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Beyond Description and Diffusion: A History of Processual Theory in the Archaeology of South Asia

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A necessary part of the practice of any mature academic discipline involves the critical examination of the methods and concepts through which the discipline functions. By examining how theoretical assumptions and models have developed and changed, it becomes possible to situate current research in relation to its inherited problems and practices. It is argued that such self-awareness should enable the rectification of subconscious biases and reveal new directions for research. On a more basic level, it reminds us how we, as archaeologists today, stand on the shoulders of our predecessors. In the future, our best theories of today will doubtless see similar revision. It is perhaps humbling to realize that ideas which may seem misguided to us today were once appropriately complex and satisfying to earlier generations.

In keeping with the need for self-reflexive analysis, numerous accounts of the history of Indian archaeology have already been written, concerning especially the archaeology of the colonial period (e.g. Krishnaswami 1953; Sankalia 1970; Chakrabarti 1982, 1988a; Paddayya 1995). Most of these accounts have dwelt on the important discoveries, the development of classificatory schemes, and methods of exploration and recording. Various critical assessments of the assumptions made by earlier archaeologists have also been carried out (Malik 1968: 18-40, 1979; Sankalia 1970; Chakrabarti 1988b, 1997; Varma 1996). What has drawn less attention is the history of theory within Indian archaeology. This paper aims to go part of the way towards filling this gap.

Due to the diversity of theoretical perspectives on the study of archaeology in South Asia, operative both now and in the past, we have found it useful to divide our discussion into two parts. The first one, encompassed in the present paper, contrasts paradigms that have been broadly classified as cultural-historical and processual. The second part (Boivin and Fuller, this volume) deals with what has been termed post-processual theory and looks at perspectives that represent a theoretical shift away from, and in opposition to, aspects of processualism. While this format may represent an oversimplification of the complex historical trajectory of theoretical development in South Asian archaeology, it has been found a useful way of coming to grips with this complexity. Even though the divisions we employ have much to do with polemical camps in British and American archaeology, they are not without their significance for Indian archaeology, as many archaeologists in South Asia have taken firm stands within these schools. It is worth noting, however, that not only do these labels suggest sharp breaks with preceding

traditions that are perhaps not always warranted; they also, to a certain extent, undermine the distinctiveness of the South Asian trajectory, by subsuming it within a model constructed to fit Western archaeological development. To rectify these biases, we have made an attempt to demonstrate the idiosyncratic aspects of the South Asian situation,¹ as well as to reveal how new theory often develops out of old. It is also worth noting that since it would be impossible to explore every study relevant to our analysis, our focus will be on those studies which seem best to represent changing trends and conceptual developments.

The fact that the different regions under discussion have at various times in the past been integrated to a significant degree has unfortunately not entirely prevented contemporary archaeologists from carving South Asia up according to modern state boundaries. The formulation of regions and periods of archaeological study within South Asia has had as much to do with recent historical and political factors as with occurrences and relationships in the deep past. This has resulted in a rather unfortunate situation, in which various academic groups have formed which all study the South Asian past, but which have little intercommunication. These groups not only attend separate conferences, but also generally publish in different journals and fail to cite each other. Our decision to include all of these areas in our discussion is based on a firm belief that they would each mutually benefit from increased contact and from a greater emphasis on interactive projects (a feeling seemingly shared by others, as evident from syntheses which have bridged these gaps, e.g. Subbarao 1958; Fairservis 1971; Allchin and Allchin 1982; Chakrabarti 1995). The boundaries that have been drawn are modern, and are interfering in the effective study of the South Asian past. A clear picture of the trajectory of cultural development in this region of the world will only come about when the various isolated specialists on the Harappan Civilization, the Deccan Chalcolithic, the Southern Neolithic, the Historical period, the ancient texts and the Stone Age, to name just a few examples, are finally able to operate as a single community. Thus, while the integration of so many distinct traditions means that our story is perhaps less neat than it might have been, and in some ways less comprehensive, we feel these disadvantages are more than compensated for by the benefits to be gained from an opportunity to encourage greater interaction and stimulate discussion.

