

'Writing' in Space: An Interpretation of Prehistoric Mortuary Practices in the Central Ganga Valley

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INTRODUCTION

Archaeologists wander through the endless corridors of the past always unlocking doors with different analytical keys. They try to listen to the deafeningly silent yet meaningfully eloquent past. Theories abound to unlock the mysteries of the past — its meaning, its construction, its creators. But is there a master-key to unlock these doors to illuminate corridors of our past with the radiance of the present? Time, the central point to archaeology, constitutes the major problem of interpretation. By definition the past cannot be present but the traces of the past surround us:

*Time present and time past
Are both perhaps present in time future
And time future contained in time past.
If all time is eternally present
All time is unredeemable.*

— T.S. Eliot

The traces of the past which we find in the present *belong* to time other than the present. The problem is of relating this *otherness* to the present. The past is 'perfect' (in grammatical terminology) which is in the flow of the ongoing 'imperfect' present. Attributes of the traces of a (perfect) past distanced from the present create problems for interpretation. A *perfect* past is temporally absent, yet the spatial temporality of objects implies its possession. Thus, time reduced to spatial distance gives a fourth dimension to an artefact — equivalent to mass and dimension. In Latin it is *subiectum* possessing *accidentes* (Heidegger, 1978:153; Rose, 1984:62-3). Bergson (1911:24) believes in the distinction between real time (the duration of being) and abstract time (the eternity of non-being). Whereas time may be treated as concrete duration intrinsic to the thinker as abstract artefact of his thought, consciousness of time lies in the confrontation between the subjective world of persons and the objective world of things. The loss of this sense of time in Levi-

Strauss's structuralism represents history as a chain of discrete particulars suspended in the boundless void of eternity. Past is somehow subtly within us but beyond us.

'Space', on the other hand, is a frame of reference for the physical components of actions. It is a grammalogue for problems and possibilities related to the performance of action in the physical world (Werlen, 1993:3). Bartel, (1973:19) defines the significance of spatially locatable elements for action by saying that most human actions have to do with material things, with exclusively spatial considerations. It has great importance for the social context of action. If we are to understand the significance for social processes of the spatial arrangement of physical-material conditions and means of action, then we need adequate frames of reference to understand the actions.

In archaeology theory, practice and evidence are interwoven. Archaeological evidence does not simply *stand* for the past to be interrogated and liberated from its inherent meaning. Like a metaphor the past requires interpretation. Truth is a mobile army of metaphors, an entire thematics of active interpretations (Nietzsche, 1909). Archaeology is a performative and transformative exercise, a transformation of the past in terms of the present. There is a dialectic of past and present. Our understanding of the past is context dependent but not context-confined. The past and present mutually constitute each other in daily life. Bourdieu's theory of practice presents an implicit invitation to archaeologists to come to an understanding of the principles, lying behind other cultural practices, through an examination of and involvement in objects arranged in space and in contexts of use (Bourdieu, 1977). Every pot and scratched decoration, every tool, hearth, house and burial is the node of a network of associations and, tell us about the way that world is put together. These are 'writings' in space.

Hermeneutics being the science of interpretation of text, one finds a broadened notion of text in Paul Ricoeur's version of hermeneutics (Ricoeur, 1981). For him any meaningful action constitutes a text which includes, among others, the material remains of the past (Chattopadhyaya, 1999). Archaeology is then a hermeneutically informed dialectical science of past and present. A hermeneutic approach (Ricoeur, 1981; Thompson, 1981; Chattopadhyaya, 1999) is to get at the meaning of things as it 'meant' in the past. What we try and do as archaeologists is to work back and forth between theory and data, showing that some theories account for more of the data than others and adjust our theories according to the data. We contextualize the data and enrich the interpretation. We 'read' the archaeological text (material culture) in its proper context (Chattopadhyaya, 1999). In archaeology all inference is drawn via material culture. If material culture has a symbolic dimension such that the relationship between people and things is affected, then all of archaeology — economic and social — is implicated (Hodder, 1986). How burial reflects society depends on attitudes to death. Ideas, beliefs and meanings interpose themselves between people and things. Social life is the collective form of symbolic thought. The interpretation in archaeology is a process of reducing the distance between one frame of reference (the present) and another (the past) which produces discourse. The process of understanding the past is extremely complicated. Archaeology being a fourfold hermeneutic inquiry needs multivariant plurality of approaches to understand the past (Shanks and Tilley, 1987). In archaeology there is a multitude of competing descriptions of an artefact, an assemblage or a set of remains. To interpret these only the hermeneutic approach is not sufficient. There is need for a dialectic process of interpretation of data binding it to theory.

Social Structures differ from natural structures in a number of important ways: they are dependent on the activities they govern; they are in a chronic state of structuration and are only relatively enduring (Bhaskar, 1979:48-9; Giddens, 1979, 1984). These structuring prin-

ciples are to be related to theoretical objects. Thus, in interpretation there will be a dialectical interplay of theorized data within the hermeneutic circle (in fact, it is more of a widening spiral). Archaeology is neither subjective nor objective — it transcends this dualism while recreating the past. Creative imagination is the essence of archaeology — a creativity that gets clear expression with the help of rules. Like different rules of *Ragas* and *Raginis* in the Indian classical music, like poetry has iambic pentameter to the haiku, archaeology's creativity works within a discipline.

