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Comparative Study of the Emergence and Evolution of Symbolic Behavior during the Middle Paleolithic Period, A Review

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Abstract

Symbols are signs interpreted through shared conventions, while symbolic behaviors denote their organized use to produce common social meanings or maintain collective identities. The origins of such behaviors extend to the African Middle Stone Age. Evidence includes ochre engravings, mortuary practices indicating awareness of death, the production of complex artifacts lacking clear utilitarian function, figurines, and personal ornaments such as shells and perforated animal teeth. These behaviors developed progressively in complexity and distribution, becoming a defining component of the cultural record associated with modern humans from the Upper Paleolithic Period onward. Recent discoveries indicate that Neanderthals also engaged in symbolic practices, though to a lesser extent than modern humans. This study examines archaeological evidence for the earliest symbolic behaviors in the Middle Paleolithic/Stone Age using a documentary (library-based) method and a descriptive-analytical approach. Data are systematically evaluated and organized by chronological context, spatial distribution, and authorship, distinguishing between archaic Homo sapiens and Neanderthals. The analysis addresses temporal gaps, trajectories of increasing complexity, and regional or intercontinental variability in the emergence of symbolic behaviors. It also compares the development of such behaviors in both groups within an archaeological framework. Investigating the origins of symbolic behavior is essential for understanding hominin cognitive development and cultural evolution, offering insights into social organization, ritual practices, and belief systems. The findings suggest that prevailing models, which posit either a rapid "behavioral revolution" or a gradual accumulation of symbolic traits from the early Middle Stone Age, inadequately explain the evolution and expansion of symbolic behaviors during the Upper Paleolithic/Late Stone Age. Instead, the "sawtooth" model of spatial-temporal discontinuities proposed by Scerri and Will provides a more robust framework for interpreting the emergence and variability of early symbolic behaviors.

Keywords: Symbolic Behavior, Archaeological Evidence, Middle Paleolithic Period, Middle Stone Age, Eurasia, Africa.

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Introduction

Symbols are signs that are comprehensible solely through social conventions or established rules, serving as physical or abstract manifestations of individual or collective beliefs. Symbolic behavior refers to the capacity of an individual or population to utilize a system of indexical symbols (Faules and Alexander, 1978: 5). Such behaviors fulfill functions including the generation, preservation, and validation of meanings shared within a society (Harris and Nelson, 2007; Jones, 1996), while also safeguarding social interactions. A key aspect of symbolic material culture—and indeed, the principal advantage of mediated symbolic behavior—lies in its ability to connect individuals or groups with others through the transmission of information (Wobst, 1977). Evidence of such behaviors, such as early engravings and personal ornaments, indicates their emergence during the Middle Paleolithic Period. The use of artifacts, including shell beads and engraved tools, could convey complex messages in the absence of the individual's physical presence. This capacity enabled human populations to establish communication with neighboring communities and more distant groups.

An examination of evidence pertaining to symbolic behavior indicates that such behaviors constituted an integral component of the complex social interactions and relationships of human populations at least as early as the Middle Paleolithic. To date, extensive research has been conducted regarding the emergence and transformation of symbolic behaviors. Scholars such as Francesco d'Errico (d'Errico et al., 2005, 2009), Christopher Henshilwood (Henshilwood et al., 2004, 2009, 2011), Marean (Marean et al., 2007), and McBrearty and Brooks (2000), alongside their colleagues, have been instrumental in investigating evidence associated with symbolic behavior, particularly during the Middle and Late Stone Ages. Evidence such as manufactured shell beads, incised objects, and the utilization of pigments in Africa serves as indicators of cognitive transformation and symbolism during these periods. These findings suggest that symbolic behavior emerged not as a sudden revolution, but rather through a gradual and cumulative process. Furthermore, evidence regarding the use of avian feathers and bones for symbolic purposes by Neanderthals (Finlayson et al., 2012; Morin and Laroulandie, 2012) implies that they did not differ significantly from Homo sapiens in cognitive capacity and indeed possessed symbolic and ritual behaviors.

This paper provides a comprehensive (but non-exhaustive) review of the earliest archaeological evidence associated with symbolic behavior

during the Middle Paleolithic/Middle Stone Age. This corpus of evidence encompasses mortuary practices and death awareness, the manufacture of complex artifacts, the utilization of personal ornaments, the application of ochre, cave art, early engravings, and indications of complex linguistic structures. Previously, it was posited that such behaviors were exclusive to anatomically modern humans and restricted to the Upper Paleolithic Period (Mellars and Stringer, 1989). However, research from the past three decades on Middle Stone Age and Middle Paleolithic sites in Africa and Eurasia indicates that the origins of these behaviors extend considerably further back in time. Both archaic Homo sapiens and Neanderthals exhibited symbolic behaviors, albeit to a lesser degree than Homo sapiens sapiens. The evidence suggests that prior to the Upper Paleolithic, symbolic behaviors appeared sporadically (Scerri and Will, 2023) before becoming systematically established during the later period. Archaeological data imply that although the expression of these behaviors among Neanderthals may have been characterized by reduced complexity, intensity, and diversity compared to Homo sapiens, certain practices—such as the use of personal ornaments, complex bone tool technologies, death awareness and deliberate burial, and the production of seemingly non-optimal lithic tools—were shared by both groups.

This study aims to first examine the cultural evidence and potential indicators of symbolic behavior within Middle Paleolithic and Middle Stone Age contexts across Eurasia and Africa. Subsequently, this evidence will be categorized according to its content and the nature of cultural materials. Finally, the paper will address the attribution of the discussed evidence to either Homo sapiens or Neanderthal populations.

Complex and Modern Behavior in Archaeology

A central issue in paleoanthropology and archaeology concerns the behavioral transformation of the genus Homo and the emergence of behaviors generally categorized as modern or complex. Symbolic behavior is regarded as a subset of modern behavior. Modern and complex behavior is characterized by innovative and creative culture, language, art, religious beliefs, and complex technologies (d'Errico and Stringer, 2011), and is identifiable through the following attributes (McBrearty and Brooks, 2000):

1. Abstract thinking: The capacity to act upon abstract concepts without temporal or spatial constraints.

2. Precise and profound planning: The ability to formulate strategies based on prior experiences and execute them within a collective framework.

3. Technological, behavioral, and economic innovations.

4. Symbolic behavior: The ability to represent objects, individuals, and abstract concepts through conventional symbols—whether auditory or visual—and to materialize these symbols within cultural practice.

Furthermore, modern behavior encompasses additional components such as the capacity for complex problem-solving and long-term planning (Wynn and Coolidge, 2011). Archaeological artifacts produced through the anticipation of future actions, the forecasting of potential difficulties, and the consideration of responses to contingencies provide evidence of cognitive abilities associated with modern planning (Wadley, 2010).

Research by Wadley and other archaeologists posits that symbolism and the external (contra inside brain) storage of symbolic information—specifically within material culture—mark cultural modernity. These symbols include art, personal adornment, diverse blade production strategies, and the systematic use of space (Wadley, 2001). Some researchers argue that this evidence of "external information storage" indicates that the genus Homo was behaviorally modern as early as the Middle Pleistocene (see e.g.: Bednarik, 1992; 1995; 2003; Wurz, 1999; Foley and Lahr, 1997). However, other scholars contend that such evidence is insufficient in isolation, arguing that the repetition of symbols across time and space is required to confirm the establishment of modern behavior (e.g., Brumm and Moore, 2005; Davidson, 2002).

Consequently, various models have been proposed to interpret the emergence of symbolism and modern behaviors. Despite the aforementioned discourse, classic models remain prevalent. For instance, the "short-range" model posits that Upper Paleolithic symbolism and art appeared suddenly and extensively during a "symbolic explosion" between approximately 40,000 and 50,000 years ago (e.g., Mellars 1998; Klein and Edgar, 2002; Mellars and Stringer, 1989; Knight et al., 1995; Brumm and Moore, 2005). During this period, beads, personal ornaments, paintings, and naturalistic engravings (parietal art) became associated with abstract and social meanings, signifying a major transformation in human creativity (Ambrose, 1998; Klein and Edgar, 2002). Thus, within classic frameworks, the symbolic revolution represents a watershed moment in the history of Homo sapiens, during which artifacts imbued with symbolic meanings and social values came into widespread use. This transformation was accompanied by the advent of new technologies and a diversification of regional styles; for the first time in prehistory, tools were manufactured not solely for utilitarian purposes but also acquired distinct cultural and social significance (Mithen 1996; Dickson and Gang 2002; Brumm and Moore 2005).

Symbolism and Symbolic Behavior during the Paleolithic Period

Tracing the emergence of symbolism in the human lineage is an arduous endeavor due to the multifaceted nature of symbols, the paucity of direct evidence of symbolism from the Middle Paleolithic, and the ambiguity surrounding inferential evidence associated with artifacts that may imply symbolic intent. Over the past three decades, archaeological findings related to the African Middle Stone Age (MSA) have fundamentally transformed our understanding of the chronology regarding the advent of symbolic culture. Until the early 1990s, the prevailing perspective on the "human revolution" was markedly Eurocentric, focusing on the Upper Paleolithic revolution as humanity's "great leap forward". Twenty-first-century discoveries from Africa have effectively doubled the temporal depth of confirmed and accepted evidence for symbolic activities. This development has given rise to four dominant perspectives concerning the timeline of the emergence of symbolic culture (Knight, 2010):

1. Francesco d'Errico: Posits a multifaceted transformation across Africa and Eurasia. Scattered symbolic behaviors existed among the ancestors of both classic Neanderthals and Homo sapiens (D'Errico, 2003).

2. Sally McBrearty and Alison Brooks: Argue that the ancestors of modern humans in Africa underwent gradual cognitive and behavioral evolution over a span of 300,000 years. Symbolism, as a component of this suite of modern behaviors, emerged flexibly and creatively within Africa (McBrearty and Brooks, 2000; McBrearty, 2007).

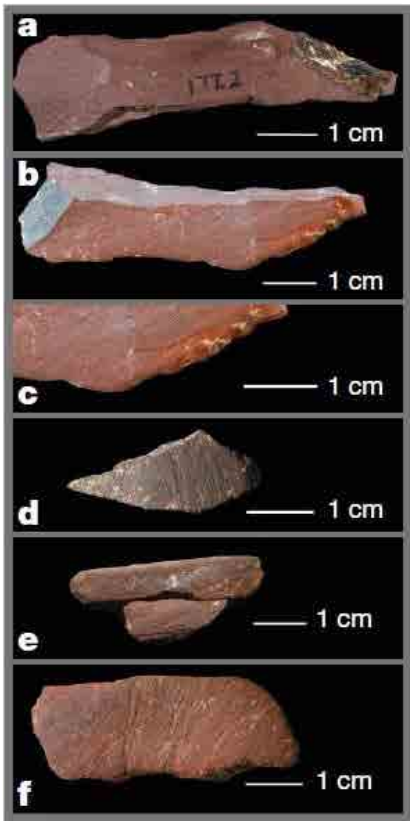
3. Christopher Henshilwood and Ian Watts: Suggest that the human revolution was integral to the speciation of Homo sapiens in Africa. Symbolism, manifesting through personal ornaments and adornments, played a fundamental role in organizing human life following the cognitive transformation in the Upper Paleolithic (Henshilwood and Dubreuil, 2009; Watts, 2009).

