A25

16

The Early Upper Paleolithic and the Origins of Modern Human Behavior

S. L. Kuhn, P. J. Brantingham, and K. W. Kerry

In P.J. Brantingham, S.L. Kuhn and K.W. Kerry (eds.) *The Early Upper Paleolithic Beyond Western Europe*. Berkeley: University of California Press. 2004

The ideas and data presented in this volume urge us to reconsider the complexity inherent in the origins of the Upper Paleolithic. A striking theme throughout the volume is the diversity of Middle-Upper Paleolithic transitions detected even on local or intraregional scales. In most of the areas covered, at least one variety of the early Upper Paleolithic appears to show strong continuity with the local late Middle Paleolithic (see figures 1.1, 1.2). In central and eastern Europe, for example, the various early Upper Paleolithic industries with leaf points (e.g., Szeletian, Streletskayan) appear to have evolved in situ out of the late Middle Paleolithic (Micoquian) with bifacial points (Kozłowski; Svoboda; Vishnyatsky and Nehoroshev; all in this volume). In the Levant (Fox and Coinman; Kuhn et al., chapter 8; both in this volume), central Asia (Vishnyatsky, this volume), and perhaps also portions of northeastern Asia (Kuzmin, this volume), the so-called "lepto-Levalloisian," or initial Upper Paleolithic, is the best candidate for a locally evolved variety of Upper Paleolithic (Kuhn et al. 1999; see also Bar-Yosef 2000). In some cases, the local origins of the Upper Paleolithic complexes are open to question: given the near ubiquity of Levallois technology in the Mousterian, the lepto-Levalloisian complexes could have come from almost anywhere. What is important is that in these areas, it seems that genuine Upper Paleolithic industries were derived independently from very different starting points in the Middle Paleolithic.

In many areas, other early Upper Paleolithic industries appear suddenly and without local precedent. These may even coexist with early Upper Paleolithic variants apparently derived from Mousterian antecedents. In central Europe, there are three apparently intrusive complexes: the Bohunician (a variant of the lepto-Levalloisian industries) (Svoboda, this volume), the so-called "arched backed blade" industries (Kozłowski, this volume), and the

more widespread Aurignacian. In eastern Europe, the blade/bladelet-dominated Spitsynian (Vishnyatsky and Nehoroshev, this volume) appears unexpectedly; something similar occurred, albeit much later, in Georgia (Meshvilliani et al., this volume). In the Crimea (Marks and Monigal, this volume) and the Levant (Fox and Coinman, this volume), as in western Europe, it is the Aurignacian that appears intrusive (see below). In northwestern China, lepto-Levalloisian industries appear without any apparent local technological predecessors (Brantingham et al., chapter 15, this volume).

At first glance, the abrupt appearance of the early Upper Paleolithic in these regions would seem to imply a radical and unexpected reorganization of cultural and behavioral adaptations. In many instances, however, the origins of these locally unique early Upper Paleolithic industries can be traced to adjacent regions, where the ties to local Middle Paleolithic variants are more transparent. Kozłowski (this volume) sees the development of arched backed blade assemblages centered in the Balkans or southeastern Europe. The lepto-Levalloisian industries, intrusive to central and eastern Europe, may have originated in Ukraine (Meignen et al., this volume), or perhaps simultaneously in the Levant and central Asia, a pattern suggested by the available radiometric dates (Tostevin 2000). None of the authors suggests a point of origins for the intrusive blade/bladelet complexes of eastern Europe and the Caucuses, though the Levantine early Ahmarian is one likely ancestor. Brantingham et al. (chapter 15, this volume) suggest that the north Chinese early Upper Paleolithic, which has no likely Middle Paleolithic antecedents, is intrusive from Mongolia and, ultimately, from southern Siberia.

