

'Always momentary, fluid and flexible': towards a reflexive excavation methodology.

by Ian Hodder

Most current archeological data collection techniques separate description and interpretation. This processual methodology and a newer, post-processual methodology are evaluated. The director of the archeological excavation at Catalhoyuk, Konya Plain in Anatolia (now Turkey) argues the merits of the post-processual methodology, which is being pioneered at Catalhoyuk. The application of the methodology at the site is evaluated.

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Although processual and postprocessual archaeologists conceive of 'data' in different ways (Patrik 1985), there has been little discussion of a postprocessual methodology (but see Carver 1989; Tilley 1989). This is understandable; any notion of a general methodology separate from the context of the production of knowledge could conflict with approaches which emphasize critique, interpretation and multivocality.

Most excavation record forms still separate description and interpretation in the way advocated by Barker (1977; 1982). Carver (1989: 669) argues that this tradition in Britain extends back to Pitt-Rivers, such that 'English excavators, particularly, believe that there ought to be a science of retrieving archaeological evidence which has nothing to do with the interpretations that are subsequently made'. The general emphasis on 'objective' recording found in field contexts in many parts of the world would suggest that the postprocessual debate has had little impact in this arena.

I wish to argue that there are two reasons for a reconsideration of archaeological 'data collection' techniques. The first - 'internal' or logical - concerns a contradiction that lies at the heart of the empiricist and objectivist approaches to 'data'. The second - 'external' - concerns the wider world within which archaeology today operates. I will illustrate the impact of this global context with reference to renewed work at Catalhoyuk (Hodder 1996).

Digging contradictorily

Consider the following two statements from Joukowsky's A complete manual of field archaeology (1980: 218-19, 175):

In addition to day-by-day notes, the square supervisor is responsible for a subjective interpretation of the meaning of his or her excavation. This subjective analysis is submitted at the conclusion of his/her work in a particular area and is physically kept separate from the objective facts, so that assumptions are kept distinct from field notes.

If the earth is from a sterile layer, it can be dumped, but if it comes from an occupation level, the earth should be carried to the screen, spread on it, and sifted so that no telltale signs will be overlooked.

The first statement argues that interpretation should be kept separate from objective fact: it should occur only after data have been collected. The second statement contradicts this by arguing that the methods used depend on prior interpretation. The excavator has to interpret a deposit in terms of whether it is an occupation level before screening (sieving) is used. How is one supposed to know whether a layer is sterile before it has been screened?

Interpretation occurs at many levels in archaeological research, and in the example just given, it cannot be confined to a higher level. How we excavate a site is generally determined by our prior interpretation of the site. The screening and point-proveniencing of all artefacts common on excavations of Palaeolithic cave sites are minimal on historic urban sites. Even within a site, decisions about whether to screen are frequently made on the basis of interpretation. A 'floor' context is excavated more intensively than one interpreted as 'fill', with 100% water-screening only being used in the 'floor' context. In such cases, whether an artefact exists at all within the archaeological view depends on interpretation. Microartefacts may only be recovered because of full water-screening of 'floor' contexts. The same artefact from a 'fill' would not be searched for or recovered; it might simply 'not exist'. The objective existence of an artefact as 'data' depends on the interpretation made prior to and during excavation. How can it be maintained that subjective data interpretation should only occur after objective data description and collection?

Archaeologists have typically dealt with the problem of needing to know what is being excavated before it is excavated by sampling different parts of deposits or sites in different ways, or by taking initial trial soundings (sondages) before full excavation. The assumption in such cases is that any mistake made in the exploration of a deposit or site can be rectified in digging other parts of the 'same' deposit or site, or even other sites in the same region or class of site. The problem with this approach is

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that we cannot assume that all the sampled parts of cultural deposits, sites or groups of sites are similar. In laboratory-based archaeological research or in experimental archaeology it may be possible to repeat experiments, varying conditions in a controlled way, so that different instances of the 'same' phenomenon can be examined. In excavation, whether different parts of a deposit or different deposits or sites are the 'same' is itself an interpretation. That interpretation might be best made after excavation - but it has to be made prior to excavation if trial soundings of an entity such as a pit or site or of a category such as a class of pit or site are to be made.