4. Richard Klein: Contends that recent interpretations of evidence from the African Middle Stone Age are erroneous. Although MSA hominins were anatomically modern, cognitive transformation did not occur until the Later Stone Age. Symbolic culture emerged approximately 50,000 years ago, resulting from a genetic mutation that induced permanent changes in the brain (Klein and Edgar, 2002).

Currently, the oldest convincing evidence of symbolism has been recovered from Africa and consists of engraved pieces of ochre (Henshilwood et al., 2002). Perforated marine shell beads have also been documented in assemblages associated with these pieces (Henshilwood et

al., 2004; d'Errico et al., 2005). These remains, dating to approximately 70,000 years ago, were discovered in Middle Stone Age layers at Blombos Cave in South Africa (Fig. 5). Other evidence related to symbolic behavior, dating to an even older period, has been obtained from a South African coastal site known as Pinnacle Point, which contains remains of mollusks, blades, and red ochre pigments dating back at least 164,000 years (Fig. 1) (Marean et al., 2007). The oldest evidence for the historical use of ochre pigments dates to approximately 300,000–250,000 years ago and is associated with tropical East Africa in Kenya; however, regular and habitual use is attributed to Homo sapiens (Watts 1999: 2009).

According to Henshilwood and Dubreuil (2009), evidence interpreted as personal ornamentation (such as perforated shells) demonstrates the capacity of Middle Stone Age hominins to communicate symbolically. In their view, this indicates that human populations placed importance on their own appearance and were cognizant of how they were perceived by others. The ability to consider the perspectives of others (multiple perspectives) is regarded as a modern capability and constitutes the foundation of all symbolic communication, including language. Consequently, Henshilwood and colleagues concluded that the producers of the pigments and ornaments at Blombos Cave possessed the cognitive prerequisites for language (Knight, 2010).



▲ **Fig. 1. Ground and abraded surfaces of ochre pieces from Pinnacle Point Cave. a: Abraded surface. b: Ground surface. c: Close-up view of the ground surface. d: Ground piece of hematite. e: Two pieces of ground siltstone adhering to one another. f: Heavily ground piece of siltstone (Marean et al., 2007).**

A Typology of Symbolic Behavior from an Archaeological Perspective[1]

A. Behaviors Associated with the Dead

Mortuary practices and other unique behaviors regarding the deceased are a fixed characteristic of symbolic life in contemporary human societies. The belief that Neanderthals intentionally buried their dead has been a primary factor influencing perceptions of their humanity and, for some scholars, has warranted their inclusion within the genus Homo (McBrearty and Brooks, 2000). Despite ambiguities regarding taphonomic processes and nineteenth-century excavation methodologies, there is a consensus that most relatively complete Neanderthal skeletons were deliberately interred (e.g., Gargett, 1989; Defleur, 1993; Mellars, 1996). For modern human societies, burial signifies respect for the deceased as well as symbolic and ritualistic thought. Although Neanderthals intentionally buried their dead, it cannot be definitively ascertained whether this act was ritualistic in nature or purely utilitarian for sanitary purposes. Furthermore, the absence of grave goods—considered evidence of symbolic behavior—in Neanderthal burials is noteworthy (McBrearty and Brooks, 2000).

The oldest evidence of burial among Homo sapiens was discovered in the Levant at Qafzeh Cave (Bar-Yosef et al., 1986). These burials date to between 90,000 and 120,000 years ago (Schwarcz et al., 1988; Valladas et al., 1988; Bar-Yosef, 1998), and at least one of these interments, specimen number 11, is associated with grave goods (Bar-Yosef & Vandermeersch, 1993). Burials attributed to Neanderthals in Europe date back to 75,000 years ago (Mellars, 1986; 1996), and it is widely accepted that Neanderthals adopted the practice of burying the dead from their modern neighbors in the Near East, whose burials date back to at least 90,000 years ago (McBrearty and Brooks, 2000). In Africa, evidence of deliberate burial by early Homo sapiens has been found, although such findings have been subject to debate. Examples such as Border Cave in South Africa, dating to between 90,000 and 100,000 years ago (Beaumont et al., 1978), and Panga ya Saidi Cave in Kenya, dating back 78,000 years (Martinón-Torres et al., 2021), provide the oldest evidence of Homo sapiens burials in Africa. It is notable that grave goods were also recovered from Border Cave (McBrearty and Brooks, 2000). Recently, claims regarding intentional burial among Homo naledi in South Africa have also been advanced (Berger et al., 2023), a hypothesis that has garnered both support and opposition (see, e.g., Martinón-Torres et al., 2024).

B. Beads and Personal Ornaments

Artifacts imbued with symbolic meaning have long been recognized as a hallmark of modern human behavior. Nevertheless, such behaviors are rarely observed in European Middle Paleolithic contexts. Nearly all these rare instances derive from controversial stratigraphic contexts or excavations lacking adequate supervision (e.g., the sites of La Quina and La Ferrassie in France) or are associated with final Middle Paleolithic layers. Even in the latter case, they predate the arrival of Homo sapiens in Europe (d'Errico et al., 1998; Zilhão and d'Errico, 1998). Hublin and Colleagues (1996) posit that although the manufacturing techniques for perforated dental ornaments during the late Middle Paleolithic differ from those of the early Upper Paleolithic, it appears that Neanderthals acquired concepts related to adornment through the exchange of ideas or imitation of neighboring Homo sapiens populations (McBrearty and Brooks, 2000).

Until a few decades ago, it was assumed that decorative elements were absent from the material culture of African Middle Stone Age (MSA) sites; however, it is now established that the African tradition of body ornamentation extends back tens of thousands of years prior to that

of European inhabitants. Beads and personal ornaments recovered from sites such as Hearth Cave, Boomplaas Cave, and various rockshelters in southern and East Africa date to between 30,000 and 52,000 years ago (Mason et al., 1988; Deacon, 1995; Plug, 1982; Cooke, 1971; Mehlman, 1979). These findings indicate that the working of ornaments in Africa has considerable antiquity and is linked to African MSA technology. Furthermore, perforated and engraved objects, such as bones and ochre pieces, have been discovered at sites like Blombos Cave and Apollo 11 Cave, dating back 73,000 to 83,000 years (Henshilwood and Sealey, 1997; McBrearty and Brooks, 2000).

C. The Use of Pigments

While the systematic use of pigments is a defining characteristic of the European Upper Paleolithic (White, 1982), evidence of pigment utilization has been recovered from the Middle Paleolithic and the African Middle Stone Age. Organic compounds can function as pigments; however, those most frequently encountered in the archaeological record are metal oxides. Although carbon in the form of graphite, charcoal, manganese, and kaolin was utilized in prehistory, most pigments found in archaeological contexts are iron oxides. These occur as red hematite (Fe_2O_3) or yellow limonite [$FeO(OH)\ nH_2O$] (Clottes, 1993; McBrearty and Brooks, 2000).

Pigments composed of iron and manganese oxides have been found at approximately twelve Middle Paleolithic sites in Europe (Marshack, 1981; Mellars, 1996). Mellars argues that these pigments were employed for personal use (Mellars, 1996); however, it is equally plausible to infer that pigments served as coloring agents, supporting the notion of symbolic or imaginative life among late Neanderthals. Given that the prevalence of pigment use occurred earlier in the Near East than in Europe (at Qafzeh Cave in the Levant circa 92,000 years ago: Bar-Yosef Mayer et al., 2009), Hublin has proposed that this practice, like burial, may have been acquired by Neanderthals through long-distance cultural transmission (Hublin, 1990; 1998; McBrearty and Brooks, 2000).

In Africa, granite slabs bearing ochre residues have been discovered in Late MSA layers at Nswatugi Cave in Zimbabwe (Cooke, 1971; Larsson, 1996). Additionally, Wendt and Vogelsang report that engraved slabs from Apollo 11 Cave in Namibia are classified within the African MSA horizon, situated above a layer containing artifacts resembling the Howiesons Poort tradition (Wendt, 1975; 1976; Vogelsang, 1996; 1998). These painted slabs date back approximately 59,000 years (McBrearty and Brooks, 2000).

D. Subsistence Economy and Symbolism: The Acquisition and Processing of Pigments

Numerous initial reports regarding MSA sites in southern and East Africa mention grinding stones and ochre; however, these finds have often been overlooked due to the uncontrolled nature of early excavations and the potential for mixing with Later Stone Age (LSA) remains. Undoubtedly, many of these grinding stones were utilized for the processing of plant foods. Nevertheless, evidence concerning the collection, processing, and extensive, controlled, systematic use of pigments in the African MSA is accumulating. Although limited archaeological or biological evidence supports a unique sociobiological interpretation, Knight and colleagues correctly emphasize the significance of pigments in understanding human behavior during the African MSA (Knight et al., 1995; McBrearty and Brooks, 2000: 74).

Large-scale hematite extraction during the African MSA has been reported at Lion Cave in Eswatini (formerly Swaziland); Beaumont reports that at least 1,200 tons of prehistoric pigment were mined from the cliff face (Boshier and Beaumont, 1972; Beaumont and Boshier, 1974). These pigments were used for various purposes, including body decoration, rock art, and rituals. Evidence for the storage and use of ochre has been reported at Klasies River on the southern coast of South Africa, dating back more than 100,000 years (Singer and Wymer, 1982; McBrearty and Brooks, 2000: 76).

