

Notes

1. Although the main part of this chapter is a shortened version of another article (Sugawara 1986d), several new arguments are added.
2. For the convenience of non-Japanese readers, I will focus my attention only on the English articles with the exception of a few important books in Japanese.

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Down Ancient Trails: Hunter-Gatherers in Indian Archaeology

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Place him on the earth before he dies, He must stay close to where his four walls grew
- And where his copper coin and silver thread and arrowhead lie hidden, He must
remember when his home was new.

Bhili song from Khare, *The Singing Bow*

South Asian archaeologists invariably work within an atmosphere influenced by a diversity of socio-economic and cultural forces, the outcome of the coexistence of varied religious, caste and tribal groups. Within this context, the image of the 'hunter-gatherer' is one created, not only by anthropological writings, but also by a personal awareness of such groups existing on the fringes of, or within towns and villages, as nomads passing through cities, or as groups increasingly assuming a more forceful role in Indian polity. The 'hunter-gatherer' as portrayed in myths and legends, epics, folk songs (as in the Bhili song quoted above), historical records and ancient literature dating back to the third century AD, has infused a time depth rarely met with elsewhere. It is this seeming continuity, which has deeply influenced the structure of Indian ethnoarchaeological studies.

The use of ethnographic analogies drawn from studies of modern hunter-gatherers may be traced to the work of R.B. Foote and other scholars in the late nineteenth century (Pappu 1991-2). Foote established the science of prehistoric archaeology in the subcontinent, and was perhaps the first to use analogies drawn from hunter-gatherers to reconstruct Palaeolithic lifeways. The importance of his work lies in the fact that in addition to discovering and documenting sites, he made a conscious attempt to integrate diverse kinds of evidence to arrive at a comprehensive picture of prehistoric lifeways in this region. Despite the constraints of working within the profit-oriented Geological Survey, largely in the field, devoid of the 'luxury of a library' (Foote 1881: 326), and distant from the European academic mainstream, his interpretation of the physical and cultural landscapes of this

region, gave a new dimension to nineteenth-century archaeological thought. It is here that his field experiences 'exposed to risks from violent storms and from wild beasts in jungle regions' (Foote 1881: 326) compounded by the influence of Darwin and Huxley comes into play. In particular 'palaeolithians' were thought to have been struggling in the 'school of necessity' subject to tropical seasonality, diseases and predators. At the same time they were of comparable intelligence with European hominids and not merely dominated by climatic alterations (Foote 1868). His observations of local tribal and caste groups led him to visualize images of 'palaeolithians' foraging in catamarans across the coast, from where tools were lost within mud banks. He was also the first to use analogies drawn from natural and cultural forces to interpret artefact distribution and settlement patterns (Pappu 1991-2). Images of prehistoric hunting technology were created using observations drawn from the tribal use of bamboo implements, thorn arrowheads and boomerangs. Subsequently, the impact of the 'New Archaeology' led to changes in conceptual approaches among some Indian scholars (Paddayya 1990, 1995). In prehistoric archaeology, this marked a shift away from the construction of culture-sequences and type-lists towards attempts to study past behaviour. Among other approaches adopted, analogies drawn from modern hunter-gatherers and actualistic studies influenced the way in which prehistoric settlement and subsistence patterns were interpreted. This paper examines different approaches used by archaeologists in interpreting prehistoric behaviour through analogies drawn from modern hunter-gatherers. It situates these approaches within the context of Indian archaeology as a whole, and attempts to examine how results of, these studies have influenced interpretations of Indian prehistory.

