

**KEYS TO DECIPHERING LATER ACHEULIAN PERIOD
MARKING MOTIFS (LA_{mrk}) – v2**

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Abstract. Though limited in scope, current archaeological evidence indicates that Later Acheulian period peoples used a repertoire of intentional marking motifs. Occurrences are generally dated to the Later Acheulian period, from around 600,000 to 200,000 years ago. Examples have been found across Eurasia. So far, they appear limited to about eight motifs: cupule, undulating line, convergent lines, divergent lines, arc, iterative strokes, geometric ‘shape of space’ and lattice. It has been hypothesized that Later Acheulian markings are analogous to and therefore represent phosphenes or early childhood scribble motifs. I argue that the marks are better accounted for as manifestations of a Later Acheulian protolanguage (LA_{mrk}). I identify the existence of a semiotic competence and derive the cognitive schemata resonating between the eight motifs. There appear to be three differential features, force/movement, convergence/divergence, bounded/unbounded. I also suggest that the motifs were utilized as glyphs within a semiotic armature that consisted of the differential features of paired motifs and their shared marking technique and medium. This suggests a key for the decipherment of Later Acheulian markings.

Introduction

Current archaeological evidence indicates that Later Acheulian period *Homo erectus* (*heidelbergensis*) used a repertoire of intentional marking motifs. Evidence of these intentional markings is dated from around 600,000 to 200,000 years ago. One of the most important instances of this tradition is the cupule-and-meander engraving at Auditorium Cave, Bhimbetka, India. Other proposed intentional markings have been found at Bilzingsleben, Germany; Stránská Skála, Czech Republic; Port-Launay en Ecoouflant, Maine-et-Loire, France; La Grotte de l’Observatoire, Monaco, and at three sites in Germany and the Netherlands. A listing of currently known sites, objects, engraving motifs and method used to identify motifs as human-made, is given in Table 1.

<i>Table 1: Later Acheulian Marking Motifs—Summary List</i>				
Site	Object	Motif	Method	Citation
Auditorium Cave, Bhimbetka, India >290,000 BP	Site III F-24	Cupule	Visual	Bednarik 1993a, 1993b, 1996
Auditorium Cave, Bhimbetka, India	Site III F-24 (same above)	Meander	Visual	Bednarik 1993a, 1993b, 1996
Bilzingsleben, GR, OIS11, c. 400,000 BP	#208.33 = #1	Divergent Line Motif (DLM)	Laser scanning microscope	Mania and Mania 1988; Steguweit 1999
Stránská Skála, Brno, CZ, c. 600-700,000 BP	Elephant vertebra	Divergent Line Motif (DLM)	Visual	Valoch 1987
Swanscombe, Middle Gravels, UK, OIS11, 400,000 BP	Flint biface	DLM, natural fossil coral, 5 radials	Visual	Oakley 1981, 1973; Feliks 2007
West Tofts, Norfolk, UK OIS7 200,000 BP	Flint biface	DLM, natural fossil scallop radial ribs	Visual	Oakley 1981, 1973; Feliks 1998, 2007
Bilzingsleben, GR, OIS11, c. 400,000 BP	#260.55 = #3	Convergent Line Motif (CLM)	Laser scanning microscope; microscope	Mania and Mania 1988; Steguweit 1999; Bednarik 1988
Stránská Skála, Brno, CZ, c. 600-700,000 BP	Elephant vertebra (same above)	Convergent Line Motif (CLM)	Visual	Valoch 1987
Bilzingsleben, GR, OIS11, c. 400,000 BP	Ivory point	Arcs	Visual	Mania and Mania 1988; Bednarik 1995
Bilzingsleben, GR, OIS11, c. 400,000 BP	#219.34 = #2	Iterative strokes	Laser scanning microscope	Mania and Mania 1988; Steguweit 1999
Bilzingsleben, GR, OIS11, c. 400,000 BP	#182.32 = #4	Iterative strokes	Laser scanning microscope	Mania and Mania 1988; Steguweit 1999
Port-Launay en Ecoflant, Maine-et-Loire, FR, c. 300,000	Bone fragment	Iterative strokes	Visual	de Lumley 1976
La Grotte de l'Observatoire, Monaco, Rissian	Flint biface	Lattice - Tree, natural inclusion	Visual	de Lumley 1976
Pampau, GR. Asselt, Beegden, NL, 400,000 BP	3 stones	Lattice - Net	Visual	Van Es and Benekendorff 2001
Bilzingsleben, GR, OIS11, c. 400,000 BP	Elephant tarsal bone	Shape of Space (double rectangle aggregate)	Visual	Mania and Mania 1988; Bednarik 1995
Bilzingsleben, GR, OIS11, c. 400,000 BP	Quartzite slab	Shape of Space ('D-shape')	Visual	Bednarik 1995

