Material culture as proxy for language: the Himalayan evidence*

Maheshwar P. Joshi
(Doon Library and Research Centre,
Dehradun,Uttarakhand, India)**

> Words in a language are of course symbols, but material things also serve in symbolic roles. Humans, it is said, live in a forest of symbols, and to understand what makes humans tick, it is necessary to consider how those symbols work. That leads us on to a relatively new field in the study of prehistory — cognitive archaeology — that is still in early development (Renfrew 2008: 67).

1. Introduction

Studying material culture as proxy for language involves cognitive archaeology a relatively young discipline. There are several competing theories of language cognition, among which the modular and non-modular ones have gained wide currency. The modular theory posits language as a genetically endowed, biological system, i.e., the faculty of language is innate (see, Chomsky 2006). According to the non-modular theory it is behavioural therefore learned (see, Lieberman 2013: *in passim*; 2016; Bickerton 2009). There is no doubt that language is a very complex behaviour that involves the interweaving of many components. Since archaeological evidence is behavioural in nature, it can be invoked in studying language origin and evolution (see, Leroi-Gourhan 1993 [1964]; Isaac 1976).

Stone tools fashioned by our remote ancestors are the earliest surviving components of material culture; therefore, our enquiry begins with the Lower Palaeolithic. The evolutionary typology in archaeological record is defined in simplistic terms as Mode system of lithic technology (Clark 1977: 23-38, *in passim*, table 5). This process of evolution passed through four major successive transitions, namely, the Lower Palaeolithic Transition, the Lower-to-Middle Paleolithic Tran-

---

* Revised and updated version of the special lecture delivered to the 24th Himalayan Languages Symposium, Department of Linguistics, University of Lucknow, June 8-10, 2018.

** Dedicated to the fond memory of Dr. Corneille Jest, the Founder Director of the UPR 299, CNRS.

Maheshwar P. Joshi, "Material culture as proxy for language: the Himalayan evidence", *Revue d'EtudesTibétaines*, no. 48, Avril 2019, pp. 184-232.

sition, the Middle-to-Upper Paleolithic Transition, and the Paleolithic-Mesolithic Transition (see papers in Camps and Chauhan 2009). Accordingly, Mode 1 technology represents the Lower Palaeolithic, advent of Mode 2 marks the Lower Palaeolithic Transition, of Mode 3 the Lower-to-Middle Palaeolithic Transition, of Mode 4 the Middle-to-Upper Palaeolithic Transition, and of Mode 5 the Palaeolithic-Mesolithic Transition.

Leroi-Gourhan's pioneering studies leading to formulation of the *chaîne opératoire* or operational sequences (1993 [1964]: Chs. 7-8) is a 'key theoretical and methodological concept' that can be applied universally in all applications including language cognition (see, White 1993). According to Leroi-Gourhan (1993 [1964]: 234), human operational behaviour 'involves several highly complex processes' bearing on operational sequences at two levels: Operational Memory and Mechanical Operational Sequences. There are three succeeding stages of operational sequences, 1- an automatic form of behaviour directly connected with our biological nature termed as 'automatic', 2- mechanical behaviour taking place in a state of dimmed consciousness, termed as 'mechanical', and 3- 'lucid' or 'fully conscious' behaviour (*Ibid*: 230-31).

Leroi-Gourhan (*Ibid*: 133) notes that we have to 'rely exclusively on the stone industry' to unfold 'technical evolution stretching back from *Homo sapiens* to the Australanthropians'. Showing critical importance of bipedalism and the anatomical changes that accompanied, he discusses at great length as to how in sync with these changes our remote ancestors progressively advanced in lithic technology from simple 'choppers' (Mode 1) of the 'pebble culture' to the 'microliths' (Mode 5) (*Ibid*: Chs. 3-4). Thus, his study demonstrates that 'the process of extraction of a cutting edge from a lump of flint varied in time proportionally with the ratio between the length of cutting edge obtained and the volume of flint required to obtain it', which he explains in 'figure 64' of his work (*Ibid*: 134-37). Leroi-Gourhan further shows remarkable similarity in the 'increase in brain volume and technical evolution', which, when translated into a diagram (*Ibid*: 137-38, figure 65), runs as two almost flat parallel lines up to the Acheulian (Mode 2 technology), and thereafter 'rise steeply during the Mousteró-Levalloisian period' (Mode 3 technology), 'while those representing brain volume flatten out and remain flat until the present day'. Significantly, Leroi-Gourhan observes that occurrence of flattening of brain volume was 'a radical biological crisis' that 'was resolved with the disappearance of the prefrontal bar... a radical turning point in our biological evolution as a zoological species governed by the normal laws of species behavior.' He synthesises technical evolution with the capacity of language as follows:

> There is probably no reason, in the case of the earliest anthropoids, to separate the level of language from that of toolmaking: Throughout history up to the present time, technical progress has gone hand in hand with progress in the development of technical language symbols. It is possible, in the abstract, to conceive of a purely gestural technical education; in practice, even completely silent instruction will actuate a reflective symbolism in both teacher and pupil. The organic link appears to be strong enough to justify crediting the Australopithecinae [authors of Mode 1 technology] and the Archanthropians [authors of Mode 2 technology] with language at a level corresponding to that of their tools...
>
> Techniques involve both gestures and tools, sequentially organized by means of a "syntax" that imparts both fixity and flexibility to the series of operations involved. This operating syntax is suggested by the memory and comes into being as a product of the brain and the physical environment. If we pursue the parallel with language, we find a similar process taking place...
>
> The early Palaeoanthropians [authors of Mode 3 technology] were the direct inheritors of this situation, but their possibilities became gradually extended. The exteriorization of nonconcrete symbols took place with the Neanderthalians, and technical concepts were thenceforth overtaken by concepts of which we have only manual operating evidence – burial, dyes, curious objects. This evidence, however, is sufficient to establish with certainty that thought was being applied to areas beyond that of purely vital technical motor function...
>
> If language really sprang from the same source as technics, we are entitled to visualize language too in the form of operating sequences limited to the expression of concrete situations, at first concurrently with them and later involving the deliberate preservation and reproduction of verbal sequences going beyond immediate situations (*Ibid*: 114-16).

The above citation from Leroi-Gourhan is a prelude to his postulation of 'The Birth of Graphism' (*Ibid*: 187-216) in which he discusses at length the relationship between 'palaeolithic art' and 'verbal language':

> Parallel with the extraordinary acceleration of the development of material techniques following the emergence of *Homo sapiens*, the abstract thought we find reflected in paleolithic art implies that language too had reached a similar level. Graphic or plastic figurative representation should therefore be seen as the means of expression of symbolic thinking of the myth-making type, its medium being graphic representation related to verbal language but independent from phonetic notation. Although no fossil records of late Paleolithic languages have come down to us, evidence fashioned by the hands

> of humans who spoke those languages clearly suggests that their symbolizing activities – inconceivable without language – were on a level with their technical activities, which in turn are unimaginable without a verbalized intellectual supporting structure...
>
> Although the interplay between the two poles of figurative representation – between the auditive and the visual – changed considerably with the adoption of phonetic scripts, the individual's capacity to visualize the verbal and the graphic remained intact. The present stage is characterized simultaneously by the merging together of the auditive and the visual, leading to the loss of many possibilities of individual interpretation, and by a social separation between the functions of symbol making and of image receiving (*Ibid*: 215-16).

I strongly feel that Leroi-Gourhan's monumental work anticipates nearly all subsequent developments in the field of sensory-based internal systems and material culture vis-à-vis language, for subsequent researches in language cognition seem to strengthen his postulates with new data, though his intellectual debt is barely remembered (cf. White 1993). In this connection I will cite two major contributions: that of Isaac (1976) and of Wynn (1991) that develop two opposite lines of argument.

Thus, in his pioneering persuasive attempts to trace 'archaeological indicators of the development of language capabilities', Isaac (1976) addresses this issue in two parts: I- evolutionary implication of the material culture, and II- archaeological reconstruction of the behaviour of early hominids. In the first part he builds:

> on the large-scale features of the archaeological record on the assumption that hominid capacity for conceiving and executing increasingly elaborate material culture designs has been connected with rising capacity for manipulating symbols, naming, and speaking' (Isaac 1976: 276).

He works out four steps of these developments (*Ibid*: 282-83). Accordingly, the first step '(2½-1½ Million Years ago)' characterises 'simple tools', step two '(1½-.2 Million Years Ago)', advent of 'the handaxe', step three'(.2-.04 Million Years Ago)', 'Late Acheulian, Mousterian, Middle Stone Age, etc.', and the fourth step '(.04 Million Years Ago, Upwards)' is marked by tools with 'maximum level of design complexity and of differentiation... Explicit traces of representational and abstract art' and 'ritual and overt symbolism became more and more frequent'. Thus,

> Step 4 material culture has long given archaeologists a feel of being organized on much more elaborate principles than Step 3, and there is still heated debate over whether the change from 3 to 4 in-

> volved the spread of genes determining superior capabilities. Alternative hypotheses more recently advanced suggest the spread of cultural and/or linguistic innovations that put behavior across a crucial organizational threshold, perhaps a cognitive and communications equivalent of the agricultural revolution.

In the second part, he briefly points out certain behavioural traits, namely, 'Bipedal Locomotion; Tool-Making; Meat Eating; Gathering (?); Home Bases; and Food Sharing', and divides them into three phases beginning with Phase I marked by 'establishment of the first protohuman adaptive complex (bipedalism, transport, tool-making, food sharing).' It put selection pressure on the enhancement of communication and information exchange systems, 'which went on to mature during Phase II.' In this Phase 'a host of indicators imply a basically human grade of organization' among 'which capabilities for language were first important'. Archaeological record of Phase III assigned to between 'about 50,000 and 100,000 years ago' shows 'a quickening of the tempo of change', and by 'about 30,000-40,000 years ago, the record gives the appearance that a threshold was crossed with the emergence of much more complex and more style-ridden systems of material culture. From this same period, as we have seen, come the first surviving manifestations of art and of bodily adornment.' Isaac suggests 'that crucial developments in language may provide the best explanation of the Upper Paleolithic cultural spurt. This remains an untested, but, in my view, very plausible hypothesis' (*Ibid*: 286).

In sum, Isaac posits that material culture unfolds that from 'step 1' (the ape grade adaptive behaviour in the Lower Palaeolithic) to 'step 4' (the anatomically modern human like behaviour in the Upper Palaeolithic) human cognitive faculty shows a progressive development, and 'capabilities for language' played critical role throughout the course of this evolution (see, *Ibid*: 277-81, and Figures 1-4, showing diagrammatic representations and time-tables; compare it with figures 64-65, and pp. 134-37 of Leroi-Gourhan 1993 [1964]). Isaac's paper reinforces Leroi-Gourhan's formulation of succeeding complexity in material culture as an expression of human behavioural change due to biological cum technological evolution as noted above.

Wynn (1991) examines language issue from cognitive perspective and uses grammar as one of the important indicators to examine presence of language in the earliest stone tools represented, in chronological order, by the Oldowan and the Acheulian biface respectively. He notes that language 'employs complex domain-specific features in grammatical constructions', such is not the case with 'tool behaviour'. Thus, stone tools representing Oldowan clearly show an *ad hoc* technology aimed at obtaining a sharp-edged artefact closely tied to an immediate task, which was abandoned after its use, and possibly reused at a later episode. However, 'notion' of a tool is implied in fashioning a biface, even if it was based on 'traditional knowledge'. Wynn accounts for this development in 'constellations of knowledge' in which 'sequence construction' is central. Though 'tool sequences are organized like strings of beads', which, superficially, may appear similar to the process of 'string-of-beads' in language acquisition, they do not follow any rules of grammar, rather they are 'learned by observation and memorization'. Independent of language, 'apprenticeship is essential to the learning of tool-use and tool-making' (*Ibid*: 193-4). In sum, compared to the Oldowan tool-use, 'making and using a biface was in this sense more cognitively complex' because its technology appears to be 'hierarchically more complex'. It was not meant for obtaining a sharp edge to address an immediate task, it exhibits 'symmetry imposed on some of these early bifaces' (*Ibid*: 203-04). In his subsequent study, Wynn (2000) discusses at length development of 'hominid-imposed symmetry' over time from two-dimensional symmetries to true congruent symmetry to three-dimensional symmetries, as noticed in stone tools, bone tools, and cave paintings dating back from the Lower Palaeolithic through the Upper Palaeolithic. Wynn contends that it 'reflects the evolution of hominid spatial perception-cognition... and developments in skill' associated with 'an aspect of the neural processing' (*Ibid*: 131). He concludes: 'It did not, however, require language' (*Ibid*: 139). Interestingly, in his 1991-paper, Wynn is non-committal about the presence of language among the authors of the Oldowan and biface tools. However, in his 2000-paper, citing his own 1991-paper, he says: 'It is clear, for example, that people learn tool use largely by observation, replication and repetition (apprenticeship), and that *language plays only a minor role*' (*Ibid*: 119, italics mine).