Hunter-Gatherers in Modern Indian Archaeology

The first few decades of the twentieth century, witnessed a shift in emphasis in Indian prehistory towards constructing grand sequences linking cultural phases and Pleistocene environmental changes. Emphasis was thus laid on stratigraphy, geomorphology and tool technology, and anthropological studies did not form an important part of research aims (Paddayya 1995). It was the impact of the New Archaeology that spurred Indian prehistorians towards investigating modern hunter-gatherers once again. The importance of ethnography was first emphasized by Malik (1968), although impetus was achieved through the writings of H.D. Sankalia, V.N. Misra, K. Paddayya and M. Nagar, and with the establishment of a chair in ethnoarchaeology at the Deccan College, Pune in 1972 (Misra 1989a; Paddayya 1979). Subsequently, most research has been carried out by students of the Deccan College. The post was first held by Malti Nagar, who carried out pioneering work in the field for more than two decades (Nagar 1967, 1969, 1977, 1978, 1982, 1983, 1985; Nagar and Misra 1989, 1990). For many years, she was

the sole woman ethnoarchaeologist in India, and worked under taxing conditions, both in the field and in a largely traditional, male-dominated social and academic world. Subsequently, numerous scholars worked on hunter-gatherer communities in various parts of the subcontinent, and it soon became incumbent on any student of prehistory to include a chapter on hunter-gatherers inhabiting their study regions (Allchin 1985, 1994; Boivin and Fuller 2002; Fuller and Boivin 2002; Mohanty and Misra 2002; Sinopoli 1991). Despite claims of following a processualist approach, little consistency exists in the use of analogies, leading to a wide range of interpretations of what ethnoarchaeological research constitutes. No clear definition of 'hunter-gatherers' is present (Bender and Morris 1988; Bettinger 1991), although this term is generally assumed to refer to a particular mode of life characterized by hunting, gathering and fishing. Principle approaches towards the archaeological study of hunter-gatherers are presented below.

The Question of Continuity: Hunter-Gatherers and Traditional Ways of Life

The apparent continuity of traditional ways of life in India, has largely conditioned a firm belief in the efficacy of ethnographic analogies in reconstructing the prehistoric past. Owing to the paucity of organic remains at most Palaeolithic and Mesolithic sites, it is widely believed that modern hunter-gatherers are the key to gaining an understanding of prehistoric subsistence and settlement strategies. This general opinion is seen in Murty's (1981: 57) observation that '... broad similarities in subsistence strategies in the hunter-gatherer ecosystems from Stone Age times to the ethnographic present can be predicted on the basis of ethnographic analogy, in combination with archaeological reasoning and environmental reality'. He however cautions that construction of Stone Age realities with the help of living traditions may not always be valid for the prehistoric period, but that historical documents offer scope to examine the dynamics of hunter-gatherer cultures.

This continuity is often examined in terms of biological continuity. Thus, hunter-gatherers of the Gangetic plains are thought to be 'almost certainly descended from the pioneering Mesolithic colonizers of these plains' (Nagar and Misra 1989: 86), and that despite degeneration and change, they provide clues to Mesolithic lifeways. The Van Vagris and other tribes are traced to earlier Mesolithic communities of Rajasthan (Misra 1990: 91). Cooper (1997: 96) states that the Kuruk fisherfolk of the Chitrakot Falls region may be descendants of early Mesolithic settlers, although no direct line can be traced owing to migration and fluid social structures. She believes that ethnoarchaeological studies of the Kuruks may reveal fundamental 'truths' about the best ways to exploit resources of the area 'which are true at all times and with all peoples in this place, even though the two sets of communities, prehistoric and modern may not have any direct lineage' (Cooper 1997). Murty (1981: 57) notes that the traditional economic behaviour

and dietary habits of tribes like the Chenchus, Yanadis, Yerukulas and Boyas of the south-east coast of India, can in fact be seen as ontogenic survivals from the Stone Age past.

Continuity is also interpreted in terms of environmental and cultural factors (Allchin 1994: 1; Misra 1989b). Nagar (1967: 236) argues that culture is a historical process and although modified, some older practices survive, preserved in the lifestyles of various tribes. Despite this, she concludes that it is difficult to draw comparisons between Chalcolithic Ahar and modern Bhils, there being few common factors between the two. Among the tribes of Rajasthan, Misra (1990: 91) believes that harsh ecological conditions imposed severe restrictions on economic growth and contributed towards the continuation of traditional adaptive strategies of hunting and gathering. Subsequent degeneration of the environment forced certain groups into agriculture or craft-traditions and into a symbiotic relationship with local communities, while others took to crime.

