Chapter 16

"Now You See it, Now You Don't"—Modern Human Behavior in the Middle Paleolithic

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ABSTRACT

An intriguing phenomenon of the Middle Paleolithic archaeological record is the sporadic occurrence of traits commonly associated with alleged modern behavior. Given the antiquity in the hominin lineage of the organic systems that control such behaviors, the question of interest is not whether Middle Paleolithic people were *capable* of such behaviors, but rather why its occurrence is so haphazard and irregular. We suggest that the archaeological finds reflect only those elements of human knowledge that have been accepted and incorporated into societal normative behaviors, stored and kept for repeated use through canonization and rituals. Instability of demographic systems and population crashes prevented the continuous accumulation of such knowledge in certain regions of the Old World, dictating that technological and symbolic innovations be "re-invented" time and again throughout the Middle Paleolithic period.

INTRODUCTION

To many researchers, the Middle Paleolithic period is "the muddle in the middle" of prehistoric times (Stringer and Gamble 1993, after G. Isaac). Though shorter

than the previous Lower Paleolithic, this period still comprises some 200,000 years. The technological variability recognized through this time interval is claimed to reflect shifts in mobility and subsistence modes, which were in turn responsive to changing ecological circumstances. In contrast, temporal variability in tool morphology, if observed at all, occurs at a slow pace, lending the Middle Paleolithic (and the Middle Stone Age) a monotonous appearance (Kuhn and Stiner 1998; Bar-Yosef 2000; Würz 2002). The latter was often explained by the contention that the brains of Middle Paleolithic hominins were organized differently from those of modern humans. In consequence, these archaic humans were lacking in the cognitive abilities that are the prerequisites for invention and innovations (*e.g.*, Mithen 1996).

For a long time, archaeological wisdom advocated a straightforward approach to the question of human cognitive capacities: *what you see is what there was*. To wit, it was assumed that human potential for modern cognitive behavior must be attested to in the archaeological record, and that the evidence for its existence would be unequivocal (*e.g.*, parietal and mobile art [Noble and Davidson 1996; Mellars 1996; but see Humphrey 1998]). A different outlook had implications too difficult to face. Indeed, if one delved too deeply into the idea of *latent* cognitive potential, not expressed in the archaeological evidence, hypotheses concerning stages and tempo of evolution of behavior and culture would stand on shaky ground, at best. For example, in order to overcome the epistemological difficulty of actualization of latent capacities, Leroi-Gourhan incorporated in his studies of human technology the somewhat arbitrary notion of a "driving force" that perpetuated a *continuous* realization of the cognitive potential (and see Audouze 2002).

For the purpose of the ongoing discussion, we use the term "modern" in its basic meaning as "of, relating to, or characteristic of the present or the immediate past" (Mish 1996), with no *a priori* evolutionary connotations. According to this definition, modern behavior is not necessarily unique to the present, and its presence in the past does not distract from its modernity.

Clear-cut evidence for modern behavior (in the sense discussed above) seemed to occur in Europe as an integrated, normative system only at the beginning of the Upper Paleolithic, seemingly hand in hand with the arrival of modern humans who replaced the local Neandertals. Due to its sudden emergence and characteristics, this evidence was taken to reflect a revolutionary event. And due to the Eurocentric worldview of prehistoric research at the time, this postulated occurrence (which was not observed outside of western Europe) was perceived as a turning point in human evolution.

Since the formulation of this paradigm, pre-Upper Paleolithic finds, of the kind typically considered as evidence for modern cognitive abilities, have time and again dented this notion (*e.g.*, Goren-Inbar 1986, 1990; Marshack 1989, 1991, 1996; Bednarik 1994; d'Errico *et al.* 1998; Hovers *et al.* 1997, 2003; Gaudzinski 1999 [and see discussion in Villa and d'Errico 2001]; d'Errico and Nowell 2000; Henshilwood *et al.* 2001, 2002). Concurrently, it has become evident that Anatomically Modern Humans coexisted with (and sometimes preceded) the Neandertals (Vandermeersch 1982; Smith *et al.* 1999; and see papers in Bar-Yosef and Pilbeam

2000). The accumulated evidence from various domains of research, recovered from widespread geographical regions, and from different time periods, now suggests that the presence of Middle Paleolithic symbolic or cognitive behavior is not tethered to the existence of Anatomically Modern Humans (Belfer-Cohen 1988).