This contradiction, which lies behind both empiricist and problem-oriented research designs, is again clearly illustrated by Philip Barker's *Techniques of archaeological excavation* (1977; 1982), which describes methods which have become common in British field archaeology. On the one hand, Barker accepts that 'interpretation . . . inevitably begins as features are seen, dissected and removed' (1982: 145). Since recording begins during excavation, and since 'the interpretive element in the recording can never be completely isolated', the archaeologist has a great responsibility to interpret immediately, as layers are uncovered (1982: 146). For Barker, recording is always an interpretation; a section or profile drawing records what the excavator sees rather than simply what is there.

So, for Barker interpretation is prior to or at least embedded within recording and excavation. But it is a very different strain in Barker's account which has come to dominate British field archaeology; the contradictory view that this interpretive component should be minimized by separating evidence from interpretation. 'Immediate on-site recovery . . . should be as objective as it can be' (1982: 147); 'in order to minimize the interpretive element 'in the record' (1982: 145) neutral terms such as 'feature' and 'context' should be used. Barker argues for formalized cards and coding sheets - indeed for the whole system of 'objective' data description that has become routine. Subjectivity and speculation become central only at higher levels of interpretation (Barker 1982: 147).

Why was it possible to side-step the centrality of interpretation within 'data description'? Partly because of the prevalence of the empiricist and positivist traditions within the discipline. Partly because of the need to handle increasingly large amounts of data and the codification implied by computer-aided techniques. Barker (1982: 206) expresses this latter need in suggesting that the excavator may start off with doubt about whether a post-hole might be a root-hole, or whether a floor might be a random scatter of pebbles. Although Barker feels that this interpretive doubt should be retained in the excavation

report, he accepts that it often is not; if all such interpretive issues were included in the report it would become too dull because there would be too much information. The handling of large amounts of data has led to highly codified and rigid computerized recording systems, systems that require data gathering to be separated from and be prior to interpretation.

The key point is that excavation method, data collection and data recording all depend on interpretation. Interpretation occurs at the trowel's edge. And yet, perhaps because of the technologies available to deal with very large sets of data, we have as archaeologists separated excavation methods out and seen them as prior to interpretation. Modern data-management systems perhaps allow some resolution of the contradiction. At any rate, it is time it was faced and dealt with.

It is not sufficient to respond by saying that hypothesis testing procedures or the promotion by government agencies of site evaluation and research programmes foreground interpretation. By these means, method is related to theory (Carver 1990). But the internal contradiction is not resolved because, whatever the prior knowledge and theories about a site, we do not find exactly what we predict. In addition, the testing of prior knowledge still involves the evaluation of whether a particular feature in the ground is an example of a general category (pit, hearth, etc). In these ways, the moment of interpretation in the field is not wholly determined by prior views. Thus the methods employed have to be fluid and flexible rather than predetermined. In practice, the adoption of hypothesis testing or site evaluation procedures has been accompanied by a continued separation of data description and interpretation in most excavations and reports.

The wider context

The second reason for reconsidering archaeological 'data collection' techniques derives from the global context within which archaeologists increasingly work. Are archaeologists adequately fulfilling their responsibilities to the societies within which they work by arguing for a separation between data and interpretation? Is it ethical to deal with the contradiction between the need to describe large amounts of data and interpretive uncertainty by arguing that description occurs before or separately from interpretation? Is this the best way to fulfil our public duties?

I will argue not, because a clear movement within archaeology and heritage has brought multivocality and interactivity central stage. Reburial issues and the need to

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co-operate with indigenous Australian or American groups, land rights issues throughout the world, the impact of feminist archaeology - all these are examples of the opening-up of archaeology to a wider set of interests. Within museums and heritage centres the need has increasingly been felt to respond to multiple voices and to engage in a wide range of issues.

