

certain neo-evolutionist expectations, in particular the linking together of craft specialization, standardization and centralized control. For example, standardization may be promoted by kin-based production networks as much as central authority (Kenoyer 1992). In addition, it cannot be assumed that the spatial patterning of craft remains found on the surface or as excavated fill at urban Harappan sites necessarily reflects spatial segregation of ancient workshops, since this could represent secondary refuse displaced from production areas, or brief, intensive periods of activity. It was increasingly recognized that comprehension of taphonomic processes could contribute to a more nuanced understanding of the spatial distribution of different human activities and provide a more multifaceted understanding of activities than could older simplistic notions of single functions for particular rooms or structures.

#### GAINING ARCHAEOLOGICAL KNOWLEDGE: POSITIVISM AND BEYOND

It was within the processual school that some archaeologists started to take an interest in the philosophy of knowledge and science in their formulations of archaeological epistemology. An explicit interest in using the scientific method was expressed and the philosophy behind it was discussed. This began with calls for a problem-oriented approach: 'The framework of factual knowledge emerges only as a solution to problems raised because "facts" have neither an independent existence nor does the mere organization of facts amount to theory' (Malik 1975: 3; see also Paddayya 1980; Dhavalikar 1985; Allchin 1998).

This was opposed to and opposed by proponents of the traditional inductive approach to archaeology, according to which facts emerged from the dirt through excavation and were then built into theory. As pointed out by Paddayya (1980, 1981), being a 'scientific' processualist required more than just applying scientific techniques like those of geology and Quaternary palaeoecology. Instead, it demanded a problem-oriented approach of hypothesis testing:

Once we concede that archaeology is one way of acquiring knowledge about the world, we cannot afford to ignore the scientific method. ... Indian prehistory has made sufficient progress for identifying culturally meaningful problems. Pending the isolation of such problems and subjecting them to the rigour of the scientific *method*, all our scientific *techniques* will be rather like the beautiful but infertile bride. (Paddayya 1980: 133, italics added)

Marital similes aside, this was an explicit statement of positivism, in which the past could be knowable through probabilistic statements based on the testing of hypotheses against a growing corpus of excavation data (see also Sankalia 1977a). A more prolonged defence of positivism was later produced by Paddayya (1990: 8-12).

However, it has increasingly been realized that interpreting the archaeological record cannot be a simple matter of equating artefacts and sites with functioning social systems, in particular by those involved in ethnoarchaeological research (e.g. Hodder 1982). As shown by Miller (1985b) in his detailed study of pottery production in modern Dangwara, ceramic vessels play multiple and changing symbolic roles in social relations both

reflecting ideal relations and recreating them. The relationship between pots and people was not of one-to-one correspondence but rather a case of multiple overlapping frameworks for understanding reality. More directly tied to archaeological interpretation, Panja (1996: 72) briefly discussed the 'hermeneutic procedure' of interpreting archaeological sites in which 'pre-understanding' based on ethnographic analogies conditions, but does not limit, archaeological interpretation.

The necessary archaeological reliance on analogy calls into question the utility of a strictly positivist framework in which the past is completely and objectively knowable. Accordingly post-processualism, which is taken up in the next chapter, along with a number of other recent approaches in archaeology, have been termed 'post-positivist' (Whitley 1992). Increasingly the positivism of early processualist archaeology has come under attack even in its American homeland: The unreflective nature of the New Archaeology was astonishing but not more so than its almost anti-intellectual insistence upon the absolute truth of a single epistemological framework of science. (Lamberg-Karlovsky 1989a; see also Trigger 1989: 379ff.). Paddayya has also come to express an interest in alternative epistemological frameworks, including some derived from Indian intellectual traditions (Paddayya 1990: 50, 1995: 139-41). It is interesting that similar kinds of concerns had already been raised by Malik (1968, 1973a), although they were not addressed by many other archaeologists until post-processualism emerged. Malik had briefly brought up epistemology and the roles which 'sense-perception and value-judgements' (1968: 5) inevitably play in the creation of what becomes accepted as knowledge. As the canons of theory change, so do perceptions of data, and their interpretation:

Therefore, any reconstructions or reproductions of past societies are 'true' in only as far as they enjoy social (whether it is a group of archaeologists, historians, etc., or society at large) endorsement. But this historical 'reality' becomes false as and when new perceptual and conceptual divergences make the older reproductions 'out of date', that is, not only because of new evidences of a factual perceptual kind which are discovered but also because of the formulation of new conceptual schemes. Therefore, in this sense, both the meaning of statements with regard to the past and the range of evidence are 'unstable'. (Malik 1968: 7)