As part of the on-going process of "coming of age" in anthropological thought, archaeological theory came to accept the notion that the material record provides but fragmentary and partial evidence of past human cognitive capacities (Preucel and Hodder 1996). Where there had been certainty, skepticism arose: does the archaeological record depict the total cognitive capacity of hominins at any given time? Or do the observed phenomena reflect a *realized* segment (randomly preserved) of far more expansive abilities?

The issue is farther complicated since archaeological data are often open to wide, sometimes contradictory yet equally valid interpretations. Clearly, questions about human cognition in the past cannot be resolved from within the archaeological domain exclusively. The input from other disciplines can, and indeed should, serve in evaluating our ideas concerning prehistoric cognitive abilities and their evolution through time.

Paleo-neurological studies (and to a lesser extent, evolutionary psychology) indicate that the neural substructure for human cognitive abilities does indeed go very far back (Humphrey 1976; Barkow *et al.* 1992; Deacon 1997a, and references therein). For example, there is evidence to indicate that the limbic system, which dictates many of the behaviors considered markedly human, has not changed structurally, at least since the Middle Pleistocene (*e.g.*, Maclean 1982; Eccles 1989). Similarly, the neuro-anatomical configuration enabling language, a marker of modernity, seems to appear very early in human evolution (Deacon 1989, 1997b; Calvin and Bickerton 2000). Given the antiquity of these neural systems, it is plausible that Middle Paleolithic hominins possessed much of the cerebral hardware pertaining to modern behavior, regardless of their taxonomic/genetic affinities.

Here, we interpret the concept of "human behavior" as encompassing both the actualization of certain types of behavior as well as the latent capacity for such behaviors. Borrowing from biology, we refer to these as "phenotypic" and "genotypic" components, respectively. As is the case with many biological phenotypes, some behaviors will become apparent only on the cue of particular stimuli (*e.g.*, Ridley 1993). The implications are twofold: (1) contrary to the notion that "instant" neurological mutations are immediately expressed "phenotypically" (*e.g.*, Klein 2000), the first recognizable appearance of a behavior probably does not signify that the cognitive potential for this behavior had emerged just shortly before; and (2) because stimuli are circumstance-dependent, we should not expect behaviors of discrete populations to be necessarily or absolutely similar, even if they possess similar cognitive abilities (for example, the polemic concerning Neandertals and Anatomically Modern Humans).

In our view, the fascinating question as regards the long Middle Paleolithic record is related neither to the feasibility of modern cognitive behavior, nor to its first appearance in the archaeological record (see Hovers 1997 for discussion). Rather, we are concerned here with the sporadic mode of manifestation of this

behavior, and its possible causative processes. The following discourse is an attempt to understand these phenomena, taking into consideration the interaction of demographic and social circumstances and their effects on systems of human communication.

A NOTE ON THE NATURE OF HUMAN KNOWLEDGE

It is important to bear in mind that any given cognitive behavior is an expression of inherent ("genotypic") potential and its interaction with *knowledge*. Given the existence of a potential for cognitive behavior in Middle Paleolithic hominins, it is useful to consider here the properties of knowledge, the second prerequisite for a manifest behavior.

A sometimes overlooked, but nonetheless fundamental property of human knowledge is its accretionary nature (Jacob 1973). Knowledge connotes past experience as well as the "proclivity to experiment with new ideas, techniques, devices, and strategies to make inventions into innovations" (*i.e.*, "innovativeness"; Sundbo 1998:20). It is through these properties that knowledge acts to expand future frames of reference.