Encapsulation and Change

The 'encapsulation' and acculturation of modern foragers, in terms of their interaction with farmers, pastoralists and urban societies has long been recognized in Indian archaeology. This recognition coexists with studies highlighting continuity of lifeways, and in such cases, attempts are made to filter selective information thought relevant for the study of prehistoric lifeways. Allchin (1985: 25) aptly warns that while communities appear to retain their identity, changes have occurred and their lifestyles need not reflect the past merely because of the survival of certain traditions. In this context of continuous change, Murty (1985a: 192-193) believes that analogical reasoning may be used only if there is evidence in the archaeological record to demonstrate a continuity from past to present. Chakrabarti (1994) presents a holistic picture of the tribal landscape in the Chotanagpur region, with interactions between hunter-gatherers, shifting cultivators and plough agriculturalists. In the case of the Van Vagrins and other tribes of Rajasthan, Misra (1990) traces their adaptation through time within different ecotones. With depletion of game, some tribes took to agriculture, while others continued as hunter-gatherers but entered into symbiotic relationships with local communities. Nagar and Misra (1989) use historical documents to trace changing subsistence and settlement patterns among tribes in the north Indian Gangetic plains, considering population demography and variability in settlement and subsistence patterns through time, as well as the symbiotic relationship between hunter-gatherers and other groups.

Murty (1985a; 1994) utilizes inscriptions, medieval literature and colonial accounts, archaeology and folk culture for a period ranging from the fourth century AD to the nineteenth century, in order to trace dialectics between forest peoples, cultural systems and the state, and to 'explain the dynamics of hunter-

gatherer cultures' of the Eastern Ghats. Cultural trajectories of hunter-gatherers are traced in a changing physical and social environment in which the state is seen to act as an intermediary. This research stresses a continuum from medieval to modern times in hunter-gatherer lifeways and displays how forest cultures were integral to the functioning and maintenance of organization of the state. An ethnohistorical study of the Andaman islanders is also presented by Cooper (1994).

Studies such as that of Hooja (1988; 1994), trace interactions between Bhils and non-Bhils from post-700 AD in Rajasthan, and dwell on recent transformations within their society. Drawing on archaeological data, she notes that early farmers of Chalcolithic Ahar (c.2500-1500 BC) and Gilund were in close interaction with hunter-gatherers of Mesolithic Bagor (Phase I, and Phase II, c.2700-2000 BC). Hooja believes that even without raising the issue of whether Bhils or non-Bhils are descendants of prehistoric communities, ethnoarchaeology can provide case studies of 'contact, conflict and co-existence between two distinct cultures in historical and modern times' (Hooja 1994: 139). Data from the Mesolithic sites of Langhnaj, Pushkar, Ganeshtar, Bhimbetka, Lekahatia and Adamgarh also point to this early interaction. Jacobsen (1985) points out that hunters and farmers have coexisted for almost five millennia, and draws on evidence from Mesolithic and Chalcolithic sites in the Raisen-Sehore complex rock shelters, where stone chipping technology and tool kits coexist with late Chalcolithic or Early Iron Age material and historical goods.

Evidence of the exchange of items between Mesolithic and settled Neo/Chalcolithic communities, is discussed by Misra (1989b), who believes that with the emergence of village-based economies in Mesolithic habitats, hunting-gathering populations came into closer interaction with the former, and possibly became marginally enclaved. Guha (1994) and Posselt and Kennedy (1979), stress the role of hunter-gatherers in Harappan socio-economy. The latter argue that the location of Lothal (Harappan) in relation to Langhnaj and other North Gujarat Mesolithic sites indicates that the hunter-gatherers of the North Gujarat Plain were supplying raw materials to the city of Lothal. Khanna (1988) uses archaeological and ethnographic data to postulate a model for the site of Bagor. A pastoral hunter-gatherer economy is proposed for Phase I (after c.2635 BC), outside the periphery of settled agriculturalists and with a multi-resource exploitation system. In Phase II, he argues for contact with neighbouring Chalcolithic populations (2765-2110 BC).