Understanding about shared ancestry, place and history are the symbolic 'raw material' from which a sense of mutual interest and community is built. According to White, "these images are neither ready-made nor self-propagating and must be continually reconstituted in the talk and activity of those who share them. Principal agents in these processes of cultural reproduction are the local leaders especially chiefs, who in life speak of history and who in death are spoken by it, memorialized in ceremonies..." (1991:51).

Theoretical Perspectives on Mortuary Practices

The study of prehistoric mortuary practices has enriched our knowledge of past societies in a number of ways. It promises to highlight not only the physical and biological aspects of concerned people, but also the social and ideological dimensions (Binford, 1971; Tainter, 1978; O'Shea, 1984). Mortuary symbolism has been variously interpreted in anthropology. Apart from the socio-economic and ideological roles of the mortuary monuments (Bloch and Parry, 1982), one can visualize an important emotional relationship between the people concerned and their dead ancestors, latter being seen as the guardians of clans (Pueblo Indians), preservers of all old customs (Melanesians) and the benevolent spirits, which are invoked through repeated rituals for their patronage and blessings and asked to be helpful to their living relatives and descendants (the Volga people) (Tokarev, 1989: 40,70,102-3).

Some anthropologists have emphasized

that the beliefs and practices associated with the disposal of the dead vary with economic base of the society. Meillassoux (1972, 1973), for example, shows the interrelationship between subsistence, social groupings, territoriality and ancestor cults by studying two idealized subsistence types—hunter-gatherers and agriculturalists. In the former type, there is no pronounced concept of fixed, exclusive territories consequently, there is an absence of elaborate mortuary rites, territoriality based descent groups and celebrations relating the living to dead ancestors (also see Woodburn, 1982 for Baka Pygmies of Cameroon and Elwin, 1939 for Baiga of Central India). On the other hand, among agriculturalists descent, that provides for group membership and renews the relations of production, is a major concern. In these societies one finds conceptual continuity with the past that is reflected in ancestor cults, developed genealogies and symbolic representations such as elaborate mortuary rites. Similar comparisons have been made by Maurice Bloch of the socio-economic behavior amongst the Zafimaniry and the Merina of Madagascar (1971, 1975).

These contrasting behavioural patterns relating to the dead, however, cannot be directly correlated with rigid economic categories. These patterns appear to be related more to mobility strategies and are also present within hunting-gathering economies. Renfrew believes that the Megalithic monuments of north-west Europe, beside being related to the burial practice, were viewed as public monuments designed to be 'seen' and were territorial markers of small-scale segmentary societies, where competition for resources were legitimised by reference to the dead ancestors (Renfrew, 1976; Renfrew and Bahn, 1991:180). However, rather than restricting the above formulation to a limited time range or a particular type of society (segmentary), Chapman adopted a broadened conceptual framework and found the above formulation also applicable to earlier, hunting-gathering societies of the Mesolithic Europe (1981). According to him the occurrence of human burials in formal disposal areas is related to periods of imbalance between critical resources

and society. Human groups are said to devise alternative mechanism to regulate access to resources that reach a critical level: "the emergence of territoriality based descent groups ... is a response to this process and the new social order may be symbolized to the community at large by the use of formal disposal areas, through which a permanent claim to the use and control of critical resources is established by the presence of the ancestors" (Chapman, 1981:80). He maintains that, while all forms of disposal of the dead are to be understood in their socio-cultural context, similar processes may have been operative in the appearance of both monumental tombs (Megaliths) and earlier, Mesolithic flat cemeteries of Europe.

Saxe's (1970) study of mortuary practices in archaeological context was aimed at building and testing models of how treatment of the dead is related to socio-cultural systems. Working on ethnographic evidence he put forward a hypothesis which states, "To the degree that corporate group rights to use and/or control crucial but restricted resources are attained and/or legitimized by means of lineal descent from the dead (*i.e.*, lineal ties to ancestors), such groups will maintain formal disposal areas for the exclusive disposal of their dead, and conversely" (Saxe, 1970:119). His hypothesis is of great significance for studying spatial dimensions of mortuary practices. Goldstein modified Saxe's hypothesis by postulating that "If a permanent, specialized bounded area for the exclusive disposal of the group's dead exists, then it is likely that this represents a corporate group that has rights over the use and/or control of crucial but restricted resources. This corporate control is most likely to be attained and/or legitimized by means of lineal descent from the dead, either in terms of an actual lineage or in the form of a strong, established tradition of the critical resource passing from parent to offspring" (1981:61). Charles and Buikstra (1983) extended the Saxe-Goldstein formulation with a view to study the relationship between formal cemetery areas and corporate lineal inheritance of crucial and restricted resources among the Archaic hunter-gathers in the central Mis-

Mississippi region. Similar inclination can be seen in Brandt's study of early Holocene hunter-gatherers of southern Somalia (1988).

