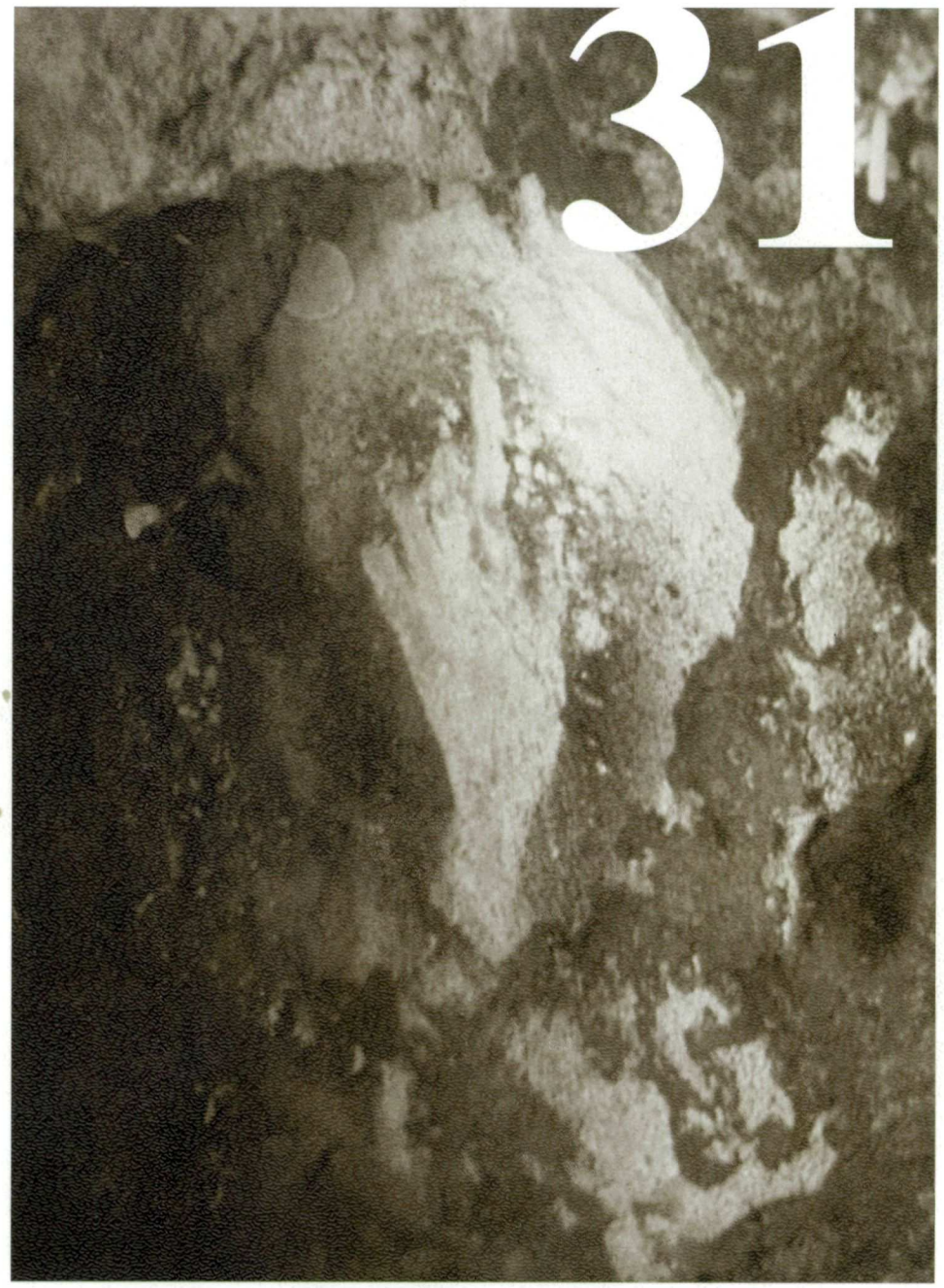
ANALECTA PRAEHISTORICA LEIDENSIA



1999

ANALECTA PRAEHISTORICA LEIDENSIA 31

ANALECTA PRAEHISTORICA LEIDENSIA 31

PUBLICATION OF THE FACULTY OF ARCHAEOLOGY
UNIVERSITY OF LEIDEN

HUNTERS OF THE GOLDEN AGE

THE MID UPPER PALAEOLITHIC OF EURASIA 30,000 – 20,000 BP

EDITED BY WIL ROEBROEKS, MARGHERITA MUSSI,
JIŘÍ SVODOBA AND KELLY FENNEMA

UNIVERSITY OF LEIDEN 1999

This volume is dedicated to the memory of Joachim Hahn

Published in cooperation with the European Science Foundation

Editorial supervision of this volume: W. Roebroeks

ISSN 0169-7447

ISBN 90-73368-16-2

Subscriptions to the series Analecta Praehistorica Leidensia
and single volumes can be ordered exclusively at:

Faculty of Archaeology
P.O. Box 9515
2300 RA Leiden
The Netherlands

contents

Margherita Mussi
Wil Roebroeks
Jiří Svoboda

1 Hunters of the Golden Age: an introduction

1. Introduction

In the last two decades palaeoanthropologists have paid considerable attention to the emergence of modern humans, and in archaeological terms, to the Middle to Upper Palaeolithic transition (e.g. Farizy 1989; Mellars and Stringer 1989; Mellars 1990; Cabrera Valdés 1993). One of the consequences of this focus has been the fact that differences between the two periods were underlined and investigated, while the variability *within* the periods at stake has been overlooked and underestimated (cf. Gamble and Roebroeks 1999). This last issue was one of the explicit research topics of the Network on the Palaeolithic Occupation of Europe, a group of researchers who organised a series of workshops dealing with various aspects of the European Palaeolithic, within a programme funded by the *European Science Foundation*[1]. Their work on the Lower and Middle Palaeolithic has been reported in two earlier volumes published by the University of Leiden (Roebroeks and Van Kolfschoten 1995; Roebroeks and Gamble 1999).