Considering these examples of Later Acheulian markings it may be inferred that the markings appear to be limited in number of types. Current evidence suggests the existence of eight identifiable shape-types or motifs:

- Cupule
- Undulating or meandering line
- Convergent lines (CLMs)
- Divergent lines (DLMs)
- Arc
- Iterated stroke marks
- Lattice (tree, net, grid, crosshatch)
- Geometric ‘shape of space’ (either 2-D inscribed enclosed space or 3-D flaked stone if paired with inscribed or naturally included LAmrk)

Comment. With respect to the last motif, I call the marking out of an enclosed space, two pieces at Bilzingsleben—a rectangle engraved within a rectangle and then infilled with strokes; a D-shaped form—a geometric ‘shape of space’. This is because, to me, the intent is a shape that contains space, and in the former occurrence infilling of the space between the outer and inner rectangle, a space within a space. The maker has a strong sense of imaginal space, projected, visualized and actualized. For Later Acheulians, it seems, space must have a shape. On the later Acheulian capability to visualize and utilize Euclidean projective space in its stone tool technology see Wynn (1996, 1989) and Feliks (1998, 2007).

Later Acheulian markings seem limited to a number of motif types. Further discoveries may confirm or amend this generalization.

Several hypotheses are proposed to explain the nature or function of Later Acheulian period markings, (a) that the markings represent primitive phosphenes (entoptics) forms (Bednarik RG. 2003, 1995, 1994, 1990, drawing upon motif classifications such as Kellogg R, Knoll M, Kugler J. 1965; Knoll M, Kugler J. 1959); (b) that they represent hallucinatory form constants, which have the same neurological source as phosphenes (Klüver H. 1966, four basic form constants being funnel, spiral, honeycomb and cobweb; Bressloff PC, Cowan JD et al 2002); (c) that they represent something comparable to the basic design patterns found in early childhood scribbling (Hodgson D. 2000, drawing on motif types in Kellogg 1979, 1969; Kellogg R, Knoll M, Kugler J. 1965); (d) that some evidence a reflective (mirroring) response to the shape of the medium in which they are engraved; and (e) that they represent self-stimulation feedback into the visual cortex, especially V1 (striate cortex), that promoted hominid perceptual brain development and/or evolution (Hodgson D. 2000; Bednarik RG. 1994, on 'optimal level of arousal imperative' as a survival value and leading from rhythmic tool manipulation to marks to decoration).

Each of these hypotheses is problematic. I note some of the weaknesses in proposed correlations and the unexamined presupposition that subject drawings of phosphenes and doodles do not involve conscious selection or gestural constraints that would make them second-order representations of V1 form constants (Harrod 2008).

While there are definite similarities between phosphenes, scribbles, or doodles and Later Acheulian marking motifs, with respect to Undulating Line (Wave), Iterative Stroke Marks, there are some curious discrepancies with respect to Radial (star), Circle (hexagon), and Arc. For instance, while one of the most frequent phosphene representations is a star-radial form, Later Acheulian DLMs do not radiate concentrically around a center; all known inscriptions have the peculiar quality that their origin point is virtual, invisible, not located on the inscribed object. While it may be that Later Acheulian marks have a precursor in representations of phosphenes or doodles, this

peculiarity of the Later Acheulian DLM is evidence that at least this LA mark has some sort of sophisticated intent, and hence semantic capacity.

Extent Later Acheulian marks do not include any circles or hexagons, the most frequent adult doodle form along with wavy line(s). One might count the singular D-shape at Bilzingsleben as a circle motif, construing it as a poorly made circle, but it appears closer to a square. A clearly intended circle does not appear until some rare occurrences in the Middle Paleolithic. Not only the similarities between phosphenes and doodles and Later Acheulian marking motifs but also the differences need to be accounted for.

Hodgson and Bednarik suggest counting as circles cupules, but I suggest this interpretation would be plausible if we treated the cupule as an aggregate or combination figure, combining circle and multiple dots. A cupule is three-dimensional, a three-dimensional point one might call it, and gestural and aural as much as visual. It is not a representation of an entoptic phosphene image; it is a tactile construct, the result of repetitive pounding of stone against stone. Its making generates a rhythmic sound. If phosphenes are visual, the cupule is aural. A cupule then exemplifies complex, sophisticated conscious representational intent, and one of a semiotic nature, as argue.