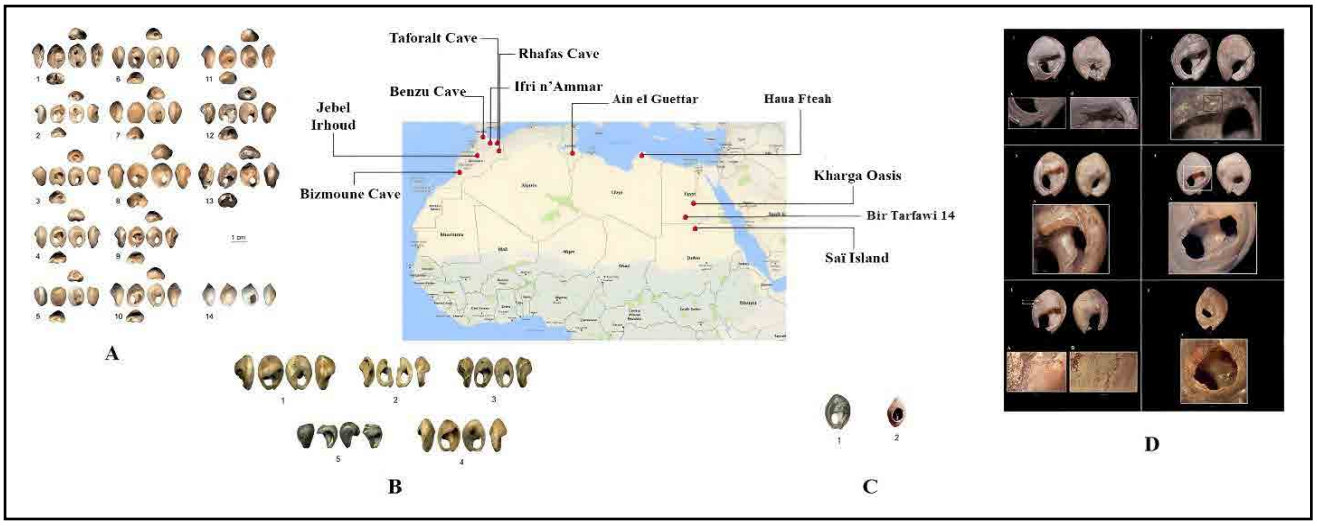
At certain East African sites, such as GnJh-15 in Kenya, evidence of pigment use has been found in contexts dating between 240,000 and 280,000 years ago. This evidence includes friable hematite pieces and grinding stones stained with pigment. Excavations at this site demonstrate that early humans utilized hematite extensively (McBrearty et al., 1996; McBrearty, 1999). Similarly, in Zambia, evidence of ochre and limonite use dating back 230,000 years has been recovered from MSA contexts (Barham, 1998). These findings indicate a widespread culture of pigment use in Africa, employed as part of the cultural and symbolic traditions of early humans (McBrearty and Brooks, 2000: 76).

Regional Examination of the Evidence

A. The Middle Stone Age in Northern Africa

North Africa constitutes a region extending from the northern expanse of the Sahara Desert to the Mediterranean Sea. Modern nations within this region include Egypt, Libya, Tunisia, Algeria, Morocco, Sudan, Niger,

and Western Sahara (Brett et al., 2016). The North African Middle Stone Age (approximately 300,000 to 24,000 years ago) yields archaeological remains that likely encompass some of the oldest Homo sapiens fossils, as well as very early regional manifestations of "symbolic" material culture and technology. This evidence includes perforated shells, ostrich eggshell fragments, ochre residues, and grinding stones (Table 1 & Fig. 2) (d'Errico et al., 2009; Scerri, 2013a; Richter et al., 2017). To date, no continuous stratigraphic sequence has been discovered that encompasses the full chronological span of the North African Middle Stone Age from Marine Isotope Stage (MIS) 8 (circa 300,000 to 245,000 years ago) to MIS 3 (approximately 57,000 to 30,000 years ago). Consequently, the archaeological prehistory of North Africa is constructed from a combination of dated sites and widely dispersed sites lacking absolute chronometric dates (Scerri, 2017: 119).



▲ **Fig. 2. Map of the most significant Paleolithic sites in the northern half of the African continent, and images of symbolic(?) artifacts recovered from them. A: Nassarius shells from Taforalt Cave. B: Marine shells from Rhafas Cave. C: Marine shells from Ifri n'Ammar Cave. D: Shell beads from Bizmoune Cave, along with ochre residues (Bouzouggar et al., 2007; d'Errico et al., 2009; Sehasseh et al., 2021).**

B. The Middle Stone Age in Sub-Saharan Africa

Sub-Saharan Africa, as the nomenclature implies, denotes the region of the African continent situated south of the Sahara Desert, geographically delimited by the southern margins of the desert (Collins and Burns, 2007). Analysis of the archaeological evidence indicates that by at least 100,000 years ago, the cognition and perception of Archaic Homo sapiens populations in southern Africa had become increasingly complex and, in certain respects, analogous to that of modern humans, employing high levels of technological behavior (Fig. 3) (Henshilwood 2012; Lombard 2012; Lombard and Högberg 2021).

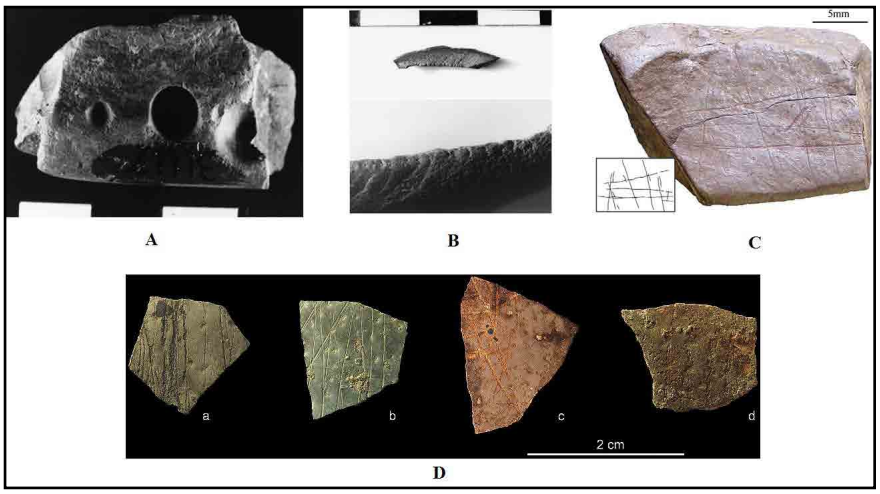
Early instances of symbolic behavior, comprising abstract designs and engravings on bone and ochre, date to approximately 100,000 years ago

Table 1. The MSA archaeological sites in North Africa associated with symbolic finds (Authors, 2024). ▼

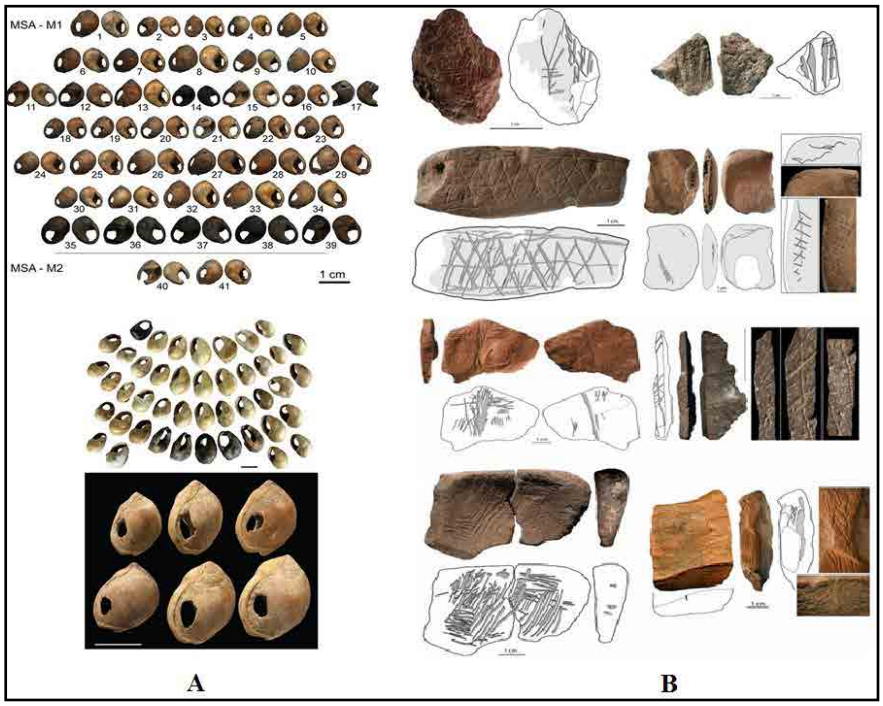
Archaeological Site	Country	Findings	Age (kyr BP)	Reference
Jebel Irhoud	Morocco	Human remains, ostrich eggshell	300	(Richter *et al.*, 2017)
Benzu Cave	Morocco	Shells and lithic artifacts	250	(Ramos *et al.*, 2008)
Saï Island	Sudan	Grinding stones, red and yellow ochre fragments, and a limestone slab	223–182	(Van Peer *et al.*, 2003)
Taforalt Cave	Morocco	13 perforated *Nassarius* shells with evidence of pigments and wear, interpreted as personal ornaments	MIS 5	(Bouzouggar *et al.*, 2007)
Rhafas Cave	Morocco	5 *Nassarius* shells and pigment residues	MIS 5	(d'Errico *et al.*, 2009)
Ifri n'Ammar	Morocco	*Nassarius* shells and pigment residues	MIS 5	(d'Errico *et al.*, 2009)
Bizmoune Cave	Morocco	33 *Tritia gibbosula* shell beads and ochre residues	>142	(Sehasseh *et al.*, 2021)
El Mnasra Cave	Morocco	234 *Tritia gibbosula* shells	112–107	(El Hajraoui *et al.*, 2012)

▲ Fig. 3. Map of the most significant sites in southern Africa yielding symbolic finds (McBrearty & Brooks 2000; Henshilwood et al., 2001, 2002, 2004; d'Errico et al., 2005, 2008; Lombard 2012).

and have been recovered in South Africa (Fig. 4) (Henshilwood et al., 2009; Henshilwood and Dubreuil, 2012: 132). It is now established that the oldest securely dated evidence of beads derives from sub-Saharan Africa, specifically from Blombos Cave in South Africa (Fig. 5) (d'Errico et al., 2005; Henshilwood et al., 2004; Wilkins, 2010: 110). Furthermore, ancient evidence of deliberate burial has been reported at Panga ya Saidi Cave in Kenya and the Rising Star Cave System in South Africa, dating to between 236,000 and 335,000 years ago (see opposing view in Martinón-Torres et al., 2024) and associated with Homo naledi (Fig. 6 and Table 2) (Dirks et al., 2017; Berger et al., 2023; Martinón-Torres et al., 2021).



