



NEW DIRECTIONS
IN ARCHAEOLOGY

The ancient mind

Elements
of cognitive
archaeology



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Towards a cognitive archaeology

COLIN RENFREW

Cognitive archaeology – the study of past ways of thought as inferred from material remains – still presents so many challenges to the practitioner that it seems if not a novel, at any rate, an uncertain endeavour. That this should be so is perhaps rather odd, for generations of archaeologists have written with considerable freedom about the thoughts and beliefs of ancient peoples, about the religions of early civilizations and about the art of prehistoric communities. With the New Archaeology of the 1960s and 1970s, however, came an acute awareness that much earlier work was in some respects not well founded, or at least that the frameworks of inference by which statements were made about past symbolic systems were rarely made explicit and were frequently defective.

This realization about the potential scope of the discipline, within the context of the optimism of processual archaeology (as the New Archaeology came to be called), should ideally have led to an upsurge of well-argued papers dealing with various aspects of what we have, in the title of this volume, termed 'The ancient mind'. But despite that early optimism, that was not the outcome, and the preoccupations of processual archaeologists were very rarely, in the early days, with human reasoning, or with symbolic structures, but rather with the more immediately material aspects of life. Culture was often defined, following Leslie White and Lewis Binford, as 'man's extra-somatic means of adaptation'. Arguing from a standpoint which has subsequently, and not unreasonably, been characterized as 'functionalist', workers often placed more emphasis on economic aspects and sometimes social aspects of the past, and tended to ignore the belief systems and indeed often the communication systems of early societies. These were the days of what may be termed functional-processual archaeology,

with an emphasis upon productive efficiency considered against a background of Darwinian selection.

During the 1980s the scientific aspirations of processual archaeology came under attack. The first critics were philosophers of science who noted that the philosophy of science (if not necessarily science itself) had moved on from what was regarded as the positivism of the 1950s into a 'post-positivist' era, and who clearly felt that processual archaeology should do the same. Hard upon their heels, and drawing encouragement from these critiques of scientific method, came workers who first termed themselves 'structuralist' archaeologists, and more recently 'post-processual' archaeologists. Proclaiming the death, or at least the imminent demise, of processual archaeology, these workers advocated an interpretive or hermeneutic approach. Their thinking was influenced by the advocates of Critical Theory in literary studies and in history, and by the so-called 'post-modern' approach (adopting a term first applied in the field of architecture and then very much more widely; see Bintliff 1991). But although the polemic was vociferous, more meta-archaeology has emerged from these debates than effective applied archaeology, and the advocates of 'post-processual' archaeology have still rather few case studies to their name.

The conference from which the present work emerged was held in the belief that reports of the death of processual archaeology have been much exaggerated. Indeed, workers in the processual tradition, including several represented here, are increasingly focusing upon symbolic and cognitive issues, and in doing so are seeking to develop frameworks of inference to take the place of (or in some cases to sustain) the sometimes rather intuitive and hasty conclusions of four or five decades ago. From this perspective it may be permissible to claim that processual archaeology, far from expiring, has entered a new phase which one might term 'cognitive-processual' archaeology (Renfrew and Bahn 1991: 431–4), acknowledging by that term both the principal field of study and the intention of working within a tradition which is broadly scientific, like that of the functional-processual archaeology of twenty years ago, although no longer so readily open to dismissal as mainly positivist in its philosophical stance.

For these reasons we would vigorously rebut what we regard as the somewhat arrogant self-denomination of the so-called 'post-processualist' archaeologists. The adverbial prefix 'post-' displays a modish preoccupation with current intellectual fashions. Yet it is hardly appropriate for the hermeneutic and interpretive exponents of this recent trend of thought themselves to offer adjudication as to whether or not it has entirely displaced the well-established scientific aspirations of the processual school. In reality, these are not 'post-processual' archaeologists but 'anti-processual'

archaeologists, who advocate an idealist and indeed a relativist standpoint which has much in common with the thinking of the historiographic writers of the 1930s and subsequently (Trigger 1978), from Croce to Collingwood and beyond. They are, of course, perfectly entitled to return to those patterns of thought which the early processual archaeologists criticized, and they certainly do so with the much greater critical self-awareness which the 'loss of innocence' (Clarke 1973) of the New Archaeology encouraged. And certainly they do so armed with refreshing and often provocative insights from the critical theorists and the deconstructionists who have been so influential in other fields. But they are once again joining in what is in some respects little more than a re-run of an old debate between conflicting schools of philosophy, or at least between philosophical outlooks, where they situate themselves alongside Hegel and Croce, Collingwood and Lévi-Strauss, Geertz and Ricoeur and those idealists whose primary business is the understanding of 'meaning' located within the minds of specifically identifiable historical personages, and for whom historical explanations are to be found in the intentions of individual (or even sometimes collective) actors – to know (to choose an example favoured by Collingwood) why Caesar crossed the Rubicon.