According to Marwick (2003), the African evidence suggests use of 'arbitrary bi-directional symbols and expression of displacement communication system' after '1.9 million years ago' when 'the first *Homo habilis* fossils appear'. This inference is drawn from gradual increase in the distance of raw material transfer from 3 to 13 kms 'during the period 1.9–1.6 million years ago', 4 to 15 kms during '1.6 to 1.2', and '15 km to 100 km' after '1.2 million years ago'. Accordingly, this accounts for human 'ability to pool information collected by individuals through face-to-face negotiation and the use of a proto-language' (*Ibid*: 71), which also facilitated human colonization outside Africa. Experimental archaeology also supports that: 'Linguistic communication plays a key role in this system of apprenticeship by facilitating joint action and the cultural construction of identity' (see for details and further references, Stout 2010).

It is clear then that howsoever primitive, hominids were equipped with verbal communication during the Lower Palaeolithic. On the basis of 'independent studies' over the past four decades, discussed by celebrated cognitive scientist Philip Lieberman (2013; 2016), it is clear that 'the neural mechanisms implicated in speech production were present in earlier hominins', that 'the intonation of speech involves neural structures that have a deep evolutionary history (Lieberman 2013: Ch. 3, and *in passim*) 'which can be 'traced back to therapsids, mammal-like reptiles' of the Triassic, Jurassic, and early Cretaceous eras' (Lieberman2016: 138). He concludes:

> A full appraisal of the biological bases of human language remains in the distant future. However, some of the neural circuits that confer the ability to master and execute the complex motor commands that underlie speech and other aspects of behavior are becoming evident. These neural circuits involve structures that also play a part in "mental" aspects of language such as associating words with their meanings and syntax. Similar neural circuits involving the same cortical and subcortical structures are implicated in a range of "higher" cognitive acts. Though many of these neural structures are "recycled" – being present in archaic species far removed from humans, they have taken on new functions and have been modified by Natural Selection acting on genetic and epigenetic events, some occurring in the last 200,000 years or so and specific to humans (*Ibid*:142).

It draws our attention to Bickerton's studies. He suggests that social pressure triggered the episodic memory of our remote ancestors to categorise objects (predators, gender, food, etc.,) and activities (grooming, food sharing, etc.), which account for the evolution of language (Bickerton 2000). He has elaborately discussed this issue in his later study (Bickerton 2009). He explicitly says that initially humans exchanged messages in the same way as chimps by using ACS (animal communication system). In course of evolution, their biological structure and foraging needs forced them to organize socially to meet the challenges from other competing species and predators for survival. It required better information flow than the 'indexical units' of the ACSs, which are mainly manipulative, hence bound to the condition of 'the here and now'. To free humans from this limitation of 'the here and now', primarily informative rather than manipulative means of messaging was required. This was achieved by substituting 'symbolic units' of language for 'indexical units' of the ACSs, for the symbols 'can refer to things outside of the here and now. This capacity is something linguists generally refer to as "displacement"' (*Ibid*:

48-50). Initially it was a modified ACS. It enabled our ancestors to free themselves from the condition of 'the here and now', which bear on the emergence of 'protowords', followed by 'words'. It was a great leap – perhaps the greatest – in human cognition initiated by a 'Stone Age Einstein' owing to 'some particular, highly specific set of circumstances that forced words to emerge' (*Ibid*: 72; cf., Tomasello 2003). In this process human activities were concentrated primarily on survival strategies for which humans created a 'niche' within a particular geographical area leading to the birth of a protolanguage. Termed as 'niche construction theory' (Bickerton 2009: 150-53), it accounts for a series of speciations in the six-stage evolutionary model that Bickerton has suggested for the development of language (Bickerton 2009: 189).

According to Bickerton, 'the modified ACS remained, just like an ant ACS, mired in the business—a vital one, you have to admit—for which it had been originally developed' (*Ibid*: 142). Our ancestors continued to live in the protolanguage niche for a considerably long time 'at the bee/ant level or only a little beyond it' to signal warnings against predators/sudden natural calamities or give recruitment calls for exploiting bigmammal-scavenging (*Ibid*: Ch. 7-8). Then, shortly after 'the bigmammal-scavenging phase' they started producing a 'teardrop- or pear-shaped' object called Acheulian hand axe which remained unchanged for more than a million years (*Ibid*: 142-43). The other tools, 'the so-called borers and scrapers were basically variations on this tool' (*Ibid*: 213). Whatever was their function, the 'basic form' common to all was that 'they were all single, stand-alone pieces'. During this very stage they developed protolanguage to invoke group co-operation to exploit food and to secure safety against predators/natural calamities. Obviously, since in the beginning the role of language was 'fully functional', it required few words sufficient to serve the limited functions of social organization aimed at surviving strategies (*Ibid*: Ch. 8). 'If the first one or three or five protolanguage signs didn't have a substantial payoff, no one would have bothered to invent any more' (*Ibid*: 165). Bickerton holds that like the modern pidgin languages these words were combined like 'beads-on-a-string' to deliver messages (*Ibid*: Ch. 9).

The next evolutionary phase started some ninety thousand years ago with the appearance of the 'Aterian point' in North Africa. It heralds the stage of the concepts substituting for categories (*Ibid*: Ch. 10). Though the Aterian point looks like a miniature Acheulian tool, it cannot be used as a stand-alone piece, it requires hafting. It needed stone for the point, wood for the shaft, mastic (a sticky resin) to bond and gut or vine to bind. The point was provided with a tang and two transverse flaring barbed-flanges terminating towards top into a point. Unlike the Acheulian tool type which could be fashioned by trial and error, it was a carefully conceived tool employing a tang to fit into the shaft, mastic for gluing together the tang and the shaft, and gut for their added security. The idea was aimed at fashioning a 'barbed-weapon' that would penetrate skin of the prey animal and hold there even if the animal tried to let loose the weapon by shaking its body.

Bickerton adds that the ACSs are complete by themselves therefore there is no question of their combinability. A word by itself cannot convey the required message therefore needs to be combined with another word to give the required call. Thus, in the evolution of language the process started with an increase in phonological complexity leading to modification of the ACS, the modified ACSs emerged into words, the words combined to signal messages in the manner of beads-on-a-string like the modern pidgin languages (*Ibid*: Ch. 11). According to Bickerton 'the earliest protolanguage words... would have been indivisible chunks of sound, sharing no features with other words', and in its later evolutionary stages protolanguage acquired syntax-like features. Interestingly, Bickerton constructs a modern pidgin version of 'the barbed-weapon scenario' to explain the structure of any given language in its evolutionary stage, and by analogy, suggests that 'there would probably have been a statistical preponderance of what, in a true language, you'd have to call "subject-first" sentences' (*Ibid*: 231).

Bickerton points out that due to absence of syntax long and complex sentences in the beads-on-a-string chaining would become ambiguous, besides it takes long time to deliver them as they are not supported by 'any brain-internal processing'. The barbed-weapon scenario again provides a clue to the brain-internal processing through which concepts recognised 'two most crucial kinds of words', namely, nouns and verbs, accordingly, 'the two templates (roughly, phrases and clauses)' were 'headed, respectively, by nouns and verbs' (*Ibid*: 235-37). Eventually, our ancestors reached the stage of fully syntactical language with Merge as its core (*Ibid*: Ch. 12). Thus, Bickerton traces three stages in the evolution of human language from the ACS to protolanguage to fully syntactical language which he developed with his colleague Calvin (see, Calvin and Bickerton 2000).[1]

Bickerton's studiesare appealing, for he situates his formulations in the evolutionary context coupled with verifiable ant/bee and pri-

---

[1] Due to my absolute lack of French language, I have not been able to use this book. However, its introductory chapters do suggest commonality with those of the Leroi-Gourhan.

mate behaviour. The Aterian point cited by him is crucial to our understanding of the cognitive evolution. Its appearance is almost contemporaneous with those of the Blombos Cave artefacts. However, it is an open issue whether humans associated with material remains from the Blombos Cave, dated to about 75,000 BP, were equipped with 'syntactic' or 'fully syntactic' language as some scholars strongly contend(Henshilwood*et al* 2002; Henshilwood and Marean 2003; Henshilwood and Dubreuil 2009; d'Errico *et al* 2003; d'Errico and Vanhaeren 2009; d'Errico and Vanhaeren 2012). It may be noted that 'syntax evolved gradually in terms of steps or stages' (Botha 2009: 96), i.e., as a 'historical process' (Tomasello 2003), and in syntactic theory 'the grammatical structure of language is the mediator between signal and meaning' (Kinsella 2009: 6, and *in passim*), thus suggesting a long process and complex cognitive ability, as Bickerton has vividly described.

Botha compellingly argues that to infer existence of syntactic or fully syntactic language from material remains from the Blombos Cave fails to withstand the test of 'Pertinence Condition' because material 'things' related to putative 'syntactic' language are 'not actually language', it cannot be accepted a 'right process'. Therefore, Botha suggests that inferences about language need to be 'underpinned by a principled linguistic ontology' (Botha 2009: 101, 107-08; see also, Balari*et al* 2011; Malafouris 2013: Ch. 5 *in passim*) grounded in 'an appropriate bridge theory'.

Significantly, to resolve this issue we can invoke Barnard's (2010) work in which he deals with 'working-memory' vis-à-vis 'system-level' properties. Based on his earlier studies spanning over past two decades, he explores how the 'working memory' progressively evolves from 'a four-subsystem architecture' of 'a prototypical mammal' like a zebra to 'nine-subsystem human architecture'. Mammalian minds were augmented by successive interacting 'additions of one new subsystem' ultimately leading to enhanced working-memory capacities in modern humans. He proposes nine-subsystem human architecture in somatic and visceral response mechanism to evaluate 'evidence concerning relationships between cognition and emotion in both normal healthy individuals and those with various psychopathologies'. Accordingly, six-subsystem architecture matches the capability of great apes and by inference of the last common ancestor shared with modern humans. The remaining three subsystems represent the three successive evolutionary steps to attain *H. Sapiens sapiens* architecture (see, *Ibid*: fig. 3 on page 45). Applying this 'system-level' approach to the archaeological record, he shows 'increasing differentiation limited to the articulatory domain' of *Homo erectus*. He conceives presence of properties of entities that would 'fit to assign the emergence of a seven-subsystem architecture to *Homo erectus*' (using Acheulian biface technology, i.e., Mode 2). He adds that the Levallois flakes 'provide good evidence' of eight-subsystem human architecture. Finally, use of intricately prepared compound adhesives in hafting found at Sibudu in southern Africa from 70 kya illustrates the 'nine-subsystem human architecture' as contrasted to the single adhesive use of noncompound materials such as bitumen in Neanderthal hafting. Furthermore, the nine-subsystem architecture also includes 'appearance of art and personal ornamentation and the use of mineral pigments', which are 'all traditionally associated with the emergence of symbolic representation' (*Ibid*: 51-52; see also Barnard *et al* 2017). He notes:

> The emphasis here on a sequence of well-specified architectures brings into focus the idea that evolution enabled minds with more advanced architectures to do more things at the same time. By the very nature of the sequence, our proposals inherently provide tight couplings between the evolution of cognitive processes, language, meaning, and more refined emotions. The system-level account directs our attention away from evidence pinpointing the emergence of particular capabilities such as the use of iconic, indexical, and symbolic representations and more toward asking questions about the "whole package" of theoretically derived capabilities that come with a mind organized in a particular way (Barnard 2010: S50-S51).

The above summary suggests that oral signalling was central to the social behaviour of our species from *Homo erectus* to Anatomically Modern Humans and that evolution of stone technology and language run as two parallel rising trajectories over time. It also suggests that material culture can be studied as proxy for language.

2. Material culture of Himalaya

It is important to note that, barring a few sites, most of the Palaeolithic find-spots in Himalayan region are surface finds (cf. Chauhan 2007). Furthermore, whereas the western Himalayan region has been subjected to extensive investigation, we have meagre information about the prehistory of the remaining vast stretch of Himalaya to the east of Himachal Pradesh, the only exception being the Siwalik region of southern- Central- and Western Nepal which was subjected to intensive and extensive explorations by Corvinus. Her extensive studies extending over two decades from 1980s onwards unfold that geo-archaeologically Central and it's adjoining Western Nepal has proved to be the most promising area of Stone Age Culture studies in the

Himalayan region, and it serves as an index to the prehistory of Himalaya. Her exhaustive report on the prehistoric archaeology of Nepal was published posthumously (Corvinus 2007). This monumental work not only deals with 'mostly stratigraphically controlled' and 'more or less securely established' artefact-bearing sites in 'a chronological order' dating back from the Lower Palaeolithic through the Neolithic, but also situates them in appropriate South Asian, East Asian, and Southeast Asian archaeological context. Corvinus' work leads us to better our understanding of the early human activities in Himalaya. To this may be added site-specific detailed analysis of tool types of certain sites carried out by different scholars. These studies suggest site-specific homogenous character of artefacts and associated technology and by implication presence of related named stages of techno-cultural complexes, i.e., Mode 1 to Mode 5, albeit with a caveat that such artefacts are time-transgressive. However, this classification based on techno-cultural traits shows existence of various hominin stone knapping techniques in the Himalayan region without situating them in chronological framework. Hopefully, this exercise liberates a non-specialist of my tribe from the bounds of specialists' culture specific classificatory terminology. In sum, synthesis of these studies leads to suggest that the Himalayan region was one of the cradles of our remote ancestors. It will be clear from the following table.