◄ **Fig. 4. Examples of engraved pieces recovered from sites in South Africa. A: Engraved ochre from Klasies River. B: Engraved ochre from Hollow Rockshelter. C: Engraved ochre piece from Klein Kliphuis. D: Oldest engraved ostrich eggshell fragments discovered at Diepkloof Rockshelter (McBrearty and Brooks 2000; Mackay & Welz 2008; Texier et al., 2013).**



◄ **Fig. 5. Symbolic artifacts recovered from Blombos Cave. A: Perforated beads of Nassarius kraussianus shells. B: Engraved pieces of ochre (Henshilwood et al., 2004; Henshilwood et al., 2009; d'Errico et al., 2005).**

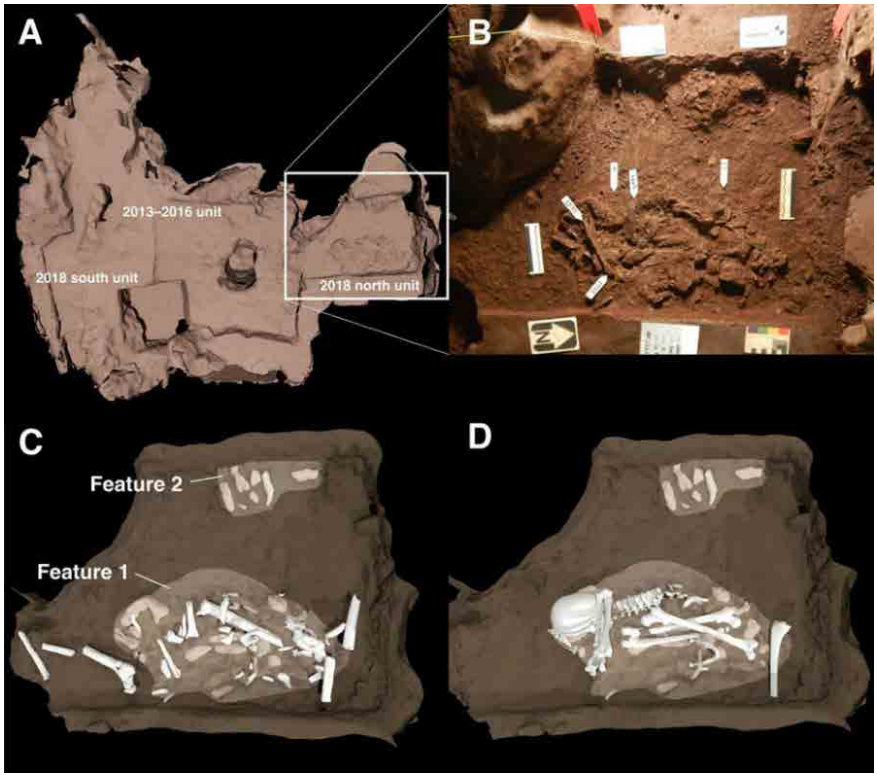


Fig. 6. Alleged deliberate burial in the Rising Star Cave system of Homo naledi. A. Three-dimensional map of the claimed burial section; B. Image of Homo naledi skeletal remains; C and D. Digital reconstruction of Homo naledi skeletal remains in the probable grave, including a child and an adult (Berger et al., 2023). ▶

Table 2. Archaeological sites associated with symbolic finds in Sub-Saharan Africa (Authors, 2024). ▼

Archaeological Site	Region	Findings	Age (kyr BP)	Source
Blombos Cave	South Africa	41 perforated *Nassarius kraussianus* shells; engraved bone and ochre pieces	75–70	(Henshilwood *et al.*, 2001, 2002, 2004; d'Errico *et al.*, 2005)
Sibudu Cave	South Africa	Perforated *Afrolittorina africana* shells; ochre residues on the edges of lithic artifacts	71	(d'Errico *et al.*, 2008; Lombard 2006, 2012)
Border Cave	South Africa	Perforated Conus shell; engraved bone	76, 44–42	(d'Errico *et al.*, 2008, 2012b, 2018; Lombard 2012)
Enkapune Ya Muto	Kenya	13 ostrich eggshell (OES) beads	40	(Ambrose 1998; Henshilwood *et al.*, 2004)
Panga ya Saidi	Kenya	Deliberate burial; shell beads; OES bead	78, 67–63	(Shipton *et al.*, 2018; Martinón-Torres *et al.*, 2021)
Boomplaas Cave	South Africa	Beads made from ostrich eggshell	42	(Deacon 1995)
Zombepata Cave	Zimbabwe	Stone ring made from micaceous schist	40.72	(Cooke 1971)
Bushman Rock Shelter	South Africa	Beads made from ostrich eggshell	MSA	(Plug 1982)
Hearths Cave	South Africa	Beads made from ostrich eggshell	MSA	(Mason 1993; Mason *et al.*, 1988)

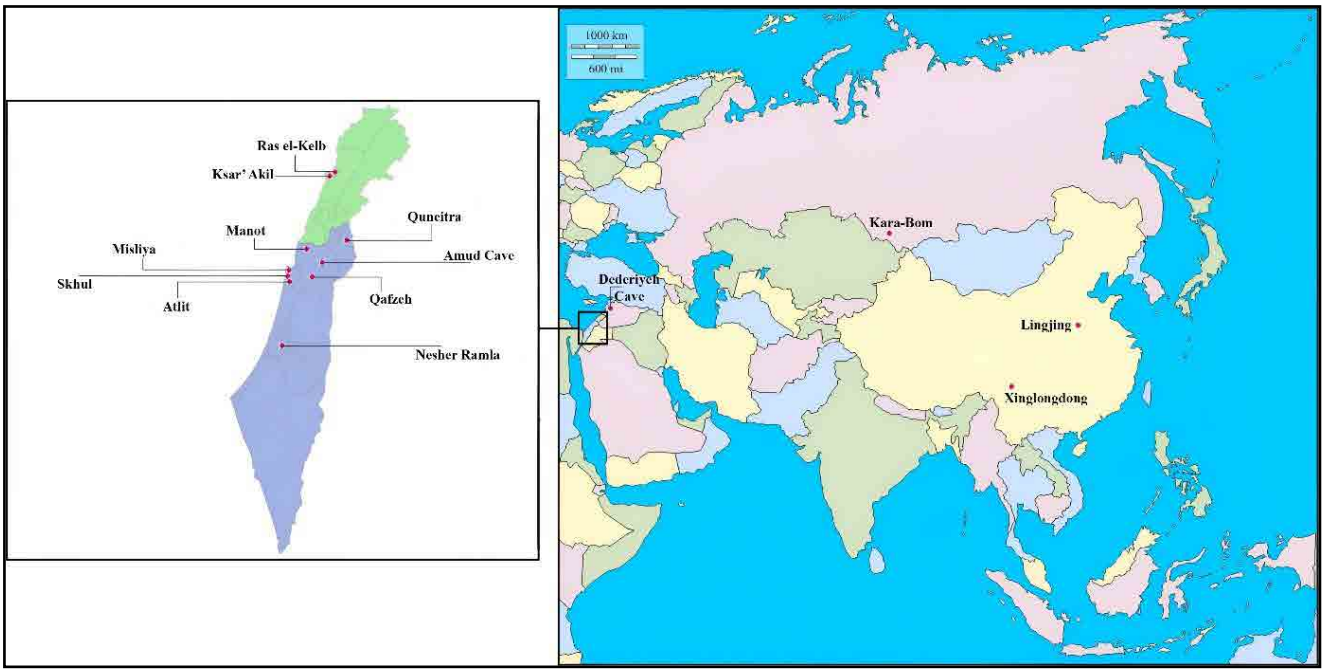
Loiyangalani Site	Tanzania	2 ostrich eggshell beads	MSA	(Thompson *et al.*, 2004)
Klasies River	South Africa	Engraved ochre plaques and two perforated bones	100–85	(Singer and Wymer 1982; d'Errico *et al.*, 2012a)
Apollo 11 Cave	Namibia	Perforated bone and ostrich eggshell fragments	83	(McBrearty and Brooks 2000)
Hollow Rock Shelter	South Africa	Perforated and engraved ochre pieces	MSA	(McBrearty and Brooks 2000)
Diepkloof Rock Shelter	South Africa	Decorated ostrich eggshell fragments	105	(Parkington *et al.*, 2005; Wilkins *et al.*, 2021)
Klein Kliphuis	South Africa	Engraved ochre	80–50	(Mackay and Welz 2008)
Rising Star Cave System	South Africa	Deliberate burial of Homo naledi	335–236	(Dirks *et al.*, 2017; Berger *et al.*, 2023)
Kapthurin Formation	Kenya	Hematite fragments, ochre, and pigment-stained grinding stones	>240	(McBrearty *et al.*, 1996)
Twin Rivers	Zambia	Three pieces of ochre	230	(Barham 2000; Wilkins 2010)
Pinnacle Point	South Africa	57 pieces of pigment	160	(Marean *et al.*, 2007)

C. The Middle Paleolithic in Eurasia

C-1. Asia

The boundary between Asia and Europe is merely a political, historical, and cultural construct; the division of Eurasia into two continents holds little significance, at least within the disciplines of paleoanthropology and prehistoric archaeology. Nevertheless, for the purposes of this study, these two continents are examined in separate sections.

Most Asian Middle Paleolithic sites yielding symbolic artifacts are located in the Levant (Fig. 7 and Table 3). Notable examples include Qafzeh and Skhul caves, from which grave goods and pigment fragments have been recovered (Figs. 8 and 9). The substantial quantity of faunal grave goods in the aforementioned caves led Bernard Vandermeersch to posit the existence of hunting specifically intended for mortuary rites (Vandermeersch, 1970). Engraved bone and stone artifacts constitute further evidence recovered from Asian Middle Paleolithic sites (Fig. 10). For instance, two engraved bones were discovered at Lingjing in Henan Province, China. Analysis of these bones revealed the presence of ochre within the incised lines of one specimen (Fig. 11). These findings provide the earliest evidence of the deliberate use of ochre-infused engravings for symbolic purposes by Late Pleistocene humans in East Asia (Li et al., 2019: 886).



▲ Fig. 7. Map of the most significant Paleolithic sites on the Asian continent containing symbolic artifacts (Bar-Yosef Mayer et al., 2009, 2020; Vandermeersch 1970, 2006; d'Errico et al., 2010; Ronen 2012).

