

## Transitions before The Transition: Evolution and Stability in the Middle Paleolithic and Middle Stone Age

Erella Hovers and Steven L. Kuhn (eds.)

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Erella Hovers and Steven Kuhn's *Transitions before THE Transition...* is a collection of 17 articles aimed at shedding some much needed light on the historical and evolutionary context for paleoanthropology's most hotly debated topic: the transition from the Middle (MP) to the Upper Paleolithic (UP) and, implicitly, on modern human origins. As the title suggests, the contributors would like to promote a more dynamic view of the periods preceding *the* transition than is commonly assumed. Nonetheless, in the words of the editors themselves, the volume is meant to open a wider discussion and "...as a whole does not speak in unison (Preface, xx)." Resulting from papers given at two symposia at the 2002 Society for American Archaeology meetings in Denver, the book includes a variety of viewpoints, informed by both the nature of the data (lithic, faunal, spatial, etc.) and by the geographic and chronological specializations of the different authors. Although the volume is not subdivided into sections, the editors have organized it such that thematic integrity is preserved throughout. Moreover, Kuhn and Hovers's informative introduction, which outlines the importance of the question at hand, also provides a thematic guide to the book, which helps the reader to assimilate the multitude and diversity of approaches. The editors' introduction is preceded by a foreword by Paul Mellars, who summarizes the difficulties in assessing cultural change in the MP, as well as the advances presented in the volume.

The articles by Kleindienst (Chapter 2) and by Clark and Riel-Salvatore (Chapter 3) start out the discussion by attempting to bring some epistemic order to our systems of classification. Kleindienst calls for a standardization of classification terminology based on Desmond Clark's system introduced at the Berg-Wartenstein conference in 1965, which relies on the archaeological occurrence or horizon as a minimal contextual unit (Clark et al. 1966). She further argues that discussing 'transitions' is meaningless unless common terms that include geographical and temporal dimensions are employed, as change from one entity to another may represent a punctuated event in one region and a gradual process in another.

Clark and Riel-Salvatore build on previous arguments (Clark and Lindly 1991) analyzing the concept of industrial identity during the Paleolithic. Their main claim is that factors that are difficult to isolate in the archaeological record, such as mobility, raw material economy, and ecology, may contribute to the convergence we see in industrial characteristics. As an example they treat the similarities between the bifacial tools from the Acheulean site of Gesher Benot

Ya'aqov and the recently published assemblage from the Bose Basin, in China. Rather than positing a connection between the geographically distant sites, the authors attribute these similarities to convergence, and conclude that cultures are difficult to correctly identify in the Paleolithic. In particular, the period of *the* transition in Europe is rife with such examples of convergence. To this effect, they cite the increasing number of published MP technocomplexes (they identify at least twenty in the literature) and argue that it should be taken as an incentive to see continuity across the MP – UP transition.

The next four chapters deal with change through time in lithic assemblages of the Middle Paleolithic. Gilliane Monnier (Chapter 4) presents data from the French sites of Combe Grenal, La Chaise, and Orgnac 3, spanning the period from OIS 8 to OIS 3, and concludes that there is no support for a hypothesis of increasing tool standardization. Monnier's data speak to the idea of directional trends within the Lower and Middle Paleolithic in Europe toward 'modern' patterns seen in the Upper Paleolithic, and their cognitive implications. The author offers the conjectured lack of hafting in the MP as a possible explanation for these results.

In Chapter 5, Delagnes and Meignen revisit the issue of industrial diversity and identify several chronogeographical trends within the French MP. In their review of the contemporary *chaîne opératoire* research in France, they focus their attention on four major debitage systems, namely the Quina, discoidal, Levallois, and laminar systems. The authors attribute the increase through time of technological diversity, as well as the increase in the appearance of methods with low degree of blank pre-determination (e.g., Quina, discoidal), to the adoption in the Late MP of similar mobility strategies by distinct groups of people, each carrying distinct technological traditions. In contrast to Clark and Riel-Salvatore (who stress convergence as a major factor underlying diversity), Delagnes and Meignen see such patterns as behaviorally meaningful evidence of the Neandertals' capacity for adaptation to fluctuating climatic conditions. Keeping the assumption that the technological identities of the different groups remained intact, the authors stress the degree to which the changes in raw material transport and lithic production systems reflect hominin flexibility in dealing with changing environmental conditions.