Site/region	Techno-facie	Stratigraphy	Date	Reference
Potwar & Jammu-Kashmir	Soan' (Mode 1 to Mode 4 type?)	Geological context (Now outdated)	Pleistocene Different glacial sequences (Now outdated)	de Terra and Paterson 1939
Riwat	Pre Acheulian* (Mode 1)	Geological context	~2 mya/ 2.6 mya	Dennell *et al* 1988/ Dennell 2009
Dina & Jalalpur, North Pakistan	Acheulian* (Mode 2)	Geological context	7 mya & .4 mya	Rendell and Dennell 1985
Uttarbaini, Jammu & Kshmir	Pre Acheulian* (Mode 1)	Geological context	2.8 ± 0.56 mya.	Verma 1991
Nalagarh, Himachal Pradesh	Acheulian* (Mode 2	Geological context	Pinjor: Lower Pleistocene	Verma 1975
Masol, Punjab	Pre Acheulian* (Mode 1)	Geological context	2.6 mya	Malassé *et al* 2016/ Gaillard *et al* 2016

Toka, Himachal Pradesh	Post-Acheulian* 'Mode 1 and Mode 3'	Homogeneity of artefacts and site context	Mid-Late Pleistocene	Chauhan 2007
Atbarapur, Punjab	Acheulian* (Mode 2)	Homogeneity of artefacts and site context	Upper Siwalik sediments, > 0.6 mya	Gaillard *et al* 2008
Dzama Thang, Spiti Valley, Himachal Pradesh.	Prepared core technology & blade elements* (Mode 3 & Mode 4)	Homogeneity of artefacts and site context	Late Pleis-tocene 50–30 ka	Chauhan *et al* 2017/ Joshi 2017
Kalsi, Uttarakhand	Unifacial & bifacial artefacts (Mode 1 type)	Surface finds	No date	Verma *et al* 2012
Narayan Ganga Valley, Uttarakhand	Flakes & scrapers Levalloisian technique (Mode 3?)	Surface finds	No date	*IAR 1977-78*
Suwal Valley, Uttarakhand	Microliths (Mode 5 type)	Surface finds	No date	Joshi 1981; 2008
Gadari	Acheulian*	Stratigraphical contex	>early Mid-Pleistocene	Corvinus 2007
Satpati Hill	Acheulian* (Mode 2)	Stratigraphical contex	Early Pleistocene to early Middle Pleistocene	Corvinus 2007
Brakhuti W. Southern-Central & Central-western Nepal	Large flake core industry (Mode 1 type, time-transgressive)	Stratigraphical contex	>early Mid-Pleistocene	Corvinus 2007
Arjun complex, Central-western Nepal	Prepared core/ Levallois & blade elements* (Mode 3)	Stratigraphical contex	Eemian age 100 ka-70 ka (Middle Palaeolithic)	Corvinus 2007
Brakhuti Industry, Central-western Nepal	Unutilised & utilised flakes, blade-flakes, corescrapers, choppers, unifaces and sumatraliths* (Mode 4)	Stratigraphical contex	25ka-40 ka (Upper Palaeolithic)	Corvinus 2007
Ammapur, Lamahi, & Bhatarkund	Microlithic* (Mode 5)	Stratigraphical contex	Late Pleistocene	Corvinus 2007
Chabeni, Central Nepal; Patu,	Mesolithic	Stratigraphical contex	Before 7,000 BP	Corvinus 2007

Eastern Nepal.				
Garo Hills Assam	Assorted tools (Mode 1 to Mode 5 types?)	Surface finds	No date	Sankalia 1974; Sharma 1974; 1979; Sharma 1996
Kale, Teehum, Glow, Alubari & Chamba, Arunachal Pradesh	Assorted tools (Mode 1 to Mode 4 types?)	Surface finds	No date	Sharma 1979; Sharma 1996
Khangkhul Khullen, & Agartala, Manipur	Assorted tools (Mode 1 to Mode 5 types?)	Surface finds	No date	Sharma 1979; Sharma 1996
Teliamura, Jirania, Sonai Bazar, Sonaram, Mohanpur, Agartala, & Jamjuri	Assorted tools (Mode 1 to Mode 5 types?)	Surface finds	No date	Sharma 1996

* *sensu* Clark 1977.

Table 1: Outline of different techno-facies discovered in Himalaya[2]

Rock drawings: In addition to the above-mentioned lithic artefacts, the Himalaya is also dotted with petroglyphs and pictographs. [Problem with table alignment in the Word file - but corrected in the PDF file]

State/Region	Idiom	Theme	Date	Reference
Eastern Himalaya	Petro-glyphs	Depressions/ Zoomorphs/ Anthropomorphs/ Floral/Geometric motifs	Uncertain Neolithic(?)	Bezbaruah 2014
Central Himalaya				
Nepal	Petro-glyphs	Depresions/ Zoomorphs/ Anthropomorphs/	'older than the Neo-lithic'	Pohle 2003

2 If these dates are accepted, the artefacts found in Potwar and Siwalik sites are the earliest in Asia, next to the'Pre-Oldowan' stone tools from Lomekwi 3 in West Turkana, Kenya, dated to 3.3. mya and christened 'Lomekwian' (Harmand *et al* 2015).

		Floral/Geometric motifs		
Uttarakhand	Petro-glyphs	Depressions/ Zoomorphs/ Floral/Geometric motifs	Lower Palaeolithic(?) to Megalithic	Rivett-Carnac 1877; Joshi 1987; 2014: In press
	Picto-graphs	Zoomorphs/ Anthropomorphs/ Floral/Geometric motifs	Upper Palaeolithic to Mesolithic	Joshi 1974; 2014: In press
Himachal Pradesh, Spiti Valley	Petro-glyphs & Picto-graphs	Depressions/ Zoomorphs/ Anthropomorphs/ Floral/Geometric motifs	Mesolithic(?) to Neolithic (excluding Buddhist)	Bellezza 2015; Chauhan and Joshi 2017; Dowad and Norbu 2017
Kashmir, adjoining North-Pakistan, Western Tibet & Afghanistan	Petro-glyphs and Pic-tographs	Depressions/ Zoomorphs/ Anthropomorphs/ Floral/Geometric motifs	Mesolithic(?) to Bronze Age (excluding Buddhist)	Allchin1987; Bruneau 2007; Bruneau and Bel-lezza 2013; Olivieri 2010; Mock 2013; Vernier 2016

Table 2: Profile of petroglyphs and pictographs of Himalaya

The above table (No. 1) clearly shows that stratigraphically controlled archaeological studies in Nepal unfold existence of discrete named stages of techno-cultural complexes, i.e., Mode 1 to Mode 5, and that in the Old World the Himalaya witnessed the earliest hominin activities next to Africa. What is central to the present study is the presence of the Middle Palaeolithic (Mode 3) techno-cultural complex that marks quantum leap forward in human cognition and matching language acquisition skills as evident from Wadley's study of Middle Stone Age industry (corresponding to the Middle Palaeolithic) called the Howiesons Poort. It may be noted that stone tools exemplified by segments 'have been found in the earliest Central African MSA, with an age of about 300,000 years. In southern Africa, between about 70,000 and 55,000 years ago, segments and other backed tools were the most common stone tools in an MSA industry called the Howiesons Poort' (Wadley 2010: S112). Wadley's (2010) experimental study clearly shows that in this industry segments as multipurpose artefacts could be used both as tools and weapons, and their hafting was an intricate process. She summarizes:

> Mental rotation, a capacity implying advanced working-memory capacity, was required to place the segments in various positions to create novel weapons and tools. The compound glues used to fix the segments to shafts are made from disparate ingredients, using an irreversible process. The steps required for compound-adhesive manufacture demonstrate multitasking and the use of abstraction and recursion. As is the case in recursive language, the artisan needed to hold in mind what was previously done in order to carry out what was still needed. Cognitive fluidity enabled people to do and think several things at the same time, for example, mix glue from disparate ingredients, mentally rotate segments, talk, and maintain fire temperature. Thus, there is a case for attributing advanced mental abilities to people who lived 70,000 years ago in Africa without necessarily invoking symbolic behaviour (*Ibid*: S111).

Interestingly, Bar-Yosef (2008) draws our attention to the intricacy of the Levalloisian technology and states that it involves oral communication to impart this knowledge. He posits that, like Out-of-Africa scenario, the Levalloisian technology was invented in 'a specific region of the Old World and only later spread all over to be shared by many other groups, enriched in due course by a series of additional technical improvements' (*Ibid*: 376-77; see also, Lieberman 2013: Ch. 5). It may be inferred then that the inhabitants of Himalaya were exchanging information through oral communication long before the emergence of the named languages.

3. Material culture and language: the Himalayan evidence

Recent archaeological investigations in Europe, Africa and Near East suggest two models of language evolution, namely, 'Human Revolution scenario', and 'Out-of-Africa scenario', the former credits Europe for this evolution and the latter Africa (see for details and further references, Botha and Knight (eds.) 2009; see also, Possehl 2007; Dennell and Petraglia 2012). However, these studies become redundant in the light of Lieberman's recent studies (2013; 2016) cited above.

Be it as it may, genetic studies indicate dispersal of anatomically modern humans representing 'three Y chromosome founder lineages, accompanying mtDNA haplogroups M and N' from Africa to South

Asia 'approximately 70–50 thousand years ago' via 'the southern [coastal] route' and 'the coalescence times of mtDNA haplogroups M, N and R are remarkably similar and ancient, ~65, 000 years' (Chaubey*et al* 2006; Endicott *et al* 2007: 235; see also, Mellars 2006; Mellars *et al* 2013; Atkinson *et al* 2008; Zegura 2008; Petraglia *et al* 2010; Li and Durbin 2011; Henn *et al* 2012; see for recent studies in human colonization of Asia in the Late Pleistocene, *Current Anthropology*, Volume 58, Supplement 17, December 2017).

In this connection it is also to be noted that genetic and paleoanthropological evidences suggest a late Pleistocene 'great demic (demographic and geographic) expansion' of modern humans that began 'approximately 45,000 to 60,000 y ago in Africa and rapidly resulted in human occupation of almost all of the Earth's habitable regions' (Henn *et al* 2012). In case of Southern Asia, 'the history of the genetic lineages now inhabiting the region' suggests a '5-fold increase in population size' by ~ 52 kya, and that these 'estimates of effective population size through time show that Southern Asia was not only a key waypoint in the human expansion from Africa but also a major chapter in human prehistory' (Chaubey *et al* 2006; Atkinson *et al* 2008: 471-72). Genetic signatures also disclose that the new geographical environment of South Asia was instrumental in generating genetic differences during this time (see, Chaubey *et al* 2006; Sankhyan 2013). Significantly, Kivisild *et al* (2003: 216) observe:

> The Indian haplogroup M lineages differ substantially from those found in eastern and central Asian populations and most likely represent *in situ* diversification in the sub-continent since the Palaeolithic...
>
> Thus, what we see as specific to Indian subcontinent is the presence of diverse sub-clusters of haplogroups M, R, and U that are virtually absent elsewhere. All these sub-clusters show coalescent times at around 50,000 BP. Given their high overall frequency in India this suggests a very limited gene flow – at least as far as maternal lineages are concerned – beyond the subcontinent over a long time span, likely since its initial colonization.

Hard archaeological evidence from different sites in South Asia (Mellars 2006; Mellars *et al* 2013; Corvinus 2007: Ch. VIII; James 2007; Petraglia *et al* 2009; Petraglia *et al* 2010) also supports human expansion. Significantly, Dunbar (2003) postulates that time invested in social grooming is crucial to social bonding and therefore determines its group size. Maintenance of larger social group size requires matching investment in time for social grooming within the limited time budget, which constraint was overcome by vocal grooming and ultimately language. On the basis of material culture bearing on symbolic cognition, particularly from the Blombos Cave near Still Bay in South Africa, it has been suggested that 'anatomically modern humans' were already language users at the time of their dispersal from Africa (Renfrew 1994; McBrearty and Brooks 2000; Henshilwood*et al* 2002; Henshilwood and Dubreuil 2009; Mellars 2004; Zilhão 2007; Knight 2009; Watts 2009). Therefore, there is no reason to believe that they arrived in South Asia without language.

Scholars engaged in linguistic and genetic studies have observed 'a remarkable similarity between the linguistic tree and the genetic tree' (Henn *et al* 2012: 17761). These studies also suggest dispersal of language using humans from Africa to different parts of the Old World (Nichols 1999 [1992]; Cavilli-Sforza 2001; Creanza *et al* 2015). The tree of origin of human languages originally drawn by Merritt Ruhlen and modified by Cavalli-Sforza (2001: 169) shows Africa as the root of the language of *Homo sapiens sapiens* (100-70 kya), whence it branched off into three sub-families, namely, Khoisian, Congo-Saharan, and Asian, the last one is assigned to '70-50 kya'. She also adds (*Ibid*: 155) that possibly the ancestors of the speakers of Khoisan languages 'were responsible for the first expansion from Africa to Asia', although 'linguistic methods have not yet generated a complete tree growing from a single source' (*Ibid*: 139-40; cf., Zegura 2008; Gell-Mann and Ruhlen 2011).

In terms of language dispersal, Himalaya is a 'residual' zone (Nichols 1999 [1992]: 21), and together with the Caucasus, offers considerable language diversity owing to climatic, geographical, and political factors, which 'make it possible for a relatively small community to survive autonomously' (*Ibid*: 44, 234). The linguistic profile of the Himalayan region is interesting:

> The greater Himalayan region is the principal meeting point for the two largest language families of the world, Indo-European and Tibeto-Burman. The same massifs have also been home to two smaller language families (Austroasiatic and Dravidian), and to two language isolates (Burushaski and Kusunda). Despite their physical prominence, the Himalayas constitute not so much an insurmountable barrier but rather a region of interaction between these various language families (Turin and Zeisler 2011: 1).