In order to control crucial/critical resources and legitimize the same through ancestral cults, societies need not be agricultural. It is now being widely recognised that hunter-gatherers too possess socio-cultural complexity, including sedentism and can exhibit a wide range of variability in their mortuary customs (Brown and Vierra, 1983; Chattopadhyaya, 1991; Price and Brown, 1985; Rowley-Conwy, 1983). The remains of ancestors on the land in question legitimize the ownership. Having arrived at this interpretation following Saxe-Goldstein formulation, some clarifications are needed regarding the natures of land ownership and control of resources among hunter-gatherers. Following Gibson's geometry of surfaces, Ingold, (1986:130-64) recognises three logically distinct kinds of land tenure: two-dimensional (of the earth or ground surface), one dimensional (of paths or tracks), and zero-dimensional (of places, sites or locations). The natures of ownership and control among hunter-gatherers may not be the same as to be found among agricultural communities where land tenure relates to the two-dimensional space, *i.e.*, bounded surface. In contrast, tenure, if found among hunter-gatherers, will be zero- or one-dimensional in nature: paths and/or sites (Ingold, 1986:147-48). The confusion in equating hunter-gatherer tenure exercises with two-dimensional areas, arises from ethnographers' biases. Such a misconception, according to Ingold, "flies in the face of evidence that the supposed 'owner' of a territory cannot refuse outsiders access to its resources, and that the offence of unannounced intrusion lies not in the suspicion of poaching but in the potential hazard it poses to successful foraging" (Ingold, 1986:148; see also Riches, 1982:1-36). Beside examining the extent to which the Saxe-Goldstein model on the emergence of formal cemeteries is applicable to the Mesolithic Ganga valley, I would like to address questions like what do land 'ownership' and 'control' over resources mean to hunter-gatherers.

THE MESOLITHIC GANGA VALLEY

Having spelt out theoretical formulations, including some fundamental concepts that I regard as essential for any serious archaeological study, I straightaway move now to archaeological analysis of the available data on the Mesolithic societies of the Ganga valley on established lines. I would like to discuss later the merits and limitations of the conventional practices in archaeology as well as social sciences and suggest that while existing approaches reinforce 'modernist' yet conservative point-of view, one has to transcend the rigid paradigms of research; the real potential of future archaeological studies lies in the broadening of the range of interpretation. A deconstructive reading of the text is necessary and deconstruction involves, among others, opening of alternative windows into the archaeological text. The aim of mainstream social sciences is to reduce the range of interpretation and increase the area of certitude. In metaphoric analysis the aim is not to contribute to the growing mass of certitude but to expand the range of interpretations and thus widen the range of options in an open-ended human future.

Archaeological Background

The central Ganga valley is an important area in South Asian prehistory. The University of Allahabad has carried out archaeological investigations for the past twenty five years in Allahabad, Pratapgarh, Sultanpur, Jaunpur and Varanasi districts of UP (Uttar Pradesh) and located 6 Epipalaeolithic and 194 Mesolithic sites dating from terminal Pleistocene to mid-Holocene (Sharma, 1973; Sharma et al., 1980). Most of the Mesolithic sites are close to oxbow lakes and streams and their distribution shows two distinct clusters (Fig. 1). The Mesolithic sites have been divided into two broad categories: non-geometric microlithic (172 sites) and geometric microlithic (22 sites). The sites with geometric microliths are generally larger. Three excavated sites — Mahadaha (MDH), Sarai-Nahar Rai (SNR) and Damdama (DDM) — are among the larger sites with geometric microliths and

human graves. The excavations also unearthed burnt plaster floors, charred seeds and animal bones, and artefacts like microliths, querns and mullers, ring stones, sling stones, hammer stones, anvils, and tools and objects fashioned on bone and antler. Microliths comprise several categories of blades, as also points, awls, lunates, triangles and trapezes.

These sites have been radiometrically dated between early and middle Holocene (Table 1). River geomorphological studies in the Vindhya and central Ganga valley have shown environmental change from cold and arid condition during terminal Pleistocene to warm and humid one during early to mid-Holocene times (Williams and Royce, 1983). This inference is in agreement with the palynological evidence (Gupta, 1976; Pant and Pant, 1980) and recent study of the river palaeochannels in the Ganga valley using satellite remote sensing data (Chattopadhyaya, 1995). The Ganga valley and the Vindhya, when considered as a larger regional unit, shows environmental heterogeneity. The central Ganga valley has no rocks. The nearest source of chert and other cryptocrystalline rocks is the middle Son valley (eastern Vindhya) about 160 km south of main Gangetic settlement. The nearest source of quartzite for making heavy-duty artefacts was, again, Vindhya (Kaimur hills). The cores found at Ganga valley sites show their maximum possible utilization. It is most likely that these raw materials were obtained from Vindhya through some kind of exchange network (Allchin and Allchin, 1982). If securing control over the regular influx of stone raw material, a critical resource, was vital for the cultural continuity of the Ganga valley societies, then it is possible that such transactions were negotiated by gaining control over the local productivity relating to food resources, antler and bone tools which were potential items for exchange. In the process of managing this control these sites had a complex role to play (Chattopadhyaya and Chattopadhyaya, 1990). Over the long term the social and economic decisions formed patterns which had underlying cultural rhythm.