In Chapter 6, Kuhn deals with directional change through the Mousterian in Italy, stressing the importance of developing models of technological adaptation to mul-

tiple optima. Starting from the observation that one of the markers of UP technical repertoire, laminarity, increases in frequency through time in Latium, but decreases in Liguria, Kuhn concludes that there is no directionality in the development of the Mousterian. Rather than assuming that the Mousterian is simply not capable of developing into the UP by virtue of some inherent deficiency in the capabilities of its makers, the author proposes keeping an evolutionary framework and borrowing the 'rugged fitness landscape' model from evolutionary genetics. The model essentially describes adaptation as a surface with multiple optima, such that a species that finds itself near such an optimum is drawn by selection to climb it. The problem that ensues is that a species already at an optimum cannot easily 'climb down' from one peak in order to climb a higher one. Kuhn is therefore suggesting that, despite the potentially higher peak of the UP, different MP entities had reached local optima in their adaptive landscape and could not move off them to reach the global optimum. This model constitutes a welcome departure from unilinear evolutionary models, and suggests a new avenue of research. Unfortunately, how to define and test the reality of global and local optima in technological adaptation during the Paleolithic remains an unsolved question.

Marks and Chabai (Chapter 7) return to the question of diversity in the Late MP, offering the example of the two major technocomplexes identified in the Crimean Peninsula, the Crimean Micoquian (CM, characterized by the presence of bifacial tools) and the Western Crimean Mousterian (WCM, characterized by a variety of Levalloisian methods). Interestingly, the industry with the longest record (the CM) is also the more stable of the two, with extremely consistent technological features over 100 ka. The authors present the hypothesis that this pattern may be explained by the relatively less predictable circumstances that the makers of the WCM may have encountered, leading to a more diverse technological system than that of the well-established CM groups. Marks and Chabai's ideas are a departure from the classical model of bifacial technologies, which have traditionally been thought of as reflecting flexibility and mobility (e.g. Parry and Kelly 1987; Morrow 1996).

The next few chapters deal with ecology, subsistence, and cultural patterns arising from population movements and relative levels of group mobility. Gaudzinski (Chapter 8) presents interesting data on monospecific hunting in the European MP, contrasting the examples of the exploitation of young solitary rhinoceros at Taubach, and the unselective hunting but selective processing of reindeer at Salzgitter-Lebenstedt. She proposes that a shift toward monospecific exploitation occurred sometime during OIS 7, although the techniques for hunting and extraction go back much further.

A different angle is examined by Stiner (Chapter 12), who identifies three important themes in hominin subsistence: predation on ungulates, exploitation of small animals, and improved resource extraction from animal carcasses. Stiner emphasizes the difference in mortality profiles in populations hunted by hominins and those

caused by other predators, specifically with respect to the targeting of prime age adults, which is unique to hominins among carnivores. Even more interesting is the pattern of increased reliance on small animals, especially fast-moving animals such as rabbits and hares, which constitute a more reliable food source because they can rebound more easily from human hunting than do tortoises. This trend is significant, as it shows that Neandertal populations must have been small compared with later MP and UP populations. On the other hand, while large game hunting itself is older than the Middle Paleolithic, marrow processing was only as efficient as cold extraction techniques allowed—stone boiling and other heat-based techniques only became prevalent later during the UP. Stiner thus synthesizes three important trends that signal changes from the beginning of the Middle Paleolithic and beyond the transition from the MP to the UP.

Increases in population reappear as explanatory models in Chapter 9, where Meignen et al. discuss the influence of demographic factors through time during the Levantine Middle Paleolithic, especially as seen in the evidence from Kebara and Hayonim caves. Their main claim is that the early part of the MP (represented by Hayonim) was characterized by high residential mobility, whereas in the later part (represented by Kebara) mobility decreased. The authors emphasize that this pattern, which results in superimposed fireplaces at Hayonim and more intra-site spatial differentiation in the placement of hearths at Kebara, should not be interpreted as a result of differences in cognitive capacities, but simply as a result of increased population densities during the late MP.