As one small example of these globalizing tendencies I mention our recent renewed work at Catalhoyuk (Hodder 1996). As archaeologists we bring our universal and specialized terms and codes, our disciplinary discourse. We bring our technologies and our interest in comparative evolutionary schemes and our global questions dealing with, for example, the origins of agriculture or of complex society. The Turkish state quite properly has other concerns in mind, to do with historic preservation. And at the site itself we are visited by bus-loads of people on 'Goddess Tours' who are interested in a spiritual connection with the site, who may come to pray, or who are part of New Age, Ecofeminist or Gaia Movements (cf. Meskell 1995; Conkey & Tringham 1995). We see that Linda Evangelista is wearing a large image of the Catalhoyuk 'Mother Goddess' on the front of clothes she is modelling for the Turkish designer Rifat Ozbek (Hello magazine January 1995). And yet the local women in the area in which we work remain covered, and the men seem confronted by but willing to make advertising use of the naked 'Mother Goddess' (Shankland 1996). There is a whole field of carpet studies and carpet dealing which looks to Catalhoyuk for the origins of kilim designs (Mellaart et al. 1989; Eiland 1993). The site and its imagery seem to exist in a whirlwind of competing and conflicting special interests.

How can we impose our specific archaeological perspective on this diversity of local and global interests? The stock answer is for the project to become involved in heritage and museums, to provide information on the World Wide Web, etc. These directions are certainly being taken at Catalhoyuk; display panels and buildings have been provided and there are plans for a museum or interpretive centre. The project has its Web home page. But the fact that these answers are insufficient was made clear in discussions with the New Age Women's Movements. When we told them that we would provide the data so that they could make their own less androcentric interpretations of the site, they complained that this was not enough - 'because when you hand over the data to us, they have already been interpreted by you'.

That statement challenges the objectivity, distance and neutrality that archaeological method has built up for itself. In response, we need to go beyond a method which

excludes and dominates, which separates description and interpretation as if description was mere data that could be objectively handed out to people to interpret subjectively. The challenge is to accept the central role of interpretation in the very process of the construction of data. The challenge is to introduce interpretation at the primary level.

Catalhoyuk is a peculiar case, it could be argued, and most archaeology takes place within a less diverse context. But, in fact, few archaeologists work today in an environment in which there are not multiple voices and conflicting interests. This is not just postprocessual dogma; the postprocessual debate has to be set within the wider context of globalism. Diversity in archaeology, heritage and museums is parallel to and part of changes in the economies and societies within which we live. Whether one calls these changes 'high', 'late' or 'post-modernism' is less important than their undoubted widespread impact.

The key linking concept behind the varied aspects of these high/late/post modern trends is globalism. Globalism - which can be defined in a number of ways (e.g. Featherstone 1991; Featherstone et al. 1995) - involves closer integration caused by new trends in economies (especially global scales of production and global markets), the new information technologies, and other global issues such as the protection of the environment. But at the same time as creating homogenization and the 'global village', these processes and their technologies lead to fragmentation and individualization, in a counter-trend partly the product of niche marketing and the new fragmentation of work practices. But it also marks the reaction against globalizing and homogenizing tendencies by groups seeking new and diverse identities, new meanings and senses of self.

In this new world - in which information is widely disseminated but in which there is also a diversity of educated, informed and active special-interest groups - it becomes increasingly difficult for archaeologists to live with the contradiction in their 'data collection' techniques. The public role of the archaeologist in a global and diverse, fragmented world is increasingly to cooperate and to integrate. As in the reburial debate, it is necessary to temper universal science with a sensitivity to local interests. It cannot be acceptable to attempt to close debate by saying, 'This is objective and descriptive,' when what we really mean is, 'This is our interpretation.' The issue of scientific objectivity is no longer simply theoretical. In a recent Society for American Archaeology Bulletin, groups within archaeology seeking to work together with native Americans and integrate the use of oral traditions in archaeological interpretation argue that 'scientific knowledge does not constitute a privileged view of the past

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. . . it is simply another way of knowing the past' (Anyon et al. 1996: 15).

