Introduction
Towards a mature archaeology

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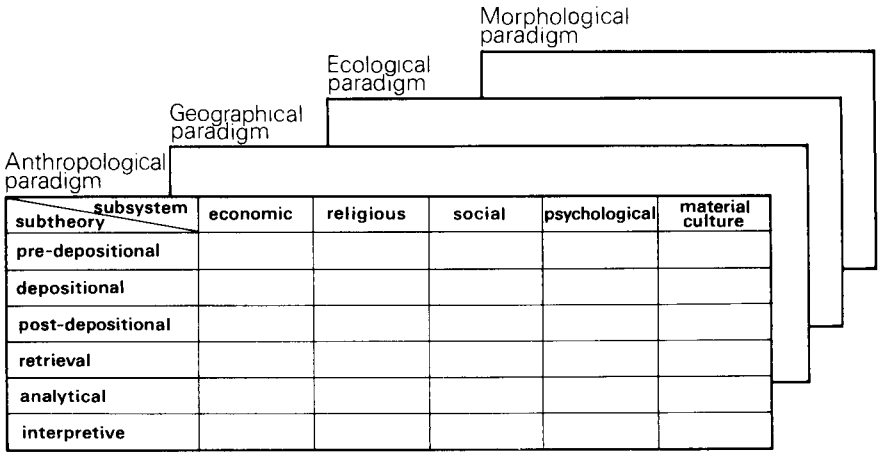
David Clarke was

> the acknowledged leader in this country of the 'new wave' of archaeological thinking. Possessed of a powerful intellect and a tirelessly inquiring mind, his short life was devoted to the task of trying to lighten our prehistoric darkness and to provide us with sharper tools. Opinion may still be divided over many aspects of his thinking, but there is no denying the enormous influence, which, in the course of a few short years, it has exerted on prehistorians, especially younger ones, in all parts of the world. (Evans 1977, p. 2)

Part of the reason for David Clarke's impact on archaeology was his broad encompassing vision of a mature and independent discipline. 'Archaeology, is archaeology, is archaeology . . . Archaeology is a discipline in its own right, concerned with archaeological data which it clusters in archaeological entities displaying certain archaeological processes and studied in terms of archaeological aims, concepts and procedures' (1968, p. 13). Such a statement opens the debate as to whether mature contributions can best be made by a separate discipline or by one fully integrated into the social sciences. This debate will be considered below. But, whatever the means considered appropriate for obtaining maturity, David Clarke's achievement was to outline, with greater clarity than anyone else, the full depth and potential of archaeology in the 1960s and 1970s. This was not to fossilise archaeology, but to start it on its adult course – the 'new wave'.

The archaeology that David Clarke outlined in *Analytical Archaeology* and in several articles (1972; 1973; 1977) was multistranded. It consisted of (1) types of theory used to study (2) types of system, working within (3) different paradigms. The vision of a unified discipline must depend on (1) and (2) since it is clear that the very different paradigms employed by archaeologists can lead to utter fragmentation. It is apparent from the papers in this volume that archaeologists still work with very different interests and assumptions. But the papers in the volume do illustrate the common use of the types of theory and types of system discussed by David Clarke and summarised in Fig. 0.1. Each contribution concerns not one theory or subsystem, but examines the links and relationships between them. The three-dimensional matrix in Fig. 0.1 provides the basis for the links generated in the articles in the book and



0.1. The interrelationships of the subsystems, subtheories and paradigms outlined by David Clarke.

for an understanding of the multivariate, multistranded relationships that are set up between the different types and levels of archaeological work. For example, a particular subsystem such as religion can be examined in relation to other subsystems using different levels of theory and within different paradigms (see Chapman, ch. 14 below).

1. TYPES OF ARCHAEOLOGICAL THEORY

In developing a 'comprehensive archaeological general theory' (1973, p. 16), the main operational subtheories are:

(i) Pre-depositional and depositional theory. The relationships between human behaviour and material culture.

(ii) Post-depositional and retrieval theory. Theories of survival and recovery of the evidence: disturbance, sampling, field strategies.

