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## SOME COMMENTS ON HISTORICAL VERSUS PROCESSUAL ARCHAEOLOGY

LEWIS R. BINFORD

A RECENTLY PUBLISHED ARTICLE by Sabloff and Willey (1967) discussed some aspects of historical versus processual approaches in archaeology. The authors acknowledge the need for archaeologists to concern themselves with processual questions but argue that archaeologists must give research priority to the reconstruction of historical events:

It is our feeling that, at least at the present state of . . . knowledge, an understanding of historical events can lead to placement of processual factors in proper perspective, rather than the reverse . . . Furthermore, we do not wish to imply in our statements that by switching the historical-processual priorities we have accepted a theoretical position which is essentially non-evolutionary (Sabloff and Willey 1967:313).

Sabloff and Willey add in a footnote that their view ". . . would approach that of Steward's (1955) 'multilinear evolution'" (Sabloff and Willey 1967:313).

The purpose of this paper is to discuss their proposals with respect to two major points: first, the nature of explanation; and second, the feasibility of working according to the priorities set forth by Sabloff and Willey. It is disagreement over these two fundamental points, I feel, that creates the greatest difficulties between the more traditional archaeologists and the advocates of what has come to be known as the "new archaeology."

Sabloff and Willey are concerned with understanding the collapse of the Classic Lowland Maya cultural system about 900 A.D. The evidence they cite to document the collapse consists of widespread abandonment of sites, decline in frequency of construction, decline in ceramics, apparent population reduction, and so forth. The authors then propose a "new hypothetical solution":

In boldest form, the hypothesis states that the Southern Lowlands . . . were invaded by non-Classic Maya peoples. This invasion began in the 9th Century A.D., and it set in motion a train of events that destroyed the Classic Maya within 100 years (Sabloff and Willey 1967:312).

Does this hypothetical formulation of Sabloff and Willey constitute a valid explanation of the collapse of the Lowland Maya? A distinguished philosopher of science, Carl Hempel, in a discussion of explanation, states:

The explanation of the occurrence of an event of some specific kind . . . at a certain place and time consists . . . in indicating the causes or determining factors [of the event in question]. Now the assertion that a set of events . . . have caused the event to be explained, amounts to the statement that, according to certain general

laws, a set of events of the kinds mentioned is regularly accompanied by an event of the kind [for which an explanation is sought] (Hempel 1965:232).

According to Hempel, an explanation consists of two parts: first, the events believed to be relevant which temporally precede the event to be explained are set forth; second, a set of general laws is formulated which connects the "causes" with their "effects" in such a way that if we know that the earlier events have taken place, we would be able to predict the event we wish to explain.

Sabloff and Willey hypothesize that there was an invasion of the Lowland Maya area by non-Classic Mayan peoples. This statement can be taken as a specification of the prior event that the authors consider relevant to the Maya collapse. But where are the general laws which allow us to connect the proposed cause and effect? Is the statement that the hypothesized invasion "set in motion a train of events that destroyed the Classic Maya" (Sabloff and Willey 1967:313) a general law? It can be reasonably argued that invasions have no necessary relevance to the general explanation of sociocultural collapse as such. For example, we might cite cases where invasions occurred that did not precipitate the collapse of the society invaded. Similarly, we might cite instances of sociocultural collapse—such as the 12th-13th century abandonment of major sites in the American Southwest—that do not appear to be explicable by reference to invasions. Such empirical cases to the contrary would cast doubt on the relevance of invasions to the explanation of sociocultural collapse.

Would we be any closer to understanding the collapse of the Classic Lowland Maya even if Sabloff and Willey had thoroughly documented the fact that an invasion had occurred? Since they offer no processual arguments regarding the characteristics of the invaders which might have been crucial in bringing about the collapse of the Classic Lowland Maya, we must answer negatively. Sabloff and Willey do not refer this event—the invasion—to any general propositions regarding cultural dynamics which are amenable to testing. Because of this lack, it is impossible to assess the relevance of the proposed invasion or to evaluate this particular case in terms of propositions made by others about general laws of cultural dynamics.