The intrusive character of the Aurignacian in several regions deserves special attention. In standard textbook accounts, the arrival of the Aurignacian in Europe marked the appearance of the full range of "modern" behavioral traits, including art, ornamentation, and elaborate bone and antler artifacts (Mellars 1996, 1999; Klein 1999, 2001; see also Bar-Yosef 2002). The Aurignacian continues to be of concern to researchers in some areas—particularly as regards the issue (or nonissue) of acculturation between archaic and modern populations as an explanation for the development of "transitional" industries such as the Châtelperronian (d'Errico et al. 1998; Mellars 1999; Zilhão and d'Errico 1999). However, in many of the regions discussed in this volume, the Aurignacian plays a much less important role in trajectories of Upper Paleolithic culture change. In eastern Europe, the Caucuses, and central and northeastern Asia, the Aurignacian sensu stricto is poorly represented, if it is present at all. Where it does appear elsewhere (central Europe, the Crimea, the Levant), the Aurignacian is both a relatively late arrival, appearing well after the development of other early Upper Paleolithic complexes, and is typologically variable. Moreover, the Aurignacian does not always appear to truncate or replace other

technocomplexes, such as in the case of the "indigenous" leaf point industries of central Europe. The situation in the Levant, not discussed explicitly in this volume, remains in question. Appearing comparatively late—after 34,000 BP (Phillips 1994)—it is unclear whether the Aurignacian displaced the early Ahmarian or coexisted with it (compare Goring-Morris 1987; Gilead 1991; Schyle 1992; Bar-Yosef 2000).

Perhaps more importantly, it is clear from many areas that the appearance of key Upper Paleolithic characteristics is not linked to the arrival of the Aurignacian. In eastern Europe, Crimea, and the Levant, the earliest examples of ornaments and bone tools are associated with earlier, non-Aurignacian complexes such as the initial Upper Paleolithic/lepto-Levalloisian, the Spitsynian, and the remarkable industry from Buran-Kaya III (Marks and Monigal, this volume). Wherever they came from, and whenever they got there, the Aurignacian was clearly not the vehicle that carried these features of "modern human behavior." This volume makes it clear that we should abandon the Aurignacian as a typological marker for modern human behavior.

Typological issues aside, is there support for a more general model claiming that the early Upper Paleolithic spread from a single "homeland" to outright replace local Middle Paleolithic industries? At present, the answer to this question appears to be negative (but see Bar-Yosef 2002; Otte, this volume). The picture that emerges from the contributions to this volume is one of substantial interregional differentiation in the origins of the early Upper Paleolithic and its constituent elements. Many specific features (ornaments, prismatic blades, bone tools) often considered diagnostic of modern behavior are first manifested at different times and in association with different cultural complexes. Models that posit a single spatiotemporal origin for the Upper Paleolithic and modern human behavior are becoming increasingly difficult to support. As stressed in the chapter by Kozłowski, for example, the controversial acculturation model, which links the appearance of Upper Paleolithic features in the Châtelperronian to contact between indigenous Middle Paleolithic hominins and invading anatomically modern humans, is simply not a plausible explanation for the early Upper Paleolithic in most areas outside of western Europe. To be certain, there is reason to be cautious in drawing final conclusions in this matter, given the limitations of current geochronological techniques (Beck et al. 2001; Marks and Monigal, this volume) and the possibility that many so-called Middle-Upper Paleolithic "transitional" assemblages were discrete entities mixed postdepositionally or through substandard archaeological recovery (see Meshvilliani et al., this volume). Nevertheless, patterns of cultural and behavioral evolution during the early Upper Paleolithic are turning out to be much more of a mosaic than most of us previously imagined, and are more complex than is commonly presented to the public and readers of introductory textbooks.

