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Whither archaeology?

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One of the two winning essays in our competition was printed in our March issue (1971, 34–41). Professor Glynn Isaac, of the Department of Anthropology, University of California, Berkeley, USA, is a graduate of the University of Cambridge, England; he has worked extensively in East Africa, and is a specialist in palaeolithic studies.

V. Gordon Childe made a characteristically clear statement about the position of prehistoric archaeology within the realms of knowledge. He wrote: 'By the inclusion of prehistory the preview of history is extended . . . history joins on to natural history.' (Childe 1941, 4). Archaeological studies are at their most significant when they attempt to elucidate the development of relationships both amongst men, and between man and the material world. Indeed it becomes increasingly clear that it is not possible to understand either kind of development independently of the other. Prehistoric archaeology is thus in its total aims not a natural science, a social science or a branch of the humanities; rather it is a distinctive pursuit in which all of these meet.

Archaeology can also be described as a worm's eye view of human behaviour. The archaeologist derives his information from the traces of men's activities which linger in the ground long after the death of the men themselves. These relics are extremely varied: they may be ruins, refuse, tools or works of art, or they may be soil erosion and modifications to living organisms and to plant and animal communities. However, most of the marks that man has left on the face of the earth during his two-million-year career as a litterbugging, meddlesome and occasionally artistic animal have one aspect in common: they are things, they are not deeds, ideas or words. Thus for better or for worse archaeologists are involved along with natural scientists in the study of objects and materials. When archaeology is at its best, the things are studied in order to make possible insight into the functioning of the economic, social and ideological systems of prehistoric communities. However, the scope and penetration of our perception of extinct human orders is directly proportional to the extent and acuity of our primary observations of objects.

Given widespread appreciation of the need of archaeology to cast its net broadly, it is scarcely surprising that successive generations of archaeologists have sought help and inspiration amongst an ever expanding range of sciences and disciplines. In the first instance, as Jacquetta Hawkes recently pointed out, co-operation has been obtained from partially subservient specialists such as soil scientists, metallurgists and palaeontologists. Meanwhile the study of artifact design, the inner sanctum of archaeology, remained secure. More recently however, the notion that archaeologists can profit even in the study of artifacts from the help and experience of biometricians, statisticians and experts in cybernetics has apparently caused widespread alarm.

This essay is a response to the editor's invitation to archaeologists under forty to offer alternatives to Jacquetta Hawkes's pessimistic survey of contemporary trends in archaeology. The opening paragraphs will have made it clear that I differ markedly in my view of what archaeology ought to encompass. I do not advocate that archaeology should sever its connexions with history and the humanities, but I believe that it differs significantly from them in its character. Archaeology is used

throughout this paper to mean prehistoric archaeology because the discipline is most distinctive when the process of reconstruction is unaided by writing or oral tradition. Since most aims and methods are held in common between studies of prehistoric and historic periods, I think that this simplifies discussion without invalidating the main arguments.

This essay is not written simply as a rebuttal since that would contribute little to discussion of the issues confronting archaeology. Moreover, although several of the whipping boys attacked by Jacquetta Hawkes were in my view singularly ill-chosen, there is no doubt that some of her general criticisms are fair ones. Her essay deserves careful reading even by those whom it annoys, because the onus of demonstrating the value of the new concepts and methods which alarm some traditionalists does lie with those who are developing them.

As a preliminary to any consideration of contemporary archaeology, it is essential to stress the point that the subject has diversified enormously since its nineteenth-century origins. It is safe to predict that branching and the establishment of liaisons with an ever widening range of disciplines will continue to be one of the most conspicuous trends. This diversity is one of the causes of excitement for those who work in the field and for spectators, but it requires tolerance. The phenomenon of man is sufficiently complex to demand examination from many standpoints. Uniformity of training or approach are not desirable and fortunately there is no sign that archaeologists are getting more alike. *Quot homines, tot sententiae: suo quoque mos.*

Given the need for archaeology to incorporate scholars with educational roots in the sciences, I would argue that it is an unjustifiable conceit to suppose that these colleagues will be less sensitive to certain values than scholars trained in the humanities. Such great biologists as Julian Huxley, J. B. S. Haldane or Gaylord Simpson, by becoming concerned with man and nature have shown the deep humanistic significance that the scientific approach can acquire.