On the other side of this philosophical divide are those thinkers who, with Darwin and Marx, or with Popper and Gellner, or in the archaeological field with Binford and Clarke, are concerned to situate human individuals and societies within the material world. In this way they avoid the rigid division between nature and history, so firmly asserted by the idealist, and to use the principles of scientific enquiry to explain, and hence understand, the behaviours of human beings and human societies. That there should be such a divide is perhaps to be regretted, and one of the purposes of the present work is to help to bridge the chasm, at least within our own field. But it should be clearly understood that those who assert this dichotomy, by proclaiming themselves to be 'post-processual', must take some share of the responsibility for its continuing existence. For this reason, while we acknowledge the validity of some of the insights of the anti-processual school in archaeology, and while we value the role that some of these may play in developing an effective cognitive-processual archaeology, we are sceptical of the utility of the proclamation that a new 'school' of thought is born, especially when it defines itself essentially by asserting its identity through opposition or contradistinction to an existing and productive tradition of thought and work. Even Hegel favoured synthesis above antithesis.

It is not the purpose here systematically to refute the claims of the anti-processual tendency in archaeology (e.g.

Hodder 1986; Shanks and Tilley 1987a, 1987b). Indeed there is little doubt that it contains many insights which, when winnowed out from the accompanying polemic, will prove not only productive but deeply instructive in developing our discipline. The observation may be sufficient that the dichotomy between processual and anti-processual is not in itself helpful, and that the 'debate' upon this polarity, for instance between Hodder and Binford (Hodder 1982; Binford 1987, 1988) has served to obfuscate as much as to clarify. That the early functional-processual archaeology (Binford and Binford 1968; Clarke 1968) did not lead rapidly to many innovative explorations in the cognitive field can hardly be denied. This may have been due in large part to Binford's own robustly materialist position, where any consideration of ideas in the minds of the ancient actors who formed the archaeological record tended to be dismissed as 'palaeopsychology'. It has for some time seemed an irony that the initial claim that the New Archaeology need not be fettered by the restrictive assumptions of the old, culture-historical tradition, in reality led to so little concrete progress in the cognitive or symbolic field, and this despite Binford's own early definition (Binford 1962, 1964) of the ideotechnic dimension or subsystem in culture alongside the sociotechnic and the technomic ones. The charge here against the more vigorous exponents of anti-processual archaeology is not that the issues they raise are inappropriate or unimportant, nor that some of their insights are unfruitful, but that their polemic is confused and ultimately unhelpful. In rejecting the scientific traditions of processual archaeology they are throwing out the realist baby with the positivist bathwater. Here we are instead concerned further to develop an approach, a cognitive-processual approach, which will, so far as is possible, use the existing methods of archaeological enquiry to investigate the early use of symbols and the development of cognitive processes.

Our understanding of what is appropriately meant or entailed by the methods of scientific enquiry is itself continually evolving, as developments in the philosophy of science clearly reflect (Wylie 1982). It is, perhaps, an irony that some of the most promising attempts at applying the philosophy of science towards the understanding of archaeological method (e.g. Watson, LeBlanc and Redman 1971; Salmon 1982) have been so deeply flawed or in some cases so superficial in their understanding of the nature and ways of archaeology itself that they have, in my opinion, confused more than they have clarified. I have, for some time, held the view (Renfrew 1982a) that for valid insights into the theoretical positions of archaeologists we would do better to look at their working papers, that is to say to the application of their thinking to specific cases, than to their more programmatic statements or to their attempts to write

philosophy. With few exceptions the archaeologist's knowledge of archaeology is only marginally more extensive than the knowledge of archaeology among those philosophers who seek to write in our field. For that reason the chapters in this volume avoid, so far as possible, grandiose or polemical statements on the current state of archaeological thought. They focus instead on the urgent task of developing ways of forming structures of inference, in an explicit (and in some sense scientific) manner which will allow us to understand better how people used their minds, and formulated and utilized useful concepts, in early societies. That is the task of cognitive-processual archaeology. The validity of the initiative, or of the philosophical/methodological positions adopted, will not be judged by *a priori* epistemological arguments, but by what can be discovered, constructed, reconstructed or otherwise informatively asserted about the past.