PROCESSUALISM AS A NEW PARADIGM

Processualism is the theoretical school that developed out of the New Archaeology of the 1960s, and which defined itself in opposition to the preceding culture history school of archaeological theory and practice. This new approach to archaeological evidence differed from the traditional production of cultural typologies and phasing by taking an interest in the interaction of variables which led to human behaviours and in isolating those variables which caused change. Practitioners made a move to become more anthropological and scientific by offering generalizations and explanations, especially of cross-cultural regularities. While traditional culture-history produced a narrative of archaeological 'cultures' which migrated through time and space and influenced each other through the diffusion of technological innovations (e.g. Piggott 1950; Wheeler 1959, 1968; Sankalia

1962, 1975), processualism attempted to understand these cultures more holistically, as organic, functioning systems, which could be analysed in terms of social structure, organization and adaptation. Change became a process rather than an event (for general reviews of processualism, see Trigger 1989: 289-328; Paddayya 1990).

Processual archaeology emerged largely in the U.S.A. (Binford 1962, 1965; Flannery 1967), with similar approaches developing slightly later in Britain (e.g. Clarke 1968; Renfrew 1973). A similar, explicitly theoretical approach was outlined in India by S.C. Malik (1968), who had spent time at the Institute of Archaeology in London and the University of Chicago, in his monograph *Indian Civilization: the Formative Period: A Study of Archaeology as Anthropology*. This monograph represented an important development in Indian archaeology, as it was the first epistemological consideration of the object and conceptual methods of archaeological inquiry. While Malik's functionalist framework for understanding drew on the same anthropological background as American processualism, he moved somewhat beyond standard processual interests in his discussions of the social nature of knowledge construction (1968: 4-9, also 1973a, 1973b, 1975) and the relevance of archaeology for the modern individual and society (1968: 171-7, 1973b). Malik's work occupies a problematic place in Indian archaeology as it seems to have gone largely uncited in subsequent theoretical writings (cf. Paddayya 1995: 135), although he seems to have had some impact on the ideas of Ratnagar (1991). Widespread interest in processualist theory did not develop in India until the mid-1970s when it was taken up by archaeologists at Deccan College (e.g. Sankalia 1977; Dhavalikar 1979, 1985; Paddayya 1980). The lack of impact of Malik's work is perhaps partly due to the strong criticisms of his ideas by established scholars like Sankalia (1970, 1973) and F.R. Allchin (1971). As these critiques pointed out, Malik did not always manage to bring his theoretical ideas together with archaeological evidence convincingly; his second book (1975) remained almost entirely theoretical and abstract with little in the way of archaeological examples.

Processualism was an explicit move to make archaeology a social science, like anthropology, through a problem-oriented approach. It began with a critique of traditional, cultural-historical archaeology which assumed adequate description was considered adequate explanation. In contrast, processualism saw explanations as generalizations which had predictive power. In processual critiques a distinction was usually drawn between 'history', which was seen as descriptive, subjective and esoteric, and 'anthropology' which was scientific, explanatory and socially relevant (e.g. Fairervis 1961; Malik 1968). Possehl (1982: 15) declared 'the emergence of a positivist approach to the past which eschews the impressionistic in favour of the rigour and intensity of systematic research'. At least in some disciplinary areas, such as Harappan studies, cultural-historical explanations that relied on 'diffusion' or 'migrations' to understand the differences between archaeological cultural phases came to be suspect, while indigenous evolutionary sequences gained favour. However, a distinctive feature of processualism within India was the extent to which archaeological cultures continued to be equated with ethnic 'peoples', notably in the Chalcolithic of western India (cf. Miller 1983; Panja 1993).

THE SEARCH FOR SCIENTIFIC PATTERNS:
SETTLEMENT, SUBSISTENCE AND SETTING

An important aspect of processual theoretical development was the placing of cultures in an ecological context. Ecological archaeology can be traced back to one of the first post-Independence syntheses of Indian archaeology, Subbarao's (1956) *The Personality of India*. This work drew on the earlier observations of Richards (1933) and similar approaches in Europe like that of Fox (1932) and Clark (1952). In his book, Subbarao correlated regional cultural divisions with geographical areas as well as later, historically-documented cultural/linguistic divisions. This encouraged thinking about archaeological cultures in relation to basic ecological patterns such as vegetation zones, soil types and rainfall. Essentially the same ecological regions were put forward by Malik (1968), although he validated them with reference to quantitative data on weather patterns (see also Allchin and Allchin 1968: 30-45). It was during this period (the 1960s) that fieldwork in Quaternary sciences and palaeoecology began to make serious contributions to understanding the changing environments of the Subcontinent's past (e.g. Vishnu-Mittre 1968; Rajaguru 1969; Allchin and Goudie 1971; Agrawal et al. 1973).