(iii) Analytical theory. The detection and analysis of pattern and structure in the surviving and recovered data.

(iv) Interpretive theory. The relationships between patterns in the data and interpretations of the patterns – the use of models.

Pre-depositional theory is examined especially in part I of this book. All the articles in this section are concerned with exposing or building models of the relationships between behaviour and material culture. In its emphasis on the relationship between people and things, pre-depositional theory necessitates work within living societies. The great expansion of ethnoarchaeology (some examples of which are given in part I) and the use of modern geographical models are part of this attempt to broaden our ideas about the way in which process in and amongst people can lead to pattern in things. But the clear behavioural emphasis in archaeology over the last decade has certainly limited the development of pre-depositional theory. In chapter 4, Fletcher continues

the advances made in his previous work (1977), moving beneath the study of apparent and functionally related surface behaviours to the analysis of underlying structures and their transformations in material culture patterning.

Studies of modern societies have also led to major advances in *depositional theory* (part II in this book). Work from Kenya (Gifford 1978) and Australia (Gould 1971) to modern Tucson (Rathje 1974) has emphasised the indirect and complex relationships between refuse and behaviour (Schiffer 1976). Theories being developed in this sphere concern, for example, the relationship between the use life of an artifact and its frequency in refuse (David 1972), the effects of curation (Binford 1976) and the effects of the length and intensity of site use on artifact distributions (Gould 1978; Schiffer 1976). But, as with pre-depositional theory, a major constraint on this type of work has been the functionalist, behaviourist assumptions of recent archaeology. Gifford (1977) and Yellen (1977) note that there is cultural variation in the cutting up, distributing and discard of animal carcasses. But these cultural differences are simply seen as providing further traits with which to examine cultural affinity. There has been little or no attempt to examine the underlying logic and meaning of refuse deposits, despite indications (Douglas 1966) that attitudes to refuse are deeply enmeshed in conceptual schemes.

Post-depositional theory has long been a concern of archaeologists, as Atkinson's (1957) early consideration of worm disturbance demonstrates. Yet it is only recently that archaeologists have faced up to the need to develop models of the movement of artifacts within and between archaeological deposits, and models of survival and decay. The area of study termed taphonomy (p. 157) is an important new development, while artifact movement after deposition has been examined experimentally (Siiriäinen 1977), analytically (Limbrey 1975), ethnographically (Gifford 1978) and archaeologically. In the latter case, for example, the distribution of joining sherds, flakes and cores can lead to understanding of the processes involved in artifact disturbances (Hivernel 1978). The building of models about such processes (e.g. Siiriäinen 1977) must take into account the complex and specific factors affecting each archaeological deposit. Detailed and exhaustive work is necessary in particular contexts, as Foley (ch. 6) and Isaac (ch. 5) demonstrate for savanna areas in East Africa. Perhaps experimental work on post-depositional factors will become a common adjunct to archaeological excavation at each site – building specific theories at the micro scale.

As the full development of post-depositional theory began late, so *retrieval theory* has only recently been widely accepted as a central concern in archaeology. Problem-solving research strategies and rigorous sampling procedures are now fairly commonplace, in America if not in Britain. Zubrow and Harbaugh (1978) make a distinction between prospecting strategies – the initial search for sites – and sampling strategies – the systematic recovery of samples from 'populations' of material. Since archaeological populations are in fact only biassed samples, the significance of random sampling in archaeology

will always be restricted (Cherry *et al.* 1978; Mueller 1975). Although rigorous sampling may reduce some of the archaeological bias (Foley, ch. 6), much of the data with which we have to work was collected very unsystematically. Chapman (ch. 14) emphasises the need to develop theories concerning the handling of such biassed and fragmentary information. Yet it remains difficult to see how biassed retrieval procedures can be modelled. Hamond (ch. 8) discusses both post-depositional factors (such as the sedimentary cover of sites) and retrieval bias (such as the localised activities and interests of museum and amateur archaeologists and the finding of early Neolithic sites in Germany largely as a by-product of commercial gravel extraction). While the process of settlement spread is modelled by Hamond, he does not model post-depositional and retrieval effects, and quite understandably. Most recovery biasses will have to be examined heuristically, although in rare cases the factors affecting retrieval may be considered so many and complex that stochastic modelling within stated constraints is realistic. There is certainly great potential for the development of theories concerning the robustness of pattern in the face of stochastic distortion and retrieval.