This volume is the outcome of a workshop dedicated to the period 30,000 to 20,000 bp[2], though the total number of contributors is significantly larger than those originally present at the meeting, which took place near one of the key sites for this period, Pavlov in the Czech Republic[3]. A wider geographical coverage is presented here, together with important case studies and papers dealing with general topics.

One of the reasons to focus on this period was the fact that its rich record had seen relatively little scientific attention yet. The final phases, around and after the Last Glacial Maximum (LGM), have actually had their share of attention (e.g. Gamble and Soffer 1990; Soffer and Gamble 1990), but the preceding ten millennia had been rather neglected in terms of general syntheses, except for one notable exception (Amirkhanov 1998). This is even more striking if one realises that most European citizens are to a certain degree 'familiar' with some of the archaeology of this period, as they would certainly recognise the famous female figurines as dating to the 'Stone Age'.

The complex evidence from this period has often been interpreted as basically reflecting human responses to the deteriorating climate, while the latter was turning more extreme at its end, i.e. at the LGM (Gamble 1986; Soffer and Gamble 1990). One of the aims of our workshop was to test this basic assumption, by collecting and combining information on ecology and material culture from various key regions in Eurasia. What became immediately clear was that the cultural developments of this period were not simply triggered by climatic stress (Mussi and Roebroeks 1996 – see below), and that the archaeological record displayed both a large-scale uniformity and a high diversity in such domains as art and ritual, subsistence and settlement structures (see below). The period at issue is one in which we have for the first time a rather fine chronological resolution, which allows to consider presence and absence of human populations in various regions of Eurasia, as well as to chart periods of intense occupation against those of more ephemeral presence of humans. This gives us the exciting perspective of starting to study cultural developments as historical processes, rather than as mere reflexes to climatic developments.

2. The Golden Age: What's in a name?

Belief in progress is a relatively recent phenomenon in western civilisation. As mentioned by Cartmill (1993), western – as well as far eastern – discourse on the history of civilisation was for a long time dominated by the idea of degeneration. In such a perspective, a hypothetical Golden Age – or, in the Far East, the time of 'Masters' and 'Ancestors' – was followed by culturally much poorer periods. In fact, the use of the term 'Golden Age' still carries the feeling that things have got worse since a specific point in time. In this case, our time of departure is the period 30,000 to 20,000 bp, the Golden Age of hunter-gatherers. We feel that this period deserves this name for a variety of reasons, all dealing with the unprecedented complexity of the archaeological record from this time span, which will be appreciated by any reader going through this review of the main themes dealt with by the contributors. Suffice here to say that in this period we find, amongst others, the first unambiguous burials left by modern humans after the Middle Palaeolithic, the earliest *bona fide* habitation structures, and an unprecedented sophistication in raw material requirements which involves provisioning strategies over hundreds of kilometres. Furthermore, while this view of the period as a

Golden Age is certainly to a high degree steered by our esthetical appreciation of the material culture, ecological information suggests that the richness and diversity of species thriving on the Mammoth Steppe may have indeed afforded people with an affluent environment. In fact, this is also suggested by the physical anthropologists' studies of the palaeontological remains, which create an image of a well-nourished population experiencing not only a cultural, but also a caloric Golden Age.

The end of the 'Golden Age' is even more clear cut. The major environmental crisis of the LGM, shortly before 20,000 bp, leads to the depopulation of vast stretches of Eurasia, to the disruption of settlement patterns, and, as the physical anthropologists show here, to the end of the large-scale open networks through which genes flowed freely. The Golden Age ended with a classic degeneration phenomenon: inbreeding.

3. Life on the Mammoth Steppe

In their contribution to the volume, Guthrie and Van Kolfschoten stress the "no-modern-analogue" character of the palaeoecology of the period which, furthermore, can be characterised as ecologically unstable. While their perspective encompasses, with the Mammoth Steppe, a super-continent – Eurasia, Beringia and northwestern America –, information gained from specific areas mostly supports their large-scale reconstruction. In Italy, for instance, swift oscillations in the percentage of arboreal pollen are known throughout OIS 3 (Follieri *et al.* 1998). In northern Europe, Kolstrup (1995) likewise concludes, after a thorough analysis of palaeobotanical evidence, aeolian deposits, frost wedge casts and other periglacial processes, that the 30,000 to 20,000 bp period is characterised by swift environmental changes and a high diversity of sub-environments, even over short distances (see also Haesaerts *et al.* 1996). Ecological instability would have selected for large herbivore behaviour which was rather nomadic than territorial. This, in turn, must have had important implications for human mobility strategies, as well as for the changing distributions of human populations over Europe. In fact, this may be the driving force behind the pattern observed by Pettitt, who notes that when the number of radiocarbon determinations for northern Europe decreases, they increase in southern Europe, and vice versa (Pettitt, this volume). On a smaller scale, ecological instability and the resulting higher mobility of game must have set an extra premium on the choice of strategic hunting locations. This may explain the richness and complexity of the aptly named "megasites", such as Pavlov and Dolní Věstonice, overlooking the Moravian geomorphological corridor (Svoboda *et al.*, this volume). Comparable factors may have been behind the striking consistency in location of for instance the much poorer Belgian and British cave and abri sites in the norther periphery (Roebroeks, this volume).