This situation prevails in Peninsular India as well, where hunter-gatherers were integrated into the wider community as specialized castes, involved in either visible or invisible trade with local communities or as dispossessed victims of expansion by kings/cultivators (Morris 1982), or pushed into refuge zones (Gardner 1982; Morris 1982). This 'acculturation' is documented in South India as far back as the first or second centuries AD in Sangam texts and in the Mackenzie

Manuscripts (see Morris 1982; Raman 1959: 5); and is inferred from trade in forest products with Rome (Morris 1982). From medieval times onwards, hunter-gatherers were employed by kings in the army (e.g. Vellans) or incorporated into the social structure (*kratas*, *pulindas*, *nishadas*, etc.). During most of the nineteenth century, they were driven into forest refuges (Morris 1982: 19). A study of the Irlas reveals that as per old legends in the *Colapurvapattayam*, (sixteenth to eighteenth centuries AD during the reign of the Cola king Kullotunga), the Irla chief Kovan ruled over Coimbatore (Kovanputtur, Koyamutturu or the 'New Town of Koyan') and that the tribe disbanded following the death of Kovan (K. Zvelebil 1988: 52-3).

Ethnographic Documentation

These approaches may be seen in the form of studies where individual artefacts or aspects of the material culture of tribes are described with a view towards interpreting the archaeological record of a particular site/region. Two approaches may be detected here.

The first approach provides detailed descriptions of hunter-gatherers, focusing primarily on settlement and subsistence systems, highlighting aspects of material culture that anthropological studies often ignore. These studies are conducted in regions rich in prehistoric archaeology, and are directed towards interpreting the archaeological record of the region under study. In most cases modern groups are regarded as offshoots of original prehistoric communities. Archaeological data may be minimal in these studies although references to other works abound. These studies supply a wealth of information on fast-vanishing lifeways, and provide a base which may be utilized by prehistorians. This approach is seen in the work of M. Nagar (1982; 1985) on the Gonds and other tribes of Central India, by M. Nagar and V.N. Misra on the Kanjars (1990) and Pardhis (Misra and Nagar 1993) and tribes of the Gangetic plains (1989, 1994), by V.N. Misra on the Van Vagris (1990) and T. Kaping (1998) on the Southern Nagas. Ethnographic studies are also noted in combination with intensive archaeological surveys and studies of lithic assemblages, in the work of S.C. Nanda (1983) on the Parjas and other Orissan tribes, P. Mohanty (1989) on the Juangs of Orissa, J.S. Jayraj on the Yanadis (1983), T. Kaping (1998) on the Southern Nagas, and P.C. Pant and V. Jayaswal (1991) on the Kodas of the Kharagpur hills near Paisra.

The second approach deals with studies of individual aspects of material culture from which parallels may be traced in the archaeological record. Here, Nagar's (1977) study of tribes in the vicinity of the Bhimbetka group of rock shelters, and her analogies drawn from Gond memorial stones and iron implements to study Iron Age burials and copper hoard cultures are significant. Analogies drawn from modern tribals were used to identify a possible shrine (a rectangular stone platform with a triangular stone with circles) at Baghor II (Upper Palaeolithic), which aids

in tracing a long continuity of mother-goddess worship (Kenoyer, Clark, Pal, and Sharma 1983). Ansari's (2000) study of modern Kols and Musahars focuses on construction and use of different types of storage bins/pits, which is compared with evidence from Mesolithic Chopani Mando.