Inventions are "the discovery or achievement by an individual of a new process, whether deliberate or by chance" (Renfrew 1978:90 and references therein). Inventions often stem from "brain storms", independent of existing knowledge and/or of means to "test" and implement them—Leonardo da Vinci's inventions are a case in point. However, inventions become full-fledged innovations, which are part of an observable behavioral repertoire, only when adopted by a large number of individuals (Renfrew 1978; Schiffer and Skibbo 1987; Kuhn and Stiner 1998). In such a process, knowledge acts as a pre-adaptive matrix. New ideas operate and are tested within the range of possibilities defined by any given state of knowledge.

Certain forms of social, physical, and organizational infrastructure are required to promote the diffusion of technological knowledge that supports the use of innovative technologies (Burt 1980; Wallace 1982; Doloreux 2002). Thus Leonardo's inventions, being divorced from the engineering realities of their time, remained technological fantasies for hundreds of years. In non-industrial societies, the spread of knowledge may occur less formally, but is nonetheless indispensable. Knowledge provides an element of familiarity that is needed to overcome the inherent human reluctance, more pronounced in traditional societies, to adopt novelties (*e.g.*, Renfrew 1978; Spratt 1989; Lepowsky 1991; Saidel 2000).

THE ARCHAEOLOGICAL RECORD

We emphasize here, at the risk of being redundant, that the first-ever, original invention underlying any innovation is most likely untraceable archaeologically. A novel behavior that is archaeologically observable necessarily implies that an

invention had already been transformed into an innovation through complex processes of spread and adoption.

That said, we posit that by the Middle Paleolithic, the "blueprint" underlying modern behavior (*i.e.*, the biological potential and the practical knowledge) had already been in place. Thus, behaviors commonly accepted as modern can be observed consistently throughout the duration of the Middle Paleolithic (for example, big-game hunting and its social and technological implications; see Stiner 2002 for a recent discussion). Other facets of modern behavior, though sporadically attested to, are implied by uncommon finds (*e.g.*, ochre, bone tools, engraved bone and stone items, see references above) as well as by the appearance of burials (see Belfer-Cohen and Hovers 1992; Defleur 1993; Hovers *et al.* 2000).

Overall, the late Middle-early Upper Pleistocene record speaks against the emergence of "modernity" as a global, one-time event associated solely with *Homo sapiens sapiens*. Judging by the criteria commonly used to identify cultural modernity, the African Middle Stone Age appears to portray the emergence of human modernity as an incremental process, beginning some 280,000 years ago (McBrearty and Brooks 2000 and references therein). By the same criteria, we will have to conclude that in the Levant, the full-fledged modern behavioral package appeared abruptly only at the close of the Pleistocene, with the emergence of the Natufian cultural entity (*ca.* 13,000 BP) (Bar-Yosef 1998 and references therein). Thus the archaeological evidence indicates that the tempo and mode of modern behavior appearance throughout the Middle Paleolithic differ over time and across geographical spaces, crosscutting the taxonomic boundaries of contemporaneous human groups.

DISCUSSION

Why then does the emergence of behavioral and cultural modernity seem chaotic and particularistic in nature? We have argued above that behavior becomes archaeologically visible only after appropriate cues in the social and physical environments have triggered the passage from latent potential, to actualized behavior, to prevalent norms. Once the initial trigger kicks in, the particular behavior appears. However, in order for such a behavior to *persist*, the pertinent knowledge must be retained and transmitted down the generations.

The triggers (or lack thereof) stimulating innovations that led to what we define as modern behavior have been discussed extensively in the anthropological literature. Often, they were identified in demographic circumstances. Ecological conditions are suggested to have led to convergence of human groups in limited regions of the Levant, leading to increased technological variability at the end of the Middle Paleolithic (Hovers 1997, 2001). Increased population densities in *refugia* areas in western Europe are argued to have stimulated the occurrence of parietal art (Jochim 1983). By the same token, social pressures and increased occupation densities are said to have led to sedentism and agriculture at the end of the Pleistocene (Keeley 1995; Belfer-Cohen and Bar-Yosef 2000).

Here we focus not so much on the stimulants of modern behavior expressions. Rather, we look at the mechanisms that might have led to the persistence of such behavior *after* it had been triggered. As a rule, cultural information (*i.e.*, the sets of beliefs, ideas, and practices that allow one to identify oneself with a broader community) has to be remembered and transmitted again and again with little or no alteration, or else the accumulation of alteration will compromise the very existence of culture (Sperber and Hirschfeld 2004).