This brings us to the topic of the importance of hunting in this period. This is a subject somewhat difficult to evaluate as most studies dealing with subsistence simply assume – rather than demonstrate – that the presence of bones of large mammals at a site testify to former hunting activities. This approach is in sharp contrast with studies of the Middle Palaeolithic, where the impact of human activity on bone assemblages is rarely taken for granted and usually discussed at great length (Roebroeks and Corbey, this volume). Notwithstanding this state of affairs, there is plenty of evidence for hunting of medium to large sized herbivores, even though some ambiguity still surrounds human involvement with the largest member of the Mammoth Steppe guild, the mammoth itself (see Musil 1994 vs. Soffer 1993). Mammoth hunting is dealt with by several contributors to the volume, but especially so by Hahn and Oliva. As already mentioned, the final outcome of human interaction with their variable and unstable environment was a well-nourished and healthy human population, which is demonstrated by the analysis of Churchill *et al.* (this volume). That same study also undermines the well-established view of males as hunters provisioning dependent women and children – such as visualised by Zdenek Burian and countless other reconstructions of palaeolithic life: they actually suggest that palaeolithic women could have been engaged in regular weapon-use behaviour. Following another line of evidence, the exceptionally well-preserved record from Moravia, Soffer (this volume) also challenges this idea of male-dominated food procurement strategies. In her interpretation, net hunting of smaller game was practised with the active participation of women and children. Likewise, the evidence for grinding from these Moravian sites (Svoboda *et al.*, this volume), just as from the Rhineland and Kostenki IV (Bosinski, this volume) indicates that there was more than just meat at stake in the Mammoth Steppe menu.

A comparable complexity characterises other aspects of life in the Mid Upper Palaeolithic. Soffer (this volume) discusses at great length both textile and ceramic production, well-documented at the Moravian sites, while Mussi *et al.* (this volume) stress the complexity of ivory working and the ingenuity in transferring working techniques from one class of raw materials to another, i.e. from ivory to soft stone. The first unambiguous evidence for habitation structures dates from this period, with Iakovleva as well as Svoboda *et al.* presenting data from the gravettian sites in the Russian plain and Moravia. Vasil'ev (this volume), however, mentions that Mid Upper Palaeolithic habitation structures from Siberia are more problematic. New developments in the study of palaeolithic parietal art show that an increasing amount of parietal art can be positively attributed to the Mid Upper Palaeolithic (Clottes, this volume; Djindjian, this volume),

once again underlining its cultural richness and complexity. Comparable information can be derived from the intricacies of personal ornaments (Taborin, this volume), as well as from the rich burials.

Dealing with a period of 10,000 years only, and taking into consideration the relatively large number of buried individuals, one can start discussing variability in mortuary behaviour. While regional patterns seem to emerge in this period (Mussi 1995), Oliva's contribution on the Brno II burial (this volume a) clearly shows that considerable variation can be expected, apparently reflecting differences in individual status. In the same perspective, a recent study of the spatial distribution of scattered small human bone fragments from Dolní Věstonice points to differential treatment of individuals after death, possibly reflecting social differentiation (Trinkaus *et al.* in press). At Grotta Paglicci in southern Italy, where two well-defined burials were discovered, fragmented and dispersed human remains were similarly reported (Borgognini-Tarli *et al.* 1980). This might also point to differences in the status of the deceased, in accordance with the hypothesis put forward by Mussi (1986, 1990) that the gravettian burials of Italy refer to a well-defined segment of palaeolithic society only. Two thousand kilometres to the east, Iakovleva' s study (this volume) shows how different sets of figurines are bound to specific locations within a site, suggesting that the spatial distribution might reflect a population which was articulated into sub-groups.

The large distances over which lithics were transported are underlined in several contributions, dealing with regions located from the Atlantic to Siberia. It is a recurrent pattern, for instance, in the Rhine valley (Bosinski, this volume), the Danube valley (Scheer, this volume), Moravia (Oliva, this volume b; Svoboda *et al.*, this volume) and the Russian plain (Boriskovskij 1963; Mussi and Roebroeks 1996). Shell transport, which at times exceeds 1000 kilometres, as from the Mediterranean shores to the German Rhineland (Bosinski, this volume; see also Taborin, this volume), provides further evidence of transfers over long distances. Another indication for such direct and indirect contacts can be found in the strikingly formal and technical similarities in anthropomorphic figurines, as detailed by Mussi *et al.* (this volume). Corroboration of the existence of continuous exchanges comes from the physical anthropologists' contribution to the volume. They quite convincingly show that not only ideas and materials were travelling, but that genes were also flowing freely between the various regions (Churchill *et al.* this volume).