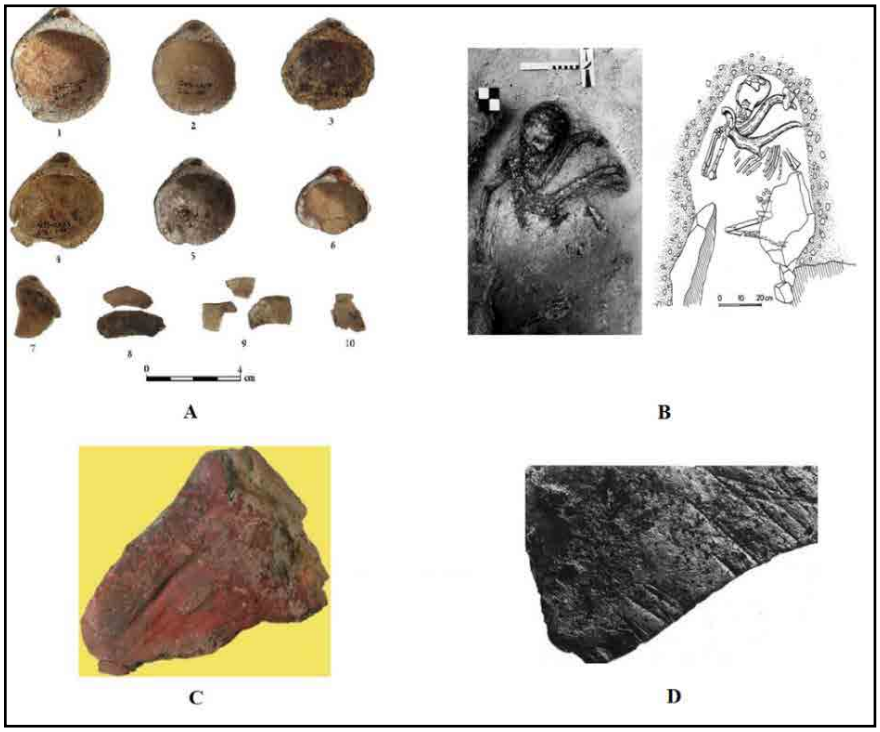
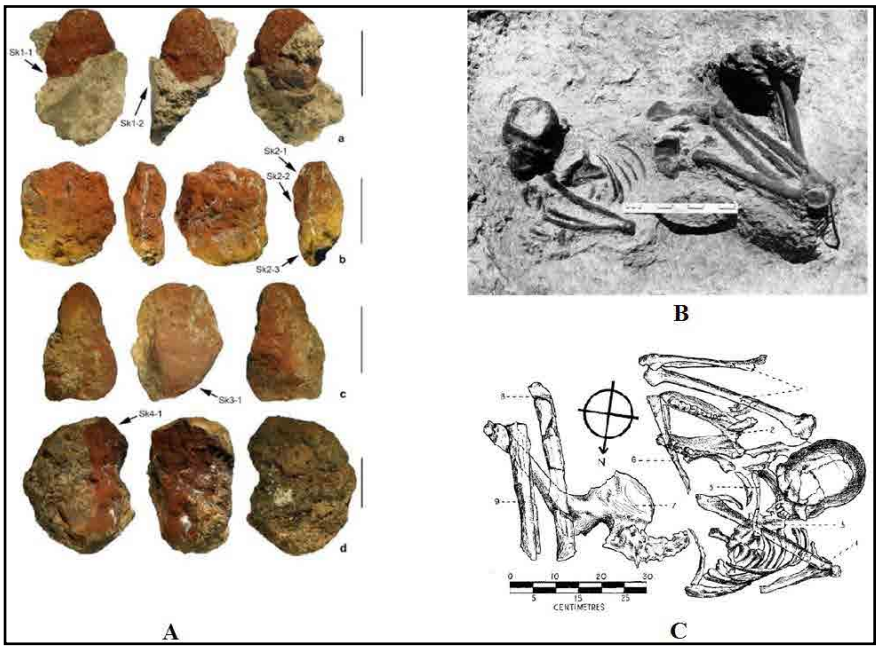


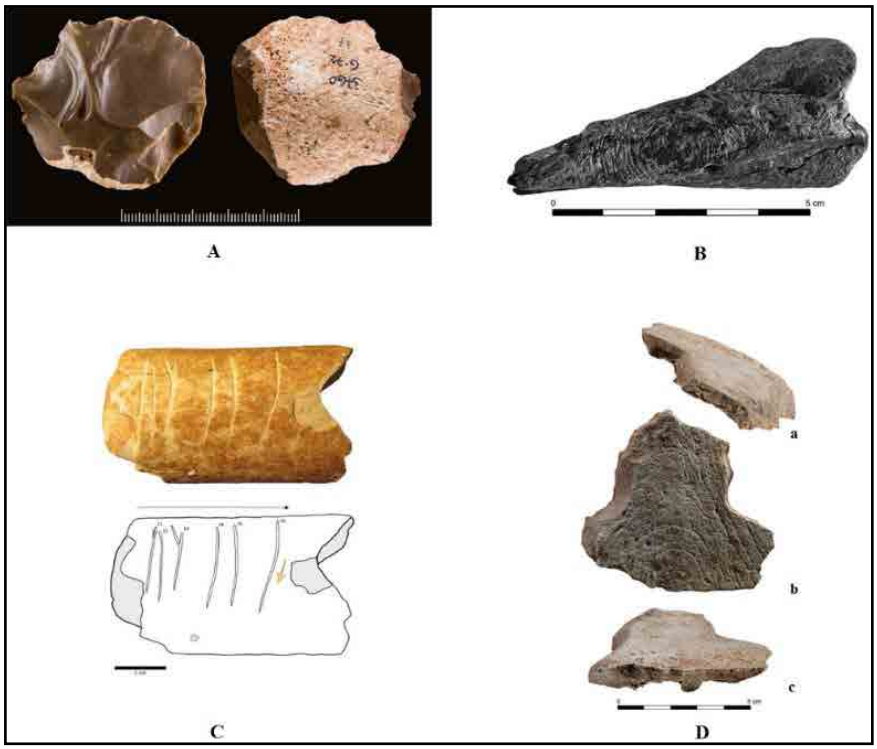
Fig. 8. Symbolic artifacts recovered from Qafzeh Cave. A: Glycymeris shells. B: Image and schematic of Qafzeh 11 burial, showing deer antlers. C: Engraved ochre from Qafzeh 8 burial. D: Engraved stone from Qafzeh 8 burial (Bar-Yosef Mayer et al., 2009; Vandermeersch & Bar-Yosef 2019; Wong 2005; Ronen 2012). ▶

C-2. Europe

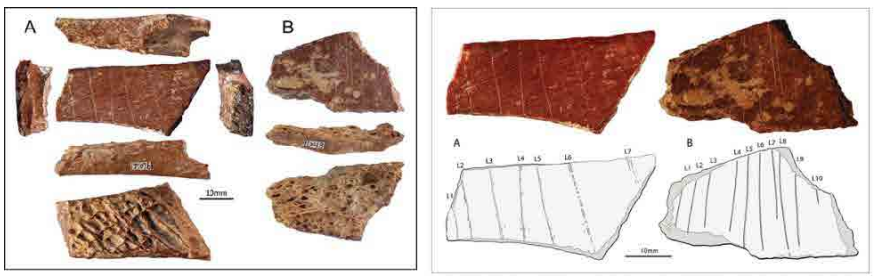
Symbolic evidence has been recovered from numerous Middle Paleolithic sites in Europe (Fig. 12 and Table 4); prominent among these are pigment remains, which appear to have been utilized for body painting, rock art, various rituals, and potentially for medical purposes as well as hide preservation (Fig. 13) (Conard, 2005: 310; Burdukiewicz, 2014: 403).



◄ **Fig. 9. Burials and symbolic artifacts found at Skhul Cave. A: Pigment fragments from Mousterian layers with the locations of analyzed samples indicated. B: Human burial. C: Skhul 5 burial, showing the mandible of a wild boar (Ronen 2012; d'Errico et al., 2010).**



◄ **Fig. 10. Engraved pieces recovered from Levantine sites. A: Manot limestone slab with possible engravings. B: Engraved bone from Quneitra. C: Engraved bones from the open-air site of Nesher Ramla, accompanied by a schematic drawing. D: Engraved stone plaque from Quneitra. a: Close-up of the distal end showing damage marks. b: Engraved stone. c: Close-up of the proximal end showing protrusions (Marder et al., 2018; Shaham et al., 2019; Prévost et al., 2021).**



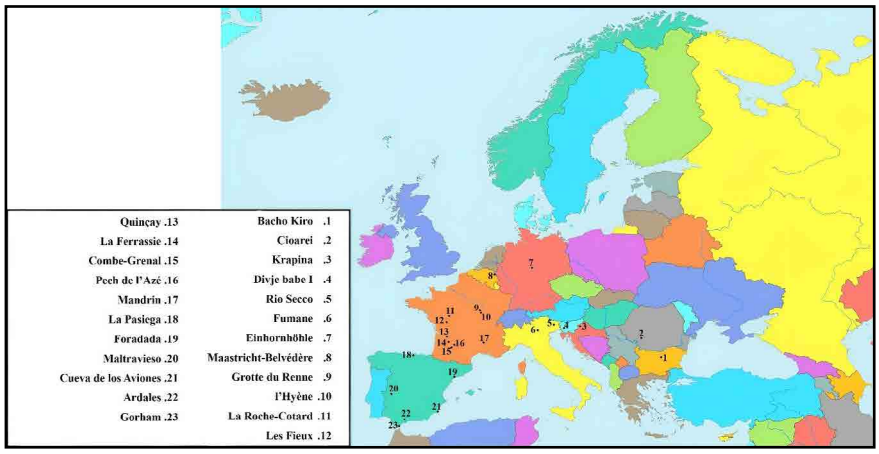
◄ **Fig. 11. Images of two engraved bone specimens from the Lingjing site. In the right image, section A, the red dots indicate the locations of ochre residues. B: The second specimen of engraved bone (Li et al., 2019).**

Table 3. Middle Paleolithic sites in the Asian continent with evidence indicative of symbolic behavior (Authors, 2024). ▼