What, then, are the implications of these diverse transitions for scenarios describing the origins of anatomically modern humans? Although individual authors have their own biases, none of the regional archaeological records described in this volume provides unambiguous support for either of the simple scenarios for the spread of modern humans into Eurasia—universal regional continuity or a catastrophic wave of population advance out of Africa. Except for the Caucasus, in each region there is at least one early Upper Paleolithic industry or group of assemblages that arguably demonstrates gradual in situ behavioral evolution. At the same time, every region also contains what are clearly intrusive early Upper Paleolithic archaeological cultures. Although none of these as yet can be traced back to sub-Saharan Africa, that may be more a reflection of the absence of appropriate data for comparisons. If one chooses to equate hominin populations with specific industries, what the archeological data suggest is a complex history involving a series of population movements among and within major regions. Interestingly, recent reevaluations of the genetic evidence reject simplistic early scenarios of catastrophic replacement of resident archaic hominins by African anatomically modern populations in favor of a series of smaller scale population segmentations, bottlenecks, expansions, and migrations among various regions (Hay 1997; Watson et al. 1997; Hawks et al. 2000; Jorde et al. 2000; Maca-Meyer et al. 2001; Relethford 2001).

Obviously, it would be desirable to know who (in a biological sense) produced the various archaeological assemblages described here. Many authors are willing to propose that a particular hominin type (Neanderthals or modern *Homo sapiens*) was responsible for a particular industry or archaeological culture. Such propositions are made both safer and less reliable by the scarcity of human fossils. In fact, except for the French Châtelperronian (e.g., Lévêque et al. 1993), there are remarkably few secure associations between early Upper Paleolithic assemblages and anatomically diagnostic skeletal materials (but see also Smith et al. 1999). For the most part, the fossils that do exist are associated with relatively late versions of the early Upper Paleolithic. Globally, the scarcity of human remains dating to the period between 45,000 and 35,000 years ago is both interesting and frustrating.

However, if one rejects the equation of a biological population with an archaeological culture—and there is more than sufficient reason to be wary of this equation—the data presented in this volume can be seen to demonstrate a complex and discontinuous development of Upper Paleolithic behavioral repertoires. Archaeological data from points beyond western Europe strongly indicate that the Upper Paleolithic, or the manifestation of "modern human behavior," was not a unitary phenomenon, but an amalgam of contextually and historically contingent behavioral tendencies.

Returning to the themes and models described in the opening chapter, assessing the difficulty of the so-called Middle-Upper Paleolithic "transition"

remains somewhat problematic. It is clear that different, but apparently genuine, Upper Paleolithic adaptations were derived independently from very different starting points in the Middle Paleolithic and/or Middle Stone Age and that these transitions occurred over vast geographical areas. This empirical pattern may suggest that certain portions of Upper Paleolithic phenotypic space were easily accessed and, indeed, that there were many pathways to modern human behavior. Unfortunately, the bulk of this evidence for a relatively easy transition is restricted to lithic technology. Some may agree that a transition to Upper Paleolithic lithic technology was a relatively easy thing to accomplish, although many researchers contend that such "transitional" lithic technologies are simply terminal Middle Paleolithic industries and are therefore of no great relevance to the origins of modern behavior (see the discussion in Marks and Mongial, this volume). The evolutionary hurdle remains in place in this case. Whether this holds true, it is worth considering the possibility that transitions in other domains, such as in the emergence of complex social and symbolic behavior, were far more difficult than those involving lithic technology. This volume adds to a growing mass of evidence that the origins of complex symbolic behavior were spatially independent, even if they occurred at roughly the same time (Kuhn et al. 2001). The earliest forms of symbolic material culture appear in connection with very different early Upper Paleolithic stone industries, in very different environmental settings, and with very different degrees of connection with local Middle Paleolithic entities (Goebel, Marks and Monigal, Vishnyatsky and Nehoroshev, all in this volume). The implication is that even these highly unique features of modern behavior were derived from different starting points. If there is a common evolutionary cause, phylogentic or otherwise, it is rooted much deeper in evolutionary time and is largely independent of the events tracked in the Middle-Upper Paleolithic transition (Kuhn et al. 2001).