Towards a reflexive methodology at Catalhoyuk

Introducing a methodology at Catalhoyuk which foregrounds interpretation at the trowel's edge has involved dealing with four issues. The first is the need to be critical of assumptions and taken-for-granted (Leone et al. 1987), to be reflexive about the effects of archaeological assumptions and work on the different communities within the public domain. The second is the need to be relational or contextual. Meaning is relational; the interpretation of a pit depends on the dating of the ceramics, but the dating of the ceramics depends on the stratigraphical relations of the pit, which are themselves uncertain and partly dependent on the ceramics, and so on. Understanding the pit involves also knowing about seeds and bones and lithics, etc. Everything depends on everything else. So to interpret involves creating a circuitry between participants in the project and between different types of data. One implication is that conclusions are always momentary, fluid and flexible as new relations are considered. The third issue involves being interactive in the sense of providing information that can be questioned and approached from different angles. The fourth involves being multivocal, plural, open or transparent so that a diversity of people can participate in the discourse about the archaeological process.

The practical steps taken to achieve these ends at Catalhoyuk are these. As on many 'excavations abroad', it is necessary for many of the non-field project specialists to be present on site. But it is possible to turn this necessity into a virtue, with ceramic, faunal, lithic, archaeobotanical, micromorphological etc. specialists present within excavation trenches and taking part in the primary interpretive process. This interaction is achieved by daily or twice-daily tours and individual visits, and it is now planned to have primary processing of faunal remains and perhaps other artefact categories in the excavation area rather than in the field laboratory. The aim here is twofold. The first purpose is to contextualize specialist information within the particular characteristics of the site; rather than assuming what burned bone looks like universally, the identification of burned bone can be informed by the interpretation of context. If the bone comes from a deposit which is, on other evidence, heavily burned, then it too is more likely to have been burned. In this way, general knowledge about what burned bone looks like can be accommodated to specific evidence for burning at Catalhoyuk. The second purpose of the tours is to empower and inform members of the excavation team by surrounding them with information; the more that is known

about the artefacts as they come out of the ground, the more is immediate interpretation facilitated. In this way methods and recording techniques can be adjusted. This type of interaction may often be difficult because it breaks down barriers and boundaries between field and laboratory expertise; it may involve conflict between field professionals and academic or laboratory personnel. The end result is beneficial in that excavation and sampling strategies can be enhanced by an informed interpretation of what is being excavated and sampled.

On smaller-scale projects, similar integrative effects may be obtained by merging the roles of non-field and field specialists. For example, faunal specialists may be involved in field excavation, at least on a part-time basis; and increasingly field staff seek training in other areas of professional training. The regional or local availability of non-field specialists becomes a priority. Another integrative strategy relevant to projects of all sizes involves escaping from the self-evident nature of archaeological 'objects' (Conolly pers. comm.). The empiricist and objectivist approaches have always been underpinned by the apparently self-evident nature of the objects archaeologists study - bones, ceramics, seeds, lithics and layers. The fragmentation of archaeological research is founded on the apparent objectivity of these differences among objects. Much of the field research at Catalhoyuk involves microscopic analysis (for example, micromorphology or study of lithic micro-debitage). At this micro-scale, the self-evident boundaries of objects disappear in that, for example, the distinctions between layers become blurred when viewed in terms of the deposition of mineral particles, or the distinctions between pots and lithics are undermined by traces of obsidian flakes used as pottery temper. If the object categories on which archaeological research is founded can be seen to be the product of the conventional lenses used in analysis, the door is opened for constructing new 'objects' of study which partition the object-world in different and multi-scalar ways. 'Objects' such as 'burning', or 'decoration', or 'rubbish' cut across the lower-level domains based on conventional artefact categories and allow fuller integrative work. A 'rubbish' specialist, for example, would need to use general information about the effects of depositional and post-depositional processes as well as field observations and information from a wide range of artefact categories.

Getting information back to the excavator as quickly as possible is essential. This may be assisted by new technologies; immediate digital data input may allow the quick production of artefact distributions and plans. At Catalhoyuk we have invested in a local, onsite computer network; all the terminals of the laboratory and field staff

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are linked by a hub so that data sheets and plans can immediately be accessed and linked to artefact-based information. Indeed it increasingly seems necessary to have a dedicated 'data-analyst' present with the time and resources to search for relationships between different types of data.