Table 1: Radiocarbon dates for Mesolithic sites of the Ganga Valley

Site	Lab. Sample No.	Uncalibrated Date (b.p.)
Sarai-Nahar Rai	TF-1104	10,050±110
	TF-1356 & 1359	2,860±120
Mahadaha	BS-136	4,010±120
	BS-137	2,880±250
	BS-138	3,840±130
Damdama	OxA-1647*	6,320±80
	GX-20829-AMS*	8,640±65
	GX-20827-AMS*	8,865±65
	AMS*	

* Accelerator Mass Spectroscopy dates, rest conventional

Zooarchaeology is a developing branch of study within archaeology and constitutes a theme essential to an integrated ecological approach to the human past. I made a first hand study of the animal remains from Sarai-Nahar Rai and Mahadaha and I shall present here the results of faunal studies not only from these sites but also from Damdama (Thomas et al., 1996). The taxonomical identification presents a broad picture of the economy and ecology. However, any interpretation of faunal economy has to be considered taphonomically. Taphonomy relates to the study of the transition of faunal remains from biosphere to the lithosphere and, thus, explores postmortem relations between organic remains and their external environment. In short, it concerns the factors affecting bone preservation from the time of animal slaughter up until the recovery during excavations. Here the aim is to assess the general preservation conditions at the site and to distinguish between natural factors (including carnivore activities) and human factors responsible in the past for the differential representation of anatomical elements. Unless these problems are addressed one cannot be sure of the representativeness of the assemblage and any interpretation of relative taxonomic abundance and hence of subsistence pattern will be misleading.

The initial step of taphonomical study consists of observations on the physical condition of bones, such as relative hardness and colour and also the long bone fragmentation patterns.



Fig.1. Map showing the distribution of representative prehistoric sites of Central Ganga Valley (DDM=Damdama, MDH=Mahadaha, SNR=Sarai-Nahar Rai)

The next step is to identify traces of carnivore actions on the bone (gnawing marks, etc.). This is followed by the application of some analytical techniques to evaluate the recovery quality, i.e., sample bias due to the techniques of recovery (Payne, 1972; Maltby, 1985) and the differential survival of the bones — Brain's method (1976, 1981), for example. However, it is beyond the scope of the present paper to discuss the details of taphonomical analyses, so it will be worthwhile to outline only the main results.

1. Most of the bones from these excavated sites are fossilized and the overall preservation conditions at all the three sites were fairly good.
2. Despite conventional method of recovery (dry sieving), the level of sample bias during bone retrieval was minimum for the Mahadaha and Damdama assemblages; small fish spikes and rodent bones too were carefully collected. But the same cannot be said for the Sarai-Nahar Rai assemblage where one finds a clear bias towards the collection of larger bones, particularly of large bovids. The faunal assemblages from Mahadaha and damdama are more or less representative and fairly reliable towards the reconstruction of the relative abundance of past animal taxa at the sites.
3. The traces of carnivore activities are rare in all the three assemblages and the differential representation of the anatomical elements resulted to a great extent from bone modifications by the humans inhabiting the sites.
4. An additional factor responsible for the excellent preservation of bones at these sites relates to the controlled firing of these faunal remains. While prolonged heating of bones destroy their organic content, incomplete calcification can fortify the bone against several agents of destruction. Before complete calcination occurs, the organic matter chars but it remains, filling the pores of the bone, thus cementing the mineral components together. Once carbonized, the organic matter remains stable and resistant to chemical change encountered by the soil (Cornwall, 1956). Gilchrist and

Mytum (1986) carried out an experiment of bone firing and studied the change of colours at different temperatures. A comparison of the colours of archaeological bones with their results by using Munsell Colour Chart, shows that a large majority of long bones were fired between 300°C and 400°C. The heating of bones to such high temperatures would be meaningless if the sole purpose were cooking, and this practice seems to have had a special purpose. A number of pit hearths of varying dimensions containing longitudinally split and burnt long bones of medium to large sized ungulates as well as bone and antler tools have been recovered from these sites. At Mahadaha a bone dumping complex (earlier described by the excavators as 'butchery area') has been located between the Habitation-cum-Cemetery area and the Lake area (Fig. 2) that contained mostly long bones and antlers. Both tools and objects fashioned on long bones and antlers in various stages of manufacture were encountered during the excavations at all the three sites (Fig. 3). Tools include scrapers, points, awls and daggers. Apart from technomic, socio-technic artefacts, such as earrings, rings, necklaces and pendants were also manufactured. It is argued here that the Mesolithic population of the site specialized in the manufacture of bone and antler artefacts and it is most likely that Sarai-Nahar Rai, Mahadaha and Damdama were bone/antler factory sites. A 'functional' explanation for this practice can be the local absence of lithic raw materials and innovation of alternative technology to supplement the stone tools.