The simple empirical observation that Upper Paleolithic phenotypic space was accessed from many different starting points in Middle Paleolithic space suggests that the transition itself was not at all improbable. Theoretically, the greater the number of potential pathways between the Middle and Upper Paleolithic, the greater the chance that local ecological contexts would foster behavioral changes along one of them. Furthermore, there is some indication that the pathways between Middle and Upper Paleolithic phenotypic spaces were not newly opened sometime after 50,000 BP. The sporadic appearance of strikingly modern behavioral attributes—blade technologies, ground and polished bone tools, specialized hunting, and even the use of pigments and ornaments—earlier in the Middle Paleolithic (and much earlier in the African Middle Stone Age) implies that small portions of Upper Paleolithic phenotypic space have been accessible since at least 250 ka (see Révillion and Tuffreau 1994; Bar-Yosef and Kuhn 1999;

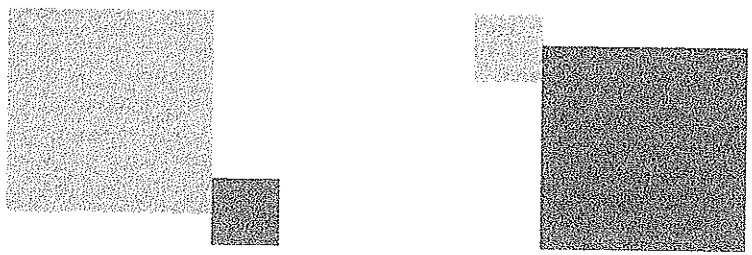

Figure 16.1. General topological models describing changes in the relative sizes of Middle Paleolithic (light gray) and Upper Paleolithic (dark gray) phenotypic spaces (see Brantingham et al., chapter 1, this volume). (1) Upper Paleolithic space is small enough to temporarily absorb some transitions from the Middle Paleolithic space. These transitions are expected to be restricted to a few features and generally will be short lived, because of the much larger basin of attraction represented by the Middle Paleolithic. (2) An increase in the relative size of Upper Paleolithic phenotypic space increases the probability of transition to the Upper Paleolithic. Such transitions should involve a more diverse set of behavioral and cultural attributes and also should be less prone to reverse transitions, because of the comparatively small basin represented by the remaining portion of Middle Paleolithic space. Such quantitative shifts in the relative sizes of Middle and Upper Paleolithic phenotypic spaces may underlie the Middle-Upper Paleolithic transitions.

McBrearty and Brooks 2000; Bar-Yosef 2002; Grayson and Delpeche 2002; Meignen et al., this volume). We are not endorsing the idea that the true transition to modernity occurred at these much earlier times. Rather, we are suggesting that brief, early excursions into "Upper Paleolithic-like" behavioral organizations indicate that the Upper Paleolithic, as it ultimately came to be, was not a complete break from the Middle Paleolithic/Middle Stone Age, but rather an extension and an expansion of some subset of it.

The scope and persistence of the most recent transitions (those occurring between 30 and 50 ka) is perhaps best seen as an indication of changes in the relative sizes of Middle and Upper Paleolithic phenotypic spaces (see figure 1.1). Early in the process, Middle Paleolithic/Middle Stone Age cultural phenotypic space was large and Upper Paleolithic space small (figure 16.1: 1). Only a small window connected them. This allowed occasional movement from Middle Paleolithic/Middle Stone Age to Upper Paleolithic, but it also permitted movement in the opposite direction, something that actually appears to have occurred more than once in sub-Saharan Africa

(McBrearty and Brooks 2000). Over time, Upper Paleolithic phenotypic space grew much larger and Middle Paleolithic space shrank, leaving a similar-sized window of access (figure 16.1: 2). Interestingly, this shifting balance would have lessened the probability of movement from the Upper Paleolithic back to the Middle Paleolithic/Middle Stone Age space, an implication consistent with the general lack of stratigraphic alternation between Middle and Upper Paleolithic industries in Eurasia. What caused the relative sizes of the two spaces to change is another question. We suggest that it was probably the result of a complex interplay between regionally variable environmental factors, human demography, and genetically determined capacities for certain forms of complex behavior, such as language. A unique insight from this model shifts focus from the relative superiority of Upper Paleolithic over Middle Paleolithic/Middle Stone Age to factors that would reduce the viability of one set of adaptive options while simultaneously increasing the viability of others. It also decouples the archaeological issues from questions of biological barriers between hominin taxa.