As noted, a reason for the highly codified recording systems developed in archaeology has been the need to deal with large data sets. A major challenge at Catalhoyuk has been to construct a database which allows the maximum amount of flexibility, change and interaction. The system, initially designed by Tim Ritchey and now by Anja Wolle, is a standard relational database (initially Microsoft Access running on a Windows NT Server machine) in which all aspects of the project are entered; excavation unit sheets as well as the faunal specialist records are on the same database so that querying across between artefact data and context data is facilitated. The aim here is to allow artefact categories (e.g. burned bone) to be evaluated against context information (e.g. whether a deposit or house is burned), and simultaneously to allow context categories (e.g. burned deposit) to be evaluated against artefact information (e.g. whether a bone appears burned). Within a nonlinear, circular process such as this categories and definitions change on the basis of multiple strands of information. It becomes necessary to tie codes and definitions of categories to dates and explanations. It may also be helpful to allow comparison and retrieval at different levels of abstraction. Contexts might be described both abstractly in terms of positive (e.g. layer) or negative ('cut') events, or in terms of more specific alternatives and probabilities (e.g. floor 70%; midden lens 30%).

While flexibility and the erosion of the notion of fixed objective categories can perhaps be engendered by these means, placing large amounts of information into a database in a way that allows efficient retrieval and comparison will always require considerable codification and fixity. Our aim is to embed the database within other information which contextualizes its own production. This reflexivity helps us to be critical of the assumptions we make, and it means that at future dates we or others can look back and understand why we made this or that interpretation, why we used this category or that context definition. It facilitates use of the site archive by later generations.

The contextualizing information includes more than coded forms and texts. The construction of a multimedia database is essential if a full range of information is to be provided to a wide variety of audiences. Access provides the ability to point to different types of data through OLE (Object Linking and Embedding). When designing the

database, the field type (e.g. video field or Autocad field) can be set as OLE object, which then gives the flexibility of including data from any OLE aware application.

One of the contextualizing types of data placed on the database at Catalhoyuk is the diary kept by the site and trench directors. With more computer terminals at the site it is hoped to have wider participation in diary-writing by members of the project. Keeping some form of diary or running account of an excavation used to be the prime method of recording information. The site or trench note-book is still advocated by, for example, Joukowsky (1980). But in British contract archaeology at least, most excavations have moved to some form of single-context recording with codified forms and prompts, and a version of this system is used at Catalhoyuk. Barker (1982: 147) argued against notebooks of 'prose whose loose format invites the writer to confuse the stages of recording, deduction, interpretation and speculation'. Since these stages are, in truth, inseparable (Carver 1990: 299) it becomes essential, both scientifically and ethically, to record what was being thought when records were being made and methods chosen. We have found at Catalhoyuk that writing a diary in the pseudo-privacy of typing at a terminal leads to highly personal and revealing accounts (even though the entries, as it turned out, are immediately and avidly read by others on the network). The entries in the diary can be linked on the basis of unit and feature number searches to the codified information so the latter can be set within the context of the production of knowledge. At the very least, the process enhances information exchange and debate within the project.

One important aspect to the context of production of knowledge on an archaeological site is visual. At Catalhoyuk daily video documentation takes place of group discussion in trenches, individual accounts of excavation progress and laboratory work. In this way team members can point to information they consider relevant, debates can be recorded and illustration provided. These videos are digitized, edited into short clips and stored on the database with attached key-words. From the database can be retrieved not only field descriptions, Autocad drawings, artefact locations and diary information for any particular unit, but also video about that unit, its discovery and interpretation. The editing process is of course selective, but the visual documentation always includes more 'peripheral' information than texts or forms, and it includes more of the surrounding context within which team members are working and interpretations are made. Indeed, the video documentation at Catalhoyuk, achieved with the collaboration of the Centre for Art and Media-Technology at Karlsruhe, has become very central to our methodology. Not only do the videos allow later

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critique and evaluation of the construction of data on site, but they also lead to greater information flow about interpretation (as people listen to each other live or on playback in the laboratory) and a greater readiness to submit one's own assumptions to scrutiny. As members of the team pointed out, the ever-present eye of the camera means that thought-processes are much more out in the open.