The extent and scale of modern archaeology is prodigious. Research now spans two million years of prehistory and successive phases of cultural diversification over the faces of five continents. Most of this activity naturally consists of the application of established methods to the task of filling in the details of prehistory. On a global scale, current investigations of two critical prehistoric developments are proving particularly interesting. First there is the study of the roots of human behaviour patterns in the Lower Pleistocene. Secondly there is the elucidation of the processes by which human behaviour was transformed through intensive use of farming techniques in both the Old and New Worlds. Despite their interest, these are advances in knowledge and understanding rather than in method and concept; and consequently have limited relevance as a basis for guesses about the future characteristics of archaeology as a discipline. However, some aspects of the best early man or early farming studies do appear to indicate the shape of things to come. In a number of cases the problem to be studied has been carefully formulated and a team of investigators has been assembled, amongst which a variety of scientists interested in anthropological problems take their place as partners rather than as technicians. The range of past human behaviours reconstructed by such teams has tended to be much broader than it usually was in days when conventionally trained archaeologists often restricted their interests to tool typology and art history.

Cutting across the present dispersal and diversity of archaeological studies are two movements which tend particularly to have appeal for the younger generation of workers. These movements involve the kinds of changes in attitude which alarm Jacquetta Hawkes. Neither of them was actually started by young archaeologists but they have been vigorously espoused by them and are often loosely characterized as the 'new archaeology'. A great deal of unnecessary sound and fury has accompanied numerous declarations by angry young men, but it would be quite wrong to conclude from this that the commotion signifies nothing.

One of the movements is in response to a growing self-consciousness of archaeology as a

thoroughly distinctive pursuit which, despite borrowing, is methodologically independent of all others. The growth of this awareness has been accompanied by a clamour for systematization of archaeological inference and for the development of a more explicit conceptual framework. The other movement is distinguishable, but closely related. It consists of a tendency to increasing use of quantitative data of all kinds in the documentation of archaeological reports and arguments; this is often felt to be an obligation rather than an option.

ARCHAEOLOGICAL INFERENCE

For better or for worse, archaeology has hitherto undergone a century of development without becoming highly organized as a discipline. At an empirical level artifacts and field data have commonly been described and classified in diverse ways indicated by experience, intuition and convenience. At an interpretative level, inferences concerning cultures, evolution, migration and diffusion are treated as realities demonstrated by this material. In most archaeological writing the process of deriving the interpretational level from the empirical level is tacitly treated as though it were self-evident or a matter of common sense. This split-level arrangement served well during much of the development of archaeological knowledge; in particular it was serviceable when the number of professional archaeologists was quite small and it was possible to form a personal understanding of the nuances of each scholar's use of words and concepts.

Two cumulative changes have combined to create the present sense of crisis with regard to archaeological reasoning. First, there has been a steady increase in the number of professional archaeologists all over the world; and in the years since 1945 the increase might almost be described as explosive. The luxury of unstated personal assumptions, and unexplained systems of nomenclature and inference, has become increasingly a barrier to communication. Secondly, as archaeology has grown through the pioneer phases of establishing in outline major divisions of prehistoric culture, there has arisen the opportunity and the demand for ever finer exegesis of the evidence. While the concepts and entities involved in the bold outlines may have been in large measure self-evident, this is not true for finer constructs: hence the tumult. This is not simply a phenomenon dividing generations of archaeologists: important attempts to cope with these problems have a long history.

To single out but a few examples of writings which have sign posted developments in this movement one might mention V. G. Childe's essay *Changing methods and aims in prehistory* (1935), his book *Piecing together the past* (1956) and Willey and Phillips's *Method and theory in American archaeology* (1958). More recently the volume *Background to evolution in Africa*, edited by Bishop and Clark (1967), reports the deliberations of older and younger scholars at an international symposium. Discussion centred on the need for clarification of concepts and stressed the importance of well-defined terms to convey these concepts.

The difference between the generations is partly marked by an actual sense of revolt amongst many younger scholars and by a tendency towards excessive use of jargon by the same group. However it would be unfortunate if distaste for a barrage of new terms, some necessary, some redundant, were to give rise to the delusion that the whole proceeding is contemptible. What is going on is a most lively process of exploration. Amongst the methodological forays in which the 'new archaeologists' engage, some are vain and ill-conceived or merely iconoclastic, others are well-conceived but will prove unproductive, yet others will surely lead to clearer and more explicit insight into the nature of archaeological patterns. It can be anticipated that the combination of such attempts will enable archaeology to integrate the split levels of operation and become a more mature discipline with more widely understood interpretative principles.

Two recently published books deserve mention as particularly important representatives of this movement. One, a symposium entitled *New perspectives in archaeology* edited by S. R. and L. R. Binford (1968) contains a broad spectrum of reformist views. The other,

Analytical archaeology by D. L. Clarke (1968), makes valuable attempts at generalizations regarding order and pattern amongst artifacts and archaeological evidence. Amongst other things, Clarke has experimented with the application of concepts and methods derived from systems analysis and numerical taxonomy. The book shows extraordinarily broadly based scholarship, with material from archaeological, historical and ethnographic sources being considered in original ways. It does not make very easy reading because, at the present stage of understanding, simple formulations are probably inadvisable. Evaluation of Clarke's work should be made in relation to the widespread sense of a need for exploration. Its importance probably lies not only in the wealth of apparently fruitful new lines of thought which are developed but in the stimulus his formulations should provide to constructive critics who view things differently.