4. A regional survey

The regions dealt with in this volume vary significantly in terms of density of traces of human occupation. Some are even devoid of such traces or have only a very poor record yet, while others are extremely rich, though in most cases this only applies to a part of the period at stake here (see below). Absence of evidence is not evidence of absence, and Larsson (this volume) underlines that in the context of herbivore presence, the lack of traces of humans is a striking phenomenon in Scandinavia, which may have been caused by the destructive processes of glaciation and deglaciation in this area. That temperature indeed cannot have been the only factor behind void areas is dramatically illustrated by Pavlov and Indrelid (this volume). They present sites from the very northeast of Europe, even from north of the Polar Circle, up to 68^0 N. The northernmost one has actually only been recently discovered, once again suggesting that current site distribution might be a pale reflection of past patterns – especially so in areas which either have become the focus of archaeological investigation in the last few years only, and/or have been subjected to large-scale destructive natural processes. The small number of sites is scattered between 36,000 and 20,000 bp, and the affinities of the various lithic assemblages with those from elsewhere in Eurasia is still subject to debate. Destruction of sites by geological processes and lack of research are also at stake in the record from Siberia, presented in the up-to-date synthesis by Vasil'ev (this volume). Despite this, Siberia is quite rich in terms of art, burial and dwelling structures, an eastern counterpart of the megasites west of the Urals. Vasil'ev, however, stresses that as far as the lithic assemblages are concerned, there are marked differences with Europe, and that within Siberia itself the lithic assemblages display considerable variability. The Siberian record further shows that site density somehow increased between 25,000 and 20,000 bp, although temperatures were lower than during the preceding 5000 years.

The rich Central European evidence and its chronology provides us with a mirror image of the Siberian and East European record. As a result of settlement density, long history of research and good preservation, we have a detailed view of the Mid Upper Palaeolithic of the area, which allows making inferences on the chronology and direction of shifts in occupation (Neugebauer-Maresch 1999; Dobosi, this volume; Oliva, this volume; Svoboda *et al.*, this volume). Whereas a few sites such as Willendorf II provide continuous stratigraphic sequences, the large number of radiocarbon dates from Moravia and Lower Austria shows that most settlements date from the pavlovian period, shortly before 25,000 bp. Later, there is a slight eastward shift in occupation from Moravia to western Slovakia (Hromada 1998). By the same time, we also observe more direct relationships in lithic tool-types, such as the Kostenki projectiles and other cultural patterns of the willendorfian-kostenkian period, between Central and Eastern Europe – as if, by the LGM, human groups were more and more centring on the East European river valleys (cf. Soffer and Praslov 1993; Amirkhanov 1998).

There is also a sharp contrast between the megasites offering a complex archaeological record, which are strategically located within the Moravian geomorphological corridor, and sites further away. Dobosi (this volume) follows the limited site distribution into the Carpathian basin, up to the mountain ranges. To the south, site density is even lower: Montet-White, while mentioning the impact of widespread erosion on site preservation, presents a reconstruction in which the Sava Basin was largely depopulated. The shift in population – towards the north and to the Carpathian basin – apparently happened as early as 28,000-27,000 bp. This is in good accordance with Perlès' (this volume) detailed presentation of the near absence of archaeological evidence from Greece and the southern Balkans after 30,000 bp.

In the western periphery of Central Europe, i.e. in southern Germany and in the Rhine valley, the record is poor if compared to Moravia (see contributions respectively by Hahn, Scheer and Bosinski). Another striking difference is that, just as in most of Western Europe, the south German record is mainly a cave one. In Moravia caves do exist, which were settled before and after the Gravettian. Humans, however, only very rarely made use of the natural shelters during the period considered here. In the Rhineland open air sites are actually known, together with caves (Bosinski, this volume), a pattern of settlement which also applies to northwest Europe, as reported by Roebroeks (this volume). These are all well-researched areas, and the small number of sites is certainly not the outcome of lack of investigations even if, once again, geological processes may have played a destructive role, as discussed by several contributors. Thanks to a very fine-grained chronology, which includes both AMS ^{14}C dates (Street and Terberger, this volume) and evidence of real contemporaneity when sites are connected by refitting (Scheer, this volume), these regions give us a high resolution image of scattered human groups. The extensive survey by Street and Terberger (this volume) also shows that most of the German gravettian sites date from before 25,000 bp. Smaller pulses of human presence are known later, as elegantly underlined further to the northwest by recent dating work at Paviland Cave in Wales (Aldhouse-Green and Pettitt 1998; Roebroeks, this volume). Quite poor in art, the northwest has yielded all the same an unambiguous burial, the 'Red Lady of Paviland', which is actually a young and tall male. In the North European plains, the lack of any evidence of occupation on the northernmost fringes, when compared to the archaeological record at the southern border (southern Belgium, the Middle Rhine area, etc.), suggests that environmental constraints indeed played a role in site distribution, and in the discontinuous peopling of the region. This might also put the absence of traces in Scandinavia in a different perspective (see above).