The scope of cognitive archaeology: the 'ancient mind'

The term 'ancient mind' is shorthand, perhaps rather misleading shorthand, for the subject matter of cognitive archaeology. It is not meant to imply that there is necessarily something inherently different between the thought processes of yesterday and those of today. No distinction is implied between the ancient mind and the modern mind. It is important at once to assert that no *a priori* argument is entertained about some notional series of evolutionary stages in human cognition, and no such assumption is made here. In the same way we are uneasy about the title of Lévi-Strauss's work *The savage mind* (Lévi-Strauss 1966) – *La pensée sauvage* in the original French. We make no assumptions about different kinds or categories of thought.

In saying this, however, one cannot escape two problems, both of which lie below the surface when one uses a vague, all-encompassing term like 'the ancient mind' to indicate an area of interest. The first and most obvious is the whole question of the evolution of cognitive abilities from earlier life forms and through the fossil apes to *Australopithecus*, *Homo habilis*, *Homo erectus* and *Homo sapiens*. Even if we make the assumption that there is little physical difference between ourselves and our sapient ancestors of 40,000 years ago, we cannot escape the obligation of considering the minds of those more remote, pre-sapiens ancestors. It may be assumed that their thinking was, in many ways, different from our own. The preserved material culture may offer us some way of considering this issue, offering, for instance, opportunities for considering the reasoning and planning abilities involved in the production of stone tools. The recent work by Merlin Donald (1991), *Origins of the modern mind*, opens a number of useful avenues of speculation, as indeed

does Peter Wilson's (1983) *Man, the promising primate*. The task for the cognitive archaeologist is to devise methods of study and frameworks of inference which will, in practice, allow the archaeological evidence to be used to make contributions to the discussion which go beyond more general speculation.

If the first problem relates to the evolution of cognitive abilities and cognitive processes leading to the emergence of *Homo sapiens*, the second is the extent to which we may speak about 'pre-modern' forms of thought operating in our own species, in earlier societies. Henri Frankfort, in his stimulating work *Before philosophy* (Frankfort *et al.* 1949) emphasized the role of what he termed 'mythic thought' in many early societies. Whether or not this is an entirely appropriate notion of a mode of thought to contrast with our own, it cannot be excluded that concepts and modes of thought may have been employed in earlier times which may not feature prominently in the processes of thought and argumentation of modern societies. Even if we dislike the generalizations implied in the term 'the savage mind', this possibility cannot be overlooked. So that while, with our use of the term 'the ancient mind' in our title, we are not asserting any specific and fundamental distinctions between ancient and modern minds, nor are we denying that there might be useful distinctions to be drawn. The term is used for its convenient concision, and not for any supposed associations which it may carry with it.

The approach followed here, however, is not to set out different cognitive categories in some *a priori* way, to posit special 'ancient' or 'pre-modern' modes of thought, but to seek to study the way in which cognitive processes operated in specific contexts, and to investigate the interrelationship between those processes and the social contexts which harboured and promoted them. It will perhaps be appropriate, before considering further the nature of the insights which may be available, to look more specifically and concretely at the various fields of study which at once present themselves for consideration.

The scope of cognitive archaeology could be outlined in several ways (see Renfrew and Bahn 1991: 339–70). Perhaps the most concise approach is to focus explicitly upon the specially human ability to construct and use symbols. A symbol is something which stands for or represents something else: 'a visible sign of an idea or quality or of another object' (*Webster's Collegiate Dictionary* 1925: 974 'symbol'). The word derives from the Greek 'to place together', and the notion of juxtaposition (of X against Y), of representation (of X by Y) and of metaphor (where X is equated with Y) are closely related. Leslie White (1949: 11) defined humanity in terms of 'the use of symbols . . . All human behaviour is symbolic behaviour: symbolic

behaviour is human behaviour. The symbol is the universe of humanity.' Similarly Ernst Cassirer (1944: 26) suggested that the human individual should be defined as an *animal symbolicum*.

