prominent sources – flint mines and upland stone quarries that saw a distinct and sustained emphasis upon axe production. Often set apart from settlement, many were established in clearings or above the treeline, their exploitation taking the form of periodic visits by small groups. Sometimes these visits went in step with the movement of cattle. As with some earlier sources, these were places and times at which members of different kin groups might anticipate meeting. Physically marginal to familiar settlements, they may have also been socially liminal, their use helping to structure basic concepts of identity that had once been sustained in other ways. As Verna Care has pointed out, flaked axes were already being produced and perhaps circulated between people during the Later Mesolithic (Care 1979). This seems to suggest a measure of continuity in a specific area of social practice; further support provided by the fact that a few ground stone axes have been recovered in Later Mesolithic contexts (David 1989). However, we should not play down the change in practice occasioned by the development of major mines and quarries. These were monuments just as much as the first tombs and ceremonial enclosures. Those permitted to work at these sites at certain times dug not just for stone, but for tokens of their identity. Indeed, the very act of sinking a shaft or climbing to a precipitous cliff face was itself a medium through which these themes were carried forward. And as people worked and learned in varied combinations, they sat among the scars of old shafts and working faces - testaments to the genealogical and ancestral past that lay behind their actions (Edmonds 1996).

With time, visits to sources may have changed in their significance. Artefacts that could be drawn upon as tokens of identity were also circulated as tokens of value. Rich in biographical associations, the histories of these tools were embellished as they passed from hand to hand, and even from one generation to another. Carried, used and displayed, they served as reminders of the standing of certain people, and their place within networks of kinship and obligation. And as exchange was increasingly drawn upon in the negotiation of those networks, so the significance accorded to procurement and production within particular regions gradually changed (Bradley/Edmonds 1993). Access to sources became a more highly charged discourse - an arena in which relations between groups were actively negotiated. Prominent mountains or hillsides gained a patina of myth and even danger, and working may have taken on added qualities as an event which shaped the basic identity of a person. This may be why we find a change through time, at one upland source at least, towards more highly structured flaking routines and the use of precipitously located quarries (ibid).

In step with these changes came other shifts in attitude and practice. Here we can return to the pits that often lie beneath

scatters of broken stone. Pits and their contents often display an order which is difficult to explain as the random and gradual accumulation of rubbish, however we choose to define the term (Thomas 1990). Pottery sherds may show considered selection and placement, as can worked stone, and material from middens or episodes of consumption is not uncommon. What were the conditions under which these features were created? What purposes were served by the placing of these materials in the earth? We will never catch the full significance that these acts may have held for specific people. But given their context, these essentially local rites may have provided a medium through which communities renewed their sense of tenure with particular places. This may have been of great importance where seasonal and even generational cycles involved movement away from one setting to another. And it increased in importance as new forms of relationship, with land and with others, were engendered by changes in the character of routine practices. For those who were present, the gathering together of fired clay, worked stone, food remains, and sometimes fragments of the dead, drew attention to the practical and genealogical ties that bound communities to specific locales. These were the traces of particular acts, associated with particular people and events. Created as people left for a season, or perhaps for other reasons, the filling of pits, like the planting of crops, offered the hope of renewal and return. For those who returned and remembered, these features provided mnemonics for the past that lay behind an old clearing or camp.

The presence of fragments of the dead in pits and perhaps in middens also brings us back to contemporary tombs. Regional differences can be seen in the forms and histories of these sites and this reminds us that we are dealing with varied local traditions. These histories also reveal that the character and significance of specific sites did not go unchanged over time. Yet many tombs share common features and their use often suggests an acknowledgement of common principles. These were the houses of the ancestors. Often embellished over generations, tombs were frames which could hold the bones of the dead and harness those relics to particular places.

What significance did the living attach to the dead at these sites? In many cases, the bones of the dead arrived already stripped of their flesh. Exposed or actively defleshed elsewhere, human bones were often brought to tombs to rest amongst the remains of earlier generations. This privilege may not always have been open to all, and bones could be removed from tombs for deposition elsewhere or to circulate amongst the living. Within their bounds however, it was a commonplace that the broken remains of a person were incorporated with the jumbled remnants of those long dead. It is in this emphasis on the collective over the individual that we can trace a concern with ancestral forces. These communities of bones contained kin who were remembered and mourned. But the customary breaking and re-ordering of their bodies suggests a desire to see the dead pass on into the ancestral realm; a realm which bound the community of the living to earlier generations and to the time of myth. Few were singled out for special treatment within these sites, and for the most part, we find little evidence for the provision of durable goods with specific people. Shrouded in myth and perhaps watched over by spirits, these were places to which people returned on many occasions. Sometimes that return brought fragments of the newly deceased, but visits were often as much in step with seasonal and ancestral rites as they were with the demise of a specific person. Entire communities may have gathered in the shadow of their ancestors at certain times. At others, attendance and observance may have been the privilege of more select groups.

The meanings that people attached to these ancestral houses was probably as varied as the architecture that we try to capture in our plans and sections. These were places where personal loss could be acknowledged and where a sense of kinship and community could be grounded in an ancestral and cosmological order. They were places where relics were generated to circulate amongst the living, many offering no more than a temporary resting place for the bones of the dead. Associated with powerful forces, they were also places to which people came to ask for intervention and support, and as such, they were contexts where some might come to hold authority over others. Proximity to the ancestors may itself have been taken as an index of the standing of particular people. The right to officiate may have been the prerogative of family heads or of shamans, and there may have been times when access to the forecourts or interior of tombs was restricted to only a few. Out of these distinctions came a sense of the order of relations amongst the living, an order which seemed all the more inevitable where its roots could be traced into the ancestral past.

The communities of bones that lay within could play an immediate and important part in this process. Inclusion may have often been a privilege of kinship and position, and once inside, the placement and re-ordering of bone may have brought certain concepts and values into sharp relief. The confusion of disarticulated and decaying remains could be read as a metaphor for the collective bonds of kinship, and this has been a common theme in interpretation. At times, this sense of commonality may have been more fictive than real, the leveling in death concealing divisions amongst the living (Shanks/Tilley 1982). But until our grasp of genetic information improves, we can only suggest that these divisions followed lines defined by marriage and descent. What is clear is that these frames could be used to idealize more basic distinctions. Sometimes the bones of the elders and of children were separated, drawing attention to the authority that set one generation apart from another. Women could also be distinguished from men. These distinctions were brought into focus as certain people handled and ordered skeletal remains; rites which probably involved the telling of stories about the ancestral past and the lives of earlier generations. Those narratives may have even taken cues from the architecture of the tombs themselves (Barrett 1994). The arrangement of chambers and deposits lent an order to the encounter that people had with these relics, and this allowed relations amongst the living to be manipulated and placed beyond question.

In a landscape composed of places and paths, what sort of encounter did people have with these sites? What issues were addressed through their foundation and elaboration over time? Rites conducted at these sites had important consequences for relations among those who participated, and those who could only stand and watch. But the significance of tombs went beyond the fragments of the dead that they contained, and this returns us to the taskscape. The settings of tombs are varied in the extreme, but many are found in prominent locations - at valley heads, on ridge tops and along likely paths of access. Some were founded in small clearings, on turf, or on earth that had been cultivated. A number even seal traces of later Mesolithic and Earlier Neolithic settlement, or align themselves on prominent landscape features that had long provided a focus for human activity (Barrett 1988; Tilley 1994). More often than not, they were founded in places that had a specific cultural past.

We could dismiss these patterns as coincidences, but a more common response is to cast these sites as territorial markers; as statements of property rights made by particular communities (Bradley 1984; Renfrew 1973). This idea seems to 'make sense' to us, but it actually says very little in itself. To begin with, it misses the dramatic reworking of the significance of a place that the foundation of a tomb established. An old camp or clearing, a patch of grazing, or an area that had seen visits by generations of hunters and herders now had ancestral occupants, forces to be respected and perhaps even feared. The purposes that were served by these foundations were probably as varied as they are difficult to specify. But it may be useful to think of the tensions that existed both within and between communities: arguments over the authority of the elders or competition for local dominance between different kin groups. No doubt there were times when these arguments revolved around questions of access; to grazing or to old settlement areas, or perhaps to particular sources of stone. This may be part of the reason why long barrows on Cranborne Chase lie close to pockets of clay with flints (Barrett et al. 1991; Edmonds

1996). Often however, it was the ancestors and their powers that were the focus of attention. Where proximity and the right to speak on their behalf could be an important expression of authority, these houses of the dead and their contents could become objects of discourse in their own right. Where those involved in the foundation of a tomb were bound by ties of kinship, the housing of the ancestors was a means by which they attached themselves to a place. What was important was that this attachment often grew out of a cyclical pattern of life that took people to and from these places. Visited at key junctures and seen or passed in the course of the seasonal round, the foundation and episodic use of tombs provided a powerful medium through which people renewed a sense of tenure with particular locales. Returning again and again, and adding to the fabric as well as the content of tombs, they grounded that attachment in the ancestral past and projected it into the future.

Over time, the statements made through simple mortuary structures were embellished through the addition of earth or stone; through the extension of mounds or the construction of forecourts and facades. These physical changes betoken shifts in the significance attached to these places and the manner in which they were drawn upon or appropriated by the living. As one generation gave way to another, those who returned added to the form and historical associations of these sites. In doing so, they renewed and redefined their bonds of kinship and their basic sense of community. These were houses that endured, but they were also resources that could be manipulated.

Given their taskscape contexts, the redolences of pits or tombs may have been best appreciated at a local scale by a relatively small number of communities. Yet like pottery and stone tools, these features were created with reference to traditions that stretched a considerable distance across the country and through time. Just as ground and polished axes can be found from northern Scotland to Cornwall, or similarities in core working traced between Yorkshire and Wiltshire, so conventions surrounding the treatment of pits or the veneration of ancestors are shared between regions. In other words, we can see common themes and concerns, even though these may have been drawn upon in different ways from one setting to another.

These patterns may be partly a product of our own preconceptions, and our desire to find an order that we can call national. But they highlight what at first glance appears to be a paradox. How do we reconcile similarities at these broader scales with the idea that the landscape was dispersed, fragmented and often seasonal in its roll call? We might make reference to routine mobility patterns played out and reworked over generations, and to concepts of exogamy and overlapping local traditions. These are, of course, crucial. But we must also allow that these broader webs of social relations were hung upon specific points in time and space. Stone sources or areas seasonally rich in game had long served as contexts in which encounters with kin and relative strangers might be anticipated. Through these meetings, goods, people and ideas passed between communities. It may have been under these circumstances that the possibility of changes in practice were realized. With the Neolithic came the idea of more clearly demarcated arenas in which those encounters could be scheduled and undertaken. Arising out of the cooperative labor of a range of kin groups, causewayed enclosures served as liminal places – set apart from the world of day-to-day activity – where the more extensive qualities of the social landscape were pulled into sharper focus (Edmonds 1993).

Long established on the continent, the idea of enclosures was drawn upon in various ways from one part of North-Western Europe to another (Burgess et al. 1988). Some formed boundaries that were added to settlements whilst others had close ties with the dead or with particular resources (Bradley in press; Petrequin et al. In press; Whittle 1996). This idea was drawn upon in equally varied ways by groups of communities in southern Britain. Like some prominent stone sources, many were initially encountered on an episodic, perhaps seasonal basis, their use embedded in broader routines of cattle husbandry. In areas such as the South-West, a few were established as more or less permanent settlements, but these remain exceptions which confirm the strength of long standing regional traditions. Often passed or even used as camps in the company of animals and close kin, these places periodically witnessed the coming together of a larger number and a wider range of people. Herds were brought together in their environs, and people camped, cooked, and worked the land around them in close proximity to others. At a time when the common pattern of contact stressed close kin, these were signal events. A focus for rites of passage, and for production and exchange, these gatherings created a symbolically charged context in which many themes could be addressed: fertility and renewal; access and ancestry; kinship and obligation; even conflict and competition. Through ancestral rites, the giving of feasts and graded transactions, people worked and reworked their position in broad networks of kinship, obligation and authority. Understood differently by those who could participate and those restricted to the margins, these events also confirmed the standing of people amongst their close kin.

Enclosures may have often been regarded as socially liminal, even dangerous places. But like tombs, these arenas of value were not constructed and used in a vacuum. Some would have been encountered on a regular basis; passed as a family moved with their cattle, or during hunting, and seen as people tended crops and gathered other resources. Certain enclosures even lay on or close to outcrops of stone that had been in use long before the first ditch was dug. Distinctive tranchet flakes in surface scatters near Knap Hill in the Vale of Pewsey point to a connection between people and place that extended back into what we call the Mesolithic. Similar patterns can be seen in Sussex (Gardiner 1984) and at Maiden Castle in Dorset, local sources of stone were as important to Earlier Neolithic communities as they had been to their forbears. We should not play down the drama of 'altering the earth' bound up in the construction and elaboration of enclosures. But even here, we should recognize that the foundation of these sites often involved the reworking of long histories attached to particular clearings, hilltops and sources of stone. Once established, they too became resources with the potential to be drawn upon in the satisfaction of sectional interests.

### 3. Conclusion

This discussion has remained at a relatively general level, and this brings with it certain problems. However, I hope I have shown that a concern with the dull compulsion of people's lives, and with the changing configuration of the taskscapes that they occupied, can add much to our understanding. We create a better context in which to set our studies of particular monuments or monument complexes when we consider the conditions under which these particular times and places were occupied. And in tracing these taskscapes, we can also explore how the character and tempo of routine tasks was itself caught up in the reproduction of the social world. In other words, we allow that commitments to place and to others may be, quite literally, 'worked through' in different ways through different areas of practice.

These genealogies of settlement and stoneworking traditions cast a sharp light on some of the taken-for-granteds behind models of the transition. In particular, they stress the importance of treating this phase in prehistory as a situated historical process unfolding through the actions of people. If there is a general observation to be drawn from all of this, it is that this process involved both continuity and change in the character of routine experience. Although resources and ideas were drawn from communities across the water, the landscapes of Southern Britain were not a tabula rasa upon which Neolithic colonists could make their mark. By the same token, concern with the definition of kin and non kin; of women and men; of the elders and their subordinates, did not emerge with the first crop of corn. Nor did questions of tenure and renown. Woven into routine practice and explicit in varied rites, these and other themes had been important for many generations. What happened across what we recognise as the transition was a reworking of the practices through which people understood and addressed these issues.
Ancestral rites, the production and use of pottery and polished tools, procurement, exchange and the use of domesticates: all provided media through which concepts of identity, community and authority could be carried forward. Taken up in varied ways and at different times from one region to another, these practices, in their turn, changed the ways in which people thought about the landscape, their past, and their relationships with others. We do little justice to the complex qualities of this process when we reduce it to the succession of archetypes.

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# A portrait of ancient society on the South Hungarian Plain

#### 1. Introduction

This paper has two related purposes. One is to briefly describe some of the organizational features that characterized the small autonomous communities of the south Hungarian Plain, circa 2,000 BC, in the period immediately prior to the emergence of complex social forms in the Carpathian Basin. The second goal is to suggest the range of anthropological issues that can be addressed using archaeological mortuary studies and, by so doing, to begin to answer the question, "What kind of anthropology of the past can archaeology hope to achieve?"

#### 2. Background

The society I will be describing dates to the 'dawn' of the Early Bronze Age on the south Hungarian Plain. At some point between 3,000 and 2,500 BC (calibrated) the broad homogeneity of the preceding Copper Age is broken by the rapid crystallization of a series of quite distinctive regional cultures (cf. Bankoff/Winter 1990; Forenbaher 1993). Prior to the advent of major 14C sequences in the region, the actual character of this crystallization was not fully appreciated, and the disparate and contrastive regional styles were attributed to a sequence of chronological phases (cf. Bóna 1965). Absolute dating now makes quite clear that many of these regional styles are in fact contemporary, and that the regional mosaic they form is a well defined and bounded tribal landscape (O'Shea 1991; Raczky *et al.* 1993).

Once this crystallization of small and discrete regional cultures has taken place, they persisted for roughly 800 years, at which time, they apparently are again absorbed into much larger scaled social entities (O'Shea 1991). The focus of the research I will be describing today is on one of these distinct regional cultures, which is variously known in the literature as the Szöreg, Mokrin/Szöreg, or Maros group (cf. Banner 1931; Bóna 1975; Girić 1987; Sandor-Chicideanu/Chicideanu 1989; Tasić 1972). The latter term is the one used here. The Maros group is a subset of the larger Perjámos Culture, defined by V.G. Childe in the 1920's, after the type site of Perjámos (Periam) in southwestern Romania (Childe 1929).

The sites of the Maros group occur primarily in the low, swampy angle formed by the confluence of the Rivers Tisza and Maros, a region which includes southeastern Hungary, as well as the northern Vojvodina in Yugoslavia and west central Romania (fig. 1). The limits of the Maros region are relatively sharply defined to the West, by the River Tisza itself, and to the North by the limits of the Maros flood plain. No similarly sharp boundaries are found to the East or South. The environment of this region exercised a very strong influence on Maros settlement pattern and regional organization, being both swampy and subject to severe annual flooding. Maros settlements and cemeteries tend to be located on isolated patches of higher ground which, prior to river channalization and drainage, constituted islands surrounded by wetlands.

The Maros group exhibits several features that make it ideal as a context for detailed social reconstruction. First, and perhaps foremost, is the fact that the Maros group produced large inhumation cemeteries, and that their practices for the disposal of the dead *happened* to be highly structured and differentiated. I use the term happened quite deliberately since there is no necessary reason that any culture must express social differences through their program of mortuary disposal, nor that such differentiation, if present, necessarily be in a form that would be either visible or recognizable to archaeological inquiry. In addition to the large and structured cemeteries, there is complementary evidence from Maros settlements. There is also the self defined and bounded character of the Maros communities relative to other contemporary populations on the south Hungarian Plain. Taken together, these factors permit the confident application of a multi-site regional approach. As such, the patterns of mortuary differentiation, recognized at one site, may be compared with those at other cemeteries, and the inferred patterns of social differentiation may likewise be compared to independent evidence from other archaeological contexts.

#### 3. Methods

While a full discussion of the techniques of funerary analysis or its theoretical underpinnings is beyond the scope of the present paper (cf. Chapman *et al.* 1981; Beck 1995), the general approach can be summarized quite succinctly. When viewed from an archaeological perspective, a cemetery represents a repeated set of behaviors or actions by the living



Figure 1. Map of the Maros region of southeast Hungary and adjacent portions of Yugoslavia and Romania, showing the location of major Maros settlements and cemeteries.

society, relative to the dead. Assuming that other depositional and post-depositional processes have been controlled for, patterns observable in the archaeological record will represent the consistent repetition of these behaviors by the living society (which arise from prescriptive and proscriptive norms or rules within the society that were actually followed). The referents of such patterns; for example, the size of the group receiving a certain treatment, its age and sex composition, its spatial distribution, and the relative effort invested in marking, allow us to describe (if not to specifically name) the kind of social unit or status being represented. Furthermore, just as any individual will have belonged to numerous social groups and held multiple statuses in life, so the different dimensions of differentiation expressed through the funerary program are expected to crosscut the mortuary population, with each dimension

blocking out its own unique set of members and contrast sets. The model of the palimpsest, in which analysis involves the pealing back of superimposed layers of treatment and symbolism, is much closer to reality than the neat corporate pyramid or dendrogram.

In practice, analysis involves first splitting up the observable funerary differentiation into its various and overlapping constituent groups, and then reassembling the differentiated subunits into a coherent whole. Perhaps the single most useful aspect of treating funerary differentiation as a culturally mediated symbolic system is the ability to assume that the elements will exhibit coherence. At the same time, the method does *not* require elaborate analogies to the ethnographic present for either its theoretical foundations or justification. One need make no assumptions about the state of mind of people in the past, nor about their intents. Similarly, one's results are not limited by existing ethnographic knowledge.

Given the limitations of space, the present discussion will focus primarily on one of these large inhumation cemeteries, the cemetery of Mokrin, which was excavated under the direction of Dr. Milorad Girić, of the Narodni Museum, in Kikinda (Girić 1971; Tasić 1972). The discussion of the patterns of social differentiation at Mokrin will draw upon parallel patterns observed in other of the Maros cemeteries and on other classes of archaeological evidence available for the Maros group. While the descriptions of both results and methods here are necessarily summary; a fuller treatment is provided in O'Shea (1995, 1996).

# 4. The organization of the Maros funerary program

The basic normative elements of the Maros funerary program served to provide a clear break with both earlier Copper Age patterns of burial (cf. Bognár-Kutzián 1963; Patay 1978), and a striking and unambiguous contrast with the contemporary and neighboring Nagyrév groups, in which cremation was the dominant mode of mortuary disposal (Bóna 1963, 1975). The elements of the normative program included burial in large multi-community cemeteries, placement of the body in a flexed posture oriented along a north-south axis, with the body 'faced' toward the east. This was the basic treatment that any member of the community received, but there were several notable exceptions. Infants younger than about 4 years of age were not interred in the cemeteries. Excavations at Maros settlement sites, however, have revealed that at least some of these infants were buried within settlements (O'Shea n.d.). Since these interments sometimes included grave offerings, it can be further concluded that such interments did not represent an expedient treatment for a 'valueless' being, but rather constituted a distinct, age-specific, alternative program of disposal. The second category of individuals not receiving the normative treatment was young adult males. Individuals of this age were significantly underrepresented in the Maros cemeteries. While a number of potential explanations might be offered to account for these individuals, the most likely explanation is that they represent men that died away from the village and whose remains were not recovered for burial. Given the many indications of endemic warfare and raiding in the region (defensive works at settlements, trophy pendants fashioned from human patellae, and the common occurrence of cranial trepanation, an operation often associated with the treatment of head wounds) it is quite plausible that these young males represent individuals lost in raiding expeditions.

Beyond the normative funerary program, a number of dimensions were regularly utilized to distinguish major

divisions within the Maros population. Perhaps the most useful from the perspective of archaeological analysis was the normative marking of gender. The Maros funerary program marked normative gender via the orientation of the body; females were placed on their right side with their heads toward the south, while males were placed on the left with their heads toward the north. Gender was a major organizing principle in Maros society and this marking of gender via orientation insured that every individual was marked. Archaeologically this is useful since it allows the comparison of biological sex with the culturally assigned gender. It also enables the comparison of differential treatment of male and female subadults, a view that cannot be supplied by biological indicators alone. While there are other categories of material goods that are limited in their distribution to females or males, the specific marking of gender by means of body orientation insures that all individuals were marked, unless there was an intentional effort not to do so. It is for this reason that the term normative gender is applied. Body preparation, treatment and orientation were also used to express non-normative characteristics which, in many instances represented particular death statuses, reflecting specific circumstances or abnormalities of death, rather than unique social statuses actually held in life.

The placement of artifacts with the dead provided the major avenue for the expression of social differences among the dead. Artifacts included various categories of ornaments worn by the dead, along with implements and ceramics placed in the grave. These differing categories of items also tended to convey differing kinds of social meanings. The analysis of differential treatments in the Maros cemeteries was facilitated by the high degree of site and inter-site consistency in the overall Maros funerary program.

Taking Mokrin as a case in point, a wide array of social differences was expressed through the combination of body placement and artifact inclusion (tab. 1). These included a series of hereditary political offices held by males and females respectively, along with at least two very distinct representations of individual and collective wealth and social standing, one tied to domestic production and the other linked to long distance trade. Not surprising, gender again was a major organizing principle in the expression or display of these two dimensions of social standing.

With this very brief background into the social categories given material expression in the Mokrin cemetery, the next step in the analysis is to consider these varying elements of mortuary treatment as aspects of social distinctions that existed within the once living community. For purposes of illustration I will focus on two specific issues; 1) how social office and social standing/wealth was acquired and transferred across generations; and 2) to consider how this

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Differentiation	Marker	Number	Sex	Age	Inferred Social Category				
Normative					Community Membership				
	Burial in Cemetery				· · · · ·				
	Flexed Burial Posture				" "				
	Eastward Facing				" "				
Vertical									
	Weapon	11	Male	Adult	Hereditary Social Office				
	Male Head Ornament	15	Male	Adult	Hereditary Social Office				
	Bone Needle	19	Female	none	Hereditary Social Office				
	Beaded Sash	13	Female	Adult	Hereditary Social Office				
	Female Head Ornament	38	Female	Adult	Associative Social Position				
	Body Ornament	87	none	none	Exotic Wealth, Associative				
	Ceramics Assemblage	n/a	none	none	Subsistence Wealth, Associative				
	Small Implements	19	none	none	Craft Specialty				
Horizontal									
	Orientation (north-south)	)	none	none	Normative gender				
	Location (north-south)		none	none	Social Segment, village?				
	Location (east-west)		none	none	Social Segment, sodality?				
Special Status									
	West Facing	7		Adult	Oppositional				
	West Oriented	1		Infant	Oppositional				
	NE Oriented	5	Male	none					
	NW Oriented	3	Male	Adult					
	SE Oriented	15	Female	none					
	Alternative Posture	8	none	none	Oppositional				
	Multiple Burial	4 (9)	none	Adult	Circumstances of death.				
				with Ch	hild				
	Cremation	3			Oppositional				
	Symbolic	5			Circumstance of death				
	Mutilation	40	none	none					
	Non-Burial 1			Infants	Age status				
	Non-Burial 2	~20	Males	Young	Circumstance of death				
				Adults					

Table 1. Classification of Major Funerary Distinctions at Mokrin

array of social statuses and offices would have appeared at any given time within the living society (as opposed to the cumulative view presented in the archaeological context).

To evaluate the acquisition of social positions, and particularly cross generation cycling of social standing, it is necessary to adapt a form of cohort analysis to archaeology. Much as a demographer treats the age distribution of a living community as though it represented the progressive aging of a single cohort of individuals, so can we look at the distribution of different aged individuals within a mortuary population and the distribution of social offices across these age categories to model the life history of a single cohort of living individuals. To do so, of course, requires that we be able to distinguish between life and death statuses represented in the funerary program, and that we control for the age specific demographic factors that structure the observable mortuary population.

At least four major social offices are marked in the Mokrin funerary program, all of which appear to have been transmitted along hereditary lines (fig. 2). Their patterns of transmission and acquisition are not identical, however. The offices marked by weapons and by head ornaments among males were both hereditarily ascribed, but both required adult status for an individual to actually hold the office. Grave 16 at Mokrin, that of an adolescent male, is revealing on this score since the individual is marked as having a right to both of these offices. Yet, it is equally clear that the individual did not yet occupy either office. For example, the head ornament





indicates symbol is present, but not worn

Figure 2. Schematic representation of the distribution of artifact classes by age groups for males and females at Mokrin.

was included in the grave, but not worn. Instead, it was folded and placed at the individual's knees.

Two parallel hereditary statuses were observed among females. One, marked by the occurrence of bone needles (which may have been an element in a larger fabric cape), was hereditarily ascribed and apparently was held from early childhood. The individual retained the office even into old age. By contrast, the other female office, marked by a beaded sash, was again hereditarily ascribed, but, like male head ornaments, required adulthood to hold the office. A number of subadult females were found with the sashes folded and placed either in their hands or at their feet. Unlike the male social offices, however, this status was relinquished when a woman reached old age. In effect, the social office was held by a prescribed women during her adulthood, or possibly reproductive age, and was then cycled on to a new potential office holder. This pattern of generational cycling of social statuses and their markers, rather than burial with the dead, will be seen again when other dimensions of social standing and wealth are considered.

A third important female status, marked by head ornaments, was also observed at Mokrin, although it operated under very different rules from those governing male head ornaments. Head ornaments among women were not hereditary, but rather appear to represent an *associative* status, which specific women acquired by virtue of their connection to high ranked males. The way in which such an associative status was acquired and held will be further clarified by the discussion of quantitative measures of standing and wealth at Mokrin.

In the present discussion, the terms social standing and wealth are used as virtual equivalents, with both being distinct from qualitatively defined social offices or statuses. The rationale for treating social standing and wealth as equivalent rests with the way these two concepts are related generally within tribal societies. In effect, wealth and social standing are two sides of the same coin. Since there is no true cash or currency (Dalton 1977), wealth is measured in the acquisition and amassing of things, be it stored food, cattle, dried fish, stone axes or coppers. Similarly, social standing within tribal societies is most typically gained by the distribution or disposal of wealth (cf. Sahlins 1972). There are, of course, other avenues to social standing; bravery in warfare and raiding, distant travels, vision quests, etc. Yet even these alternative routes often have as a by product the acquisition and distribution of goods. From an individual's perspective, goods (or wealth) are generated as a means to achieve higher social standing. Since there is no permanency of value in these goods, it is a logical strategy for the individual, while at the same time operating as a leveling mechanism to dampen serious economic inequality among community members. This appears to be the kind of

behavior that generates the distribution of different wealth markers in the Maros cemeteries.

Two non-redundant quantitative dimensions of wealth and standing were observable at Mokrin, which distinguished male and female spheres of activity and decision making. Each was less a personal status and more a statement concerning the wealth and standing of the deceased's household and immediate kindred. The first of these is termed here exotic wealth, and includes a range of metal and faience artifacts that were either obtained, or their raw materials procured, through long distance travel and trade. While individuals of both genders wore or displayed exotic wealth, it appears to have been generated as a result of male activities, and at a distance from the Maros villages. The second dimension is termed *domestic* wealth, and appears to have been an indicator of the subsistence standing, and particularly the stores, of the deceased's immediate household. Unlike exotic wealth, which consisted of ornaments that were worn in life, the display of subsistence wealth appears to have occurred via the medium of the funerary ritual itself, quite possibly in the elaborateness of the funerary feast. The elaborateness of the funerary feast being, in turn, reflected in the character of the ceramic assemblage placed with the deceased in the grave. Subsistence wealth appears to have been principally the product of female labor within the household. Decisions, such as how elaborate a feast should be provisioned, and the balancing of this expenditure of food stores against anticipated future needs, was also in the hands of the household's women. In effect, the two quantitative dimensions of standing and wealth present the interplay of male and female spheres of activity within individual households.

When the age patterns of wealth distribution are contrasted for males and females, considerable insight into the operation of the system is afforded. Among males, infants and children are found with considerable quantities of metal ornaments (quantities that are equivalent to similar aged females). On reaching adulthood, however, this pattern drastically changes. Adult males only rarely have metal ornaments, and older adult males have no metal ornaments at all. This inverts the expected pattern for the gradual accumulation of goods during an individual's life time and instead suggests that 1) when males reached adulthood, they ceased their role as 'displayers' of wealth, as they assumed the role of 'procurer' of wealth, and 2) male children received metal ornaments through their association with adult males. The complete absence of metal ornaments among older males suggests that among males, metal ornaments were eventually cycled back into the household.

The pattern of distribution among females is somewhat different. Among female subadults, again, a broad range of metal ornaments are found. The proportion of individuals with ornaments increases as women reach adulthood and an additional set of types, specifically arched pins and neck rings which are restricted in their distribution to adults, are now worn. Women continue to display these elaborate sets of ornaments until they reach old age. Once they reach old age, all of the more elaborate metal ornaments are relinquished, and the old women display ornament sets that are similar, if less frequent and elaborate, to those found among female subadults.

The contrastive pattern among males and females provides what is probably the critical clue to understanding the Maros wealth display system. Under this system, the wealth of a household is denoted by the man's ability to procure exotic metal ornaments (or the raw material for their production) which is displayed, not on the male, but on the women and children of the household. And while there is clear evidence that this display was competitive, it was nevertheless bounded by rules governing the 'tasteful' wearing of ornaments, such that no individual wore, or was buried, with greater quantities of any ornament type than could properly be worn at one time. The critical transition for males was adulthood when they ceased to wear the elaborate ornaments. It is not clear what happened to an individual's ornaments when this occurred. In all probability they were either recycled within the household, or they may have formed the foundation for the young man's own accumulation, perhaps for some use similar to the institution of bride price. Females did not undergo this sharp transition in role, at least not until they reached old age. It seems clear that the household's adult females were the principal focus of the competitive display, with children of either sex as a secondary focus. It is possible, again, that aged females recycled their ornaments to younger females within the household. But on balance, it seems more likely that they contributed it toward the son (or grandson's) initial accumulation. Such a pattern of generational cycling would have had the added advantage of tending to keep the wealth within the household lineage, even as the ornaments were being displayed on obligated affines.

From a more general perspective, a critical feature of the mortuary display is the fact that it represents an *associative* status, that is, a status that an individual held not in their own right but by virtue of their relation to another individual or group, in this case, the household.

A particularly revealing instance at Mokrin illustrates how these various rules and associations were negotiated to meet individual situations. Grave 10 contains a very robust, senile aged male. Yet the individual was treated in every way as a gendered female. This included not only a southern orientation characteristic of normative female status, but also a full array of adult and female restricted ornaments. Indeed, this individual had the single most elaborate assemblage of metal ornaments found in any of the Maros cemeteries. And this is what makes the case particularly interesting. Women, when they reach old age, normally relinquish their more elaborate metal ornaments to younger individuals. Yet this is not the case for grave 10. Did the over elaborate grave assemblage serve to mark this individual as some manner of 'super woman'? Or, did the uncommon mix of gender and sex result in a situation where there simply was no appropriate heir for the ornaments? In either case, the example highlights both the intentional and the negotiated character of the decision making process; as the living attempted to match quite individual circumstances to a broadly shared set of cultural norms dictating appropriate funerary treatment.

With this understanding of transmission and acquisition of social position and standing, it is now possible to consider the synchronic character of the Maros villages that produced the cemeteries. In essence this modeling process involves first fitting the corrected mortality structure of the cemetery population to an idealized model life table from which we can generate an estimate of the living population structure (cf. Weiss 1973). This is then matched with evidence relating to the duration of use of the cemetery which, for Mokrin, was roughly 150 years (O'Shea 1991). Given this size and structure of the living population, the relative proportions of differing social categories observed by age and sex in the mortuary population can then be projected back onto the modeled living population. The result of this modeling process for one of the villages associated with the Mokrin cemetery is presented here (fig. 3).

Perhaps the most striking feature of this model is the small size of the local community. The average community here is somewhere between 40 and 50 people total, broken down into six to eight households. The second striking feature is the suggested intensity of losses to warfare (remembering too that these are the individuals' whose bodies were not returned, and not the total number of deaths due to warfare and raiding).

Of the major social positions, there is a definite paralleling of male and female offices, with only a single office holder at any one time in any of the four positions. The 'doubling' of the number of female head ornaments further supports the associative, rather than hereditary, character of this marking.

In terms of the display of wealth and standing, the figure again highlights the distinction between the acquisition and display of exotic wealth. It also is interesting to note the imperfect correlation between exotic and subsistence wealth. The shadings give a general sense of the state of different household economies in the Maros village, although it is likely that subsistence standing was unstable over time. This distribution is skewed upward towards high subsistence standing. The diagram also begins to hint at some of the complex balancing and decision making that governed the elaborateness of the funerary feast.



Figure 3. A synchronic model of a living Maros community, based on the demographic structure and funerary treatments of the Mokrin cemetery. The approximate distribution of economic standing is represented by the distribution of ceramic assemblage types from the cemetery. Dashed lines with arrow heads mark statuses that were retained by individuals across major age categories.