Pattern analysis, as part of *analytical theory* (parts II to IV in this book), has received a major boost in archaeology as a result of the injection of outside techniques. This is especially the case in taxonomy (Doran and Hodson 1975), and in the study of spatial structure (Hodder and Orton 1976; Smith 1976) and social organisation (e.g. Tainter 1977). However, much of this work has a heavy inductive, 'pattern playing', emphasis. The limitations of this approach, outlined by Hamond in chapter 8, include the lack of concern with the multiple processes which could have produced any single pattern. Analytical theory should be more concerned with process, and in this, computer simulation is a powerful tool. Experimentation with a range of competing hypotheses concerning, in Hamond's case, settlement spread becomes feasible. While simulation is an invaluable analytical tool, perhaps the major development that is needed in archaeological pattern analysis concerns methods for the recognition of pattern at different levels. For the moment, there has been little attempt to study organisational principles lying beneath surface patterns. Design analysis has begun to emphasise compositional principles such as symmetry (Washburn 1978), while the rules of generation of Palaeolithic art have been studied by Marshak (1977) and Conkey (1977) and of spatial structure by Hillier *et al.* (1976) and Fletcher (1977). Yet the full development of techniques for the identification of principles underlying a wide range of different types of archaeological material – from burial patterns to artifact and refuse distributions – remains a major challenge.

Most models for the *interpretation* of past patterns are derived directly from other social sciences. But over recent years, major differences have emerged in the way that these imported ideas are used in archaeology. For the 'law and order' archaeologists (Flannery 1973) argument is by correlation. It is

assumed that law-like statements can be found of the form 'if I have design clusters I have matrilocal residence'. The general aim is to identify strong statistical correlations because there can be no logically necessary deductions from archaeological evidence to human behaviour. The main approach to interpretation cannot be through laws in any strict deductive–nomological sense. Rather, a more flexible approach, involving models and analogy and followed in practice by most archaeologists, must be allied to an emphasis on multiple working hypotheses as suggested by Stanislawski (1973) and Hamond (ch. 8) and to multivariate causality as examined by systems theorists (Flannery 1973). Any positivist approach has to contend with the criticisms of phenomenology and hermeneutics. While the debate is raging in related disciplines (Buttimer 1976; Entrekin 1976; King 1976; Relph 1970), archaeology stands by. Once again, full maturity will only be achieved by an involvement in these wider discussions concerning different interpretive procedures and epistemology.

All types of archaeological theory have made considerable advances in recent years. The different areas of the fledgling but fast-maturing science have been recognised, defined and filled out. A broad and rich body of theory is emerging. Yet, throughout the discussion presented above the major limits to growth have been where an inward-looking mentality has prevented debate of broader issues current within the social sciences. In particular, the debates concerning behaviourism, functionalism and structuralism, and concerning alternatives to the Hempelian philosophy, have often been disregarded. Similar limitations will be apparent in the discussions which follow.

2. TYPES OF SUBSYSTEM

The main emphasis of the systems theory approach is to focus attention on the networked nature of systems. The various components (subsystems) of a system are connected so that change in one leads to changes in another. 'The archaeologist must be aware of the complex connections between his subsystems input and output and that of the other interconnected subsystems networking the overall system. How else can the archaeologist hope to interpret the social, religious, economic and other kindred aspects of his material' (Clarke 1968, pp. 33–4). In practice, however, it is necessary to define social, religious, psychological, economic and material culture subsystems (*ibid.*, p. 83). There are links between the components of these subsystems, between the subsystems themselves, and with the environment system. The study of the Iron Age Glastonbury settlement (Clarke 1972) is a good example of an attempt to expose these links within one study.