Ideas with contemporary social acceptance influence interpretation, and therefore contemporary social circumstances will affect views of the past. It is some of the key influences on the perception of the past which have come increasingly into focus through the critiques of post-processual archaeology (Boivin and Fuller, this volume). Thus, a simplistic positivism that ignores the contemporary social influences on archaeological interpretation cannot be sustained as a philosophical framework for archaeology. Nevertheless, a systematic commitment to scientific methodology remains a powerful approach to understanding the past, and it was hypothesis-testing that was advocated by Malik despite statements like the one above (1968, 1975, 1979). By collecting archaeological evidence in an attempt to repeatedly test explicit hypotheses, the growing body of material inevitably constrains what can be conjectured about the past (Paddayya 1989, 1990; Trigger 1989: 407ff; Hill 1991). New theoretical questions and critical

assessments of contemporary influences on interpretation promise to raise new questions and reformulate hypotheses, but it is ultimately the material products of past people upon which arguments are built.

#### CONCLUSION

In exploring processualism, we discussed five different threads of emphasis, all of which existed to some extent prior to explicit theorization, but which became refined and intertwined within a processual framework with the advent of the New Archaeology. These strands have been identified as: cultural ecology, social evolution, a systemic view of culture, the problem of site formation processes and epistemology. The processual reformulation of archaeological inquiry led to a 'much-expanded definition of the data which apply to the human past' (Possehl 1982: 15) and encouraged increasing interdisciplinary investigations with particular attention to the environmental and economic context of sites (Agrawal and Chakrabarti 1979; Varma 1996). Increasingly, quantitative analysis of data was carried out within new frameworks for understanding material culture which stressed variation beyond idealized type categories (Shaffer 1982; Ratnagar 1993). In turn, the emphases on understanding variation in past material culture and making reasoning explicit, formed the groundwork from which post-processualism emerged as critique and alternative.

Processual archaeology and the post-processual critiques that followed it recognized that human behaviour/action is highly patterned. As a result, artefacts and archaeological deposits will also retain some amount of this patterning and can therefore provide insights into past economies and social organizations different from those of today. The analyses carried out both within and outside the processual school differed from cultural-history by emphasizing the importance of context of one sort or another in our understanding of the evidence. For processualist with an interest in cultural ecology, the landscape and environmental context is often emphasized. It was the theoretical interests and discussions of processual archaeology which led to thinking about archaeological formation processes. If one was to study past cultural systems, one had to understand how their functioning produced material products and by-products which were then preserved and recovered through excavation. Post-processualism emerged from processual theory by extending considerations to other kinds of contexts and to the relationship between material culture and society.

Processual aims unify the archaeology carried out in India and Pakistan with that of other parts of the world. As processualism takes an active interest in issues of emerging complexity and cultural ecology, it readily facilitates comparisons across cultures. In addition, these processual interests have helped to overturn older diffusionist frameworks that often served to help legitimize colonialism. Indeed, some prominent Indian archaeologists promote archaeological science and the investigation of ancient ecology in part for this reason (e.g. Agrawal and Chakrabarti 1979; Chakrabarti 1997), and Paddayya (1995: 142) has argued that: A non-partisan understanding of the past on the part of the ordinary citizen, and his/her ability to appreciate the universality of human

culture behind the facade of its spatio-temporal diversity, are the best insurance against any abuse of the past.

On the other hand, some post-processual archaeologists have criticized the 'scientific' archaeology of processualism as representing a form of Western hegemony (e.g. Thomas 1995). However, surely this can only be judged from the perspective of non-Western archaeologies, as pointed out by Paddayya (1990). That the socio-politics of archaeological interpretation is even discussed must be seen in part as an after-effect of processualism, since it was this movement which first encouraged the discussion of theory at all.

On a practical level, processual frameworks such as neo-evolutionism, or homeostatic cultural or ecological systems have provided easily-applied methods for making sense of archaeological evidence in ways more satisfying than the previous frameworks of migration or diffusion. While it has become increasingly clear that these ready-made methods fail to account for the full diversity of past societies, and do not deal with numerous historical contingencies, it has only been through their employment that such realizations have emerged. For example, by applying the anthropologically defined criteria of chiefdoms and states to South Asian societies, the inadequacy of the crude divisions becomes evident. However by bringing aspects of ancient societies into comparison with organizational aspects of possible analogues it becomes possible to frame new questions that transcend such categories. The most significant archaeological discoveries may not always come from lucky accidents of digging but also from reassessments of what we know and how we think about material from the past.

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#### NOTE

1. We employ the terms 'Indian' and 'South Asian' in a loose and interchangeable way to evoke the historically inter-linked cultural heritage of these areas.

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