Man has, as it were, discovered a new method of adapting himself to his environment. Between the receptor system and the effector system, which are to be found in all animal species, we find in man a third link which we may describe as the *symbolic system*. This new acquisition transforms the whole of human life. As compared with the other animals man lives not merely in a broader reality: he lives, so to speak, in a new *dimension* of reality. (Cassirer 1944: 24)

An important component of the cognitive-processual approach is to set out to examine the ways in which symbols were used. This may be contrasted with the attempt to seek rather to ascertain their 'meaning', which would generally be the object of the anti-processual or interpretive approach. The distinction is an important one. As we shall see, both approaches must inevitably rely upon the insights and intuitions of the modern investigator. The creative, and in that sense perhaps subjective aspects of scientific inquiry are not in doubt and it is a common misconception of the scientific method deriving largely from the polemic of Bourdieu, that it is, in its inspiration, inhuman, mechanistic or lacking in creativity. But for the cognitive-processual archaeologist, it is enough to gain insights into *how* the minds of the ancient communities in question worked and into the manner in which that working shaped their actions. For the interpretive archaeologist, working in the grand tradition of idealists like Collingwood, this is not enough. One seeks, instead, to 'enter the mind' of the early individuals involved through some effort of active empathy. This total experience of 'being' that other, long-dead person, or at least undergoing an experience to be compared with theirs, is what characterizes the subjective, idealist and interpretationist approach of the anti-processual and 'post-modern' archaeologist. The cognitive-processual archaeologist is sceptical of the validity of this empathetic experience, and sceptical too of the privileged status which must inevitably be claimed by the idealist who is advancing an interpretation on the basis of this intuitive, 'I-was-there' experience. As in the conduct of all scientific inquiry, it is not the source of the insight which validates the claim, but the explicit nature of the reasoning which sustains it and the means by which the available data can be brought into relationship with it. As Popper long ago emphasized, validation rests not upon authority but on testability and on the explicitness of the argumentation – even if testing is not always, in practice, an easy undertaking.

When we come to consider in more detail the ways in which symbols have been used, we can, perhaps, think in terms of a series of categories of human behaviour. Symbols are used to cope with several aspects of existence:

- (1) design, in the sense of coherently structured, purposive behaviour;
- (2) planning, involving time scheduling and sometimes the production of a schema prior to carrying out the planned work;
- (3) measurement, involving devices for measuring, and units of measure;
- (4) social relations, with the use of symbols to structure and regulate inter-personal behaviour;
- (5) the supernatural, with the use of symbols to communicate with the other world, and to mediate between the human and the world beyond;
- (6) representation, with the production and use of depictions or other iconic embodiments of reality.

No doubt one may define other ways in which symbols are used to structure human life and human affairs, but these certainly cover some of the main headings.

The distinction between planning and design is not always a clear one, since so much human behaviour involves both. For instance, the temple-builders of Malta in the third millennium BC produced small models in limestone of the structures which they had built or were to build (Fig. 1.1). It is difficult now to know whether the model preceded or succeeded the construction of the building itself. But if the former were the case, this is a good example of both planning and design.

In some cases, however, it is useful to emphasize the distinction between the two. For instance, in the production of stone tools (Gowlett 1984; Davidson and Noble 1989; Wynn 1991), it has often been found necessary to acquire the raw material from some suitable source located at a considerable distance from the locations where the tool is to be used. There is no doubt that the use of the material in some cases entails a deliberate journey undertaken at least in part to secure its acquisition. That implies planning. Trade and exchange in later times likewise entail planning, in the sense of time-structuring, of a more complex kind.

The cognitive issues involved in tool production are of a related kind, subsumed under the term 'design'. The assumption is a long standing one (see Clarke 1968: fig. 39) that the production of most artefacts, for instance of such stone tools as Acheulean handaxes, involves the use of a mental template, which serves to guide the craftsman producing the artefact. But the production of an artefact type need not depend upon any sophisticated conceptualizing, nor need it pre-assume the use of language (Bloch 1991). Yet

unless the production process is an instinctive one which is genetically determined (as it may be in the case of termite hills or the nest of bower birds), then the term design is appropriate.

Measurement has a special place in the development of cognitive archaeology for several reasons. The most obvious is that measurement requires actions in the material world in which artefacts of a special type are often involved: weights, measuring rods, vessels of specified capacity and so on. Moreover the measurement of time involved many repeated, sequential actions. These, when recorded, often display periodicities related to those of the sun and moon, notably the number of days in the lunar month and solar year. These activities are of particular interest to the archaeologist since the artefacts themselves often survive and are available for study. One good example is the major series of palaeolithic bone and ivory objects with incised notations which have been so informatively studied by Alexander Marshack (Marshack 1991). Another is the series of stone cubes from the Indus valley civilization which may plausibly be identified as weights, and from which other aspects of

Harappan measuring practices and quantitative thought may be inferred (Renfrew 1982b: 17).