QUANTITATIVE METHODS

There is wide agreement amongst younger archaeologists the world over that archaeology would be better off if certain kinds of *judgements and decisions* were made with due regard to *relevant* quantitative information. The phrase 'judgement and decisions' is italicized because some contemporary writers tend to imply that the use of numerical data deprives the investigator of the opportunity to judge and interpret. 'Relevant' is stressed because the usefulness of quantities in archaeology, or any other discipline, will always depend on the existence of a significant relationship between what is measured and the problem to be solved. It is true that precision with regard to quantities and frequency distribution patterns can sometimes spoil a good scholastic debate by settling it conclusively, but this can hardly be advanced as a serious argument for refusing to admit these as legitimate methods even in a humanistic discipline.

The use of some quantitative data is practically as old as archaeology, and during this century there has been an erratic tendency to increase in the systematic use of numbers. However the current situation is distinctive in that the preoccupation of many younger archaeologists with quantitative methods has become so intense that something akin to a cult of numbers has arisen in certain quarters. This flurry of interest is commonly associated with concern over the theoretical foundations of archaeology. Taking a long view it seems likely that quantitative methods will prove indispensible to aspects of archaeology, but present hyperconsciousness of numbers will probably subside when trial and error has resulted in the development of a more sound conceptual framework and when a stock of effective analytical methods has been established.

Meanwhile we have to put up with a partly tedious intermediate situation. Extensive and often dull explanations of method are at the present stage frequently necessary. Many authors understandably feel obliged to present their data both by orthodox verbal and illustrative exposition and by attempts at quantitative characterization. Further, many users of numbers are rightly or wrongly not sufficiently confident of the virtues of statistics to have the courage to replace hundreds of measurements by a few items of information such as the mean, median, standard deviation and range. In addition there are reports where numbers ramble like sacred cows: their contribution to the author's argument is not explicit and the likelihood that anyone else can use them may also be slender. In other cases valuable numerical data may be compiled and then in effect abandoned by a reversion to conventional classificatory systems which ignore the continuous property of numerical scales. It is also apparent that numbers create an illusion of purity and have a fascination of their own. Archaeologists should heed the warning provided by the barren years which craniometry spent in the wilderness searching for formulae which would make numbers the universal key to understanding evolution and race (cf. Washburn 1969).

The deficiencies of the present situation cause as much concern amongst exponents of quantitative methods as they do amongst traditionalists. However, the difference lies in the fact that proponents advocate rendering the

morass fertile by drainage, while traditionalists appear to be advocating mere retreat back into a forest where at least the mystique of half comprehension is familiar. This is not an appropriate place for a full parade of arguments in favour of the development and application of suitable quantitative methods. Suffice it to say that quantitative considerations have long played an essential but unspecified role in archaeological interpretations. Standard words such as 'common', 'rare', 'typical', are all labels for inherently quantitative properties of the evidence.

Awareness of modes in artifact design is so much a part of our culture that mathematicians borrowed the word as their term for the phenomenon in general. We need hardly be shy of re-introducing the methods which they have devised for clarifying the concept.

There are some worthwhile perceptions of patterns in archaeological data which may only be possible through the use of quantitative analysis. Examples of this kind of pattern may prove to include really complex geographic or chronological seriation patterns, or the unravelling of complex interactions between stylistic and functional factors which determined the form of tools or the composition of tool kits. Some interesting studies have already demonstrated that subtle patterns with considerable sociological and humanistic significance can be detected in assemblages of archaeological materials by quantitative methods when normal inspection would have revealed little or nothing. An outstanding example of this is Richardson and Kroeber's (1940) study of cycles of European dress style and the apparent influence of social tension on degrees of variability. Deetz's work on relationships between aspects of the potter's craft and socio-economic changes amongst the proto-historic Arikara is another case holding out promise for this kind of approach (Deetz 1965).

The advent of electronic computers provides important opportunities for those interested in developing the necessary knowledge to take advantage of them. These devices are capable of many varied operations which can cross-reference intricate records and which can express aspects of patterning in very complex data. It is safe to predict extensive contributions to archaeological theory and knowledge by investigations which would not be possible without computers.