Overall, the typical Maros village contained six to eight households and recognized at least four distinct hereditary offices with important political and ritual functions. Some households were better off than others, in terms of the prowess of the males at long distance trade and warfare, or in the household's success in the diverse range of subsistence tasks that characterized the local Maros economy. To a certain extent there was a convergence between the holding of hereditary office and the household's economic standing, yet this standing was apparently always volatile and could be undermined by warfare, bad harvests, or excessive social obligations. Yet, even as hereditary and economic inequality existed among the members of this community, the scale of the society was simply too small to permit a great deal of social distance between its members. All still belonged to a single community, owed allegiance and duties of defense and solidarity to their village, and ultimately all shared the same cemetery in death.

At a larger scale, Maros society appears to be made up of a series of small, but autonomous communities, and can probably best be though of as a loose confederacy or tribe of small villages. They were bound together by a shared identity, a common organizational plan, and a series of crosscutting inter-community sodalities. In addition to social bonds, marriage ties and shared cemeteries and funerary custom, the villages were bond by the needs for mutual support and defense in what apparently was a relatively hostile and dangerous world.

#### 5. Conclusion

Hopefully, this necessarily sketchy view of community organization on the South Hungarian Plain suggests something of what we can expect from archaeological research as we attempt to do anthropology in the past. Archaeology has both the theory and the methods necessary to undertake a true anthropological study of the past, one that is capable of discovering social forms unprecedented in the ethnographic present, and one that is beholden to neither the sterile process of culture-taxonomic categorization, nor to the intellectually bankrupt 'archaeology of imaginings' offered by post-modernist approaches.

Unlike the 1960's when the only hope for constructing images of past societies was by matching them to cultureevolutionary slots (themselves rendered out of the limited and biased ethnographic present), archaeology now has the means to monitor directly many aspects of past social organization and behavior, from demography and subsistence through to social and economic inequality, gender roles, and even community structure. With the increasing ability to monitor these decisive social dimensions, archaeology no longer needs to rely on stretched ethnographic parallels, since we can buildup convincing constructs of the societies themselves. Indeed, by our ability to view many more example of societal organization, and particularly examples of societies not touched by colonial states and empires, archaeology can bring to general anthropology a refreshingly broader picture of the variety of human cultural organization.

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## Stone age ideologies

#### 1. Introduction

How can we understand a past which we can never observe? What is the relationship between our practice as archaeologists and the practices of those whose lives, which although now extinct, we still hope to understand?

Imagine. Imagine that the day has passed as a walk, at first beside a river whose winter floods have receded leaving the banks scoured and in sharp relief against the flow of the waters. Progress has been slow. There are others with you, and a child is being carried. Woodland encroaches upon the water's edge and at times you leave the banks to cut along a well established but overgrown path between the trees. The trees are in bud and the smell of recent rainfall is all around you. Eventually the path picks up again but now it begins a climb which you have made many times before. You are hungry and tired, but you know that you will reach your destination that evening. Eventually the ground levels out. The landmarks are familiar, a great uprooted tree, a narrow stream. And then the trees give way to open ground, a huge gently sloping area which had been burnt but which is now deep in grass and from whence it is possible to look down towards the broad expanse of the coast. The sea is bright in the late afternoon sun and, to the south, the river which had shared your earlier path, breaks the line of the shore. Resting here little is said. Much of the journey has been in silence for the world around exists without comment as it has always done. Now, keeping the coast in sight and leaving the river behind, the pace quickens and before the sun has closed upon the sea your destination is reached. Beside a low outcrop of white rock you and your companions join with others, and at last you can rest. There is some dried meat and there is talk. Small groups huddle together, there are fires and there will be shelter. The next few days will be spent in this company. Here stories will be told and memories recalled. Food will be collected and shared, and in the heart of these activities a child, the child carried here, will die.

Is there an archaeology of talk? It seems unlikely. Talk leaves no mark for us to recover, no trace to act as its record. And if we continue to operate with the idea that the archaeological record is the only medium by which the meanings of the past are transmitted to the present, then that record seems so fragmentary and so coarse grained that the moments if not the localities of talk - short term and face to face - seem for ever lost. In their place archaeologists seek a general order in the material, mitigating the apparently incomplete nature of the record by recognizing patterns extending over huge geographical distances and lasting for long periods of time. The archaeological record therefore appears essentially the record of long term process. When, from this perspective, we say that material culture embodies meaning it is a meaning which seems to be mutely expressed. It is as if the significance of the patterns contained in the record lies in them being representative of something, rather than expressive of meanings which were once lived and talked about. These are not the meanings enunciated, considered, and argued over in talk so much as meanings which once stretched out over decades and covered territories which no single person could ever traverse. These meanings, which archaeologists refer to as 'traditions', 'cosmologies' or 'ideologies', seem some way removed from the practicalities of getting on with life. Yet it was people who were getting on with life who made, used, and discarded the materials we now study.

To assert that material culture is meaningfully constituted is therefore one thing, to understand how those meanings were created and operated historically, and to establish the means by which archaeological analysis can explore such issues, is quite another. In this contribution I want to distinguish between the meanings which archaeologists recognize as being located in the long term structural relationships which are directly observable in the archaeological evidence (such meanings appear to be *objectified* in the record of the past) and the meanings which were reproduced and objectified by the practices of those people who created and lived amongst the materialities which we recover archaeologically.

It is wrong, as I hope to show, to treat *structure* and *practice* as separate and thus alternative domains of analysis; the fact that they have been so regarded is the problem. Various attempts have been made to establish a duality of the two, although these attempts are often expressed so abstractly that they appear far removed from the historically specific ways human life has been lived. The easiest route through what has become a complex theoretical argument is

via the concept of human agency. The concept of agency simply establishes the idea that humanity is able to understand the worlds it occupies, to act upon those worlds in pursuit of aims and desires, and to monitor the results of those actions.

All human agency is situated; it has available to it different sets of resources, it has expectations as to the significance and value of those resources, and by necessity it acts with reference to different demands and controls which are placed upon it. Agency also operates temporally, it moves through life as a sequence of experiences, a sequence punctuated temporally and marked spatially by displacement. An example of this would be the sequence of experiences encountered in a walk. The human agent therefore experiences their own life by passing through time in which occurs a series of events. These events may be 'bracketed off' from one another by such simple devices as moving from one place to another, or by turning the body to face away from one place and towards another. These bodily experiences form part of an individual's biography. Agency, however, does more than merely experience life, it also makes sense of it.

It is in making sense that agents discover meaning in the world around them and in their own actions. Meaning is something which is both taken from the world when it is the product of interpretation and understanding, and it is something given to the world as the product of action. Agents therefore recognize a coherency and meaningful order in the world and they act, on the basis of that perceived order, to achieve certain ends. That such acts appear effective establishes the empirical validation of the original interpretations upon which they are based, and through such acts the agent is able to understand their own place and being in the world. Meaning is therefore created through interpretation, action and communication; it does not reside in some message or symbolic structure but has to be redeemed by an active process of interpretation and negotiation.

This point is of central importance to us, it will be the means by which we will unite the concepts of practice and structure, formulate a critique of current archaeological approaches towards the 'ideologies' of Stone Age societies, and establish the nature of archaeological research into these periods.

#### 2. The archaeology of archaeology

We began with a short, imaginary, journey. Before we can return to the kinds of experiences encountered there we will have to undertake another journey, this time through the more entangled undergrowth of archaeological reasoning. Our goal will be to reach a position from whence we can question the logic of a great deal of the recent interpretive work identified as 'postprocessual archaeology'. The remarkable failure which typifies this work is that whilst 'agency' has been adopted as the object of analysis in a commitment to write into history the existence of a knowledgeable humanity, and thus establish a break with processual archaeology, the practices by which that agency both gained and used its knowledge are rarely discussed. Consequently the agencies most obviously present in the writing of Stone Age archaeologies are not those of Stone Age peoples but of archaeologists themselves.

We must certainly begin by accepting that the histories of the Stone Age are the products of our writings. They are therefore the products of our enquiry into the past rather than being the direct representation of the past itself. That such an enquiry on our part is possible, and that the histories which it produces are open to evaluation, are because a general consensus exists among archaeologists that not only does a large body of evidence exist for the past, but that we are capable of establishing the significance of that evidence.

The evidence comprises a complex of material remains, and when we establish a meaning for those remains, in terms of some historical significance, we create an understanding of history. Two complex issues are embedded in this seemingly innocent statement; the ways humans understand their world, and the nature of the relationship between the understandings others once had of their world and the understandings of the past created by archaeologists.

We have already touched upon the first. Humans understand the world by understanding their place within it; they read the world around them and discover therein an order or logic whose utility is demonstrable through practice. Practice re-inscribes that understanding of order upon the world. It is therefore through *practices* which seem to achieve desired aims that the meaning of the world is realized and given some sort of empirical validation. Practices are, for the most part, inherently social for not only do they make sense to the practitioner but they also make sense to others - they are a social discourse. Practices therefore achieve some of the aims which are hoped for, they are generally understandable, although they may also give rise to consequences which were unintended. Practice is the means of interrogating the world whereby previous experiences and understandings are shown to be valid and adequate to the tasks at hand.

Ricoeur demonstrates how a conscious agency moves between different temporalities; an awareness of one's own self is built in relation to an awareness of the grander cosmological ordering of the world via the practices or narratives by which self-awareness is seen to have a practical validity in relation to that seemingly changeless cosmology (Ricoeur 1988). The meanings both read from and inscribed upon the world are relatively open. A number of views may be expressed of a particular condition, or a number of interpretations offered of a single event. The transformative power of agency, as it acts on the world by convention, creates new conditions which those conventions then have to accommodate. The ways actions interpret and impart meaning may always escape the expectations of convention. This is not to say that anything can go, competent social agents do require to be understood for their actions to be effective; they must make some reference to what is already expected of them by others and to what is already taken for granted, however radical their own pronouncements upon the world might be.

The emphasis placed upon agency, through whose interpretations and actions the structural conditions which it occupies are recognized, regenerated, and transformed, means that those structural conditions cannot by themselves determine the trajectory of history. Structural conditions do not contain some necessary direction; they do not embody a teleology. They partly define the material conditions in which people find themselves living and the traditions of knowledge upon which people draw to understand and to re-work those conditions, but the path we see history taking is contingent both upon our own actions as historians and upon the desires, motivations, and actions of agents who may always have acted otherwise and for whom the consequences of their actions may always have escaped their intentions. Structural conditions certainly change, and with such change the scope of opportunities available to agents may alter, but the directions agency takes in creating new structural conditions is not determined in the final instance.

Uncertainty and indeterminacy lie at the heart of life. Processual archaeology in particular plays a simple conjuring trick when it by-passes agency and presents as a cause for structural change, its consequences. As Bettinger has noted, a theory of consequences cannot be presented as a theory of process, a logical failure which processual archaeology holds in common with all functionalist analyses (Bettinger 1991, 216). Process refers to generative action and the latter, as we have argued, only lies in the hands of agency.

Material culture is itself the medium and the consequence of practice. If the human agent occupies a world which is structured by natural and human agency, then existing material conditions may appear to those who inhabit them to reveal the cosmological ordering of the world. But the agent also reworks those material conditions by re-inscribing a narrative of their own presence in that world upon them. Such re-inscription changes the nature of the world which may then be re-interpreted. We must be aware that not only does material culture have more than one meaning, because it can be read from a number of different perspectives, but that it also operates two dimensionally in the world, as the already given material conditions of life, and as the means and consequences of its reworking. Agency is situated between these two dimensions, it both occupies and interprets that material, whilst also creating it.

The second issue must accept the generality of the points made here; they apply to our practice as archaeologists and inform the ways in which we create histories just as much as they once applied to those whose lives we hope to study through archaeological analysis. The archaeologist is involved in the interpretation of her or his own world and in the interpretation of other people's worlds which no longer exist. Giddens has argued that what distinguishes the social scientist from the natural scientist is that the latter deals with an object world which 'does not answer back' and which does not construct and interpret the meaning of its own activities. The social scientist, on the other hand, interprets a world which others have also interpreted and where a valid understanding of those other social worlds must accommodate the knowledge of those who sustained them (Giddens 1982, 13). The past does not literally 'answer back' but the principle remains. Shanks and Tilley developed this reasoning by suggesting that archaeological practice involves a 'fourfold hermeneutic' (1987, 108). This may cloud the more simple point; the knowledge maintained by those others who sustained the life worlds we investigate must feature in our understandings of those worlds (cf. Shanks/ Hodder 1995, 10). Shanks and Tilley suggest that part of the hermeneutic particular to archaeology is the archaeologist's attempt to "understand an alien *culture* involving *meaning* frames radically different to his or her own" (1987, 108 my emphasis). What concerns me is the vagueness of the terms which I have emphasized.

Archaeologists are not privileged to observe the people whose lives they wish to study, instead they work with the residues of the materialities those lives once inhabited. Despite this, and given the need to include in our writings an understanding of the knowledge by which those now extinct lives operated, there has been a tendency to reify such knowledge in the surviving material residues. These residues are observed to be patterned and to contain order and as such are taken to represent the structural conditions which the archaeologist seeks to understand. The interpretation of humanly created 'material culture' is assumed to reveal the forms of knowledge implicated in its creation. In other words the structure of material culture supposedly encodes other peoples' knowledge, and this is something open to archaeological discovery. Archaeological practice thus stands between the structured and unchanging material residues of the past and the assumptions and motivations of contemporary archaeology. My point is that the knowledge created under these conditions need have little to do with how those who once reworked some small segment of that material universe saw it for themselves.

I believe this point to be of crucial importance, not simply because it defines a necessary difference between our archaeological knowledge of the various pasts which once existed and the knowledge of those who inhabited those pasts, but because it also reminds us that the proper object of archaeological analysis is not material culture but the *inhabitation* of material culture.

To reiterate: human practice is neither determined by, nor is it reducible to, the structural conditions which it inhabits. Material cultural residues which are recovered archaeologically are part of the contemporary conditions within which archaeologists work. Past human practices were situated quite differently in some smaller portion of these material conditions. Archaeologists should study the ways other humans once occupied their worlds, a practice through which archaeologists also understand their contemporary world. In postprocessual archaeology the former is often forgotten at the expense of the latter.

The emphasis upon a dominant archaeological understanding of contemporary material culture is relatively easy to document. Interpretation, writes Tilley, is something we only have to do "if we are puzzled or ignorant about something ... we interpret only if things are not obvious to us" (Tilley 1993, 2 emphasis removed). Interpretation is a process in which we are actively involved and is a form of 'making sense' of things which initially puzzle us. We make sense of things either because we can find a way of fitting them into our preconceptions or because, more radically, we have to rethink our preconceptions.

What then is it in archaeology which puzzles us? Tilley suggests that "in relation to the contemporary act of archaeology we are interested in the manner in which certain meaning effects of material culture are emphasized by individual authors and woven into interpretative accounts. Why is this meaningful or important to the archaeologists?" (Tilley 1993, 5 emphasis removed). Thus, whilst "all archaeology involves the adoption of interpretative procedures that it ought to be possible to identify and describe" and in which the intention is "to identify the effects significant meaning has on its observers and readers both in the past and the present" (Tilley 1993), it becomes all to easy to impose contemporary meaning effects upon the agency of the past. An example may suffice.

Thomas and Tilley have offered an interpretation of the 'symbolic structures' of the Neolithic in Brittany. It is an interpretation which arose from a week long field class to the region in 1991. Neither author had visited the area previously and the impact of the monuments upon them was powerful. As the week progressed they found that "all the interpretations we were making were interlinked and seemed increasingly to make more and more sense of the monuments and the artifacts in the museum exhibitions as we visited them" (Thomas/Tilley 1993, 225). The reworking of these 'on the spot' observations allowed the authors to "make a series of interpretative remarks with relation to the entirety of the Breton Neolithic, attempting to cover a period which spans roughly 2500 years" (Thomas/Tilley 1993, 227). These remarks therefore draw upon the surviving and cumulative debris resulting from two and a half millennia of human activity, debris which we can arrange into a sequence of types and forms, such as "menhirs and the development of axe symbolism" (Thomas/Tilley 1993, 229), which seems to display some internal logic. The only human agency which stands amongst this debris is that of the two authors. The way that their practices are situated in a contemporary academic discourse is expressed in the scale of their vision - the entirety of the Breton Neolithic - and in the routines of written and illustrative discourse. Who else would compare the ground plan of Barnenez, the skeletal human rib-cage and one of the rock engraved motifs from Les Pierres Plates (Thomas/Tilley 1993, fig. 6.11), other than someone who has spent too long in a library? If the agency of an 'other' exists in such an account then it is only dimly recognizable.

The foregrounding of the act of archaeological interpretation in the writing of history reminds us that we create those histories and with that creation comes responsibility. Archaeology is a "material practice in the present", with "no final and definitive account of the past as it was", but rather "a plurality of archaeological interpretations suited to different purposes, needs, desires" (Shanks/Hodder 1995, 5). The contexts of archaeological interpretation "include the interpreting archaeologist(s) and the questions asked and entities existing in the archaeological record" (Tilley 1993, 9). There is no past which exists independently of us and against which we can evaluate the veracity of our historical writings. That said, some form of assessment is possible for there are good and there are bad archaeologies. But if we treat material culture as an open text, endlessly available to our re-interpretations, how are such judgments to be made? I would suggest that much depends upon the way in which we welcome a humanity other than our own into our histories.

This rather dull preambulation through archaeological theory has reached its goal; to distinguish between structure and agency and to recognize that the material world is both the context and the consequence of human practice. Structures are the conditions which exist and which humans recognize as resources with which they can work. Agency understands those resources, it reads them and recognizes that some of its own desires can be achieved through action and discourse which use them, agency finds a place for itself in the world. Structure and agency do not form a duality because each interpenetrates the other through the consciousness of agency. The ordered pattern of material residues, like the order of social and economic institutions, arises as a *consequence* of this inhabitation of the world. We may treat such consequences as the *systemic* arrangement of things or of social institutions. Bettinger has dealt in detail with an argument similar to the one pursued here where he demonstrates that neo-functionalism and Marxist theory both assume that 'culture process' occurs by means of systems transformation (Bettinger 1991).

The disentangling on the one hand of the interpenetration of structural conditions with agency, which is the real condition of history, from on the other its systemic consequences, means that we are in a position to avoid analysis which seeks to explain systemic change by reference to the system itself. To claim for example that social or economic systems are directly represented in the patterns of archaeological residues, as Renfrew has done, immediately removes the possibility of situating historical agency within its material and structural conditions (Renfrew 1994). To go further and claim that the social or economic system existed to be adaptive and that systemic change is to be explained as an adaptive response to some external stimuli is trivial. As Bettinger comments "most behaviours have at least some potentially beneficial effects" (1991, 53), simply by placing themselves in the world people generally adapt to it with a certain degree of efficiency.

It is time to return to the people whose lives we should be studying and to the kinds of experiences with which we began this paper. This means, among other things, that we no longer write an archaeology of the *Mesolithic* or *Neolithic* as if these systemic orderings of material and institutionalized practices were themselves the forces of history, for they were not. It is thus pointless to seek an explanation for the transformation between one such system and another in terms of those systems themselves.

#### **3.** The archaeology of inhabitation

Consider the dead child. What kind of being was this? Was such a life understandable, for where did it find its place and how could this death be brought into a conformity with the world as it was? Perhaps the child could be named, placed among the living community, or perhaps the life had been so fleeting as to render it insubstantial, transient. The sudden and unexpected death could perhaps, by reason, become understandable. Archaeologists do not listen to the stories by which others talked through the logic of such a situation, establishing what was required to hold some small portion of the world together, or to tear asunder the inappropriate conditions which gave rise to the events which they then perceived. But archaeologists do study the conditions which helped to render such talk possible, and they do observe the consequences of actions which accompanied the practice of such talk.

To talk an understanding of the world into being, to be able to comprehend the passing of a life, or to be able to contain the implications of that death, is to express a sense of vision which sees how the world is and establishes the place within it for such an event. We use the terminology of visual perception to describe an understanding of temporal continuity, the relationship between event and structure. The idea of seeing or sensing one's place brings us back to the ways the practices of inhabitation make sense of life. Time and place combine in the way we experience the world. We may pass time at one place and we separate different parcels of time as we move between places, a movement through time and space. The landscape therefore embodies the temporal aspects of our inhabitation of it. But as such it must contain more than one kind of temporality. To think across time, to link the time of one's own life or of the life of another to the time of a larger cosmological order requires that, through the practice of inhabiting the world, we are able to bring those different temporalities together in the one world which we encounter.

Hirsch argues that through inhabitation the landscape is brought 'into view' by the discovery of its familiarity (Hirsch 1995, 3 see also Carter 1987). The way this works is between an occupied 'foreground' of immediate experience and a 'background' of perceived potentiality, the latter being thrown into relief from the point of view of the former (Hirsch 1995, 3). The relationship must be both spatial and temporal. The foreground is the 'here and now' whilst the background is not merely the 'horizon' but also 'the time of law', a place of creation and history, the location of some other ideal state. The background is therefore a displaced temporality, a landscape which the subject sees as separate from themselves, creating the situation of the spectator, but a landscape wherein they too could find a place. Such landscapes express what Smith describes as 'the pleasure of detachment' through which 'something ordinary is made extraordinary' (Smith 1993, 79 & 81).

The background is therefore the historical or transcendental space to which practice aspires, and we must keep hold of the centrality of practice as *the* means by which the background is revealed or brought into view. Howard Morphy has described the way Narrityin Maymuru, a Yolngu from north-east Arnhem Land was able to recognize, or bring into view, the landscape around the Snowy Mountains on the border between New South Wales and Victoria which neither of them had ever visited before. That landscape was recognizable in terms of ancestral time and could therefore be seen and talked about (Morphy 1995, 184). Morphy expresses the relationship between the body's own experiences, the foregrounded practices of inhabitation and talk, and the background of historical time thus brought into view as the 'triadic relationship' between 'the individual',

'the world in which he or she lives', and 'the ancestral world of the past' (1995, 187). For the Aboriginal people of Australia the Dreaming "represents a structure ... which has in part been lived and has, as a consequence, connotations. It had its origins in the past, in its separation from the flow of Dreamtime events. It has gained its connotations through its incorporation in subsequent history, through being reproduced in a form which enabled it to accommodate to the exigencies of historical events" (Morphy 1995, 188). Ancestral time was transformed into place when the moment of the ancestral presence was frozen into the form adopted by the place. Temporal sequences of ancestral events thus became spatially segregated places for the human observer where "what remains is the distance between places rather than their temporal distance between events" (Morphy 1995, 188). It is through their inhabitation of the landscape that the individual reworks the relationships between the temporal experiences of their own body and its practices, and the temporal relationships expressed by the events of ancestral time. "The ordered, frozen world of the ancestral past becomes part of the subjective experience of the individual, through the acquisition of knowledge in the ancestral past as he or she moves through the world" (Morphy 1995, 189).

The individual recontextualises their experiences by lifting their eyes from the foregrounded ordinary event to see the background horizon of extraordinary, sacred or historical order. The practices by which such order is brought into view, and by which the ordinary life becomes embedded within it, are talked about as the discourse of 'being in the world'. Tilley writes that to "understand a landscape truly it must be felt, but to convey some of this feeling to others it has to be talked about" (Tilley 1994, 31), and he links the process of relating one place to another via a serial movement along a path as a 'narrative understanding'. Events and places are given meaning by linking them as a particular sequences of foregrounded experiences to the background of generalities. The particular rhetorical organization of a narrative works on us because we share an understanding of both, we see how the particular relates to the general, in effect we share the same landscape. Thus "a critical understanding of spatial narrative requires that we investigate precisely why we prefer some plots or configurations of things rather than others. In other words attention must be played (sic) to the manner in which the story is creatively orchestrated, how it guides, and what it passes through" (Tilley 1994, 32).

If we accept that a fundamental relationship exists between landscape, understanding and language then we should also be in a position to recognize that an archaeology of practice, of the agent's inhabitation of the world, is also an archaeology of talk. Gell and others have written of the poetics of those who inhabit the densely forested highlands of New Guinea. Gell's concern with the issue of linguistic iconicity leads him to distinguish syntactic iconicity, shared by all languages and covering the rules which govern the arrangement of the main and subsidiary clauses within a sentence, and sentence meaning, from phonological iconism which concerns the connections between the "soundsubstance of individual words and morphemes and their meanings" (Gell 1995, 234). Gell proposes that "the primary forest environment imposes a reorganization of sensibility, such that the world is perceived in a manner which gives pride of place to the auditory (and another sense we hardly ever use, olfaction ...), and that this transformed sensibility has manifold consequences in the domain of cognition tending to promote phonological iconicity in language" (Gell 1995, 235). In a world where the landscape is known primarily through sound and smell, where there are no open vistas linking the moment and place to a far horizon, Gell finds a cultural expression of 'sympathy' in this 'intimate, concrete and tactile world' which maintains a phonological iconicity in its languages with its use of a wide range of onomatopoeias. In contrast the dominance of a phonological iconicity may fall away in conditions where a visual experience of the connections between landscape features predominates and a more 'arbitrary' language emerges where 'sign and meaning belong to entirely separate codes' (Gell 1995, 235).

Through practice the connections are made between the foregrounded experiences of ordinary life, its routines and surprises, and the background horizons of generality, history and order. The experience of a particular landscape will find within it a particular link between the two spatially and temporally, and by a certain form of narrative the links are talked about and understood. The experience of the landscape therefore makes certain narratives appropriate; the closed and intimate sympathies of the forests or the lineal narratives which address the experiences of walking through open country. In the walk with which this contribution began another possibility occurred, to emerge from a local and closed path onto an upland vista. Such a walk could not have taken place anywhere in post-glacial Europe, it was not a walk over a broad lowland expanse or a coastal plane. Those who passed through that open and undulating landscape could tell the stories of their own journeys, the remembered narratives of places visited in turn, but they could also look out from an upland vantage point and gain, at that moment, a clear view of the distant horizon and of the places which lay between them and that horizon. Such a vantage point gave voice to the possibility of a narrative vision of landscape which was available only to those who stood partly outside and looked across it and saw, from their perspective, its connections. From such a point time and space might seem to collapse into a single synthesis, a set of fundamental

principles which evoked the pattern of the land seen with a clarity of vision which was only available in an extensively cleared landscape of undulations and sharp relief (cf. Bloch 1995). Exactly how such a synthesis might be established, the nature of the principles it employed, are not determined by the physical conditions it uses, but those conditions make such a synthesis possible.

In his A Phenomenology of Landscape Tilley (1994) visits three regions in southern Britain; the coastline of south-west Wales, the Black Mountains of south-central Wales, and the chalk downland of southern Wessex. Tilley evokes the characteristics of the topography of each of these regions. Through this topography an interplay is established between the landscape and the monument, an interplay which itself depends upon the movement, vision and experiences of the human body. The conscious body, which is absent from almost all archaeological texts, is the agency through which place, monument and landscape can be recognized in relation one with the other. The relationship, expressed as a narrative, is never of one form, and so the stories are not repetitive (see also Fraser 1995). Sometimes the narrative is about the approach towards the monument and the landscape position within which it is set and through which the agent passes, at other times it may concern the way the place and the monument operate as a point of reference for the landscape beyond. Such narratives require the ability to name places and understand a way of relating them. Thus Tilley suggests "that it was precisely because the coast provided both rich economic resources and a wealth of named and distinctive natural topographic markers that it was so symbolically important to both Mesolithic and Neolithic populations" (1994, 86). But the ways of relating these named markers is through the interplay of foreground and background. Between these the monument and other landscape features slip with reference to the position and movement of the body as well as the biography of experiences which the body carries with it.

Monuments expressed a certain way of talking about a particular range of landscape experiences; they made sense when situated in the expansive vistas of the relatively open and topographically distinctive landscape forms which they addressed. Perhaps we can now begin to hear the ways narratives could have been constructed in the topographically varied landscapes of Atlantic Europe. As the vegetation was increasingly cleared to reveal the distant forms of these landscapes so it became possible to see an integration between distant places and places already encountered. The narratives of that integration, in their various manifestations, often shared a rhetorical concern with human burial and ancestral veneration. In this way past and present were brought together at one place and thus the passing of human life could be allocated a significance in a changeless world.

In his account Tilley is concerned to maintain, if somewhat diffidently, a distinction between the Mesolithic and the Neolithic marked by the emergence of monument building in the Neolithic. This was the process, according to Tilley, "by which the land became enculturated and ultimately transformed into architectural form during the Neolithic, when there arises a need to capture and control what the landscape is about through the medium of landscape morphology" (1994, 73). The distinction seems over played. The same places remained important, and similar narratives of the landscape may have been told, ensuring that the gatherer-hunter landscape was as densely enculturated as anything which followed. The transformation of place by the erection of stones - monument building may merely have been contingent upon the numbers of people present at any one time and the nature of activities associated with the narratives of the place. It was the context of the places in which those narratives became possible which gave those monuments their significance, which made then meaningful. Tilley offers an evolutionary scheme taking us out of the Mesolithic and into the Neolithic via the appropriation of the ancestral powers and meanings of the landscape by individuals and groups who constructed and used the various chambered tombs, long cairns and long barrows (Tilley 1994, 202). For him it was in the Neolithic that "tombs presenced and marked out the bones of the ancestral dead in the landscape. In so doing they visibly brought the presence of the ancestral past to consciousness. ... [The] setting of place became much more anchored. The building of the monuments prevented the ritual and mythological significance of particular places being lost and forgotten. They stabilized both cultural memory of place and connections between places" (Tilley 1994, 202-4). But these assertions seem to confuse the longevity of survival of the archaeological monument with the stability of its meaning. Certainly the architectural forms represented by these monuments facilitated the complex organization of the ritual practices which used them. Coincidentally this might have further emphasized distinctions between statuses of practitioner by establishing clear levels of spatial segregation which each status might occupy (Barrett 1994). But these arrangements no more stabilize or appropriate meaning than does the veneration of a rock outcrop; what matters is that for either the tomb or the outcrop to have objectified a certain set of values then the narratives which set those values in place had to be told and understood, they had to be lived as a way of making sense of peoples' experiences.

We must surely accept the enormous longevity of certain landscape narratives which evolved, as the landscape of Atlantic Europe itself evolved, in the post-glacial period. In the telling of those stories certain acts of construction took place which had further consequences for the ways in which the landscape could be viewed. These constructions, the monuments for burial and of ancestral veneration, do not mark the transition from one age to another, nor do they necessarily mark the emergence of a more stable understanding of the landscape. Monuments were simply the product of people continuing to rework the traditional narratives of their landscapes but under changing material conditions. These changing conditions, including the clearance of vegetation, the introduction of new resources and increased levels of population, do not 'explain' why these particular monuments were built but simply represent the structural conditions under which they became possible.

#### 4. Conclusion

Through talk experience is shared and understandings of the world are expressed. Archaeologists do not hear the talk of those whom they study, but then nor do most historians. Talk is intimate, a local practice which makes sense because assumptions about the world and experiences of the world are shared. It expresses the embodied nature of human agency through which the world is inhabited. The body moves through the world, and the experiences it encounters on the way are found to be comprehensible and can be acted upon because they are seen against the wider horizon of a socially constituted and ordered universe. Agency is therefore situated within particular structural conditions which it comprehends and through which it is able to act and to communicate the basis of that comprehension.

Archaeology has tended to confuse the issue by regarding its role as being to interpret or to explain ancient patterns of material culture rather than to understand how others once occupied the structural conditions which they perceived to govern their lives. This is a question of the extent to which archaeologists are prepared to relinquish the primacy of their own horizons of expectation and seek instead alternative horizons which others may have used to guide the passage of their own lives. We may certainly find a meaning for certain patterns of material culture when we draw comparisons representative of extensive geographical and chronological diversity, but such comparisons are expressive of the way we are situated within our academic discourse. There have been other ways this material was occupied, and it is this which should interest us.

The Neolithic was not a set of material resources which spread from south-west Asia through Europe, nor was it a set of abstract categories which were transmitted into different ecological and social contexts across Europe, although of course that is exactly what the Neolithic is for large numbers of archaeological commentators. Nor is the Neolithic to be explained as a shift in the systemic adaptation of human societies away from gatherer-hunting which was brought about either by environmental change or by long lived and essentially abstract social processes. Material conditions certainly changed, but the Neolithic is about the ways those changing conditions were inhabited, understood and talked about, thus allowing the momentary experiences of life to be set against a background of perceived order. The megalithic and non-megalithic architecture of the Atlantic seaboard expresses a number of ways of situating the subjective experiences of movement and the encounters with place within a wider landscape context. These ways of talking were made possible by the very nature of the landscape itself in which some monuments eventually bridged the space between the occupied foreground and the background of desired and ordered possibilities, between subjective experience and the cosmological certainties which made the world the way it was.

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# Remarks on the problem of inferring ideology and social structure from the artifacts of human action<sup>1</sup>

#### To Professor Rodney Needham

Since ... only the events and not their inferred relationships are empirically demonstrable in any study dealing with man's past, the difference between the archeological, documentary, and ethnographic records is merely one of degree, not of kind, and the archeologists should not consider that the limitations of their finds impose interpretive strictures upon them any more than upon other students dealing with past actuality. Up to the limits of their evidence, theirs are the same privileges and the same obligations that impinge upon ethnologists and historians.

- Walter W. Taylor, A Study of Archeology (1967 [1948])

#### 1. Introduction

In the academic year 1993-1994, Dr. Marek Zvelebil and I found ourselves together as Fellows in the Netherlands Institute for Advanced Study in the Humanities and Social Sciences, the only representatives of archaeology and social anthropology, our respective disciplines, in the NIAS fellowship that year. Perhaps for want of a more qualified person close to hand, I was invited to serve as a discussant for a two-day conference on *Ideology and Social Structure of Hunting, Gathering, and Farming Communities in Stone Age Europe*. With a remark of Prince Charles-Joseph de Ligne (1735-1814) in mind ('This is a subject on which I know absolutely nothing: I should write a book on it') and some misgivings, I accepted the invitation.

I am neither an archaeologist nor prehistorian but, as a social anthropologist, I have carried out long-term fieldwork on the island of Flores in eastern Indonesia where, among a people who call themselves the Ata Tana 'Ai, I have investigated social organization, religion, myth, language, and the human ecology of the Tana 'Ai valley. The topic of the NIAS conference, which encompassed ideology and social structure, was thus attractive to me and I was very curious to learn what my European colleagues in archaeology and prehistory had to say on these subjects. I was not disappointed. Not only were the papers presented in the conference very interesting in themselves, but as the conference unfolded it became clear that its participants shared a common set of problems, approached those problems with a common and coherent assemblage of methods, and were arguing about crucial and non-trivial matters bearing on their main concerns: Mesolithic hunting and gathering, Neolithic farmers, and early Bronze Age

society, and how we might determine something fundamental about the people of those ancient societies in Europe who left behind material residues of their activities.