Southern France is a unique area in this regional synthesis, as it is the only region where the record suggests (near) continuous occupation over the whole period at stake. This is mainly a cave and abri record, as underlined by Djindjian (this volume), though among the few open air sites some have yielded very clear-cut remains of habitation structures. The richness of parietal art of this area, as also underlined by Clottes (this volume), needs no further elaboration here. French archaeologists have invested a considerable amount of energy in the study of the flint industries from this period, which here include solutrean assemblages. The contributions by Djindjian and Rigaud show that there is still debate on the intricacies of the established schemes. Long-distance transfers of raw materials are common, and Djindjian suggests that some of the open air sites in northern France, dealt with by Roebroeks (this volume), may have been the result of seasonal hunting expeditions by groups based in the south. Given the richness and the long research history of the Mid Upper Palaeolithic of this area, it is noteworthy that no burial can be unambiguously attributed to the period 30,000 to 20,000 bp.

The Iberian record is a very different one. Continuous occupation possibly occurred in some areas, but recent research has highlighted that this could have been because of a complex scenario, in which modern humans were contemporaneous with the very last Neanderthals (Vega Toscano, pre-circulated paper; Vega Toscano 1990; Villaverde and Fumanal 1990; Zilhão, this volume). Late Mousterian as well as late Aurignacian co-occur in the south of the peninsula at around 30,000 to 28,000 bp. Then, they both disappear, 'wiped out', so to say, by the Gravettian, which is followed by the Solutrean. In this highly articulated sequence of lithic assemblages, apparently related to competing groups, ritual and symbolic activity is relatively scarce. It is mainly documented by cave painting at a limited number of aurignacian, gravettian and solutrean sites (Clottes, this volume), and by a single indisputable burial, the recently discovered Lagar Velho child (Duarte *et al.* 1999). Parietal art, however, is known here also in the open, with the most important site cluster recently found in the Côa valley of Portugal. As mentioned by Zilhão (this volume), a significant part of these petroglyphs could date to the latter part of the period examined here.

Turning to the other southern peninsulas of Europe, the changes from 30,000 to 20,000 bp produce an even different scenario. Greece, as already noted, seems to have been more or less abandoned because of the extreme aridity, while Italy, just as Iberia, experiences a peopling from the north, but under very different conditions (Mussi, this volume): there is no late Mousterian there, and there is even an occupational hiatus after the Aurignacian, which does not seem to have lasted after 30,000 years ago. The number of gravettian sites

definitely increases after 25,000 bp, and all over the period there seems to be an influx of people arriving from north of the Alps. Compared with a relatively low number of sites, both portable art ('Venus figurines') and burial practices are documented with a richness unknown elsewhere in Western Europe.

5. Diversity and uniformity

The survey of the themes dealt with in this volume clearly shows that the Mid Upper Palaeolithic is characterised by both diversity and uniformity in various domains of life. To start with, the evidence from Iberia – and from Croatia as well (Smith *et al.* 1999) – strongly suggests that there was not even one single human species around. On the other hand, the palaeontological evidence suggests that the modern human population of this period was very uniform, freely exchanging genes over large areas. These human groups created a diverse archaeological record, both through time – e.g. the sequence of Aurignacian, Gravettian and Solutrean in western Europe – and in space – e.g. the lithic assemblages of Europe which are very different from those of the Urals and beyond. And even within the general uniformity of the Gravettian, the best represented tradition in this period, differences in time as well as in space are conspicuous. Notwithstanding this fragmentation, we have all kinds of evidence that groups scattered over vast stretches of Eurasia were able to articulate a joint identity by means of large-scale networks, all the more striking because of the very low demographic density.

Thanks to the high resolution of the record, we can observe movements not only of raw materials and artefacts, but also of people. This includes both the colonisation of unoccupied territories, such as northeastern Europe, and a denser pattern of settlement in areas previously characterised by ephemeral human presence, such as eastern Europe and Siberia. The European record also allows us to follow shifts of occupational centres, especially in the second half of the 30,000 to 20,000 time range: most notably, those from central to eastern Europe, and the population influx into Italy and Iberia. Meanwhile, northwestern Europe and the Balkans were less and less often visited.

While these large-scale movements may have been steered by the deteriorating climate of the second half of the period, this volume shows that clear-cut correlations between climate and human adaptations are not warranted, except at the very peak of the LGM. Because of the overall ecological instability, human groups probably did not even have a direct perception of a steadily deteriorating climate. The fact that the marginal and 'difficult' areas of the northern plains of Europe were never totally abandoned can also be seen in this perspective. Overall, the studies reported in this volume challenge simple environmental perspectives and deterministic explanations of the gravettian record.

Throughout the volume, contributors again and again report variability in food resources as well as in their use and choice by humans, within the rich bounty afforded by the Eurasian environments – and especially so by the Mammoth Steppe. For more than a century archaeologists have debated the role of mammoth hunting, and the concept of 'Palaeolithic man the mammoth hunter' has become part of the repertoire of palaeolithic imagery. Several arguments, such as the location of settlements along rivers and in dead end valleys, and various faunal patterns, suggest that Mid Upper Palaeolithic communities might indeed have faced and killed mammoths. It should be stressed that, if they did so, then the hunters of the Golden Age must have been extremely well equipped, not only technologically and physically, but psychologically as well. Appropriate rituals would have been a powerful tool to mitigate the stress of close encounters with mighty creatures, as well documented among recent whale hunters (e.g., Harkin 1998). While this aspect of human activity is so far highly speculative, several contributors have underlined the subtlety and sophistication of the symbolic behaviour embedded in the archaeological record, as well as the positive evidence of complex ritual activity in burial practices and artistic production.