It may be noted here that whereas Burushaski is spoken 'in the central Hunza Valley of northern Pakistan', Kusunda is spoken by a precariously small group of former foragers commonly known as the 'Ban Raja' (Watters 2006: 9; Blench 2008). Variously addressed as Raute, Raji, Banraja or Banraji, the people inhabiting Far West Nepal and eastern Kumaon in Uttarakhand, India, are different from the

Kusunda-speaking 'Ban Raja' of Nepal.[3] The language of the former is called Raute or Raji (see for further references, Bandhu 2017; Rastogi 2017), and its origin remains disputed (Krishnan cited in Zoller 2016: 3). Interestingly, not only in terms of language isolates, Himalaya is equally important from the perspective of history of Indo-European language phylum as it has at least two regions, namely, Lahaul and Spiti sub-division of Himachal Pradesh in Western Himalaya (Sharma 1983) and Bangan in Garhwal division of Uttarakhand in Central Himalaya (Zoller 1988; 1989; 2007; 2008; see also, Abbi 1997; Drocco 2016), where traces of 'Old Indo-Aryan' have survived, whereas they have disappeared in most other places since long.

Arguably, in terms of time depth there are deep-rooted connections between the forebears of the speakers of the above-mentioned languages and the authors of material culture of the Himalaya. To the best of my knowledge, this issue has not attracted scholars working on the prehistory of Himalaya and its linguistic prehistory. Surprisingly, despite 'Munda and related Austro–Asiatic languages' that existed in South Asia for 'several millennia' and pre-date Old Indo-Aryan (Southworth 2005: Ch.3; van Driem 2012), in the archaeological context studies in the dispersal of language using humans in South Asia is generally dominated by the Indo-European speakers vis-à-vis agriculture (see, for example, Renfrew 1987: Ch. 8; 1992; 1994; Erdosy 1997 [1995]; Southworth 1997 [1995]; 2005; Witzel 1997 [1995]; van Driem 2001; Blench and Spriggs (eds.) 2004 [1998]; Blench 2008; Bellwood 2001; Bellwood and Oxenham 2008; Fuller 2003; 2007; Fuller *et al* 2011; Gray *et al* 2011; Tewari *et al* (eds.) 2007-2008).[13] This is despite availability of adequate material culture bearing on symbolic cognition (James 2007), implying use of spoken language long before the Neolithic.

> Thus, according to these linguistic hypotheses, the ancestors of close to 100 per cent of the indigenous languages spoken in India today came to India during the Holocene... consequently, all the preceding pre-Neolithic languages were totally replaced. If this is indeed so, how extensive was the genetic replacement caused by these events? (Kivisild *et al* 2003: 216).

---

[3] Variously known as Raute, Raji or Banraji in Far WestNepal the 'population of Rautes and their cultural and linguistic relatives who live in the Nepal/India border region [i.e., estern Kumaun, India, and its adjoining Far Western Nepal] is estimated to be about 700 Rautes, 2,500 Rajis, and 2–3,000 Banrajis' (Fortier 2009: 4). The Raute, Raji or Banraji are different from Kusunda-speaking folks who call themselves '*mihaq* Ban Raja' (Watters 2006: 14). I am thankful to Prof. Dr. Chudamani Bandhu (Tribhuwan University, Kathmandu, Nepal) and Prof. Dr. Kavita Rastogi (Lucknow University, Lucknow, India) for this information.

While studying the rock paintings of Central Himalaya (Uttarakhand), a preliminary attempt at reading signatures of language was made by me a few years ago (Joshi 2014: in press). In the meantime, I got the opportunity to work with a team of archaeologists of Himachal Pradesh Government headed by Dr. Hari Chauhan. Their (Chauhan *et al* 2017) recent discovery of the Palaeolithic tools with prepared core technology in the lower Spiti Valley (Himachal Pradesh) has added new dimensions to Indian archaeology. Though these tools have been found on the surface, circumstantial and inferred archaeological evidence (e.g., prepared core technology, Levallois-like flakes, predominance of blade elements and absence of microliths; find-spot situated along a palaeolake dated to '50–30 ka' by Phartiyal *et al* 2009; and discovery of almost similar tools dated to 'minimum' 30 kya in adjoining Western Tibet by Aldenderfer *et al* 2008) suggest that they represent local transitional phase from the Middle Palaeolithic to the Upper Palaeolithic (Joshi 2017).

What is central to the present study is that, as we already have noticed, the Levallois-like technology implies adequate oral communication. It draws our attention to Burushaski, a language isolate, considered to be one of the branches of Basque (Cavalli-Sforza 2001: 142, 149). van Driem (2008) affiliates Burushaski with 'Greater Yenisseian'. According to Bengtson (2009, and further references therein) Kusunda, Burushaski and Basque form part of a larger language family, called 'Dene-Caucasian'. However, in a recent paper Gerber (2017) has thoroughly examined the possibility of parcelling these languages into one larger language family linguistically, but he found no 'genealogical relationship' between these languages. He concludes:

> all languages involved in this paper are typologically similar to each other and exhibit similarly complex verbal morphology [but do] not provide evidence for genealogical relationship...
> Especially in the case of the comparison of Burushaski, Kusunda, Yenisseian and Athabaskan-Eyak-Tlingit, the assumed time depth makes it unlikely that these languages, even if they were in fact related to each other, would still preserve enough of the original positions and categories to resemble each other in the way that they actually do nowadays.
>
> All these considerations lead to the conclusion that a genealogical relationship between Burushaski, Kusunda, Yenisseian and Athabaskan-Eyak-Tlingit cannot be demonstrated at the present stage. This finding corroborates my personal conjecture that the time depth of a putative Dene-Kusunda family is just too great to enable us to detect convincing vestiges of a common origin. Convincing statements concerning language relatedness beyond a certain time

> depth are not possible, and the Dene-Kusunda hypothesis lies well beyond this horizon (*Ibid*: 191-192).

It is obvious then that great time depth makes it difficult to identify the forebears of speakers of modern language isolates based on linguistics. However, as noted above, there is 'a remarkable similarity between the linguistic tree and the genetic tree' and therefore, in the absence of any other convincing hypothesis, we can follow the suggestion that genetic studies indicate that Basque is 'related to the language spoken by Cro-Magnons, the first modern humans in Europe' (Cavalli-Sforza 2001: 112, 121, 141-42, 149, 158; see also, Piazza and Cavalli-Sforza 2006). If it is so in Eurasia, what about the forebears of Burushaski-speaking folks and, in the same vein, of Kusunda- and Raute/Raji-speaking folks in the Himalaya? Let us examine the Himalayan archaeological record.

To the best of my knowledge, van Driem is the only scholar who has cited archaeological evidence in his linguistic studies of the Himalaya, but it is restricted to the Neolithic (van Driem 2001; 2008). He cites Corvinus' (2007) study of material culture of pre-Neolithic Nepal but, to the best of my understanding, he does not articulate it with any Himalayan language (van Driem 2012: 211-12). However, his studies point out that the first language using occupants of Himalaya were 'the Austroasiatic speaking populations' (van Driem 2001: 414; 2011; 2012). They were followed by the Kusunda speakers 'whom the Tibeto-Burmans must have encountered when they first entered the Himalayan region millennia ago' (van Driem 2001: 333). In a more recent study, van Driem suggests that 'Kusunda might be the remnant of the same ancient Greater Yenisseian migration into the Himalayas' as Burushaski (van Driem 2013: 164), but neither he gives any chronology of such an event nor he refers to any material culture of Himalaya bearing on such a migration. Arguably, if Burushaski and Kusunda belong to 'Greater Yenisseian', and together with Basque form part of yet greater language family termed 'Proto-Yeniseian' (see for details and further references, Vajda 2012: 15-16), we should look for their roots in the Upper Palaeolithic. Admittedly, it refers to the geographical area of Eurasia and North-West South Asia. A recent study of human activities in Gissar Range, Pamir, Hindu Kush and Kashmir during prehistoric times by Malassé and Gaillard (2010) shows close interaction of peoples in this area. They sum up:

> The data suggest that the hunting territory in high plateaus was a biotope exploited during summer, since the Late Pleistocene, by Central Asian hunters and that a huge territory opened from the second half of the Holocene, including lower valleys not only such

> as Gissar and Afghani Badakhshan, but also Chitral, Swat, Indus and may be other regions awaiting further investigations in Himalayas and Western China. Without those movements which allowed interbreeding between the tribes, the genetic variability would have declined (*Ibid*: 8).

Since discovery of the 'Acheulian, Middle Acheulian, proto-Levalloisian, early Levalloisian, distinctly Levalloisian, and the late Levalloisian of Europe' have been reported from Potwar and Kashmir by Paterson (1939: 303, 307-68, 310), it presupposes existence of speakers of syntactic language. Therefore, it is not unlikely that some of the folks using the Levallois technology in the area under reference were the forebears of Burushaski, which, following Cavalli-Sforza (2001: 158, and figure showing tree of language on page 169), belonged to 'Dene-Caucasion' superfamily of language that included two major families, namely, 'Sino-Tibetan and Na-Dene'. This suggestion may also lend support to van Driem's 'Greater Yenisseian' hypothesis provided we assign it to the Upper Palaeolithic.

The above account gives us general information about presence of language using folks on the basis of stone artefacts. However, these are the rock drawings which make our understanding of linguistic prehistory of Himalaya somewhat explicit. I have discussed this issue in some detail elsewhere (Joshi 2014: in press; 2017: in press; see also, Joshi *et al* 2015; Joshi *et al* 2017; Chauhan and Joshi 2017; Joshi: forthcoming). In sum, we have two idioms of rock drawings in Himalaya, namely, petroglyphs and pictographs (see above, table 2). Petroglyphs are ubiquitous in Himalaya but pictographs are restricted to Central Himalaya (Uttarakhand) and Western Himalaya. Furthermore, on circumstantial and stylistic grounds, the Central Himalayan rock paintings form a class by themselves and may be assigned to the Upper Palaeolithic-Epipalaeolithic (see for details, Joshi 2014: in press). Since, as already stated above, the Neolithic has been subjected to extensive studies in the context of language and agriculture dispersal, in the discussion that follows I will address the rock drawings of the Pre-Neolithic Central Himalaya vis-à-vis language.

Stylistically, Central Himalayan rock paintings have two distinct categories, the one showing anthropomorphic, zoomorphic, and aniconic signs. This category may further be divided into two subgroups: the first shows human figures arranged linearly with horizontal orientation, for example, Lakhu-udyar (Pl. 1), Lwethap (Pl. 2), and Phalsima (Pl. 3), all situated in District Almora (Kumaon, Uttarakhand). The second sub-group shows human figures jumbled up in conglomeration. Significantly, so far the latter sub-group is noticed only in two sites, namely, Gvarkhyavadyar (near Village Chhinka. Pl.

4), and Ghatgarh rock shelter (near Adi Badri, Pl. 5), both in District Chamoli (Garhwal). The second category is unique in that it shows a perpendicular row of hieroglyph-like motifs having creeper-like shoots painted in steel-grey colour as found at Hudoli, District Uttarkashi (Pl. 6). In terms of symbolic cognition the first category compares well with the earliest rock paintings of Bhimbetka in that it shows overwhelmingly large number of barehanded anthropomorphic figures, few wild zoomorphic figures, simple iconicity, and small variety of aniconic motifs. Furthermore, except stick-like object, that too occurring rarely, these paintings do not show any such object as indicates any advanced tool technology. The abstract depictions in the rock paintings under reference include vulvas, dots, varied alignments of short lines and a long wavering line as may be seen at Phalsima (Pl. 7), and Lakhu-Udyar (Pls. 8-10). Whereas Leroi-Gourhan (1968: 199-200) associates such signs with femininity, according to Lewis-Williams (2012 [2002]: 127-33, 151-54) such depictions in the Upper Palaeolithic drawings are produced due to 'entopic phenomena' experienced by the shamans. These characteristics tend to suggest that these paintings belong to the pre-Neolithic phase of material culture of Central Himalaya (see for details, Joshi 2014: in press).

There is a general consensus among scholars that Munda is one of the 'primary' branches of Austroasiatic (see, Blust 2013: Ch. 11, see also Kumar and Reddy 2003; Sidwell 2015; cf. Majumdar 2010). Significantly, Sharma (2003) has shown that Munda is the sub-stratum of 'Tibeto-Himalayan languages'. Thus, we have three major candidates whose forebears may have left their signatures in the Pre-Neolithic material culture of Himalaya, namely, the Munda-, the Burushaski-, and the Kusunda-speaking folks. We already have noticed that the forebears of the Burushaski-speaking folks may represent some or the other groups using the Levalloisian technology. Interestingly, the Levalloisian flakes have also been found in close proximity of Ghatgarh rock-shelter (*Indian Archaeology 1977-78 – A Review*: 83). If the Ghatgarh rock paintings are accepted as the Upper Palaeolithic, association of the Levalloisian flakes with them is plausible. In that case, it is an open issue whether the authors of Ghatgarh rock paintings as well as the other ones found in Central Himalaya, represent the forebears of the Munda-speaking folks. In any case, they were using adequate language to communicate through these paintings.