Given the particular and hard-won knowledge and expertise that archaeologists bring to their subject, one can reasonably ask what a social anthropologist might contribute to a discussion of life in the prehistoric societies of Europe. In replying to this question I wish to make it clear at the beginning that most of what I now know about this subject I learned in two days at NIAS. I took away from the NIAS conference the impression that its participants were vitally interested in the ways in which the social structure and ideology, i.e., the culture, of Mesolithic and Neolithic European peoples might be characterized on the basis of data supplied from the study of the material remains of their behavior and activities, and most especially, from the traces of their subsistence activities. These concerns are not too far removed from those of social anthropologists, who investigate behavior and both individual and group activities, albeit among people still alive and communities still extant. The many points at which these papers raise and address problems shared by archaeologists and anthropologists indicate the degree of affinity between the two fields.

The participants in the NIAS conference were assembled to consider three questions:

- 1. What do we know about the social organization and ideology of the hunter-gatherer and farming communities of stone age Europe?
- 2. How can we use archaeological evidence and our conceptual frameworks to know of the social domains of the Mesolithic and Neolithic societies?
- 3. What patterns of change in the social domain can be observed in time during the Mesolithic and Neolithic?

Perhaps the most intractable is the problem of inferring social structure and ideology from the material residues of behavior. This question is also the one of the three that a social anthropologist is best equipped to address, and it is thus to this problem that I will address the remarks in this essay.

In essence, the questions discussed by the NIAS conference reduce to this: with respect to developments in Europe in the late Mesolithic and Neolithic eras, how do we read the anthropologist's 'culture' from the 'archaeologist's 'culture?' But just what 'culture' is for an anthropologist, that is to ask, what it is that social and cultural anthropologists study, has never been settled satisfactorily. It was a problem in 1952, when Kroeber and Kluckhohn published *Culture: A Critical Review of Concepts and Definitions*, and it remains a problem now. I shall in this essay (perhaps somewhat unsatisfactorily) first say what I think culture is *not* (it is not static, it is not a causal entity, and it cannot be reliably inferred from behavior or the material products of behavior) and from there point to difficulties and, more positively, to possibilities for archaeologists who work from artifacts toward culture as a concept which includes peoples' ideas and patterns of social structure.

2. The material remains of behavior and action While not ignoring a century of debate about the subject in the social and behavioral sciences, I will here take as behavior anything I can observe a person doing. But, as a social anthropologist, I am generally more interested in action than in simple behavior. The difference between behavior and action is that action is *intentional behavior*, by which I mean that it has some goal, purpose, or rationale that makes it instrumental or meaningful. Sneezing is behavior, whereas clearing a patch of forest is action. If I ask an informant, 'Why did you sneeze?' he might well reply, 'I don't know.' But any informant will reply, often at length, about why he clears a patch of forest. As an anthropologist I attend most to the latter because I am interested in the patterns and regularities that human action produces, either as an intended goal or as an unintended consequence of action. Distinguishing intended action as a particular kind of behavior from behavior taken generally and further distinguishing the intended goals of action from the unintended consequences of intentional action lead to unsuspected complexities in anthropology.

In the Tana 'Ai region of eastern Flores, for example, people clear forest to make gardens, and they make gardens in which to plant crops, and they plant crops in order to get food. Thus, clearing a forest is an intentional activity. Although action is intentional, it nevertheless can lead to unintended consequences. For example, when looking across the Tana 'Ai valley from its western wall to the valley's eastern slopes, the mosaic of cleared garden land and regrowth forest is the single most obvious feature of the landscape of the region. Without reference of any kind to members of the community, one could map the gardens and forests and, in doing so, could discover an unintended order in the landscape. By unintended, I mean that, should you ask Tana 'Ai horticulturalists about it, they might not immediately recognize what it is you are talking about and, furthermore, might not (indeed, most likely would not) cite

bringing about that order in the landscape as an intended consequence of clearing forest and planting gardens the way they do. With or without their intending it to be so, the order is nonetheless there. And it is a worthy object of understanding and explanation.

Before the arrival of Europeans, the valley of the Murray River, Australia's largest catchment and riverine system, was replete with forests of *Eucalyptus*. Eucalypts, or gum trees, are excellent water pumps. Among trees, they excel at drawing ground water through their roots and aspirating it into the atmosphere through their leaves. Mature Eucalyptus forests thus regulate ground water levels, as they once did in much of the Murray River basin. Over more than a century, Europeans took advantage of the rich soils of the valley for agriculture. This activity required felling and clearing the valley's forests to make fields and paddocks. With the trees gone, the water table in the valley began to rise. As it rose, the water carried with it dissolved salts. Today, that salt has come to the surface in many parts of the valley, thus making agriculture increasingly difficult. The salting of the Murray River valley is an unintended consequence of intentional human action.

One of the aims of archaeology is to explain artifacts and assemblages of artifacts in terms of the behavior of their makers. Thus, as analysis can reveal an orderliness in artifacts and assemblages, it is reasonable to assume that this order reflects an orderliness in the behavior of those who produced them and who were responsible for their deposition. But if the aims of archaeology include the reconstruction of the culture of the people who made and deposited an assemblage of artifacts, then we require a means for establishing more than a simple correlation of artifact and behavior. To reconstruct a past culture we need, among other things, to be able to infer the ideology and social structure of those who left behind a particular assemblage. And, in order to learn something of ideology (a more or less self-consistent set of ideas about the nature of the universe and appropriate human action in it) and society, we need a way of sorting the intended results of action from the unintended results of action which, by their nature, cannot reflect an ideology. It would, after all, be incorrect to try to explain why Europeans cut down the Eucalyptus forests in the Murray River Valley by saying that the ideas they had in mind were to make the valley agriculturally nonproductive and that they achieved this goal by actions which caused the soils to salt up.

Both agriculture and the salting of the Murray soils were consequences of the intentional clearing of forests and both would be seen in the archaeological record of human activity in the Valley. But only one of these results (agriculture) would shed light on the ideology of the people who cleared the forests. The problem is this: how can we distinguish the intended results of action from the unintended results? And, there is a further problem: once we eliminate the unintended results of action from consideration as a purpose of action, we may be only marginally closer to knowledge of the ideology of farmers in the Murray Valley since more than one ideology can accommodate agriculture as a mode of action.

Why is this question important? Let us assume, for the sake of argument, that there is some relationship between some ideologies and some actions (i.e., intentional action, not simple behavior). To the extent that this is the case, then it makes good sense for an archaeologist to trace the relationships between artifacts and action, and between action and ideology. The same can be said of an attempt to trace the relationships between artifacts, action, and social structure.

While artifacts can be taken to be signs of action or behavior, artifacts do not directly index any particular action or any particular form of action. For this reason, the methods employed in establishing a relationship between artifacts (or assemblages of artifacts) and the action that produced them require inference. In this undertaking, an archaeologist can include in the inferential process both artifacts that are the results of intentional action and those that are the unintended results of action. In proceeding from action to ideology, inference is once again required. But, once again, we cannot assume that any particular action is an index of any particular ideology. The reason for this is that, to recall the case of agriculture and the salting of soils in the Murray River Valley, agriculture involves intentional action whereas the salting of soils, while a result of intended action, was not the intended result of that action. Insofar as it is reasonable to assume that, whatever the relationship between ideology and action, ideologies do not encompass the unintended results of action, to infer ideology from action means we first need a means of discriminating intended from unintended artifacts. Thus, if we are to infer the ideology of the Murray River agriculturalists, we will need to keep in mind that the production of food crops was the result of an intended action whereas the salting of soils was an unintended artifact of felling forests for agriculture. The actions and activities of people engaged in agriculture are in accord with some ideologies whereas an action intended to produce soil degradation would be in accord with a different ideology (or ideologies). Furthermore, action that produced as an unintended consequence the salting of soils is consistent with an ideology associated with action that aimed at agriculture, but would not have been intentional action in the sense I am employing the term. Thus, artifacts that are the unintended results of action would not directly tell us much about ideology.

The consistency or compatibility of an idea or set of ideas (an ideology) with an action or actions is not the same thing as causality. Thus, an anthropologist can observe and record textually actions and he can reasonably identify intentional actions as those that his informants themselves explain in terms of a set of ideas (bearing in mind that it is safest to treat the verbal expression of an idea itself as an action). And should he come up with a hypothetical linkage between observed action and a recorded idea, he can refer his hypothesis to informants by way of a query. In other words, an anthropologist can observe the *action* that he tries to link to thought or ideology and he can connect the two in a single inferential step (see Lewis 1997).

In this respect, an archaeologist is at a disadvantage: the action that produces an artifact cannot be directly observed, but must be inferred from the form and (insofar as it can be known) the function of the artifact itself and from the artifact's contextual relationships to other artifacts. Thus, action intervenes between artifact and ideology and, for the archaeologist, a sequence of at least two inferential steps is required to get from artifact to ideology:

Artifact $\rightarrow$	behavior:		inference			
	behavior $\rightarrow$	ideology:	inference	b		

Insofar as an inference can carry only a degree of certainty (or a probability of being correct), the sequence of inferences between artifact and ideology is subject to a compounded probability of correctness (or falsity). If the probability of an inference, *a*, from an artifact to the action of its maker ('I am 80% certain that this artifact was produced by technique *x*, or is an element of assemblage *y*, or was employed in process z') is 0.8 and the probability of the subsequent inference, *b*, from the action of its maker to its maker's ideology is 0.6, then the inferential sequence from artifact to action and from action to ideology yields a probability (or certainty) of less than 0.5, which is not very satisfactory.

The archaeologist must frequently imagine the sorts of beliefs, desires, goals, intentions, ideas, and knowledge people might have had that would have led them to act in ways that would have brought about the artifacts observable in an archaeological record. Frequently a number of ideas and goals that led to actions that might account for a single result are possible, but some will be more reasonable than others when direct, indirect, or collateral evidence – or plain common sense – is taken into account. Thus, in studying the Europeans' exploitation of the Murray River Valley, some future archaeologist could discount the following as likely ideas or intentions that led to actions that brought about the salting of soils:

- 1. the Europeans intended to bring salt to the surface and felled the *Eucalyptus* forests to bring about the degradation of the valley's soils;
- 2. the eucalypts were abducted by aliens;
- 3. the Europeans cut down or ring-barked as many trees as possible in the shortest possible time because they hated trees.

Based on comparisons with other contemporary and prehistoric cases of agriculture leading to radical and deleterious alterations to an environment, one or more of the following motivations and ideologies are more likely to be true:

- the Europeans attempted to recreate an agriculture already familiar to them from their European experience and did not know (or take into account) the peculiarities of the Australian environment;
- the Europeans viewed the Australian environment as an expendable resource which, coupled with an enthusiasm for capitalistic ideology, inclined them to ignore the salting of the valley in favor of a quick return on a minimal investment of labor;
- 3. the clearing of the valley was an expression of a European ideology that positively valued man's domination over nature.

In weighing alternative inferences, archaeologists are free to take evidence from anywhere they can find it and to take inspiration from the findings of other archaeological studies of similar assemblages of artifacts and similar situations, from ethnographic reports of contemporary societies, from historical records, and the like.

A concrete example of the differences between archaeology and anthropology in this regard may help clarify my point. In 1980 I observed and recorded in detail (including registration on 16 mm sound-synchronous film) the gren mahé rites in Tana Wai Brama.<sup>2</sup> During these rites, the Ata Tana 'Ai slaughtered more than 300 goats and pigs as sacrifices to their deity and ancestral spirits. After decapitation with a ceremonial sword, the severed heads of the goats were then rubbed on the mahé altar, which is a branching tree trunk surrounded by monoliths set in a clearing in a small patch of primary forest. The animals' owners then dragged the carcasses off into the forest surrounding the mahé altar and butchered them. Except for the jaws of the pigs, the bones of these sacrificial animals were left at the butchering sites. Finding these bones, archaeologists of the future might well associate them with the monoliths, the nearest artifactual feature of the landscape and, if they are lucky, they might also find the remains of the branching altar. They might then infer that the sacrifice of pigs and goats was part of a ritual complex among the ancient people of Tana 'Ai. But could anything in the assemblage of material remains of these rites serve as evidence for the ideational content of the religious beliefs that animated the rites and lent rationality to them? With respect to social structure, would anything in the remains of the sacrifices point to the complex interrelationships between the mahé rites and the precedence of the domain's clans, itself encoded in mythic histories of the domain whose narrations were also an essential element in the gren mahé?

And would the archaeologists guess that the missing pigs' jaws were significant? If so, would there be anything in the archaeological record that would lead them to speculate about the role of the jaws of pigs (and not of goats) in exchanges by which affinal relationships of people in the community were reaffirmed?

As an anthropologist, I was in the relatively fortunate position of witnessing and recording the actions that led to the deposition of what, far in the future, would be discernible as a patterned assemblage of artifacts. An archaeologist of the future would not be in this position and would thus be one, longer step removed from being able to reconstruct the 'ideology' of the people responsible for the depositions.<sup>3</sup>

Archaeologists study artifacts (including buildings) and landscapes that have been altered from their natural state by human behavior. While it might be thought that a social anthropologist has more direct access to the ideology of the people he studies than does an archaeologist, this is an oversimplification with which I would take issue. On reflection, it can be seen that anthropologists also study artifacts of behavior. A social anthropologist in the field can witness behavior, including the actions of individuals and groups of individuals. These actions form part of the data for ethnography. In addition, the anthropologist can interrogate members of a community under study about their intentions and motivations for acting as they do, and can even discuss with them ideas they hold about their actions and their intentions while they were acting. But these intentions and motivations and the states of actors' minds while they acted in certain ways are not directly accessible to an anthropologist. While actors' accounts of their intentions can be recorded after the fact, such accounts are not themselves intentions. The data with which a social anthropologist constructs an ethnographic account of a community and the lives of its members derive in part from such texts. These texts may be field notes, sound recordings, video or film registrations of behavior (that is, people doing things or talking about the things they have done), and, in some cases, the anthropologist's memory of events and what people did when they participated in them.<sup>4</sup> But those texts of informants' recollections, reflections on, and accounts of intentions can be taken to be only indirect evidence for actors' states of mind.

Texts of the last sort are especially interesting because, as descriptions of ideology that might serve as bases for explanations of action, they are related to action in much the same way as archaeological artifacts are residues of action: both are shaped by action, but neither are themselves action. Neither archaeologists nor anthropologists can observe ideology directly. To the extent that an anthropologist draws on records of this sort as a source of data, then the primary sources of data in both anthropology and archaeology are derivatives at least one ontological step removed from the action that shaped them and a second step removed from ideology. Thus, archaeology and anthropology are similar in terms of the nature of the evidence on which they draw to construct past social life, even when taking into account that the past of the social life studied by the anthropologist may be measured in years whereas the past social life studied by an archaeologist might be measured in centuries or millennia.

# 3. On backbearing from artifacts, to behavior, to social structure and ideology

For a social anthropologist, society consists of individuals but, more importantly, subsists in the relationships of *groups* of individuals to one another, relationships that are reproduced and thus persist through time. In other words, society can be defined as the patterns of relationships that link groups of people. Groups are categories of people and the groups that maintain on-going relations with one another in society thus constitute a system of social classification. The exchanges of material goods in which individuals and groups engage in social life are indices of the relationships of categories of people and these relationships can be analyzed to chart both the relationships and their nature.

There are two important points about societies of the kind I have studied in eastern Indonesia. The first is that, as in all societies, there are groups that are exogamous, which means that the members of each group must marry out of the group and that each group is dependent upon the others for its own reproduction. In both of the societies of Flores in which I have worked, the members of these groups hold in common control over and rights to certain productive resources such as gardens, plots of forest, and coconut plantations, none of which belong to individuals of the group. In addition to being exogamous, these group are, in anthropological terms, corporate. In exchanging people in marriage, the reproduction of individuals, the reproduction of the groups, and the reproduction of society itself are all achieved simultaneously. If those ancient peoples described in the papers of this volume had societies such as these, then it would be crucial to discover as much as possible about marriage and the material exchanges which accompany it in order to be able to say anything meaningful about the structures of those societies.

A second feature of such societies accords with the first: in small scale societies, those that Lévi-Strauss called 'cold' societies, everyone is related to everyone else as kin. This means that people almost always marry a kinswoman or a kinsman. Here the system of classification upon which society is founded demands consideration. Assuming that reproduction usually occurs within a generation rather than between generations, an individual's choice of a partner in marriage must be made between siblings and cousins. Almost universally in contemporary societies of this kind, siblings (i.e., the children of a particular woman) are classified as unmarriageable. Of the four possible opposite sex cousins which a person might have (FBD/S, FZD/S, MZD/S, MBD/S),<sup>5</sup> one or more might be treated as siblings and classified as unmarriageable whereas the remainder are classified as potential spouses.

By the intersection of these two simple yet elegant ideas, exogamy and the classification of siblings and cousins, the simplest possible society is one made up of two groups who exchange people in marriage and divide more or less equally the offspring of those marriages. In such 'symmetrical' systems, siblings are classificatorily merged with parallel cousins (the children of same-sex siblings) and are classified as prohibited in marriage whereas the children of cross-sex siblings (i.e., cross-cousins) can marry. The interposition of this simple classificatory rule is sufficient to insure both the reproduction of the two groups and of society.

Of greater possibilities are systems that exclude from the category of marriageable cousins one or the other of the cross-cousins while allowing marriage with the remaining cross-cousin. Such systems are found among the world's contemporary societies and can, in principle, accommodate a large number of groups, bringing them all into a single society founded once again upon the ideas that each group is dependent upon another for reproduction and that society subsists in the system of exchange thus created. These societies are known as asymmetric systems and are characterized by generalized exchange.

In these societies, each group, regardless of other functions it may fulfill, is a descent group. A simple way of constituting such a group is to limit membership to people who are related to each other either exclusively through men or exclusively through women. In the former case, we speak of patrilineal descent and in the latter we speak of matrilineal descent. The exchanges in which these unilineal descent groups participate include not only partners in marriage, but a large variety of other exchanges such as bridewealth given by a wife-taking group in exchange for a counter-prestation from the wife-giving group, exchanges at the birth of children, exchanges at the death of a spouse, and many others. Almost universally, people in societies of this kind consider wife-givers to be superior to wife-takers, but as it works out, each group is superior to some other group or groups and each is inferior to yet others. This is a kind of hierarchy, but not one that leads to marked social stratification.6

A reasonable question to ask is this: were any of the societies of Mesolithic or early Neolithic Europe of these kinds? A second, equally important question is: what would the archaeological data that would allow us to decide the question look like?

Lineality is about descent, that is, kinship, and, of itself, is about nothing else. Knowing that its descent pattern is matrilineal or patrilineal tells us precious little about any other aspect of a society and does not even provide good cause for inference about other aspects of society. I can cite here as examples two societies in east central Flores which share a language, a common prehistorical origin, and many features of culture including an almost identical system for the classification of cousins. The Ata Tana 'Ai of the mountainous eastern region of the Regency of Sikka on Flores calculate descent through lineally related women and a person belongs to the descent group of his or her mother and not to the group of his or her father. In the village of Sikka, which is only about 50 kilometers away from Tana 'Ai, a person belongs to the descent group of his or her father and descent in this community is thus patrilineal. There are other differences between the two societies, some of which can be summarized as below:

	Ata Tana 'Ai	Ata Sikka
1.	matrilineal descent	patrilineal descent
2.	marriage not marked by ritual; child exchange marked by exchange of ceremonial goods	marriage with the exchange of ceremonial goods as bridewealth and counterprestations
3.	shifting cultivators, with some hunting and gathering	intensive cultivators, traders, teachers, government officials, landlords
4.	practice the rites of their local religious tradition	Catholic since the 16 <sup>th</sup> century

The activities associated with features 2, 3 and 4 would undoubtedly leave material residues in the archaeological records of these societies. But all such activities would be compatible with both an ideology of patrilineal descent and an ideology of matrilineal descent. It follows that it would be difficult for an archaeologist to determine the descent principles at work in these societies merely from the material remains of activities relating to marriage, subsistence, and religion.

Rodney Needham was the first anthropologist to point out that elements of culture such as behavior, rules, and categories need not be related logically, causally, or by any other necessity. He came to this conclusion after two decades devoted to the study of alliance systems in Indonesia and elsewhere and by thinking carefully about the nature of prescription. *Prescription* is a rule found in many (but not all) of the world's societies by which a person should marry a person of a particular category of kin and to the exclusion of persons of other categories. However, Needham notes that prescription is an ambiguous concept that actually refers to at least three different aspects of culture and realms of social life:

"In the study of social life there are three main aspects of collective conduct and representations which can usefully be discriminated: (1) behavior, (2) rules, (3) categories. The character of prescription can be attributed to each of these aspects, and anthropologists have in fact done so" (Needham 1973, 171).

Of these three aspects of collective conduct and representation, an anthropologist can directly observe and record (i.e., textualize) behavior. Rules of behavior can be constructed from regularities observed in behavior. These rules have the status of analytical or explanatory constructs. Rules may also be articulated by members of the community under study, in which case they have a different status from analytically derived rules, but in both cases there is a disjunction between rule and behavior: in the first instance, a deduced rule may be found to apply in only some statistically significant number of cases. Thus, from a corpus of genealogical data the anthropologist might find that in 94% of the marriages in a community in three generations, classificatory MBD married classificatory FZS. In the second instance, it may be found that a rule articulated by members of the community themselves is observed in only n% of the instances in which it should apply. There is in both cases a measurable discrepancy between behavior and the rules that are thought to govern (or explain) it. Nevertheless, according to Needham, for the anthropologist there are certain advantages to studying rules. Firstly, it is easier to specify what a rule says (that is, what it prescribes or proscribes) than it is to decide whether behavior accords with the rule in a statistically significant number of instances. Secondly, the contents of rules are amenable to comparison. Thirdly, even in those cases in which behavior departs from rules, it is from the rules that the behavior departs and so rules must be taken into account in the description of society (Needham 1973, 172).

Another possibility is to take prescription to be, rather than a matter of rules, a 'formal property of a system of categories of social classification' (Needham 1973, 174). Needham argues that in studying prescription, there is an advantage for the anthropologist in paying attention first to the categories of social classification. Here he notes four pertinent features of behavior, rules, and categories. Firstly, institutions are 'condensed' in categories; secondly, social action varies more than its attendant classifications; thirdly, the comparison of categories is more feasible than is the comparison of variable behaviors; fourthly, forms of classification are relatively few and simple compared to modes of action (1973, 174). In short:

"By starting from social classification ... we need be under no inclination to ignore or to underrate the associated rules and modes of behavior. Indeed, this approach actually brings out more clearly the fact that categories, rules, and behavior are independent variables" (1973, 174).

If categories, rules, and behavior are independent variables, and if there is an advantage for the anthropologist in beginning the study of society with categories, then there follows a methodological imperative:

"Our precept, then, must be that what can vary independently must be analyzed independently (Needham 1970, 255). We should therefore first make a formal analysis of the terminology, then establish the rules framed by this classification, and finally plot the modes of social action; at each stage in the investigation we have to expect disparities" (Needham 1973, 174).

The import of Needham's argument for both anthropologists and archaeologists is that inference from behavior to rules, from rules to categories, and from behavior to categories is very risky. Categories are part and parcel of ideology and, with respect to prescription:

"To prescribe is to lay down a rule, to decree an obligatory mode of conduct; that is, the term refers properly to the jural regulation of social life. But the jural features in question cannot be attributed to a formal structure, and they are not properties of a relationship terminology. Prescribed marriage is logically quite distinct from a prescriptive terminology: *there is no necessary correspondence between categories and social action, and therefore neither can be inferred from the other*" (1973, 177; emphasis added).

I have quoted these points of Needham's argument at length because I am convinced they are worthy of the most careful consideration by any archaeologist who might attempt an inferential backbearing from artifact to ideology or social structure. The argument that 'categories, rules, and behavior are independent variables' [*supra*] is of particular relevance for archaeologists, for it tells us that working from behavior to rules, and thence to categories cannot be done *a priori* because there is no necessary connection between these three aspects of collective conduct and representations.<sup>7</sup>

In addition, Needham proposes that anthropologists should work first from ideology (categories and classifications), then to rules (and institutions), and then to accounts of behavior, which is variable with respect to rules and categories. This is the reverse of the procedure of archaeology, which must begin with artifacts as the material remains of behavior and work then toward social structure and ideology.

An ethnographer can observe and record the behavior of living people but, if Needham is correct, it is not possible to read with certainty rules which presumably govern that behavior from the behavior itself. Normally, where there are rules to be found, an ethnographer discovers them by interrogating living informants. Likewise, the categories of classification systems, including the social categories which make up systems of social classification, are discovered through an examination of language and the actual speech of informants, among whom the ethnographer can make further direct investigations by the simple expedient of discussing with them the identification of categories. Thus, an ethnographer does not (because he cannot) derive rules from behavior, and then further derive the categories of social and cultural systems of classification from rules. In ethnography, each of these is found directly in empirical evidence of different types and thus must be the subject of distinctive investigations. The nature of each aspect of culture is determined individually by reference to living members of the community under study and their actions.

These methods are clearly not available to archaeologists and, because behavior, rules, and categories are independently variable, determining them for people long dead is a very difficult undertaking. I would suggest that the relationships between artifact, behavior (or action), and ideology are similarly indeterminate. There is a further problem: artifacts are not behavior, but the products of behavior (I would say 'intentional action'). The material that archaeologists study is thus a further level removed from the 'culture' (categories and rules or ideology and social structure) they wish to characterize.

#### 4. 'Culture' and inference

James Deetz, who was the leader of a band of enthusiastic students of historical archaeology when I last studied the subject formally<sup>8</sup> once wrote: 'Archaeology seeks to learn about culture from the fragmentary remains of the products of human activity' (1967, 5). This is a worthy goal, but Deetz had trouble defining culture — so much so, that he preferred to make statements about it rather than defining it directly. These statements included: 1. culture is learned behavior; 2. culture is uniquely human; 3. culture is patterned; and 4. society is the vehicle for culture. Thus, 'culture [is] a uniquely human system of habits and customs acquired by man through an extrasomatic process, carried by his society, and used as his primary means of adapting to his environment' (Deetz 1967, 7). But, in addition,

"Culture is highly perishable, and therefore cannot be excavated. No one has ever dug up a political system, a language, a set of religious beliefs, or a people's attitude toward their ancestors. Yet such things as political and religious behavior, language, and social interaction affect what the archaeologist does recover. The patterning which the archaeologist perceives in his material is a reflection of the patterning of the culture which produced it. Pots, arrowheads, house floors and axes are the products of culture, not culture in themselves, but they are linked to culture in a systematic manner. It is the archaeologist's task to discover how cultural behavior is shown in its products" (Deetz 1967, 7).<sup>9</sup>

It is precisely the evanescence of culture in Deetz's sense of the term, plus certain difficulties in relating various aspects of it to one another, that create problems in the archaeological search for ideology and social structure in the remains of past action.

Deetz's ideas bear a close relationship to those of Taylor (1967 [1948]) who, in arguing for a 'conjunctive approach' (in contradistinction to the comparative and taxonomic approach) in the archaeological study of the past, found it necessary to contrive a definition of culture suited specifically to archaeology. In so doing, Taylor was among the first of many who have noted the ambiguity of the term culture. He made three pertinent points. Firstly, he distinguished culture as 'a concept which is holistic and used to distinguish phenomena that are 'cultural' [i.e., 'the product of human activity'] from those that are 'natural' from culture as 'a concept which is on a secondary level of abstraction, which is partitive, which denotes a segment of the holistic concept, i.e., a culture.' His second point is that 'culture is a mental phenomenon, consisting of the contents of minds, not of material objects or observable behavior.'10 Thirdly, 'a 'trait' or unit of culture can be either shared or idiosyncratic, i.e., it can be common to many individual minds or to the mind of a single individual' (Taylor 1967, 96).

In these and two further points, Taylor was ahead of his time (cf. Watson 1995):

"Culture, consisting as it does of mental constructs, is not directly observable. *It cannot, therefore, constitute the empirical data of any discipline*. Culture can be studied only through the instrumentality of observable phenomena, through what have been called the objectifications of culture: cultural behavior and the material and non-material results of such behavior. A tribal dance, the avoidance of a woman by her son-in-law, the identical appellation used between a small child and an old man, the designs of a Navaho sandpainting, a stone axe, all these are observable phenomena. *The culture ideas behind them can only be inferred*" (Taylor 1967, 108-109, emphases added).

The difficulty is the problem of inference from one independent variable (artifact or behavior) to another (social structure or ideology).

While it is not my purpose here to summarize the history of archaeological thinking about culture, the citation of one additional idea from the archaeology of the 1960s and 1970s will help establish my argument. When I last studied archaeology, I learned that the equation of 'assemblage' with 'culture' in archaeology held certain theoretical implications and methodological advantages for archaeologists.<sup>11</sup>

Somewhat later, Trigger treated the concept of the assemblage critically and identified it with the 'historical particularist conception, championed by Boas' (Trigger 1989, 190). While I am not competent to fault Trigger's judgment, I will suggest that the equation of an archaeological assemblage with a culture may have some residual value for those archaeologists concerned with the extent to which ideology and social structure can be read from material remains.

My intention in this essay is to voice a warning about the difficulties of backbearing from the material residues of action and behavior to cognition, to patterns of 'social' thought and action, and to 'culture.' I confess to worries about the reliability of such chains of inference because (1) I agree with Taylor's view that, if culture is constructed mentally, then it cannot be apprehended directly and empirically by anthropologists or by anyone else, and (2) I am convinced that what social and cultural anthropologists have long called 'culture' is not a causal entity. That is to say, it is not a force in the universe which acts upon matter or brains and minds. If culture is not causal, then the first question that arises is: can 'culture' be explanatory, i.e., can it be invoked to explain human behavior or action? Is it reasonable to say something like: 'The Mumbos (do, say, think, represent, believe) because of their culture'? To my mind this leads, at best, to tautology and at worst to metaphysics. There are many complex problems here, but certainly a view commonly revealed in public discourse, and one we find hints of occasionally in anthropology, that culture is causally related to behavior, ignores the difficulties.<sup>12</sup> At a minimum, culture (whatever it might be taken to be) is mediated by individual cognition and choice which, in particular cases, might be linked to action that varies radically from the 'behavioral norms' of a social group.<sup>13</sup>

This is another way of saying that the empirical object of anthropological study is not 'culture' and 'society,' but behavior and action. The fact that patterns of intentional action recur in one human group and may differ from those of other human groups, that is, that these patterns may be 'cultural,' does not mean that culture itself is directly available for study. This leads to the question, if action is the object of study, should archaeology concern itself with discovering the culture (or social structure or ideology) of the people who made an artifact or assemblage of artifacts in the first place?

By this argument, the most important feature of a human being's environment is not culture, but other human beings. This fact arises from the unique biological history of our species, which has produced a creature who cannot survive, either as an infant or as a mature organism, without the care and cooperation of others of its kind. This must be kept in mind when asking questions about the relations between action, the material conditions of social life, and the material residues of action in a way that assumes a priority of ideology or social structure.

If technologies are indices of ideas, they are also solutions to problems - with room for play and experimentation. The relative complexity of Neolithic technologies can be taken as a movement toward greater eclecticism, a more generally applicable repertoire of tools, techniques, and strategies for the exploitation of environments, which must also include the exploitation of a social environment. If this is so, it raises interesting questions, such as: to what extent, if at all, can a social system be viewed as an element in a technology? While the inclusion of 'social system' in technology might be a matter of definition, considering 'social system' or 'social structure' in this way my allow us to answer questions, such as: can a social system and the ideas held by its members be inferred from an assemblage of artifacts and subsistence strategies, and their material remains? This question returns us to my starting point.

#### 5. Culture as theory

If culture does not cause behavior, and if inference from artifact to behavior and then to social structure or ideology is uncertain, then what in the methods of anthropology might be of use to an archaeologist?

In brief, an anthropologist's data are observations and records of behavior made in the course of field research, including recordings of what his informants tell him about rules and categories. The argument here must take into account the ontologies of these three things. Behavior is physically manifest in the movement (intentional or not) of human bodies. Rules are propositions which are either articulated by informants or constructed analytically by anthropologists. In the first instance, they may be taken as expressed imperatives that are thought by informants to govern behavior; in the second, they are analytical constructs intended to account for behavior. In both cases, they may be found to accord only statistically with observed behavior. Categories are formally specified in language. In other words, categories, rules, and behavior are things of different types and it seems unreasonable to me then to say that they make up a thing (culture) of a unitary type.

Archaeologists have a similar problem: the material artifacts or residues of behavior studied by archaeologists are not behavior, but are things and phenomena of different logical types from behavior. There may be more than one way to produce an artifact, for example, a stone tool. To the extent that this is so, to the extent that many tools can be put to more than one use, and to the extent that the features of an artifact may not include those that can serve as clues to which one of the possible means of manufacture the maker actually employed or the uses to which it was put, then care must be taken when inferring from the artifact the behaviors that produced it or involved its use.

Ethnography, as the main product of social anthropology, may be cited as a model for the final results of archaeology. But an ethnography is not a description of a culture (or of social structure or ideology); it is a theory of the recorded data an anthropologist accumulates in the course of fieldwork and which are subjected to analysis to reveal their relationships to one another. The analogue in archaeology is the archaeologist's systematic specification of an archaeological site: descriptions of the artifacts it contains, their relationships to one another in space and time, and their relationships to the context within which they were found. It may be useful to think of that assemblage as being associated with or part of a culture, but there is something suspiciously circular in a syllogism that posits culture as a determinant of the production and use of artifacts and then proceeds to discover that culture in the analysis of an assemblage of artifacts. It may be better to conceive of the results of the analysis of an archaeological site as a theory that explains the deposition of the things found there. This is exactly what most archaeologists do.

Just as a symbol is meaningless in isolation, but only takes on meaning in relation to other symbols and to the extent that all are systematically related to one another, so, too, an artifact only takes on meaning in relation to other artifacts and the contexts in which they are deposited. There may yet be a distinct advantage to be found in this view (which was not incompatible with a larger concept of culture). As an assemblage grows and its typology becomes more complex, and as the relationships among artifacts and between artifacts and context become more complex, so the 'culture' changes or gets refined. Here, culture is, in effect, a theory of the assemblage.

The archaeologist's 'culture' is then an explanation – a *theory* – devised by the archaeologist to explain the provenance of the assemblage, the artifacts that make it up, the relationships identifiable among those artifacts (i.e., within the assemblage), the relations of the assemblage to its context, and changes in the assemblage through time (where these can be identified, one can speak of 'cultural evolution' or 'culture change'). Thus culture is not a *thing* an archaeologist infers (or an ethnographer observes). It is, rather, a theory devised to explain what can be observed and described (artifacts, in the most comprehensive sense, for archaeologists; action for ethnographers).

There are thus similarities between archaeology and social anthropology. Both include in their primary data the residues of human action in the world, although anthropologists can include in their data direct observations of action and behavior. In archaeology those data are artifacts, assemblages, and reshaped landscapes. In anthropology they are texts of one form or another. But the fields interrogate these data in similar ways. Both anthropologists and archaeologists want to know the reasons why a thing was made and what was done with it, and, if possible, the motivations of the people who made and used it; we want to know what the people who made and used them thought about their creations. We both want to know what the things and the things done with the things meant. And we both want to know what can be learned from the origins and evolution of human society because those lessons will tell us also about our potential as individuals and as a species.