The artistic production dating between 30,000-20,000 bp also provides another illustration of the variability discussed above, in materials, techniques, styles, themes and uses. Parietal art in the west is related to deep caves, whereas in central and eastern Europe mobile art is made and used in central parts of the open air settlements. In some cases, the production event itself seems to have been important, as with the ceramic figurines. In other instances, vice versa, works of art were made to be seen and to function over long periods. We see this both in mobile art and in cave art, as well illustrated by the adjustments experienced by some of the Balzi Rossi figurines (Bolduc *et al.* 1996) or by the *Megaloceros* panel at Cougnac (Lorblanchet 1994). In addition, we also observe changes through time: in Moravia, most notably, the large and diverse figurine assemblages of the pavlovian sites are followed by single female statuettes in the later gravettian sites of the same region (Svoboda 1995).

Diversity can also be underlined in other aspects of the record, from choice in shells and other materials used for ornamentation, via variability in the size and shape of dwelling structures, to mortuary practices. The latter ones include inhumation as just one of several options, as evidenced in Moravia and also, maybe, in Italy.

Despite all this diversity, there is a kind of continuum in the vagaries of the archaeological record. The transport of lithic raw materials and shells over vast distances connects distant places and people. Technological and stylistic similarities are pervasive in the artistic production, as in

female figurines, while there is a thematic link between the (earlier) aurignacian cave paintings, and the (later) gravettian figurines of Moravia. The very fact of burying a dead person, sometimes with a rich assemblage of goods, is innovative enough not to occur by chance in otherwise chronologically, geographically and sometimes culturally related areas. The same can be said when shelters are built, even if following overall different architectural patterns.

6. Final comment

At the beginning of the 30,000-20,000 bp period, at a time when Grotte Chauvet already had many of its magnificent paintings, Neanderthals were still living in some parts of Eurasia, alongside modern humans. While the latest outcome of the Middle Palaeolithic was fading away from the record, the Eurasian scene was occupied by new human groups. In a constantly changing environment, dominated by the animals of the Mammoth Steppe, they developed labour expensive strategies to exploit a vast array of resources. The thriving human groups vigorously expressed their own distinct cultural identity, but this happened within the framework of larger entities spanning all over Eurasia. The novelty of the MUP lies in this very unprecedented capacity of integrating diversity into a functional system of inter-group and intra-group exchange. The ensuing complex and socially articulated way of life allowed people to cope with a demanding and ever changing environment. Overall, the system was resilient to ecological instability. Only when the worsening climate definitely undermined the very bases of survival, of humans just as of many other species, radically different solutions had to be found.

It is a fascinating thought that, more than 1000 generations ago, humans of Siberia may have been aware that many months of walking to the west – actually more than 8000 kilometres away – there were still people, different from themselves, yet in many respects similar – as shown by this volume.

notes

1 The Network's committee consisted of G. Bosinski (chairman), W. Roebroeks (scientific secretary), C. Farizy, C. Gamble, L. Larsson, M. Mussi, N. Praslov, L. Raposo, M. Santonja and A. Tuffreau.

2 For clarity's sake we wish to stress that all dates mentioned throughout this volume are, unless otherwise stated, uncalibrated ones, starting with the subtitle of this volume. Calibration – or rather: "calendric conversion" (cf. Street and Terberger, this volume) – of dates from this time range is still to some degree experimental and controversial.

3 The participants and contributors to the workshop, held at Pavlov (Czech Republic) on 12-14 October 1995, were the following: G. Bosinski (Cologne and Monrepos, Germany); F. Bernaldo de Quirós (León, Spain); I. Campen (Tübingen, Germany); F. Djindjian (Paris, France); C. Gamble (Southampton, U.K.); J. Hahn (Tübingen, Germany); L. Jarošová (Brno, Czech Republic); L. Larsson (Lund, Sweden); V. Lepistö (European Science Foundation, Strasbourg, France); M. Mussi (Rome, Italy); M. Oliva (Brno, Czech Republic); P. Pavlov (Syktyvkar, Russia); C. Perlès (Nanterre, France); P. Pettitt (Oxford, U.K.); N. Praslov (St. Petersburg, Russia); L. Raposo (Lisbon, Portugal); J.-Ph. Rigaud (Bordeaux, France); W. Roebroeks (Leiden, The Netherlands); M. Santonja (Salamanca, Spain); A. Scheer (Blaubeuren, Germany); V. Sladek (Brno, Czech Republic); P. Škrdla (Brno, Czech Republic); J. Svoboda (Brno, Czech Republic); A. Tuffreau (Lille, France); K. Valoch (Brno, Czech Republic); L.G. Vega Toscano (Madrid, Spain); A. Verpoorte (Leiden, The Netherlands); J. Zilhão (Lisbon, Portugal).

references

Aldhouse-Green, S., P. Pettitt — 1998 — Paviland Cave: contextualizing the 'Red Lady', *Antiquity* 72, 756-772.

Amirkhanov, H.A. (ed.) — 1998 — *The Eastern Gravettian.* Moscow: Scientific World.

Bolduc, P., J. Cinq-Mars, M. Mussi — 1996 — Les figurines des Balzi Rossi (Italie): une collection perdue et retrouvée, *Bulletin de la Société Préhistorique de l'Ariège* 51, 15-53.