The identification of different subsystems is based on the premise that different aspects of life can be separated and the links between them identified and examined. In particular, many archaeologists would accept that a distinct, *economic*, side of life could be distinguished and usefully studied in relative

isolation. Despite the views of substantivists (see Dalton, ch. 1), palaeoeconomists (Higgs 1975) seem little concerned with society and culture. A more integrated view is presented by Sherratt (ch. 10) and Halstead (ch. 11). Nevertheless, Sahlins' (1976) criticisms remain. Links are studied between subsystems, but the links and the subsystems are of the analyst's own making.

In discussions of *social* and *religious* subsystems, most archaeologists in recent decades have used various forms of ecological functionalism. This is seen clearly in the articles in this volume. For example, Chapman (ch. 14) suggests that unpredictable fluctuations in an arid climate in south-east Spain may have helped to stimulate nucleation and hierarchy in order to 'buffer' the effects of variation in the water supply. Sherratt (ch. 10) links a range of changes in the social subsystem to economic changes which themselves relate to population increase and innovation. In chapter 11, Halstead suggests that Cretan Bronze Age palaces and sanctuaries may have fulfilled an integrative role in a period of economic diversification. Hamond (ch. 8) suggests that social links are maintained between nearby Neolithic settlements in order to maximise the flow of information and exchange and provide surety in unfavourable conditions. Ellison (ch. 15) hints that widespread networks of pottery styles are related to a pastoral aspect of the economy in the Late Neolithic and Early Bronze Age in England, with arable farming in the Middle Bronze Age leading to local style clusters. In all these examples, the social and religious subsystems are explained by showing how they function in relation to the economy and environment.

Tilley, however, in the section of the book which concentrates on the social subsystem (ch. 13), examines some of the criticisms that have been made of the functionalist use of systems theory. He discusses alternative views which give greater independence and weight to social relations and which consider the conceptual constraints on socioeconomic change and variability. It is necessary to become involved in the debate in the social sciences concerning ecological functionalism.

The discussion by David Clarke (1968) of *psychological* and *material culture* subsystems adds important dimensions to the systemic approach favoured by many archaeologists. These subsystems do not appear, for example, in Renfrew's (1972, pp. 22–3) scheme since his technological and projective systems appear to have a different nature. While Renfrew stresses the limitations of a systems theory approach which does not consider individual perceptions (Tilley, ch. 13), Binford (1972) suggests that archaeologists are poorly equipped to be palaeopsychologists. For David Clarke, psychological and cultural patterns were more than mere reflections of other aspects of life. 'It would seem that cultures induce a broad psychological pattern on their generators, with considerable personal variation' (1968, p. 113). Subconscious concepts and values are seen as having an internal structure induced largely by language. The perception of an immature member of a society is organised and orientated by linguistic constructs and categories. Dislocation and

disequilibrium in the relationship between the psychological sphere and the other subsystems lead to personal stress, strains and conflict. Fletcher (ch. 4) examines the way in which the limits to the densities at which people are willing to live are seen in individual stress as the frequency of interaction increases.

The very identification by David Clarke (1968, pp. 119–23) of a separate material culture subsystem in which information about the orientation of a culture's percepta was 'congealed', emphasises that mind and conceived pattern are more than mere epiphenomena of social and economic functioning and adaptation. Even if the encoded information in material culture was seen by David Clarke as being mainly survival information, the retention, in contrast to his American counterparts, of aspects of the normative view, means that the door is still open for us to consider the internal structure and logic of cultural pattern. The main challenge to systems theory in archaeology, met recently by Bennett and Chorley (1978) in geography, is to follow David Clarke in breaking out of a narrow ecological functionalism which over-emphasises equilibrium and adaptation. We need to accomodate the study of internal generative process and the structure of cultural meaning. These points will further be discussed in consideration of the morphological paradigm.

3. PARADIGMS

Tilley (ch. 13) suggests that the identification of four paradigms in archaeology (anthropology, geography, ecology and morphology) – three of which are clearly related to other sciences – argues against the idea of an independent and separate archaeology. But even if the call is for an archaeological discipline in its own right, all of David Clarke's work shows an awareness and willingness to consider the contribution that related disciplines could make. In each of the four paradigms (the term as used by David Clarke can best be seen as approaches, interests and assumptions), outside ideas and models are worked into the fabric of the emergent discipline.