Many archaeologists share the anxiety expressed by Jacquetta Hawkes (1968, 258) concerning a 'vast accumulation of insignificant, disparate facts, like a terrible tide of mud, quite beyond the capacity of man to contain and mould into historical form'. However, brevity can be achieved in two ways: replacement of information by vaguely substantiated judgements or by the definition of patterns which can be demonstrated to be valid, significant orderings of the total complexity. In practice, of course, both processes are involved in preparing an archaeological report, but clearly pattern summary is less destructive of information than unspecified personal judgements, however sound. Statistical operations can often fairly be characterized as processes for making controlled generalizations from sets of otherwise disparate items of information. Clearly it is possible that statistics may prove to be one of the filters which can help to hold back the tide of mud while releasing a clear stream of water into the pool of knowledge.

If we are in a phase of trial and error searching for effective methods of quantitative analysis and pattern recognition then it is to be expected that parts of the work now being done will prove sterile, other parts will later appear as tentative gropings, while only a comparatively small proportion can be expected to provide the kind of elegant clarification of archaeological situations that we may fairly demand of quantitative methods if they are to become an established part of archaeological procedure.

THE ARCHAEOLOGY OF LIVING PEOPLE

Archaeology has become fairly adept at reconstructing from flimsy traces significant aspects of otherwise unknown extinct human behaviour patterns. However, there is a growing conviction amongst many archaeologists that we could get some novel insights into our methods and perhaps added vitality for our reconstructions if we were to take the scarcely

precedented step of observing closely, potential archaeological traces amongst peoples whose economy, sociology and ideology is already known. I envisage observations of the relationships between refuse patterns, including chemical residues, and living habits; careful records of settlement size and form in relation to community size and social structuring. Also of crucial importance are observations of variation in artifact morphology amongst individual craftsmen, amongst communities and craft lineages, and amongst larger social units.

Observations of these kinds of material manifestations are made by archaeologists as a matter of course on sites, where exact behavioural significance is a matter for reconstruction, but the observations have no counterpart in classic ethnography where the behaviour and the material traces could both be determined. This kind of study has been dubbed action archaeology (Kleindienst and Watson, 1956) and there is now a small literature on the subject (e.g. Ascher, 1962, Brain, 1967, Foster, 1960), but further work is a matter of urgency since the expansion of mass-produced plastic and canned food will displace behavioural arrangements of the kind that prevailed through prehistory. It is conceivable that such studies may help to do for archaeology what genetics and primate behaviour studies have done for human palaeontology.

CONCLUSION

From the foregoing discussion, the view emerges that archaeology is currently engaged in experimentation with a vast range of new techniques and methods. Any attempt to hamper this process by deliberate reversion to the situation which prevailed during the youth of established archaeological scholars would be stultifying and unsuccessful. The contributions of many of the great names cited by Jacquetta Hawkes as exponents of balanced humanistic archaeology have been incorporated into the foundations of modern archaeology. Their potential succesors would hardly be worthy of the training they have received at these hands if they were content to devote their lives simply to more of the same.

There tends to be an inverse relationship between complexity of subject matter and the degree of maturity of the discipline engaged in its study. Physics has been characterized as the very complex study of comparatively simple processes; biology as the comparatively simple study of enormously complex processes. Anthropology is at the next remove up in complexity of subject matter, and at several steps down in the degree of penetration hitherto achieved by its methods. Because anthropology in its broadest sense subsumes archaeology and history, it is no discredit to archaeology that it has only now accumulated sufficient experience to organize an explicit conceptual framework for dealing with its particular complexity. It should also not occasion surprise that the transformation is proving in part to be traumatic and inelegant. However, if we follow Jacquetta Hawkes in her belief that 'it would be better not to put in the shop window this half cooked, unleavened dough'—then it is not clear how the body of archaeologists is going to find out which recipes are more promising than others.

It seems undeniable that the prime responsibility of any scholarly discipline must be to maintain its factual basis in good order. It is equally true that the superstructure of insight and understanding is what really interests most of the participant scholars and the rest of intellectual humanity. It would be a distressing discovery if it proved true that the pursuit of significant information is incompatible with the achievement of insight. Also, if the goals and values of humanistic studies really are irreconcilable with those of scientific studies, then archaeology would be condemned eternally to the present schizophrenia so well depicted by Jacquetta Hawkes. However, it seems equally probable that when the new stock of ideas has been sorted and allowed to mature, archaeology will be greatly enriched. New levels of precision in presenting data and in interpreting them can surely lead to briefer and more interesting technical reports as well as providing the basis for more lively literary portrayals of what happened in prehistory.

The goals of archaeology have been well

defined over the past century and will require little change. Archaeology ought to be what archaeology already is. The problem is how can we improve our ways of doing it? This is a challenge that every generation faces afresh.

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