Four classes (with the Phylum Chordata), namely Mammalia, Reptilia, Pisces and Aves are represented in the faunal assemblages of the excavated sites. All the species identified are wild. Besides, some invertebrates like Gastropods and Bivalvia are also present. The mammalian assemblages at Mahadaha and Damdama are dominated by the remains of deer, particularly swamp deer (*Cervus duvauceli*), hog deer (*Axis porcinus*) and spotted deer (*Axis axis*). The remains of *Cervus uni-*

color and *Muntiacus muntjac* occur infrequently. Other taxa identified are *Rhinoceros unicornis*, *Elephas maximus*, *Equus cf. namadicus*, *Sus scrofa*, antelopes like *Boselaphus tragocamelus*, *Antelope cervicapra* and *Gazella gazella*, large bovids, such as *Bos namadicus*, *Bos (bibos) gaurus* and *Bubalus arnee*, a few species of carnivores, and rodents. Some species of tortoise (*Chitra indicus*, *Trionyx gangeticus*, etc.), fish and birds complete the vertebrate assemblage. Figure 4 presents the variation of Niche Width with Resource diversity at the three sites, which suggests a generalised or broad-spectrum economy for Mahadaha and Damdama, characteristic of a hunting society (see Christenson, 1980 for details of the argument).

Absolute ageing of swamp deer and hog deer molars, using Klein's method (Klein and Cruz-Urbe, 1984), helps not only in understanding the mortality profiles of these animals but also in addressing the problem of seasonality of site's occupation. The data analysis from Mahadaha shows that both these animals were killed year round, though the peak seasons of their respective cullings were different (Fig. 5). The faunal evidence thus suggests residential stability, as opposed to residential mobility, at Mahadaha. This is further supported by the occurrence of rodent remains (*Bandicota bengalensis*) from both Mahadaha and Damdama (Chattopadhyaya, 1990).

Mortuary Evidence

All the three excavated sites have furnished mortuary evidence of similar nature. Individuals were buried in supine position in shallow oblong graves. The traces of earthen tumuli on the graves in some cases were reported. In most cases graves contained single individuals, though evidence of double or multiple burials is also found. The graves with double and quadruple burials involve sub-adult to adult individuals of opposite sex. The overall representation of males is higher than that of females at all the three sites. For details of graves and individuals from these sites see table 2.

Table 2: Some attributes of the human burials from the excavated Mesolithic sites in the Ganga valley

Attribute	Sarai-Nahar Rai	Mahadaha	Damdama
No. of graves	11	28	41
No. of double burials	0	2	5
No. of triple burials	0	0	1
No. of quadruple burials	1	0	0
No. of individuals	14	30	46
No. of males	9	17	24
No. of females	4	7	17
No. of children	0	1	3
% males in total sexed adults and sub-adults	69.2	70.8	58.5

Kennedy (1984) has made a detailed morphometric and pathological study of the skeletal remains from Mahadaha and Sarai-Nahar Rai and has reached the conclusion that homogeneity lies in their close genetic ties: "these Mesolithic skeletons are remains of individuals from regional enclaves of the same macropopulation and that they were 'contemporaries' in the sense of a few generations apart from one another" (1984:47-8). Shared features among these skeletal series are overall tall stature of the individuals, robust cranial and postcranial characters, and the relative absence of osseous and dental pathologies resulting from their close genetic ties. The univariate and multivariate analyses of the morphometric data show a high frequency of phenotypic characters shared by the populations of the two sites. Similar conclusion has been drawn by Lukacs in his recent study of the skeletal remains from Damdama (Lukacs and Pal, 1993). It is suggested that a closed mating network system was in operation among the Mesolithic populations (Chattopadhyaya and Chattopadhyaya, 1990). A study of ancient DNA in biomolecular archaeology opens up a number of possibilities of embellishing studies on population migrations and diffusions in this region.

As far as the ornamentation of the dead is concerned there are three categories of bone and antler ornaments: (i) pendants and necklaces (ii) ear rings and (iii) rings. The interesting thing to be noted here is that males are