There is a solitary example of perpendicular arrangement of motifs located at Hudoli. Perpendicular arrangement of symbols is found on 'Oracle bones' representing 'the earliest undisputed' Chinese texts in 'late Shang dynasty (c. 1300–1200 bc) inscriptions' from the area of 'the last Shang capital, Yinxu, near Anyang (Henan)' (Demattè 2010).

However, Chinese characters start appearing from 'the Late Neolithic (*c*. 3000–2000 BC)'. Interestingly, inscription on the Dinggong potsherd shows horizontal arrangements of character (*Ibid*: 214 and Fig. 2c), hence, the source of perpendicular arrangement of Chinese characters needs to be searched somewhere else. According to van Driem (2008: 44), 'most Tibeto-Burman language communities and even most branches of the language family are exclusively represented outside of China'. Therefore, can it be suggested that the authors of Hudoli paintings were the forebears of the Kusunda-speaking folks? For, it has been suggested that the Tibeto-Burman speakers 'must have encountered' Kusunda speakers 'when they first entered the Himalayan region millennia ago' (van Driem 2001: 333). In that case, it is not unlikely that the Hudoli paintings served as a prototype that inspired development of pictographic script and perpendicular alignment of characters. The Tibeto-Burman speakers learned it from the authors of Hudoli paintings and passed on the system to their counterparts in China. Alternatively, the Tibeto-Burman speakers themselves invented the characters and perpendicular alignment of motifs after settling in Hudoli area whence the idea spread northwards into China. It is difficult to surmise otherwise, for there is no resemblance between the Hudoli motifs and early Chinese characters (see for early Chinese characters, Huisheng 1995; Demattè 2010). If it is so, the Hudoli paintings might date back to the Early Neolithic phase of South Asian Northern Neolithic (*circa* 7000 BC). I reserve it for a future study. In this connection it is also to be noted that recent linguistic and genome studies have complicated the identity of the Kusunda-speaking people because of Kusunda's closeness to 'Indo-Pacific family of languages' (Whitehouse *et al* 2004; Rasmussen *et al* 2011; cf. van Driem 2011).

It seems that prehistoric community resorted to depictive symbolism, what Leroi-Gourhan's pioneering study terms as 'The Birth of Graphism' (Leroi-Gourhan 1993 [1964]: 187-216), to give expression to its perception of mundane as well as metaphysical world effectively due to their deficiency in spoken language. This practice was abandoned in course of time when humankind developed an adequate vocabulary and syntactic language to narrate the same. Interestingly, in Africa, the San continued the tradition until their last paintings in the nineteenth century, because the Bushman still use click mode of communication.

4. Concluding observation: why material culture is proxy for language

In the preceding section of this essay an attempt was made to identify forebears of speakers of three putatively most ancient language families of Himalaya, namely, Munda, Burushaski, and Kusunda with the authors of material culture of the Himalaya. As regards techno-facies of the stone artefacts, their approximate dates cannot be disputed. Therefore, it is obvious that humans with adequate language skills were roaming in the Himalaya at least some 70,000 years ago. However, such is not the case with rock paintings. Despite several scientific attempts at dating prehistoric rock paintings 'a reliable scientific method to establish their absolute antiquities' is yet to come into view (Watchman 1997: 21). Therefore, scholars take into account circumstantial, inferred archaeological, comparative, and stylistic grounds to work their chronology. No doubt, it is speculative and subject to sudden death the moment a compelling scientific method is developed in the light of which these paintings declared Neolithic or much later. If so, what about the explanations given here of the rock paintings, their authors vis-à-vis different languages spoken in antiquity in the Himalaya? Its answer lies in the semiotic study of these paintings. In the discussion that follows I will summarily point out few representative examples.

Thus, there is a highly symbolic representation located at Pethsal (Pl. 11). It represents a conically roofed pyramidal motif showing three upward receding tiers of arched niche-like panels in red with a human figure in black within each panel. The topmost tier consists of a single conical niche-like panel. The motif is superimposed on three human figures in red depicted outside the niche-like panels, below on the right. Moving towards right, three conical patterns of varying sizes in black are depicted in vertical order, and on the extreme right, there is a vertically arranged serpentine motif. There is no doubt that the colour combination of red and black pigments in the motif under reference is indicative of cognitive complexity. Does it suggest association of red with life and black with death? In that case, the human figures in black may represent deceased ancestors, the arched panel-like niches in red (symbolising life) as ochre-furnished graves to bring life to the deceased, and the three conical patterns in black on the right as the graves emptied by them during the ancestor worship (*śrāddha* ceremony in Brahmanical religion). Significantly, these conical patterns are devoid of any base or ground, as if floating in the sky, suggestive of their locations in the three worlds of departed ancestors in the sky. The three human figures in red below on which this threetiered motif is superimposed might denote the resurrected immediate ancestors referred to above.

It may be noted that association of the deceased ancestors (*pitṛi*-s) with the three worlds is explicitly mentioned in several Brahmanical texts (see, Kane 1953: 458; 503). Interestingly, it has been suggested that some sort of belief system in the three worlds finds expression widely in the prehistoric rock drawings (see, Lewis-Williams 2012 [2002]: 144, 149, 165, 209; Boyd 2012; Hays-Gilpin 2012; McNiven and Brady 2012; Rozwadowski 2012; see also Bloch 2008; Layton 2012: 442). It is likely that such beliefs continued echoing in the subsequent phases of human history and resurfaced in the form of *pitṛi-pūjā*of the Indo-Aryan culture as evidenced in the *Ṛigveda*. Interestingly, according to Staal (1963: 268) Vedic rituals related to deceased members of one's family known as *preta-karma*, which also include *pitṛi-pūjā*, are non-sanskritic in origin (see also Jośī 2011: *Adhyāya* 4-5). Singh (1997) draws our attention to copious references in the *Ṛigveda* which clearly show that their authors had not lost memory of the Pre-Neolithic phase of human culture in South Asia. Accordingly, depiction of the three tiers in the motif under reference may refer to the three worlds of the *pitṛi*-s.

Another noteworthy example of symbolism is found at Lwethap (upper rock shelter). It shows a long frieze of human figures together with other motifs in different hues of red, some of which are superimposed (Pl. 2). In this frieze we come across few curious figures, each looking like a slightly slanted vertical line surmounted by 'X'-like (in one case 'star-like') sign in solid red, and, if it is not due to the impact of bleeding of calciferous rock, encased in deft thin white lines. The composition seems to depict a procession of anthropomorphic figures including some differentiated human figures wearing peaked headdresses or masks (?); the figurative representation of coalition ritual activity is beyond doubt. It reminds us of the Katyūrī *jāgar* ritual (a group spirit possession séance) still in vogue in Central Himalaya in which possessed spirits are differentiated on the basis of their socio-political antecedents and seated in a specific order accordingly. It plays vital role in bringing about group solidarity, and in perpetuating shared beliefs through time (cf., DeMarrais 2011). A spectacular show of such activities takes place in the annual fair at Ranibagh near Kathgodam (District Nainital), where the *jāgar* rituals start with processions lead by possessed mediums (see for details and photographs, Joshi 2014).

Significantly, Central Himalayan rock paintings clearly show that when used in association with black, red pigment tends to superimpose on the black. It may explain the contents of a section of rock paintings at Phalsima depicting medley of black and red figures (Pls.

3, 12). Following shamanistic interpretation, it may be suggested that the black figures may denote evil spirits being subdued/vanquished by the superimposed life-giving red ones representing benevolent spirits, or else a struggle between the evil and the benevolent spirits, a common belief system enacted in spirit possession in Central Himalaya. Two singularly drawn headless human figures in black at Phalsima (Pl. 3) clearly support association of death/evil spirits with black colour (cf., Petru 2008: 226). In this case they might represent vanquished, beheaded evil spirits.

In the same vein, another example of colour symbolism is noticed on the large rock shelter near the Forest Checkpoint at Lakhu-udyar (Pl. 9). It shows a large number of variously shaped alternating white and red coloured motifs, somewhat resembling 'l' 'c', 's', 'y', of the Roman letters, and reverse '*da*' of the Devanagari script, besides different combinations of straight/semi-curved lines, all arranged in a horizontal row. It may be explained as a structural representation of 'nothingness that is before birth, the world in the ice age' (cf. Kandinsky 1977) represented by white strokes and birth/life represented by red ones. Indeed, plants stemming through snow/ice cover in the spring season is still a common experience for the residents of higher altitudes of the Himalaya.

Yet another interesting example of symbolic use of red colour is noticedin the same painted rock. Here a considerably long irregular thin red line is drawn on the side face of the rock, which at random would appear as meaningless (Pl. 10). Interestingly, in African rock drawings such irregularly drawn long thin red lines, albeit in association with human and animal figures, have been interpreted as 'lines of potency', which could be both malevolent and benevolent (Lewis-Williams 1981; Power 2004). In Central Himalayan rock paintings also red lines are clearly associated with human figures as may be noticed at Lwethap (Pl-13, lower painted rock) and Lakhu-Udyar below Forest Checkpoint (Pl. 14).

Cognitive archaeology has shown that 'the symbolic capacities needed for art are also needed for language, and are interpreted by some as indicative of the presence of language' (Johansson 2006; cf. Davidson and Noble 1989). Deacon's (1997) studies show the centrality of symbols in the spread of language communication, and Rappaport (1999: Ch. 3; cf., Renfrew 2001) has persuasively shown that certain indexical signs 'would be impossible to conceive or denote in the absence of language'. In the same vein, motifs in Himalayan rock drawings were used as symbols which needed adequate means of communication for explaining their contents to the viewers of the society who used them. If symbolism is separated from the above-mentioned examples of Central Himalayan rock paintings what else could be the intent of these paintings? So long as we do not find an answer to this poser, it would not be an overstatement to say that the examples cited by us represent proxy for language in the material culture of Himalaya. It needs further research to associate these paintings with the forebears of different named language-speaking groups, i.e., Munda-, Burushaski-, Kusunda-, Raute/Raji-speaking folks of Himalaya.

Bibliography

Abbi, Anvita. 1997. Debate on archaism of some select Baṅgāṇi words. *Indian Lingiustics*, 58: 1-14.

Allchin, Bridget. 1987. South Asian rock art. *Journal of the Royal Society of Arts*, 135 (5366): 138-56.

Aldenderfer, Mark S., John W. Olsen and P. Jeffrey Brantingham. 2008. Archaeological Research Conducted in Ngari Prefecture, Tibet Autonomous Region and in the Amdo Region, Qinghai in 2007. A Report of Investigations Carried Out under a Program of Research Entitled "Defining the Paleolithic Presence on the Tibetan Plateau" Supported by the American Council on Learned Societies & the Henry Luce Foundation. https://www.researchgate.net/publication/242200868

Atkinson *et al* 2008: Atkinson, Quentin D., Russell D. Gray and Alexei J. Drummond. 2008. mtDNA variation predicts population size in humans and reveals a major Southern Asian Chapter in human prehistory. *Molecular Biology and Evolution*, 25 (2): 468-74.

Balari *et al* 2011: Balari, Sergio, Antonio Benítez-Burraco, Marta Camps, Vıctor M. Longa, Guillermo Lorenzo and Juan Uriagereka. 2011. The Archaeological record speaks: bridging anthropology and linguistics. *International Journal of Evolutionary Biology*, 2011, Article ID 382679: DOI: 10.4061/2011/382679

Bandhu, C.M. 2017. Rāuṭe and Rāji: Two endangered tribes of Central Himalayas. *In*: B.K. Joshi and Maheshwar P. Joshi (eds.), *Unfolding Central Himalaya*: *The Cradle of Culture*: 81-98. Dehradun: Doon Library and Research Centre and Almora: Almora Book Depot.

Barnard, Philip J. 2010. From executive mechanisms underlying perception and action to the parallel processing of meaning. *Current Anthropology*, 51 (Supplement 1): S39-S54.

Barnard *et al* 2017: Barnard, Philip, Iain Davidson and Richard W. Byrne. 2017. Toward a richer theoretical scaffolding for interpreting archaeological evidence concerning cognitive evolution. *In*: Thomas Wynn and Frederick L. Coolidge (eds.). 2017. *Cognitive*

Models in Palaeolithic Archaeology: 45-67. New York: Oxford University Press.

Bar-Yosef, Ofer. 2008. Can Paleolithic stone artifacts serve as evidence for prehistoric language? *In*: John D. Bengtson (ed.), *In Hot Pursuit of Language in Prehistory: Essays in the Four Fields of Anthropology. In Honor of Harold Crane Fleming*: 373-79. Amsterdam/Philadelphia: John Benjamins Publishing Company.

Bellwood, Peter. 2001. Early agriculturist population diasporas? Farming, language, and genes. *Annual Review of Anthropology*, 30: 181-207.

Bellwood, Peter and Marc Oxenham. 2008. The expansions of farming societies and the role of the neolithic demographic transition. *In*: J.-P. Bocquet-Appel and O. Bar-Yosef (eds.), *The Neolithic Demographic Transitionand its Consequences*: 13-34. Dordrecht: Springer.