Symbols are used in various ways to structure interpersonal behaviour. One of the most pervasive in the modern era is money. Of course in earlier times the use of money might involve measurement, when cumulative value was ascribed by number (for instance in the case of cowrie shells) or by weight (where quantities of gold coins might be involved). But most coinages have a token aspect. The value of the coin is symbolic in two senses. First the very notion of 'intrinsic value' for a precious metal is conventional and symbolic (see Renfrew 1986: 160). But secondly the coin, or in the modern world the banknote, is itself a symbolic entity which makes, or implies, reference to goods in the real world. Today, when money is transferred from financial centre to financial centre by electronic means, the symbolic nature of the transaction is even more clearly apparent.

Another field of considerable interest, within the whole area of the symbolic structuring of human relations, is the representation of rank by symbolic means (nor should it be

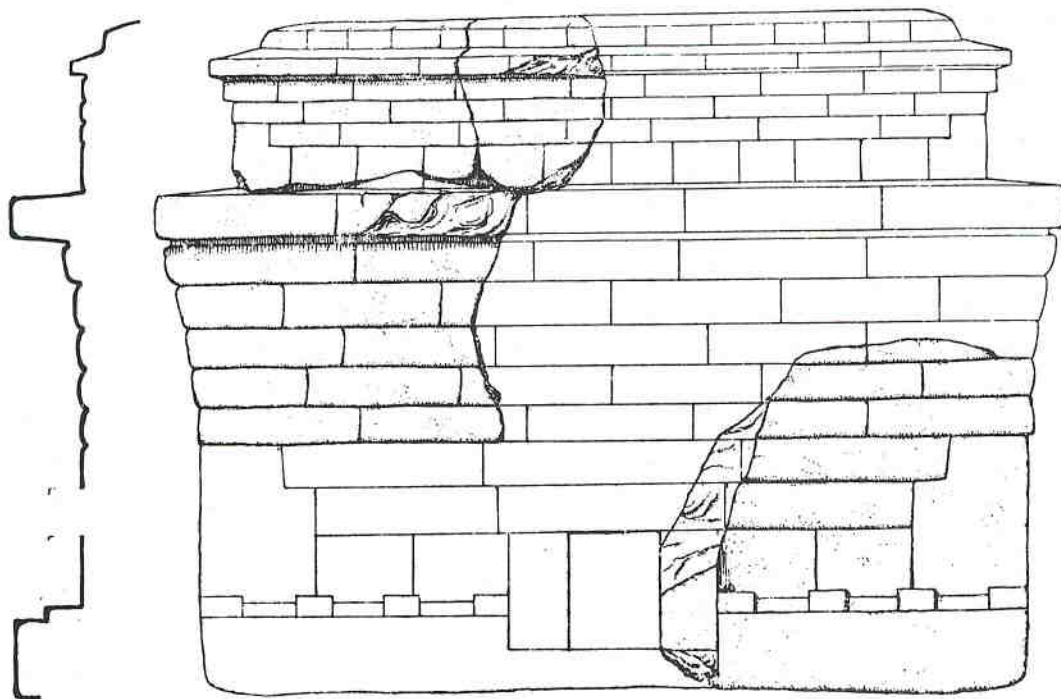


Fig. 1.1. Model of a Maltese temple of the third millennium BC. It has been suggested that these representations served as architects' models, for use in design and planning, as blueprints are today. Height 31.6 cm (after J. D. Evans, 1959. *Malta*. London, Thames and Hudson, Fig. 19).

noted that this is inseparable from the actual creation and establishing of social ranking) (Fig. 1.2).

To attempt to subdivide, in this manner, the different ways in which symbols are used may well be a somewhat artificial exercise. But it at least offers some glimpse into the scope of cognitive archaeology. And it shows how many of the aspects to be investigated are certainly not out of the reach of systematic research. The functioning of material symbols at a superficial level is often plain enough, although to analyse, more completely, precisely how they functioned can be more difficult.

In the same way, the use of symbols in relation to the supernatural is often perfectly clear. It is the more complete analysis of their functioning which can be difficult. No-one who has seen the pyramids, near Cairo, could doubt that the

pyramidal form had a special place in the Egyptian belief system. But to establish the different ways in which this symbol functioned is a much more complex undertaking.

The definition of the supernatural is not an easy matter, and the recognition of human activities directed towards the supernatural presents difficulties. Human play, for instance, particularly in its more elaborate and ambitious forms, often uses artefacts in a manner which, in a different context and with a more serious purpose, could be confused with religious ritual. Perhaps the earliest documented interactions with the supernatural arise in the context of burial, already in the Upper Palaeolithic period (Mellars 1991). The well-documented treatment of the body with red ochre, in a number of cases, is certainly noteworthy, as are other aspects of formalized behaviour associated with burial.