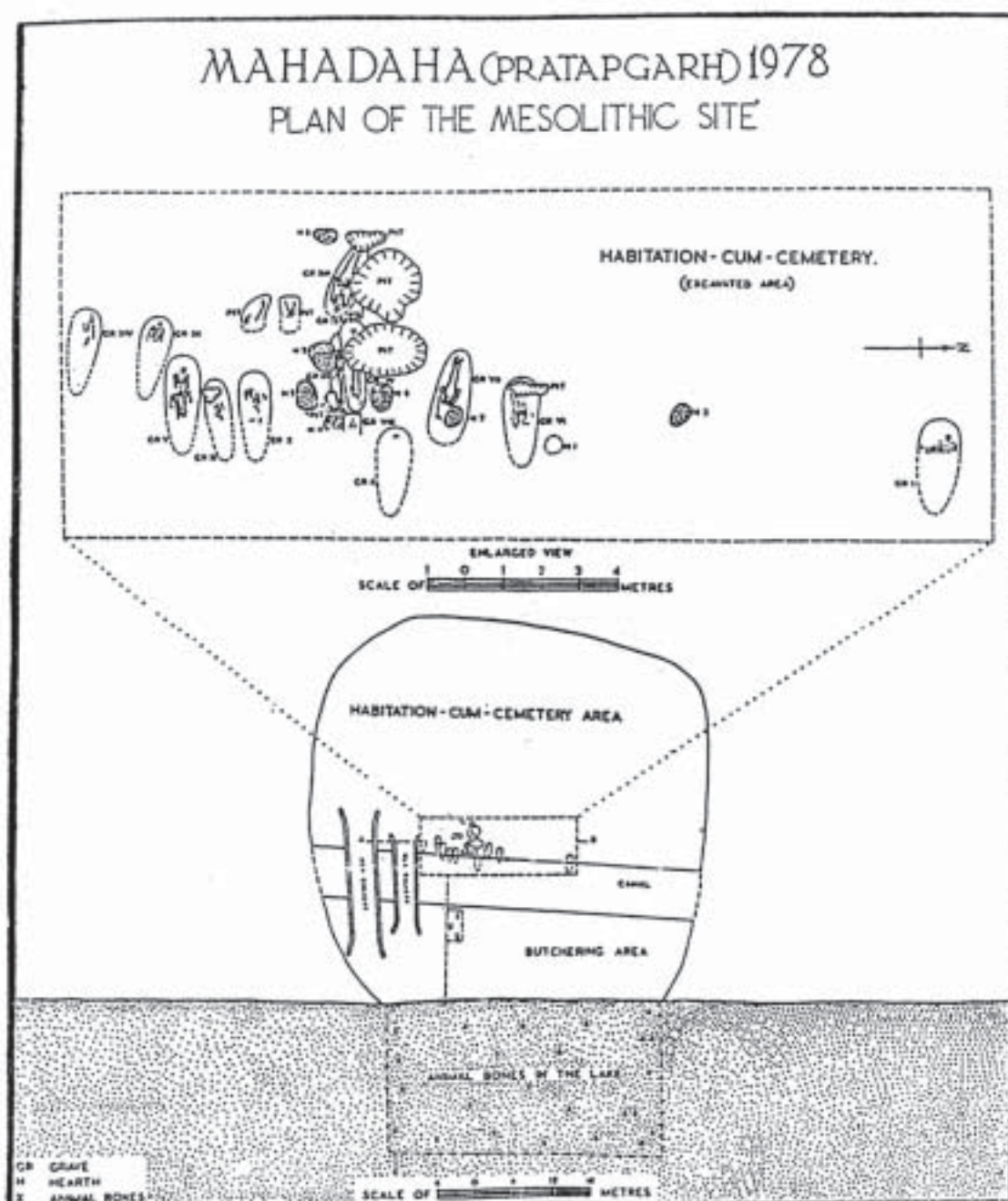


Fig. 2. Site plan of Mahadaba



Fig. 3. Stages of manufacture of antler rings

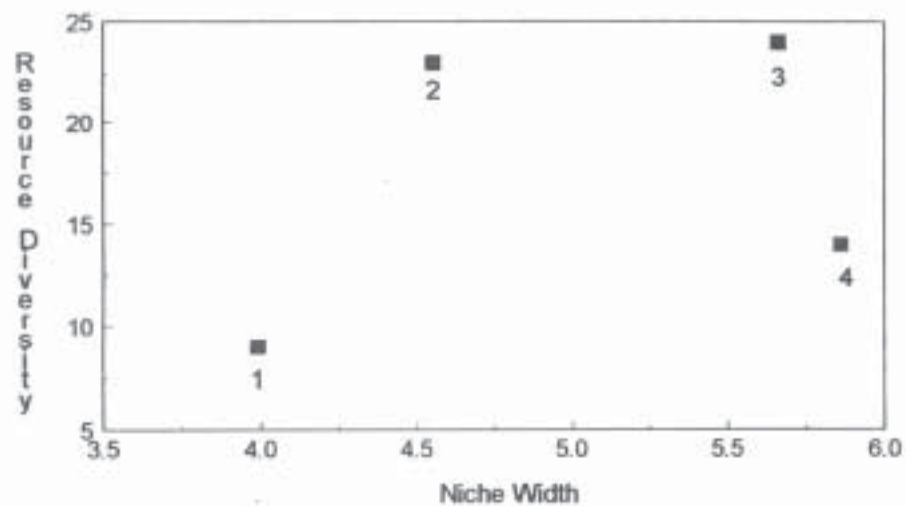


Fig. 4 . Variations of niche width with resource diversity for 1. Sarai-Nahar Rai, 2. Damdama, 3. Mahadada (Cemetery) and 4. Mahadaha (lake)

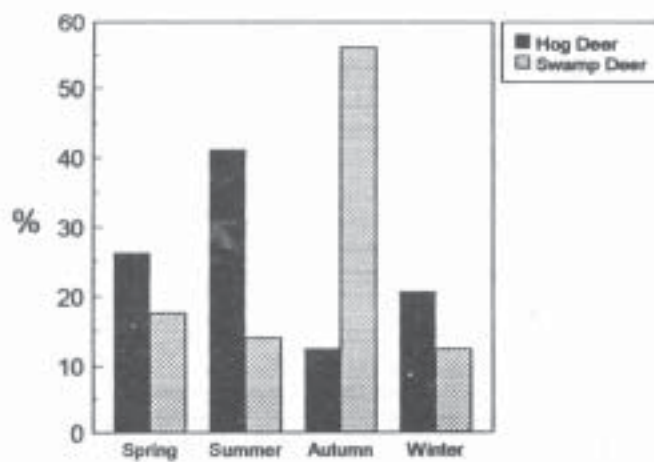


Fig. 5. Seasons of hog deer and swamp deer killings at Mahadaha

mostly associated with first two categories of ornaments while females are associated, if at all, with the third category. The ornamentation pattern indicates social asymmetry between and within sexes, on the one hand, and social position, social affiliation and possible ranking, on the other. In the light of preliminary analysis of the available data it can be said that three dimensional-distinctions, namely condition of death, social position and social affiliation, were given consideration in the mortuary practices at the three excavated sites. If this tentative conclusion is confirmed by further studies then perhaps one could suggest more complex social organization for these Mesolithic societies than is expected among simple hunter-gatherers. This is one area where a fruitful research could be carried out.