Bellezza 2015: See, John V. Belletza's website reporting discoveries of petroglyphs and pictographs in Tibet, Jammu & Kashmir, and Himachal Pradesh, http://www.tibetarchaeology.com; http://www.tibetarchaeology.com/july-2015/

Bengtson, John D. 2009. "Dene-Yeniseian" and the Rest of Dene-Caucasian: Part 3: The Burusho-Yeniseian (Karasuk) Hypothesis. Part 4: Burusho-Dene. Working Papers in Athabaskan Languages. http://jdbengt.net/articles/Athabascan2009Bengtsonx.pdf

Bezbaruah, D. 2014. Megalithic monuments and the context of rock art in NE India. *In*: B.L. Malla (ed.) *Rock Art Studies: Concept, Methodology, Context, Documentation and Preservation*. New Delhi: Indira Gandhi National Centre for the Arts and Aryan Book International.

Bickerton, Derek. 2000. How protolanguage became language. *In*: Chris Night, Michael Studdert-Kennedy and James R. Hurford (eds.), *The Evolutionary Emergence of Language Social Function and the Origins of Linguistic Form*: 264-84. Cambridge: Cambridge University Press.

___. 2009. *Adam's Tongue*: *How Humans Made Language and Language Made Humans*. New York: Hill and Wang.

Blench, Roger and Matthew Spriggs. 2004 (1998). Introduction. *In*: Roger Blench and Matthew Spriggs (eds.), *Archaeology and Language*, Vol. II: *Archaeological Data and Linguistic Hypotheses*: 1-19. London: Routledge 1998/Taylor & Francis e-Library, 2004.

Blench, Roger. 2008. Re-evaluating the linguistic prehistory of South Asia. *In*:ToshikiOsada and AkinoriUesugi(eds.), *Linguistics, Archaeology and the Human Past*: 159-178. Occasional Paper 3. Kyoto: Indus Project Research Institute for Humanity and Nature.

Bloch, Maurice. 2008. Why religion is nothing special but is central. *In*: Colin Renfrew, Chris Frith and LambrosMalafouris (eds.), *The*

Sapient Mind: *Archaeology Meets Neuroscience*, 363 (1499): 2055–2061.London: Philosophical transactions of the Royal Society B.

Botha, Rudolf. 2009. Theoretical underpinnings of inferences about language evolution: the syntax used at Blombos Cave. *In*: Rudolf Botha and Chris Knight (eds.), *The Cradle of Language*: 93-111. Oxford: Oxford University Press.

Botha, Rudolf and Chris Knight (eds.).2009. *The Cradle of Language*. Oxford: Oxford University Press.

Boyd, Carolyn E.2012. Pictographs, patterns, and peyote in the Lower Pecos Canyonlands of Texas. *In*: Jo McDonald and Peter Veth (eds.), *A Companion to Rock Art*: 34-50. West Sussex: Blackwell Publishing Ltd.

Blust, Robert. 2013. *The Austronesian Languages*. Revised Edition. Canberra: Asia-Pacific Linguistics Research School of Pacific and Asian Studies, Australian National University.

Bruneau, Laurianne.2007. A preliminary study of rock art of the Western Himalaya. *Puratattva*, 37: 104-11.

Bruneau, Laurianne and John V. Bellezza. 2013. The rock art of Upper Tibet and Ladakh: Inner Asian cultural adaptation, regional differentiation and the Western Tibetan Plateau Style. *Revue d'EtudesTibetaines*, 2013, 28: 5-161. <halshs-00947955>

Calvin, William. H . y Derek Bickerton. 2000. *Lingua ex Machina*. *La conciliación de las teorías de Darwin y Chomsky sobre el cerebro humano*. Cambridge, Massachusetts: The MIT Press.

Camps, Marta and Parth Chauhan. 2009.*Sourcebook of Paleolithic Transitions: Methods, Theories, and Interpretations*. New York: Springer.

Cavalli-Sforza, Luigi Luca. 2001. *Genes, Peoples and Languages*. Translated by Mark Seielstad. London: Penguin Books.

Chaubey *et al* 2006: Chaubey, Gyaneshwer, Mait Metspalu, Toomas Kivisild and Richard Villems. 2006. Peopling of South Asia: investigating the caste–tribe continuum in India. *BioEssays*, 29: 91–100. DOI: 10.1002/bies.20525

Chauhan, Hari and Maheshwar P. Joshi. 2017. Petroglyphs, rock paintings and symbolic behaviour: Recent discoveries in Himachal Pradesh (A preliminary study). *In*: Hari Chauhan (ed.), *Rediscovering Spiti*: *A Historical and Archaeological Study*: 14-39. Shimla: State Museum.

Chauhan *et al* 2017: Chauhan, Hari, Surender Kumar, Narendra Kumar and VikasBaniyal. 2017. Newly discovered Palaeoliths from the Spiti Valley (Himachal Pradesh): A preliminary study. *In*: Hari Chauhan (ed.), *Rediscovering Spiti*: *A Historical and Archaeological Study*: 1-13. Shimla: State Museum.

Chauhan, Parth R. 2007. Soanian cores and core-tools from Toka, Northern India: Towards a new typo-technological organization. *Journal of Anthropological Archaeology*, 26: 412–441.
Clark, Grahame. 1977 (1961). *World Prehistory*: *In New Perspective*. Third Edition. Cambridge: Cambridge University Press.
Chomsky, Noam. 2006. *Language and Mind*. Third Edition. New York: Cambridge University Press.
Corvinus, Gudrun.2007. *Prehistoric Cultures in Nepal*: *From the Early Palaeolithic to the Neolithic and the Quaternary Geology of the Dang-Deokhuri Dun Valleys*, Vol. 1 (text) and Vol. 2 (Plates). Wiesbaden: HarrassowitzVerlag.
Creanza *et al* 2015: Creanza, Nicole, Merritt Ruhlen, Trevor J. Pemberton, Noah A. Rosenberg, Marcus W. Feldman, and Sohini Ramachandran. 2015. A comparison of worldwide phonemic and genetic variation in human populations. *Proceedings of the National Academy of Sciences* (*PNAS*) 112 (5): 1265–1272. DOI: 10.1073/pnas.1424033112
Current Anthropology, Volume 58, Supplement 17, December 2017. *Human Colonization of Asia in the Late Pleistocene*. Wenner-Gren Symposium Supplement 17.
Davidson, Iain and William Noble.1989. The archaeology of perception: traces of depiction and language. *Current Anthropology*, 30 (2): 125-155.
Deacon, Terrence W.1997. *The Symbolic Species: the Co-evolution of Language and the Brain.* New York: W. W. Norton & Company.
d'Errico *et al* 2003: d'Errico, Francesco, Christopher Henshilwood, Graeme Lawson, Marian Vanhaeren, Anne-Marie Tillier, Marie Soressi, Frédérique Bresson, Bruno Maureille, April Nowell, Joseba Lakarra, Lucinda Backwell and Michèle Julien. 2003. Archaeological evidence for the emergence of language, symbolism, and music—an alternative multidisciplinary perspective. *Journal of World Prehistory,* 17 (1): 1-70.
d'Errico, Francesco and Marian Vanhaeren. 2009. Earliest personal ornaments and their signifcance for the origin of language debate. *In*: Rudolf Botha and Chris Knight (eds.), *The Cradle of Language*: 16-40. Oxford: Oxford University Press.
d'Errico, Francesco and Marian Vanhaeren. 2012. Linguistic implications of the the earliest personal ornaments. *In*: Maggi Tallerman and Kathleen R. Gibson (eds.), *The Oxford Handbook of Language Evolution*: 299-302. Oxford: Oxford University Press
DeMarrais, Elizabeth .2011. Figuring the group. *Cambridge Archaeological Journal*, 21 (2): 165-86.

Dematté, Paola.2010. The Origins of Chinese Writing: the Neolithic Evidence. *Cambridge Archaeological Journal*, 20: 211-228. DOI: 10.1017/S0959774310000247
Dennell, R.W., H. M. Rendell and E. Hailwood.1988. Late Pliocene Artefacts from Northern Pakistan. *Current Anthropology*, 29 (3): 495-498.
Dennell, R.W. 2009. *The Palaeolithic Settlement of Asia*. Cambridge: Cambridge University Press.
Dennell, Robin and Michael D. Petraglia.2012. The dispersal of Homo sapiens across southern Asia: how early, how often, how complex? *Quaternary Science Reviews*, 47: 15-22.
de Terra, H. and T.T. Paterson.1939. *Studies on the Ice Age in India and Associated Human Cultures.* Washington: Carnegie Institute Publication No. 493.
Dowad, Michael and TseringNorbu. 2017. Spiti River Valley rock art: A preliminary study. *In*: Hari Chauhan (ed.), *Rediscovering Spiti*: *A Historical and Archaeological Study*: 40-102. Shimla: State Museum.
Drocco, Andrea. 2016. Some preliminary observations about Baṅgāṇī pronominal and nominal declension. *Linguistica e Filologia*, 36: 69-98.
Dunbar, Robin. 2003. The Social Brain: Mind, Language, and Society in Evolutionary Perspective. *Annual Review of Anthropology*, (32): 163-181.
Endicott *et al* 2007: Endicott, Phillip, Mait Metspalu and Toomas Kivisild. 2007. Genetic evidence on modern human dispersals in South Asia: Y chromosome and mitochondrial DNA perspectives: *The world through the eyes of two haploid genomes*. *In*: Michael D. Petraglia and Bridget Allchin (eds.), *The Evolution and History of Human Populations in South Asia Inter-disciplinary Studies in Archaeology, Biological Anthropology, Linguistics and Genetics*: 229–44. Dordrecht: Springer.
Erdosy, George. 1997 (1995). Language, material culture and ethnicity: theoretical perspective. *In*: George Erdosy (ed.), *The Indo-Aryans of Ancient South Asia*: *Language, Material Culture and Ethnicity*: 1-31. New Delhi: MunshiramManoharlal Publishers.
Fortier, Jana. 2009.*Kings of the Forest*: *The Cultural Resilience of Himalayan Hunter-Gatherers*. Honolulu: University of Hawai Press.
Fuller, Dorian. 2003. An agricultural perspective on Dravidian historical linguistics: archaeological crop packages, livestock and Dravidian crop vocabulary. *In*: Peter Bellwood and Colin Renfrew (eds.), *Examining the Farming/Language Dispersal Hypothesis*: 191-213. Cambridge: The McDonald Institute for Archaeological Research.

___. 2007. Non-human genetics, agricultural origins and historical linguistics in South Asia. *In*: Michael D. Petraglia and Bridget Allchin (eds.), *The Evolution and History of Human Populations in South Asia*: *Inter-disciplinary Studies in Archaeology, Biological Anthropology, Linguistics and Genetics*: 393-443. Dordrecht: Springer.

Fuller *et al* 2011: Fuller, Dorian, Nicole Boivin, Tom Hoogervorst and Robin Allaby. 2011. Across the Indian Ocean: the prehistoric movement of plants and animals. *Antiquity*, 85: 544-58.

Gaillard *et al* 2008: Gaillard, Claire, Mukesh Singh and Kulbhushan Kumar Rishi. 2008. Technological analysis of the Acheulian assemblage from Atbarapur in the Siwalik Range (Hoshiarpur District, Punjab). *Manand Environment*, XXXIII (2): 1-14.

Gaillard *et al* 2016: Gaillard, Claire, Mukesh Singh, Anne Dambricourt Malassé, Vipnesh Bhardwaj, BaldevKarir, Amandeep Kaur, Surinder Pal, Anne-Marie Moigne, Cécile Chapon Sao, Salah Abdessadok, Julien Gargani and Alina Tudrynd. 2016. The lithic industries on the fossiliferous outcrops of the Late Pliocene Masol Formation, Siwalik Frontal Range, northwestern India (Punjab). C. R. Palevol (2016), http://dx.doi.org/10.1016/j.crpv.2015.09.017

Gell-Mann, Murray and Merritt Ruhlen. 2011. The origin and evolution of word order. *Proceedings of the National Academy of Sciences*, 108 (42): 17290-17295. www.pnas.org/cgi/doi/10.1073/pnas.1113716108

Gerber, Pascal. 2017. The Dene-Kusunda hypothesis: a critical account. *Man in India*, 97 (1): 111–204. file:///C:/Users/user/Desktop/gerber-dene-kusunda-hypothesis.pdf

Gray *et al* 2011: Gray, Russell D., Quentin D. Atkinson and Simon J. Greenhill. 2011. Language evolution and human history: what a difference a date makes. *In*: Andrew Whiten, Robert A. Hinde, Christopher B. Stringer and Kevin N. Laland (eds.), *CultureEvolves*, 366 (1567): 1090-1100. London: Philosophical Transactions of the Royal Society B. DOI:10.1098/rstb.2010.0378

Harmand *et al* 2015:Harmand, Sonia, Jason E. Lewis, Craig S. Feibel, Christopher J. Lepre, Sandrine Prat, Arnaud Lenoble, Xavier Boës, Rhonda L.Quinn, Michel Brenet, Adrian Arroyo, Nicholas Taylor, Sophie Clément, Guillaume Daver, Jean-Philip Brugal, Louise Leakey, Richard A. Mortlock, James D. Wright, Sammy Lokorodi, Christopher Kirwa, Dennis V. Kent and Hélène Roche. 2015. 3.3-million-year-old stone tools from Lomekwi 3, West Turkana, Kenya. *Nature*, 521: 310-15 [310-26]. -DOI: 10.1038/nature14464.