When it comes to the phosphene form type 'arc', while we have examples of arcs at Bilzingsleben, it is curious that in Knoll and Kugler (1959) the subjects do not draw linear arcs, but attempt to represent crescents solids, that is, a fragmentary chunk of a V1 form constant. Apparently the Later Acheulians took even this to a higher level of abstraction, and for what purpose?

Finally note that the Later Acheulian 'shape of space' motif seems to be fairly frequent in relation to occurrences of the other marking motifs, but is, as Quadrangle, rare in phosphene representations and scribbles and not mentioned in a classification of adult doodles (Watson 2008). The gist of this analysis is that the phosphene hypothesis, while

relevant, is not sufficient to account for the selection of motif types found in Later Acheulian markings.

Bednarik (1994:177) states that the phosphene hypothesis “can be readily refuted by presenting evidence of pre-iconic production that lacks a significant content of phosphene motifs”. In the light of the problematic aspects of the phosphene and doodle and Later Acheulian marking motif correlations, a more restrained hypothesis would appear to hold for Later Acheulian markings: their makers made simple, basic geometric motifs; they selectively drew upon, but were not confined to, form types analogous to phosphenes and doodle patterns.

There remains to be considered Bednarik’s view that Later Acheulian artists sometimes made their marks in arrangements that reflected the shape of their medium. This is an acute observation, which I will return to later.

Method

The method used for this study is basically threefold. First, I select markings that might be described as belonging to the same culture circle, that is, markings from roughly the same time period, the Later Acheulian, circa 700,000 to 200,000 years ago, the same stage of hominid evolution, *Homo erectus* or *Homo heidelbergensis*, a late erectus subtype, and covering a roughly culturally coherent geographic area from Europe to India. Second, I make a close analysis of the formal characteristics of marking occurrences as they appear in the research literature. The analysis focuses on internal characteristics of the markings without recourse to ethnographic or neurological analogies. Third, I search for hints of semiotic features, which features follow generally accepted principles of structuralist and deconstructionist approaches to linguistic phenomena.

First-Order Results: Six Generalizations

Considering the extent examples of Later Acheulian markings at least six generalizations seem to still stand.

First, as noted earlier, the markings appear to be limited in number of types, with eight apparent motifs: Cupule; Undulating or meandering line; Convergent lines (CLMs); Divergent lines (DLMs); Arc; Iterative stroke marks; Lattice (i.e. sequential, may be net-like or ladder-like hierarchy); and geometric ‘Shape of space’

Second, though the number of known markings is a small sample, they display similar shapes at multiple sites and on multiple objects at particular sites. Later Acheulian markings appear to have a stereotypical, canonical character. They are more than random engravings.

Third, there is evidence of combinations of motifs. In some cases the same motif is doubled, for example, the double arc and the double rectangle at Bilzingsleben and the doubled iterative stroke mark on a bone from Port-Launay en Ecoflant, Maine-et-Loire. The Bilzingsleben ‘D’ shape might also be added to this list if it were intended as half a rectangle and half a circle or arc. (See Table 2 for summary list, dating, degree of validity.)

<i>Table 2: Later Acheulian Marking Motifs: Occurrences of Pairs of Same Motif on Same Object</i>			
Site	Similar Motif Pairs	Association	Validity*
Bilzingsleben, GR, OIS11, c. 400.000 BP	Two parallel Arcs	√ (ivory point)	B
Bilzingsleben, GR, OIS11, c. 400.000 BP	Two Shapes of Space (rectangles, smaller nested in larger)	√ (forest elephant tarsal)	B
Bilzingsleben, GR, OIS11, c. 400.000 BP	Two Shapes of Space (interpreting the 'D' as half rectangle + half circle)	√ (quartzite slab)	C**
Port-Launay en Ecouffant, Maine- et-Loire, FR, c. 300,000	Two Iterative Strokes	√ (bone)	C***
<p>* Validity evaluated as A = design and intentionality beyond a reasonable doubt; B = intentionality clear, but design needs microscopic examination to clarify details; C = design ambiguous in illustration and/or which parts intentional, which natural; needs microscopic examination.</p> <p>** Alternatively, this 'D-like' design might be interpreted as a pairing of two different motifs, a half-rectangle Shape of Space and a half-circle Arc; or it may be merely a poorly made square or circle.</p> <p>***The two stroke marks are similar to the 'bi-line' motif in Upper Paleolithic European rock art, however there appear to be at least three other irregularly spaced parallel stroke marks some distance away on the same object. The whole could thus be interpreted as a series of five iterative stroke marks without intentional pairing.</p>			

Fourth, there are occurrences in which different, contrasting motif types appear to be paired. A summary listing of such pairs is given in Table 3.