A few of the key terms in the discussion of these questions at NIAS were:

Culture	Hunting-gathering
Society	Agriculture
Ideology	
Social structure	

And we examined, *inter alia*: Graves Grave sites Stone tools with reference to: Animals Plants Landscapes

These are things of different logical types: some are concrete things in the physical world; some are best described as open and stochastic (i.e. evolving) systems; some have a dual ontology and are both stochastically systematic at one level and logical constructs at another. And, as an ever present danger in anthropology (I will not speak of archaeology), they can be confused ontologically. Thus, a *culture*, which is at best a theory devised to explain ethnographic data, can be mistaken for a phenomenon that has causal efficacy whereby it produces as artifact that (behavior, action) which it explains. This is a double fallacy of misplaced concreteness and the assumption of a conclusion, which many of us anthropologists actually get paid to commit. Depending upon whom you have been reading recently, a social structure is an empirically observable configuration of communicating and interacting human beings or either a mechanical or statistical model dreamt up by an anthropologist to explain a corpus of data. If we are to employ these terms, we need to understand the possible relationships between the things for which they stand.

Societies do not make artifacts. Artifacts are made by individual people, sometimes working singly, sometimes cooperatively in groups. If the behavior or action by which an artifact is made is related in some way to an idea or ideology, it is an idea which is in the mind of the individual. Its existence cannot be some metaphysical 'group mind,' nor even Durkheim's *conscience collective*. Similarly, individual thought is not the same thing as collective thought, the *représentations collectives* imputed to the people of a society by Durkheim. The first is cognition, a capacity of the individual mind, whereas the second is social and, as such, can only be inferred with more or less logical legitimacy from the observed representations of individuals. In searching for an 'ideology' that may be inferred from artifacts through behavior, both archaeologists and anthropologists would be well advised to keep clearly in mind whose mind it is to which ideas are attributed or imputed.

Behavior and action may have immediate or efficient causes in brain mechanisms (which are themselves still imperfectly understood). But as explanation for those things that most attract the attention of anthropologists and archaeologists, brain mechanisms are not themselves a sufficient explanation. Nevertheless, the invocation of *culture* (or ideology or social structure) as an explanation of behavior is at least insufficient and is at most ridiculous because culture does not *cause* behavior. It cannot, therefore, be held to explain mechanically the regularities, repetitions, and patterns of action documentable by an anthropologist nor the residues of such action recordable by archaeologists.

If culture is not a causal entity, and if it is not reasonable to say that someone behaves in some way or does something in particular *because* of his culture, then there will be implications for archaeologists who are interested in the links between the artifactual remains of human action and the 'ideology' or 'society' or 'culture' of the people who left those residues behind. Specifically, I am afraid it is not possible to read directly from the former to the latter. If this is the case, then archaeologists must take particular care in the way they *explain* their data: culture as a *thing (sui generis* or *Ding an sich)* cannot be invoked as explanation for an archaeological assemblage.

However, this is not to deny that the people who create assemblages of artifacts or who act in patterned ways *possess* a culture. A less satisfying, but much more rational and, I believe, useful implication follows: *culture*, if not a thing or causative force, can be a *theory*. That is to say, one can explain behavior or the remains of it in terms of an explanatory construct that we can call (perhaps for want of a better term) a 'culture,' *so long as the explanation is testable* and correctable in light of new or additional evidence, which is another way of saying that such a theory must contain an heuristic which leads toward further research, and data which may falsify the initial formulation. The argument is, simply, that culture is a theory of things, and not a thing itself. That theory may have the form of a sequence of inferences (strictly speaking, *hypotheses*):

if artifact x (and y, z, ...), then intentional action a.

if action *a*, then idea (or ideology) *i*.

Each inferential hypothesis, to be of use, ought in principle to be testable, either by the generation of further 'if *m*, then *n*' hypotheses, where *n* can either be sought empirically or can be decided on other reasonable grounds.

The procedure is very much like that by which we solve jigsaw puzzles, only in the case of archaeology and anthropology, pieces are always missing. Each piece which interarticulates with another and then another, to form a mass, ought to invite the fitting of other pieces. If, in the end, more pieces (data) are left out than are incorporated into the puzzle, then another strategy for fitting them together ought to be devised.

A number of years ago I delivered a lecture to a class of undergraduates in which I suggested that the ontology of 'culture' is murkier than most anthropologists generally recognize and that one way of dealing with the concept is to think of a 'culture' as the distillation of a meeting between the ethnographer's culture and the culture of the people he studies. I called this synthesis an 'ethnographic culture' and said that what it really is, is a theory of the ethnographic information an anthropologist has at hand at a given moment and that its most powerful quality was as an heuristic for further research.<sup>14</sup>

Social anthropologists can draw on 'native theories' of structure and employ them as *data*; archaeologists cannot: indeed, it is those 'native theories' that are among the goals of archaeological research. Archaeologists may, therefore, find it useful to know of the problems and difficulties that anthropologists encounter and the methods they bring to bear on them.<sup>15</sup> Culture is, then, neither a thing nor a phenomenon, much less a force that causes anything. But it may still be something that an anthropologist or archaeologist can infer with greater or lesser methodological rigor and then analyze more or less fully. It is most usefully viewed as a cumulative theory of the data to which anthropologists and archaeologists variously attend: behavior and the residues of behavior. An ethnographic description of a community of human beings and the analysis of the patterns of observable behavior and action in which they engage is such a theory. The description and analysis of the individual elements in a material assemblage of artifacts and the context in which they are embedded and their relationships to one another may also lead to such a theory.

#### notes

1 This essay began life as the notes for a discussant's paper for the Conference on *Ideology and Social Structure of Hunting, Gathering and Farming Communities in Stone Age Europe* organized by Marek Zvelebil and Annelou van Gijn and sponsored by The Netherlands Institute for Advanced Study in the Humanities and Social Sciences, Wassenaar, and the Institute of Prehistory, University of Leiden, The Netherlands, 28-29 April 1994. I am indebted to NIAS for a Fellowship in 1993-94 and for the year of freedom from the quotidian affairs of life in the late twentieth century university it provided me. The notes from which this paper emerged were assembled at NIAS during that year. I would like to thank my colleague, Dr J. Timothy O'Meara, of the Anthropology Programme, The University of Melbourne, for a thoughtful and constructive discussion of the main points of my argument as the draft of the paper neared completion.

2 Tana Wai Brama ('the Domain of Wai Brama') is one of seven ceremonial domains into which the people of Tana 'Ai are divided. See Lewis 1988 for an ethnographic account of Tana Wai Brama, including the *gren mahé* rites, and Lewis, Asch and Asch 1993, a film about the *gren mahé*.

3 A comparison of ethnographic accounts of sacrificial rites in various societies of eastern Indonesia would reveal that ritual complexes which might leave similar archaeological records are attended by quite different ideologies and, conversely, that similar ideologies are associated with ritual practices which would leave quite different archaeological records (as, for example, those of Florenese peoples who sacrifice water buffaloes and those who sacrifice other animals) (see Lewis 1996 and the other essays in Howell [ed.] 1996).

4 I include in the set of such events those which consist of an anthropologist discussing with an informant some question of belief, motivation, intention, or 'ideology.' These events become textualized when the anthropologist records a conversation with an informant or minutes that conversation in fieldnotes.

5 Anthropologists employ a simple short-hand for identifying genealogical relationships: F = father, M = mother, B = brother, Z = sister, D = daughter, S = son.

6 There is yet another major class of societies, those in which kinship (i.e., descent) is determined neither through men nor through women exclusively. Anthropologists refer to the kinship and descent patterns of these societies as *cognatic*. In them, all individuals recognize equally their kinship with their mothers' and their fathers' kin. It is perhaps worth pointing out that almost all of the contemporary societies of Europe are of this class. For that and many other good reasons, an archaeologist seeking to identify a prehistoric society in terms of its kinship and descent patterns must consider the possibility that it was cognatic.

7 In Belief, Language and Experience Needham takes up Wittgenstein's proposition: 'An "inner process" stands in need of outward criteria' (Wittgenstein 1953, sec. 580) with respect to belief and argues persuasively that, 'in the case of belief these are just what we cannot discover in any form of action' (Needham 1972: 102). In an argument that bears directly on the problems of anthropology and archaeology, Needham concludes that that 'there is no necessary or general connection between belief and action,' and, because this is so, action cannot be a criterion of belief (1972: 100). Just as all men think, but there is no corresponding bodily phenomenon by which thought may be intuited (Needham 1972: 144), so too with belief, which entails no necessary bodily index. If Needham is correct in his criticism of Wittgenstein and if his argument is extendible to ideology, then the search for ideology in the remains of action will lead to many of the same problems as attempting to determine a person's beliefs from his actions.

8 In the Department of Anthropology, Brown University, in 1973-74.

9 The 'culture concept' has been defined in various ways in archaeology in the U.S.A. Watson (1995) provides a succinct survey of the history of the concept.

10 On this point, Taylor and Deetz apparently disagree, for Deetz says of culture that it is 'learned behavior' (cf. *supra*).

11 Cf. Chard (1969: 23): 'When a[n] ... assemblage recurs repeatedly at a number of sites, we are dealing with a *culture*. Each archaeological culture is thought to represent a society and to reflect the patterns of behavior common to the members of such a larger grouping.'

12 Thus, to say 'Joe drinks beer because of his culture,' that is, to say that Joe's particular behaviour or actions are *caused by* his culture, is to utter nonsense. This view is distinctly contrary to the popular conception of the dynamics of culture and the ways in which it influences behavior, at least in Australia, a nation whose government policy explicitly promotes 'multiculturalism.' Not too long ago, Radio National, the Australian public radio service, broadcast a discussion of multiculturalism in the law courts. One case cited in the program was that of a man who had migrated to Australia from a middle eastern country and who stood accused of physically abusing his wife. The commentators in the program considered the question of whether or not the man's 'cultural background' (which, it was implied, included wife-beating as a 'culturally sanctioned' form of action) might or might not be a mitigating factor in his case before law. The proposed argument seemed to be: 'Ahmed beat his wife because in Ahmed's culture wife-abuse is normal,' i.e., Ahmed's 'culture' made him beat his wife. Thus Ahmed's 'culture' should be considered a mitigating factor in his behavior and it might be found that Ahmed was not entirely responsible for his action; hence it might not be proper to find him guilty of the charge laid against him.

13 See Freeman (1978, 1981) for an elegant exposition of preferential choice as a defining characteristic of human behavior. See also O'Meara (1997) for an exposition of the causal efficacy of ideas, beliefs, and values.

14 I thought I had lifted the idea directly from Roy Wagner (1981), but in re-reading his book I do not find this phrase, althought the ideas which lead to it are clearly there.

15 See Lewis 1997

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The well-preserved remains of the Middle-Neolithic Settlement Wateringen 4 give detailed information of a hitherto unknown early phase of coastal occupation, prior to the well-known sites of the Vlaardingen Group. This Middle-Neolithic site of the Hazendonk 3 Group was inhabited around 3500 cal BC. It is concluded that the site was probably occupied on a year-round basis; foraging and farming were both important.

### 1. Introduction

D.C.M. Raemaekers

1.1. HISTORY OF THE RESEARCH

Until recently, the remains of the Middle Neolithic B Vlaardingen Group constituted the earliest known evidence for the presence of Neolithic man in the Dutch coastal area. The absence of older occupation remains was attributed to the dynamic nature of the coastal area: it was believed that any older occupation remains would either have disappeared owing to erosion or they would have become buried beneath thick deposits, precluding their recovery (Louwe Kooijmans 1993, fig. 6.11). This view could still be maintained in 1993, when remains of the Middle Neolithic A Hazendonk 3 Group came to light on the slopes of two dunes during large-scale infrasctructural work in the municipality of Rijswijk (province of Zuid-Holland). These dunes had first been covered with a layer of sediments with a total thickness of approximately 3.5 metres, after which, in the Iron Age, large parts of this layer had been eroded by a creek system known as the Gantel (Hessing 1994a, 415; Koot 1994, 15-23).

However, this traditional view had to be abandoned when the RAAP foundation discovered the Wateringen 4 site in the course of a coring campaign commissioned by the provincial authorities of Zuid-Holland to evaluate the archaeological remains in an area where a road was to be constructed (fig. 1). The RAAP's analysis revealed the presence of a soil in the top part of a dune, which was interpreted as a prehistoric 'culture layer', possibly dating from the Neolithic or the Bronze Age. RAAP recommended digging a trial trench to determine the character and age of the site (Kolen/Bosman 1992, 24).

# Wateringen 4: A Settlement of the Middle Neolithic Hazendonk 3 Group in the Dutch Coastal Area

The ROB (*Rijksdienst voor het Oudheidkundig Bodem*onderzoek, the Dutch State Service for Archaeological Investigations) then dug a trial trench into the dune. This trench yielded pottery sherds, fragments of bone and burnt flint artefacts, which were dated to the Middle Neolithic A Hazendonk 3 period (Hessing 1994b, 437). The unexpected discovery of these well-preserved Middle Neolithic remains was cause for an extensive excavation, which was carried out by the IPL (*Instituut voor Prehistorie, Rijksuniversiteit Leiden*, Institute for Prehistory, Leiden University). The IPL conducted this investigation out of scientific interest, but also because it was able to start the excavation of the site within a short space of time.

#### 1.2. The excavation

The high groundwater level and the considerable depth of the archaeological remains (down to two metres below the surface) necessitated the installation of a drainage system. To minimise the costs involved in installing this drainage system, core samples were first collected within a grid of ten-by-ten metres to determine the optimum location for the drains. The outcome of this coring campaign was a detailed map of the fossil dune surface, indicating the thickness and extent of the find layer and the presence/absence of charcoal, on the basis of which the drains were subsequently installed. This enabled us to excavate the top of the dune, where the find layer was thickest and contained the most charcoal, and large parts of the dune's slopes.

The road construction work was scheduled to begin after eight weeks, and it could not be postponed. We therefore decided to excavate the site on a large scale by shovel, without using sieves, in units of one square metre, to minimise the amount of administration. Most features were discovered in the last weeks of the excavation, so an excavation on a smaller scale would have led to a better understanding of the peripheral parts of the settlement site, but the centre of the settlement would not have been excavated. Stratigraphic sequences were observed in the slopes on both sides of the dune (see below). Here the finds



Figure 1. The situation of the Wateringen 4 excavation in relation to the planned road (double intermittent lines) and the built-up area of the town of Wateringen (solid grey). The field boundary is indicated as well.



Figure 2. Schematic cross-section of the Wateringen 4 site. Only the excavated part of the dune is depicted. Sample numbers refer to <sup>14</sup>C samples.

M. Verbruggen

Sample Groningen   Material number   number		Years BP 054		- 4000			 - 3500						- 3000		
1	GrN 20.614	charcoal	4880 ± 50												
2	GrN 20.718	peat	4670 ± 70										_	-	
3	GrN 20.719	peat	4780 ± 40									_	_		
4	GrA 913	bone	4610 ± 70												
5	GrA 887	charcoal	4740 ± 40								- ¢				
6	GrN 21.109	charcoal	4840 ± 50												
RGD1	GrN 21.599	shell	5460 ± 40												
RGD2	GrN 21.600	shell	4900 ± 30												

Figure 3. The <sup>14</sup>C dates of Wateringen 4. The sample numbers refer to the numbers in the text. The calibrated dates are given with  $1\sigma$  (grey lines) and  $2\sigma$  (black lines) ranges.

were collected per stratigraphic unit. On top of the dune, however, the finds were collected per square.

Most features came to light after the find layer had been dug away. They were all drawn and sectioned. Some features were not clearly visible at this depth, probably owing to homogenizing effects of soil formation. Therefore another layer of 10-20 cm was removed with the aid of a mechanical shovel. This led to the discovery of about 20 more features, including the northern half of a house plan (Raemaekers 1997).

### 2. Geological context

#### 2.1. LITHOSTRATIGRAPHY

Several deep borings and two trenches revealed six lithostratigraphic units at depths of between 1.4 and 8.2 metres below NAP (see fig. 2). The lowest unit (Unit 1) consisted of calcareous, well-sorted, flat-bedded, fine-grained sands alternating with layers of clay with thicknesses of up to 2 cm. The layers contained many lenses of mollusc shells (*Macoma balthica*) that had been washed together.

Unit 2 consisted of well-sorted unstratified fine sands. The top of this unit showed a dune morphology. About a hundred borings revealed two SE-NW oriented ridges with widths of 80 and 20 metres respectively, with a shallow depression in between. The area of the broadest and highest ridge was excavated; no occupation remains had been found on the second ridge during the coring campaign. Two types of soil were observed in the top part of Unit 2. Type 1, a dark grey A1 horizon, was observed beneath Unit 3 and in large lumps of sediment found in the unlined wells that had been dug into Unit 2. Type 2, a black, 10-cm-thick A horizon, had developed on the higher parts of the sand ridge (see below).

Unit 3, a thin layer of peat, had formed in the depression between the two ridges and the dune's southeastern slope. A clear distinction could be made within the peat between a dark brown lower part with recognisable plant remains and a black upper part without recognisable plant remains. The finds from the lower and upper parts of Units were collected separately. At the northeastern slope, the upper part of Unit 3 is named Unit 3a, the lower part is designated Unit 3b, while at the southwestern slope these parts are designated Unit 3c and Unit 3d respectively.

The sand above the area where the black upper part of the peat layer wedged out was also black; this discolouration extended to 10 centimetres above the peat. No features extended through Unit 3. A lamina of sand with the same characteristics as the sediment of Unit 2 was observed within Unit 3 (see fig. 2).

Unit 4, an approximately 30-cm-thick layer of clay, lay on top of Unit 2 and Unit 3. To the east of the ridge this clay layer was at least 80 cm thick (see fig. 2). There the boundary between Units 3 and 4 was very sharp.

Unit 5 (a thin layer of peat) and Unit 6 (a disturbed layer of clay) formed the top of the sequence.

#### 2.2. Chronology

Eight <sup>14</sup>C samples were taken in order to date the sediments and the period of occupation. Figure 3 presents the sample numbers, <sup>14</sup>C ages, GrN and GrA numbers and calendar age ranges. Sample RGD 1, which was taken by the RGD (Geological Service of the Netherlands), consisted of shells of *Macoma balthica*. As it was obtained from about 60 cm beneath the top of Unit 1 it yielded a date for the period of sedimentation of this unit.<sup>1</sup>

Samples 1, 4, 5 and 6 were taken in order to derive dates for the period of occupation. Samples 1, 5 and 6, which were obtained from the fills of some unlined wells on the flanks and top of the sand ridge, consisted of charcoal. Sample 4, which consisted of bone, was obtained from the fill of a watering place in the flank of the ridge, beneath the peat layer.

Samples 2 and 3 came from the bottom and top of the peat layer, respectively.

Sample RGD 2 was taken for the purpose of dating Unit 4. The sample was found to consist of shells of *Scrobicularia plana*. Since no archaeological remains were encountered in the sediments next to the ridge, the site must have been abandoned by the time that the sedimentation of Unit 4 started.

The uncalibrated <sup>14</sup>C dates presented several interpretation problems. In the first place, the two <sup>14</sup>C dates obtained for

the peat layer appeared to be in reverse order. Secondly, the dates suggested that the site was inhabited both before *and* after the formation of the peat (see samples 1 and 4), whereas the archaeological evidence points to a single habitation phase (see below).

However, all this changed when the <sup>14</sup>C dates were calibrated with the aid of the CAL20 program (Van der Plicht 1993) to obtain calendar age ranges. The calibration curve was smoothed by choosing a sample time width of 60 years for charcoal and peat (Mook 1983); the curve was not smoothed for molluscs and bone. It was decided to use the full sequence of all the calibrated <sup>14</sup>C ages as a basis for interpretation instead of rejecting one or more dates for the sake of arriving at a 'convincing' interpretation.

When we consider the full calendar age ranges of the two peat samples, the <sup>14</sup>C ages are not necessarily reversed. The peat growth may have started shortly after  $3650 \text{ BC}^2$  and ended before 3400 or even 3500 BC (see the calendar age range of sample 3) – in other words, the period of peat growth may have lasted only 150 to 250 years. In the section, the peat layer was found to wedge out and come to an end at the point where it met the fairly steep slopes of the dune (see fig. 2). This implies that the base of the peat is diachronous, which could mean that on the higher parts of the dune peat growth started even later than 3600 BC. The calendar age range of sample 4, starting around 3600, supports this view.

The <sup>14</sup>C dates obtained for samples 1, 5, 6 and 4 suggest dates of about 3700 and 3100 BC for the beginning and end of the period of occupation, if we take into account the extreme ages of the ranges of 6 and 4. The calendar age ranges of samples 3 and RGD 2 however shorten this time span to 3700-3400 BC (fig. 3).

An interesting question from an archaeological viewpoint is whether the calendar age ranges leave open the possibility of a single occupation phase of a short duration (say 50 years). If we agree that this would mean that the calendar age ranges of samples 1, 4, 5 and 6 would then have to show only one chronological overlap, then the answer is yes: the date of  $3625 \text{ BC} \pm 25$  falls within all the ranges. If we accept that a <sup>14</sup>C date obtained for charcoal provides an indication not of the time when the charcoal was produced (*i.e.* the time of occupation), but of the time when the wood still formed part of a tree (which is always an unknown number of years earlier), such a short occupation phase can be placed anywhere between 3625 and 3400 BC.

#### 2.3. The events

The lithostratigraphic evidence and the eight <sup>14</sup>C dates enable us to reconstruct the events that took place before, during and after the occupation of the sand ridge (fig. 4).



Figure. 4. Schematic representation of the chronostratigraphy and events at Wateringen 4.

Unit 1 formed around 4000 BC. Similar sediments have been extensively studied by Van der Valk (1992) at a location only 4 km to the east of Wateringen 4 (Rijswijk A4 temporary exposure, Unit 3a). Van der Valk interpreted those sediments as beach barrier deposits.<sup>3</sup>

Low dune ridges were later formed on top of the beach barrier.<sup>4</sup> Some soil formation must have taken place before the dune was occupied; see the description of Unit 2.

Around 3650 BC peat began to grow in the depression between the two dune ridges. Around this time, or at the very most 200 years later, people settled on one of the dune ridges. In the section, the bottom of the unlined well lies at a greater depth than the base of the peat, which means that the wells must have contained water. If we consider the fact that water tables beneath dune ridges like that of Wateringen 4 are often convex, the water in the well may have been 40-50 cm deep. Interesting in this context is that there was a small marsh near the dune. Perhaps the prehistoric settlers were attracted to this site because they knew that the marsh implied the availability of fresh water inside the dune.

Peat growth continued throughout the period of occupation. After the site had been abandoned, possibly around 3400 BC, a black soil developed in the higher parts of the dune ridge, as a result of a rise in the groundwater level. Around 3350 BC part of the eastern half of the dune was affected by erosion, after which marine sediments were deposited all-over the dune ridge.

#### 3. Features

#### D.C.M. Raemaekers

3.1. Postholes

A total of 97 postholes were recorded, the majority of which lay on top of the dune (fig. 5). As these features were discovered only after the find layer had been removed, their exact depths had to be determined by calculating the difference between the height of the dune surface above the features and the bottom of the posthole sections. The






Figure 6. The depths of the postholes. The postholes ascribed to the house plan are indicated separately.



Figure 7. The house plan. In the top part of the drawing the postholes ascribed to the house plan are shown in black; the depths of the postholes are indicated in the bottom part. The remains of the wooden posts are indicated in white. The grey parts correspond to the thickness of the black layer (see the text). The postholes ascribed to the house plan are outlined in black.

maximum depth of the postholes was found to have been 80 cm (Lawende 1995, 26-29; see also fig. 6).

A configuration of nineteen postholes observed on top of the dune constituted the plan of a two-aisled house with a length of 10.9 m and a width of 4.1 m (fig. 7). As post-*Bandkeramik* Neolithic house plans are very rare in the Netherlands, the house plan will be discussed in detail below. The configuration was interpreted as the plan of a house on the basis of the following evidence:

- the use of different kinds of wood for different structural parts, *i.e. Alnus* for the central posts and *Juniperus* for the wall posts (see section 5);
- the observation that the central postholes were somewhat broader and deeper than the wall postholes. This suggests that the house had a saddle roof (Huijts 1992: 21);
- the presence of the two aisles and the size of the plan. The few other house plans from this period known in the Netherlands are also two-aisled and of a similar size. Good examples are the plans of the Vlaardingen Group at Haamstede-Brabers (plan 1 (9.10  $\times$  3.50/3.80 m) and plan 2 (7.50  $\times$  3.90 m); Verhart 1992, figs 10-13), and the house plan of Vlaardingen (western levee (9.70  $\times$  5.30/5.80 m); Glasbergen *et al.* 1961, fig. 31);
- the situation of the features on top of the dune. This was the driest part of the dune, which will moreover have afforded a good view over the surrounding area;
- the orientation of the plan relative to the dune's contours;
- the overlap with the distribution of the finds (figs 26, 29, 33).
  This suggests that the structure was a centre of activities.

The majority of the postholes that still contained the remains of wooden posts form part of the reconstructed house plan. This suggests that the absence of wood in the other postholes on top of the dune is not attributable to preservation conditions. It is more likely that the posts that once stood in those holes were deliberately removed, possibly for use in a later structure. That would mean that the plan formed by the postholes containing the remains of wooden posts represents the last structure to have stood on the excavated part of the dune top.

When the posts of the earlier structures were removed and reused or burned, the empty postholes were filled with sand. The fills of these holes consisted of humic topsoil or the non-humic sand that surrounded the posthole. In the latter case it was of course impossible to distinguish visually between the fill of the posthole and the surrounding sand. The large number of postholes without remains of wooden posts suggest that there were more structures on top of the dune than that discussed above.

# 3.2. UNLINED WELLS

In addition to the postholes, the excavators observed a second group of features. This group consisted of fourteen



Figure 8. Schematic representation of an unlined well (UU119).

similar features with diameters between 45 and 257 cm (average 152 cm), depths between 58 and 103 cm (average 78 cm) and primary fills consisting of thin lenses of non-humic and slightly humic sand combined with a few lumps of sand showing traces of soil development (see fig. 8). These features yielded very few finds.

In the dune stratigraphy exposed in the section the soil horizon was obscured by the black discolouration; it was attested only in the fills of this second group of features and beneath the layer of peat. All these features contained lumps of this soil, which means that the pits must all have been dug some time after the formation of the dune. This is further supported by the <sup>14</sup>C dates for the formation of the dune and the occupation, which show a clear hiatus of several hundred years.

The combination of very few finds and a fill of slightly humic and non-humic sand implies that the pits became filled with sand shortly after they had been dug. This rapid infilling makes it likely that the features represent unlined pits that were dug down to beneath the groundwater level; such pits will have had unstable walls, which will have caved into the pits within a short time. That would explain the presence of the sand lenses and the lumps of sand showing traces of soil development. In section 2 it was already observed that the pits probably extended to beneath the groundwater level.

We may assume that these pits were dug for the purpose of obtaining water. An argument favouring this interpretation is the absence of intersections, which would have made the walls of the unlined wells even less stable, causing them to cave in almost immediately. After the unlined wells had filled up, depressions remained in the surface of the dune. These depressions indicated the positions of earlier wells and could be avoided when digging new wells. Concentrations of charcoal were found in two of these depressions (SS102 and UU115; see fig. 5).

The distribution of the unlined wells is shown in figure 5. The majority of the wells were situated near the peripheries of the settlement area as inferred from the distribution of the finds. Nine of the fourteen wells were concentrated in a small area to the east of the top of the dune. This area yielded fewer finds than would have been expected on the basis of the altitude of the dune surface; compare figures 18, 26, 29 and 33. It may well be that the occupants deliberately kept this area free of refuse to avoid polluting their drinking water.

The largest and deepest unlined well lay on top of the dune, near the house plan. If the prevention of pollution was indeed a consideration, it is unlikely that this well was in use at the same time as the house, for the large number of finds discovered in and around the well implies that the water would then have been polluted. It is equally unlikely that the well was dug at a later date, because the period of occupation is believed to have ended with the abandonment of the last house discussed above. This is further evidence suggesting that the site was already occupied before the latter house was constructed.

# 3.3. WATERING PLACES

Three features observed in the peat-covered northern slope of the dune differed from the above group of features in terms of their sizes (lengths of 160, 160 and 335 cm), their depths (64, 51 and 90 cm, respectively), their peaty fills and their shapes (length-depth ratios), see fig. 9. The position of the features, in the wettest (= deepest) part of the excavated area, suggest that the features represent watering places. The large amounts of bone found in the features' fills indicate that the watering places were later used for a different purpose, probably for the dumping of refuse. The two easternmost features yielded the remains of dung beetles, which are generally assumed to constitute sound evidence for the former presence of animal dung.





### 3.4. Pits

The second largest group of features comprised the features of nineteen pits with diameters between 39 and 97 cm (average 61 cm), depths between 31 and 67 cm (average 42 cm) and uniform fills of grey, slightly humic sand. Like all the other features, these pits yielded few finds. The pits were all situated near the top of the dune, in contrast with the unlined wells. The pits' function is unknown.

#### 3.5. The hearth

Some seven metres from the western side of the house plan the excavators found a circular feature with a diameter of 150 cm and a depth (reconstructed) of 56 cm. The feature's flat bottom was covered with a 5-cm-thick layer of large fragments of charcoal, followed by a 10-cm-thick layer of dune sand (see fig. 10). This feature was interpreted as a hearth. The sand may have been used to extinguish the fire after use. This is the only true feature of a hearth found at the site. In addition, layers of charcoal were found in two of the depressions that remained after the collapse of the unlined wells.



Figure 10. Schematic representation of the hearth (L82).

# 3.6. Conclusions

The analysis of the features' shapes, sizes, fills and spatial distributions showed that they represent postholes, unlined wells, watering places, pits and a hearth. The features' distributions reflect a spatial differentiation of activities: the majority of the postholes, the pits and the hearth were concentrated on top of the dune, whereas the wells and the watering places were situated mostly on the slopes.

The length of the period of occupation is probably best estimated on the basis of the evidence provided by the features. All the wells were found to contain lumps of sand mixed with soil. This means that the first occupants must have arrived a few hundred years after the formation of the dune. The assumption that earlier structures stood on the dune before that represented by the reconstructed house plan implies that the site was occupied for at least two house generations. At least one of the wells is datable to this earlier occupation phase.

# 4. Former vegetation and food plants C.C. Bakels4.1. METHODS

It was decided to recover the botanical remains from the find layer by means of interval sampling. Initially, 5-litre samples of black soil were taken from every other square along four lines running parallel to the long sides of the main excavation trench, at intervals of eight, and in one case six, metres (*cf.* figs 11-16). Unfortunately, the southeastern tip of the excavation area was not sampled. Whenever features came to light beneath the black layer, they were sampled too. The samples were taken from lumps of the old land surface incorporated in the features, from the primary and secondary fills of various features, from some of the postholes and from the hearth.

However, after some time we found that we had collected such vast quantities of soil that it would be impossible to analyse all of the samples. As the soil contained both carbonized and uncarbonized plant remains, large-scale flotation was out of the question. All the samples had to be hand-sieved and hand-sorted. The finest mesh used was 0.5 mm. To limit the amount of work, the investigation was therefore largely restricted to squares lying five metres apart and the sample size was reduced to three litres.

It was decided also to perform some pollen research. For the latter purpose a section in one of the trenches was sampled (see fig. 5). The section showed a peaty sediment with a thickness of about 10 cm, the lateral continuation of the black layer mentioned above (Unit 3). The peat lay on top of the sandy subsoil and was covered by clay. Archaeological finds showed that the layer dated from the period of human occupation. The sample was taken from a point lying 50 m from the centre of human activity: the top of the low dune. Two pollen spectra were counted, one from the bottom and one from the top of the peat.

4.2. RECONSTRUCTION OF THE FORMER VEGETATION Some results of the identification and counting of the seeds preserved in the soil samples are presented in table 1. They are representative of all the analysed samples. The taxa have been arranged according to the environments in which they most probably grew. The first two rows indicate how they were preserved. Most of the uncarbonized remains were of species with decay-resistant seeds. The original number of plant taxa will hence have been greater. Nevertheless, the encountered plants probably represent the former vegetation fairly accurately.

As carbonized remains have in one way or another been handled by human beings, it is always best to reconstruct former vegetations from the evidence provided by waterlogged remains. Of course, there is always the possibility that some waterlogged remains selected for analysis have been dislocated by human beings, but this is assumed to be of only minor influence on the results, especially in the case of herbs. As will be pointed out below, it is very unlikely that the remains from the Wateringen site had been dislocated by other agents, such as water.

The best sources for the reconstruction of the environment are the samples from the squares. They represent a vegetation *in situ*.

The first question that had to be answered was whether this vegetation corresponds to the vegetation during the period of human occupation. This was investigated by comparing the evidence from the squares with information obtained from the lumps of old land surface found at the bottom of some of the unlined wells. Those lumps were found to contain remains of the same species as also encountered in the samples from the squares. The composition of the primary and secondary fills of the pits showed that the vegetation underwent very few, if any, changes during and after the period of occupation. The seed bank may theoretically have contributed components of an older, different, vegetation (Cappers 1995), but no clear indications of this were found in the analysis of the counts. Therefore the evidence provided by the uncarbonized remains from the squares was used to reconstruct the former environment.

The groups of plants presented in table 1 were combined with the dune's former relief, three excepted. The remains of 'cultivated plants' were all carbonized. The only true waterplant, *Ceratophyllum demersum*, was represented exclusively in samples from the features interpreted as wells; it was not encountered in the samples from the squares. *Potamogeton* sp. also grows in marshes. The samples from the squares moreover contained no remains of plants from trodden ground, such as paths.

The first group of plants which apparently covered a fairly large area is that of riparian plants; see figure 11. The figure is based on the presence/absence of the taxa, because no additional information was obtained in a quantitative analysis of the data. The plant communities in question covered the lower part of the terrain, roughly the part below the -380 cm contour line. This part of the settlement's surroundings was probably wetland. There were no large expanses of open water.

Figure 12 presents the remains of plants classified as species favouring marshy areas. They were encountered in the same areas as the riparian plants, but also higher up the dune, up to the -360 cm contour line. One of the species encountered most frequently is *Eupatorium cannabinum*. As already pointed out above, this does not necessarily mean that this was a dominant species, for it may simply be the

Table 1. The plant species represented at Wateringen 4 and examples of the contents of individual samples. W=waterlogged, C=charred; in individual samples, charred remains are indicated by an \*; the other remains are waterlogged finds. +: <10, ++: ≥10 but <150, +++: ≥150. 1-6 are samples from features, 7-9 are samples from squares. 1=UU119, 2=YY120, 3=C88, 4=UU115, 5=YY120, 6=C88, 7=G120, 8=G110, 9=G76.