The destabilization of taken-for-granted assumptions and the critique of universal codes is also encouraged by the presence in the field team of an anthropologist whose concern is to study the context of production of knowledge. Carolyn Hamilton worked with us during the 1996 field season, using participation techniques and, for example, the diary to try to expose some of the assumptions we were making, some of the contradictions we were not facing and some of the potential for alternative interpretation. An ethnomethodological study of an archaeological excavation has been conducted by Gero (1996). Rather than making the Catalhoyuk excavation the object of study, Hamilton's aim has been to participate in and contribute to the excavation process. As with the video work, Hamilton's presence quickly came to be far from marginal. Her work interdigitated with ours so completely that very many of our interpretive and methodological ideas derived from discussion with her. The presence of a team member dedicated to questioning leads to a greater understanding of the processes in which we are engaged. The anthropological work not only makes the account of the production of knowledge (for example, on video or in diaries) by team members more complete; it also means that the knowledge itself is informed by a greater awareness of alternative interpretations. Hamilton also had a privileged access into our thoughts through individual interviews; she was able to point out for us parallels and comparisons between team members. Again, communication and interactivity were enhanced. The benefits to the project are tangible both in terms of results and working relations.

One example of many in the 1996 season at Catalhoyuk was Hamilton's observation that we were still being very descriptive in our field recording. As an anthropologist she felt that we did not get beyond the static. We did not think through in the field how artefacts had become incorporated into the archaeological record. Our primary data description did not include consideration of the agency behind the broken pot on the house floor. This critique helped us to see that interpretation had to become a routine part of primary recording if relevant questions were to be asked of the data during their discovery.

So far I have described the site as being interpreted by

'team members'. On any project there will be differential participation by members in the construction of knowledge. One of Hamilton's aims is to explore some relations of production of archaeological knowledge at the site. This is certainly necessary since differences in education, gender, country-of-origin and so on limit any ideal of open communication (Gero 1996). But in the global heritage market identified earlier in this paper, even the idea of a well-bounded 'team' is increasingly difficult. What qualifies for membership of 'the team'? While a core group undertakes the fieldwork, research and publication, many people in the global community may wish to have direct access to the site data and to participate in its interpretation. For this reason, the entire raw database is being placed on the Web, including drawings and diaries but excluding, for the moment, the video clips which require too much storage space for the Internet. The presence of contextualizing information in the database allows others to understand the process of the construction of the coded information and to be in a position to criticize and re-evaluate from alternative perspectives. The 'data' are thus not hoarded by 'the team' until publication; they are immediately part of a public interpretation.

We are also developing the use of hypertext in ways parallel to Ruth Tringham's (1994) 'Chimera Web' for the Balkan Neolithic site of Opovo. It can be argued (e.g. Thomas 1996) that the use of hypertext and non-linear multimedia data-structures allows some de-centring of the author and some 'writerliness' of texts for which some theoretical statements have called (Bapty & Yates 1990; Spector 1993; Joyce 1994). Since it is possible for each 'reader' of the 'text' to move through it in different ways, there is a greater openness to a wide range of interests and greater opportunities for interactivity and engagement. It is possible in this way to embed a narrative about the site in links to the database, to visual material, reconstructions and so on at various levels of specialist knowledge. Care must be exercised here, as Thomas (1996) has indicated. A certain level of archaeological knowledge may be required before the user of hypertext or hypermedia can effectively interact with it. It may be necessary to ensure that part of the hypertext deals with explaining terms and assumptions, so that the tools necessary for interaction are made available and easily accessible.

Virtual reality, as applied by the Karlsruhe team working at Catalhoyuk, has already been important in providing a deeper understanding of what it could have been like to move around within and between the buildings at the site (Forte & Siliotti 1997). This has been achieved by video-length computer animation, but also using

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Quick-Time VR, VRML and Real-Time Computers (some of which is accessible at the project's Web address). A phenomenological or experiential approach has been championed by a current generation of British prehistorians (e.g. Barrett 1994; Thomas 1996; Tilley 1994). In situations of less good or minimal monument survival, or where there has been substantial landscape change, virtual techniques may allow experiment with alternative forms of interaction between people and the worlds they have constructed round them. The intention at Catalhoyuk is also to use virtual reality to provide a non-specialist 'front end' to the database. Users will be able to 'fly' into the site, into individual buildings, 'click' on paintings or artefacts and so move gradually, if desired, into all the scientific information available in the database. Potentially, users will be able to move through the site, exploring information, and coming to their own decisions about the 'data' at different levels. One problem we have at Catalhoyuk is in deciding whether a building is in some sense a 'house'; rather than accepting 'our' conclusions on this, users will be able to access the data, as far as that is possible, and can come to their own conclusions about the definition of a 'house' at Catalhoyuk.