These same criticisms can be made every time an argument is offered which proposes a cause and effect relationship between events when the only justification for such a proposal is the sequential nature of the events cited. In actual practice this is rarely done; it is more common for the proponents of "historical" explanations to make assumptions about the "plausible" response of people to certain situations. These "laws" of human behavior remain implicit in their arguments. Given the methods of most historians, such connective propositions are rarely

tested to determine their validity. This failure of historical explanation is alluded to in a statement which Spaulding (1968) cites from Brodbeck (1962:254) "There is no such thing as 'historical' explanation, only the explanation of historical events."

Sabloff and Willey might well counter the criticism offered here by pointing out that they were not attempting to explain the Maya collapse. They state:

It must be obvious, at this point . . . that our hypothesis does not really solve the whole "mystery" of the fall of Maya civilization in the Southern Lowlands, nor does it rigorously attempt to do so . . . To repeat, one of the major purposes of this paper has been to show that the best way to get answers to the processual problems connected with the fall of the Maya is through the building of a proper historical framework (Sabloff and Willey 1967:329-330).

If their efforts were not directed toward the explanation of cultural dynamics, how can we evaluate their suggestions on proper research procedures and priorities to be followed in seeking explanations? Their major point is stated several times in different ways. For example, they emphasize that "by first gaining control of the historical variables we will then be in an excellent position to eventually gain control of the processual ones" (Sabloff and Willey 1967:330). The problem of critical importance here is the criterion used for judging what constitutes a "proper historical framework" (Sabloff and Willey 1967:330). Sabloff and Willey appear to assume that the relevance of historical facts is self-evident and primary and that processual understanding is to be gained through the inductive study of these facts. Although this position is not explicitly stated, their agreement with Steward's multilinear approach seems to substantiate their adherence to this point of view. Steward explicitly states: ". . . I wish to stress that my delimitation of problem and method precludes all efforts to achieve universal explanations or formulations of human behavior" (Steward 1955:7-8). In another place he asserts that the method of multilinear evolution ". . . is empirical rather than deductive" (Steward 1955:18). That Sabloff and Willey subscribe to an inductivist philosophy is further documented by their very argument that gaining an understanding of processual factors is secondary to gaining an understanding of historical events.

I think it can be argued, however, that a "proper historical perspective" cannot be gained without coping with processual problems. Process, as I understand it, refers to the dynamic relationships (causes and effects) operative among the components of a system or between systematic components and the environment. In order to deal with process we must seek explanations for observed phenomena, and it is only through explanations of our observations that we gain any knowl-

edge of the past. Explanation begins for the archaeologist when observations made on the archaeological record are linked through laws of cultural or behavioral functioning to past conditions or events. Successful explanation and the understanding of process are synonymous, and both proceed dialectically—by the formulation of hypotheses (potential laws on the relationships between two or more variables) and the testing of their validity against empirical data. Hypotheses about cause and effect must be explicitly formulated and then tested. Only when this is done are we in a position to judge what facts might be relevant; only then can we objectively evaluate the implicit propositions which underly “plausible” historical interpretations of archaeological data.

Sabloff and Willey (1967:313) refer to my concerted efforts to redirect the attention of archaeologists to problems of process. These urgings have been prompted not by a messianic vision but by a conviction that archaeologists must proceed by sound scientific method. We begin with observations on the archaeological record, then move to explain the differences and similarities we observe. This means setting forth processual hypotheses that permit us to link archaeological remains to events or conditions in the past which produced them. Once hypotheses are explicitly stated, we can determine what additional observations must be made or available data collected to test the validity of our hypotheses. If validated, such hypotheses would be raised to the status of laws regarding the role of archaeological remains in the functioning of extinct cultural systems. It was in the context of such functioning that the artifacts or features were produced, used, and discarded or abandoned; it was also in the context of a functioning cultural system that the characteristic associations and distributions were produced. This procedure—observation, hypothesis formulation and testing—is necessarily involved with problems of process and is what constitutes the scientific method.