In non-literate societies, information is stored by means of oral tradition and shared through extensive networks of lateral and vertical cultural transmissions. Information needed for mediating mundane subsistence and social needs, and to cope with frequent and recurrent stress events, is used constantly. It is therefore easily accessible, efficiently retained, but at the same time responsive to small-scale changes in the circumstances to which this information is pertinent. On the other hand, information needed for negotiating rare crises is in danger of being forgotten in parts or as a whole, because it is put to use only very infrequently. In this case, there is a premium on resistance to change, namely on the capacity to maintain information intact through time, despite the "noise" introduced into the process of transmission as either random or systemic phenomenon (K. P. Smith 1988:99–100). As a means to prevent the loss of such knowledge, it is incorporated into rites and myths, and canonized as part of the group's cultural heritage and social identity. Smith (1988:87) suggested that ritual is particularly appropriate for the storage of information necessary for long-term group survival. Significantly, ritual also epitomizes fundamental constituents of a group's social self-image and regulates its very social structure. Changes to ritual are risky not only in terms of ecological balance; they entail a heavy social toll and endanger the group's existence as a social unit. It is for these reasons that rites and symbols are strictly adhered to and perpetuated at the cost of heavy social investment. This central role of ritual in the retention and transfer of information is amply illustrated ethnographically (Minc 1986; Minc and Smith 1989; Kosse 1990; Owens and Hayden 1997; Sobel and Bettles 2000).

It is the information stored in, and transmitted through, ritual and myth that serves as a foundation on which additional knowledge is accrued. The mechanisms that maintain information transmission are dependent upon critical population size and density (Kosse 1990). If networks of storage and transmission are *not* available or fail when facing a sudden, unexpected crisis, the group will come up with an innovative behavior—or perish.

The archaeological evidence commonly cited as indicating modern behavior (see details above) relates both to technological efficiency (*e.g.*, introduction of bone tools, composite weapons, *etc.*) as well as to ritual contexts that do not reflect directly the daily "business of living." It seems to us that, at least in the framework of the present argument, the mundane and ritual domains are interrelated. In fact, social retention of the former may have been dependent on the existence of the latter. This interpretation is justified, given the contexts of similar occurrences in later prehistory and in modern ethnographic records (Turner 1970; Conkey 1980; Jochim 1983; Sagona 1994).

We suggest that the sporadic expressions of modern behavior in the Middle Paleolithic reflect a situation where systems of knowledge retention were rather unstable. Recurrent demographic crashes would operate to eradicate much of the socially stored knowledge. Such crashes in the Upper Pleistocene are indeed postulated by genetic studies (*e.g.*, Semino *et al.* 2000; Caramelli *et al.* 2003). Thus we should not be surprised that a particular behavior appeared in the Middle Paleolithic record either sporadically or suddenly. Fluctuations in the ability of Middle Paleolithic human groups to store knowledge also constitute a parsimonious explanation for the different trajectories of establishment and growth of modern behavior in various geographical regions (*e.g.*, Africa *vs.* Europe *vs.* the Levant). These are the expected patterns when a behavior is "invented" anew time and again.

To conclude, the hindrance to modern human behavior in the Middle Paleolithic may have resulted not from evolutionary biological limitations, namely, inferior mental capacities. Rather, the impediment to the perseverance of full-fledged cultural modernity lies in demographic constraints on the formation of an appropriate matrix of "innovativeness". The processes of change that took place within the Middle Paleolithic sometimes go unrecognized because they were not progressive in nature, *i.e.*, did not lead linearly from a given situation to a specific end (Hovers 1997). Viewed from this perspective, the Middle Paleolithic should not be regarded as a period of cultural stasis. Conversely, the processes of change in the course of this time span were the background for the crystallization of Upper Paleolithic modern behavior (*e.g.*, Gilman 1984). The spread and persistence of modern behavior is a tale of historical contingency rather than a gradual evolutionary culture change or an Upper Paleolithic innovation *sensu stricto*.

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