Boriskovskij, P.L. — 1963 — Problema Kostenkovskogo Kremnya. In: *Ocherki po paleolitu basseina Dona,* 166-191, Leningrad: Nauka.

Borgognini-Tarli, S., G. Fornaciari, A. Palma di Cesnola — 1980 — Restes humains des niveaux gravettiens de la grotte Paglicci (Rignano Garganico): contexte archéologique, étude anthropologique et notes paléopathologiques, *Bulletin et Mémoires de la Société d'Anthropologie de Paris*, ser. XIII, 125-152.

Bosinski, G. — this volume — *The period 30,000-20,000 bp in the Rhineland.*

Cabrera-Valdés, V. (ed.) — 1993 — *El origen del hombre moderno en el suroeste de Europa.* Madrid: Universidad de Educacion a Distancia.

Cartmill, M. — 1993 — *A View to a Death in the Morning. Hunting and Nature through History.* Cambridge (Mass.): Harvard University Press.

Churchill, S.E., V. Formicola, T.W. Holliday, B. Holt, B.A. Schumann — this volume — *The Upper Palaeolithic population of Europe in an evolutionary perspective.*

Clottes, J. — this volume — *Art between 30,000 and 20,000 bp.*

Djindjian, F. — this volume — *The Mid Upper Palaeolithic (30,000 to 20,000 bp) in France.*

Dobosi, V. — this volume — *Interior parts of the Carpathian Basin between 30,000 and 20,000 bp.*

Duarte, C., J. Maurício, P.B. Pettitt, P. Souto, E. Trinkaus, H. van der Plicht, J. Zilhão — 1999 — The early Upper Paleolithic human skeleton from the Abrigo do Lagar Velho (Portugal) and modern human emergence in Iberia, *Proceedings of the National Academy of Sciences* 96, 7604-7609.

Farizy, C. (ed.) — 1990 — *Paléolithique moyen récent et Paléolithique supérieur ancien en Europe (Colloque International de Nemours, 9-11 mai 1988)*, 177-183, Nemours: Mémoires du Musée de Préhistoire d'Ile de France 3.

Follieri, M., M. Giardini, D. Magri, L. Sadori	1998	Palynostratigraphy of the Last Glacial Period in the Volcanic Region of Central Italy, *Quaternary International* 47-48, 3-20.
Gamble, C.	1986	*The Palaeolithic Settlement of Europe*. Cambridge: Cambridge University Press.
Gamble, C., W. Roebroeks	1999	The Middle Palaeolithic: a point of inflection. In: W. Roebroeks and C. Gamble (eds), *The Middle Palaeolithic Occupation of Europe*, 3-12, Leiden: University of Leiden.
Gamble, C., O. Soffer (eds)	1990	*The World at 18 000 BP. Vol. 2. Low Latitudes*. London: Unwyn and Hyman.
Guthrie D., Th. van Kolfschoten	this volume	*Neither warm and moist, nor cold and arid: the ecology of the Mid Upper Palaeolithic.*
Haesaerts, P., F. Damblon, M. Bachner, G. Trnka	1996	Revised stratigraphy and chronology of the Willendorf II sequence, Lower Austria, *Archaeologia Austriaca* 80, 25-42.
Hahn, J.	this volume	*The Gravettian in Southwest Germany – environment and economy.*
Harkin, M.	1998	Whales, chiefs, and giants: An exploration into Nuu-Chah-Nulth political thought, *Ethnology* 37, 317-332.
Hromada, J.	1998	*Mladý gravettien v severozápadnej casti Karpatskej kotliny a jeho vztahy k nadkarpatským oblastiam*. Thesis for CSc. degree, Slovak Academy of Sciences, Nitra.
Iakovleva, L.	this volume	*The gravettian art of Eastern Europe as exemplified in the figurative art of Kostenki 1.*
Kolstrup, E.	1995	Palaeoenvironments in the north European lowlands between 50 ka and 10 ka BP, *Acta zool. cracov.* 38, 35-44.
Larsson, L.	this volume	*Plenty of mammoths but no humans? Scandinavia during the Middle Weichselian.*
Lorblanchet, M.	1994	La datation de l'art pariétal paléolithique, *Bulletin de la Société des Etudes Littéraires, Scientifiques et Artistiques du Lot* 109, 93-113.
Mellars, P. (ed.)	1990	*The emergence of modern humans*. Edinburgh: Edinburgh University Press.
Mellars, P., C. Stringer (eds)	1989	*The Human Revolution. Behavioural and Biological Perspectives on the Origins of Modern Humans*. Edinburgh: Edinburgh University Press.
Montet-White, A.	this volume	*A scarcity of MUP sites in the Sava Valley, stratigraphic hiatus and/or depopulation.*
Musil, R.	1994	Hunting game from the culture layer at Pavlov. In: *Pavlov I*, ERAUL 66/Dolní Věstonice studies 2, 170-196.
Mussi, M.	1986	On the chronology of the burials found in the Grimaldi Caves, *Antropologia contemporanea* 9, 95-104.
	1990	Continuity and change in Italy at the Last Glacial Maximum. In: O. Soffer and C. Gamble (eds), *The World at 18 000 BP, Vol. 1, High Latitudes*, 126-147, London: Unwin Hyman.