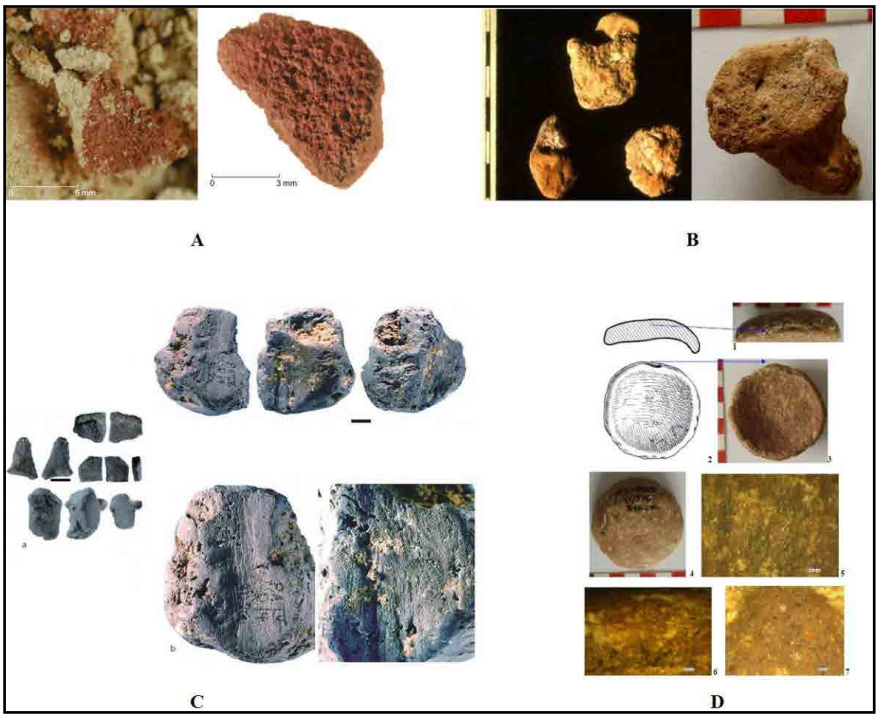
Archaeological Site	Region	Findings	Age (kyr BP)	Reference
Qafzeh Cave	Levant	Ten perforated *Glycymeris* shells with ochre residues; 85 pieces of red ochre; grave goods including a pair of deer antlers and an engraved stone with 27 incisions	90, 130–100	(Bar-Yosef Mayer *et al.*, 2009, 2020; Hovers *et al.*, 2003; Vandermeersch 1970, 2006; Ronen 2012)
Misliya Cave	Levant	11 unperforated shells, displaced by humans	240–160	(Bar-Yosef Mayer *et al.*, 2020)
Skhul Cave	Levant	Perforated *Nassarius gibbosulus* shells; pigment fragments; grave goods including a wild boar mandible, bovine skull, and a flint scraper	130–100	(Vanhaeren *et al.*, 2006; d'Errico *et al.*, 2010; McCown 1937; Garrod 1957)
Atlit Site	Levant	(Perforated?) *Glycimeris* shells	120	(Ronen *et al.*, 2008)
Ksar'Akil Cave	Lebanon	Shell beads	43.75–32	(Mellars and Tixier 1989)
Kara-Bom	Russia	Perforated teeth	43	(Derevianko & Rybin 2003)
Manot Cave	Levant	An engraved Levallois core	46–42	(Marder *et al.*, 2018)
Amud Cave	Levant	Grave goods including the mandible of a deer placed upon the pelvis of a Neanderthal infant	130–100	(Rak *et al.*, 1994)
Dederiyeh Cave	Syria	Grave goods including a flint flake and a rectangular limestone slab	70–50	(Akazawa *et al.*, 2002)
Nesher Ramla Open-Air Site	Levant	An engraved bone fragment	130–80	(Prévost *et al.*, 2021)
Quneitra Open-Air Site	Levant	Engraved bone and an engraved flint stone plaque	56–51	(Shaham *et al.*, 2019)
Ras el-Kelb	Lebanon	Engraved flint flake	52	(Moloney 1998)
Lingjing Site	China	Two engraved bones with evidence of ochre	125–105	(Li *et al.*, 2019)
Xinglongdong Cave	China	Engraved ivory	150–120	(Haynes 1991; Villa and d'Errico 2001; Norton and Jin 2009)

Other symbolic findings include avian remains. Evidence from European Middle Paleolithic sites, particularly in France and Italy, indicates the systematic use of raptor talons by Neanderthals (Fig. 14) (Morin and Laroulandie 2012: 3).

Another significant category of evidence related to symbolic behavior in the European Middle Paleolithic is parietal art. For instance, in Spain, a linear ladder-shaped motif in red has been recovered from La Pasiega Cave, a red hand stencil from Maltravieso Cave, and red-painted flowstone deposits from Ardales Cave (Fig. 15) (Hoffmann et al., 2018: 912–913). Additionally, eight engraved panels exhibiting intentional incisions have



◄ **Fig. 12. Map of the most significant Middle Paleolithic sites in the European continent from which symbolic evidence has been recovered (Soressi 2002; Soressi and d'Errico 2007; Zilhão et al., 2010a; Peresani et al., 2011, 2013; Hoffmann et al., 2018).**



◄ **Fig. 13. Pigment remains discovered from various sites in Europe. A: The largest hematite pieces discovered at the Maastricht-Belvédère site in the Netherlands. B: Several samples of natural ochre discovered at Cioarei Cave in Romania. C: Pigments from the Pech de l'Azé site in France. a: Pigments with worn surfaces; b: Pigment likely scraped with a flint tool. D: Container discovered at Cioarei Cave. 1: Section of the container; 2 and 3: Schematic drawing and photograph of the container with ochre residues; 4: Surface of the container; 5: Overlapping color layers; 6: Combination of black, red, and other shades; 7: Various colored pigments (scale for images 5–7: 250 µm) (Roebroeks et al., 2012; Soressi and d'Errico 2007; Cârciumaru et al., 2015).**

◄ **Fig. 14. Talons with cut marks recovered from Mousterian sites in France and Italy. The bones are sorted by size (Romandini et al., 2014).**

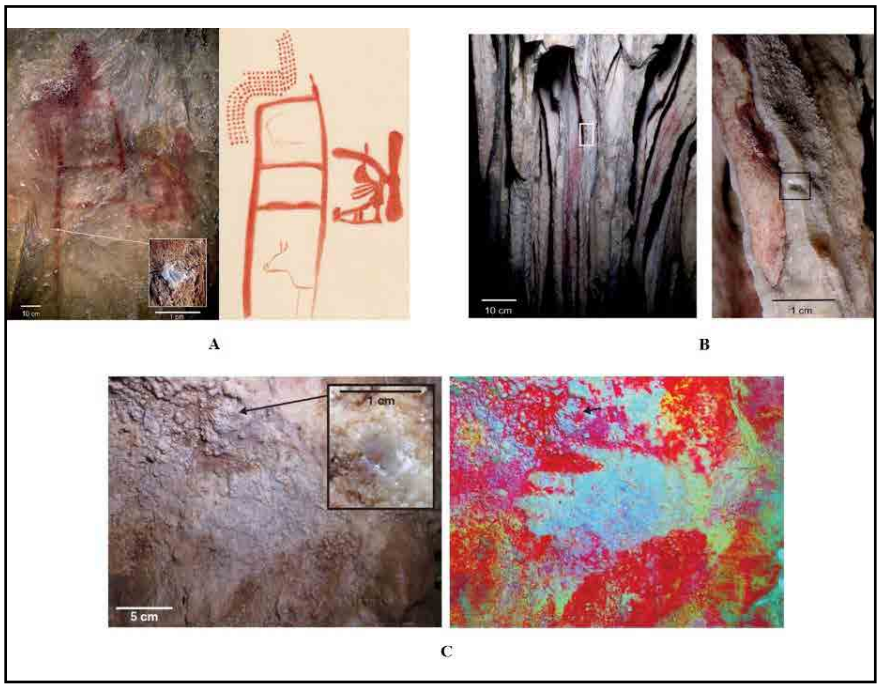


Fig. 15. Cave art discovered in Spain. A: La Pasiega Cave. A linear ladder-shaped motif with red dots, rectangular in form, with unfinished animal images. Left: Photograph of the motif. The enlarged image shows a section of the outer layer sampled and analyzed to determine the minimum age (64.8 ka). Right: Drawing of the motif by Henri Breuil. B: Laminar flowstone with red pigment in Ardales Cave. Left: An assemblage of carbonate sheets showing red pigment at the top; these areas are relatively covered by the growth of the flowstone. The white rectangle indicates the area shown on the right. Right: Detail of the flowstone. The black square indicates the sampling location of carbonate overlying the red pigment. C: Hand stencil in Maltravieso Cave. Left: Original image. The enlarged image shows the sampling location of carbonate for analysis and dating. Right: The same image after processing with DStretch software to enhance color contrast (Hoffmann et al., 2018). ▶

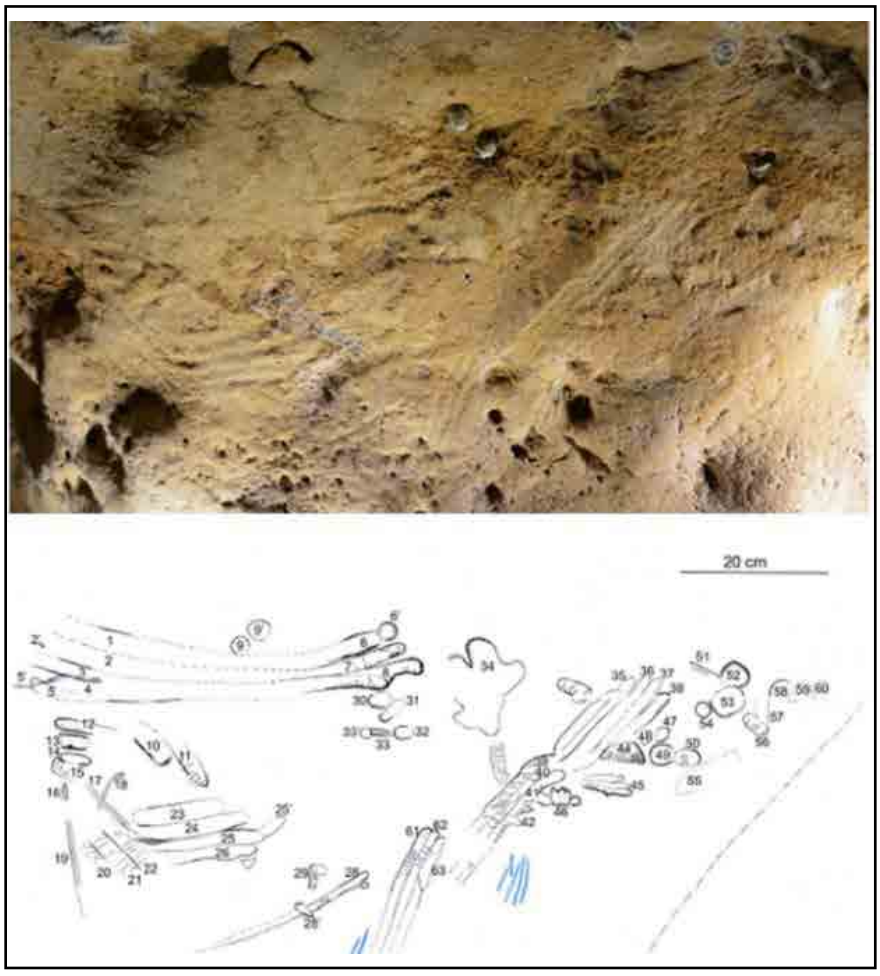


Fig. 16. An example of an engraved panel on the wall of La Roche-Cotard Cave and a schematic drawing of what appears to have been created on this wall (Marquet et al., 2023). ▶