Fifth, there is at least one occurrence so far of a complex aggregate of motif types. The elephant metatarsal bone from Bilzingsleben appears to have five of the eight motif types aggregated in a single design, including two rectangles (Shapes of Space), two convergent and/or divergent line markings (CLMs or DLMs), several sets of Iterative Stroke marks, one set of which crosses a vertical, suggesting a Lattice. (Only the Cupule, Meander and Arc seem absent here.)

<i>Table 3: Later Acheulian Marking Motifs: Occurrences of Pairs of Different Motifs on Same Object</i>			
Site	Differential Motif Pairs	Association	Validity*
Auditorium Cave, Bhimbetka, India >290,000 BP	Cupule + Meander	√ (contiguous on rock surface)	A
Stránská Skála, Brno, CZ, c. 600- 700,000 BP	Convergent Line Motif (CLM) + Divergent Line Motif (DLM)	√ (contiguous on elephant vertebra)	C
Swanscombe, Middle Gravels, UK, OIS11, 400,000 BP	DLM (natural fossil coral, 5 radials) + Shape of Space (biface)	√ (natural motif embedded in biface)	A
West Tofts, Norfolk, UK OIS7 200,000 BP	DLM (natural fossil scallop radial ribs) + Shape of Space (biface)	√ (natural motif embedded in biface)	A
La Grotte de l'Observatoire, Monaco, Rissian	Lattice - Tree (natural) + Shape of Space (biface)	√ (natural motif embedded in biface)	A
Bilzingsleben, GR, OIS11, c. 400.000 BP	Aggregate = Shape of Space (2 concentric rectangles) + Iterative Stroke marks, possibly chevron or Xs, yield Lattice – Ladder or crosshatch	√ (contiguous on forest elephant tarsal)	B
Bilzingsleben, GR, OIS11, c. 400.000 BP	Arc (2 arcs, parallel pair) + Iterative Stroke Marks	√ (contiguous on polished ivory point or at least both motifs at single site, with iterative strokes on bone fragments)	C
This table covers pairs of differentially distinct motifs. For pairings of same motif (see Table 2).			
* Validity evaluated as A = design and intentionality beyond a reasonable doubt; B = intentionality clear, but design needs microscopic examination to clarify details; C = design ambiguous in illustration and/or which parts intentional, which natural; needs microscopic examination.			

Thus, during the Later Acheulian period we seem to have occurrences of singular form motifs, combinations of form motifs, whether of the same or different motifs, and aggregation of motifs.

Comment. Combination and aggregation of geometric shape types occurs in Australian Panaramitee and Eurasian Upper Paleolithic art. Apparently, as we see, combinations and aggregations of inscribed motifs also occur as early as the Later Acheulian period.

Sixth, as Bednarik (1995, 1988) has noted, Later Acheulian artists sometimes made their marks in arrangements that reflected or responded to the shape of their medium. Bednarik (1988:99) suggests that Bilzingsleben markings—as well as Stránská Skála markings, if valid—reflect geometric aspects of and the overall shape of the object marked.

“Each of the four [Bilzingsleben] artifacts Mania and Mania describe exhibits a different marking scheme, but there is a conspicuous common theme which identifies them as examples of a common ‘tradition’ (using the word without implying more than established, uniform and nonutilitarian behavior pattern). I see them as unequivocal responses to physical aspects of the artefacts. Psychologically they are responses to the shape of surfaces, perhaps to their edges... The configuration of the convergent lines on Artefact 3 reflects the outline of the implement and clearly focuses on its upper end. The trapezoidal form of the longitudinal surface on [Bilzingsleben] Artefact 1 is mirrored in the perfectly balanced arrangement of the markings. The seven lines near the pointed end of the object are about parallel to the trapezium’s oblique side, and the lines near the centre of the decorated facet are roughly perpendicular to its longitudinal edges.” “Moreover, precisely the same marking scheme is found on the elephantine vertebra from Stránská Skála . . . again, a series of convergent lines is arranged along the edge of the bone, and is in perfect symmetry with the object’s overall shape.”

We may also view some of these ‘mirrorings’ as pairings of similar Later Acheulian motifs. For instance, Bilzingsleben object #3=260.55 has what I interpret as a CLM converging toward one of its pointed ends, which itself a CLM as it is a convergence of the objects edges toward a point. The DLMs of the Stránská Skála elephant vertebra mirror the DLM of the divergent edges of the vertebra itself.