Hays-Gilpin, Kelley. 2012. Engendering rock art. *In*: Jo McDonald and Peter Veth (eds.), *A Companion to Rock Art*: 199-213. West Sussex: Blackwell Publishing Ltd.

Henn *et al* 2012: Henn, Brenna M., L. L. Cavalli-Sforza and Marcus W. Feldman. 2012. The great human expansion. *Proceedings of the National Academy of Sciences* (*PNAS*), 109 (44): 17758–17764. DOI: 10.1073/pnas.1212380109

Henshilwood *et al* 2002: Henshilwood, Christopher S., Francesco d'Errico, Royden Yates, Zenobia Jacobs, Chantal Tribolo, Geoff A. T. Duller, Norbert Mercier, Judith C. Sealy, Helene Valladas, Ian Watts and Ann G. Wintle. 2002. Emergence of modern human behavior: Middle Stone Age engravings from South Africa. *Science*, 295: 1278-1280.

Henshilwood, Christopher S. and Curtis W. Marean. 2003. The origin of modern human behavior: critique of the Models and their test implications. *Current Anthropology*, 44 (5): 627-51.

Henshilwood, Christopher Stuart and Benoît Dubreul. 2009. Reading the artifacts: gleaning language skills from the Middle Stone Age in southern Africa. *In*: Rudolf Botha and Chris Knight (eds.), *The Cradle of Language*: 41-61. Oxford: Oxford University Press.

Huisheng, Tang. 1995. Chinese pictographic characters and rock art. *NORA*: *InternationalNewsletteron Rock Art*, 11: 13-18.

IAR 1977-78:*Indian Archaeology 1977-78 – A Review*.

Isaac, Glynn. 1976. Stages of cultural elaboration in the Pleistocene: possible archaeological indicators of the development of language capabilities. *Annals of the New York Academy of Sciences*, 280 (1): 275-288.

James, Hannah V.A. 2007. The emergence of modern human behavior in South Asia: *A review of the current evidence and discussion of its possible implications* [italics in original]. *In*: Michael D. Petraglia and Bridget Allchin (eds.), *The Evolution and History of Human Populations in South Asia*: *Inter-disciplinary Studies in Archaeology, Biological Anthropology, Linguistics and Genetics*: 201-27. Dordrecht: Springer.

Johansson, Sverker. 2006. Constraining the time when language evolved. *In*: Angelo Cangelosy, Andrew D.M. Smith and Kenny Smith (eds.), *The Evolution of Language*: Proceedings of the 6th International Conference (EVOLANG6): 152-59. Singapore: World Scientific Publishing Co.

Joshi, Maheshwar P. 1974. Newly discovered painted rock shelters from Kumaon. *In*: G. M. Bhattacharya (ed.), *Summaries of Papers.* All India Oriental Conference, XXVII Session:219-20.Kurukshetra: Kurukshetra University.

___. 1981. Prehistoric remains from Kumaon. Paper presented to the Silver Jubilee Year Conference, Department of Ancient Indian History, Culture and Archaeology, Allahabad: Allahabad University.

___. 1987. Dots, cup-marks and pits vis-à-vis megaliths: new evidences from Kumaon. *Puratattva*, 16: 25-28.

___. 2008. Prehistoric cultures of Western Himalaya: some enigmatic issues. *In*: Hari Chauhan (ed.), *Cultural Heritage of Himalaya*: 1-19. Chamba: Bhuri Singh Museum.

_____. 2014. The Bhārata/Jāgara of Maulā alias JiyāRānī as Narrated in Doti (Far Western Nepal) and Uttarakhand (India): Text and context. *European Bulletin of Himalayan Research*, 44: 9-38.

___. 2017. The horse and rider in the rock drawings of Spiti. *In*: Hari Chauhan (ed.), *Rediscovering Spiti*: *A Historical and Archaeological Study*: 119-50. Shimla: State Museum.

___. 2014: In press. Rock paintings of Central Himalaya and symbolic cognition: a new look at prehistoric rock paintings of South Asia. *Ancient India*: *Bulletin of the Archaeological Survey of India*, New Series, Number2 & 3.

___. 2017: In press. Cognition: Some aspects of symbolism in rock drawings of Central Himalaya. National Seminar on Theoretical and Cognitive Aspects of Rock Art, 3rd-5th April, 2017 at IGNCA, New Delhi.

___. Forthcoming. *Cognition and Archaeology*: *Global Perspective on Himalaya Before the Neolithic* (*With a Special Reference to Petroglyphs and Rock Paintings*).

Joshi *et al* 2015. Joshi, Maheshwar P., Vijay Bahuguna, Kalyan Singh Rawat, C.P. Fuloriya, S.C. Tamta, D.N. Dimri, K.C. Nauriyal and Piyush Bhatt. 2015. Prehistoric rock engravings and painting: New discoveries in Uttarakhand Himalaya. *Manimahesh: A Journal of Himalayan Studies*, 6: 1-10.

Joshi *et al* 2017: Maheshwar P. Joshi, Hari Chauhan, Vijay Bahuguna, D.N. Dimri and K.C. Nauriyal. 2017. Petroglyphs and rock paintings of Uttarakhand and Himachal Pradesh: A semiotic study. *In*: Sadasiba Pradhan and Dibisat B. Garnayak, *Rock Art in India*, Vol. II: 447-67. New Delhi: B.R. Publishing Corporation.

Jośī, Maheśvara Prasāda.2011. *Śūdroṁ kā Brāhmaṇattva*: *Madhya Himālayī Anubhava*. Dehradun: Śrī Yugaśaila Kalyāṇa Samiti (raji.).

Kandinsky, V. 1977. *Concerning the Spiritual in Art*. (Translated by M.T.H. Sadler). New York: Dover Publication (http://www.webexhibits.org/pigments/indiv/color/whites.html).

Kane, PandurangVaman. 1953. *History of Dharmaśāstra* (*Ancient and Mediaeval Religious and Civil Law*), Vol. IV. Poona: Bhandarkar Oriental Research Institute.

Kinsella, Anna R. 2009. *Language Evolution and Syntactic Theory*. Cambridge: Cambridge University Press.

Kivisild *et al* 2003: Kivisild, Toomas, Siiri Rootsi, Mait Metspalu, Ene Metspalu, Juri Parik, Katrin Kaldma, Esien Usanga, Sarabjit Mastana, Surinder S. Papiha and Richard Villems. 2003. *In*: Peter Bellwood and Colin Renfrew (eds.), *Examining the Farming/Language Dispersal Hypothesis*: 215-22. Cambridge: The McDonald Institute for Archaeological Research.

Knight, Chris. 2009. Language, ochre, and the rule of law. *In*: Rudolf Botha and Chris Knight (eds.), *The Cradle of Language*:281-303. Oxford: Oxford University Press.

Kumar, Vikrant and B. Mohan Reddy. 2003. Status of Austro-Asiatic groups in the peopling of India: An exploratory study based on the available prehistoric, linguistic and biological evidences. *Journal of Biosciences*, 28 (4): 507–522.

Layton, Robert. 2012. Rock art, identity, and indigeneity. *In*: Jo McDonald and Peter Veth (eds.), *A Companion to Rock Art*: 439-54. West Sussex: Blackwell Publishing Ltd.

Leroi-Gourhan, André. 1968. *The Art of Prehistoric Man in Western Europe*. Translated by Norbert Guterman. London: Thames and Hudson.

___. 1993 (1964). *Gesture and Speech*. Translated from the French [*Le Geste et la parole*, 1964] by Anna Bostock Berger and introduced by Randall White. Cambridge, Massachusetts: An October Book, The MIT Press .

Lewis-Williams, J. David. 1981. The thin red line: Southern San notions and rock paintings of supernatural potency. *The South African Archaeological Bulletin*, 36: 5-13.

___. 2012 (2002). *The Mind in the Cave*: *Consciousness and the Origins of Art*. Reprinted paperback edition. London: Thames & Hudson.

Liberman, Philip. 2013. *The Unpredictable Species: What Makes Humans Unique*. Princeton: Princeton University Press.

___. 2016. The evolution of language and thought. *Journal of Anthropological Sciences*, 94: 127-146. DOI: 10.4436/jass.94029

Li, Heng and Richard Durbin. 2011. Inference of human population history from whole genome sequence of a single individual. *Nature*, 475 (7357): 493–496. DOI: 10.1038/nature10231

Majumder, Partha P. 2010. The human genetic history of South Asia. *Current Biology*, 20: 184–187. DOI 10.1016/j.cub.2009.11.053

Malafouris, Lambros. 2013. *How Things Shape the Mind: A Theory of Material Engagement*. Cambridge, Massachusetts: The MIT Press.

Malassé, Anne Dambricourt and Claire Gaillard. 2010. Relations between climatic changes and prehistoric human migrations during Holocene between Gissar Range, Pamir, Hindu Kush and Kashmir: The archaeological and ecological data. *Quaternary International*, xxx: 1-9. DOI: 10.1016/j.quaint.2010.04.001

Malassé *et al* 2016: Malassé, Anne Dambricourt, Mukesh Singh, BaldevKarir, Claire Gaillard, Vipnesh Bhardwaj, Anne-Marie Moigne, Salah Abdessadok, Cécile Chapon Sao, Julien Gargani, Alina Tudryn, Thomas Calligaro, Amandeep Kaur, Surinder Pal, Manjil Hazarika. 2016. Anthropic activities in the fossiliferous Quranwala Zone, 2.6 Ma, Siwaliks of Northwest India, historical context of the discovery and scientific investigations. C. R. Palevol (2016). http://dx.doi.org/10.1016/j.crpv.2015.06.004

Marwick, B. 2003. Pleistocene exchange networks as evidence for the evolution of language. *Cambridge Archaeological Journal*,13 (1): 67–81.

McBrearty, Sally and Alison S. Brooks. 2000. The revolution that wasn't: a new interpretation of the origin of modern human behavior. *Journal of Human Evolution*, 39: 453–563.

McNiven, Ian J. and Liam M. Brady. 2012. Rock art and seascapes. *In*: Jo McDonald and Peter Veth (eds.), *A Companion to Rock Art*: 71-89. West Sussex: Blackwell Publishing Ltd.

Mellars, Paul. 2004. Neanderthals and the modern human colonization of Europe. *Nature*, 432: 461- 65.

___. 2006. Going east: new genetic and archaeological perspectives on the modern human colonization of Eurasia. *Science*, 313: 796–800.

Mellars *et al* 2013: Mellars, Paul, Kevin C. Goric, Martin Carre, Pedro A. Soaresg and Martin B. Richardse. 2013. Genetic and archaeological perspectives on the initial modern human colonization of . *Materials for a Tentative Reconstruction of the Religious and Cultural Stratigraphy of Ancient Swat*. Ph. D. Thesis. Universität Berlin.

Paterson, T.T. 1939. Prehistory of the Potwar and Indus regions. *In*: De Terra, H. and T.T. Paterson. *Studies on the Ice Age in India and Associated Human Cultures*: 310-12. Washington: Carnegie Institute Publication No. 493.

Petraglia *et al* 2009: Petraglia, Michael, Christopher Clarkson, Nicole Boivin, Michael Haslama, Ravi Korisettar, Gyaneshwer Chaubey, Peter Ditchfield, Dorian Fuller, Hannah James, Sacha Jones, Toomas Kivisild, Jinu Koshy, Marta Mirazón Lahr, Mait Metspalu, Richard Roberts, and Lee Arnold. 2009. Population increase and environmental deterioration correspond with microlithic innovations in South Asia ca. 35,000 years ago. *Proceedings of the National Academy of Sciences*, 106 (30): 12261-12266. www.pnas.org/cgi/content/short/1306043110.

Petraglia *et al* 2010: Petraglia, Michael D., Michael Haslam, Dorian Q. Fuller, Nicole Boivin and Chris Clarkson. 2010. Out of Africa: new hypotheses and evidence for the dispersal of Homo sapiens along the Indian Ocean rim. *Annals of Human Biology*, 37(3): 288–311.