In all the burials the body orientation shows a remarkably consistent west-east or east-west pattern (in all such descriptions, the direction given first suggests the direction of the head). Having said this, it has to be mentioned that there is a significant range of variation within this cardinal direction. The plausible basis for this pattern seems to be the direction of the sun (Tylor, 1871; Randsborg and Nybo, 1986:161-84). Over the centuries, due to gravitational perturbation, there is a variation of solar movement across the horizon between summer and winter solstices (Astronomical Almanac, 1988, preface). This range for Mahadaha (Latitude $25^{\circ} 59' 10''$ N), for example, has been calculated to be 54° for the epoch ca. 8300 B.C. (the earliest date for the Mesolithic settlement in the region). For the epoch 6000 B.C. the range has been calculated to be 56° (Chattopadhyaya and Chattopadhyaya, 1990). The present day range is $52^{\circ} 40'$. This means that around 8300 B.C. sunrise during the summer and winter solstices would have occurred at angles of 63° and 117° from the Azimuth, respectively. Similarly, sunset during the summer and winter solstices would have occurred at angles of 297° and 243° . At all the three excavated sites angles of grave orientation measured from the Azimuth generally fall within the above range (Fig. 6). The conclusions we reached are: (a) Sarai-Nahar Rai had a seasonal pattern of occupation in ei-

ther the summer or the winter half, and (b) The normal distributions at Mahadaha and Damdama suggest a year-round pattern of occupation at the sites. This analysis further supports the faunal evidence for residential stability at Mahadaha. Population concentration was higher during autumn/spring as greater number of graves are aligned close to solar paths around the equinoxes. Grave orientations in relation to solar variation suggest that the sites of Mahadaha and Damdama were logistically organized and residentially stable (Chattopadhyaya, 1991:111-2). In the light of Goldstein's theory it can be said that Mesolithic sites of Ganga valley provide very good evidence for corporate group rights over the use and/or control of crucial but restricted resources through legitimization of lineal descent from the dead.

The taxa identified from Mahadaha and Damdama that could be regarded as primary resources are two species of deer: *Cervus duvauceli* and *Axis procius*, and aquatic resources especially turtle and fish. The possible rights of ownership involve those resources that are fixed in space, are predictable and in sufficient quantity such that a group can localize its activities around their vicinity (Charles and Buikstra, 1983). All the three Ganga valley sites with mortuary evidence were located in areas rich in aquatic resources. It appears that there was a correlation between control of land rich in aquatic resources, on the one hand, and legitimization of this control through symbolic means, such as formal cemeteries, on the other. This is a plausible explanation for the rise of onsite, formal cemeteries which would denote corporate group rights to the use and/or control of crucial but restricted resources at the Ganga valley sites. The inhabitants of these sites would have depended on Vidhyan population as far as stone raw material was concerned. The stone artefacts at the excavated sites of Ganga valley include microlithic tools and heavier artefacts, such as querns, mullers, hammer stones, rubbers, etc. (Sharma et al., 1980). Raw material used for microlithic tools include a variety of cryptocrystalline silica rocks — such as chalcedony, agate, chert, jas-

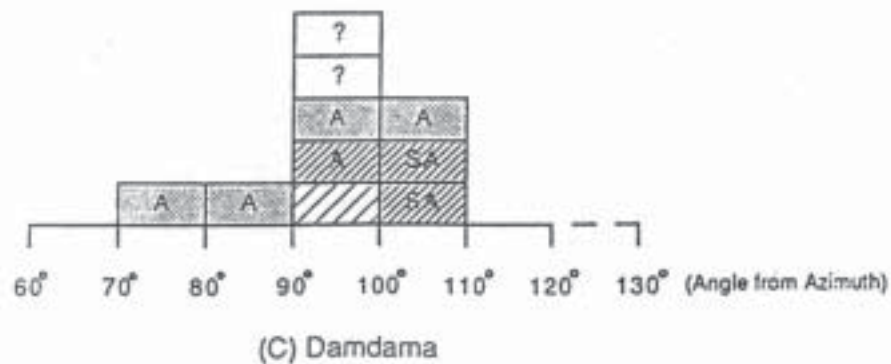
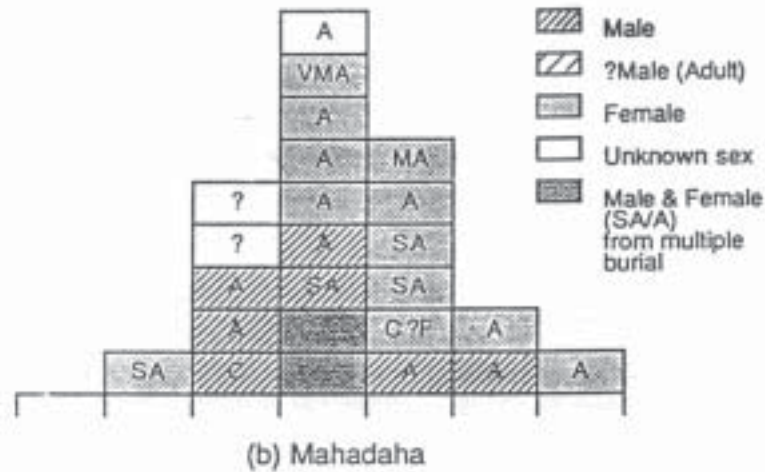
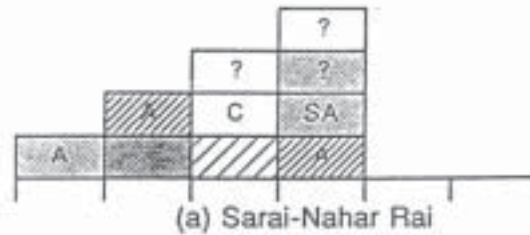
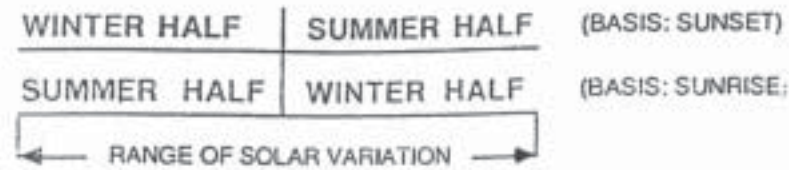