Tool functions are often interpreted on the basis of ethnographic analogies. This is seen in analogies drawn by Murty (1981) and Raju (1988) to interpret stone tool functions along the south east coast of India. This is particularly evident in studies of Upper Palaeolithic and Mesolithic tool types, including backed blade elements, microlithic blades, arrowheads and crescentic backed pieces. Parallels are also drawn from bored-stones used by the Yanadis, Voda Balijes and others as net sinkers in fishing and which are also found at Upper Palaeolithic sites in this region (Murty 1981). Grinding stones at Upper Palaeolithic sites are thought to have been used for processing wild food such as rice (*Oriza nivara*), found even today in the Eastern Ghats. Analogies have also been drawn from the study of specific plant species (Kajale et al. 1991) to explain probable uses of wood remains of *Cassia* cf. *fixtula* found at Betamcherla (Upper Palaeolithic and Mesolithic). Murty (1981) also draws on modern analogies of the use of resins/gums (gums of several species of *Acacia*, lacquer from the nests of fire ants and milky juice of *Excoecaria agallocha*) in interpreting hafting of Upper Palaeolithic tools. Ethnobotanical studies were also conducted by Nagar (1985) in Central India, in which she highlights species utilized, as well as the fact that most collection is done by women and children.

General Ecological Models

Models drawn from human ecology as well as from studies of modern and Pleistocene geographical and environmental changes represent a movement away from particularistic studies. In a comprehensive paper Misra (1989b) draws together archaeological and ecological data and proposes a broad picture of settlement and subsistence patterns spanning the Palaeolithic and Mesolithic. Varied ecological niches in ecosystems were occupied from the Upper Palaeolithic onwards, as seen in the presence of archaeological sites in regions occupied by modern tribals. He believes that this concurrence in site location indicates that present-day resources must have been used by Terminal Pleistocene populations, possibly on a much larger scale (Misra 1989b: 24). Similar reasoning is used to push back the exploitation of aquatic resources of water bodies in the Eastern Ghats, to the Terminal Pleistocene, based on analogies drawn from the Yanadis (Murty 1981, 1985a). Murty (1985a; 1985b) argues that the tremendous tribal knowledge of plant species results from ecological adaptation and exploitation over a long period, and thus justifies the use of analogies drawn from recent tribal subsistence patterns along the south-east coast to predict past subsistence strategies.

Murty (1981) was perhaps among the first to integrate ecological, archaeological and ethnographic data to categorize sites based on their physiographic location and microenvironment, sedimentary context, assemblage composition, and their relationship with modern tribal settlements, in order to propose models of changing prehistoric subsistence and settlement patterns. He also uses general ecological models and those based on Maruyama's deviation-amplifying to study causes and antiquity of the Kunchapuri Yerukula subsistence strategies based principally on hunting aquatic birds (Murty 1978-9). He argues that temporary periods of environmental instability, during the Pleistocene, must have led to a reliance on a narrow spectrum diet. Assuming that the strategy proved advantageous, following climatic amelioration, it would have been favoured by cultural selection and become an established economic tradition. He suggests that in the late Pleistocene and Holocene, wild cattle were plausibly lamed on a limited scale as an aid (acting as a concealing shield) in bird hunting, even as is done today, and that the tradition of maintaining small herds of cattle/pigs possibly dates back to their symbiotic association with Neolithic stocks.

This approach may also be noted in Paddayya's model of Acheulian land-use patterns in the Hunsgi valley (Paddayya 1982). He considers environmental factors, seasonality, types of water sources, archaeological site sizes, distribution and density of artefacts, and ethnographic data drawn from the Ikung and Chenuchus among others. He postulates a model of dry season coalescence of groups around scarce water bodies such as springs, and wet season dispersal when resources were diverse. Ecological approaches form an integral part of research, which includes middle range models and actualistic studies, discussed below.

Middle Range Research and Actualistic Studies

Such studies often invoke theoretical approaches of the New Archaeology (Binford 1982; 1983; Schifter 1987), but differ in their application and methodology. They generally involve the following aspects: (a) a description of one/more tribes inhabiting the study region, focusing on their subsistence and settlement strategies, (b) a description of the archaeological record stressing on site location, function, artefact density, (c) (optional): studies of site formation processes (both cultural and natural), and (d) proposal of hypotheses of past mobility and settlement patterns based on comparison with modern data. These studies draw largely on the residential versus logistic mobility models proposed by L.R. Binford (1982; 1983). The use of such analogies may or may not include the establishment and subsequent testing of hypotheses (Wylie 1985).