The *anthropological paradigm* focusses on the relationships between patterning and variability in archaeological data and patterning and variability in the social structures behind that data. The use of ethnographic models to examine these relationships is discussed in part I of this book. The main problem posed within the paradigm is the proper use of analogy. If an aspect of societal organisation can be shown ethnographically to be related to an aspect of material culture patterning, to what extent are we justified in inferring from pattern back to social process? In a recent attempt to move 'beyond analogy', Gould (1978) suggests that the emphasis on similarities and analogies should be extended to contrasts. The archaeologist should identify ways in which his and the ethnographer's data differ because it is in the differences and 'surprises' that information on past non-material

behaviour is contained. This suggestion leads to the further problem of how we explain pattern that is different from ethnographic experience. If social forms existed in the past which are now extinct, how are we to interpret them? Dalton (ch. 1) considers that extinct societies might be identifiable if they can be linked to polythetic genus-sets of societies. For example, acephalous stateless societies and tribal kingdoms form two different genus-sets. Having identified the constraints and constants associated with each set, it would be possible to look for or suggest the existence of many of the other traits associated with that set.

Dalton's societal types are built up by broad cross-cultural surveys and it is this type of broad study that is often considered of greatest value to archaeologists. For example, Sherratt (ch. 10) uses several correlations between economy and social behaviour derived from Murdock's *Ethnographic Atlas*, Chapman (ch. 14) uses Saxe's and Goldstein's ethnographic work on burial practices, and both Chapman and Ellison (ch. 15) base interpretations on the Peebles and Kus survey of characteristics of ranked societies. A distinctive aspect of this type of large-scale correlation is that the test of the analogy partly takes place outside archaeology. The larger the number of times that material and non-material behaviour traits co-occur in our present biassed set of surviving 'primitive' peoples, the more certain we feel that any particular application to archaeological data will be successful. The hypothesis is partially tested before it ever reaches the archaeological data. Since many of the hypotheses concern aspects of non-material behaviour such as patrilineal inheritance which cannot be tested independently in the archaeological record, great care is necessary in such applications.

Analogy derived from cross-cultural surveys is also limited by the tendency to relate superficial appearances of cultural patterning and behaviour. The nature and context of the links between people and things is often left unexamined. Thus, the amount of space in settlements has been shown empirically to be related to numbers of people inhabiting the settlements (e.g. Wiessner 1974). But the link itself has been assumed rather than examined. One aspect of Fletcher's contribution (ch. 4) demonstrates the 'cautionary tale' aspect of ethnoarchaeological work. He shows that correlations between spatial area and numbers of people cannot be supported by ethnographic data. But Fletcher also goes beyond the study of correlations to consider the underlying *way* in which people are related to and use space. The limiting constraint in the relationship between human densities and area concerns the spatial characteristics of communication and the finite frequency of interaction that human beings can tolerate and control.

The same emphasis on examining more closely the links between people and things is seen in the chapters by Longacre (ch. 2) and Hodder (ch. 3). Longacre's ethnographic work amongst the Kalinga resulted from dissatisfaction with an earlier model which suggested a relationship between matrilocal residence and localised design clusters. Ellison's (ch. 15) doubts about this

hypothesis are further supported by ethnographic work in Zambia (ch. 3). Both the Stanislawskis (1978) and Longacre have shown how design clusters can be produced by a wide variety of factors and that design learning may cut across family and clan lines. Design distributions are not neutral referents for human activities. Rather, designs are used as expression within social strategies.

The studies in part I are concerned both with conducting broad but careful cross-cultural surveys and with examining at a smaller scale the detailed links between patterns in people and things. The links occur at different levels, at the level of material culture as expression (in the chapters by Hodder and Longacre) and at the deeper level of general and perhaps universal characteristics of human behaviour (as in Fletcher's article).

