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Notes on archaeology, its theory and method

This chapter is introductory in the sense that it tries to explain some concepts as used later in the book. On the one hand, it deals with several rather general topics (e.g. the relation between archaeological objects and means) which I consider to be more theoretical than methodological; these topics will not be discussed in any of the following chapters in more detail. On the other hand, some of the problems included in the following paragraphs (such as induction and deduction) will be further developed in a number of later chapters. Both cases require a rather short handling of the matter, concentrated on generalities and on differences from what I consider to be the usual understanding of various basic concepts. In no case should this chapter be mistaken for a systematic exposure of problems connected with the notions introduced here.

Many scholars limit their conception of archaeology to the study of material remains, leaving the 'higher' levels of 'historical' or 'anthropological' knowledge to another branch of science called 'prehistory'. This might seem to be an innocent division of the discipline into two parts, were it not for the fact that it makes modelling, the most specific archaeological method, operate in at least three disciplines in any case of its application: after establishing a model in the realm of prehistory, which cannot be done without reference to another discipline with 'observable time', one has to cross the boundary of prehistory into 'archaeology'; having tested the model by means of archaeological facts one has to return to the source of models via 'prehistory' to enrich the model and so on. And because the use of models is indispensable for any archaeological endeavour (i.e. from the phase of analysis), it means trespassing constantly across the two boundaries.

The concept of prehistory would appear logical only if it were conceived as *archaeological theory* based not only on the knowledge derived from the archaeological evidence but also on all outside knowledge obtained by sciences with observable time. Prehistory would then become the source of models used by archaeology; I wonder whether any such prehistory exists at present, and I am not sure whether it is logical to try to establish it as a particular discipline. The parallel with the seemingly analogous pair, archaeology–history, makes the problem even more complicated. Anyway, prehistory in this conception could not be understood as a counterpart to archaeology: the relation between the two disciplines would rather correspond to the relation of the empirical and the theoretical aspects of a single science.

It is, of course, impractical to view archaeology and prehistory as two separate sciences, but it could be tolerated were it not for the fact that such a conception of archaeology also has another, more serious, consequence for the methodology of our discipline. If archaeology is the study of material remains left behind by ancient man, and prehistory is another discipline, then models obviously need not be discussed within archaeological methodology; it might seem, in fact, that their use does not belong to archaeology at all. And this assumption again makes it easy to believe that, in the absence of models, archaeology in the narrow conception is able to generate ‘prehistorical’ knowledge or, to put it in other words, to believe that the historical process can be *observed* by means of archaeological finds. There are examples of such reasoning in the field of archaeological methodology (e.g. Hensel, Donato, and Tabaczyński 1986).

1.1 Archaeological objects and means

To define archaeology one has to analyse two methodologically important concepts: objects and means of a discipline. The *object* is the part of the real world towards which the discipline is directed while the *means* represents the sets of things or beings which become the immediate subject of inquiry. These two concepts were introduced to archaeology by a Ukrainian archaeologist, L. Zakharuk, in the sixties

and have subsequently been discussed by several other authors (cf. Gening 1983).

There are many branches of science where the two elements, the means and the objects, fuse; in order for this to happen, it is necessary that a number of conditions are fulfilled. Some disciplines, such as many fields of biology or pre-nuclear physics, study their objects more or less directly – they simply observe them – and some are even able to experiment with them. In most instances like these the objects and the means of the particular disciplines are identical. The direct approach to the objects has two aspects:

- (1) *observability* either by naked eye or by means of a simple sense-amplifier such as an optical microscope;
- (2) observability of changes *over time*.

If a discipline is to be experimental, two additional conditions must be fulfilled:

- (3) the *accessibility* of objects, and
- (4) the availability of material means and energy sufficient to cause *changes* in the objects or in the conditions of their existence.

There is no doubt that archaeology is not an experimental science as the human past is not accessible to modern activities; it is impossible to exert any influence on historical conditions such that we would be able to observe the results. What has been called ‘experimental archaeology’ is only superficially similar to experimental disciplines in the natural sciences as it operates outside the time limits to which the archaeological record once belonged, and outside the conceptual world of ancient people.