D.R. Raju (1988) considers archaeological and ethnographic evidence in the Gunjana valley to reconstruct Upper Palaeolithic lifeways. In addition to drawing analogies between the location of modern and prehistoric sites, and site sizes, he also draws on similarities between Yanadi activity areas and the patterning in arte-

fact clusters at Upper Palaeolithic sites, which possibly represent similar activity areas. He notes that, 'while it is hazardous to correlate the Yanadi lifeways with Terminal Pleistocene hunter-gatherers, it does demonstrate the resource potential of the region and its carrying capacity to support considerable hunter-gatherer populations' (Raju 1988: 93). Owing to the absence of any significant environmental change from the Terminal Pleistocene in the Gunjana valley, he uses ethnographic evidence to predict the range of resources which may have been used by Upper Palaeolithic populations and puts forward estimates of palaeodemography.

Similar approaches were used by Selvakumar (1996), whose aim was to understand how modern Palyans adapt to their environment and how this may be used to study Mesolithic cultures of the Gundar basin, Tamil Nadu. He identifies three types of archaeological sites created by the Palyans, namely base camps, temporary camping sites, off-sites and rock-painting sites, and discusses choices in settlement location and activities at individual settlements. Drawing on ethnographic and archaeological data, and using Binford's model of logistic versus residential systems, he puts forward a model of dry season migration in the post-monsoon period to the hilly areas of the Upper Gundar basin, and wet season migration to the western part, as influenced by game movement. He identifies three types of Mesolithic settlements, namely base camps, temporary camps and specific activity areas. He also draws on general ethnographic studies in estimating band size and palaeodemography.

In terms of actualistic studies, specific mention may be made of Cooper's work on the Kuruks in the Chitrakot Falls basin, Madhya Pradesh (Cooper 1997), and in the Andaman islands (Cooper 1990; 1992; 1994). In the Chitrakot Falls, her approach is based on a combination of intensive archaeological survey, documentation of modern Kuruk fishermen's settlement and subsistence patterns, and on modern and past ecology. The distribution of Mesolithic sites in this region may be understood by a study of modern Kuruk settlement and by ecological factors. The waterfall formed the focus of the subsistence cycle, with hunting-gathering and fishing being carried out in the dry season along the river. During the monsoon, with the dispersal of game, humans exploited streams where traps/weirs were used to catch fish/crustacea, hunting was minimal and gathering was conducted along numerous small water courses. She also notes that most Mesolithic sites occur on physiographic boundaries between the plains and the rivers, providing access to two different kinds of resources. She proposes that the Chitrakot Falls and environs provided predictable sources of sustenance year round in the Mesolithic, as it does today.

Cooper's study of the Onge encampments in the Andaman islands is the first study in India that attempts to document various stages of abandonment of middens and other sites, and record observable items. Functional attributes of these sites are examined in the light of their possible reoccupation. Cooper

believes that this, together with a consideration of the variable patterns of discard and conditions of preservation, might explain the presence of cultural items most commonly found on archaeological midden sites in the Andamans, although she admits that processes determining the internal structure of these mounds would be difficult to determine. Her studies include patterns of refuse disposal and variability in ways in which refuse is disposed of; taking into consideration questions of abandonment and reoccupation. She also notes, as others have done, that transient camps disappear rapidly under the action of animals/vegetation. At the site of Chauldhari, archaeological data, chronology, changing composition of midden species, methods of extraction/procurement and the lithic assemblage are considered. She concludes that the numerical predominance of a particular species or artefact at a site is not always an accurate measure of the major dietary items that were consumed, or tools commonly used. Evidence from the Hava Beel cave (AD 410 ± 110, ANU-5340, from a 4.4 m trench) is important as it marks the complete absence of any faunal remains and artefacts save lumps of resin (*Canarium ephyllum*), used by modern Andaman tribes for making torches. She suggests that the cave was used as a temporary shelter while maintenance and procurement activities were carried out 100 m away in a shell midden (Cooper 1990).

