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A LOOK AT PALEOECOLOGICAL INQUIRY IN ARCHAEOLOGY

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Though this symposium is directed toward pollen and prehistory, I would like to concern myself with the broader ~~problem~~ problem of difficulties in paleoecological inquiry and prehistory. Specifically I would like to discuss the matter of how the archaeologist can utilize paleoecological information to his best advantage.

I would like to begin by pointing out that most paleoecological work undertaken in archaeology will probably forever ~~remain~~ lie in the hands of specialists. Though the archaeologist shows a rather astonishing catholicity of interest about the nature of all kinds of prior events, his main concern remains with culture change and culture process. His training and experience point out to him that phenomena of change in the vegetation record or the total ecological record through time may be correlative with cultural changes and cultural processes, and indeed may at times be identified as causes. But the archaeologist is not ordinarily ~~interested~~ interested in these ecological phenomena for their own sakes. He wishes to know what happened but ~~he~~ he will leave the finding out about it to someone else.

On the other hand, the archaeologist's training and experience does lead him to understand the problems of dealing with scientists whose interests are contributory to his own. Archaeology is primarily considered a branch of cultural ~~anthropology~~ anthropology and the archaeologist works every day--especially if he is a faculty member--with ethnologists, social anthropologists, historians and others. Each of these other fields has something to offer archaeology, and the archaeologist spends quite a bit of his energies learning how to utilize information his colleagues in other specialties produce.

Today there is a growing amount of interest by archaeologists in the work of paleoecological specialists. I am here attempting to look at this interest and offer some suggestions on how to make the cooperation between archaeologist and specialist operate smoothly and efficiently.

As is clear in the archaeological literature, even very closely allied studies cannot always be utilized effectively by archaeologists. The archaeologist has often been frustrated by discovering a x close ethnographic parallel to some item in an archaeological site, but to discover upon investigation of the ethnographic literature that there is little or no other typological information given for this group. Archaeology looks to social anthropology for a body of anthropological theory, but finds the social anthropologist will rarely discuss implements of the sorts he digs up every summer. How much more of a problem, then, when the archaeologist deals with the paleoecological specialists whose main interests are even further from his own.

The basic problem seems to me to boil down to the fact that each scientific investigation is primarily undertaken in light of the background and philosophy of that science. The palynologist trained in Botany usually concerns himself with the problem of vegetation history when he "does" the pollen analysis of a locality. As he is well aware, this is not quite the same thing as concerning himself with the problem of ecology when investigating the same locality. The data are perhaps the same, but the relationships those data are expected to reveal are somewhat different. The palynologist who is a geologist brings yet another set of scientific traditions to these same data and he looks for still other relationships.

It should come as no surprise, then, that an archaeologist dealing with these data would similarly concern himself with different relationships. He is interested in culture and culture process; cultural ecology deals with different set of relationships than plant ecology--different phenomena are important and different ~~xxx~~ interpretations develop.

If I may bring in an example from my own work, I was recently able to observe in the palynological record from Cahokia that certain samples showed sediment disturbance on a very narrow time level. To the student of vegetation history this fact might have little relevance. The plants involved were of non-arboreal genera, the time period was extremely short, and the basic site vegetation was the same before and after. It was evident that the local plant ecology was very little affected.

But the cultural ecology is a different matter. To the archaeologist this same phenomenon can be considered indicative of the period when earthworks were being constructed. The cultural habit of building earthen mounds at Cahokia could thus be seen in terms of relative time: there were periods of mound building activity and other periods when mounds were not being constructed. The rest of the cultural record at Cahokia could be viewed in relationship to this hypothesis, and the implications in ~~xxxxx~~ terms of other cultural behavior ^{considered} ~~such as organization of work parties, transmission of engineering knowledge and the like~~ are very interesting.

Now if the paleoecological work is primarily the responsibility of the specialist, how can the matter of professional orientation be resolved? Specifically, how can the archaeologist who submits a series of specimens to a specialist be sure that the interpretations of that specialist will be effective in cultural terms?

One answer is to request the specialist only to produce raw data, such as the pollen diagram of the site. This places the burden of interpretation on the shoulders of the archaeologist whose training is insufficient to prepare him for the task.

The usual alternative is to let the specialist interpret the data to his own satisfaction and include it in the archaeological report as an appendix. From this the archaeologist picks up what interpretations

he considers useful and works with those.

The alternative I shall here propose is a bit more complicated.

First, I consider that it is the obligation of the archaeologist to determine the exact nature of the problem he wishes the specialist to resolve:

Is it the determination of relative and absolute time

Is it determination of economic flora of a culture

Is it determination of prior climatic conditions or prior local ecology (the two are not the same)

Is it to demonstrate some specific cultural ecological hypothesis

Is it to verify information previously retrieved, perhaps by some other technique

Once the archaeologist has a pretty good idea of the nature of his problem he can elicit cooperation on those terms. Certainly the same data can be ~~xxxx~~ utilized by the specialist for elucidation of a different problem, but that is not the archaeologist's concern.

Once the problem to be resolved is clarified the two scientists can together design a sampling program. The archaeologist recognizes that all sites cannot be excavated in the same way, similarly ~~xxx~~ pollen sampling programs must be varied to meet the demands of the situation. There is a technique of pollen sampling just as there is a technique of digging, but what is important is the problem one wishes to resolve.

Next, both the archaeologist and the palynologist get to work in their respective laboratories and ~~ultimately~~ produce their ~~reportxxxxxxx~~ analyses of raw data. Ultimately the palynologist completes his interpretation of the pollen record in light of the archaeological problem. At this point it seems to me that the archaeologist must make a more than determined effort to understand that report. He must attempt to critically evaluate its information in terms of his own interpretations developed from analysis

of the cultural record. Is a certain pollen type or ecological grouping found consistently with an artifact type. Are hypotheses in the archaeological literature about cultural ecology verified by these palynological records. Can ethnographic parallels be worked out on the basis of the ecological conditions interpreted by the palynologist.

And it is an important next step that the archaeologist request his palynological colleague to help him answer these specific questions. If they are framed in terms that are comprehensible to the non-archaeologist, that is free from jargon and implications, they can ordinarily be answered from his point of view also. I think, having been on both sides of the fence, that this is a valuable procedure. Our vocabularies are loaded with hidden meaning. When the anthropologist talks about drought, for example, he is ^{generally means} ~~discussing~~ a phenomenon of limited time dimension. A drought takes one human generation, perhaps two, to come to completion and this would be an extreme drought. To the student of vegetation history, a drought might only be recognized in the record if it took enough time to affect the arboreal flora--perhaps six or eight human generations at a minimum. Specific questions directed to one specialist by another are the best way that I can see to resolve this difficulty.

In summary, as I see it ^a ~~the~~ basic problem ^{of} ~~is~~ paleoecological inquiry in archaeology derives from the fact that there are multiple interpretations possible of paleoecological data. Each specialist, archaeologists included, views his responsibilities of interpretation of these data in terms of his own field. If the archaeologist expects non-archaeologists to interpret the data in terms that will cover the range of cultural ecology he will usually be dissatisfied. The archaeologist must recognize that he is the one responsible for the interpretation of paleoecological data in cultural terms. To accept this responsibility he must concern himself with efficient means of eliciting the information he needs from his specialist colleague.