John Speth (Chapter 10) returns to the Kebara hearths and produces strong evidence to suggest that Neandertal 'housekeeping' is consistent with patterns observed in modern hunter-gatherers. Bones found close to the cave walls have more lower-utility parts than inside the cave area and fewer cutmarks, indicating periodic cleaning of trash, and there is a higher incidence of burnt bone near the cave walls, implying periodic cleaning of fireplaces. After drawing his conclusions, Speth points out that though Neandertals periodically cleaned their living quarters, as do modern hunter-gatherers, the observed patterns do not necessarily have meaning with respect to modernity.

The next few articles are focused on exploring Pleistocene cultural trends from an African perspective. Brooks et al. (Chapter 13) present the case for the behavioral shift toward distance killing of game animals during the African Middle Stone Age. Support for these claims comes from an examination of comparative material from the #Gi and Aduma sites and from the well-known Levantine sequence from Tabun. Their data clearly show trends in the size reduction and the standardization of retouch location at the African sites (presumably reflecting hafting modifications). They interpret these trends as a sign of increasing reliance on projectile technology, which is in turn a sign of modernity.

McBrearty and Tryon (Chapter 14) turn the focus toward the transition from the Acheulean to the Middle Stone

Age, as seen through the lens of the Kapthurin Formation sites in Kenya. Like Brooks et al., the authors show a transition from hand-held to hafted implements, but because retouch is rare in the assemblages studied, their conclusions are based on an increased diversity of lithic production schemes across the transition (similar in a way to that documented for the end of the French Middle Paleolithic by Delagnes and Meignen).

Chapter 15 returns to the question of spatial organization in cave sites, explored by Speth in Chapter 10. Lyn Wadley addresses the spatial organization of hearths and lithics from the perspective of the social and cultural ordering of living space from final MSA and early LSA contexts at Rose Cottage Cave, South Africa. While her data suggest continuity from the MSA to the LSA, she points out that patterns consistent with a 'mythical ordering of space' are only evident in the LSA, when activity areas seem to be consistently reused in the same manner. Meanwhile, the pattern characteristic for the MSA is more like those encountered in the European MP.

Chapter 16 deals with the important issue of the perpetuation of innovation and its identification in archaeological assemblages. Asking the hard question of how and why innovations are lost, Hovers and Belfer-Cohen give a new twist to the cognitive abilities debate, by noting that modern human behavior is sporadically and haphazardly found within MP and even earlier contexts. Instead of focusing on identifying the first occurrences of symbolism and other acknowledged forms of 'modern' behavior, the authors concentrate on the question of how such behaviors could have been sustained and why they were not stabilized in earlier contexts. Their answer is based on the supposition that population density is positively correlated with the probability of innovation and transmission. Consequently, the authors suggest examining the emergence of stable modern behavior especially within crowded refugia, where the critical population necessary for maintenance might have been present.

Shea advances a similar idea in an earlier chapter (11), where he identifies the same pattern of recursive invention and loss in the European MP. Shea's proposed explanation also relates demographic patterns to the loss of innovation,

especially in the context of small populations that could have been driven to local extinction, producing the apparent pattern of diversity.

The volume concludes with a discussion by Ofer Bar-Yosef (Chapter 17), who remarks on the return of the *fossile directeur* approach to the forefront of the study of prehistory, this time using the notion of learned *chaînes opératoires* to map out the ancient cultural territories of hominin groups.

As a whole, the book provides a much-needed big-picture context for the transition from the Middle to the Upper Paleolithic. Discussions centered on the pace and character of cultural change before *the* Transition allow the reader to review assumptions about the scale and directionality of change that are often uncritically adopted during the course of examining human origins. In particular, focusing on stability and its causes is a novel approach to the problem of change, and several of the articles suggest solutions to the question of cultural conservatism and recursivity. Such approaches are especially welcome as it is becoming increasingly clear that evolutionarily relevant systemic changes or stases in behavior should be studied from a systemic point of view, and that means developing ways of interpreting the large-scale patterns in the archaeological record, keeping in mind their interactions. Altogether, the volume is rich in the diversity of ideas and approaches, making it a good resource for the researcher looking to examine large-scale patterns in the prehistoric record.

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