In order to pursue the environment-culture correlation more systematically, a new approach to fieldwork and data analysis emerged in the form of settlement archaeology. This meant identifying and mapping archaeological sites systematically for a given region and then interpreting this settlement pattern in terms of scheduling, resource availability and use, as well as changing patterns of social and political organization (Trigger 1967; for a literature review see Lal 1984: 158-67). This interest in settlement pattern emerged prior to an explicit processualism, but was an important analytical approach which was taken up by theoretically-oriented archaeologists and often linked with the conceptualization of cultures as adaptive systems. In America, settlement archaeology grew in popularity after a pioneering study by Gordon Willey (1953) in the Viru valley, Peru. A research programme along similar lines was initiated in Baluchistan in the 1950s by Fairservis (1956, 1961), who used his data to address the emergence of Harappan Civilization from a background of village societies adapted to farming in the Indo-Iranian borderlands. Increasingly, a consideration of site locations in relation to surrounding landscapes, as well as of the practical considerations which may have influenced the settlement location, became an important part of archaeological synthesis: 'the essential features of a living site are its proximity to water, and to land suitable for hunting, agriculture, or other essential activities. At different periods other factors, such as a view of the surrounding countryside, freedom from insects, accessibility, defence and communications, may take on increasing importance' (Allchin and Allchin 1968: 235-6).

By the end of the 1960s, an interest emerged in fieldwork that recorded settlement distributions in particular regions. Research focusing on recording site distributions was increasingly undertaken (e.g. Misra 1968; Mughal 1972; Sharma 1973; Suraj Bhan 1973; Paddayya 1973). However, most of these early studies were still largely cultural-historical, focusing on describing and comparing materials. During the first half of the 1970s, a problem-oriented approach to fieldwork began to develop, as exemplified by Deccan

College excavations at Inamgaon. As is clear from a report of the first season's work, the initial aims of the project were cultural-historical, 'in order to know more about the beginnings and end of the Jorwe culture', i.e. to pin down dates (Sankalia et al. 1971: 139). In subsequent years, questions about economy and social organization were incorporated into the research programme inspired by theoretical writings on settlement archaeology (Dhavalikar 1976, 1977; Sankalia 1977b). In the mid to late 1970s, numerous archaeological surveys and settlement pattern studies were undertaken with an explicit interest in theoretical questions relating to environmental change and cultural adaptation as well as social evolution (e.g. Chitalwala 1977; Suraj Bhan and Shaffer 1978; Possehl 1980; Sharma et al. 1980; Fentress 1982; Paddayya 1982; Mughal 1982, 1990; Lal 1984, 1987; Shinde 1985, 1991; Flam 1986; Erdosy 1988).

In addition to the trend towards settlement pattern studies, site excavations in the 1970s became increasingly multidisciplinary as archaeologists took into consideration the local environment, available resources, and their past exploitation. This also involved work in archaeological sciences, through the study of archaeobotanical and archaeozoological data (cf. Clason 1977; Vishnu-Mittre 1977). For example, in a study of the natural resources of Mundigak, a site in southern Afghanistan, Jarrige and Tosi (1981) explored both location of the site in terms of the sources of material found there, including animal and plant remains, and artefacts of various raw materials. Through comparison with the Iranian site of Sharh-i Sokhta, they defined for Mundigak an 'economic space ... the spatial dimensions of the exploitation's mechanisms centred on Mundigak in the fourth and third millennia BC [which] is determinant to a better understanding of the place of the site in the cultural geography of the time as well as of its real dependency from the settlements it was ideologically or politically tied to' (ibid.: 116). During the 1970s, numerous other excavations were initiated which included teams of specialists to work on a wide range of evidence on and off site, as, for example, at Pirak (Jarrige and Santoni 1979), Mehrgarh (Jarrige and Lechevallier 1979), Apegaon (Deo et al. 1979), Allahdino (Hoffman and Shaffer 1976; Fairservis 1982), Balakot (Dales 1986) and Daimabad (Sali 1986), as well as in the Belan valley (Sharma and Clark 1983). The Inamgaon project included an application of 'site-catchment' analysis (Pappu 1988; also, Pappu and Shinde 1990) in which the region surrounding a site up to a 5 km radius is carefully mapped in terms of environmental zones of exploitation, an approach that had been pioneered in the 1970s by the Cambridge Palaeoeconomy Group (Higgs and Vita-Finzi 1972). The aim of this approach is to determine the exploitable resources that could be gathered within a day's walk from the site.