Table 4. Middle Paleolithic sites in Europe with evidence indicative of symbolic behavior (Authors, 2024). ▼

Archaeological Site	Country	Findings	Age (kyr BP)	Reference
l'Hyène Cave	France	*Polypier* and gastropod shells	60	(Soressi 2002; Soressi and d'Errico 2007)
Maastricht-Belvédère	Netherlands	15 pieces of red hematite pigment	250–200	(Roebroeks *et al.*, 2012)
Pech de l'Azé	France	Over 500 pieces of pigment; one brachiopod shell; two golden eagle phalanges	60–43, 100	(Soressi 2002; Soressi *et al.*, 2007, 2008)
Cioarei Cave	Romania	Stalagmitic vessels for ochre preparation	51–45	(Cârciumaru *et al.*, 2015)
Fumane Cave	Italy	*Aspa marginata* shell with hematite residues; a large and diverse assemblage of raptor bones	47.6–45, 44	(Peresani *et al.*, 2011, 2013)
Cueva de los Aviones	Spain	Perforated large bivalve shells with traces of pigmentation; cosmetic container made from an unperforated shell cup; pigment lumps; bone tools with pigment residues	>115, 50–45	(Zilhão *et al.*, 2010a)
La Ferrassie	France	Grave goods including an engraved bone fragment and a limestone slab with cupule marks	75–60	(Peyrony 1934; Defleur 1993; Zilhão 2012)
Grotte du Renne	France	Personal ornaments; decorated bone tools; approximately 18 kg of pigment remains	41–36	(Zilhão 2006, 2007, 2011; Caron *et al.*, 2011)
Quinçay Rock Shelter	France	6 perforated teeth; personal ornaments	40	(Soressi and d'Errico 2007; Roussel and Soressi 2010)
Bacho Kiro	Bulgaria	Two perforated teeth; a spindle-shaped bone pendant	43	(Kozlowski 1982, 2000; d'Errico *et al.*, 2005)
Divje babe I Cave	Slovenia	Bear femur with unusual perforations, possibly a flute	50	(Turk *et al.*, 2018)
Einhornhöhle Cave	Germany	Engraved toe bone of a deer	51	(Leder *et al.*, 2021)
Krapina Cave	Croatia	Engraved Neanderthal cranium; a limestone slab with decorative use; eight talons and one engraved talon bone of white-tailed eagles	130	(Radovčić *et al.*, 2016; Frayer *et al.*, 2020)
Gorham's Cave	Gibraltar	Engraved limestone	39	(Rodríguez-Vidal *et al.*, 2014)
Rio Secco Cave	Italy	Engraved golden eagle phalanx	49.1–48	(Romandini *et al.*, 2014)
Mandrin Cave	France	Engraved golden eagle phalanx	50	(Romandini *et al.*, 2014)
Combe-Grenal	France	Engraved golden eagle phalanx	90	(Morin & Laroulandie 2012)
Les Fieux Cave	France	Two white-tailed eagle phalanges	60–40	(Morin & Laroulandie 2012)
Foradada Cave	Spain	Engraved phalanx of a large eagle	>39	(Rodríguez-Hidalgo *et al.*, 2019)
La Pasiega Cave	Spain	Cave art	64.8	(Hoffmann *et al.*, 2018)
Maltravieso Cave	Spain	Cave art	66.7	(Hoffmann *et al.*, 2018)
Ardales Cave	Spain	Cave art	65.5	(Hoffmann *et al.*, 2018)
La Roche-Cotard Cave	France	Cave art	57	(Marquet *et al.*, 2023)

been discovered at La Roche-Cotard Cave in France (Fig. 16) (Marquet et al., 2023).

Discussion

Researchers have long debated the factors that precipitated the formation of the suite of behaviors characteristic of Homo sapiens. This issue is inextricably linked to the discourse concerning when, where, and how our ancestors became cognitively modern. In the strictest sense, the term "modern" encompasses every facet of culture evident today, ranging from agriculture to iPhone 16. Many scholars employ a list of behavioral traits that distinguish the Middle and Upper Paleolithic periods in Europe. Others utilize the material culture of modern and contemporary hunter-gatherers as a guide. Ultimately, whether a specific assemblage of remains can be regarded as evidence of "modernity" depends upon the evaluator's definition of the concept (Wong, 2005: 94).

Zilhão introduces a proposition regarding the indices of "behavioral modernity" within the African archaeological record, the validity of which has been widely accepted by paleoanthropologists. The first proposition is the explicit and definitive statement by Henshilwood and Marean: "[Modern behavior comprises] artifacts or features that convey a clear, symbolic, and exosomatic message, such as images and motifs, personal ornaments, or even tools explicitly created to identify the [identity of] their maker" (Henshilwood and Marean 2003). The second proposition is Brown and colleagues' distinct interpretation of modernity: "The complex use of technology, specifically the controlled application of fire as an engineering tool to modify raw materials; for instance, heat-treating low-quality siliceous cobbles prior to use to enhance their flaking properties" (Brown et al., 2009). Zilhão argues that if these propositions can be utilized to define modern behavior, then any clear evidence of Neanderthals conforming to these descriptions must be considered indicative of modern behavior within that population (Zilhão 2012; Elias 2012: 7–8).

One argument that has led to the dismissal of evidence of symbolism among Neanderthals is the belief that this development was a very late phenomenon, emerging among Neanderthals solely due to coexistence and imitation of Homo sapiens behavior in Europe. A second argument posits that, firstly, sites containing symbolic evidence associated with Neanderthals are exceedingly rare, and secondly, in these rare instances, layers containing artifacts associated with Homo sapiens overlie the lower layers attributed to Neanderthal habitation, exhibiting a degree of stratigraphic overlap (Elias, 2012: 8).

Zilhão contends that recent chronologies demonstrate that the emergence of the Châtelperronian tradition (associated with Neanderthals) predates the Early Aurignacian culture (attributed to Homo sapiens) and is older than the oldest skeletal evidence of anatomically modern humans throughout Europe. Furthermore, he counters the second argument—regarding the intrusion of symbolic artifacts belonging to Homo sapiens into Neanderthal layers in multi-period sites—by citing the existence of numerous Neanderthal sites from which symbolic objects have been recovered. He references evidence from other Châtelperronian sites in Europe, including Quinçay Rockshelter in France, Ilsenhöhle Cave in Germany, Trou Magrite in Belgium, Bacho Kiro Cave in Bulgaria, Klisoura 1 Cave in Greece, and Fumane Cave in Italy. At each of these sites, artifacts with a distinctly symbolic nature have been found within Châtelperronian contexts, with each assemblage dating to between 41,000 and 45,000 years ago (Zilhão, 2012; Elias, 2012: 8–9).

In recent years, the evidence discussed above has been widely accepted by both the public and the scientific community. Zilhão suggests that this acceptance aligns with the publication of the initial results of the Neanderthal Genome Project, which was released at approximately the same time (Green et al., 2010). Ancient DNA evidence indicates that a portion of the DNA of Homo sapiens is shared with Neanderthals, demonstrating admixture between these two groups during the Late Pleistocene. This, in turn, eliminated the necessity of viewing Homo sapiens and Neanderthals as entirely separate and competing species. Consequently, such evidence has contributed to undermining the notion of a lack of symbolic capacities in Neanderthals. However, not all archaeologists or paleoanthropologists are convinced. Old beliefs (the notion of a fundamental difference between Neanderthals and "wise" humans) persist stubbornly, both within archaeology and in other fields (Elias, 2012: 9).

Some researchers, in studying the process of modernization, consider organized symbolic behavior, which includes language. Henshilwood articulates his claim as follows (Henshilwood, 2007): "It appears that the ability to store symbols outside the human brain is the primary agent of everything we do today". Although the emergence of a symbolic-based communication system may not be directly traceable in the archaeological record, it seems researchers have at least accepted it as a defining characteristic of the human mind as we know it, rather than as it exists (Wong, 2005: 94).

Since the early Lower Paleolithic, humans have collected shells and transported them to their habitats (Joordens et al., 2015). However, around 120,000 years ago, hunter-gatherers began the deliberate collection of shells that were naturally abraded and perforated. It may be a reasonable hypothesis that these shells, like those from Qafzeh Cave, were strung for body adornment (Vanhaeren et al., 2013). Nevertheless, at two sites associated with the Middle Stone Age at Pinnacle Point Cave in South Africa, dating to 164,000±12,000 years ago, and the Middle Paleolithic Misliya Cave, the shells were not perforated (Hershkovitz et al., 2018; Marean et al., 2007; Jerardino and Marean, 2010). Of particular interest is that in both sites, the collected shells were relatively small and polished and belonged to the genus Glycymeris (Jerardino and Marean, 2010; Bar-Yosef Mayer et al., 2020: 9–10). It appears that the reasons for collecting shells in the early Middle Paleolithic Period varied from complex conceptual symbols related to the reverence for life to the representation of identity (Steinhardt, 2010). Specific attention to bivalve shells was likely driven by cognitive patterns inherent in all humans. Beyond potentially alluding to cosmic powers, they also signify the belief that life originates from the sea (Bar-Yosef Mayer et al., 2020: 9). These, of course, remain speculations that may never be empirically tested.

Results of recent research indicate the existence of a wide range of symbolic culture, including visual arts and perhaps even music (?), among Neanderthals, although such findings remain very scarce. Regarding the emergence of new forms of symbolic culture, European and Middle Eastern Neanderthals differed little from African Homo sapiens. Contrary to some popular beliefs, the development of symbolic culture cannot be linked to specific human populations. The capacity for symbolic thought likely evolved independently in Neanderthals and Homo sapiens, or perhaps it emerged from a common early ancestor before the two groups embarked on separate evolutionary trajectories. White (2003) expresses his conjecture as follows: “I cannot prove my claim, but I am certain that Homo heidelbergensis possessed the capacity for symbolic thought”. Henshilwood also believes that the emergence of symbolism-based thought is latent within the Middle Stone Age (Wong, 2005: 95).

The growing body of evidence from Europe and Southeast Asia supports the hypothesis that the cultural adaptations of archaic hominins included mediated symbolic behavior, thereby challenging the belief that modern cognitive abilities were restricted to Homo sapiens. Today, while many researchers have accepted this hypothesis regarding Neanderthals,

evidence from Siberia and East Asia suggests that this may also hold true for Denisovans—the probable creators of some of the engravings found at these sites (Li et al., 2019: 896). However, further research is required to elucidate the rules and details of the initial emergence and development of symbolic culture (Burdukiewicz, 2014: 404).