Now of course, in a formal sense, the evidence before one in the case of burial may be considered as relating to 'the disposal of the dead' rather than the supernatural. But very frequently the dead are accorded more attention than other categories of organic refuse, and in some cases it is reasonable to suggest, as a working hypothesis, that the living contemporaries of the deceased were acting in a manner consistent with a belief in an after-life for him or her. The activities constituting the ritual would, in that case, have a number of symbolic functions difficult for us to determine today, but the operation of the complex ritual as a whole may in part be understood.

The final symbolic category to be mentioned here, representation, comes very close to the literal meaning of the term 'symbol', as defined above. Of course not all symbols are visible or material – spoken words may reasonably be regarded as symbols – but no-one could doubt that all representations are symbols. The term 'depiction' is perhaps more tightly focused, with the implication that the representation is indeed a visual one, which in some senses resembles or looks like the thing depicted. Now it may be that several species of animals employ mimetic behaviour, where the behaviour of one individual looks like that of another to the extent that the human observer concludes that it does so deliberately. And of course mimesis occurs in nature through the agency of natural selection, where harmless species of insects take on the colouring of more dangerous species and in so doing lessen the danger of predation by birds. But it can be argued that only the human species creates shapes which look like other things (depiction) and which have a role or purpose other than that of being confused with, or taken for, the original form. The camouflage behaviour of insects is one thing, but to produce a representation of the human form, for instance, whether in two dimensions or in three, at a different scale from the original, is quite another. To my mind we have not yet

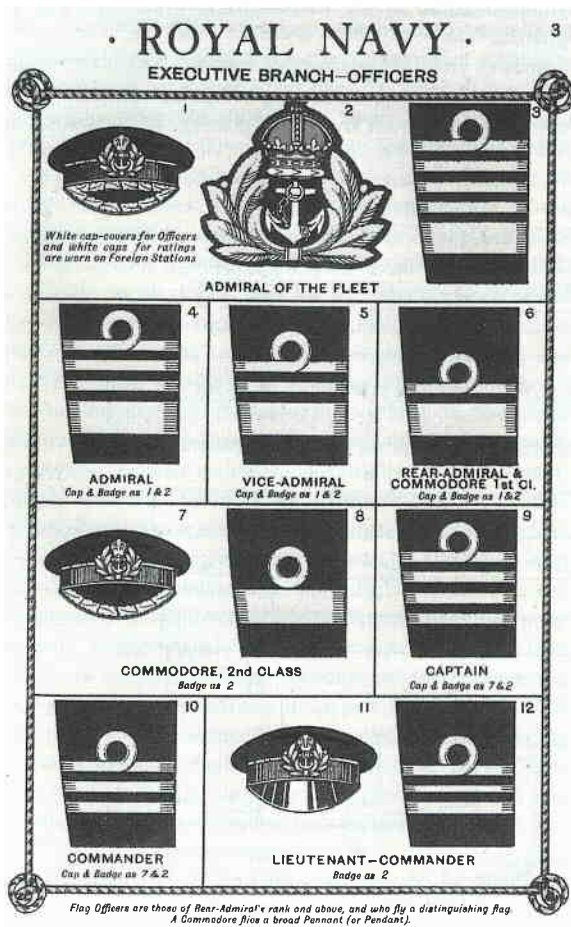


Fig. 1.2. Ranking expressed symbolically: the use of insignia in the Royal Navy.

sufficiently considered the momentous nature of the step taken when clay was first modelled, for instance, to produce a small representation of the human form, or when a sharp implement was first used to carve the outline of an animal on a piece of bone. The creation and subsequent preservation of representations, in this sense, offers us great potential for considering a number of important cognitive steps, from the first application of pigment in some ice age cave to the great fresco cycles of the Italian Renaissance.

I have the feeling, too, that the whole process of tool production, briefly discussed earlier, can productively be subjected to much more careful examination. The notion of the *chaîne opératoire* is a helpful one, and there must be other conceptual devices which we can employ to scrutinize, more closely, the cognitive steps implicit in the production of so complex an artefact as a handaxe.

These are some of the fields of investigation contained within the broader rubric of cognitive archaeology. It is the argument here that while their consideration cannot and should not seek to avoid the concepts of 'meaning' and 'interpretation' in the subjective and relativist sense in which they are used by the anti-processualists, it is more productive to seek, as far as possible, to use the well-established techniques of rational scientific inquiry, and to aim to develop these, where appropriate, by explicit theoretical formulations.