	W	C	Old s	urface	Prima	ry fill	Second	lary fill		Squares	
	vv	C	1	2	3	4	5	6	7	8	9
Cultivated Plants											
Hordeum vulgare		х	2*	-	-	3*	7*	4*	-	2*	-
H. vulgare, internodia		х	-	-	-	-	-	9*	-	-	1*
Triticum dicoccum		х	-	-	-	1*	2*	-	-	-	-
Tr. dicoccum, glume bases		х	-	-	3*	1*	1*	8*	-	-	-
Hordeum/Triticum		х	-	_	-	_	_	10*	-	-	-
Open Water											
Ceratophyllum demersum	х	х	_	_	_	1	2*	_	_	_	_
Potamogeton sp.	х		_	_	_	_	_	_	_	_	_
Rinarian Vagatations											
Berula erecta		x	_	_	_	_	1*	_	_	_	_
Carex acutiformis	x		1	_	_	_	_	_	_	_	_
Carex riparia	x		_	_	_	_	_	_	_	_	_
Iris pseudacorus	x		_	_	_	_	_	_	_	_	_
	N V								2		
Mentha aquatica	x		_								
Scirpus lacustris sen tab	A V	v				1		1*			
Scirpus maritimus	A V	A V	_	_	1	1		1	_	_	_
	~				1			1			
Marsh											
Brassica nigra	х	х	-	-	-	-	_	-	-	-	-
Eupatorium cannabinum	х	х	-	2	1	-	_	2	15	2	-
Euphorbia palustris	х		-	-	-	-	-	—	-	1	1
Lythrum salicaria	х		-	-	-	-	-	—	-	-	-
Solanum dulcamara	х		+	-	-	-	-	-	-	-	-
Stachys palustris	х		1	-	-	-	-	-	-	-	-
Thalictrum flavum	Х		-	-	-	-	_	_	-	-	-
Ruderal Areas, wet											
Alopecurus geniculatus	х		-	-	-	-	-	-	-	-	-
Chenopodium glaucum/rubrum	х		-	-	-	-	-	_	-	-	-
Lychnis flos-cuculi	х		-	-	-	-	-	_	-	-	-
Myosoton aquaticum	х		-	-	_	-	_	_	-	-	-
Polygonum hydropiper	х		+	-	_	-	_	_	-	-	-
Polygonum minus	х	х	++	-	-	-	_	1*	-	-	-
Potentilla reptans	х		_	_	_	-	_	_	-	-	-
Ranunculus sceleratus	х		+	-	+	-	-	_	-	-	-
Ruderals/Weeds, dry											
Arctium sp.	х		_	_	2	-	_	_	-	-	-
Atriplex patula/prostrata	х		+	-	_	_	_	_	_	-	-
Chenopodium album	x	х	-	-	++	+	++	5	1	-	_
Chenopodium ficifolium	x	х	-	-	_	_	+	-	_	-	_
Polygonum convolvulus	х	х	-	_	+	_	_	_	_	-	_
Polygonum lapathifolium	х	х	-	_	++	_	_	1*	_	-	_
Solanum nigrum	x	х	-	-	1	+	_	-	_	-	_
Stellaria media	x		+	-	++	_	_	-	_	-	_
Urtica dioica	х		++	1	+++	+++	_	_	3	-	1

Table 1. (continued).

	W	C	Old si	urface	Prima	ıry fill	Second	ary fill		Squares	
	vv		1	2	3	4	5	6	7	8	9
Paths											
Plantago major	х		-	-	-	-	-	-	-	-	-
Polygonum aviculare	х	x	-	-	-	-	-	-	-	-	-
Wooded Areas											
Cornus sanguinea	х		_	_	_	_	-	_	-	_	_
Corylus avellana		x	_	_	-	-	-	_	-	-	-
Galeopsis bifida/tetrahit	х		_	_	1	_	-	_	-	-	-
Glechoma hederacea	х		+	_	_	_	-	_	-	_	1
Lapsana communis	х		1	_	_	_	_	_	-	_	_
Malus sylvestris	х	x	_	_	_	_	_	_	-	_	_
Moehringia trinervia	х		+++	15	2	+	++	7	1	++	24
Prunus spinosa	х	x	8-3*	_	_	_	3*	4*	_	_	_
Rosa sp.		x	_	_	_	_	-	1*	-	_	_
Rubus caesius	х		_	_	_	_	-	_	-	_	_
Sambucus nigra	х		_	1	-	-	-	-	-	-	_
Salt Marsh											
Suaeda maritima	х		_	_	_	_	_	-	-	_	_
Others											
Alnus glutinosa	х	x	-	-	-	1*	-	_	-	-	-
Brassica rapa	х		_	_	++	_	-	_	-	_	_
Bromus sp.		x	_	_	_	_	-	_	-	_	_
Carex sp.	х	x	_	_	_	_	-	2*	1	_	_
Galium aparine		x	_	_	_	2*	1*	4*	_	_	_
Galium cf. mollugo		x	_	_	_	_	-	_	-	_	_
Gramineae		x	-	-	-	-	-	_	-	-	-
Hypericum sp.	х		-	-	1	-	-	_	-	-	-
Juncus sp.	х		-	-	-	-	-	_	-	-	-
Phragmites/Poa sp.		x	-	-	-	1*	-	_	-	-	-
Poa sp.		x	-	-	-	-	-	_	-	-	-
Rumex sp.	х	x	++	-	2	-	-	_	-	-	-
Scrophularia/Verbascum	x		_	_	-	-	-	-	-	-	_
Silene sp.	х		++	2	_	_	-	_	-	_	_
Stellaria sp.	x		_	_	_	+	-	_	-	-	_
Vicia hirsuta		x	-	-	-	-	-	-	-	-	-
Vicia hirsuta/tetrasperma		x	-	-	-	-	-	-	-	-	_

species with the most decay-resistant seeds. In this particular case, however, this plant may indeed have been the dominant species. The tall forb *Eupatorium cannabinum* tends to dominate in comparable surroundings. Although it is commonly described as a plant favouring wet conditions, it also thrives in dry areas, in soils containing decomposing humus, for instance in calcareous dune environments. The same is true of *Solanum dulcamara*. The lower slopes of the

Wateringen 4 dune may hence have been less 'marshy' than one would think.

A third category consists of plants which are nowadays found mainly in wet ruderal areas. As can be seen in figure 13, they show the same distribution as the marsh plants. These plants grow in soils with a high nitrogen content, which will have occurred naturally in this young environment.



Figure 11. The presence/absence of remains of riparian vegetation in the sampled squares and the primary fills of the features. The large dots indicate the presence, the small dots the absence of remains in the samples. The grey area represents the house plan.



<u>10</u>m



360

086

Figure 13. The presence/absence of remains of wetland ruderal vegetation. See also fig. 11.







Figure 15. The presence/absence of plants typical of salt marshes. See also fig. 11.





The results of the analysis show that the area surrounding the dune is best described as a marsh with a lush vegetation of tall forb species. Although the groundwater reached the surface in the lowest parts, and there must hence have been patches of open water (otherwise plants like Potamogeton sp. would not have grown here), there does not seem to have been an actual lake in the immediate surroundings, at least not within the excavated area. The water was fresh, as indicated by species like Lythrum salicaria, which do not grow in saline environments, but this may have been a fairly recent condition by the period of occupation. Most of the encountered plants tolerate saline or slightly saline conditions. Theoretically, the remains of these species may actually derive from the seedbank left by an earlier vegetation in a brackish environment, but as they were encountered in such high numbers in proportion to true freshwater species we may assume that the species in question formed part of the contemporary vegetation. All these species can grow perfectly under freshwater conditions. They may have colonized the area during a phase of brackish conditions and have continued to grow there when the environment underwent desalinisation.

Elements associated with wooded areas are presented in figure 14. They comprise the remains of fruits and seeds of woody plants (with the exclusion of alder, Alnus glutinosa) and the herbs that may have formed part of the undergrowth. Alnus was excluded because its fruits and seeds were encountered only in the primary fill of watering place TT77. They may have been dumped in the pit by human beings. If alders had grown in the immediate surroundings of the site, their seeds would have been found in many more samples. The most common shrubs of which fruit and seed remains had been preserved were elder (Sambucus nigra) and sloe (Prunus spinosa). Although those fruits may also have been gathered elsewhere, it is very likely that the shrubs formed part of the local vegetation. A shrub vegetation is attested by the plant whose remains were most frequently encountered: Moehringia trinervia; its seeds were even the most numerous of all the Wateringen 4 seeds. This herb thrives beneath shrubs in relatively open stands, on sandy soils with high concentrations of decomposed organic matter that are neither too dry nor too wet. The second most common herb encountered on the dune was Glechoma hederacea, which favours the same conditions. Neither plant grows in brackish environments.

Some species, in particular *Moehringia*, were encountered in widely varying frequencies; that is the reason why their remains are expressed in classes in figure 14. As can be seen in this figure, the greatest quantities were found in the higher parts of the landscape. From this we may infer that the low dune was originally covered with an open shrub vegetation including elder and thorny elements, which bore a close resemblance to the type of vegetation commonly encountered on young dunes today. A striking difference with respect to present-day dune vegetations is however the absence of sea buckthorn (*Hippophaë rhamnoides*) in the Neolithic vegetation. The absence of remains of the fruits of this shrub could be attributable to preservation conditions, but if sea buckthorn had indeed grown on the dune, its pollen would have been represented in the pollen spectra and, as we will see below, this is not the case.

Another low tree whose fruit and pollen were not represented in the record is juniper (*Juniperus communis*). The fruit and pollen of this species survive only rarely. However, many remains of the worked and unworked wood of juniper trees were found during the excavation. The outer posts of the house, for example, were made of relatively stout juniper trunks (see section 5). Juniper may have grown in well-developed stands on the low dunes. Only few junipers are to be found on the Dutch dunes today, but in the past the species was fairly common. On the island of Texel, for instance, junipers were to be found in relatively dense stands until well into the nineteenth century.

The Neolithic occupants undoubtedly had to clear away some of the thicket before they were able to settle on the dune. The resultant clearance and its use will have stimulated the growth of ruderal herbs, most of which may even have been introduced by the occupants themselves. Only *Urtica dioica* may have been fairly common before their arrival.

The last category consists of plants typical of salt marshes. Only one species of this category was actually represented, namely *Suaeda maritima*. As can be seen in figure 15, the majority of the seeds of this species were found around the house plan. The plant is very much out of place in the reconstructed immediate surroundings: the salt marshes must have lain some unknown distance away from the dune. One explanation for the plant's presence in the site's botanical record could be that clay from the salt marshes was used to daub the walls of the house, although no remains of clay were found during the excavation. Another possibility is that the seeds were introduced by animals and were deposited in their dung; salt marshes are good pastures.

The analysis of the pollen from the peat in the trench contributed little towards the reconstruction of the vegetation. The macroremains found in the section (*Eupatorium cannabinum* and *Lythrum salicaria*) show that the organic deposit formed in the environment described above. The presence of some remains of foraminiferae in the lowest spectrum testifies to occasional flooding by salt or brackish water in the early phases of the deposit's formation. There were many more remains of these organisms in the top spectrum, indicating renewed influence of the sea. The pollen spectra of the bottom and top samples are very similar. Pine (*Pinus*), presumably a long-distance element, is the dominant tree, which confirms that the landscape was indeed open. Oak (*Quercus*) is the most common sub-regional pollen type, followed by alder (*Alnus*). The other tree species represented are lime (*Tilia*), ash (*Fraxinus*), birch (*Betula*) and hazel (*Corylus*), but as they were all represented in percentages of less than 5% they cannot have grown in the immediate surroundings.

The herb spectra are dominated by Compositae tubuliflorae, as would be expected with *Eupatorium* being a prominent local herb. Gramineae (*Phragmites*?) and Cyperaceae (*Scirpus*?) are also well represented. The top spectrum shows higher frequencies of Chenopodiaceae and Compositae liguliflorae (*Aster tripolium*?), which may be attributable to the growing influence of the sea. The spores of Monoletae psilatae may have come from ferns that grew in the local marsh. The other species, which were represented in percentages of at most 1%, are *Artemisia*, *Polypodium*, *Euphorbia palustris*, *Filipendula*, *Polygonum persicaria*-type, *Urtica*, *Sparganium erectum*-type and *Calystegia/Sepium*. With the exception of the first two, they all formed part of the local marsh flora.

As already mentioned above, a conspicuous feature of the Neolithic record is the absence of *Hippophaë* pollen. Also remarkable is that the spectra show no dominance of alder (*Alnus*). This implies that no stands of alder were to be found nearby, which is rather surprising because, besides juniper wood, alder wood is the most common type of wood found on the site (see section 5). The inhabitants must hence have transported the wood over some distance. The same holds for the other resources that were gathered in woods. But the exact extent of the distance covered is unknown.

#### 4.3. Cultivated and gathered plants

The remains of cultivated plants are restricted to naked barley (*Hordeum vulgare* var. *nudum*) and emmer wheat (*Triticum dicoccum*), of which both the kernels and the chaff were found. These remains, which were all carbonized, were encountered not only in the fills of various features, but also in the samples from the squares. As can be seen in table 1, these species were not represented in large quantities anywhere on the site, but the samples that were found to contain more than one fragment almost all came from the immediate surroundings of the house and the wells (fig. 16). It should be borne in mind that this charred material is very light and is easily blown about by wind. This explains why fragments of cultivated plants were found even in the marsh.

The evidence from Wateringen 4 confirms that emmer and naked barley were the main cereals grown in the Middle Neolithic. The same species were also found at the contemporary Dutch sites Hazendonk 3 and P14 (Bakels 1981; Gehasse 1995). The question is whether these cereals were grown locally. The local conditions certainly allowed their cultivation. The reconstructed local vegetation is indicative of rather rich and sufficiently moist sandy soils, which are very suitable for the cultivation of cereals. The only problem may have been the wind.

The weed flora associated with the cereals may be represented in the 'ruderals/weeds' category. A striking aspect of this category is the high percentage of carbonized remains. The plants may have become charred together with the grain. The weeds in the list starting with *Chenopodium album* and ending with *Solanum nigrum* are all common Neolithic weeds. Some of the plants listed under 'others', like *Galium aparine*, *Vicia hirsuta* and *Vicia hirsuta/tetrasperma*, were also quite common in the Neolithic. Today, most of these weeds are associated with summer crops, except *Vicia*, which is associated with winter crops. But we should be careful in drawing any conclusions from this as we do not know whether we may apply presentday conditions to Neolithic environments.

Another problem involves turnip (*Brassica rapa*). We do not know for sure whether it was a wild plant or a crop plant (Brinkkemper 1991).

The occupants of the Wateringen site may have supplemented their diet with wild fruits, nuts and seeds gathered in the surroundings. As at other prehistoric sites, remains of hazelnuts (*Corylus avellana*), apples (*Malus sylvestris*), sloe plums (*Prunus spinosa*), rosehips (*Rosa* sp.), dogwood (*Cornus sanguinea*) and, less frequently, dew blackberries (*Rubus caesius*) were common finds (Bakels 1991). As already mentioned above, some of the fruits and nuts, such as the hazelnuts and the apple, cannot have been gathered in the immediate surroundings. But they are products that can be stored, hazelnuts as such and apples in dried condition.

Non-food plants were also gathered. The relatively high proportion of charred rush (*Scirpus* sp.) remains points to human use. The same holds for the reed (*Phragmites australis*) remains. The seeds of the latter plant were difficult to identify, but the carbonized stems were frequently encountered. The plants may have been used for basketry and thatching. Any remaining or decayed parts may have been put onto fires.

The spatial distributions of the carbonized and uncarbonized remains of the plants that were used by the occupants do not reveal any special activity areas. The assemblages from the primary and secondary fills of the pits and wells were the same as those from the adjacent squares, except for the fact that their densities were higher, perhaps because plant remains accumulated there, either by chance or because the occupants used the pits and wells for dumping the remains in question. There is only negative evidence



Figure 17. Two wooden artefacts from Wateringen 4. One of the ends of the post (1, from feature D91) had been sharpened to a point. The top part had been affected by oxidation. The wooden plank (2: from feature TT76) had been carefully finished; its use is unknown. Scale: 1:3.

suggesting that one of the features may be associated with a special activity. The hearth found outside the house contained no seeds whatsoever, only a large amount of charcoal. If this had been a normal domestic hearth, intended for the preparation of food, it would have yielded some charred seeds – that is at least usually the case with domestic hearths. The absence of charred seeds may indicate that this hearth had a different function.

**5. Wood** K. Hänninen and C. Vermeeren All the waterlogged wood encountered during the excavation was sampled. Charred wood was found in the samples collected for seed analysis and in the feature interpreted as a hearth. The wood was analyzed to obtain information about the vegetation in the vicinity of the site and about the occupants' use of wood. The wood was divided into four categories: waterlogged/unworked, waterlogged/pointed, waterlogged/worked and charred wood. The first category provided information about the vegetation, the other three shed light on aspects of human behaviour. All the worked wood was identified. The other categories were investigated by taking samples. The results are shown in table 2.

A large number of species were found. This, and the equal distribution of the different species over the four categories, suggests that the trees grew in areas not too far removed from the site. Most will have grown in small woods of trees and shrubs on dry dunes. The alder, willow and buckthorn will have grown on moister soils. Juniper is a special case. It will germinate only in open terrain, and only in areas shielded from blowing sand. Its stands were most probably to be found on the western beach barrier. The fact that the unworked remains of wood consisted mainly of juniper and alder suggests that these two tree species were the most readily available.

Different types of wood were selected for different uses. The outer posts of the house were made from juniper, probably because juniper is a strong type of wood. The

	Unv	vorked	Po	inted	W	orked	Cł	narred	
Maple	4	8.0	_	_	4	33.3	_	_	Acer spec.
Alder	20	40.0	7	46.7	2	16.7	7	10.8	Alnus spec.
Alder?	-	_	-	-	-	-	3	4.6	cf. Alnus spec.
Dogwood	1	2.0	-	_	-	_	1	1.5	Cornus spec.
Hazel	1	2.0	-	-	-	-	-	-	Corylus avellana
Ash	-	_	-	_	2	16.7	1	1.5	Fraxinus excelsior
Juniper	15	30.0	7	46.7	2	16.7	6	9.2	Juniperus communis
Juniper?	-	_	-	_	-	_	2	3.1	cf. Juniperus communis
Apple/pear/hawthorn	1	2.0	-	-	-	-	29	44.6	Pomoidea
Sweet cherry	-	_	-	_	-	_	2	3.1	Prunus avium
Birdcherry?	4	8.0	-	-	-	-	-	-	Prunus cf. padus
Sloe?	1	2.0	-	_	-	_	4	6.1	Prunus cf.spinosa
Sloe/birdcherry	-	_	-	-	-	-	1	1.5	Prunus padus/spinosa
Prune	-	_	-	_	-	_	1	1.5	Prunus spec.
Prune/birdcherry	-	_	-	_	-	_	1	1.5	Prunus/Sorbus
Oak	3	6.0	1	6.6	-	-	2	3.1	Quercus spec.
Buckthorn	-	_	-	_	-	_	2	3.1	Rhamnus catharticus
Willow	_	-	-	_	2	16.7	-	_	Salix spec.
Total	50	100.0	15	99.9	12	100.1	65	100.2	
Indet.	14						4		

Table 2. Wood species represented at Wateringen 4.

Table 3. Mammal species represented at Wateringen 4. 3a-3d refer to the sub-units of Unit 3.

	<b>m</b> , 1	61	2	61	21	~	2	61	2.1	<i>c</i> /		61	
	Total	%	3a	%	36	%	3c	%	3d	%	Features	%	
Cattle	284	43.2	20	30.3	34	58.6	4	28.6	2	50.0	15	52.6	Bos taurus
Red deer	155	23.6	33	50.0	8	12.1	1	7.1	-	-	4	21.0	Cervus elaphus
Pig (w/d)	153	23.3	11	16.7	16	24.2	3	21.4	1	25.0	5	26.3	Sus scrofa/dom.
Dog	40	6.1	1	1.5	_	_	5	35.7	1	25.0	_	_	Canis familiaris
Beaver	10	1.5	-	-	-	-	-	-	-	-	-	-	Castor fiber
Otter	7	1.1	_	_	_	_	_	_	_	_	_	_	Lutra lutra
Wild cat	3	0.4	1	1.5	_	-	_	-	_	-	-	_	Felis silvestris
Mole	2	0.3	_	_	_	_	_	_	_	_	_	_	Talpa europaea
Water vole	1	0.1	-	-	-	-	-	-	-	-	-	_	Arvicola terrestris
Grey Seal	1	0.1	_	_	_	_	1	7.1	_	_	_	_	Halicoerus grypus
Carnivore	1	0.1	_	-	-	-	_	_	_	-	-	-	
Totals	657	99.8	66	100.0	58	99.9	14	99.9	4	100.0	19	99.9	
LM	110		5		5		1		3		1		
MM	11		3		_		1		_		1		
SM	5		-		-		-		-		-		
Indet.	2277		189		149		14		20		2		

trunks were remarkably thick. Alder was used for the inner posts (fig. 7). Alder wood is softer, but it was readily available in the vicinity of the site and as alders are tall trees, their trunks could be used to make long posts.

Remains of worked wood were found in five features. They seemed to consist mainly of waste. Much use had been made of maple wood, which is strong and easy to work. Maple wood had been used to make a remarkable artefact (fig. 17: 2) whose function is unknown. Other artefacts were made of alder, willow, ash and juniper. The pieces of worked wood were in very poor condition; no cutmarks were visible on them.

The charred wood derived from gathered fire-wood, discarded wooden objects and waste formed in wood working. Pomoidea, alder, juniper, prune, dogwood, ash, oak



Figure 18. The spatial distribution of the bone remains. The largest dots represent at least 250 g per square.

Figure 19. The spatial distribution of the bones of *Bos taurus*. The largest dots represent 8 bone fragments per square.

Figure 20. The spatial distribution of the bones of *Cervus elaphus*. The largest dots represent at least 5 bone fragments per square.

and buckthorn were identified. The charred wood from the hearth consisted exclusively of Pomoidea, wood that burns extremely well.

6. Mammal bones D. Paalman Table 3 presents a survey of the mammal bones. Cattle is the most frequently identified species, followed by pig (wild or domesticated) and red deer. Some bones could not be identified to species level. They were subdivided into *Large Mammals* (cattle or red deer), *Medium-Sized Mammals* (pig, dog or juvenile large mammals) and *Small Mammals* (beaver, otter, wild cat or juvenile medium-sized mammals) on the basis of their size.

The bones from the upper and lower part of the peat on the slopes of the dune were studied separately as it was hoped that any distinctive differences observable between the assemblages from those sub-units would shed more light on the chronology of the occupation. Unfortunately, however, the layers yielded insufficient finds to allow any conclusions.

The spatial distribution of the bones differs from the distributions of the other categories of finds (compare fig. 18 with figs 26, 29 and 33). The bones were found predominantly on the slopes of the dune, whereas the majority of the other finds came to light on top of the dune. This is particularly apparent in the figures showing the numbers of identified bones (figs 19, 20). The difference in the distribution of the bones could be attributable to either human activities or differences in preservation conditions between the top of the dune and the slopes. The facts that bones were also found on top of the dune and that they were of the same quality as those found further down implies that the spatial distribution of the bones is a consequence of human activities. If, as argued in section 3, the centre of the settlement indeed lay on top of the dune, this must mean that animals were either butchered away from the centre of the settlement, on the slopes of the dune, or in the centre of the settlement, after which their bones were taken elsewhere.

There is little evidence from which we may infer whether the site was occupied on a seasonal or a year-round basis. What could be an indication of seasonal occupation is a mandible of a calf of about two months old. If we assume that calves were born around April (Fokkinga 1985), this mandible points to summer habitation. A second indication of occupation in a specific season is provided by the remains of three full-grown antlers and fragments of the skulls of red deer. They suggest that the deer were killed some time between October and February/March (Peltzer 1991, 12). This leaves us with indications of both summer and winter activities at the site.

The proportion of cattle in the faunal spectrum of Wateringen is considerably higher than that found at P14 and Hazendonk 3, the only two contemporary sites in the



Figure 21. Triangular diagram showing the proportions of bones of wild and domesticated animals and (wild/domesticated) pig from 16 Middle Neolithic sites (see table 4). The bone spectrum of Wateringen 4 bears the closest resemblance to the spectra of the coastal settlements from the Vlaardingen period, where the bones were concentrated in clusters associated with different environmental zones.

Netherlands to have yielded preserved bones, whereas the proportion of wild mammals is much lower (fig. 21, table 4). The bone assemblage of Wateringen bears a closer resemblance to the assemblages of the coastal sites of the Middle Neolithic B Vlaardingen Group than to that of Hazendonk 3. Figure 21, in which the bone spectra of Wateringen 4, Hazendonk 3 and P14 are compared, suggests that the economic diversity characteristic of the Vlaardingen period (contra Verhart 1992: 95) may already have existed in the Hazendonk 3 period.

7. **Bird bones** D. Paalman Of the total of 782 bird bones recovered, 463 could be identified (tab. 5). The high proportion of unidentifiable bones is attributable to gnawing by dogs, which resulted in a large number of bones without distal and proximal ends.

The spectrum is dominated by mallard (*Anas platyrhyn-chos*). Teal/garganey (*Anas* sp.) and widgeon (*Anas penelope*) are also well represented. Units 3a and 3b yielded relatively few bird bones, but the range of species represented in these layers and the proportions of the individual species are similar to those of the overall spectrum. The represented species are all water birds, which suggests that the birds were killed in an environment abounding in water.

The spatial distribution of the bird bones shows a few distinctive concentrations, which may represent the remains of a small number of fowling expeditions (fig. 22). Of the

Table 4. The mammal bone spectra of 16 sites. Nos 1-3 are of Wateringen 4 and two contemporary sites, the other are of the Vlaardingen Group. These data were used to construct the triangular diagram shown in fig. 21. After Gehasse 1995, table 9.10.

No.	site	'culture'	Wild animals	Pig	Domesticated animals	Literature
1	Wateringen 4	Hazendonk 3	27	23	49	
2	Hazendonk 3	Hazendonk 3	83	10	7	Zeiler 1991, table 4
3	P14, layers ABC	Swifterbant	57	29	14	Gehasse 1995, table 9.3
4	Hazendonk	Vlaardingen 1b	81	15	2	Zeiler 1991, table 5
5	Hazendonk	Vlaardingen 2b	77	12	11	<i>id.</i> , table 6
6	Vlaardingen	Vlaardingen	48	37	15	Clason 1967, table 1
7	Hekelingen I	Vlaardingen	50	26	24	<i>id.</i> , table 3
8	Hekelingen III-1	Vlaardingen	45	36	20	Prummel 1987, table 2
9	Hekelingen III-2	Vlaardingen	58	18	24	id.
10	Hekelingen III-3	Vlaardingen	61	25	14	id.
11	Ewijk	Vlaardingen	4	30	57	Clason 1990, 288-289
12	Zandwerven	Vlaardingen	2	2	96	Clason 1967, table 5
13	Voorschoten-D	Vlaardingen	3	51	46	Deckers 1991, table 1
14	Voorschoten-B	Vlaardingen 1	13	15	72	Groenman-van Waateringe
						et al. 1968, table 1
15	Voorschoten-B	Vlaardingen 2	32	8	60	id.
16	Leidschendam	Vlaardingen	12	38	50	<i>id.</i> , table 2

Table 5. The bird species represented at Wateringen 4.

	Total	%	3a	%	3b	%	
Mallard	240	51.8	1	12.5	2	25.0	Anas platyrhynchos
Duck	120	26.0	3	37.5	3	37.5	Anatidae
Feal/Garganey	52	11.2	3	37.5	_	_	Anas spec.
Widgeon	38	8.2	_	_	_	_	Anas penelope
Eider	6	1.3	1	12.5	1	12.5	Somatria mollissima
Goose	4	0.9	_	_	1	12.5	Anser spec.
Coot	1	0.2	_	_	_	_	Fulica atra
Grey heron	1	0.2	_	_	1	12.5	Ardea cinerea
Plover	1	0.2	-	-	-	-	Chara spec.
Fotals	463	100.0	8	100.0	8	100.0	
ndet.	319		2		2		

most frequently encountered species, widgeon was represented only in the concentration found on top of the dune (fig. 23). The majority of the teal/garganey bones, on the contrary, were found in the concentration around YY114. The distribution of mallard bones is very similar to that of all the bird bones collectively. It is tempting to interpret the deviating distribution patterns of widgeon and teal/garganey as the results of fowling expeditions that focused on these specific species. Mallards were presumably killed more often, which would explain why their distribution pattern corresponds to that of all the birds collectively, of which mallard is the dominant component. Besides from the bones of certain mammal species, information on the season of occupation can also be inferred from the bones of certain bird species. On the basis of present-day evidence it is assumed that widgeon was caught in the winter half of the year. But other water birds that winter in the Netherlands nowadays – such as those represented at Bergschenhoek (Louwe Kooijmans 1985, 77) – are conspicuously absent in the bird spectrum. This is all the more remarkable in view of the relatively high proportion of identified bird bones. All the other bird species besides widgeon were probably available in the summer half of the year (teal), or throughout the year

	Тс	otals	Wel	1 88C	(	Other	
Sturgeon	2	0.8	_	_	2	8.3	Acipenser sturio L.
Eel	136	54.0	136	59.6	_	_	Anguilla anguilla (L.)
Carp family	16	6.3	15	6.6	1	4.2	Cyprinidae
Bream	2	0.8	1	0.4	1	4.2	Abramis brama (L.)
Pike	7	2.8	6	2.6	1	4.2	Esox lucius L.
Salmon/Sea trout	3	1.2	3	1.3	_	_	Salmo spec.
Perch	4	1.6	4	1.7	-	_	Perca fluviatilis L.
Mullet family	17	6.7	13	5.7	4	16.7	Mugilidae
Thin-lipped mullet	14	5.5	5	2.2	9	37.5	Liza ramada (Risso)
Plaice family	46	18.2	41	18.0	5	20.8	Pleuronectidae
Flounder	5	2.0	4	1.7	1	4.2	Platichthys flesus (L.)
Totals	252	99.9	228	99.8	24	100.1	
Indet.	398		396		2		

Table 6. The fish species represented at Wateringen 4.





Figure 22. The spatial distribution of the bird bones. The smallest dots represent 1-5 bone fragments per square, the medium-sized dots 6-30 bones and the largest dots 74-93 bird bones per square.

Figure 23. The spatial distribution of the bones of *Anas penelope*. The smallest dots represent 1 bone fragment per square, the mediumsized dots 2 bones and the largest dots 8-14 bird bones per square. (mallard, eider, garganey). As no distinction was made between teal and garganey in the analysis of the bird bones we cannot conclude from this that the birds were killed only in the summer.

#### 8. Fish bones

B. Beerenhout

Owing to the employed excavation techniques, few fish remains were recovered at Wateringen. Only 26 fragments were collected by hand; 396 others were recovered from a sieved sample from well C88. As can be seen in table 6, the remains represent eight species. They include freshwater fish (pike (Esox lucius L.) perch (Perca fluviatilis L.) and bream (Abramis brama)), fish that tolerate fresh water for long periods (eel (Anguilla anguilla), mullet (Mugilidae) and flounder (Platichthus flesus)) and fish that tolerate salt water for long periods (sturgeon (Acipenser sturio L.) and salmon/sea trout (Salmo spec.). With the exception of perch, all these species can be found in brackish water, but they spawn either in fresh water (pike, perch, salmon/sea trout, sturgeon, bream) or in salt water (eel, mullet, flounder; Boddeke 1974; Nijssen/De Groot 1987). Generally speaking, all these species tolerate fresh water for varying lengths of time, which suggests that the site was situated in a freshwater environment (see also the section on the former vegetation, 4.2).

As the two fish bone assemblages differ considerably, they will be discussed separately below. 252 of the fragments from well C88 were identified, 38 of which were fragments of distorted vertebrae. According to Jones, the distortion is characteristic of vertebrae that have passed through a metabolic system (1984: 61-65). Six vertebrae moreover showed signs of gnawing or tooth marks. The sharp, pointed tooth marks cannot have been made by human beings or dogs. These remains were all very fragmentary, their surfaces partly eroded. The cranial skeleton was poorly represented in comparison with the rest of the skeleton. A final conspicuous aspect of these remains is that they included thirteen burned fragments, five of which were calcined. This suggests that the bones were not burned during cooking, for all foodstuffs become inedible at the high temperatures required for calcination. It is more likely that the fragments were secondarily burned.

The characteristics described above lead to the conclusion that this assemblage is not the result of human cooking activities, but the contents of the stomach of a fish-eating mammal, probably an otter. About 90% of an otter's diet consists of different kinds of fish; the rest comprises small mammals, birds, shell-fish and insects (Mason/Macdonald 1984, 7-10). When an otter catches a large fish, it takes the fish ashore and eats certain parts of it, in particular the soft parts behind the head and the stomach area; the rest of the fish is often left untouched (Broekhuizen 1985, 97-195). This

behaviour would quite plausibly account for the fish remains found in well C88.

Otters exploit not only freshwater areas, but also brackish estuaries and marine environments (Green *et al.* 1984, 140). They favour areas with hiding places, where the water is not deeper than five metres. Otters show a preference for eel, especially in the summer, when eels are active and hence easy to find. In the winter, when they are not active, eels are harder to find (Mason/Macdonald 1984, 7). In estuarine environments, otters also commonly consume flatfish: in June and July they consume eel and flatfish in equal proportions, in August they often consume more flatfish (Herfst 1984, 66). These present-day data confirm the interpretation of this assemblage as the contents of the stomach of an otter.

The dominance of eel (and flatfish) suggests that the otter consumed his last meal in the summer. The fact that the contents of the butchered animal's stomach ended up in the secondary fill of well C88 suggests that this well was secondarily used as a refuse pit. The fish remains provide an indication of the aquatic conditions within a radius of 1.5-5 km from the place where the otter was killed – the size of the territory of a small group of otters (Veen 1975, 21-37). If the otter was killed near the settlement, then we may infer from the remains that the settlement was situated in a freshwater environment with brackish water nearby.

Outside well C88 no more than 26 fragments of fish bones were found. They are to be interpreted as a mixed assemblage spanning the entire period of occupation. The remains of sturgeon and thin-lipped mullet, two species which were to be found near the site only in the summer season, are indisputable evidence for occupation in the summer (tab. 7). But they do not imply that the site was occupied on a seasonal basis only, as the remains of the other fish species may reflect occupation in the winter.

# 9. Pottery

INTRODUCTION

9.1.

D.C.M. Raemaekers

In total, the pottery sherds recovered in the excavation weighed 49,867 g. Only a portion of this pottery was analyzed, namely the sherds whose temper was still identifiable and whose surface had survived sufficiently intact for us to be able to determine whether or not the pottery had been decorated: *i.e.* 3063 sherds with a total weight of 40,371 g, 81% of the overall weight of the pottery.