Mussi, M. 1995 Rituels funéraires dans les sépultures gravettiennes des grottes de Grimaldi et de la grotte delle Arene Candide: une mise au point. In: M. Otte (ed.), *Nature et Culture*, 833-846, Liège (ERAUL 68).

this volume *Heading south: the gravettian colonisation of Italy.*

Mussi, M., J. Cinq-Mars, P. Bolduc this volume *Echoes from the Mammoth Steppe: the case of the Balzi Rossi.*

Mussi, M., W. Roebroeks 1996 The Big Mosaic, *Current Anthropology* 37, 697-699.

Neugebauer-Maresch, Ch. 1999 *Le paléolithique en Autriche*. Grenoble: J. Millon.

Oliva, M. this volume a. *The Brno II Upper Palaeolithic burial.*

this volume b. *Some thoughts on pavlovian adaptations and their alternatives.*

Pavlov, P.Yu., S. Indrelid this volume *Human occupation in Northeastern Europe during the period 35,000-18,000 bp.*

Pettitt, P. this volume *Chronology of the Mid Upper Palaeolithic: the radiocarbon evidence.*

Perlès, C. this volume *Greece, 30,000-20,000 bp.*

Rigaud, J.-Ph. this volume *Human adaptation to the climatic deterioration of the last Pleniglacial in southwestern France (30,000-20,000 bp).*

Roebroeks, W. this volume *A marginal matter: the human occupation of Northwestern Europe – 30,000 to 20,000 years bp.*

Roebroeks, W., Th. van Kolfschoten 1995 *The earliest occupation of Europe*. Leiden: University of Leiden.

Roebroeks, W., C. Gamble 1999 *The Middle Palaeolithic occupation of Europe*. Leiden: University of Leiden.

Roebroeks, W., R. Corbey this volume *Periodisations and double standards in the study of the Palaeolithic.*

Scheer, A. this volume *The Gravettian in Southwest Germany: stylistic features, raw material resources and settlement patterns.*

Smith, F.H., E. Trinkaus, P.B. Pettitt, I. Karavanic, M. Paunovic 1999 Direct radiocarbon dates for Vindija G1 and Velika Pecina Late Pleistocene hominid remains, *Proceedings of the National Academy of Sciences* 96, 12281-12286.

Soffer, O.	1993	Upper Paleolithic adaptations in Central and Eastern Europe and man-mammoth interactions. In: O. Soffer and N.D. Praslov (eds), *From Kostenki to Clovis*, 31-49, New York/London: Plenum Press.
	this volume	*Gravettian technologies in social contexts.*
Soffer, O., C. Gamble (eds)	1990	*The World at 18 000 BP. Vol. I. High Latitudes.* London: Unwyn and Hyman.
Soffer, O. N. Praslov (eds)	1993	*From Kostenki to Clovis.* New York/London: Plenum Press.
Street M., Th. Terberger	this volume	*The German Upper Palaeolithic 35,000-15,000 bp. New dates and insights with emphasis on the Rhineland.*
Svoboda, J.	1995	L'art gravettien en Moravie. Contexte, dates et styles, *L'Anthropologie* 99, 258-272.
Svoboda, J., B. Klíma, L. Jarošová, P. Škrdla	this volume	*The Gravettian in Moravia: climate, behaviour and technological complexity.*
Taborin, Y.	this volume	*Gravettian body ornaments in Western and Central Europe.*
Trinkaus, E., J. Svoboda, D.L. West, V. Sládek, S.W. Hillson, E. Drozdová, M. Fišáková	in press	Human remains from the Moravian Gravettian: Morphology and taphonomy of isolated elements from the Dolní Věstonice II site, *Journal of Archaeological Science.*
Vasil'ev, S.A.	this volume	*The Siberian mosaic: Upper Palaeolithic adaptations and change before the Last Glacial Maximum.*
Vega Toscano, L.G.	1990	La fin du Paléolithique moyen au sud de l'Espagne: ses implications dans le contexte de la Peninsule Ibérique, In: C. Farizy (ed.), *Paléolithique moyen récent et Paléolithique supérieur ancien en Europe (Colloque International de Nemours, 9-11 mai 1988)*, 169-176, Nemours: Mémoires du Musée de Préhistoire d'Ile de France 3.
	1995	*Hombre y medio durante la ultima crisis climática (30-20 ky) en la Meseta central, Levante y Andalucia (España)*, Pre-circulated paper for the European Science Foundation Workshop at Pavlov, Czech Republic.
Villaverde, V., M.P. Fumanal	1990	Relations entre le Paléolithique moyen et le Paléolithique supérieur dans le versant méditerranéen espagnol, In: C. Farizy (ed.), *Paléolithique moyen récent et Paléolithique supérieur ancien en Europe (Colloque International de Nemours, 9-11 mai 1988)*, 177-183, Nemours: Mémoires du Musée de Préhistoire d'Ile de France 3.
Zilhão, J.	this volume	*Nature and culture in Portugal from 30,000 to 20,000 bp.*

Margherita Mussi
Dipartimento di Scienze dell'Antichità
Università di Roma "La Sapienza"
Via Palestro 63
00185 Roma
Italy

Wil Roebroeks
Faculty of Archaeology
Leiden University
P.O. Box 9515
2300 RA Leiden
The Netherlands

Jiří Svoboda
Department of Paleolithic and Paleoethnology
Institute of Archaeology
AS Dolní Věstonice
Czech Republic