It is impossible to compare the archaeological record with the contents of the so-called ‘black box’ as some would have it (cf. Clarke 1968, p. 59). The internal structure of such a black box, being inaccessible to direct observation, is discovered by manipulating its inputs and observing the reactions (outputs). In the case of archaeological records, however, no reaction can be expected at the output in response to anything that could be imagined as input. If any analogy can be drawn, then it is with an amber cube (or ‘amber box’) cut out of a piece of

prehistoric resin and containing remains of an ancient insect: its material structure, however incomplete, can be more or less reliably observed (as is also the case in archaeology) but there is no way of affecting it experimentally. The amber box has neither inputs nor outputs.

If archaeology cannot be considered to be an experimental discipline, can it at least observe its objects over their own time? Irrespective of the question whether the object of archaeology is 'the finds' or the past processes, it is obvious that the time in which archaeologists are interested elapsed long ago. Archaeological observations take place in our modern time, which is quite different from that in which ancient artifacts and their users lived. The only possible way of removing this difficulty would be the acceptance of the thesis that archaeological objects are equivalent to antiquities with no recoverable relation to past life. Assuming this, such antiquities would be observed in their own time (which would then be our present) but they would be degraded to the role of *objet trouvé*. I am not going to discuss this kind of archaeology in the present volume. Clearly, the thesis that the object of archaeology is identical with its means cannot be upheld if archaeology is to be concerned with the past. What, then, are the means and what are the objects of our discipline?

The first part of the question is easier to answer. The *archaeological means* are represented by the record irrespective of how it is conceived. It can be observed (the observation includes its spatial and formal properties), but it is devoid of the time coordinate and, as a result, it is not accessible to our practice other than just the observation. Yet it constitutes the empirical basis of archaeology.

It is somewhat more complicated with the *object of archaeology*. Without going into detailed discussion of the most varied views proposed by many archaeologists throughout the world, I present the solution which I personally consider the most satisfying. The object of archaeology is the past process or, to be more exact, the *historical process* in human societies. This concept includes not only abstract regularities or laws of human behaviour in the past, but also the concrete manifestations of these laws as affecting real human groups (and their individual members) living at a specific place at a

specific date and having a specific culture. I hope that such a position does not give up on any important aspect of the past.

The object of archaeology, i.e. the historical process, cannot be observed. It is known to have been dynamic (it took place in time) and to have been concrete (rich in details). The historical process constitutes the theoretical component of archaeology. *The archaeological method can be conceived as a set of procedures that lead from the record to the process, i.e. from empirical to theoretical knowledge.*

The means are sometimes called *sources* in historical sciences. Archaeology has its 'material' sources and history has its 'written' sources. This simple analogy might lead to the conclusion that the nature of the two kinds of 'sources' is similar. It is obviously impossible to experiment with the past on the basis of written records (just as it is impossible to experiment with the 'material' record), but there is a great difference between archaeology and history in that the records of the latter do contain observation taking place in time. This is the logical consequence of the fact that historical sources consist of language constructs which have the capacity of expressing both time change and causal explanation (however deformed it might be). Consequently, the written records are able to describe the historical process directly. The principal difference between a biologist observing his animals and a historian 'observing' the past through his records is that the historian is limited to what his source happened to note: the columns of his observation diary have been filled by another person, may not be objective, and not to the desirable degree, but they are present there. History based on written sources has its own difficulties but they differ in principle from those encountered by archaeology.

In the course of the advancement of human knowledge particular scientific disciplines have apparently formed on the basis of both their object and/or their means. Archaeology is one of those sciences which became specific on the basis of their means; this does not mean, however, that the object would be less important. *Archaeology is the science of man that studies the historical process on the basis (or by means) of archaeological records.* It shares its object with other historical

disciplines. We shall, of course, return to the delimitation of the archaeological record in later paragraphs.

It is necessary to point out that in defining archaeology one has to include both the aspect of object and that of means. Archaeology is not simply the science of the archaeological record as in such a case, being a purely formal discipline, it would lose any meaning for contemporary mankind. At the same time, it is not simply a science of human history; the same objective is also approached by many other disciplines. Without stressing the role of the record (the means), archaeology could fall into the trap of dilettantism which does not respect its specific methodology.