Tables 8 to 11 show various qualitative and quantitative characteristics of the pottery from four different stratigraphic contexts. As no conclusions can be drawn from the 3 and 2 sherds that were recovered from Units 3c and 3d, respectively, those sherds have not been included in these tables. As can be seen in the tables, the average total weight of the pottery from 3b is considerably higher than that of the

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Table 7. The probable seasonal presence of fish species in the surroundings of Wateringen 4.

month:	1	2	*	3	4	5	*	6	7	8	*	9	10	11	*	12
sturgeon																
eel																
bream																
pike																
salmon/sea trout																
perch																
thin-lipped mullet													-			
flounder																

Table 8. Quantitative and qualitative characteristics of the Wateringen 4 pottery.

All sherds			Organio	c temper			G	rog			Stor	e grit		Totals
All Shelus		0	1	2	3	0	1	2	3	0	1	2	3	
Number		939	961	819	344	1630	727	613	93	367	1064	1081	551	3063
Percentage		30.6	31.4	26.7	11.2	53.2	23.7	20.0	3.0	12.0	34.7	35.3	18.0	
Weight (g)		10,721	13,405	11,578	4,653	20,472	9,973	8,852	1,329	3,794	12,651	15,245	9,081	40,346
Percentage		26.6	33.2	28.7	11.5	50.7	24.7	21.3	3.3	8.4	31.3	37.8	22.5	
Average weight (g	g)	11.4	13.9	14.1	13.5	12.5	13.7	14.0	14.3	9.2	11.9	14.1	16.5	13.2
Average wall thic	kness (mm)	8.8	9.2	9.4	9.7	9.2	9.0	9.4	9.7	9.6	9.1	9.1	9.4	9.2
Types of joins:	H-joins	100	146	178	84	214	131	126	8	95	201	120	53	550
	N-joins	29	70	44	13	93	37	23	2	13	58	64	21	157
	Z-joins	10	11	5	2	18	4	4	2	2	11	10	6	29
Surface finish:	Roughened	290	368	317	95	501	260	265	44	99	361	388	222	1070
	Smoothed	282	292	220	93	462	253	149	23	121	347	369	110	887
	Polished	62	13	30	30	78	20	36	1	40	30	54	11	135
	Besenstrich	17	20	17	6	36	11	12	1	3	18	19	20	60
	Smeared	4	8	9	0	12	4	5	0	2	4	10	5	21
	Irregular	165	120	93	49	264	68	82	13	39	138	153	97	427
Wall decoration:	Spatula	51	71	48	14	90	37	51	6	6	59	81	38	184
	Hollow instrument	30	8	6	5	34	4	10	1	4	14	22	9	49
	Single fingertip	129	106	124	33	186	121	71	14	16	126	147	163	392
	Double fingertip	23	15	14	7	36	10	9	4	2	13	30	14	59
Rim decoration:	Fingertip	2	5	1	1	7	2	0	0	0	2	4	3	9
	Spatula	3	0	0	0	2	0	1	0	1	1	1	0	3

pottery from the overlying 3a. This is undoubtedly due to the fact that the pottery contained in 3b became buried beneath a layer of peat relatively quickly, which protected it from the destructive effects of trampling. The 46 sherds that were recovered from the features are on average a little heavier and thicker than the sherds of the assemblage as a whole and they are also tempered with more grog and show less decoration. The relevance of these differences is difficult to asses. An aspect of the overall Wateringen pottery assemblage that should be mentioned here is that it contained no sherds of types not encountered at the other sites of the Hazendonk 3 Group. The fact that a number of sherds recovered from different contexts could be fitted together seems to justify our decision to treat the sherds as a single assemblage.

#### 9.2. Description

First the characteristics of the pottery will be discussed, an the employed variables will be introduced, after which the fragments shown in figures 24 and 25 will be briefly described. Finally, the main features of the pottery will be summarised and the pottery will be compared with that from other Hazendonk 3 sites.

#### 9.2.1. *Temper*

The amount and type of temper used for a pot may have been dictated by considerations relating to, for example, the size or function the pot, its wall thickness or whether or not the pot was to be decorated, or it may have been culturally determined, as perhaps suggested by the chronological

	Table 9.	Same	as tab	le 8	, now	for	the	sherds	from	Unit	3a
--	----------	------	--------	------	-------	-----	-----	--------	------	------	----

Unit 3a			Organic temper				Grog				Ston	e grit		Totals
Unit 5a		0	1	2	3	0	1	2	3	0	1	2	3	
Number		8	8	5	1	17	5	_	_	1	5	9	7	22
Percentage		36.4	36.4	22.7	4.5	77.3	22.7	_	-	4.5	22.7	40.9	31.8	
Weight (g)		109	122	63	18	250	62	_	_	5	79	92	136	312
Percentage		34.9	39.1	20.2	5.8	80.1	19.1	_	-	1.6	25.3	29.5	43.6	
Average weight (g)		13.6	15.2	12.6	18.0	14.7	12.4	_	_	5.0	15.8	10.2	19.4	14.2
Average wall thickness (mm)		9.2	8.5	11.6	11.0	9.7	9.2	_	-	13.0	9.2	10.3	8.4	9.6
Types of joins:	H-joins	1	1	0	0	1	1	_	_	0	2	0	0	2
	N-joins	0	1	1	0	2	0	_	-	0	0	2	0	2
Surface finish:	Roughened	1	1	0	0	2	0	_	_	0	0	0	2	2
	Smoothed	3	3	0	1	5	2	_	-	0	4	2	1	7
	Besenstrich	3	2	1	0	4	2	-	-	1	0	1	4	6
	Irregular	1	0	1	0	2	0	_	-	0	0	2	0	2
Wall decoration:	Spatula	1	0	1	0	2	0	-	-	0	0	2	0	2

Table 10. Same as table 8, now for the sherds from Unit 3b.

Unit 3b			Organic temper				Grog				Ston	e grit		Totals
Unit 50		0	1	2	3	0	1	2	3	0	1	2	3	
Number		23	10	2	5	28	8	4	_	3	11	17	9	40
Percentage		57.5	25.0	5.0	12.5	70.0	20.0	10.0	_	7.5	27.5	42.5	22.5	
Weight (g)		541	219	21	70	494	265	92	_	41	347	263	200	851
Percentage		63.6	25.7	2.5	8.2	58.0	31.1	10.8	_	4.8	40.8	30.9	23.5	
Average weight (	g)	23.5	21.9	10.5	14.0	17.6	33.1	23.0	_	13.7 31.5 15.5 22.2		21.3		
Average wall thickness (mm)		9.6	9.6	9.0	12.8	10.3	8.7	10.2	_	13.4	9.9	9.8	9.1	10.0
Types of joins:	H-joins	1	1	0	3	4	1	0	_	3	0	2	0	5
	Z-joins	0	1	0	0	0	0	1	_	0	0	1	0	1
Surface finish:	Roughened	2	0	0	0	2	0	0	_	0	0	0	2	2
	Smoothed	7	6	0	1	9	3	2	_	1	5	5	3	14
	Besenstrich	4	1	2	3	7	2	1	_	1	2	3	4	10
	Irregular	7	3	0	1	8	2	1	-	0	4	7	0	11
Wall decoration:	Spatula	1	1	0	0	0	1	1	_	0	0	2	0	2
	Single fingertip	4	0	0	0	2	2	0	-	0	2	1	1	4

variations observable in some Middle Neolithic pottery (Louwe Kooijmans 1976, 255-280). The determination of the amount and type of temper is therefore an important aspect of pottery analysis.

A set of reference sherds was used to determine the amounts of temper in the sherds. Six sherds containing different amounts of stone grit, grog and organic temper determined the limits of three ranges representing small, average and large quantities of temper. The average particle size of the stone grit and grog was estimated in mm; the average particle size of the organic temper was not estimated, as that would have been too difficult in most cases. The grit encountered in most of the sherds was crushed quartz; a few sherds contained crushed granitic rock. In order to be able to study the relation between the types and amounts of temper on the one hand and the other characteristics of the pottery on the other, the sherds were subdivided on the basis of the type of temper contained in them. The results are presented in tables 8 to 11. These tables were used as a basis for studying differences within the assemblage and between this assemblage and other assemblages.

As can be seen in table 8, the majority of the sherds are tempered with average or large quantities of grit, but much use was also made of organic temper and grog. The average particle size of the grit temper varies from 2.0 mm (small quantity) to 2.7 mm (large quantity); the average particle size of the grog varies from 2.1 mm (small quantity) to 2.9 mm (large quantity).

Features			Organic	e temper		Grog				Stone grit				Totals
		0	1	2	3	0	1	2	3	0	1	2	3	
Number		4	7	24	11	12	11	21	2	4	24	11	7	46
Percentage		8.7	15.2	52.2	23.9	26.1	23.9	45.6	4.3	8.7	52.2	23.9	15.2	
Weight (g)		38	101	451	194	154	168	433	29	27	417	139	201	784
Percentage		4.8	12.9	57.5	24.7	19.6	21.4	55.2	3.7	3.4	53.2	17.7	25.6	
Average weight (g)		9.5	14.4	18.8	17.6	12.8	15.3	20.6	14.5	6.7	17.4	12.6	28.7	17.0
Average wall thickness (mm)		9.7	10.9	10.2	9.9	9.8	9.8	10.5	10.5	9.7	10.2	9.6	11.1	10.2
Types of joins:	H-joins	2	1	12	4	1	5	13	0	3	12	2	2	19
	N-joins	1	0	0	0	1	0	0	0	0	0	1	0	1
	Z-joins	0	0	2	0	0	0	0	2	0	0	2	0	2
Surface finish:	Roughened	1	1	5	1	3	2	1	2	0	3	4	1	8
	Smoothed	2	1	2	3	3	3	2	0	0	5	3	0	8
	Besenstrich	0	0	2	0	0	0	2	0	0	2	0	0	2
	Smeared	0	1	0	0	1	0	0	0	0	0	0	1	1
	Irregular	1	3	13	7	3	5	16	0	4	14	3	3	24
Wall decoration:	Spatula	1	0	0	1	1	1	0	0	0	1	1	0	2
	Single fingertip	1	1	1	0	2	1	0	0	0	1	2	0	3
	Double fingertip	0	0	2	0	0	0	0	2	0	0	2	0	2

Table 11. Same as table 8, now for the sherds from the various features.

# 9.2.2. Number and weight

Indicated are the numbers of sherds and their total weights. Comparison of the number and weight percentages of the different groups of sherds reveals the relation between the types and amounts of temper on the one hand and the degree of fragmentation on the other.

The average weight of the 3063 analyzed sherds is 13.2 grams. The number percentages and weight percentages of the different groups are similar, which suggests that the fabrics' strength was not influenced by the amount and type of temper used. There is one exception: the average weight of sherds containing large quantities of grit is considerably higher than that of sherds containing less or no grit. This cannot be explained by assuming that a large quantity of grit implies a stronger fabric – on the contrary, large amounts of grit result in poorer cohesion of the fabric, which would imply a higher degree of fragmentation. It is more likely that, in our analysis, we overestimated the amount of grit contained in the larger (and heavier) sherds.

## 9.2.3. Wall thickness

The average wall thickness is 9.2 mm. There seems to be no relation between the wall thickness and the type and amount of temper used.

# 9.2.4. Joins

The relative importance of the different types of joins may be regarded as a technological characteristic with chronological implications, for it has been found that H-joins were gradually replaced by N-joins and Z-joins in the Middle and Late Neolithic (Louwe Kooijmans 1976, 255-286).

736 sherds (24%) showed signs of strip building. H-joins predominated (75%), followed by N-joins (21%), and a small number of Z-joins (4%). Generally speaking, H-joins were observed comparatively frequently in sherds containing large quantities of organic temper; they were observed comparatively rarely in sherds containing large quantities of grit temper. There seems to be no relation between the amount of grog used and the type of join.

#### 9.2.5. *Rim decoration*

Rim decoration was very rare: only 12 of the 723 rim sherds were found to be decorated (2%). The decoration, consisting of fingertip impressions (75%) and spatula impressions (25%), was always on the outside of the pot.

## 9.2.6. Wall decoration

The technique used to decorate the walls could be identified in the case of all the decorated sherds, in contrast to the positions and patterns of the decorations, which could be identified only on the large fragments. Two types of decorative techniques were distinguished. The first entailed making double or single impressions in the soft clay with the fingernails or fingertips. As there was not always a clear-cut distinction between fingernail and fingertip impressions, only double and single impressions have been distinguished in the tables. Whether the impressions were made with the fingernails or fingertips is specified in the descriptions of the depicted fragments where possible.



Figure 24. Large pottery fragments from Wateringen 4. Letters A-G refer to the text. Scale 1:3.

The second type of decorative technique entailed making impressions with the aid of an instrument: either a small hollow object, like the bone of a bird or part of a reed stem, or a blunt spatula (simply referred to as a spatula below). The term 'pin pricks' has in the past been used to describe such impressions made with the aid of a small spatula (Louwe Kooijmans 1976, 257).

About 22% of the sherds are decorated. If we consider only the large sherds, this figure increases to approx. 36-42% (fig. 26). The percentage of decorated sherds may be regarded as an indication of the percentage of decorated pots. The most common form of decoration (66%) consists of single (57%) and double (9%) fingertip/fingernail impressions. Impressions made with the aid of an instrument (34%) are of two different kinds: one kind was made with the aid of a spatula (26%), the other with the aid of a hollow instrument (7%). There seems to be no relation between the amount and type of temper used and the type of wall decoration.

#### 9.2.7. Surface treatment

The surface treatment of 2600 sherds was identified (85%). Various finishing treatments were distinguished: roughening (41%), smoothing (34%), polishing (5%), *Besenstrich* (2%) and smearing (1%). The rest of the identified sherds (16%) have irregular surfaces.

In the category of pottery with a high grit or grog content the percentage of sherds with a roughened surface is much higher than that of sherds with a smoothed surface. The pottery with a high grit content also includes a high



Figure 25. Pottery from Wateringen 4. Scale 1:3.

percentage of sherds with an irregular surface. No relation was observed between the amount of organic temper and the surface treatment.

The depicted pottery fragments (fig. 24):

A. Fragment of a barrel-shaped pot with a rim diameter of 32 cm. The clay was mixed with three types of temper, all of which were used in small quantities: grit (particle size 2 mm), grog (3 mm) and organic temper. The pot

was built from strips joined via H-joins and had an irregular surface. The wall decoration consists of single fingertip impressions that covered the entire surface of the pot with the exception of the rim. A band with a width of 6 cm around the top of the pot was decorated with a series of horizontal shallow grooves drawn with the fingertips.

B. Fragment of a flat-based pot tempered with an average quantity of grit (particle size 3 mm) and a small



quantity of organic matter. The pot was built from strips joined via H-joins and had an irregular surface.

- C. Fragment of a bucket-shaped pot with a rim diameter of 24 cm. The clay was tempered with an average quantity of organic matter and a small quantity of grit (particle size 2 mm). The pot, which was built from strips joined via H-joins and had an irregular surface, contained two holes, which were at some time repaired.
- D. Fragment of a barrel-shaped pot with a rim diameter of 44 cm. The clay was tempered with a small quantity of grit (particle size 3 mm). The surface of the pot was smoothed. The rim of the pot was decorated with a single row of nail impressions, the rest of the pot's surface with single fingertip impressions.
- E. An intact pinched bowl with a rim diameter of 11 cm and a height of 8 cm. The clay was tempered with an average quantity of grit (particle size 2 mm). The pot's surface was smoothed.
- F. Fragment of a round-based pot tempered with a large quantity of grit (particle size 2 mm) and an average quantity of grog (particle size 3 mm). The pot, which was built from strips joined via H-joins, was decorated with randomly arranged nail impressions.
- G. Fragment of a *Wackelboden* tempered with an average quantity of grit (particle size 2 mm) and a small quantity of grog (particle size 3 mm). The pot was built from strips joined via H-joins and had a smoothed surface.

		$d_{\text{const}} = \frac{1}{2} \int \frac{1}{2} \int$		otal			
		absent	dorsal $< 50\%$	dorsal $\geq 50\%$	n	%	unsure
terrace flint		4	51	36	91	18.1	_
pebble-Meuse eggs		10	98	206	314	62.5	_
Rijckholt		16	1	0	17	3.4	-
Valkenburg		3	0	0	3	0.6	_
Light-grey Belgian		24	2	0	26	5.2	_
Zevenwegen		3	3	1	7	1.4	-
axe frag	ments	44	0	0	44	8.8	-
Total	n	104	155	243	502	100.0	_
	%	20.7	30.9	48.4	100.0		
indeterminable		393	135	30	558		5

Table 12. Haw material versus cortex exte	nt.
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Table 13. Typology versus raw material. 1=terrace flint; 2=pebble-Meuse eggs; 3=Rijckholt; 4=Valkenburg; 5=Light-grey Belgian; 6=Zevenwegen; 7=axe fragments.

	1	2	2	4	5	6	7		Тс	otal
	1	Z	3	4	3	0	/	unsure	n	%
triangular points	2	4	2	_	2	_	_	12	22	2.1
leaf-shaped points	-	-	_	_	-	_	_	1	1	0.1
transverse arrow-heads	s –	-	_	_	-	_	_	4	4	0.4
other points	1	1	_	_	-	_	-	1	3	0.3
pointed blades	-	-	_	_	-	2	_	-	2	0.2
borers / reamers	1	1	1	_	-	_	-	3	6	0.6
scrapers	4	6	1	1	4	1	_	10	27	2.5
flint axes	-	-	2	_	-	_	_	2	4	0.4
retouched blades	2	1	1	_	2	1	-	3	10	0.9
retouched flakes	4	3	1	_	2	1	_	9	20	1.9
retouched waste	-	1	_	_	-	_	_	3	4	0.4
other retouched mat.	2	1	2	_	_	_	-	9	14	1.3
unretouched flakes	36	139	4	1	8	1	26	242	457	42.9
unretouched blades	1	5	1	_	3	_	-	-	10	0.9
cores	2	20	_	_	2	_	-	4	28	2.6
unretouched waste	17	41	2	_	2	1	7	66	136	12.8
splinters	4	17	_	1	1	_	5	169	197	18.5
potlids	2	3	_	_	_	_	6	25	36	3.4
pebbles	13	71	-	-	-	-	-	-	84	7.9
Total n	91	314	17	3	26	7	44	563	1065	100.1
%	8.5	29.5	1.6	0.3	2.4	0.6	4.1	52.9	99.9	

To summarize, the pottery from the Wateringen site comprises fragments of barrel- and bucket-shaped pots and one small, round-based pinched bowl. The pots had flat or round bases or a type of base known as a *Wackelboden*. The clay of the majority of the pots was tempered with grit, but organic matter and grog were also commonly used as temper. Rim decoration is very rare, but about 40% of the pottery shows wall decoration, consisting of impressions made with the fingertips/fingernails or some instrument. Most of the pots had a roughened or smoothed surface; some had an irregular surface.

On the basis of the pottery characteristics described above the Wateringen 4 site may be classified in the Hazendonk 3 Group (Louwe Kooijmans 1976, 267-276): in technological and morphological terms the pottery from Wateringen 4 shows a close resemblance to the pottery from Hazendonk

- PL = plant
- HI = hide
- MI = mineral
- '10' = polish '10'
- SH = shooting
- $\iff$  = longitudinal motion
- $\downarrow$  = perpendicular motion
- $\downarrow$  = shooting
- $\checkmark$  = hafting
  - = light wear
- = medium wear
- = heavy wear



Figure 28. Typical flint tools from Wateringen 4 (Scale 1:1): A-H: points; Indicated are the wear traces observed on the tools (see legend).

(Louwe Kooijmans 1974, 150-155; 1976, 267-271), Het Vormer (Louwe Kooijmans 1980), Gassel (Verhart/Louwe Kooijmans 1989), Meeuwen-Donderslagseheide (Creemers/Vermeersch 1989) and Grave-Pater Berthierstraat (Verhart 1989). A striking difference is however the absence of the groove patterns that constitute a common decorative feature on the walls of the pots from the other Hazendonk 3 sites.

#### 9.3. SPATIAL DISTRIBUTION

Figure 27 reveals a close relation between the amount of pottery and the height of the dune: the greater part of the pottery was found on top of the dune. There is also a relation between the position of the house plan, on top of the dune, and the distribution of the pottery. The area around the house plan was interpreted as a primary deposition zone. The zone containing the watering places yielded very few finds in

comparison with other areas at the same altitude. This suggests that this area was deliberately kept clean to avoid contamination of the drinking water. Some of the stray finds recovered on the slopes were found in primary contexts, others in secondary contexts. The latter is illustrated by the fact that matching pottery fragments were found lying at distances of up to 40 metres apart. They had been moved from their primary contexts by post-depositional processes such as trampling and children's play. One group of matching sherds comprises sherds from the find layer, a feature and Unit 3b. This seems to justify our decision to regard the pottery from the different contexts as a single assemblage in the analysis.

## 10. Flint

10.1.

A.L. van Gijn

In total, the excavators found 1,065 flint artefacts, with an overall weight of 5,335 g. The composition of the assemblage is to some extent the result of the recovery procedure used in the field: small chips are definitely underrepresented. All the flint artefacts were described in terms of their metrical dimensions, weight, basic technology, typology, raw material, grain size, breakage patterns, kind and extent of cortex, presence of traces of burning, patination, polished facets and spatial context. In addition, a sample of 179 implements was selected for microwear analysis.

#### 10.2. MORPHOLOGICAL DESCRIPTION

INTRODUCTION

The Wateringen 4 flint assemblage is the result of a flake technology, blades being almost completely absent (53.1% *versus* 2.7%). Besides flakes and blades, the assemblage also includes a large amount of waste, *i.e.* artefacts without indications of flaking direction (44.2%). A high percentage (39.2%) of the implements shows traces of burning. As the assemblage contains so few blades, the degree of fragmentation is very low: only 21 pieces were found to have broken and there were no indications of intentional breaking whatsoever. Flint axes were reused as cores for the production of flakes: 7.3% of the artefacts show polished facets. Such reuse was very common in the subsequent Vlaardingen group (Hooijer 1961). The greater part of the



Figure 29. Typical flint tools from Wateringen 4 (Scale 1:1): A: pointed blade; B-D: scrapers. Indicated are the wear traces observed on the toold (see legend).



Figure 30. Typical flint tools from Wateringen 4 (Scale 1:1): A-H: retouched flakes and blades. Indicated are the wear traces observed on the tools (see legend).

identifiable raw material in the assemblage consists of flint from river gravels and what are known as pebble-Meuse eggs, small pebbles of relatively fine-grained flint of varying colours. The imported flint includes Rijckholt (1.6%), Lightgrey Belgian (2.4%), Valkenburg (0.3%) and Zevenwegen (0.7%) flint. Many artefacts showed cortex to varying extents (53.3%), mostly of a weathered kind; 84 artefacts were completely covered with cortex (the pebble-Meuse eggs). This high percentage is attributable to the type of raw material selected: largely river gravels, almost all of which (391 of the 405) showed cortex. Many of the implements produced from imported flint showed no traces of cortex, which suggests that they entered the site in finished form (tab. 12). The fact that most of the cores (N=29) and core fragments and the greater part of the waste consist of flint from the river gravels shows that this flint was knapped on the spot (tab. 13). Generally speaking, the artefacts are rather small: the average length of complete blades is 3.8 cm (N=15), of flakes 2.8 cm (N=94). This is evidently also attributable to the use of small river pebbles for the production of implements.

# 10.3. Tool typology

Of the total of 1065 artefacts 117 pieces were intentionally modified (11%) (tab. 13). The points (fig. 28: A-H) constitute the largest category of formal tools (N=30, *i.e.* 26% of the retouched implements); this is an exceptionally high percentage in comparison with the figures obtained for other contemporary sites. The majority of the points are triangular (N=22), 7 having a straight base, 3 a concave base and 12 a convex base. The position of the retouch was found to vary considerably; in some cases it was confined to the tool's margin, in others it extended over the entire surface. In addition to the triangular points, one leaf-shaped, four transverse and three non-diagnostic points were recovered.

The second largest category (N=27) (fig. 29: B-D) consists of scrapers, the most common tool type in most Neolithic assemblages. There is no evidence suggesting a preference for a scraper of a specific shape: short endscrapers, lateral scrapers and double scrapers are represented in equal proportions. The position of the scraper head was evidently dictated by the morphology of the flake, which in most cases was quite irregular owing to the restrictions imposed by the poor-quality raw material. One scraper head was observed on a core.

Borers are not well-represented in the assemblage: only six were identified, one of which may be a reamer (fig. 31: A-C). In addition, two pointed blades were found, figure 29: A.

Besides the relatively well-defined tool types, the assemblage includes quite a few retouched flakes (N=20), blades (N=10) and retouched waste (N=4), figure 30: A-H. Thirteen implements may be termed modified but they



Figure 31. Typical flint tools from Wateringen 4 (Scale 1:1): A-C: borers. Indicated are the wear traces observed on the tools (see legend).

cannot be classified in a specific tool category. Finally, the assemblage also includes two axe fragments and a core that was secondarily used as a hammerstone.

# 10.4. MICROWEAR ANALYSIS

# 10.4.1. Methods

All of the 117 modified implements (among which I include the tools with only a very small amount of retouch) and 62 unmodified artefacts were examined for the presence of traces of use; the unmodified artefacts were selected on the basis of the presence of a regular cross-section of at least one cm (*cf.* Moss 1983; Van Gijn 1990). As some implements showed traces of residues preserved on their surfaces, the tools were examined for the presence of organic remains with the aid of a stereomicroscope before being cleaned. Where such remains appeared to be present, samples were ANALECTA PRAEHISTORICA LEIDENSIA 29



Figure 32. Micrographs of wear traces. a: polish from contact with plants seen on tool no. 13 (fig. 30G, 200x); b: plant polish on tool no. 100 (fig. 30F) used for silicious plants (200x); c: traces from scraping hide, seen on tool no. 67 (fig. 29B, 100x); d: so-called polish '10' with a perpendicular directionality, observed on tool no. 47 (fig. 29D, 100x); e: same tool (200x); f: traces from boring a mineral substance, perhaps pottery, seen on tool no. 35 (100x); g: rough polish interpreted as being the result of scraping a mineral substance, seen on tool no. 107 (fig. 30H, 100x); h: friction-gloss from impact seen on the tip of a point used for shooting (no. 115, fig. 28D, 200x).

taken by dissolving the residue in distilled water and smearing it on a glass slide for examination beneath a transmitted light microscope. After this initial screening, the implements were washed in water containing a detergent and were regularly wiped with a cloth drenched in alcohol. A small number of implements displayed a film of highly resistant 'dirt', which was removed through immersion in an ultrasonic cleaning tank. None of the implements were chemically cleaned. The microwear analysis was carried out with the aid of an incident light microscope, at magnifications ranging from 100 to 600×.

# 10.4.2. *Results*

On the whole, the surface of the implements was reasonably well-preserved, post-depositional surface modification

occurring on only 34 pieces; 9 implements could not be studied because they were too severely burnt. In total, 86 of the 179 artefacts studied displayed traces of use, often in several zones: 13 tools displayed two zones of use, three implements even showed three zones of use. Five tools showed zones of several uses, either on different contact materials, or in different motions. The residues, for which the tools were systematically studied, were limited to remnants of birch tar, associated with hafting.

The contact material most frequently encountered is plant (N=18, table 14). In most cases the plants were of silicious species such as reeds or grasses (fig. 32: a-b). The polish is very bright and smooth, with a fluted topography. The traces are well-developed. None of the implements displayed plant residues. Longitudinal and transverse motions are represented

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Fig. 32 continued

in equal proportions, which suggests that the tools were used for both collecting and processing activities. No typical sickle inserts were found, but they may have remained unidentified as such amongst the plant-cutting implements. Evidence for wood working was observed in only seven zones of use. It pointed to light tasks, for which the implements were employed in a transverse direction. The nature and extent of edge removals indicated that one flake had been used for chopping into wood.

Evidence for bone working was found in only six zones of use: four edges showed traces of a scraping movement, while one point and a pointed flake had been used for boring bone. In addition, four zones of use displayed traces of contact with soft animal material. The fact that three of these implements had been used in a cutting motion suggests that they were light butchering tools.

Traces of contact with hide were observed more frequently, in 13 zones (fig. 32: c). The appearance of the hide polish and the absence of extensive rounding of the

working edges show that the tools were not used for hide treatments such as currying. It is more likely that they were used in relatively simple hide-cleaning operations. An exception is a standardised scraper of Light-grey Belgian flint (fig. 29: B) displaying a well-developed dry hide polish. The edge is extremely blunt and obtuse-angled, indicating multiple resharpening phases. This may clearly be regarded as a curated tool. The evidence pointing to the cutting and boring of hides besides scraping suggests that hides were also processed into products such as garments and the like.

h

Most of the typological points were indeed used as projectiles (N=15). Evidence confirming this includes impact fractures and linear traces of matt polish, generally referred to as MLITS as well as friction gloss (see Fisher *et al.* 1984; Odell/Cowan 1986; Van Gijn 1990).

A total of ten edges displayed either so-called polish '10' (see Schreurs 1993; Van Gijn 1997) or a 'mineral' polish. Polish '10' is a rough, matt, bright polish, occurring in a band along the edge, which is usually extremely rounded

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Total 2 3 4 5 1 6 unsure % n 8 2 plant 6 2 18 20.9 wood 5 1 1 7 8.1 \_ \_ 5 bone 1 6 7.0 \_ 2 10 13 hide 1 15.1 3 1 4 soft animal mat. 4.6 3 1 3 7 8.1 mineral \_ \_ \_ polish '10' 3 3 3.5 \_ \_ \_ 5 unsure \_ 2 2 15 4 28 32.5 Total 14 34 12 1 3 15 7 86 99.8 n % 16.3 39.5 13.9 1.2 3.5 17.4 8.1 99.9

Table 14. Contact material versus motion. 1=longitudinal; 2=transverse; 3=boring; 4=diagonal; 5=chopping/wedging; 6=shooting.

Table 15. Raw material versus degree of wear (only for implements showing traces of use).

		11-1-4		1		Total		
		light	medium	neavy	unsure	n	%	
terrace flint + pebble-Meuse eggs		20	9	4	_	33	38.4	
imported flint		9	4	6	-	19	22.1	
unsure		21	4	7	2	34	39.5	
Total	n %	50 58.1	17 19.8	17 19.8	2 2.3	86 100.0	100.0	

(fig. 32: d-e). In appearance it sometimes resembles hide polish, at other times plant polish, but it is probably attributable to neither of those contact materials. It has not yet been reproduced experimentally. Polish '10' was observed on two tools, one with two worked edges. Both of the tools were of exotic material. The implements were used in a transverse motion. The tools that were interpreted as having been used on some unknown mineral material are more varied (fig. 32: f-g). There was evidence for cutting, scraping and boring. The boring implements were of local flint, the cutting and scraping tools of exotic, Light-grey Belgian flint. The latter implements are quite remarkable as they were found to display polish over large parts of their surfaces, both their ventral and their dorsal surfaces. The implements were subsequently retouched. The tools may have been used to scrape pottery, but the traces do not match the experimental equivalents sufficiently to corroborate such an interpretation.

Finally, 28 implements displayed undiagnostic traces of use, which could not be further specified.

Quite a few tools showed traces of hafting, in particular the points. The traces comprised remnants of birch tar and microwear traces. A remarkable tool in this respect is one of Zevenwegen flint (fig. 29: A), which was used on hide and plant and was hafted in birch tar. There was no clear evidence suggesting that tools of imported flint were more frequently hafted than locally made implements.

Neither was there any evidence suggesting a preference for a specific raw material for a particular contact material, except perhaps the traces of polish '10' observed on two tools of Zevenwegen material. The implements of imported flint had however been more frequently used than those made on flint from the local river gravels (table 15). The tools of Light-grey Belgian flint in particular showed clear evidence for resharpening: in four of the eight cases the traces of primary use had been removed by subsequent retouch. Another interesting feature of the imported tools is that the majority were used for different purposes, as indicated by the traces of different contact materials and





different motions. The use-wear traces are moreover better developed and indicate more extensive use.

When we examine the relationship between tool use and tool typology we find that the points were almost invariably used as projectiles; some showed signs of use as borers, but this may have been a secondary use. The scrapers were indeed used in transverse motions, usually on hide, but also on bone.

# 10.5. Spatial distribution

The spatial distribution of the flint, based on its weight, corresponds roughly to the density distribution of the pottery: the density is highest around the house plan (fig. 33). A difference with respect to the pottery distribution is however that comparatively more flint was discarded on the slopes of the dune, close to the watering places. The distribution of the implements of Zevenwegen and Rijckholt flint displays a higher concentration along the circumference of the excavated area, but this is probably due to fact that a large part of the flint was found at the peripheries of the inhabited area. This may be attributable to a desire to keep the living area free of sharp-edged debris. This intentional clearing of the living area further supports the assumption that Wateringen 4 was a permanently inhabited settlement.

The distribution of the different tool types does not show any particular clustering. All the types were more or less evenly distributed across the excavated area (fig. 34). Only the arrow heads seemed to be concentrated in the northern part, around the house plan. This may be associated with retooling activities (Keeley 1982) at the centre of the living area.

In considering the distribution of the different activities inferred from the wear traces on the implements (fig. 35) we must allow for the possibility that some of the finds may have been recovered from secondary contexts. It is probably safe to assume that the artefacts that were found on top of the dune were discarded at the site of their last active use. Tools showing traces of hide working appeared to be largely confined to the central living area. The evidence for the cutting and boring of hides suggests that the hides were processed into products like garments within the central living area. The presence of hide scrapers within the living area is rather remarkable because we tend to regard hide working as a rather smelly, dirty activity that will preferably have been carried out some distance from the living area. It is therefore more likely that their presence is associated with retooling activities. The presence of the points showing traces of shooting on top of the dune is in accordance with our views on the areas in which specific activities were carried out within a settlement: arrow shafts may have been retooled around the hearth.

The used implements found on the slopes of the dune are to be differently interpreted. These implements consist predominantly of plant-working tools and implements showing microwear polish '10'. This may imply that these tools were discarded on completion of the task for which they were used, but we do not know whether that task was performed in the living area or on the slopes of the dune.

#### 10.6. CONCLUSION

The picture that emerges from the examination of the flint component of the Wateringen 4 assemblage is that of a permanently inhabited settlement, largely dependent on local raw materials. However, the presence of implements of exotic flint that were brought to the dune in finished form attests to contact with areas further south. These tools were definitely curated. A conspicuous aspect of these tools is that they showed traces of 'foreign' contact materials such as dry hide and the materials implied by polish '10'. Similar traces





- Borers
- Scrapers
- Retouched blades
- Retouched flakes

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Figure 34. The spatial distribution of the flint tools in relation to the excavation grid and the house plan.