Second-Order Results: A Later Acheulian Semiotic Competence

If Later Acheulian intentional markings show (1) stereotypical repeated shapes, (2) a distinct and limited number of motifs, (3) combinations of motifs; (4) pairings of differential motifs; (5) aggregation of motifs and (6) mirroring response to shape of the medium, then these markings are more than random scratch marks, hallucinatory entoptics, child scribbles or adult doodles. These six characteristics of Later Acheulian marking motifs suggest that a semiotic competence is at work; the marks appear to be symbols that are associated using syntactical rules.

Perhaps most interesting from a semiotic point of view are instances in which distinct motif types are paired. Currently there are extant examples of differential pairings that cover all eight Later Acheulian motifs.

- Cupule and Undulating Line occur together on a single object (rock surface), Bhimbetka.
- Convergent and Divergent Line Motifs are associated on a single object (bone vertebra), Stránská Skála; perhaps also the various kinds of crossing lines on the a ‘double rectangle’ design, Bilzingsleben; and both types at on different objects in at the same habitation site, Bilzingsleben.
- DLM and Shape of Space, the former as natural fossil inclusions, are integrally interrelated on two Acheulian bifaces from Swanscombe and West Tofts.
- Lattice and Shape of Space co-occur on a forest elephant metatarsal bone in a complex aggregate of motifs, two nested rectangles with crossing lines which

yield a ladder lattice, Bilzingsleben; a tree-like Lattice inclusion occurs on a lozenge shaped biface Shape of Space, La Grotte de l'Observatoire. (Although this latter object is not intentionally engraved (Bednarik, personal communication 2004), it may be treated as similar in intentionality to the DLM fossil inclusions on the Swanscombe and West Tofts bifaces.

- Iterative Stroke and Arc may, if this could be microscopically determined, co-occur on a single object, the polished ivory point, Bilzingsleben (this requires microscopy); the two motifs do co-occur at least in a single site, on the ivory point and on bone fragments, Bilzingsleben.

Considering these occurrences of paired different motifs, the cupule and undulating line at Auditorium Cave, Bhimbetka, could be deemed the most important example since it occurs on a single object and both motifs are clearly intentionally engraved.

A closer look at the eight motifs and their pairings suggests that they constitute a coherent group of motifs that in their juxtaposition have inherent differential features. They appear to fall into the following eight-cell, three-axis matrix.

*Table 4: Later Acheulian Semantics:
Differential Features*

	FORCE	MOVEMENT	
convergent	●	↷	unbounded
divergent	~	\ \ \ \	
convergent	#	↵	bounded
divergent	≡	↖ ↗	

There are three axes to this matrix, each consisting of two contrasting ‘differential features’—to use a term from structural linguistics. On one axis there is contrast between ‘force versus movement’, on the second ‘divergence versus convergence’, and on the third ‘constrained, bounded versus unbounded, free’. These differential features are

cognitive schemas that organize the markings into differential categories of motifs. It generates their ‘motif-ness’.

Comment. With respect to the contrasting senses of force and movement, calls to mind Derrida’s (1978:28) comment in his essay “Force and Signification” calling for a philosophical approach to texts capable of “renouncing ... the privilege given to vision ... embracing both force and the movement which displaces lines ... embracing force as movement, as desire, for itself, and not as the accident or epiphany of lines ... to the point of embracing it as writing” (i.e., inscription).

This matrix captures the notion that contrasting aspects of force and movement appear to have been fundamental for the Later Acheulian mind. The makers of these glyphs saw a world, within as without, animated by force and movement. On the one hand, were powers of impetus, vigor, energy that everywhere exerted their push and efficacy and, if you will, their moral strength of character—taking a phrase from a dictionary definition of force. On the other hand, everything is alive with movement, things moving from place to place, constantly in a state of change, displacement, replacement, and novel a-placement. Everything is the force of movement and the movement of force; desire and drive, for itself and in itself.