Deshpande-Mukherjee's (2000) study of midden formation describes contemporary shellfish gathering along the Konkan coast by the Son Koli fishermen, taking into consideration techniques of collection, division of labour, seasonality, processing and discard strategies, as well as modern lime manufacture and other factors influencing midden formation. This study of midden formation, along with that of Cooper, constitute new lines along which actualistic studies are being conducted in India.

Special mention may also be made of Rao's (1994) work on the Gonds in the Kuntala region, Andhra Pradesh and the Vasavas of Akkalkuwa, Maharashtra. Her aim was to understand past settlement and subsistence patterns by reviewing modern practices. In addition, she also considers ecological factors and acculturation, as well as a detailed study of lithic assemblage variability. Her study follows a rigorous methodology in the construction and testing of hypotheses. She identifies short-term sites, transient loci and long-term camps, and suggests that the perennial pool at Kuntala was the nucleus around which populations wandered with wet-season dispersal and dry-season aggregation patterns. She is also one of the few scholars who contrasts this evidence with that drawn from a study of the Vasavas in a region where water is not the main criteria for mobility. Here modern and prehistoric settlements are located on high grounds (permanent camps) close to the river Narmada facilitating exploitation of the river and interior forested regions (transitory loci).

Actualistic studies were also conducted to investigate Upper Palaeolithic and Mesolithic settlements in the Son valley (Mishra and Clark 1983). Here temporary

shelters constructed by farmers to guard over fields, and by pastoral nomads were studied, and important observations were made on the distribution of stone manuports, commonly found at prehistoric sites. Based on studies of the Baigas, Clark and Sharma (1983), conclude that models of settlement types and mobility patterns applicable in Africa were not very relevant in India. They put forward a hypothesis for Holocene communities in India, which includes a model of frequent movement over short distances, splitting for short periods during the monsoon and early fall when resources were abundant, and aggregation for socio-religious causes.

Pappu's (2001) research formed a part of a broader aim of investigating behavioural variability during the Middle to Late Pleistocene in the Kortallayar basin, South India. Fieldwork and literature surveys revealed great variability in modern South Indian hunter-gatherer settlement and subsistence strategies resulting from ecological, cultural and historical processes, from which alternate expectations on long-term land-use patterns could be suggested. These expectations were considered after taking into account the influence which the rate and scales of geomorphic processes had on site visibility, location, assemblage composition and long-term settlement patterns. Models were proposed on seasonal movement between the river and the hills, although it was acknowledged that ethnographic analogies could be used only in a very general way as regards the Lower and Middle Palaeolithic archaeological record.

Site formation studies have in recent years led to the development of productive information on the Indian prehistoric record, although in most cases, these have focused largely on natural processes (Petraglia 1995). Taphonomic studies of bone dispersal were conducted in Tamil Nadu (Badam and Sathe 1995) focusing on natural rather than human elements. Research also includes Paddayya's study of the dispersal of modern water buffalo carcasses (Paddayya 1987), studies of animal remains in vacant plots and abandoned workers camps (Faculty and Students 1989), methods of meat processing by the Dabba Yerukulas and Boyas, and implications for Late Mesolithic hearths, bearing charred bones (Murty 1981).

In recent years such studies have focused increasingly on palaeodemography and palaeopathology (Kennedy 2000; Possehl and Kennedy 1979; Tavares 1997; Walimbe and Tavares 1992) wherein analogies drawn from modern human populations are increasingly utilized.

Discussion

Ethnoarchaeological studies in Indian prehistory include a wide range of approaches in the use of analogies drawn from modern hunter-gatherers. Conceptual approaches do not appear to reflect developments through time, and are not only dependent on the theoretical orientation of authors, but also on the

nature of the archaeological database available, and the state of the tribal group under study. The greatest contribution of modern Indian ethnoarchaeological research lies in the documentation of aspects of material culture, often ignored by social anthropologists. Thus issues such as settlement patterns, site-types, -structure and activity areas, refuse disposal methods, midden formation, abandonment and reoccupation, material culture, and methods of resource exploitation are discussed, providing details not available in anthropological literature. This is of immense importance when one considers that traditional ways of life are rapidly vanishing in modern India. Beginnings have been made in ethnobotanical studies, taphonomy and bioanthropology. A growing realization of the importance of adopting ecological approaches is also closely associated with ethnoarchaeological research in India. Above all, such studies have guided Indian prehistorians away from construction of type-lists and culture sequences towards thinking about understanding past behaviour.