Number	blocks	%	pebbles	%	tools	%	total	%
Quartz	4	7.1	205	58.1	3	4.8	212	45.0
Quartzite	8	14.3	123	34.8	31	50.0	162	34.4
Sandstone	6	10.7	22	6.2	7	11.3	35	7.4
Other metamorph.	16	28.6	-	_	5	8.1	21	4.5
Crystalline	7	12.5	_	_	8	12.9	15	3.2
Quartzitic sandstone	4	7.1	2	0.6	7	11.3	13	2.7
Marcasite	6	10.7	-	_	_	_	1	1.3
let	1	1.8	_	_	1	1.6	2	0.4
Slate	1	1.8	_	_	_	_	1	0.2
Porphyry	-	_	1	0.3	_	_	1	0.2
ndeterminable	3	5.4	-	-	-	-	3	0.6
Fotals	56	100.0	353	100.0	62	100.0	471	99.9

Table 16. The different types of stone encountered at Wateringen 4 and the proportions in which they were found based on the number of fragments found.

were also observed on a large retouched flake of Zevenwegen flint from the contemporary site of Rijswijk (author's observation). This implement showed evidence for several instances of use and intermediate resharpening.

The inhabitants of Wateringen 4 practised a range of activities, related to both subsistence tasks and the processing of various materials. Plants were gathered and processed; those plants may have been reeds which were made pliable so as to be suitable for the manufacture of mats and the like. The many arrow points that were used for hunting in the vicinity of the site were taken back to the living area to be repaired and rehafted. Bone objects were also made, if on a small scale. There is evidence for hide working. Some of the hides may have been used to manufacture skin products. The fact that no sickle blades were found does of course not mean that agriculture was not practised: negative evidence of this nature is not significant.

The results of the analysis of the Wateringen 4 flint assemblage closely resemble those of the few contemporary sites that have been studied. As far as the use of raw material is concerned, the proportion of local flint (pebble-Meuse eggs) is higher than that of imported material (Rijckholt, Light-grey Belgian, Valkenburg, Zevenwegen). This was the case in particular at Hazendonk 3 (32% imported flint) and Rijswijk (12%; Raemaekers, pers. comm.). At Gassel and Kraaienberg, which are both situated closer to the southern flint sources, the percentages of imported flint were higher (Louwe Kooijmans / Verhart 1990; Verhart / Louwe Kooijmans 1989). The technology was aimed largely at the production of flakes; blades are rare. All four sites yielded relatively few modified tools: Hazendonk 3 12%, Gassel 16%, Kraaienberg 13% and Wateringen 4 11%. The usewear traces observed on the flint represent comparable broad spectra of activities at all four sites (the Rijswijk assemblage

has not yet been subjected to functional analysis) (Bienenfeld 1989; Schreurs *in prep.*). 'Exotic' traces, such as polish '10' and polish '23', were found mostly on southern, imported flint implements (Van Gijn 1997). Generally speaking, the evidence points to permanently inhabited sites with, for example at Wateringen 4, a strong emphasis on hunting.

Wateringen 4 yielded evidence for the use of polished axes as cores, as also attested at the later Vlaardingen sites. 7.3% of the artefacts from Wateringen 4 showed polished facets. The greatest difference between the Wateringen 4 assemblage and the assemblages from the Vlaardingen sites in terms of the range of activities represented is the almost complete lack of traces of bone working in the former (*cf.* Van Gijn 1990).

#### 11. Stone

#### 11.1. RAW MATERIALS

471 pieces of stone with a total weight of 7,129.2 g were collected. They represent ten different kinds of stone (tables 16, 17). The two most common kinds are quartz and quartzite, with weight percentages of 53.5% and 21.8%, respectively. The large difference in percentages between the number of quartz fragments and their weight is due to the large number of small fragments of this stone.

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What is perhaps the most remarkable aspect of the lithic assemblage is the presence of marcasite (FeS<sub>2</sub>), an iron compound which occurs as lumps in layers of chalk. The nearest natural occurrences are in the Devonian chalks and schists of the Ardennes (Louwe Kooijmans, pers. comm.). Among the sedimentary rocks are several fragments of an unidentified rock. As these fragments include five artefacts they were regarded as a separate group of unidentified fragments.

The number and size of the pebbles indicate that the greater part of the lithic material was probably obtained from




Meuse and Rhine gravels. Some of the stone may have been picked up on the beaches along the North Sea coast. The assemblage also includes imported material. A jet bead found at Swifterbant is thought to have come from northern France (Deckers *et al.* 1980, fig. 121). A similar source may perhaps be proposed for the jet bead that was found at Wateringen 4.

#### 11.2. Artefacts

Table 18 presents a survey of all the 62 fragments of stone artefacts. Noteworthy is a piece of a polished jet stone with two incomplete conical perforations – probably the result of an unsuccessful attempt to produce a bead (fig. 36.1). A similar bead was found at Vlaardingen (Glasbergen *et al.* 1967: fig. 19).

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Weight (g)	blocks	%	pebbles	%	tools	%	total	%
Quartz	9.4	2.3	1,296.5	35.8	250.8	8.1	1,556.7	21.8
Quartzite	39.5	9.8	2,075.7	57.3	1,702.7	54.9	3,817.9	53.5
Sandstone	49.9	12.3	213.5	5.9	373.2	12.0	636.6	8.9
Other metamorph.	65.8	16.3	_	_	136.1	4.4	201.9	2.8
Crystalline	48.4	12.0	_	_	267.3	8.6	315.7	4.4
Quartzitic sandstone	26.3	6.5	12.7	0.4	368.1	11.9	407.1	5.7
Marcasite	20.3	5.0	_	_	_	_	20.3	0.3
Jet	3.8	0.9	_	_	1.4	0.0	5.2	0.0
Slate	43.0	10.6	_	_	_	_	43.0	0.6
Porphyry	_	_	27.0	0.7	_	_	27.0	0.4
Indeterminable	97.8	24.2	-	-	-	-	97.8	1.4
Totals	404.2	99.9	3,625.4	100.1	3,0996	99.9	7,129.2	99.8

Table 17. Same as table 16, with the proportions based on the weight of the fragments.

Table 18. The relation between the types of stone tools and the raw materials. 1=hammerstone, 2=grindstone, 3=quern, 4=axe fragment, 5=mortar, 6=bead, and 7=indeterminable.

Artefacts	1	2	3	4	5	6	7	Total
Quartzite	10	8	3	3	_	_	7	31
Crystalline	_	_	_	_	_	_	8	8
Sandstone	_	_	2	_	_	_	5	7
Quartzitic sandstone	_	1	_	1	1	_	4	7
Other sedimentary	_	_	_	_	_	_	5	5
Quartz	3	_	_	_	_	_	_	3
Jet	-	-	-	-	-	1	-	1
Totals	13	9	5	4	1	1	29	62



Figure 37. The spatial distribution of the stone material. The largest dots represent at least 100 g per square.



- Mortar
- Quern stone
- Hammer stone
- □ Wetstone
- A Polished stone axe
- Bead
- Bead and hammer stone
- Quern stone and hammer stone
- Indeterminable

Figure 38. The spatial distribution of the stone tool fragments in relation to the excavation grid and the house plan. Fitting fragments are joined by solid lines.

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Source	northern slope	central zone	unlined wells zone	southern slope
fig. 5	watering places	postholes / house plan	wells	_
fig. 15	-	salt marsh plants	_	_
fig. 16	_	cereals	-	_
fig. 18	bone	_	bone	bone
fig. 19	cattle	_	-	_
fig. 22	_	birds	birds	_
fig. 23	-	widgeon	-	_
fig. 27	_	pottery	-	_
fig. 33	-	flint	-	flint
fig. 34	_	arrow heads	-	_
fig. 35	plant working	_	plant working	plant working
-	polish '10'	_	polish '10'	polish '10'
	-	hide working	-	_
	_	projectiles	-	_
fig. 37	_	stone	_	stone
fig. 38	_	hammerstone	_	hammerstone
-	_	mortar	-	-

Table 19. The intrasite distribution of various categories of finds and other variables.

Three fragments of quartzite stone axes were identified: a flake, an almost complete edge and a tip (fig. 36: 2, 3). All three showed traces of pounding. It could not be inferred from the fragments whether they had all belonged to the same axe. The edge may have formed part of a Fels Rechteckbeile A, a type of axe known from various Neolithic cultures (Beuker et al. 1992, 117-120; Schut 1991, 7-25). A fourth fragment of quartzitic sandstone may also be part of an axe, judging from its three facetted sides, figure 36: 4.

Large and rounded pebbles with roughened surfaces may have been used as hammerstones, for instance in flint working. In some cases a fragment of the pebble had been removed in the hammering. The lithic assemblage also includes five fragments of querns, of sandstone and quartzite. Some of these fragments show clear traces of the deliberate roughening of the surface. Other stones show polished surfaces (see fig. 36, 5-7).

Stone tools are not extensively discussed in the reports on the other sites of the Hazendonk 3 Group. Wateringen 4 yielded far more fragments of stone tools than the other sites, but the majority of those fragments represent the same types of tools as also encountered at most of the other sites. There is therefore no evidence to suggest a difference in function between Wateringen 4 and the other Hazendonk 3 sites.

#### 11.3. SPATIAL DISTRIBUTION

The greater part of the lithic material was concentrated on top of the dune and on the southern slope (see figs 37, 38). Two clusters of artefacts were distinguished within the overall distribution: a first cluster, which included hammerstones and fragments of quartzitic sandstone axes, in and around the house plan and a second, consisting predominantly of indeterminable artefacts, on the southern slope.

D.C.M. Raemaekers 12. Synthesis The first occupants of the Wateringen site settled on a dune in a natural environment that had only shortly before developed freshwater conditions. The dune was surrounded by a diverse landscape with marshes, creeks and small woods on the nearby small dunes. The potential of this area was equally diverse: cattle could be pastured on the nearby salt marshes, there was probably an abundance of wild animals and cereals could be cultivated on the dunes.

The subsistence activities of the occupants of the Wateringen 4 site included crop cultivation and animal husbandry, hunting and gathering. Other activities attested at the site are the processing of plants and the working of wood, bone and hides and the activities represented by the enigmatic polish '10' observed on some flint artefacts. The occupants dug various kinds of pits, some of which have been interpreted as unlined wells and watering places. Moreover, at least one house was constructed.

It proved possible to relate some of these activities to specific zones of the excavated area (tab. 19). The majority of the activities appear to have taken place predominantly in the central zone rather than on the slopes of the dune. Some of the finds recovered on the slopes represent activities, others the discarding of waste formed in the activities on top of the dune. The unlined wells and watering places were all situated exclusively on the slopes.

As far as the season/seasons of the occupation is concerned, the mandible of a two-month old calf and the remains of fish bones from the stomach of an otter constitute evidence for occupation during the summer season. Winter activities are represented by widgeon bones and three fullgrown antlers.

But does this mean that the site was occupied on a seasonal basis, in the form of winter occupation in some years and summer occupation in others, or on a year-round basis? Year-round habitation seems more likely, because

- 1. the area seems to have been suitable for crop cultivation and animal husbandry,
- 2. there appears to have been a clear difference between the relative importance of the economic activities practised at the different sites in the Hazendonk 3 period. Wateringen was a more permanently occupied settlement (see fig. 21),
- 3. the house plan implies a considerable investment in time and labour (contra Verhart 1992, 92-94).

It is very difficult to compare Wateringen 4 with the other sites of the Hazendonk 3 Group on account of the nature of the latter sites. Most of those other sites were found to be surface scatters, where all zoological and botanical remains had disappeared due to oxidation. Many had moreover remained occupied for a long period of time, as a result of which the remains from different phases had become mixed. This greatly complicates or even precludes comparisons of aspects like site dimensions, site structure and economy.

Hazendonk is the only published site that does not present the aforementioned difficulties. In several respects Hazendonk differs considerably from Wateringen 4. In the first place it is believed that the occupants of Hazendonk, which was situated on top of a small river dune in an entirely different natural environment, cannot have practised crop cultivation, as the area available on the dune was too small and there were no areas suitable for crop cultivation in the vicinity of the site (Bakels 1986). The Hazendonk 3 subsistence data reflect the importance of the hunting of otters and beavers (Zeiler 1991, tab. 4).

The flint artefacts from Wateringen 4 closely resemble those found at the other Hazendonk 3 sites in technological and typological respects. Marked differences are observable in the raw materials used: whereas terrace flints and pebble-Meuse eggs were rare at Gassel and Grave-Pater Berthier, they constituted about 70% of the raw material used at Vormer and Hazendonk 3. At Wateringen 4 this percentage is even higher. Wateringen moreover yielded far more flint artefacts and tools than the other Hazendonk 3 sites.

As for the pottery, the typical bucket- and barrel-shaped pots were found at all the Hazendonk 3 sites. The same holds for the small round-based bowls. The pottery from the different sites is remarkably uniform in morphological and technological terms. A conspicuous feature of the Wateringen pottery is the absence of the groove patterns



Figure 39. Triangular diagram showing the proportion of bones of wild and domesticated mammals and (wild/domesticated) pig from 8 Neolithic sites, all of which are older than Wateringen 4 (see fig. 21). The sites may be identified on the basis of table 20.

which were found to be the main form of decoration at the other Hazendonk 3 sites. This may suggest closer links with the south (Zeeland and Flanders) than with the east.

A few important conclusions can be drawn from a comparison of the data from Wateringen 4 with the evidence from the Middle Neolithic B Vlaardingen settlements in the coastal area. In the first place, in the centuries between the abandonment of Wateringen 4 and the arrival of the Vlaardingen settlers, the natural environment changed drastically from an open, newly developed freshwater environment to a relatively mature deciduous forest (Groenman-van Waateringe *et al.* 1968). It is however believed that both environments were suitable for agriculture.

Secondly, the resemblance between the bone spectra of the Hazendonk 3 period and those of the Vlaardingen period suggests that the economic diversity attested by the evidence from the Vlaardingen period may have existed already in the Hazendonk 3 period. To take this argument one step further, we may even suggest that the settlement system of the Hazendonk 3 period resembled the relatively well-known Vlaardingen settlement system.

At what time did the Neolithic occupation of the Dutch coastal area begin? This question can be approached from two different starting points. The first is the beginning of the formation of the beach barriers in this area, which constitutes a sound *terminus post quem* for the period of occupation. It is thought that this took place around 4850 BC (Van der Valk 1992, 120-121). This would leave a period of about

No. site	'culture'	Wild animals	Pig	Domesticated animals	Literature
1 Hazendonk 1/2	Swifterbant	74	10	16	Zeiler 1991, table 3
2 Swifterbant S3	Swifterbant	35	55	10	Zeiler 1991, table 1
3 P14, layers ABC	Swifterbant	57	29	14	Gehasse 1995, table 9.3
4 Hüde I	Swifterbant	79	19	2	Hübner et al. 1988, table 16
5 Brandwijk L30	?	60	20	20	Robeerst 1995
6 Brandwijk L50base	Swifterbant	63	31	6	Robeerst 1995
7 Brandwijk 150top	Swifterbant	59	33	8	Robeerst 1995
8 Brandwijk L60	Swifterbant	68	22	10	Robeerst 1995

Table 20. The mammal bone spectra of 8 Middle Neolithic sites, all of which are older than Wateringen 4. These data were used to construct the triangular diagram shown in fig. 35. After Gehasse 1995, table 9.3.

1225-1400 years between the formation of the beach barriers and the Wateringen 4 occupation. Although we know of no actual settlements from this period, the Bergschenhoek fowling camp (dated around 4300/4200 BC) indicates that the resources of the coastal area were being exploited (Louwe Kooijmans 1977, 245-248; 1987, 238-242).

Our second starting point is of an archaeological nature. Where did the colonist of the coastal area come from? This question is of course difficult to answer, though it is quite tempting to correlate the decrease in settlement density in the peat district of the Rhine-Meuse delta attested from the Hazendonk 3 period onwards with the beginning of the occupation of the coastal area. Both the number of sites in the peat district and their sizes decreased (Verbruggen 1993). It may well be that the Hazendonk 3 occupants of Wateringen (and those of Rijswijk) came from the peat district. Around this time marked changes began to take place in the relative importance of the subsistence activities, too: the subsistence activities attested at the sites from the Hazendonk 3 and Vlaardingen periods shows a wider degree of differentiation than those of the preceding period (compare figs. 39 and 21 or tables 20 and 4). This greater diversity in subsistence activities may reflect a greater diversity in settlement types. Of course, the observed differences may also be attributable to differences in the intensity of archaeological research.

From what has been said above it may be concluded that the coastal area was first occupied either in the Hazendonk 3 period or a little earlier, but not before about 4850 BC. If the area was occupied before the Hazendonk 3 period, the occupation was probably of a different nature than the Vlaardingen-like occupation of the Hazendonk 3 sites. We would like to suggest that any earlier occupation of the Dutch coastal area will have been of a pioneering nature, in seasonally occupied fowling or hunting camps whose occupants hesitantly explored the possibilities of the virgin area. Later, probably from the beginning of the Hazendonk 3 period onwards, the occupation gradually acquired a more permanent character.

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The drawings were made by P. van der Kroft (fig. 27), H. de Lorm (figs. 36, 25 A and 25 C), M. van Waveren (fig. 17), C. Mostert (fig. 26, except 25 A and 25 C) and P. Heavens (all the other figs).

#### notes

1 Radiocarbon dates RGD 1 and RGD 2 were corrected for the age effect of surface ocean water and the delta <sup>13</sup>C effect, but not for the age effect of the admixture of fresh water. Van der Valk (1992: 127-129) has suggested that radiocarbon dates obtained for mollusc shells may be 300 to 400 years too old owing to the admixture of fresh water. This is probably also the case with the dates obtained for the shells of Wateringen 4. This would narrow the gap between the formation of the beach barriers and their occupation. Subtraction of 350 years from the date obtained for the mollusc shells from Unit 4, which postdates Unit 3 (the peat layer), yields a date of around 3350 cal. BC. This would agree with the age of the peat layer.

The RGD dates are quoted here with the kind permission of the RGD.

2 All dates BC given in this article are calibrated dates.

3 According to Van der Valk, the beach barriers of Rijswijk are among the oldest preserved barrier chains. Around 4850 cal. BC (or several hundreds of years later if the <sup>14</sup>C dates are differently interpreted) the barriers began to prograde northwards at a high rate.

4 Unit 2 is similar to Unit 3b of the Rijswijk A4 temporary exposure; see Van der Valk 1992.

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### Acquiring a taste: the menu of Iron Age and Romanperiod farmers at Oss-Ussen, the Netherlands

The incorporation of the southern part of the Netherlands into the Roman Empire led to the introduction of customs, manners and ideas hitherto unknown or hardly known to the indigenous societies. Among the novelties were foods and culinary habits. An interesting question is how the local rural population reacted to the wave of change. The excavations that were carried out at Oss-Ussen provided an opportunity to study this subject. A combination of botanical, zoological and other evidence on eating and drinking shows that the culinary habits of the native farmers indeed underwent some changes, but that the new customs were not uniformly adopted by all the households. Moreover, the main part of the daily diet remained unchanged. A reflection on the reasons why people change their culinary habits seeks to offer an explanation for this.

### 1. Introduction

The year 12 BC was an important year in the history of what is now the Netherlands. In that year the Roman army invaded the area and incorporated part of it into the Roman Empire. The position of the border between occupied and free territory fluctuated somewhat at first, but around AD 47 it came to be fixed along the course of the river Rhine. The Roman army was followed by the Roman administrative and marketing systems and the area was linked up with the Roman infrastructure. This resulted in the introduction of customs, manners and ideas hitherto unknown or hardly known to the indigenous societies. Among the novelties were also new foods, as has been amply demonstrated in the *limes* area with its Roman *castella* and associated sites (Knörzer 1991a).

An interesting question is how the local rural population, living in more or less backward areas, reacted to the wave of change. Did their menu change and, if so, in what ways? Another important issue is the meaning of changes in eating and drinking habits: culinary customs are influenced by more than nutritional values alone.

The excavations that were conducted at Oss-Ussen between 1976 and 1986 gave us an opportunity to search for answers to these questions. During the large-scale fieldwork carried out by the Leiden Institute of Prehistory a microregion of some 30 hectares was uncovered, revealing a continuous history of occupation from the Bronze Age, through the Iron Age into the Roman period. Since the excavations, several major reports have appeared and more will be published in the near future (Van der Sanden/Van den Broeke 1987; Van der Sanden 1988; Schinkel 1994; Fokkens 1996; Wesselingh forthcoming). These reports enabled us to conduct the study whose results are presented on the following pages.

# 2. Settlement at Oss-Ussen in the Iron Age and the Roman period

Ussen is the name of an area in the northwestern part of the municipality of Oss. The area lies in the transitional zone between the Pleistocene coversands of the province of Brabant and the wide valley of the river Meuse. The local subsoil is sand. At present, the Meuse flows five kilometres to the north of the site, but it may have run closer by in the Iron Age and the Roman period (fig. 1).

The history and nature of the human occupation have been amply described by K. Schinkel (1994). In the Early Iron Age (800-500 BC) settlement consisted of single farms scattered across the landscape. The farms incorporated living areas and a byre beneath a single roof. One or more outbuildings and wells were to be found in the yards. Sometimes there was also a watering place for livestock. When a farmhouse was abandoned, it was not rebuilt at the same spot or in the same yard. Farmsteads were shifted about within a – their? – small territory. The occupants of the farms practised both arable farming and stock-breeding.

The nature of settlement did not change during the Middle Iron Age (500-250 BC). Only from the Late Iron Age (250-12 BC) onwards were farms rebuilt at more or less the same spot, as testified by the clustering of features uncovered in the excavations. This does however not imply a more clustered type of settlement, because contemporary farms still lay scattered across the landscape. The economy remained the same.

The development outlined above ultimately resulted in fixed settlements with true clustering of permanent farmsteads in the Roman period (12 BC - AD 200). During the 1976-1986 campaigns the remains of three such hamlets were discovered: Vijver, Zomerhof and Westerveld. With the exception of Zomerhof, whose earliest remains were dated



### 1 2 3 4 • 5

Figure 1. The location of Oss with respect to the Roman limes. 1. fluviatile deposits; 2. peat and clay; 3. water; 4. coastal barriers and Pleistocene deposits; 5. military camps.

around AD 70, the hamlets can be regarded as the direct successors of the Iron Age settlements in this area. The largest of the three, the Westerveld settlement, lay within a rectangular ditched enclosure. This settlement was moreover found to have comprised new types of houses. In spite of these differences, farming was the principal activity of all the hamlets' inhabitants.

The deceased of Oss-Ussen were cremated and their ashes were buried in loosely arranged clusters of burials. Only the layout of the cemetery from the Roman period shows some degree of planning. In addition to burials, other ritual – but most certainly non-funerary – monuments were discovered. They included square structures, which were built from the Middle Iron Age onwards and were interpreted as open-air sanctuaries (Van der Sanden 1994; Slofstra/Van der Sanden 1988).

#### 3. Ingredients of the diet, plants

The diet consisted of ingredients derived from plants, animals and mineral sources. Aspects like how the food was prepared and served will be dealt with in later sections. We will first take a look at the food plants.

Our main source of information on food plants consisted of soil samples. Soil samples were obtained from both dry and waterlogged contexts at Oss-Ussen. The former were foundation trenches and postholes, the latter wells and watering places. Both types of sediments were sieved using mesh sizes up to and including 0.25 mm. The dry samples could have been subjected to flotation, but as they were from necessity small because the features were small, and as the waterlogged samples had to be hand-sieved anyhow, all the material was treated in the same way. Flotation would not have reduced the overall processing time. A small amount of



Figure 2. Seeds of typical Romanperiod plants. 1. savory, 2. celery, 3. coriander, 4. beet. Scale bars: 1 mm.

additional information on food plants was obtained from impressions in pottery.

The Iron Age remains were published by C. Bakels (1994) and the seeds and fruits from the Roman period were analysed by I. van Amen (1995). Many of the remains were of wild plants which, with the exception of wild fruits and hazelnuts, will not be considered below. Oats will be omitted here, too, because only few remains of these plants were found and the identifiable chaff belonged to wild oats (Avena fatua). Another uncertain cereal, rye (Secale cereale), may likewise have been a field weed, but it was nevertheless included in the analysis because rye was beginning to be cultivated in the period under consideration. Although the foliage, seeds, tubers, etc. of many wild plants will have been consumed, we decided to restrict ourselves to cultivated plants and the aforementioned fruits and nuts as the evidence obtained in the excavations did not reveal any changes in the presence of wild plants over the centuries.

Tables 1, 2 and 3 show the composition of the evidence per period and site. Table 1 presents the evidence from the primary fills of waterlogged features. Secondary fills were not considered because their dates are not certain. Although several samples were taken from many of the wells and watering holes, especially those in which different layers were observable, we regarded the feature as the unit of analysis instead of the sample. The various layers of the primary fills of the individual features bore a close resemblance to one another in terms of contents. There were however considerable differences between the individual features.

Table 1 shows the frequencies of the various species instead of the numbers of seeds recovered. The frequencies indicate the percentages of the features in which remains of the plant in question were found. At sites like Oss-Ussen, where all kinds of waste have been preserved, frequencies provide a better impression of the commonness of different

Site					Oss-Ussel	L			Oss-IJsselstraat
Period	Early Iron Age	Middle Iron Age	Late Iron Age			Roman F	eriod		Roman period
Settlement				Zomerhof	Vijver	Westerveld 1	Westerveld 2	Westerveld 2-P329	
Number of features	5	6	8	7	∞	9	22	21	3
cereals									
Hordeum vulgare, hulled barley	40	67	63	43	63	67	68	67	100
Panicum miliaceum, millet	40	33	63	29	100	83	68	67	67
Secale cereale, rye	0	0	0	14	0	0	0	0	0
Triticum dicoccum, emmer wheat	20	44	13	14	25	33	14	14	33
Triticum spelta, spelt wheat	20	33	13	0	0	33	18	14	0
pulses									
Vicia faba, Celtic bean	0	11	0	0	0	0	0	0	0
oil plants									
Brassica rapa, rape seed	0	0	25	0	0	0	6	10	0
Camelina sativa, gold of pleasure	20	22	13	0	0	0	0	0	0
Linum usitatissimum, linseed	20	33	50	14	50	50	32	29	0
Papaver somniferum, poppy	40	0	0	0	0	17	5	0	0
kitchen herbs etc.									
Anethum graveolens, dill	0	0	0	0	0	17	5	0	0
Apium graveolens, celery	0	0	0	0	0	17	5	5	0
Beta vulgaris, beet	0	0	0	29	25	17	6	5	0
Coriandrum sativum, coriander	0	0	0	0	0	33	14	10	0
Satureja hortensis, savory	0	0	0	0	0	17	5	0	0
fruits and nuts, wild or cultivate	p								
Corylus avellana, hazelnut	20	0	0	0	25	17	18	19	0
Juglans regia, walnut	0	0	0	0	0	17	5	0	0
Malus sp., apple	0	0	0	0	13	17	14	14	0
Prunus insititia, plum	0	0	0	0	0	0	0	0	33
Prunus spinosa, sloe plum	0	0	13	0	75	17	18	14	67
Rubus fruticosus, blackberry	0	0	0	57	88	50	36	33	0
Rubus idaeus, raspberry	0	0	0	14	13	33	14	10	0
Sambucus nigra, elderberry	20	0	0	14	0	17	14	14	0
Vaccinium myrtillus, bilberry	0	0	0	14	0	0	5	5	0
Number of species	6	7	8	10	10	18	20	16	5

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Site		Oss	s-Ussen			Son	Oosterhout
Period	Middle Iron Age	Late Iron Age	F	Roman perio	od	Middle Iron Age	Roman period
Settlement			Zomerhof	Vijver	Westerveld		
Number of structures	7	7	2	1	18	7	22
Cereals							
Hordeum vulgare, hulled barley	57	57	0	100	56	100	100
Panicum miliaceum, millet	29	29	0	0	11	100	100
Triticum dicoccum, emmer wheat	43	43	0	0	14	57	50
Triticum spelta, spelt wheat	0	0	0	0	14	86	50
Pulses							
Pisum sativum, pea	0	0	0	0	0	14	0
Vicia faba, Celtic bean	0	0	0	0	0	0	0
<b>Oil plants</b>							
Camelina sativa, gold of pleasure	0	0	0	0	0	86	0
Linum usitatissimum, linseed	0	0	0	0	29	14	50
Fruits and nuts, wild or cultivated							
Corylus avellana, hazelnut	0	0	0	0	6	14	0
Rubus fruticosus, blackberry	0	0	50	0	0	0	0
Rubus idaeus, raspberry	0	0	50	0	0	0	0

Table 2. Plant remains from dry contexts, expressed in frequencies.

Table 3. Seed impressions in pottery from Oss-Ussen in absolute numbers.

Period	Early Iron Age	Middle Iron Age	Late Iron Age	Roman period
Hordeum vulgare, hulled barley	7	7	3	3
Panicum miliaceum, millet	_	1	_	1
Triticum dicoccum, emmer wheat	1	7	1	_
Triticum spelta, spelt wheat	_	2	_	_
Vicia faba, Celtic bean	_	1	1	_
Linum usitatissimum, linseed	-	1	-	1

species than the numbers of preserved remains. Some of the remains will have been deposited in the farmyards as part of the domestic waste and will have been kicked or blown into the wells. Others may have been intentionally dumped into an abandoned well. The commoner the plant, the greater the chance of it occurring among the preserved remains, on the condition, of course, that it includes parts that survive well in waterlogged contexts. Examples of such parts are cereal chaff, the seeds of oil plants and kitchen herbs, the pips and kernels of fruit and nutshells. Pulses are rarely preserved. The Celtic bean listed in table 1 had survived by chance because some carbonised beans had ended up in a well. Without these remains, the Celtic bean frequencies would have been zero everywhere. Some of the cereal grains were also carbonised, but this does not affect the frequencies.

The Early, Middle and Late Iron Age are represented by nine, seven and eight species, respectively. They are all more or less the same and their frequencies do not differ much. Local customs do not seem to have changed much throughout the Iron Age. Hulled barley, millet, emmer wheat and spelt wheat were the main cereals, gold of pleasure and linseed the main oil-seed species. The samples contained no remains of kitchen herbs and fruits and nuts were rare. The poppy caused some surprise. Some experts are of the opinion that poppy was introduced by the Romans (Van Zeist 1980).

With their ten species each, the lists of food plants encountered at the Roman settlements Zomerhof and Vijver are not much longer. In the analysis of the remains from six randomly selected wells at Westerveld eighteen species were encountered (Westerveld 1 in tab. 1). They included dill, celery, coriander, savory (fig. 2) and walnut - plants which are associated with a Roman way of life.1 This result induced I. van Amen to analyse samples from more wells at this settlement. As Westerveld was a large settlement, the number of analysed features could be raised from six to 22. But only two additional species, rape and bilberry (tab. 1, Westerveld 2, which includes the remains from the wells of Westerveld 1), were identified in the subsequent analyses. It was moreover found that the remains of dill, savory and walnut were restricted to one well, P329, which had been included in the first analysis by chance. This well also contained remains of coriander. It was clearly a special case. Therefore, a third list of species was set up, in which the remains from P329 were not included (Westerveld 2 - 329). This list still contains sixteen species, which is more than the number of species encountered in the Iron Age farmyards and in the Romanperiod settlements Zomerhof and Vijver.

As far as hulled barley, millet, emmer wheat and linseed are concerned, the evidence from the Roman period shows no differences with respect to the preceding period. Their frequencies show that they were all still common food plants. Spelt wheat seems to have become less common than in the Iron Age, which is surprising, because spelt is known to have been very popular in Roman circles (Knörzer 1991a, 199; Kooistra 1996, 96/108). Rye was found only at the Romanperiod hamlet of Zomerhof, in very small amounts. It was perhaps not yet being cultivated in this area, and will not be considered further below. True differences between the Iron Age and the Roman period are observable in gold of pleasure, which is restricted to the former, and beet, which is restricted to the latter. Gold of pleasure did apparently not even grow as a weed in flax fields in the Roman period. That flax/linseed was cultivated locally is apparent from the repeated occurrence of the weed Cuscuta epilinum associated with this species. The occurrence of beet in Roman-period contexts only is in agreement with current views on its introduction as a food plant (Knörzer 1991b, 160; Kooistra 1996, 122).

Remains of kitchen herbs were likewise encountered in Roman-period contexts only, and only at the Westerveld settlement. Some fruit and nut species were also represented almost exclusively in Roman contexts, for example walnut. The frequencies of berries, which were presumably gathered in the wild, are clearly higher than in the Iron Age.

A small amount of further information on food plants was obtained from carbonised remains recovered from the postholes and foundation trenches of farmhouses and other buildings. Most of these features were however too shallow for sampling, so only a few, fairly small samples could be taken. No concentrations of seeds were found. The only sample from the features of ritual structures to contain seeds yielded nothing more than a few stray remains of wild plants.

The results are presented per building in table 2. Seven Middle Iron Age buildings, seven Late Iron Age ones, two buildings discovered at Zomerhof, one at Vijver and eighteen at Westerveld were included in the frequency analysis. Only two Early Iron Age houseplans were recorded and they were not sampled. As was to be expected, the species list is much shorter than that presented in Table 1. The only noteworthy aspect is that even this small amount of evidence included pips of blackberry and raspberry.

Our third source of information consisted of impressions in pottery. They represent only those seeds which leave impressions large enough to be observed during the handling of sherds and so the range of species identified in pottery impressions is always somewhat restricted. The seeds were identified in casts. One of the advantages of analysing impressions is that there is no bias against pulses. Only few impressions were observed in the pottery from Oss-Ussen, but at least two of the impressions unmistakably represented Celtic bean (tab. 3), which shows that pulses were underrepresented in the other types of samples.

To summarise the results of the frequency analyses, beet, wild fruits, walnut and kitchen herbs seem to have been added to the traditional diet in the Roman period. The latter seem to have been consumed occasionally, and only at the largest and most developed hamlet – Westerveld. Gold of pleasure went out of use.

Whether these conclusions also hold for other, comparable rural sites in the same area is difficult to say as only little evidence is available for comparable sites. Tables 1 and 2 include the evidence from three wells from the Roman period discovered at Oss-IJsselstraat, seven Middle Iron Age silos filled with domestic rubbish excavated at Son, and the features of two Roman-period farmhouses found at Oosterhout (Bakels 1980; Bakels/Van der Ham 1980; Buurman 1990). The data show that hulled barley, millet, emmer wheat, spelt wheat and linseed were common food plants in both periods, as at Oss-Ussen. The evidence from Son adds pea to the list of Iron Age species. Gold of pleasure was represented only at the Middle Iron Age settlement of Son. Kitchen herbs were absent at all these sites. In this respect Westerveld remains a remarkable hamlet.

#### 4. Ingredients of the diet, animals

The sandy soil of Oss-Ussen is far from ideal for the preservation of faunal remains. Nevertheless, some six thousand bones, bone fragments and especially teeth were recorded. They have been described and published by R. Lauwerier and G. IJzereef (1994).