Fig.6. Frequency distribution of grave orientations from the Azimuth at the Mesolithic sites of the Ganga valley

Key: F=Female, M=Male, C=Child, SA=Sub-adult, A=Adult, MA=Mature adult and VMA=Very mature adult

per, etc. Continuity of the Gangetic Mesolithic tradition depended upon the influx of stone raw materials from the Vindhya through some kind of exchange network. Therefore, residential stability was part of an adaptive process, directed towards securing control over the economic and industrial productivities that would, in turn, facilitate the acquisition of exotic stones. The recovery of a large number of long bone and antler fragments showing the evidence of controlled firing in excavated pit hearths and the actual recovery of tools and objects (both technomic and socio-technic artefacts) made of these organic raw materials suggest that Mahadaha, Damdama and Sarai-Nahar Rai were special purpose sites associated with intensive, alternative industrial activities.

OVERVIEW

Having established the possible link between hunter-gatherer sedentism, corporate group descent and formal cemeteries in prehistoric societies in the Ganga valley it could be suggested that the Saxe-Goldstein formulation, with its emphasis on the economic/material dimension, presents only a partial view of the social reality. Marshall Sahlins (1974) abandons the entrepreneurial and individualistic conception of "economy" as a means-end relationship while studying prehistoric and living traditional societies. For him, economy becomes a category of culture rather than behaviour, in a class with politics or religion rather than rationality or prudence: the material life-process of society instead of the need-satisfying activities of individuals. One has to study primitive economics with the understanding that it is the reverse of economic orthodoxy. Sustained ambiguity on this point in both archaeological and anthropological literature has resulted in misinterpretation of hunter-gatherers' world-view. It can be argued that implicit in such theoretical formulations are tendencies to view economy as a separate category involving means-end relationship, on the one hand, and have modernist bias in interpreting ownership and control in the prehistoric past, on the other. Saxe-

Goldstein's approaches, though may not be viewed as invalid, are none the less based on ecological functionalism, a notion which has been severely criticized by post-processual archaeologists (Hodder, 1982; Miller and Tilley, 1984; Shanks and Tilley, 1987). Such models based on ecological functionalism and techno-economic determinism present only a 'partial' view of hunting-gathering societies. 'Writing' in space has to be understood in holistic sense. For making mainstream archaeology more holistic we have to devise a theory of life and consciousness, different from popular theories of complex adaptive systems. Methodological limitations could be overcome in both anthropology and archaeology, "Once we appreciate that human reality can rarely if ever be adequately understood in terms of our dispositional either-or alternatives but demands an intuitive feel for both-and and neither-nor qualities as well" (Miller, 1992:135). Such a reading of cultural phenomena is consonant with the perspective of Foucault (1970) who is as alert to the non-history, the excluded from history as he is to the thoughts, words and action that actually take place (see also Hoy, 1986). Here, an attempt has been made to discuss and interpret the dimensions of burials and their meanings — the meanings of signs — the 'signature' in space.

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comments by Umesh. I have tried to prepare this paper as a 'Chinese meal', which one enjoys while eating with gusto, feels full with the feast of taste and flavour but shortly after eating feels hungry again. Needless to say, I am responsible for the inadequacies that remain.

KEY WORDS Hermeneutics. Mesolithic. Ganga Valley. Cemetery. Corporate Behaviour. Territoriality.

ABSTRACT This paper has two aims, the first is to study the relationship between phenomena in the social world and those in the physical material world; to understand their respective patterns of arrangement and mutual connection in course of action. The second aim is to carry out a hermeneutic inquiry into the mortuary practices of the Mesolithic societies of the Ganga valley. The archaeological evidence has been examined against the Saxe-Goldstein formulation on the interrelationship between cemeteries and corporate group rights to critical resources.

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