To be more specific, the cupule, for instance, as at Bhimbetka, objectifies force in the same place, directed at and converging on the same spot; the meander, force not in the same place, acting differently in different places, alternating or swaying side-to-side and constantly changing direction, diverging from a straight path. Both cupule and meander signify something unbounded, free, spontaneous, intensive, instigating, activating, selective and creative. The meander is a force that ‘just meanders’, unconstrained, freely pushing its path in ever new directions, the innovative and creative force that animates all living and sentient beings. It is the undulating movement of life, as in the movement of a snake, a river, a cloud, the inner organs of animals, the heart, the intestines, arteries and veins, blood, and that, which in mimesis, might be danced in undulating movement. In contrast, the cupule is the ‘force of this place’, which is a force of spontaneity and excess,

a surplus of energy. It evokes that which is for itself, an apprehension of spirit. It compels movement toward or away from itself, even unceasing and recursive movements. It commands cooperation. It is a force striking stone against stone that would be an affirmation of freedom and unconstraint, even though exercised in at the same place and faced with the opacity and immovability and hardness of stone, a spirit of excess, exuberance, ardor, passion, jouissance, the freedom to inscribe, to know, to auger as well as to augur, and also, perhaps, the pathos of this free will. Cupule and meander could have functioned as commands—such as ‘converge at this place’—mnemonics for instruction or actual inaugurators of forceful and energetic action among communal participants with respect to the markings. The inscriber of the glyphs at Auditorium Cave, Bhimbetka, may have intended any or all of this as she or he engraved into the stone.

In the convergent line motif (CLM), lines converge toward the same place, while conversely, in the divergent line motif (DLM), the lines seem to radiate from the same place, a virtual source. The movements signified by these two motifs are bounded and constrained by the foci of their virtual source. The two motifs signify something that converges and diverges while being bounded, constrained, and directed in such movements. Already, Bednarik grasped the differential features that generate these two motifs, and so named them, CLMs and DLMs. I suggest that CLM and DLM could have functioned as records, anticipations or mnemonics for political or ethical instruction with respect to aggregation and dispersal of animal herds or human social groups, accumulation and disbursement of resources, receiving and generosity. They could have functioned in spiritual instruction as ciphers for their absent foci, an *arche*, beginning or source of what shows itself, shines (qua *phainomena*) or a *telos* or end of the same.

In the latter regard, the Felix (1998, 2007) analysis of the Later Acheulian period ‘fan’ motif on objects from Bilzingsleben and West Tofts establishes in a convincing manner that the radiating lines of this motif with only one exception (the natural five-pointed fossil coral on the Swanscombe biface) posit a virtual source not present on the incised object itself. This applies to all the incised radial motifs at Bilzingsleben and

even to the naturally-ribbed fossil scallop in the West Tofts biface. This is quite remarkable since, based on the presumed derivation of these Later Acheulian marking motifs from phosphene representations and doodles, one would anticipate that star-like radials would be one of the most frequent motifs in Later Acheulian palaeoart, but we have not one known example of such an engraving. Apparently, there was a conscious effort to represent a semantic ‘radiate from a virtual, imaginal, absent center point’.

Comment: Are we to infer that the Later Acheulians had already grasped and were representing a concept of the divine as a transcendent creative force? Is this a consciousness similar to the doctrine variously attributed to Trismegistus, St. Bonaventura, Nicholas of Cusa, Voltaire and Blaise Pascal, that the universe is a sphere whose center is everywhere and whose circumference is nowhere (*sphaera cuius centrum ubique, circumferential nusquam*), or its converse, that the circumference is everywhere and the center nowhere? Or is it similar to the Lakota Sioux belief expressed by Wallace Black Elk: “There is nothing but the spirit of all things. That is the real world that is behind this one, and everything we see here is something like the shadow from that world”?

In this Later Acheulian cognitive matrix, the shape of space and the lattice are to be understood as generated by the contrasting features of convergence and divergence, but now not in terms of movement, but in terms of force. This suggests that the Later Acheulian mind conceived of the shape of space as a field of forces (force field), a domain of dynamic impulses, which is also a place of convergence, a convergences of forces in the field. It conceived the lattice as a lattice of forces, a hierarchy of forces, as in social status, political power, or spiritual power, which as a sequential hierarchy is also a divergence of forces, presumably, following the matrix logic, from more important or valued or stronger forces to lesser forces. The lattice could have been used to command or instruct about relationships of power, political or spiritual. The shape of space would have been used to evoke, address or instruct with respect to the interactive and interpenetrating forces within the ‘field’ or ‘world’ that was the referent of the shape of space motif or even within the actually inscribed shape of space.

Further, the matrix indicates that the iterative stroke mark(s) and the arc are to be understood in terms of movements that are convergent and divergent and—in contrast to CLMs and DLMs--unbounded. The iterative stroke motif may be taken as signifying a divergent movement with iterated moments, this then this then this, again, which can go on ‘forever’ or, at least, in an unbounded way; while the arc would signify convergent and movement, returning back to or towards itself or its original state, and doing so repeatedly as in cyclical or spiraling movements, or, as in mathematics, a recursive, self-reflexive movement, i.e., a repeated application of a function to its own values, suggesting a kind of self-reflective process. This hints at some notion of self-consciousness facilitated by the act of communicative inscription. The iterative strokes could have functioned as counts of units of persons, things or time, whether as reminiscences, records, or mnemonics for instruction or commands. Similarly the arc could have been used for counts of steps or stages in cyclical processes.