Conclusion

The aim of introducing a discussion of methodology at Catalhoyuk was to move towards the four goals of reflexivity, contextuality, interactivity, multivocality. These same concerns, in varied guises, reappear in many areas of the post- or high-modern world (Lyotard 1984; 1991). They are themselves linked to, and perhaps produced by, new information technologies (Castells 1996; Porter 1997); it is to be expected that in trying to operationalize these concerns in archaeology, the technologies themselves come to play a central role. It would have been appropriate to couple this text with a video debate amongst participants in the project. Conventional academic publishing by single authors is only part of an overall process and it is limited in its ability to further the fourfold aims.

But simply to introduce the new technologies is clearly insufficient. While high-speed processors on site, hypertext, multimedia and virtual reality may all foster some of the reflexivity, contextuality, interactivity and multivocality that is required, they have to be aligned with broader changes in approach and work practices. The technologies perhaps provide an opportunity rather than a solution.

Placing so much emphasis on the point of excavation may lead to a re-empowering or recentring of the field excavator. It may also involve retraining and reskilling

individuals so that they can handle the increased amount and complexity of knowledge made available to them during the excavation process. Alternatives might involve breaking the distinction between field and laboratory staff, and providing opportunities for field staff to be trained also as specialists in other areas and levels of research. More generally, the separation between field professional, university academic and laboratory scientist within the discipline do not provide a good context for the necessary degree of interpretive interaction. If interpretation is not to be seen as secondary but as primary to data collection, then so will the institutional divides between data collection, analysis and interpretation be further eroded.

As a further example of the relationship between methodological change and the need for wider accompanying changes in approach, it is possible to consider the impact of widespread data accessibility on the careers of project researchers and field staff. It will often be the case that some aspect of their career development is linked to publication; if primary data about the project are immediately widely available, the ability to publish original information may be undermined. Some safeguards and controls on information dissemination may be deemed necessary at certain points in the circuitry.

Despite these problems and implications, the end result of a reflexive methodology is an approach with scientific advantages. If more information is available at the point of excavation, choice of sampling and excavation method will be more appropriate to the questions being asked and the problems being studied (Carver 1989; 1990); fuller recording of relevant information will also be possible. If more contextual information is available to those working on materials from the site, there is less danger of inappropriate codes and categories being imposed from outside. If those conducting excavations are open to a wide range of perspectives, they may be more willing to adjust general views to the particularities of the information being discovered. A final scientific advantage might be claimed in the production of archives with sufficient contextual information to make them more usable than those archives based on highly objectified and codified data systems.

Whether or not these claims for scientific advantages come to be met, there are also ethical considerations. Day by day it becomes more difficult to argue for a past controlled by the academy. The proliferation of special interests on the 'fringe' increasingly challenges or spreads to the dominant discourse itself. As part of the global heritage economy there is a massive dissemination of cultural information. Rather than leading to a simple homogenization, this process has involved a decentring

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and a burgeoning of special interest groups. These communities, however dispersed and virtual they might appear to be, and however dependent on a technological system, have created for themselves new, varied and independent identities. Many are extremely well informed. Within this unstable kaleidoscope it is no longer so easy to see who is 'in' the academy and who is 'outside'; in the same way post-modernism blurs the distinction between 'high' and 'low' culture. Within the global communities fascinated by some aspect or other of Catalhoyuk, where does one draw the line between those within and without the 'team'? Is there a need to draw a line? Is not the better solution to make the line as permeable as possible while being responsible to the protection of certain rights? Is it not better to accept openly that even in the construction of archaeological data, interpretation is required?

Note. The Web address for Catalhoyuk is:
<http://catal.arch.cam.ac.uk/catal/catal.html>

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