If we omit any of these steps and appeal to unstated processual propositions in explaining observations, we can have little confidence in the historical reconstruction offered. The only recourse at this point is the one offered by Raymond Thompson (1956:335) that we evaluate reconstructions or interpretations by evaluating the competence of the person who is proposing the reconstruction. This is scarcely sound scientific procedure, and I feel it is necessary for us to have objective means for judging the validity of statements in archaeology instead of relying upon faith or personal opinion.

If the propositions appealed to in explaining our observations of the archaeological record are correct, then we will have gained knowledge of the past. Oth-

erwise, we will have achieved only knowledge of the archaeological record itself, which is, of course, a contemporary phenomenon. It might also be pointed out that most textbooks and syntheses in the contemporary archaeological literature are descriptive expositions of our knowledge of the archaeological record and not summaries of our knowledge of the past; nor do they present knowledge gained regarding the functioning or evolutionary dynamics of past cultural systems. (See, for instance, Griffin 1967 and Jennings 1968.) If we can attain knowledge of the past and of the operation of past cultural systems through the explanation of observations made on the archaeological record, we can then proceed to the task of explaining past events and seek to formulate laws dealing with the dynamics of systemic functioning and the evolution of cultural systems.

As in any scientific situation, when one changes the context in which one considers things and events observable in the external world, different features or characteristics of those things or events become relevant. (For a good discussion of this point see White 1959.) Thus, as we shift our perspective from one of explaining archaeological observations in terms of processes and events in the past to an attempt to explain those past processes and events, the characteristics of the archaeological record sought as relevant for testing explanatory propositions will be quite different from those characteristics observed as relevant in the earlier phase of work. This means that there are minimally two contexts of relevance in terms of which we observe and conceptualize the archaeological record. In addition to ignoring the contextual differences between "facts" with respect to explanations of differences and similarities observed in the archaeological record and explanations for differences and similarities between cultural systems or past events, the inductive procedure assumes as self-evident a single context of relevance for facts as they relate to scientific method. The inductive procedure is to gather facts, study them inferentially, and interpret them in terms of assumed laws of culture and/or human behavior. This procedure organizes observational materials in terms of implicit assumptions about their interrelationships (interpretation) or as a means to the formulation of new propositions (Steward's recommendation), but it never allows for the testing of these assumptions or new propositions. A simple inductive method does not recognize that once empirical materials are employed in the context of testing, the context of relevance has changed and new or different facts may be needed. It is maintained here that we must continually work back and forth between the contexts of explaining the archaeological record and explaining the past; between the contexts of proposition formulation (induction) and proposition testing (deduction). This is necessary

if we are to maximize the potential information contained in the archaeological record; our destruction of this record in search of facts relevant in a single context precludes the possibility of subsequent search for facts relevant in a different context.

I argue that Sabloff and Willey's suggestions regarding historical priorities are defensible only in the context of an inductivist philosophy and that such a philosophy is unacceptable scientific procedure. Even if we do not accuse them of advocating an inferential methodology, how can we understand their argument favoring priority for the construction of a "proper historical framework"? If they mean by this that archaeologists have not yet solved all the explanatory problems of the significance of archaeological remains for past conditions and events and that our first job should be the sound explanation of the archaeological record, I would be in full agreement with them. But in that case they would be urging archaeologists to give priority to processual studies, and they explicitly deny this.