In addition, theoretical modelling of 'settlement-subsistence systems' allowed predictions to be made against which data could be compared. A pioneering example was a study by Dhavalikar and Possehl (1974) that modelled the agricultural system of Inamgaon starting from some basic assumptions about population size and land productivity. On the basis of their population estimates, Dhavalikar and Possehl argued that the alluvium immediately adjacent to the site of Inamgaon would have been inadequate to feed its population and therefore the black cotton soils must have been cultivated, thus

contradicting an older view which saw these soils as unusable prior to the introduction of iron ploughs. This represented an important exercise combining observable archaeological evidence with explicit uniformitarian assumptions to arrive at a more holistic reconstruction of a past society. The same model was applied to Kaothe (Shinde 1985). The increased awareness of issues relating to subsistence and cultural adaptation led to numerous discussions of the various aspects of agricultural production such as irrigation techniques, cropping season and ploughing (Fairservis 1961, 1967; Possehl 1980: 8-9, 1986, 1997; Thapar 1982; Allchin and Allchin 1982; Thomas 1983; Shinde 1987; Dhavalikar 1988, 1989a; Franke-Vogt 1995). This period (the 1970s and after) in South Asian archaeology showed an 'increased swing towards considering past cultures in their totality. ... As a result artefacts are seen as only one aspect, although an important one, of any culture' (Allchin and Allchin 1982: 3). In particular, it saw an increasing interest in the natural environment, as well as economic relationships such as trade. More recently, Chattopadhyaya (1996) has integrated subsistence data and cemetery evidence to argue for hunter-gatherer territoriality in the Mesolithic Ganga valley, focused on year-round base camps where group rights were asserted through clearly defined burial sites. This model therefore combines cultural ecological data and the study of social organization.

ENVIRONMENT AS CRADLE AND GRAVE:
FROM ADAPTATION TO CATASTROPHE

The ecological turn in archaeology instigated a move beyond mere typological studies of artefacts and brought to the fore alternatives to the migrationist narratives which had predominated in the cultural-historical tradition. The quintessential example of the migrationist paradigm promoted by Wheeler was his Mohenjo Daro 'massacres' and their linkage of the destruction of Indus cities to invading hordes of Aryan warriors who had left their distinctive material culture in Cemetery H at Harappa (Wheeler 1947, 1959, 1968; Piggott 1950: 214-41). This explanation attributed a widespread change to random, historical variables, namely, invasion, itself a social process that requires understanding. The reconsideration of the archaeological context of the supposed massacre victims may have called this theory into doubt (Dales 1964), but the shift away from the invasion theory also resulted from an increasing theorization of archaeology. While the environment had been discussed by Wheeler, Piggott and others, it had been seen more as a backdrop for culture-history than as an integral part of cultural systems.

The rise of civilizations, the Harappan in particular, came to be seen through settlement patterns as subsistence adaptation. Studies by Fairservis (1961, 1967) documented how the pre-Harappan cultures of the Indus valley were adapted to the arid environment and able to maximize available water by constructing stone dams adjacent to settlements. In a sequence of three stages which preceded the emergence of urbanism in the Indus valley, Fairservis (1967) identified the third stage as one in which full sedentism was possible because of such adaptation, which also allowed settlement to move onto the Indus alluvium. In turn, this new productive locality led to 'the production of surpluses, the

proliferation of populations, the amplification and multiplication of non-farming specialists' (*ibid.*: 15). In addition, palynological data from Rajasthan was suggested to indicate a period of wetter climate, which was hypothesized to have aided and supported urbanization (Singh 1971). Subsequent fieldwork, most notably at Mehrgarh in Baluchistan, expanded knowledge on the evolving cultural ecology which preceded the Harappan Civilization. This site provided increased temporal depth and new data for addressing long-term trends in the development of agriculture (e.g. Jarrige 1982).