1.2 Archaeological theory and archaeological method

The distinction between theory and method is not a straightforward one. The difficulties connected with the delimitation between the two aspects of science cannot be removed by any simple means such as formal definitions because, in the course of our cognition of the reality, theoretical constructs become methodological tools and vice versa. Thus, for example, models (which serve as methodological concepts in the course of interpretation) become parts of theory if successfully tested against the structure of archaeological finds; as we shall see later in this book, however, the same theory which results from the models, is subsequently turned back into models to become methodological means in another iteration of archaeological research. The difference between theory and method thus becomes a highly relative matter.

In spite of this, everybody feels that there is a distinction. Some problems are treated in contemporary archaeology predominantly as methodological and others predominantly as theoretical questions. The former group clearly includes, among other topics, analysis and what will be later described as the synthesis of archaeological structures; the latter group covers the discussion of recognized structures (such as particular cultural groups or chronological periods) and, of course, the concepts and categories resulting from the interpretation of the archaeological record. The two parts of

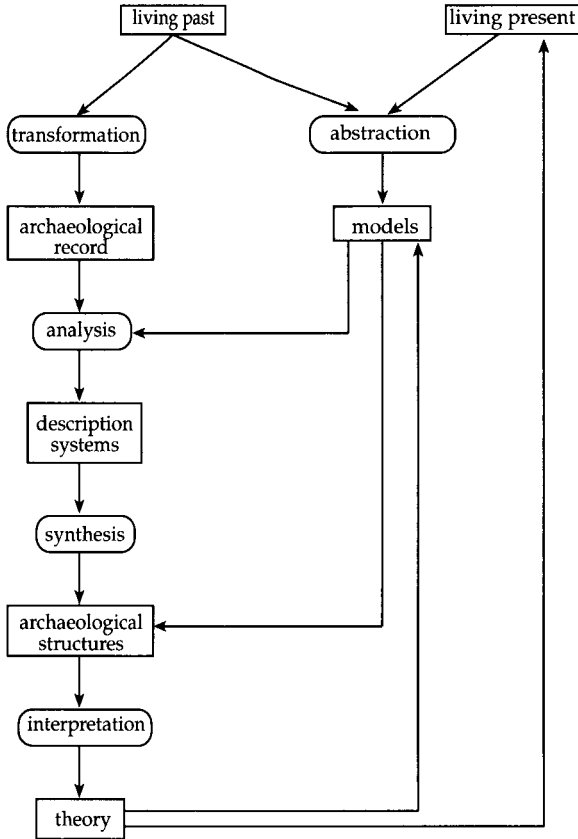


Fig. 1.1 The interdependence between theoretical and methodological steps

archaeology (i.e. theory and methodology) are clearly not identical in concrete research situations.

One way of distinguishing between theory and method is to conceive of the former as partial *results* of the cognitive process while the latter is understood as *ways* leading to the results. This is no strict definition but it often helps in making the distinction. The idea has been summarized in Fig. 1.1, where 'theory' appears in rectangles while 'methodology' is enclosed in oval rings. Most pairs of rectangles (those relevant to archaeology) have been joined through a ring which contains

the name of the methodological procedure enabling the transition between two sets of theoretical problems.

This conception of the difference between archaeological theory and methodology is quite similar to that proposed by Pałubicka and Tabaczyński (1986). According to them, theory consists of hypothetical statements reflecting the structure of reality and the mechanisms of its change. Thus, theory includes not only the results of research but also the conceptual apparatus; consequently, theory becomes a 'research tool'. *While the object of archaeological theory consists of prehistoric phenomena themselves, the object of archaeological methodology consists of statements relating to those phenomena.* It follows that methodology discusses the ways in which statements about the past should be constructed; this again brings it near to Gardin's 'theoretical archaeology' (Gardin 1979).

The new directions in archaeology invading the discipline in the last twenty years or so have been predominantly theory orientated. There were, no doubt, important methodological themes discussed as well (such as the role of deduction vs. induction) but, on the whole, methodology was identified with the particular natural scientific or mathematical tools used in generating some aspects of archaeological knowledge.