The great diversity of early Upper Paleolithic sequences described in this volume may be discouraging to those who prefer simple narratives. We—and we hope many readers of this volume—find it extremely encouraging. Increasingly, the community of scholars engaged in paleoanthropological research has the opportunity to approach the global question of modern human origins using a truly global database. It is almost inevitable that, as our knowledge base has expanded, models formulated using data from a few regions will be undermined. The early Upper Paleolithic world now seems to be a more complicated place than it did fifty, or even fifteen, years ago, but the door is now also open for a deeper and more comprehensive understanding of cognitive evolution, cultural change, and population movements during the late Pleistocene.

REFERENCES

Abramova, Z. A. 1984. The Early Paleolithic of the Asian part of the USSR. In *Paleolit SSSR.* P. I. Boriskovsky, editor. pp. 135–160. Moscow: Nauka.

Abramova, Z. A., S. N. Astakhov, S. A. Vasil'ev, N. M. Ermolova, and N. F. Lisitsyn. 1991. *Paleolit Eniseia.* Leningrad: Nauka.

Aitken, M. J., C. B. Stringer, and P. A. Mellars, editors. 1993. *The Origin of Modern Humans and the Impact of Chronometric Dating.* Princeton: Princeton University Press.

Aksenov, M. P. 1989a. *Paleolit i Mezolit vekhnei Leny.* Ph.D. dissertation. Novosibirsk: Institute of History, Philosophy and Philology, Siberian Branch, Soviet Academy of Sciences.

Aksenov, M. P. 1989b. *Paleolit i Mezolit vekhnei Leny: Aftoreferat.* Novosibirsk: Nauka.

Aksenov, M. P., and I. S. Naidentskaia. 1979. K voprosu o stratigraficheskoi i planimetricheskoi situatsii na Makarovo IV. In *Otchetnaia Nauchno-Teoreticheskaia Konferentsiia Arkehelogiia Etnografiia Istochenikovedenie.* pp. 74–75. Irkutsk: Irkutskii Gosudarstvennyi Universitet.

Aksenov, M. P., V. I. Bazaliiskii, and E. M. Ineshin. 1986. Iz arkheologii G. Irkutska (drevneishie sledy osvoeniia chelovekom territorrii sovremennogo goroda). In *Arkheologicheski i Etnograficheskie issledovaniia v Vostochnoi Sibiri: Itogi i Perspektivy.* pp. 3–6. Irkutsk: Irkutskii Gosudarstvennyi Universitet.

Aksenov, M. P., M. A. Berdnikov, G. I. Medvedev, O. N. Perzhakov, and A. B. Fedorenko. 1987. Morfologiia i arkheologicheskii vozrast kamennogo inventar'ia Makarovskogo Paleoliticheskogo plasta. In *Problemy Antropologii i Arkheologii Kamennogo Veka Evrazii.* pp. 24–28. Irkutsk: Irkutskii Gosudarstvennyi Universitet.

Alekseeva, E. V., and A. M. Maloletko. 1984. Novyi peshchernyi Paleolita na Altae. In *Problemy Issledovaniia Kamennogo Veka Evrazii.* pp. 26–28. Krasnoiarsk: Krasnoiarskii Gosudarstvennyi Pedagogicheskii Institut.

Allsworth-Jones, P. 1986. *The Szeletian and the Transition from Middle to Upper Paleolithic in Central Europe.* Oxford: Clarendon.

Allsworth-Jones, P. 1990. The Szeletian and the stratigraphic succession in central Europe and adjacent areas: Main trends, recent results, and problems for reso-