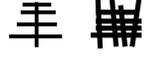
Comment. Alexander Marshack (1991) and Francesco D’Errico (1998) and others have convincingly demonstrated that some European Upper Paleolithic marking arrangements are count schemas or tallies, with lunar calendrical, seasonal and/or other uses. The Later Acheulian iterative stroke marks and arcs are candidates for further research to confirm or rule out a similar usage, which if further confirmed would make them precursors to the Upper Paleolithic counting marks.

In the cognitive schema of the third axis, DLMs, CLMs, lattice and shape of space are seen as bounded, either by virtual foci or by situational forces that have shaping power. Bednarik’s (1995) observed “in these early marking strategies [referring to CLMs and DLMs]...most seem to be reactions to aspects of the form or shape of the surface decorated in their extent, orientation, and ‘focus’.” I suggest that such occurrences represent one evidential ‘proof’ of our hypothesized Later Acheulian cognitive schemas and semiotic matrix.

Comment. This Later Acheulian cognitive matrix builds upon earlier Middle Acheulian and Early Acheulian cognitive templates. For instance, the cognitive template of the Early Acheulian appears to apply the oppositions ‘natural versus trimmed edge’; ‘rectilinear versus curvilinear edge’; ‘pointed versus rounded side’; and ‘convex versus concave side’ to the making of bifaces—and to do so in a manner that was consciously playful and evocative of design ‘for its own sake’ (see Harrod 2003). This cognitive ability now may be viewed as prelude to the Later Acheulian cognitive template, which, with its inscriptive tradition, now appears capable to conceptualizing and signifying with respect to ‘the world’.

To sum up so far, I have reviewed six generalizations about structured characteristics of Later Acheulian markings. This led to the hypothesis that the marks were expressions of a semiotic competence. I have proposed a matrix of cognitive schemas, differential features, which govern and underlie this semiotic competence. This matrix explains the generalizations and other curious characteristics of the marking tradition, such as instances in which marks are inscribed in an arrangement that reflects the shape of the surface so inscribed.

In the following Table 5 I summarize pairs of differential features and the corresponding lexemes for each of the eight Later Acheulian marking motifs.

<i>Table 5. Summary of Later Acheulian Marking Motif Lexemes</i>				
Later Acheulian Marking Motifs			Differential Features	Lexemes
1	Cupule		point	= contact this place, here, dwell here, where it happens; shock of presence
2	Undulating Line		line	= move with undulating movement; push forward, keep moving with the alternating positive and negative forces
3	Convergent Line Motif		convergence	= concentrate, move toward point, penetrate core essence, gather into the One, nostalgia for origins
4	Divergent Line Motif		divergence	= disseminate, emerge, radiate out from core essence, virtual source; push for form to emerge; origin-heterogenous, yearning for freedom
5	Arc		recursive order	= yield to unbalanced pressures to survive, be resilient, bend; move with the cycles of life; return to self
6	Iterative Stroke Marks		sequential order	= push on balancing field of forces, match force with force; participate in the sequential unfolding of time, finitude, fatality
7	Lattice		supporting structure	= net-like interdependence of all things cooperating; energy that holds together, supports, uplifts, aspires, emancipates from old grids
8	Shape of Space		container	= projective Euclidean space, an imaginal realm, container of abundance and manifestation, holding environment, stage of visualization, dramatic action
<p>Note 1: Some linguists might refer to the meanings generated by the 'differential features' as 'semes' or 'sememes' instead of 'lexemes'.</p> <p>Note 2: In this table I have listed only the LA 'marking motifs' and not the exotic objects, though they may also be signifiers in the LA protolanguage.</p>				

Finally I think there is another way to look at the differential features of the eight basic Later Acheulian marking motifs, which involves the semantics that is generated when a motif is paired with which I summarize in the following Table 6.