It may not have been a chance development that the so-called New Archaeology stressed so much the deductive method; it was exactly in this way that its predominant occupation with theory became logical. Namely, if deduction from theoretical premises is the principal procedure for deriving archaeological theses, then it is theory that becomes important. Deduction, however, is more or less a logical method; archaeological facts, which are opposed to this method, can be preprocessed by means of the 'methodological' tools such as, for example, so-called statistical methods. It seems to me that some of the New Archaeologists were afraid that methodology, if followed beyond the level of research tools, could become harmful, bringing back some form of induction.

If, however, the methodological constituent of our discipline is equated with the various research tools (such as dendrochronology, seriation and geomagnetic prospecting), then methodology falls out of the scientific endeavour unless some

of its parts are included among the theoretical problems. It is interesting to note that the idea of replacement of archaeological method with research tools is shared by both empirically orientated archaeologists and their theoretical colleagues.

Looking nearer at the 'research tools' it becomes obvious that they do not, in fact, generate any theoretical statements on our record. What they do generate is a deeper, often more sophisticated, description of the finds and certain relations between them. The radiocarbon method states how much radioactive carbon a sample contains, and this is interpreted in terms of the time elapsing since a particular prehistorical event. The history of radiocarbon dating makes it clear that this interpretation is no simple process, depending not only on certain natural scientific premises but also on a number of archaeological assumptions (mainly that the death of the organic tissue in the sample is contemporaneous with the event to be dated). Similarly, chemical analysis of archaeological materials, if they are to be interpreted in terms of theoretical statements, rely on assumptions about the purposeful behaviour of ancient people. Generally speaking, natural scientific 'methods' require archaeological *methods* to generate theoretical statements of archaeological relevance; it is a frequent source of misunderstanding to believe that they do it automatically by themselves.

1.3 Deduction and induction

Traditional archaeology has inherited inductivist methodology from the nineteenth-century natural sciences. It was considered 'logical' to compile finds until they disclosed some aspects of antiquity. The regularities contained in the record and subsequently their interpretation grew up logically from the assembled and described facts: knowledge on generalities was obtained by putting together particular instances of archaeological phenomena. It should be noted at once that doing archaeology does *appear* like this procedure; many practitioners of archaeology would probably insist that they were successful proceeding in accordance with this inductivist recipe.

Inductivist methodology implied that all knowledge came

from generalizing based on sets composed of individual facts; if the facts failed to report on some aspect of ancient life, this may have been caused either by a complete disappearance of the relevant record or, more probably, by an insufficient quantity of the record. In many cases it seemed to be meaningful to dig until the desired 'sources' appeared in sufficient quantities. This philosophy led archaeologists to go on excavating throughout their lives in the belief that the record would begin speaking one day. It was considered to be bad scientific behaviour to exploit generalities obtained from a non-archaeological sphere; deduction was assumed to have its proper place in mathematics but not in the realm of 'concrete' sciences.

A reaction to these one-sided views was started by Binford in the early phases of the New Archaeology (Binford 1972). He conceded that the archaeological facts did not speak to him at all, irrespective of their number and the thoroughness of their description. He concluded that it was necessary to set up certain premises from which it might be possible to deduce consequences testable by means of archaeological finds. This is a logical procedure contrary to what the New Archaeologists described as the *narrow inductivism* of their opponents. The theoretical basis for these views was found within a logical discipline called the 'philosophy of science', but a rather narrow selection of readings on the theme was used (cf. Eggert 1978).

In spite of these limitations, Binford's criticism of inductivism was revolutionary as it opened new outlooks on the relationships between individual facts and general theory. In the framework of the deductive method it became possible to ask any question: the only problem involved was whether the set of general premises concerning the question (the hypothesis) allowed the deduction of a corresponding set of consequences which would be testable by means of the archaeological record. If the required facts were not at hand, it was possible to go out to the field to perform excavations aimed specifically at answering the questions posed by the hypothesis. Binford proposed to excavate not to find something unexpected but to find facts on which previously formulated hypotheses could be tested.