Towards a cognitive-processual archaeology

It has been suggested above that the early New Archaeology was, in general, optimistic about the potentialities of developing valid and explicit frameworks of inference for the whole range of human activities, including the technical, the economic, the social and the ideological (Binford 1962, 1964). Early studies favoured the first two of these, however, and explicit consideration of the cognitive aspects were sometimes avoided as bordering upon 'palaeopsychology' (see Binford 1987). In this way the preoccupations of the early years of processual archaeology were primarily with subsistence, with the human adaptation to the natural environment, and to some extent with economic factors. It is for that reason that this may be characterized as a functional-processual emphasis.

The essentially materialist preoccupations of this new functional-processual tendency led to reactions, notably on the European side of the Atlantic. Hodder, in a number of interesting papers, stressed the active role of material culture in shaping the social world in which we live, and along with a number of philosophers of science (see Wylie 1982), was critical of what was seen as the 'positivist' cast of the theoretical stance of the early New Archaeologists.

These observations, to my mind well-justified, were accompanied, however, by a reaction against science of any kind (see Earle and Preucel 1987).

Following the arguments of some of the more vociferous neo-Marxist thinkers, science was seen as a powerful instrument of domination, and those advocating a broadly scientific approach to archaeology (or indeed to anything else) were seen as the agents of imperialist hegemony (Miller and Tilley 1984). There was also a tendency, not restricted to avowed neo-Marxists, to see all intellectual developments as a predictable product of the contemporary *Zeitgeist* (Trigger 1981). The shadow of the atom bomb, of economic prosperity, or (in the light of subsequent events) of some alleged *crise de confiance* in the capitalist world system, were seen to have had a significant and (in retrospect) predictable impact upon the development of our subject. But while each of us is no doubt in some sense the product of our time, and while none of us can avoid the economic, social and ideological context in which we work, I have to say that I find most comments of this kind that have hitherto been formulated in relation to the post-war development of archaeology to be decidedly facile. They are facile, above all, because the climate of opinion, the contemporary actuality, the *Zeitgeist* has, for any given span of years, been delineated by these writers with a sloppiness and an absence of critical self-awareness which, on examination, I find remarkable. It is one of the implications of the work of these writers that to characterize any past period and culture in a few convenient words, in terms of a couple of rather ill-defined concepts, is irresponsible in the extreme. Yet this is precisely their own approach towards the characterization of the present and to their own 'contextual analysis' of the theoretical developments in our subject over recent decades.

The outcome of the 'critique' offered by the anti-processualist school, exemplified in some writings by Hodder (1982, 1986) and perhaps quintessentially in those of Shanks and Tilley (1987a, 1987b) has been a proposed rejection of the methods of scientific inquiry, and a move towards the relativism associated with the desire that modern archaeological writing should fulfil the objective of 'relevance' towards the social or other issues advocated by the researcher (see Bintliff 1991; Thomas and Tilley 1992). I have characterized this (Renfrew 1989: 36) as 'archaeology as wished for', and have pointed out that, employing these criteria for valid argumentation, there is nothing to distinguish the research which they would produce from the most fantastical assertions of the lunatic fringe about flying saucers, earth magic and corn circles.

It is not the aim here, however, to enter into full-scale polemic against the epistemological position of the anti-processualists, defective though some may find it to be. It

will be more constructive to indicate some of the elements of the epistemological position of the cognitive-processual archaeology which, as I have suggested, has developed directly and without hiatus from the functional-processual archaeology of earlier decades. There is an unbroken processual tradition here, but along with it a change of emphasis towards the cognitive issues which, as I have suggested, were somewhat neglected after a few initial and programmatic statements in the first writings of the New Archaeology. It should at once be acknowledged that it is, in the main, those writers in what we may term the anti-processual tendency who have sought to focus on cognitive and symbolic issues, and much of their work has been of very great interest. The aim here is not in any way to belittle what they have achieved, but to indicate that, from the standpoint advocated here, they have achieved it in spite of rather than because of their polarized and polemical philosophically relativist standpoint.

The philosophical position, which many cognitive-processual archaeologists might advocate, may be described as a realist one. That is to say that one conceives of the past as really existing in a physical world, much like the present, with human individuals living their lives, and interacting with each other and with their environment very much as we do today. In other words, the past really happened. This clearly differs from an extreme positivist or empiricist position which might restrict our conception of the past exclusively to that which we can empirically learn about it. But this notion of a past which really happened is to be distinguished from our own knowledge of the past, which has to be based upon our own observations and inferences, and is thus constructed by us using those observations. We may set about this task in different ways, and there may, in that sense, be different constructions of the past. To speak of 'reconstructing' the past, if it implies that one is coming close to a unified view of the past 'as it was' is therefore misleading. And it is misleading not only because our reconstructions are hampered by lacunae in the available evidence, the data. It is misleading too, because even when the data are unlimited (as is perhaps the case if we seek to describe, or characterize, or sum up the present) the account which we shall give will be dependent upon our own view of what is significant, or what is worth reporting or considering. That we can view the past, like the present, from different standpoints does not prevent our asserting, however, that some constructions of the past may be in error in failing to use existing data appropriately or in employing erroneous data.