<i>Table 6. LAMrks: Generative Semantic Matrix of Motif Paired with Inverse Motif</i>			
Semantics	Motif	Inverse Motif	Semantics
= moving, pushing, gathering diverse elements toward invisible, virtual point of unity, which is not present, but transcendent	CLM <i>(convergent and bounded)</i>	Lattice - Tree, Net, Order <i>(divergent and bounded)</i>	= structure that holds together, supports, uplifts, aspires, inspires, cooperation, interdependence, emancipation from old grids, and harmonious order
= radiating emergent from invisible, virtual point, which is not present, but transcendent (spirit)	DLM <i>(divergent and bounded)</i>	Shape of Space <i>(convergent and bounded)</i>	= source, creative imaginal place, moment(um) of emergence from formless into form
= alternately positive and negative push, re-iteratively, into a new place	Undulating Line <i>(divergent and unbounded)</i>	Cupule <i>(convergent and unbounded)</i>	= iteration in same place, once again, eternity, eternal now
= parabolic return, iteratively cycling back to an original state	Arc <i>(convergent and unbounded)</i>	Iterative Strokes <i>(divergent and unbounded)</i>	= iteration over difference, separation of time or place, once again
Note 1. Terms in parenthesis for each motif are taken from Table 4. Later Acheulian Semantics: Differential Features.			

I am reminded of Bednarik's surmise: "Non-iconic objects, such as those 'geometric' patterns which precede all figurative rock art in the world ... irrespective of the ultimately iconic origins of such motifs ... are very likely to be symbolic" (1994: 174). I believe I have now outlined a rigorous hypothesis for how this might be so.

Discussion: A Later Acheulian Semiotic Armature

If the Auditorium Cave cupule and meander and other Acheulian marking motifs do have a semiotic competence and potential semantics, as indicated in the preceding, do Later Acheulian marking motifs (LA_{mrk}) possess what the structural anthropologist Claude Lévi-Strauss called a 'semiotic armature'? He defined a semiotic armature as the

basic structure that encodes and establishes levels of signification, symbolization, and meaning.

I tentatively suggest in the affirmative that there is such an armature and that it might be thought of as consisting of three levels, namely (a) the ‘differential features’ in a contrast between two different paired motifs; (b) the common technique or ‘marking strategy’—to use Bednarik’s phrase—used to inscribe them; and (c) the common medium of the inscriptions, such as stone or bone. This hypothesis is summarized in the following Table 7.

<i>Table 7. LAmrks: Tripartite Semiotic Armature</i>	
Motif A	Motif B
Marking Technique	
Medium	

Such an armature would thus involve both differential and shared features, and thus identity and difference, a ‘logic’ characteristic of symbol and sign systems. Such an armature can be characterized as a complementarity resonance structure.

Table 8 summarizes how the tripartite armature of Later Acheulian marking motif inscription lends additional semantic nuances to the eight basic motifs.

<i>Table 8. Later Acheulian Heart-Mind</i>			
Glyph	Lexemes	Evocation (medium)	Evocation (pairing in medium)
Cupule	contact	stone =brutality opacity of suffering and resistance to domination	gentleness caress, touch, love; exaltation and annunciation of leading principles
Undulating Line	undulate		
CLM	concentrate	bone = source of life sustenance of death	essencing-disseminating life-passage, life-giving, emergent form; pathos of survival
DLM	disseminate		
Arc	return	medium as medium = force field, force as such exertion vs. inertia	remembrance mourning, grief; compassion
Stroke Mark	push on		
Lattice	cooperate interpenetrate and ascend emancipate	medium as medium = organized geometric space (cosmos, world) grid and <i>chora</i> , identity and difference; world levels for shamanic ascent	heart-mind as grid and <i>chora</i> of identity and difference; as self-knowing as it emancipates and materializes its creative- productive work
Shape of Space	project visualize actualize		

Any attempt at a decipherment or decoding of particular occurrences of Later Acheulian markings would need to take into account this triune armature. I have suggested certain decipherments elsewhere, both with respect to Bhimbetka (Harrod, 2007) and most of the known occurrences of paired differential motifs (Harrod 2004).

Limitations

The number of Later Acheulian markings so far known is limited in extent, some dozen or so occurrences, some less validated than others. The number of motif types seem limited to the eight described in this study. Further discoveries may confirm or amend the factual generalizations and hypotheses presented here. Intuition suggests that they will more or less confirm them, but time will tell.

Please note that in my decoding of Later Acheulian markings and proposed cognitive matrix, I am not primarily arguing the hypothesis that ‘Mark X meant a, b and c to the people who made it.’ Rather I am arguing that Mark X as associated with Mark Y

has through its differential features a capacity to symbolize certain things. I elucidate for these marking motifs only a minimal semiotic capacity, albeit a profound one. How people back the Later Acheulian period articulated, understood or used this capacity I leave for another study and another discussion.

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