Petru, Simona. 2008. Colour, form, animals and deception in the ice age. *Documenta Praehistorica*, XXXV: 227-35.
Phartiyal *et al* 2009: Phartiyal, Binita, Anupam Sharma, Pradeep Srivastava and Yogesh Ray. 2009. Chronology of relict lake deposits in the Spiti River, NW Trans Himalaya: Implications to Late Pleistocene–Holocene climate-tectonic perturbations. *Geomorphology*, 108: 264–72. DOI: 10.1016/j.geomorph.2009.02.018
Piazza, Alberto and Luigi Cavalli-Sforza.2006. Diffusion of genes and languages in human evolution. *In*: Angelo Cangelosy, Andrew D.M. Smith and Kenny Smith (eds.), *The Evolution of Language*: Proceedings of the 6th International Conference (EVOLANG6): 255-66. Singapore: World Scientific Publishing Co.
Pohle, Perdita. 2003. Petroglyphs and abandoned sites in Mustang. A unique source for research in cultural history and historical geography. *Ancient Nepal*, 153: 1-14.
Possehl, Gregory L. 2007. Thoughts on the evolution and history of human populations in South Asia. *In*: Petraglia, Michael D. and Bridget Allchin (eds.).2007. *The Evolution and History of Human Populations in South Asia*: *Inter-disciplinary Studies in Archaeology, Biological Anthropology, Linguistics and Genetics*: 447-59. Dordrecht: Springer.
Power, Camilla. 2004. Women in prehistoric art. *In*: G Berghaus (ed.), *New Perspectives on Prehistoric Art*: 75-103. Westport, CT/London: Praeger.
Rappaport, Roy A.1999. *Ritual and Religion in the Making of Humanity*. Cambridge: Cambridge University Press.
Rasmussen, Morten *et al* (57 co-authors). 2011. An aboriginal Australian genome reveals separate human dispersals into Asia. *Science*, 334: 94-98. www.sciencemag.org
Rastogi, Kavita. 2017. Raji: Challenges of preservation and revitalization. *In*: B.K. Joshi and Maheshwar P. Joshi (eds.), *Unfolding Central Himalaya*: *The Cradle of Culture*: 99-113. Dehradun: Doon Library and Research Centre and Almora: Almora Book Depot.
Rendell, Hellen M and R.D. Dennell. 1985. Dated Lower Palaeolithic artifacts from northern Pakistan. *Current Anthropology*, 26: 393.
Renfrew, Colin. 1987. *Archaeology and Language: The Puzzle of Indo-European Origins.* Jonathan Cape, London.
___.1992. Archaeology, genetics and linguistic diversity. *Man*, New Series, 27 (3): 445-478.
___.1994. World linguistic diversity. *Scientific American*, January 1994: 116-23.
___.2001. Symbol before concept: material engagement and the early development of society. *In*: Ian Hodder (ed.), *Archaeological Theory Today*: 122-40. Cambridge: Polity Press.

___.2008. *Prehistory*: *The Making of the Human Mind*. E-book. New York: The Modern Library.
Rivett-Carnac, J.H. 1877. Rough notes on some ancient sculpturing on rocks in Kumaon similar to those found in monoliths and rocks in Europe. *Journal of Asiatic Society of Bengal*, XLVI (1): 1-15.
Rozwadowski, Andrzej. 2012. Shamanism in indigenous context: understanding Siberian rock art. *In*: Jo McDonald and Peter Veth (eds.), *A Companion to Rock Art*: 455-71. West Sussex: Blackwell Publishing Ltd.
Sankalia, H.D. 1974. *The Prehistory and Protohistory of India and Pakistan*. Poona: Deccan College Postgraduate and Research Institute.
Sankhyan, Anek R. 2013. The Emergence of *Homosapiens* in South Asia: The Central Narmada Valley as witness. *Human Biology Review*, 2 (2): 136-152.
Sharma, A.K. 1996. *Early Man in Eastern Himalayas* (*North-East India and Nepal*). New Delhi: Agam Books International.
Sharma, T.C. 1974. Recent archaeological discoveries in North-Eastern India. *Puratattva*, 7: 17-19. 1974;
___. 1979. Prehistoric archaeology in North Eastern India – a review of progress. *In*: T. C. Sharma and D.N. Majumdar (eds.), *Eastern Himalayas* (*A Study on Anthropology and Tradition*): 102-35. New Delhi: Cosmo Publications.
Sharma, D.D. 1983. Preservation of Old Indo-Aryan dialects in the Mid-Himalayas. *Nepalese Linguistics*, 2: 45-51.
_____. 2003. *Munda*: *Sub-stratum of Tibeto-Himalayan Languages*. New Delhi: Mittal Publications.
Sidwell, Paul. 2015. The Austroasiatic language phylum: A typology of phonological restructuring. *In*: Claire Bowern and Bethwyn Evans (eds.), *The Routledge Handbook of Historical Linguistics*: 675-703. Oxon: Routledge.
Singh, Bhagwan. 1997. Birth of civilization: Indian viewpoint. *Purātattva*, 27: 74-84.
Southworth, Franklin C. 1997 [1995]. Reconstructing social context from language: Indo-Aryan and Dravidian prehistory. *In*: George Erdosy (ed.), *The Indo-Aryans of Ancient South Asia*: *Language, Material Culture and Ethnicity*: 258-77. New Delhi: MunshiramManoharlal Publishers.
___. 2005. *Linguistic Archaeology of South Asia*. London and New York: RoutledgeCurzon, Taylor & Francis Group.
Staal, J.F.1963. Sanskrit and sanskritization. *Journal of Asian Studies*, 22 (3): 261-75.
Stout, Dietrich. 2010. Possible relations between language and technology in human evolution. *In*: April Nowell and Iain Davidson

(eds.), *Stone Tools and the Evolution of Human Cognition*: 159-84. Boulder: University Press of Colorado.

Tewari *et al* (eds.) 2007-2008: Tewari, Rakesh, KripaShankerSaraswat and Girish Chandra Singh (eds.). 2007-2008. *Proceedings of the International Seminar*: '*First Farmers in Global Perspective*' (Lucknow 18-20 January, 2006). *Prāgdhārā*, 18. Lucknow: U.P. State Archaeology Department.

Tomasello, Michael. 2003. On the different origins of symbols and grammar. *In*: Morten H. Christiansen and Simon Kirby (eds.), *Language Evolution*: 94-110. Oxford: Oxford University Press.

Turin, Mark and Bettina Zeisler (eds.). 2011. *Himalayan Languages and Linguistics*: *Studies in Phonology, Semantics, Morphology and Syntax*. Leiden: Brill.

van Driem, George. 2001. *Language of the Himalayas*: *An Ethnolinguistic Handbook of the Greater Himalayan Region Containing an Introdution to the Symbiotic Theory of Language*. Leiden: Brill.

___. 2008. Reflections on the ethnolinguistic prehistory of the Greater Himalayan Region. *In*: Brigitte Huber, Marianne Volkart and Paul Widmer (eds.), *Chomolangma, Demawend und Kasbek: Festschrift für Roland Bielmeierzuseinem 65:* 39-59. Geburtstag (2 vols.). Halle: International Institute for Tibetan and Buddhist Studies.

___. 2011. Lost in the sands of time somewhere north of the Bay of Bengal. *In*: Mark Turin and Bettina Zeisler (eds.), *Himalayan Languages and Linguistics: Studies in Phonology, Semantics, Morphology and Syntax*: 13-38. Leiden: Brill.

___. 2012. Glimpses of the ethnolinguistic prehistory of northeastern India. *In*: Toni Huber and Stuart Blackburn, (eds.), *Origins and Migrations in the Extended Eastern Himalayas*: 187-211. Leiden:Brill.

___. 2013. East Asian Ethnolinguistic Phylogeography. *Bulletin of Chinese Linguistics*, 7 (1): 135-188.

Vajda, Eduard J. 2012. *Yeniseian Peoples and Language. A History of Yeniseian Studies with an Annotated Bibliography and a SourceGuide*. New York: Routledge.

Verma, B.C. 1975. Occurrence of Lower Palaeolithic artefacts in the Pinjor member (Lower Pleistocene) of Himachal Pradesh. *Journal of Geological Society of India*, 16 (4): 518-521.

___. 1991. Siwalik Stone Age culture. *Current Science*, 61 (8): 496.

Verma, Niraj Kumar, Manoj Kumar Saxena, Maheshwar P. Joshi, Syed Jamal Hasan and D.N. Dimri. 2012. Newly discovered palaeoliths from Uttarakhand Himalaya, India. *Manimahesh: A Journal of Himalayan Studies*, 2: 39-44.

Vernier, Martin.2016. Zamthang, epicentre of Zanskar's rock art heritage. *Revue d'EtudesTibétaines*, no. 35, April 2016: 53-105.

Wadley, Lyn. 2010. Compound-adhesive manufacture as a behavioral proxy for complex cognitionin the Middle Stone Age. *Current Anthropology*, 51 (Supplement 1): S111- S119.

Watchman, Alan. 1997. Paleolithic marks: Archaeometric perspectives. *In*: Margaret W. Conkey, Olga Soffer, Deborah Stratmann and Nina G. Jablonski (eds.), *Beyond Art: Pleistocene Image and Symbol*: 21-36. Wattis Symposium Series in Anthropology, Memoirs of the California Academy of Sciences, Number 23. California, San Francisco.

Watters, David E. 2006. *Notes on Kusunda Grammar*: *A Language Isolate of Nepal*. *Himalayan Linguistics*: Archaive 3: 1-182.

Watts, Ian. 2009. Red ochre, body painting, and language: interpreting the Blombos ochre. *In*: Rudolf Botha andKnight, Chris (eds.), *The Cradle of Language*: 62-92. Oxford: Oxford University Press.

White, Randall. 1993. Introduction [to the first English translation of *Le Geste et la parole*]. *In*: André Leroi-Gourhan. 1993 (1964). *Gesture and Speech.* Translated from the French [*Le Geste et la parole*, 1964] by Anna Bostock Berger and introduced by Randall White. Cambridge, Massachusetts: An October Book, The MIT Press

Whitehouse *et al* 2004: Whitehouse, Paul, Timothy Usher, Merritt Ruhlen and William S.-Y. Wang. 2004. Kusunda: An Indo-Pacific language in Nepal. *PNAS*, 101 (No. 15): 5692-95. www.pnas.org/cgi/doi/10.1073/pnas.0400233101

Witzel, Michael. 1997 [1995]. Early Indian history: linguistic and textual parameters. *In*: George Erdosy (ed.), *The Indo-Aryans of Ancient South Asia*: *Language, Material Culture and Ethnicity*: 85-125. New Delhi: Munshiram Manoharlal Publishers.

Wynn, Thomas. 1991. Tools, grammar and the archaeology of cognition. *Cambridge Archaeological Journal*, 1 (2): 191-206.

___. 2000. Symmetry and the evolution of the modular linguistic mind. *In*: Peter Carruthers and Andrew Chamberlain (eds.), *Evolution and the Human Mind: Modularity, Language and Metacognition*: 113-39. Cambridge: Cambridge University Press.

Zegura, Stephen L. 2008. Current topics in human evolutionary genetics. *In*: John D. Bengtson (ed.), *In Hot Pursuit of Language in Prehistory: Essays in the four fields of anthropology. In honor of Harold Crane Fleming*: 343-57. Amsterdam / Philadelphia: John Benjamins Publishing Company.

Zilhão, João. 2007. The emergence of ornaments and art: an archaeological perspective on the origins of "behavioral modernity". *Journal of Archaeological Research*, 15 (1): 1 – 54.

Zoller, Claus Peter. 1988. Bericht über besondere Archaismenim Bangani, einer Western Pahari-Sprache. *Münchener Studien zur Sprachwissenschaft*, 49:173-200.

___. 1989. Bericht über grammatische Archaismenim Bangani. *Münchener Studien zur Sprachwissenschaft*, 50: 159-218.
___. 2007. Is Bangani a V2 Language? *European Bulletin of Himalayan Research*, 31: 83-141.
___.2008. Genitive marking of subjects in West Pahari. *ActaOrientalia*, 69: 121-151.
___. 2016. *Proto Indo-European – Indo-Aryan – Himalayan Aryan Languages: New Perspectives on Some Old Questions*. Dehradun: Doon Library and Research Centre & M/s Bishen Singh Mahendra Pal Singh.

❖

Pl. 1: Lakhu-udyar, horizontal orientation of human figures.

Pl. 2: Lwethap, horizontal orientation of human figures.

Pl. 3: Phalsima, horizontal orientation of human figures.

Pl. 4: Gvarkhyavadyar, human figures jumbled up in conglomeration.

Pl. 5. Ghatgarh rock shelter, human figures jumbled up in conglomeration.

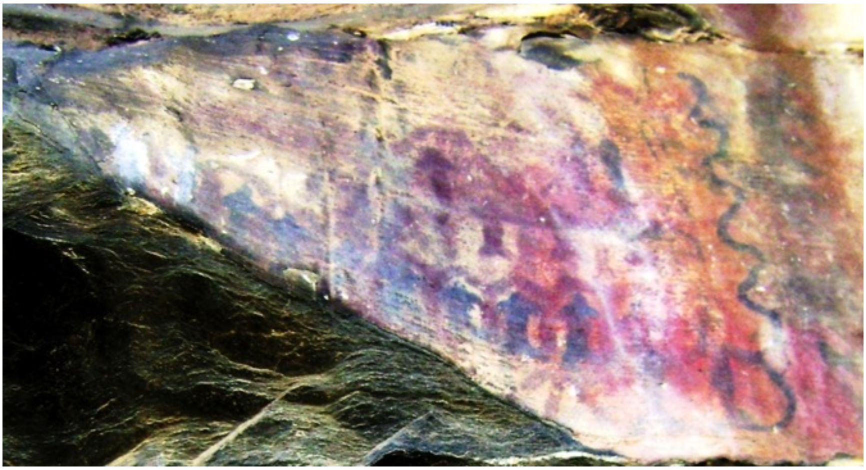
Pl. 6. Hudoli, perpendicular row of hieroglyph-like motifs.

Pl. 7: Phalsima, alignments of short lines.

Pl. 8. Lakhu-Udyar above Forest Checkpoint, vulvas.

Pl. 9. LakhuUdyar, imposing rock shelter above Forest Checkpoint, alignments of short lines.

Pl. 10: LakhuUdyar, imposing rock shelter above Forest Checkpoint, long wavering red line.



Pl. 11: Pethsal, conically roofed pyramidal motif.

Pl. 12. Phalsima, beheaded human figures in black.

Pl. 13. Lwethap, lower rock shelter, red lines associated with human figures.

.

Pl. 14: LakhuUdyar, red lines associated with human figures.

❖