In the light of recent developments in the philosophy of science, moreover, it can no longer be asserted that 'facts' have an objective existence independent of theory. Facts

modify theory, while theory is used in the determination of facts, and the relationship is a cyclic (but not a circular) one.

In the tradition of processual archaeology, a cognitive-processual archaeology will seek to be as 'objective' as possible, while not laying claim to objectivity in any ultimate sense. The aim of producing valid generalizations remains an important goal, although to frame these as universal 'laws of culture process' is now seen as impracticable. But at the same time, the claims of privileged access to other (especially past) minds, which sometimes seem implicit in the writings of the anti-processual school, are rejected. We all start off on an equal footing, with the opportunity of framing hypotheses about the past, and of pursuing these in relation to available data or to newly acquired data, in order to examine their validity.

Where cognitive-processual archaeology goes beyond its functional-processual successor is in the attempt to apply these approaches to the cognitive sphere. This undertaking certainly recognizes that ideology is an active force within societies, and must be given a role in explanations (as Marxist and neo-Marxist thinkers have long argued). It acknowledges too that material culture is to be seen as an active force in constituting the world in which we live. As Hodder (1986) has argued, individuals and societies construct their own realities, and material culture has an integral place within that construction.

One way of making the cognitive approach more concrete is to imagine each individual as possessing a cognitive map of the world, built up in the light of one's own experience and activities, so that this map or world-view serves as the referent used by the individual in determining his or her future activities. In setting out this argument (Renfrew 1987) I have used the term *mappa* to designate this notional internalized cognitive map. The suggestion corresponds with my own personal experience and I make what seems a necessary assumption that this does not differ radically from that of other humans. Indeed I take the existence of such a *mappa* to be the concomitant of the self-awareness and self-consciousness which we believe to be part of the shared human condition. It is a defining feature of self-consciousness that the self is separately identified and that 'I', 'thou' and 'the world' emerge as distinct entities. The individual thus distinguishes an external world, with a past, a present and a future existence. An important part of one's accumulating personal experience is the acquisition of knowledge about this world and the formulation of some projected constructs or models about its nature by the process of cognition which is sometimes called 'mapping'.

Once one has accepted this notion as a reasonable one, the systematic consideration of the cognitive map or *mappa* is

no longer dismissed as 'palaeopsychology', although the danger still remains of the circular thinking which that term implies. To infer from the actions of an individual that his or her cognitive map possesses certain features, and then to explain those actions by the existence of those same inferred features risks a complete circularity of precisely the same kind which Marxist thinkers often employ when speaking of contradictions underlying social change. But when we have other evidence for the nature of that *mappa*, for instance in the form of depictions of aspects of the world, that circularity may be avoided. From this viewpoint, the project of undertaking cognitive archaeology is equivalent to the study of those preserved aspects of past material culture and of such of the activities of early societies as may allow us to make valid inferences about the cognitive maps of their inhabitants.

To tackle this task in a systematic and self-critical way is, in some respects, a new undertaking. Of course much work carried out by earlier generations, in the field of art history, for instance, or in the early history of religions, shares some objectives in common. But rarely does it have a very acute awareness of the difficulties and the implicit assumptions which accompany this task. Very much the same criticism may be made, as noted above, of the anti-processual school, whose exponents often display a comparable methodological naiveté, and who are sometimes equally willing to make that great conceptual leap towards the proclamation of 'meaning' which their approach requires and which their interpretations sometimes lead them to feel they have discerned. The defining characteristic of cognitive-processual archaeology, as understood here, should be the more careful and often the more painstaking delineation of arguments which can proceed more through the construction of frameworks of inference than by interpretive leaps. But often, it must be admitted, there are gaps in the chain of reasoning, and then the two approaches may become all too similar. The crux of the matter is to make explicit the assumptions and the inferences which sustain the argument. To do this for archaeological reasoning in general was the principal goal of the New Archaeology. It remains that of processual archaeology, of which cognitive-processual archaeology is the logical and natural development and extension into the symbol-using fields of thought and of communication.

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