Despite these advances, much remains to be done in the archaeological study of modern hunter-gatherers. While the influence of processualist schools of thought has led to greater methodological rigour, hypothesis testing remains confined to the works of a few scholars. With a few exceptions, most scholars focus on a single tribe generally occupying the region that is being surveyed for archaeological sites. Such analogies often constitute chapters within doctoral dissertations, or take the form of research papers; there being a marked absence of ethnoarchaeological monographs on hunter-gatherers. Thus, variability between tribes arising from ecological, cultural or historical processes is either ignored or largely simplified. Owing to the paucity of organic material at archaeological sites, complex statistical modelling of subsistence patterns using modern analogies is non-existent. Most analogies of hunter-gatherers stop with the study of prehistoric sites, and few scholars (Guha 1994; Murty 1994; Hooja 1988; 1994; Misra 1989b; Khanna 1988) take into consideration the important role played by hunter-gatherers in later periods. Analogies drawn are selective, and comprise those elements thought to be most relevant for reconstructing prehistoric lifeways, with few studies focusing on trajectories of change within tribal groups. Questions of time and change are ignored, little attention is paid to the question of palimpsests and rates and scales of archaeological and ethnographic time, and often a single tribe may be used to provide analogies ranging from the Palaeolithic to the Mesolithic.

To a large extent, ethnographic studies have not influenced mainstream prehistoric research. In the case of the Lower and Middle Palaeolithic, behavioural models have little to do with ethnographic data; with site location, palaeoenvironmental changes and lithic technology playing greater roles in interpreting behaviour. Attempts to model past behaviour based on modern foragers are rarely integrated with other sources of information or serve to provide broad generalizations, with models of transhumance as related to seasonal water availability being most

commonly used (Paddayya 1982, Pappu 2001). Apart from highlighting continuity in the exploitation of ecological zones and use of similar resources from the Lower Palaeolithic onwards, ethnographic studies have not produced any models of past behaviour, which are unique to the Indian palaeoecological context (but see Clark and Sharma 1983). This is not the case as regards the Upper Palaeolithic and Mesolithic with a richer canvas of chronometric dates, structures, organic remains, burials and art. Ethnographic studies have not only contributed towards identification of aspects of material culture, but have also led to the proposal of plausible hypotheses, which in some cases have been tested against the archaeological record.

In general, models used tend to draw on that proposed by L.R. Binford (1982). Thus site types and settlement patterns are often approached with the aim of identification of categories, and few studies attempt to consider patterns of reuse/multiple occupation or questions of long or short-term abandonment (but see Cooper 1992; Murty 1981; Paddayya 1987; Pappu 2001). This has led to a rather static rendering of all archaeological data, which must be seen to fit within one or more site categories, or settlement types. This assumes importance when considering sites of a different nature, in particular those of the Ganga valley Mesolithic complex (Sharma et al. 1980), which appear to reflect a more sedentary nature of occupation among hunter-gatherer groups.

Analogical reasoning in India has yet to develop greater rigour and theoretical sophistication in order to explore new avenues of investigating hunter-gatherers. There is a need to develop an awareness of contemporary anthropological thought and to move beyond studies of subsistence and settlement, towards issues related to gender studies and the individual. Ethnoarchaeologists must also attempt to involve contemporary hunter-gatherers in studies related to prehistoric archaeology in regions exploited by them. This should form a part of a wider aim of educating the Indian public on the antiquity and complexity of this mode of life, and the wealth of knowledge, which may be derived from such groups. This would contribute towards creating a positive attitude towards addressing problems in the lives of contemporary Indian hunter-gatherers.