Conclusion

The search for evidence of increasing behavioral complexity in the history of the genus Homo is primarily conducted through the examination of behavior in contemporary primitive groups, or rather, through ethnoarchaeological research. In this pursuit, researchers largely focus on behaviors related to abstraction, symbolism, and language, the creation of art, hypersociality[2], altruism, and cumulative culture within these groups. Among these, symbolism, abstraction, and artistic creation are considered integral components of complex and so-called modern behavior, the search for whose material evidence entails specific difficulties. These difficulties include the rarity and dispersion of material evidence at the inception of these behaviors (the Middle Stone Age and the Middle Paleolithic), spatiotemporal discontinuities even during the Upper Paleolithic or Later Stone Age, the role of taphonomic processes and natural factors in the obliteration of such evidence, and the challenge of achieving a consensus regarding the attribution of certain material remains to symbolism, abstraction, and art.

In anthropology, the concept of modern behavior has historically typically been examined as a binary of presence-absence (a zero-one variable), predominantly viewed as a sudden, "revolutionary" emergence associated with the onset of the Upper Paleolithic and the marked differences between Neanderthal and "wise" human behavior (see, e.g., Mellars, 1989; Mellars and Stringer, 1989). Richard Klein was the first to extend a hypothesis similar to this Eurasian revolutionary transformation to Africa and the Later Stone Age (Klein, 1994; 2000; 2009). The seminal paper by McBrearty and Brooks (2000) served as a response to these hypotheses, locating the origins of modern behavior in the Middle Stone Age and conceptualizing "modernization" as a gradual process. Consequently, various scenarios regarding the emergence of modern behavior and its subset, symbolic behavior, have been discussed to date, including: (1) the sudden appearance of modern behavior as a "package"; (2) the gradual emergence of behavioral complexities in humans with an African origin; and (3) a direct correlation between these developments and changes in

brain structure. The most recent perspective in this regard belongs to Scerri and Will (2023). They argue that, rather than continent-centric views or the gradual accumulation of materials related to complex behaviors over time, the material evidence suggests the presence of such indicators in a non-synchronous and discontinuous manner across different regions of Africa (extensible to Eurasia). Evidence from the African Middle Stone Age points to a mosaic of discontinuous and fragmented trajectories in space, diverse in timing, and dependent on the evolutionary histories of specific population groups. Furthermore, there is currently no direct evidence establishing a correlation between changes in human brain structure and the appearance of so-called modern (and symbolic) behavioral packages. In this context, it appears that the most critical factors in the emergence and persistence (more continuous presence) of complex behaviors are those related to demographic processes, such as population structure and size, and the degree of connectivity between different populations.

It should be noted that this new perspective (in: Scerri and Will, 2023) had its precursors. Since the beginning of the 21st century, many researchers have ceased to believe in a single location and time as the origin of modern behavior (e.g., Wadley, 2001; Wynn et al., 2016), tracing the emergence of such behaviors from the late Middle Pleistocene and the transition between the Middle and Late Pleistocene in Africa, without a specific center (e.g., Conard, 2015). Similar hypotheses have also been proposed for Eurasia (e.g., d'Errico, 2003; Zilhão, 2007). Moreover, it was during this period that models related to human behavioral evolution increasingly focused on diversity, flexibility, and the plasticity of behaviors (e.g., Shea, 2011; Kandel et al., 2016; Roberts and Stewart, 2018). Scerri and Will argue that traits attributed to modern behaviors—such as engraving on cultural materials like shells and limestone slabs (art?), the transport of raw materials such as shells from distant locations, the presence of perforated shells, evidence of deliberate burial, and the use of pigments, particularly the mineral ochre—may reflect the formation of group identity and social networks, individual and intra-group communication, coding, the existence and creation of shared beliefs, social solidarity, and the multilateral interdependence of individuals within a group, as well as planning, innovation, experimentation and trial-and-error, dietary flexibility and habitat adaptability, the ability to control, reconstruct, and modify landscapes and ecosystems, and specialization in generalism (Scerri and Will, 2023).

In summary, there is a consensus that the oldest evidence associated with so-called symbolic behavior in Africa dates back to early Homo sapiens

in the Middle Stone Age context. Furthermore, the examination of this category of evidence in Eurasia indicates that the history of the emergence of symbolic behavior extends back several tens of thousands of years prior to the beginning of the Upper Paleolithic or Later Stone Age. Evidence of symbolic behaviors among Neanderthals demonstrates that this human species also possessed the capacity for symbolic expression, although the intensity and breadth were not equivalent to those of Homo sapiens. While the precise reasons for the greater frequency and development of these behaviors among Homo sapiens populations remain unclear, it appears that demographic discussions related to "wise" human groups—such as higher population density, larger population sizes, and the endeavor to form collective identities and establish connections with neighboring groups and distant societies—play a role (Negash et al., 2011; Blegen et al., 2018).

In addition to the foregoing, discoveries related to the Homo denisova species and the documentation of modern behavior at sites attributed to this population have further complicated the situation. Based on the aggregate evidence from the three human species, it can now be stated that one should no longer seek a "package" of modern and complex behaviors and their subsets, such as symbolic behavior, in Paleolithic sites; rather, they should be viewed as a general capacity among human groups. In effect, the absence or scarcity of material evidence related to these behaviors at sites attributed to these two human species should not be interpreted as an indication of low or high cognitive capacity. Factors such as demographic issues (size and density), social aspects, and environmental conditions may have inhibited the expression of these behaviors among Neanderthals (Scerri and Will, 2023); in other words, Neanderthals may not have had a need to manifest such behaviors in certain regions and periods. Therefore, based on the principle of optimality, an initial need, as well as a social function and objective, must exist for complex behaviors to manifest.

Finally, it appears that both the sudden emergence model (the modern behavior package) and the gradual process model (gradual emergence in the Middle Stone Age) possess deficiencies. Today, given the evidence, it seems that the "saw-tooth" model (Scerri and Will, 2023) explains the Middle Stone Age cultural materials of Africa. Analogous to the teeth of a saw, which are inclined on one face and perpendicular to the axis of movement or the main axis of the saw on the other, an innovation in the realm of modern (and symbolic) behavior would occur in the African Middle Stone Age, and after decades of the scattered presence of such evidence across the continent, this type of behavior would abruptly vanish entirely. On the other hand, as previously discussed regarding spatiotemporal

discontinuities and the mosaic nature of this evidence, it was not the case that throughout Africa at a specific time within the Middle Stone Age, we witness the continuous and uniform emergence of one aspect of modern behavior (such as the symbolic use of ochre).

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Author Contributions

Author Contribution: S. Dehqani and S. M. Hashemi contributed equally to this work.

Conflict of Interest

The Authors, while observing publication ethics in referencing, declare the absence of conflict of interest.

Endnote

1. This section draws substantially upon the framework established by McBrearty and Brooks (2000).
2. A term popularized by Curtis Marean (2015: 541), denoting highly cooperative and intensely altruistic behavior toward other group members, the community, and even strangers, without the expectation of material or tangible gain. This trait is often considered specific to Homo sapiens.

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چکیده

نمادها به نشانه‌هایی گویند که به کمک دسته‌ای از قراردادها قابل درک هستند. رفتارهای موسوم به «نمادین» نیز به استفادهٔ سیستماتیک از نمادها اطلاق می‌شود که اهدافی چون ایجاد معناهای مشترک اجتماعی یا حفظ هویت گروهی را دنبال می‌کند. پیشینهٔ پیدایش رفتار نمادین دست‌کم به عصر سنگ میانی در آفریقا بازمی‌گردد. شواهد آن نیز حکاکی بر روی مواد معدنی چون کانی اُخرا، تدفین و مرگ‌آگاهی، ساخت دست‌ساخته‌های به‌ظاهر غیربهینه و پیچیده، ساخت پیکرک‌ها و استفاده از زیورآلات احتمالی چون صدف‌ها و دندان‌های جانوریِ سوراخ‌شده است. لازم به ذکر است که بروز رفتارهای نمادین به‌تدریج پیچیده‌تر شد و گسترش یافت و جزو جدایی‌ناپذیری از مواد فرهنگی مرتبط با انسان مدرن در دوره‌های پارینه‌سنگی جدید و فراپارینه‌سنگی/میان‌سنگی شد. در دهه‌های اخیر مشخص شده است که علاوه‌بر انسان مدرن، نئاندرتال‌ها نیز رفتارهای نمادین، هرچند در مقیاس بسیار کوچک‌تر، از خود بروز می‌دادند. در این جستار به شواهد باستان‌شناختی مرتبط با کهن‌ترین رفتارهای نمادین در دوران پارینه‌سنگی میانی/عصر سنگ میانی با روش کتابخانه‌ای (اسنادی) پرداخته می‌شود. این شواهد براساس گاهنگاری، پراکنش فضایی در قاره‌ها (دید هم‌زمانی) و نیز، براساس پدیدآورندگان (انسان خردمند باستانی، نئاندرتال) بررسی و طبقه‌بندی می‌شوند؛ سپس، تلاش می‌شود که به پرسش‌هایی چون تفاوت‌های درزمانی، روند پیچیده‌تر شدن و تفاوت‌های بین‌قاره‌ای یا منطقه‌ای میان بروز رفتارهای نمادین اولیه پرداخته شود. علاوه‌بر آن، بروز رفتارهای نمادین میان انسان خردمند باستانی و نئاندرتال‌ها نیز در چارچوب باستان‌شناسی بررسی و مقایسه خواهند شد. بررسی‌ها نشان‌داد که امروزه دیگر مدل‌های پیدایش یک‌بارهٔ بستهٔ رفتارهای مدرن و دگرگشت تدریجی رفتارها از ابتدای عصر سنگ میانی پاسخ‌گوی تحولات رخ‌داده و شکفته‌شدن و رواج رفتارهای نمادین در دوران پارینه‌سنگی جدید نیستند؛ بلکه درحال‌حاضر، مدل ناپیوستگی‌های فضایی-زمانی موسوم به «مدل دندانهٔ اره‌ای» شاید بتواند شواهد یافت‌شده در چند دههٔ اخیر از آغاز رفتارهای نمادین در عصر سنگ میانی و پارینه‌سنگی میانی را توضیح دهد.

کلیدواژگان: رفتار نمادین، شواهد باستان‌شناختی، دوران پارینه‌سنگی میانی/عصر سنگ میانی، اوراسیا، آفریقا.

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