In inner India, interest in the environmental factors which were assumed to have promoted the rise of village cultures became an issue in the late 1980s. The chalcolithic villages in central and western India in the late third millennium BC were attributed in various ways to the fertile tracts of black soils. One hypothesis suggested that the locally rich environment allowed population growth amongst early-mid Holocene hunter-gatherer populations who were driven to adopt farming due to population pressure (Shinde 1994). The rise of agricultural settlements along the banks and tributaries of the Ganga and Yamuna in northern India was also discussed in terms of their distribution in relation to fertile soils and available water (Lal 1984).

While the rise of civilization represented a society well adjusted to its environment, the end or decline was often attributed to disasters in that environment. In the late 1960s in Europe and America, when there was increasing awareness of modern environmental impacts, an archaeological school of 'New Catastrophism' emerged (see Trigger 1984, 1989: 319ff.) within which Robert Raikes, a hydrologist by profession, played a vociferous role. The first catastrophe which was cited for the demise of the Harappan Civilization was catastrophic flooding at Mohenjo Daro, brought on by tectonic shifts (Raikes 1964, 1965; Dales 1966; though see Raikes and Dales 1986; Kenoyer 1991 for arguments against this theory). Climate was also blamed. Changes in the pollen flora of cores through the salt lake beds of Rajasthan were interpreted as indicating a decrease in rainfall, coincident with the collapse of Harappan Civilization (Singh 1971; Bryson and Swain 1981; cf. Dhavalikar 1995a: 203-9; Allchin and Allchin 1997: 207ff.). However, Singh's hypothesis, of an ecologically driven collapse of the Urban Harappan Civilization came under internal critique, in terms of its palaeoecological inferences, (e.g. Vishnu-Mittre 1976; 1982; Meher-Homji 1980), as well as external critique addressing the relationship between the palaeo-ecological reconstruction and the archaeological evidence (Misra 1984; 1992; Possehl 1997). Similarly, Possehl (1967) critiqued Raikes' theory of lower Indus flooding both on the basis of its correlation with sedimentological and topographical evidence, as well as on general principles. Another, more complicated environmental theory linked the end of the Mature/Urban Harappan Culture with the drying-up of the so-called Sarasvati river, the dry bed of which runs through Cholistan (Agrawal and Sood 1982; Misra 1984, 1992; Mughal 1992; Chakrabarti 1995; Lal 1997; Possehl 1997: 442-7). The actual social processes by which the drying up and subsequent depopulation of the Ghaggar-Hakra valley would have precipitated the overall decline of what we recognize as the Harappan Civilization over a much larger geographical area than just that river course remains problematic. For example, Chakrabarti (1995: 274) proposes

that 'once the civilization in its heartland weakened due to the slow but inexorable process of drying up of the Sarasvati-Hakra ... *the process could not but affect* the entire Harappan distribution area, and Harappan urbanism, as we know it in its mature form, was easily lost' (emphasis added). This statement implies the operation of an underlying causative law linking the fate of north-western South Asia to the settlements in the Ghaggar-Hakra, but the nature of this systemic relationship remains unexplored.

Monocausal environmental determinants still feature in some archaeological explanations, although they have come under increasing critique. For example they are prominent in the writings of Dhavalikar (1973, 1984, 1988, 1995b), where catastrophic climatic change is maintained as the cause of key changes, such as the abandonment of settled villages in western India in the first millennium BC and the later de-urbanization of the Satavahana kingdom (Dhavalikar 1995b). Nevertheless, dissatisfaction has begun to develop, as a result of both theoretical and empirical considerations. Paddayya (1994) dismissed Dhavalikar's (1984) interpretation of cultural process as 'environmental determinism coupled with the Boserupian notion of the option of demographic pressure' (Paddayya 1994: 14). Paddayya pointed out that Dhavalikar's argument lacked sufficient empirical data to show climate change in concert with the abandonment of Inamgaon and other sites. Furthermore, he had failed to provide a coherent argument of the relevance to the inferred consequences. Like the critiques of post-Harappan catastrophism, discussed above, Dhavalikar's model received both internal and external critiques.