		Early Ir	on Age			Middle	Iron Age			Late Ire	on Age	
species	number	%	weight (g)	%	number	%	weight (g)	%	number	%	weight (g)	%
cattle	43	61	407.6	50	100	59	2589.5	75	116	72	2562.9	75
sheep/goat	1	1	0.4	0	1	1	60.0	2	4	2	21.2	1
pig	10	14	50.4	6	8	5	38.6	1	8	5	53.5	2
horse	15	21	347.8	43	59	35	761.4	22	30	19	683.0	20
dog	1	1	5.0	1	0	-	0.0	-	1	1	15.0	0
red deer	0	-	0.0	_	1	1	13.5	0	3	2	62.7	2
total identified	70	48	811.2	77	169	52	3463.0	83	162	37	3398.3	69
cattle-horse size	35	47	175.3	70	90	57	610.1	85	225	83	1479.8	97
sheep-pig size	25	33	53.7	22	44	28	79.7	11	45	17	50.6	3
mammal	15	20	20.0	8	21	13	24.0	3	2	1	1.1	0
bird	0	-	0.0	-	3	2	1.0	0	0	-	0.0	-
total unidentified	75	52	249.0	23	158	48	714.8	17	272	63	1531.5	31
Total	145		1060.2		327		4177.8		434		4929,8	

Table 4. Oss-Ussen. The Iron Age faunal remains. Table after Lauwerier/IJzereef 1994, table 23.

Table 5. Oss-Ussen. The faunal remains from the Roman period. Table after Lauwerier/IJzereef 1994, table 25.

		Vi	jver			We	sterveld			Zon	nerhof	
species	number	%	weight (g)	%	number	%	weight (g)	%	number	%	weight (g)	%
cattle	17	77	279.4	91	517	67	6751.2	73	8	67	51.9	84
sheep/goat	0	-	0.0	_	25	3	98.0	1	0	-	0.0	_
pig	3	14	3.9	1	32	4	195.6	2	1	8	5.0	8
horse	0	_	0.0	-	181	24	2218.7	24	3	25	5.0	8
dog	1	5	0.3	0	12	2	40.1	0	0	-	0.0	-
red deer	1	5	25.0	8	0	_	0.0	_	0	_	0.0	-
domestic fowl	0	_	0.0	-	1	0	0.9	0				
total identified	22	81	308.6	97	768	50	9304.5	66	12	67	61.9	91
cattle-horse size	3	60	5.7	53	666	87	4630.6	95	6	100	6.3	100
sheep-pig size	0	_	0.0	_	65	8	92.3	2	0	_	0.0	_
mammal	2	40	5.0	47	38	5	170.0	3	0	-	0.0	-
total unidentified	5	19	10.7	3	769	50	4892.9	34	6	33	6.3	9
Total	27		319.3		1537		14197.4		18		68.2	

The remains were in a poor condition and rather fragmented. Larger animals may therefore be overrepresented, and the results of the identification might not reflect the original domestic refuse. This is especially true where the numbers of remains are concerned. The bone weights present a more accurate impression of the refuse. The problem of preservation is however the same for all the periods under consideration and comparisons between the evidence from the Early, Middle and Late Iron Age and that from the Roman period can still be made, especially where large animals are concerned. It is possible that differences in small and rare animals were not detected in the analyses. The results of the bone counts and the bone weights are presented in Tables 4 and 5.

A comparison of the values for the large mammals reveals negligible differences between the Early, Middle and Late Iron Age farms and the three hamlets from the Roman period.

Hunting, expressed as percentages of red deer, was not important in any of the periods considered. The few Iron Age remains of red deer include bone, which implies that some deer were indeed caught. The only red deer fragment from the Roman period, on the contrary, is a piece of antler, which may derive from a shed antler or imported material. The difference is however not significant enough to allow the conclusion that the Iron Age farmers hunted more deer. No other remains of hunting and fishing were found. This could be attributable to the fact that not all the refuse was sieved, but no fish bones were found among the residues obtained in the botanical analysis either. Another reason could be that the small bones had not survived. As a matter of fact, contemporary net-sinkers have been found 2.5 km from Oss-Ussen, in the area of a former branch of the river Meuse (Verwers/Beex 1978). Nevertheless, Lauwerier and IJzereef are of the opinion that hunting and fishing cannot have been of importance for the local diet.

Cattle constituted the most important source of meat. The percentages calculated for the Iron Age, especially the Early Iron Age, are lower than those obtained for the Roman period, but the difference is attributable to differences in the numbers of horse bones. The horse is generally not considered to have been a meat supplier (Gautier 1990; IJzereef/Laarman/Lauwerier 1989; Lauwerier 1988). When we leave the horse bones out of consideration, the remaining cattle bones show no changes in the consumption of beef.

In their study of the faunal remains, Lauwerier and IJzereef also considered the possibilities of changes in slaughtering practices and the size of the animals. They detected no differences in slaughtering practices, the age at which the animals were killed or their sex, but they emphasised that their results were based on only a small number of measurements, owing to the fragmented condition of the evidence.

The same problem of insufficient evidence complicated the reconstruction of the animals' withers heights. It is well-known that the cattle's size changed under Roman influence. The withers height increased from 110 cm or less in the Iron Age to 125 cm or more (Lauwerier 1988). Two reconstructions of cattle from the Roman period at Oss-Ussen suggest animals of Iron Age sizes. The – very tentative – conclusion drawn by Lauwerier and IJzereef is that Roman husbandry practices had no influence on cattle raising at Oss-Ussen.

Sheep/goat seem to have been of almost negligible importance, although their bones may form part of the category of unidentified bones of sheep/pig dimensions.

Pig seems to have been slightly more important. No true differences are observable between the various periods or hamlets. The highest percentages were obtained for the Early Iron Age and the Roman-period hamlet of Zomerhof. But in both cases the total numbers of bones are the lowest in their series, which makes the pig values suspicious.

The Roman invaders were fond of pork and the Roman army left ample evidence of its pork consumption, although cattle were its main source of meat (Davies 1971; Lauwerier 1988, 161). The civilian part of the "Roman" world appears to have consumed large amounts of pork, too. Viewed in this context, the absence of clear differences in the pig bone numbers and weights means that the farmers of Oss-Ussen did not start raising more pigs under the influence of the Romans.

There are more aspects that should be considered with respect to foodstuffs besides domestic consumption. The finds from Oss-Ussen suggest that pig played a fairly important part in burial practices in the Roman period. Some cremation burials were found to contain pig bones in addition to human remains (Lauwerier 1985). They are the remains of food intended for the deceased. The pigs were young individuals or suckling pigs. This custom is known from other Roman-period cemeteries, too (Lauwerier 1983). The fact that the deceased were accompanied by piglets does not imply that pork was the main food for the dead, because, as Lauwerier has pointed out, beef would have been deposited in the grave without bones and would hence have left no archaeologically visible remains. The evidence from Oss-Ussen does not imply that the custom was adopted from the Romans, because the Iron Age cremation graves also yielded bones which may have belonged to pig, but which could not be identified any further than as remains of pig or sheep.

The last animal to be mentioned is chicken. According to W. Prummel (1987, 187), the chicken was introduced by the Romans. The occurrence of a chicken *tibiotarsus* in the hole of a roof-bearing post – an offering? – in the Westerveld settlement is an indication that the bird was known and may have been kept in farmyards in the Roman period. Another bone fragment of a chicken-like bird was found in one of the cremation burials. In addition to piglets, chickens were popular parts of the meals for the dead.

The consumption of chicken may have been a luxury in domestic contexts. The faunal remains identified as the bones of chicken may be the only true indications of Roman influence as far as the animal part of the diet is concerned. We should however be very careful in drawing such conclusions as the list of Middle Iron Age faunal remains also includes three bones of birds, one of which was even specifically identified as a bird resembling a chicken or a pheasant. These bones were however not found in a domestic context, but in association with the feature of a ritual structure and a grave. The faunal remains that were found in such contexts are not listed separately in Table 5, but they constitute only a very small proportion of the overall amount of remains and do not affect the percentages. In the case of the bird bones, however, the non-domestic context should be mentioned. The custom of using birds in rituals does not seem to have been introduced by the Romans and if the bird mentioned above was indeed a chicken or a different newly introduced bird like the pheasant, this would make the connection between Roman occupation and the consumption of chicken less obvious than previously assumed.

### 5. Other ingredients

The only mineral ingredient for which evidence was found at Oss-Ussen is sea salt. The evidence in question consists of many fragments of a specific type of pottery identified as a salt container. These containers, which are usually very porous as a result of the use of organic temper, were designed specifically for the extraction and transportation of salt from the Dutch, Belgian and French coasts (Van den Broeke 1986, 1987, 1995a and 1995b). Salt was being transported to the Ussen settlements in the Iron Age already and this continued in the Roman period. In the Early Iron Age, the salt containers were of a semi-cylindrical shape, but over the centuries their shape, and also their fabric, underwent several changes. In the Roman period a more or less standardised type was used: a cylindrical container with a decorated rim, usually of a brittle fabric, with a yellowish to light orange surface. There was also a different type of a harder fabric and an orangey-red colour, which had much thinner walls. It has been argued that the two types represent two different salt-production areas. The former may have contained salt from the Dutch/Belgian coast, where salt is known to have been produced from the Iron Age onwards. The latter, thin-walled type may have been produced in the area around the Strait of Dover (Van den Broeke 1995b). An interesting question raised by this hypothesis is whether the quality of the salt from the different coastal regions varied. It may well be that in the Roman period different kinds of salt were used for consumption and preservation on the one hand and other activities such as the tanning of hides on the other.

Another product whose presence at the settlements of Oss-Ussen may perhaps be inferred from its container is wine. But since grapes are not known from the area and the product itself has not been found we do not know for certain whether the settlements' inhabitants ever tasted wine. The salt containers had to be broken to extract their contents and they could hence not be reused, but this was not the case with the two wooden wine casks whose remains were found at Oss-Ussen, so they may have arrived here empty. The two wine casks had been reused to line the insides of two wells dating from the Roman period, both situated in the Westerveld settlement (fig. 3). Analysis of the wood and the stamps observable on one of the casks led to the conclusion that the cask originated in southern France or northern Italy,



Figure 3. Wine cask, reused as a well-lining at the Westerveld settlement (diameter approx. 65 cm, original height approx. 90 cm). The strips of split wicker that held the staves together were not preserved.

as did the wine it had at some time held (Bogaers 1987). If the two casks arrived full of wine, the inhabitants of the Westerveld settlement may have enjoyed over 1500 litres of wine.

A set of bronze kitchen utensils recovered from a well some 500 m northeast of Ussen (Verwers 1991, 138) may also be associated with wine (fig. 4). The set, which comprised a basin and a matching scoop and strainer that were dated to the second or third century AD, probably belonged to an inhabitant of a different (unexcavated) settlement. We know that similar sets of scoops and strainers were intended for ladling and filtering crude wine, but it has been suggested that these later implements may have been used for a different purpose, such as straining stock (Koster 1993, 306). Such a set would have been a precious possession, even if it was not used for wine, so its occurrence at Oss does not necessarily imply the presence of wine at the settlement. No fragments of certain types of amphoras that are known to have been used primarily as wine containers (for instance Dressel 2-5 and Pélichet 47) were identified at Oss-Ussen. The only evidence that could prove that wine was consumed at Oss-Ussen would be the remains of the casks it arrived in.



Figure 4. Bronze scoop and strainer found in a well at Oss-Horzak (length 34.3 cm). (photo ROB).

Olive oil is a third ingredient that may have been imported into the Oss-Ussen area. Again no remains of the product itself were found, nor of any olives. The vessels in which olive oil may have been imported were globular amphoras of the type identified as Dressel 20, which were produced in southern Spain. Several fragments of these thick-walled vessels, which were used to transport olive oil from the Guadalquivir valley, were found in the Roman-period settlements of Oss-Ussen.<sup>2</sup> Like the wine casks, the oil amphoras were still suitable for use after they had been emptied of their original contents, so we do not know for sure whether the inhabitants of Oss-Ussen actually consumed olive oil.

# 6. The preparation, serving and consumption of food

Only a few finds yield direct information on the ways in which food was prepared. Many fragments of tephrite querns, used to grind cereals into flour, were found in features from both the Iron Age and the Roman period. In the Iron Age saddle querns were used, but the Late Iron Age (around 200 BC) saw the introduction of the rotary quern, which was to become the common type in the Roman period. This new type will have simplified the grinding process, but the end product was the same. Flour could be used to make bread or porridge. One of the soil samples, taken from a well in the Westerveld settlement, contained thousands of bran fragments, all smaller than 1 mm (Van Amen 1995). They could be the result of grinding, but also of chewing. A second Westerveld sample yielded lumps of fragmented cereals that were charred, and hence definitely the result of grinding and not chewing.

Objects pointing to the preparation of dairy products were found only in Iron Age features. A large, alder-wood barrel with two handles, which had been reused as a well-lining, was shaped rather like a churn (fig. 5). Whether it was actually used as such cannot be proved. A specific, funnelshaped type of pottery without a base may have been used for dairying. Fragments of these vessels show typical wear patterns on the outside of the rim suggesting that the vessels were used as cheese presses (Van den Broeke 1987, 104-105).

A typical Roman way of preparing food involved the use of a *mortarium* or mortar. Such wheel-thrown vessels, over 250 fragments of which were found at Oss-Ussen, were designed for making sauces, marinades or other fluids. Fragments of quartz on the inside of the base served to create a rough surface on which herbs, seeds or other ingredients could be rubbed and crushed. After a fluid had been added, the resulting mixture could be poured out through a spout. Again there is no evidence to show whether the native population adopted this preparation method from the Romans.

A final aspect of food preparation is the ways in which ingredients were combined: which meats and cereals were eaten together, what was salted and what was sweetened, which dishes were flavoured with condiments? Unfortunately we have very little information on this issue. The aforementioned sample containing bran fragments also included a blackberry pip with grain fragments adhering to it and pieces of an apple core. We would like to be able to say that these are the (digested) remains of bread or porridge sweetened with fruit, but that is by no means



Figure 5. Churn-shaped barrel made of alder wood, reused as a well-lining in the Iron Age (length 90 cm).

certain. It is more likely that the 'ingredients' ended up together as refuse.

To summarise, the evidence suggests that the ways in which food was prepared underwent only few changes over the centuries. If the mortars were used in the Roman way, they represent a significant change. Another change involved the complete replacement of the saddle quern by the rotary quern and it would seem that dairying became less important.

Pottery is our only source of information on the ways in which the foodstuffs were served and consumed. The types of dishes that were used can tell us something about communal vs individual dining habits (Hawthorne 1996, 4). In the case of Iron Age pottery it is almost impossible to relate specific types to specific functions, such as serving and eating (Van den Broeke 1987, 103). The only unexpected development represented by the pottery is a decrease after the Middle Iron Age in the relative frequency of open dishes and bowls. These types are assumed to have been the most suitable for serving and eating. However, wooden plates, bowls and dishes will have served the same functions equally well, but they are only rarely preserved.



Figure 6. Part of a maple-wood bowl (height 13.5 cm).



Figure 7. Maple-wood bowl (height 6 cm).

Two maple-wood bowls, of different shapes and sizes, were found in Roman-period wells in the Westerveld settlement (figs 6 and 7).

In the Roman period, the use of wheel-thrown pottery increased, though it would seem that hand-made pottery never went out of use entirely (Wesselingh forthcoming). Roman wheel-thrown pottery shows a wide range of shapes and sizes, from which we can infer some functions. Besides the aforementioned types used for transport, storage and food preparation there were a number of vessels that were specifically intended for serving and consuming food and drink. This so-called tableware includes bowls, plates, cups and beakers, usually made of relatively thin-walled pottery. The fabrics include terra sigillata, Belgic wares, colourcoated pottery and a few examples of smooth-walled ware. Tableware was found at Oss-Ussen, too, but in low relative frequencies (tab. 6). The earliest types were encountered in the Westerveld settlement. Special attention should be paid to the colour-coated cups and plates. The proportion of plates is thought to be an indication of the degree of Romanisation: eating from a plate was a Roman innovation (Van Enckevort/Huisman 1995, 35). Table 7 shows a low percentage of plate fragments. Unfortunately the sherds

#### ANALECTA PRAEHISTORICA LEIDENSIA 29

	Vijv	ver	Zom	erhof	Wester	rveld
terra sigillata	59	2	21	2	362	4
Belgic ware	140	5	44	3	544	5
colour-coated ware	150	5	46	4	349	3
smooth-walled pottery	639	21	281	22	1677	17
mortaria	45	2	35	3	178	2
dolia	321	10	131	10	50	+
amphorae	60	2	20	2	485	5
thick-walled indet.	_	_		_	420	4
coarse ware	1634	53	676	54	2495	25
other	11	+	5	+	3510	35
total	3059	100%	1259	100%	10070	100%

Table 6. Wheel-thrown pottery from the Roman-period settlements at Oss-Ussen (number of fragments and relative frequencies).

Table 7.	Colour-coated	cups	and plates	from the	Roman-perio	od settlements	at Oss-Usser	ו (number	of
fragment	s and relative f	requei	ncies).						

	V	ijver	Z	omerhof	We	sterveld	
cups	142	95	44	96	346	99	
plates	8	5	2	4	3	1	
total	150	100%	46	100%	349	100%	

cannot be accurately dated, so we do not know whether the number (or the use) of plates increased.

Another luxurious Roman import that may have been used for serving is the glass vessel. Several fragments of glass were found at Oss-Ussen, most of which had belonged to bowls and bottles, two to a cup or beaker. The majority of the glass fragments were found in the Westerveld settlement.

# 7. Elements acquired after the Roman occupation

The above survey of the various elements of the menu leads to the conclusion that the incorporation of Oss-Ussen into the Roman world indeed brought about changes, notably in the form of additions to the Iron Age diet. Only few elements disappeared. Gold of pleasure seems to have gone out of use, fewer deer may have been hunted, although this is by no means certain, and dairying may have become less important. Only the latter would actually represent an important change.

New elements are the more frequent use of wild fruits and the introduction of beet, walnut, kitchen herbs, wine, olive oil and chicken, and the use of mortars and new forms of tableware. With the exception of the wild fruits, whose incorporation into the diet is poorly understood, the new products must have been obtained through contacts with the "Roman civilization", most probably the army and its surroundings. At first, all of the new products were possibly imported into Oss-Ussen, but at a later stage some of them may have been produced locally. The occupants of the settlements may have started to grow beet and the kitchen herbs in their farm gardens, but this cannot be proved on the basis of the scarce evidence. The same holds for the walnut. The tree is known to have been introduced into the southern part of the Netherlands in this period (Bakels 1996, 141), but a single shell fragment does not constitute sufficient evidence for us to assume that a walnut tree actually grew in or near the settlements.

The single chicken bone represents a similar case; we know that the fowl was being kept at the time, but the bone recovered in the excavations may derive from an imported bird.

The wine and olive oil were definitely imported from outside. As for the wheel-thrown pottery and the glass vessels, they were not made at Oss-Ussen itself. The early types came from distant sources and some of the later types were produced in specialised centres in the area.

Interesting questions are when and in what quantities the new products arrived in the various settlements. The dates of



Figure 8. Plan of the Vijver settlement showing the new ingredients (apple, blackberry, raspberry and beet).

the features that yielded the remains of the new products can be used to answer these questions. Unfortunately, finds from pits and wells are problematic in this respect. The majority of the non-botanical finds were not collected from specific stratigraphic contexts, as a result of which the assemblages from which the dates of the features had to be inferred were mixed and spanned long periods of time. At best, the dates may be regarded as *termini ante quem*, as the final dates are mostly based on the youngest pottery. Due allowance should be made for this in considering the dates mentioned below. Further allowance must be made for the timespans of the settlements themselves: the earliest remains of the Zomerhof settlement are of a later date than those of the other two settlements (see page 193). The dates obtained for the wine, which are based on the casks that were reused as well linings, should of course also be considered with due caution; we must not forget that a certain length of time will have elapsed between the emptying of the cask and its

secondary use. The olive oil containers also involve problems, because too little is yet known about their occurrence at Oss-Ussen.<sup>3</sup>

Forest fruits seem to have become more important from the beginning of the first century onwards, perhaps a little later in the two smaller settlements. Beet was present in the Zomerhof settlement in the first century, and in the other two in the second century. As for the other ingredients that were found only at the Westerveld settlement, celery, wine and chicken were present in the second half of the first century, walnut, coriander, dill and savory in the second century.

The earliest dates of some of the other aspects of the culinary habits can also be given. Glass vessels made their appearance in the early first century AD in the Westerveld settlement, and towards the end of that century in the smaller settlements. The early use of glass in the large settlement, at a time when the new foodstuffs had not yet arrived, indicates that glass was not necessarily associated with a different diet. *Mortaria* (type Brunsting 36) were used from the middle of the first century onwards. As for the salt containers, a well in the Westerveld settlement yielded one of the earliest fragments of the thin-walled, orangey-red ware ever found at rural settlements; it is possibly of pre-Flavian date (Van den Broeke 1995b, 196).

All in all, this means that most of the new elements were introduced and/or used at Oss-Ussen between AD 50 and AD 200. There is no evidence for the import of foodstuffs in the Augustan/Tiberian period; the forest fruits that were consumed in this period were not imported. The three truly exotic kitchen herbs seem to have been used from the second century AD onwards.<sup>4</sup> The two categories of foodstuffs that allow comparisons between the settlements, *i.e.* wild fruits and beet, show no differences in terms of dates. Fruits started to be consumed slightly earlier at the Westerveld settlement, while the Zomerhof settlement yielded the earliest evidence for beet.

In an attempt to gain a better understanding of culinary practices on a household level, we plotted some of the new ingredients on the settlements' plans (figs 8, 9, and 10). In the case of the Vijver settlement, most of the remains of the new foods seem to have come from a cluster of pits near one of the houseplans (H51), but as only part of this settlement was unearthed, we cannot conclude that this was the only household to have adopted the new customs. The samples containing remains of wild fruit that were collected at the Zomerhof settlement, of which a larger proportion was excavated, came from all over the settlement site, but beet was encountered only in the easternmost farmyard (H4/H5/H6).

The distribution of the new elements at the Westerveld settlement is rather interesting, showing what appear to be two distinct concentrations. The southwestern concentration lies within a large farmyard enclosed by a series of ditches. Within this enclosure were several houseplans, one with an exceptional layout possibly indicating Roman influence (H78). Several other unusual objects were found here, too.

The second concentration essentially comprises the contents of a single well (P329), in the northwest of the excavated area, near another cluster of houseplans which includes H105. A tentative conclusion could be that at least two Westerveld households tried the new foods. To summarise, it would seem that not all the inhabitants of Oss-Ussen acquired a taste for the new foods and that a small number of households took the lead in sampling the novelties.

#### 8. An acquired taste

A combination of botanical and zoological evidence and other information on eating and drinking has shown that the



Figure 9. Plan of the Zomerhof settlement showing the new ingredients (blackberry, raspberry, bilberry and beet).

culinary habits of the native farmers of Oss-Ussen underwent various changes during the Roman period. To regard this 'culinary Romanisation' merely as an aspect of overall Roman influence would be oversimplifying matters. Below, we will try to answer two main questions about the observed changes, and argue that a change in diet reflects more than a more varied supply alone. Why do people change their culinary habits? And which of the inhabitants of Oss-Ussen (first) adopted the new eating and drinking habits?

On the assumption that the diet of at least some of the farmers of Oss-Ussen changed, a few remarks can be made about the possible motives for such a change. Given that food is central to the sense of identity, we may legitimately ask why, and under what circumstances, people tend to retain or change their culinary habits. Identity and social lifestyle may be more important criteria determining what people eat and drink than the simple matter of taste: people will consume certain dishes in order to express a wish to belong, or to emphasise their identity ('you are what you eat').<sup>5</sup> In this respect, basic anthropological categories like age, sex, race and class are all important. Very few people enjoy their first taste of coffee or beer - two drinks with important social implications. But most will quickly acquire a taste for these beverages to show that they are an adult, or one of the 'lads'. Likewise, status, rather than taste, can sometimes be the main reason for eating or serving dishes like oysters or caviar.

Adults can be extremely conservative about what they eat – an attitude known as *neophobia*. The complete opposite of this 'fear of the new' is an attitude towards food involving a



Figure 10. Plan of the Westerveld settlement showing the new ingredients (apple, blackberry, raspberry, bilberry, beet, dill, celery, coriander, savory, walnut, chicken, wine and olive oil, represented by >15 fragments of Dressel 20).

constant search for variety (*neophilia*). Humans show both tendencies (Visser 1991, 42-43). Contact with other cultures, either through travel or because one's own surroundings are being influenced, is thought to encourage the willingness to try something new. However, this will depend strongly on people's attitude towards the new culture: the British who colonised India refused to eat 'native' food and had their own corned beef and tea shipped in. Eating can thus be used as a way of resisting or embracing another influence. In this respect, the different menu of the Oss-Ussen farmers seems to be a clear reaction to Roman influence. But which inhabitants changed their habits?

Some of the new foods and food-related implements were encountered all over the Oss-Ussen area, but a number of ingredients were clearly restricted to the large Westerveld settlement. Does this uneven distribution perhaps reflect a social difference? In addition to remains providing information on aspects of the diet, the Westerveld evidence includes several other distinct elements, among which is an exceptional houseplan (H78), thought to represent a building with a Roman-style timber porticus. It has often been suggested that a tribal elite that controlled the other inhabitants of the Oss-Ussen area resided in this house. Via contacts with the Roman army they may have received 'diplomatic gifts' or exchanged (surplus) products for luxury goods (Van der Sanden 1988, 118). Tableware, wine and kitchen herbs may well have been among these luxury goods. Exotic condiments were considered 'primarily for the rich man's table' (Miller 1969, 10). This would fit in with the idea that innovations in diet, including aspects of material culture associated with food and drink, do not affect an entire society at once (Sherratt 1991, 229). The new habits may have started out as something exclusive, restricted to the 'upper classes', in this case the local elite living in the Westerveld settlement.

If this was indeed the case, we are left with a few questions. Firstly, the exotic foods were not concentrated exclusively around the supposed elite residence. Some of them were found in a well (P329) near another cluster of farmhouses (fig. 10). This may be the result of the use of different areas for storing, cooking, serving and waste disposal. In cases in which an elite and members of a lower class lived close together it can sometimes be difficult to infer spatial divisions where food is concerned (De Hingh/Bakels 1996, 120). In the case of the Westerveld settlement it is questionable whether there was indeed such a division between the upper and lower classes (Wesselingh forthcoming). However, when we leave the one well out of consideration, as has been done in table 1, we do in fact observe a marked clustering of finds around the house with the porticus. Something else that should be considered is that the unexcavated parts of the settlement, such as the area immediately to the east of P329, may have contained another 'elite' building.

The second question to be answered is why, after their introduction as an elite privilege, the new foodstuffs never came to be widely used at Oss-Ussen. By the end of the occupation period, around AD 200, other innovations that had also been luxuries at first, such as wheel-thrown pottery, were in common use at all three settlements. Herbs, chicken, walnuts and wine apparently remained rare goods. This would fit in with the general impression that the Westerveld settlement never fully evolved into a wealthy villa-like complex (Van der Sanden 1988, 119). It could be that the elite's wish to retain the exclusive right of using the luxury ingredients prevented their diffusion among the rest of society, even if the foodstuffs in question were widely available.

The nature of the elite may provide a different answer to the question of the new foods' restricted acceptance. The local elite came into contact with Roman culture when it 'invaded' their surroundings. But what if an inhabitant of the Westerveld settlement learned to appreciate Roman cuisine literally by broadening his horizons? The civitas Batavorum, in which Oss was situated, is known to have supplied large numbers of soldiers for the Roman army. If it is true that a member of almost every Batavian household served in the Roman army (Roymans 1993, 40), it is likely that the Westerveld settlement also supplied one or more warriors. On their return to Oss, these men may have introduced Roman dishes or table manners for which they had acquired a taste during their time in the army. This scenario throws an entirely different light on the acceptance of novel culinary habits, since those habits would then have been introduced by 'converted' locals. Besides the attitude towards Roman culture, the esteem of the veterans themselves will in this case have played a role in changing the culinary habits.

An alternative to the above hypothesis based on an elite cuisine, whether introduced by lineage heads or army veterans, is a variation on the idea that innovations in diet do not affect an entire society at once. It could well be that, rather than being exclusive in a social respect, the new foods were used only on special occasions, for example in ceremonial or religious contexts.<sup>6</sup> The activities involved may have been accessible to everyone, and may well have

taken place at the Westerveld settlement. But may we still speak of a true change in diet if coriander was eaten (or sacrificed) by a priest twice a year?

Whatever scenario we choose, the changing diet reflects some of the changes brought about by the arrival of Roman culture. It is important to note that we are here referring not to the mere introduction of new ingredients and new ways of preparing food, but to the native inhabitants' acceptance of all these novelties as part of a new lifestyle. They did not merely take what was available to them, but consciously selected the elements they wanted, redefining them and combining them with elements already present. It is precisely this blend of the old and the new and the appropriation of Roman elements that is essential to Romanisation in general (Derks 1996, 8-13). In the case of diet, only the full range of culinary habits, from preparation to serving and consumption and even disposal, can tell us what the native population considered worth keeping and what worth trying. In a situation in which a group of native farmers was influenced by a new, Roman culture, such choices were of crucial importance. Eating and drinking served as ways of communicating (Douglas 1984, 6; Hastorf 1991, 135), and identity may have been one of the messages to be conveyed (Meadows 1994, 135).

It is clear that many (social) aspects of consumption cannot be inferred from archaeological evidence. Social and ideological factors must to a great extent have determined which individuals (men, women, children, families, individuals of a particular status) ate where, in what way and especially with whom. Unfortunately, our knowledge about details of the menu is very poor owing to the shortage of relevant evidence. Entire settlements were sampled at Oss-Ussen, but most of the evidence was recovered from pits and wells and must hence be regarded as refuse. It is almost impossible to say anything about food on a household level. Moreover, it is difficult to define what people chose to consume if we do not know what was available.<sup>7</sup> For instance, there are no indications that garum, the famous Roman fish sauce, was present at Oss-Ussen. Did it never reach the region, or did the inhabitants of Oss-Ussen decide not to include it in their diet? And if not, was this because of the sauce's salty taste, or did the sauce not agree with the native community's (culinary) identity? Something else that we should bear in mind is that the presence of Roman ingredients does not necessarily imply an entirely Romanised cuisine. Beet, herbs and chicken may have been combined with existing foods such as cereals, pulses and beef. They may have been prepared, served and consumed in the traditional way. So a selection of new ingredients need not reflect a change in taste: new foodstuffs may have been 'nativized' or even perceived as traditional (Douglas 1984, 28-29). On the other hand, the absence of new ingredients

does not necessarily imply a 'neophobic' attitude towards food and eating. Local foodstuffs may have been prepared, served or consumed in a Roman way, even without using Roman vessels (Meadows 1994, 137). In both cases, even in the absence of evidence for 'native continuity', 'Romanisation' is not the appropriate term for describing the social change. It is impossible to make a clear distinction between Roman and non-Roman elements (Meadows in press).

Only a few preliminary conclusions can be drawn from the evidence available on culinary habits. Without knowing what new foods were available, or the exact composition of the meals, we can say that (some of) the inhabitants of Oss-Ussen chose to enrich their menu with various new elements provided by Roman culture. This may have been done by a select group of people at first, or the foods and implements may have been used for special occasions. Apparently culinary innovations, like many other aspects of culture, did not affect the entire society at once. In the case of Oss-Ussen it seems that some of the new elements never penetrated to all the members of the community, either due to limited availability or limited access or by choice. If the new cuisine reflects the identity of this small group of farmers living just within the borders of the Roman Empire, it was an identity in which traditional aspects were still valued. New elements were incorporated from time to time, but their nutritional value was low. The main part of the daily diet continued to consist of traditional cereals and meats. The fact that the additions to these dishes consisted of flavourings is however significant.<sup>8</sup> Although the food remained 'native' in essence, the new flavourings must have given it a different appearance and fragrance; the way the food looked and smelled, its public impact, was obviously important. In this respect the innovations were certainly intended to express a changed identity, whether this message was intended for fellow-inhabitants, farmers of nearby settlements or even the occasional Roman. Irrespective of all the political, social and ideological considerations that may underlie a diet, a preference for a particular foodstuff is to some extent also dependent on individual likes and dislikes. But considering the social and ideological implications of food, tastiness is very often the result rather than the cause of a preference for a particular foodstuff. Asking whether the farmers of Oss-Ussen truly acquired a taste for the Roman cuisine is hence as meaningless as asking whether beer is 'really' tasty.

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#### notes

1 In the following discussion we will assume that the herbs encountered at Oss-Ussen were used as condiments. Some of the herbs are however known to have been used by the Romans for different purposes, too. Besides as a flavouring, dill was also used as an ingredient in ointments, and coriander and dill may have been used as *aromata* in perfumes (Miller 1969, 6-7).

2 Various specialists analysed the wheel-thrown pottery from the Ussen settlements. The material from the Vijver and Zomerhof settlements was studied by W.J.H. Verwers. Amphora sherds were identified, but not ascribed to specific types. M. Brouwer studied the pottery from the Westerveld settlement. She described several sherds as parts of 'Spanish amphoras' (= Dressel 20), but that was the only type of amphora she distinguished. Some of the sherds recovered at the two smaller settlements may also have belonged to Dressel 20 amphoras, but they were not identified as such.

3 See also note 2. Fragments of Dressel 20 ware have so far been identified only in the Westerveld settlement, and only documented for the houseplans. The only two structures to have yielded more than five fragments of Dressel 20 ware are two houseplans found within the areas where the new foods concentrate. H105, dated Id(/IIA), yielded 18 fragments, H78, dated I(c)d/IIA, 38 fragments.

4 The fourth herb, celery, is a wild plant which grows in coastal areas, also along the North Sea coast. The plant is however assumed to have been domesticated in the Mediterranean area.

5 "The old saw about being what we eat, which turns up in a dozen different languages and numerous metaphors, impresses by its very banality: anything *that* everyday must be quite special. Our tastes and habits in other spheres of consumption [...] do not approach food in significance." (Mintz 1993, 262).

6 In an abstract of a lecture given at the International Roman Archaeology Conference 1997, M. Loughton writes that 'initially the consumption of wine was controlled by rituals [...], later the consumption of wine was less structured and determined by new beliefs and rituals. [...] The changing values given to imported wine are linked with other pivotal changes[...]' (Loughton 1997).

7 A regional analysis or a comparison with evidence from other rural settlements could shed more light on this question. Unfortunately the botanical and zoological data of many excavated sites have not yet been published. An exception is Wijk bij Duurstede – de Horden, which shows a remarkably similar list of Roman ingredients. In addition to wine (casks), beet and chicken it includes the herbs coriander, dill and celery. No remains of walnut were recovered, but amphoras used for the transportation of *garum* were found (Kooistra 1996; Van der Werf 1987). At this site the proximity of a *castellum* will have greatly influenced the availability, and possibly also the acceptance, of new foods. 8 "What we do not often realize is how powerfully these flavor markers shape our notion of what a cuisine is. Cover any food, no matter what, with a sauce made of tomatoes, olive oil, garlic and herbs, and we identify it as Italian: what is more, Italians will identify it as Italian. Be it dromedary hump or acorn, its culinary identifications will ultimately be determined by the way in which is flavored (Rozin 1982, 197).

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