Part II is concerned largely with the *geographical paradigm*, which concentrates on within-site and between-site activity patterns and the distributions of features, structures and artifacts which are involved in them. David Clarke's (1977) introduction to *Spatial Archaeology* demonstrates the full richness and scope of this type of study. An important new development published since his introduction was written has been the attempt to define the syntax or grammar with which spatial patterns are built (Hillier *et al.* 1976). The possibility of identifying underlying structure in settlement patterns is, however, already present in David Clarke's (1972) analysis of the Iron Age Glastonbury settlement. Here, each of the modular units, composed of associations of a number of different house types within the settlement, is divided into a major familial section and a minor dependent sector. A similar bilateral symmetry is identified in the circle of houses in each compound. 'Perhaps the relationship between the dependent, low status half of the compound and the rich, high status half might represent a structural analogue of the relationship between the minor, female half of each unit area and the major, familial half' (1972, p. 837). The structural pattern of clusters of separate round houses with their various functions and arrangements in the Iron Age continues into the Romano-British arrangement of rooms within one rectilinear building – the latter case is a 'rectilinear transformation of the other' (p. 828). Ellison (ch. 15) identifies aspects of the same structure already emergent in the British Bronze Age.

The existence of a separate geographical paradigm in archaeology must be considered against criticisms that are being made of the very existence of geography as a definable area of study. Gregory (1978) notes the slender basis on which study of the spatial dimension is used to define a distinct discipline. Much geography, as in Thrift's (1977) work on time, is little concerned with spatial relationships, while many processes occurring over space are in fact studied as part of other disciplines (economics, transport studies, sociology, ecology). If it were not for the institutional emphasis in university organisation, geography would disappear within a wider social science. Similarly, in archaeology, while special statistics are needed to examine two-dimensional

patterns, and while many social and economic models have an important distance component, it is not at all clear that we should separate geographical archaeology from other archaeological approaches. To do so would be to move against the trends visible in geography itself.

The *ecological paradigm*, represented by Parkington but also by Sherratt, Halstead and Wilkinson in part III in this book, is concerned with the adaptation of human systems within an environmental and ecological context. This has perhaps been one of the richest areas of recent research and development in archaeology. The criticisms which have been made of the approach concern, for example, the extent to which bone typology is any better or more interesting than pot typology, and the degree to which ecology is a sufficient explanation of human behaviour. The narrow emphasis on 'the economy for its own sake' is certainly avoided by the integrated accounts and studies of the chapters in part III. The ecological view tends to emphasise external causes of sociocultural change. This is one way in which this area of study may be considered to provide insufficient explanation. Tilley (ch. 13) follows structural-Marxists in suggesting that the environment constrains but does not determine. A full explanation must examine internal social processes (part IV). The economy is embedded in society so that the workings of the economy cannot be studied as a separate and independent sphere.

The usual rejoinder to such criticisms is that archaeologists study long-term change. Over the long term the social and conceptual are seen as necessarily fitting into and allowing whatever the ecological relationships demand. European prehistory abounds with 50 to 500 year sociocultural changes and there is considerable spatial variation in cultural form. While many of the temporal phases can be shown to have had an accumulative effect on the environment, very little of the cultural variation can be related closely to climatic alteration. Environmental change due to over-use by man is an effect of internal social process, not a cause. A depleted environment constrains social change, but it does not determine it. Some regional cultures, such as the early *Linearbandkeramik*, do seem to be adaptively related to particular environments, but, as Hamond shows (ch. 8), this relationship is often very complex. It is difficult to relate most of the groupings in later prehistory to distinct ecological zones. As with the geographical paradigm, perhaps more would now be gained by integration of the ecological approach into the study of social relations.

An apparently distinctive archaeological paradigm is the *morphological*. This involves the definition of regularities in the 'structural morphology of archaeological entities' and the exposition of 'the grammar of their developmental transformations' (Clarke 1972, p. 44; some aspects of taxonomic procedures are discussed in ch. 3 below). At several points in this introduction it has been suggested that a mature archaeology means an archaeology involved in, and contributing to, wider debate in the social sciences. One of the main restrictions on such debate is the maintenance of an ecological