The failure of their method and the inadequacies of their suggested priorities is demonstrated by their failure to deal directly with the problem of how they derived their proposed invasion of the Mayan Lowlands from the facts of the archaeological record. We are presented with the following archaeological facts:

1. At the site of Seibal during the 9th century fine paste pottery is a common ware associated with both public and residential structures.
2. Fine paste pottery is a non-Classic trait, stylistically and technically most similar to analogous wares from the Gulf Coast area.
3. Stelae erected at Seibal between A.D. 850 and 890 exhibit non-Classic traits similar to those known from Yucatan and Central Mexico; these stelae also share more than twenty stylistic features with the fine paste wares.
4. A building constructed with a round plan, previously unknown in Classic Maya sites, has analogies to structures in Yucatan and Central Mexico.
5. Figurines at Seibal are similar in form to Gulf Coast specimens.
6. The location of "ceremonial activities" within the site of Seibal was shifted from Group D structures (a defensible area) to Group A structures (a nondefensible area).
7. The population of Seibal reached its peak during this period.

From these facts how do Sabloff and Willey arrive at the proposition that they signify an invasion by "non-Classic" peoples? As far as I can determine, this conclusion is reached by the traditional archaeological method of "plausible interpre-

tation." The laws underlying such an interpretation are implicit and assumed to be true; therefore, the interpretation is plausible. This implicit law of archaeological interpretation appears to be that temporal continuity in the formal properties of artifacts varies directly with social continuity. There are, however, many cases to the contrary which demonstrate that this is not necessarily true.

It would seem likely, furthermore, that if there had been an invasion there should be some evidence of conflict. Is there archaeological evidence at Seibal for the "superior weapons"—darts and atlatls—which, it is suggested (Sabloff and Willey 1967:327), gave the invaders a military advantage? Is there evidence for the existence at Seibal of military compounds which one might expect if the invaders were militaristic and engaged in "raiding of the rest of the Peten" (Sabloff and Willey 1967:329)? Why should the population of Seibal have reached its peak after the proposed takeover by the invaders? How was food procured and distributed for the invaders? Should there not have been evidence of a major change in the economic and subsistence logistics of such a group?

Until empirical materials from the archaeological record can be shown to conform to expectations in terms of deduced consequences of the proposed invasion, and until the validity of the propositions which permit the arguments of relevance offered for relating archaeological facts to past events and conditions has been demonstrated, Sabloff and Willey's interpretation cannot be said to have provided us with a "proper historical framework." If future research should prove their interpretation correct, such proof would be dependent upon an understanding of processual relationships among various classes of material items in the dynamics of cultural systems. Only then would we be able to relate reliably our contemporary archaeological observations to past conditions and events.

In summary, I have argued that there is a necessary first step in archaeological research—the attempt to explain observations made on the archaeological record by hypothesis formulation and testing. It has been stressed that this step *necessarily* involves coping with problems of process. We attempt to explain similarities and differences in archaeological remains in terms of the functioning of material items in a cultural system and the processual features of the operation or evolution of the cultural systems responsible for the varied artifact forms, associations, and distributions observable in the ground. Sabloff and Willey are not unique in approaching this task intuitively and inferentially; this has been the accepted procedure in archaeology. Advocates of the so-called "new archaeology" are not, as Jennings would have us believe, simply reinterpreting old data and old ideas:



Some of the more impatient young scholars refer to the "new archaeology." This term seems to imply the utilization of new "theoretical" viewpoints (which are less theories than new hypotheses or restatements of old assumptions) and the assistance of the ancillary sciences along with the old data and old ideas (Jennings 1968:329). Insofar as the ideas and theories of science are old, Jennings is right; however, in the field of archaeology these ideas are revolutionary. Most of my own efforts and those of my colleagues in the "new archaeology" have been directed toward the disproof of the old principles of interpretation which gave the ring of plausibility to traditional reconstructions and interpretations. We seek to replace these inadequate propositions by laws that are validated in the context of the epistemology of science, so that we may gain an accurate knowledge of the past. This paper is one more attempt to demonstrate that a change in methodology is needed so that archaeologists will begin to test the validity of explanatory principles currently in use and attempt to refine or replace them by verified hypotheses relating the significance of archaeological data to past conditions. Only after these procedures are followed will we be in a position to establish a "proper historical framework."

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