Instead of incontrovertible catastrophe, many have argued for more gradual processes of decline albeit related to economic and environmental changes (cf. Kenoyer 1991; Possehl 1997). A gradual decline in which Harappans were wearing out their landscape through deforestation and agricultural intensification had already been proposed by Wheeler (1960), whose invading Aryans merely finished the job. On the other hand, Fairservis (1967) saw a gradual decentralization of Harappan society as population spread eastwards and southwards facilitated by the adoption of rice cultivation. Others have further discussed the potential role of changing agricultural systems, brought about by the availability of new crops from Africa, i.e. the African millets, which allowed summer cropping (Jarrige and Santoni 1979; Possehl 1980, 1986; Weber 1991; Meadow 1996). Some have highlighted the potential role of declining long-distance trade in decreasing Harappan urbanism (e.g. Ratnagar 1991), although this has also drawn harsh criticism (e.g. Chakrabarti 1995). One important issue which it does raise, however, is the potential role of imported goods within the elite ideology of the Harappan Civilization. In general, the late/post-Harappan is now seen as 'a process of decentralization and localization rather than extinction' (Kenoyer 1991: 370).

REVELATIONS ABOUT REVOLUTIONS: SOCIAL EVOLUTIONISM WITHOUT GRADUALISM

Another important strand of processualism was the paradigm of neo-evolutionism, according to which cultures were generalized into different levels of social complexity. American anthropologists in the 1950s and 1960s (e.g. Sahlins and Service 1960; Service

1962) developed a general social evolutionary sequence (by comparing modern ethnographically documented societies), of bands (egalitarian hunter-gatherers); tribes (farmers without hereditary leaderships); chiefdoms (somewhat hierarchical societies with hereditary leaders but without centralized military force); and states (with multiple levels of hierarchy, inherited status, and force to sanction power). While these stages represented 'general evolution', the archaeologists' role was to study specific evolutionary cases in order to explain the gradual change from one level to another, such as the rise of complex societies. Change was almost entirely seen through Binford's maxim (borrowed from White 1958), that 'culture is viewed as the extra-somatic means of adaptation of the human organism' (Binford 1962: 218), or in the words of Paddayya (1979: 63), 'each culture is after all an adaptive mechanism for dealing with the local environment' (see also Dhavalikar 1985). This promoted both ecological determinism and technological primacy. Within this framework the environment and technology interacted, determining much of the rest of culture. This basic framework came to be widely employed by archaeologists in the 1970s to discuss trajectories of change leading from hunter-gatherers to cities. In addition, Thapar (1984) employed a social evolutionary perspective in reinterpreting ancient Indian textual sources relating the rise of Early Historic polities in northern India.

While the neo-evolutionist paradigm promoted gradualism amongst most Western archaeologists, this was not always the case in South Asia. Gradualism moved away from the event-like view of change in older cultural-historical archaeology, within which framework, Childe (1951) termed the origins of agriculture and cities 'revolutions' Trigger (1998: 131), has suggested that the gradualism that succeeded was partly a product of the political climate of America in the 1950s and early 60s in which revolutionary changes, especially if coming from within society, had negative, Marxist connotations. The same sensibilities may have been absent within an Indian context, where there was a persistence of migrations delineated on the basis of changing ceramic styles. This contrasted with the case in Europe and America, where there was a near complete abandonment of migrations as explanations (cf. Adams et al. 1978; Rouse 1986: 16-18; Anthony 1990). Nevertheless, while Dhavalikar (1984, 1985) and Shinde (1985, 1991) applied processual interests in settlement, subsistence and social organization, they continued to discuss archaeological cultures, such as the Savalva, Harappans, Malwa and Jorwe, as ethnic peoples who migrated and settled. This represented a continuing equation of pots with peoples, a persistent paradigm that continues to receive critique (Malik 1968; Miller 1983; Panja 1993; Ratnagar 1994; Naik and Mishra 1997). Pot styles were assumed to be ethnic peoples until proven otherwise. In the case of the Jorwe Culture, the possibility of it having developed out of the Maharashtra Malwa, as at Inamgaon, was suggested quite early (Dhavalikar 1973). Miller (1983) took the critique of ethnic prehistory to a more general level by showing that Malwa and Jorwe ceramics represented a statistical continuum. Nevertheless, the persistence of interpretation of chalcolithic pottery styles in central India in terms of ethnicity has meant that critiques have had to continue (e.g. Panja 1993; Shinde 1994; Naik and Mishra 1997). Following similar critiques, the