

THE ROLE OF ENVIRONMENTAL ARCHAEOLOGY; TO MEASURE – TO INTERPRET, OR BOTH?

Roger Engelmark and Johan Linderholm

The Environmental Archaeological Laboratory,

Department of Archaeology, Umeå university, S-90187 Umeå, Sweden

This paper is a personal, perhaps subjective, response to many years of work within the field of environmental archaeology. It deals with questions on the relations of sciences within archaeology. Also, the purpose of these conferences will be discussed as well as wider aspects of interdisciplinary collaboration. We also assume it to have relevance for other science related fields, both inside as well as outside of archaeology.

These conferences started in Uppsala 1976 as the “The Nordic Conference on Thermoluminescence Dating and other Archaeometric Methods” and mainly dealt with various scientific dating methods as a response to the need of intensified co-operation between archaeologists and “specialists” (i.e. scientists). The following conference took place in Elsinore, Denmark in 1982. Here, people also working in other science based fields of archaeology were invited to participate and thus the theme of these conferences broadened and subsequently the name was changed to “The Nordic Conference on the Application of Scientific Methods in Archaeology”. Since then another four meetings have been held (see list of references).

The purpose of the first meeting (and those succeeding) was to:

- 1) present the latest developments of scientific methods in archaeology.
- 2) provide an opportunity for discussions among archaeologists and specialists on the problems associated with the application of the various techniques.

The first point is well satisfied. But we have a strong feeling, without having any statistical proof, that the second point is underrepresented and very few cultural (traditional) archaeologists attend the conferences. There are probably several reasons for this. Lack of funding may be one, lack of interest or even lack of response from the “scientific” community may be another. Here, it is important to point out that we do not seek or attempt to bring about or enhance a polarization between cultural archaeologists on the one hand and environmental archaeologists and other science based disciplines on the other.

Something obviously needs to be done.

I. Archaeology; A definition of a discipline

The identity of the archaeological discipline has changed over the years and has been subjected to continuous debate during the last decades (Callmer 1995, Kristiansen 1996). The definition of archaeology will certainly be different depending on who you ask – academic scholars, museum antiquarians or the general public. The delimitation to other disciplines is unclear and consequently archaeology must be considered as a broad and pluralistic discipline. We regard it to be a genuine interdisciplinary science covering all aspects of past human affairs.

Modern archaeological theoretical debate has brought consequences for natural

sciences in archaeology. New questions were being addressed as postprocessual archaeology emerged, questions concerning cognition, symbolism etc., where environmental data had (or at least was claimed to have) little relevance for the archaeological interpretations. Here, a gap was formed that has not yet been bridged and might remain so, if this perspective of archaeology is maintained. This is also probably one of many reasons for the absence of cultural archaeologists at the Nordic conferences.

The debate between processual and postprocessual (as well as other) archaeologists and its aftermath (exemplified by discussions of Shanks and Tilly 1990) showed that some postprocessual theoreticians reached the ultimate point of separation, disclaiming material data, when arguing that the data are so subjective that it can not be used to test theories. History has shown how all kinds of archaeological data can be misused or ignored. National and local archaeological movements use and abuse archaeological data in various ways and sometimes dubious ways, even for present day political situations. Only by consistent evaluation and interpretation-reinterpretation of the available data can we, as archaeologists, be convincing.

Environmental archaeology has also been accused of being affected by positivism, empiricism and scientism (Barret 1990, Edmonds and Thomas 1990, and with reply from O'Connors 1990). As far as we are concerned, this is a beating where the combatants are holding opposite ends of the same stick. Considering scientism, a rather unsatisfactorily defined term, we believe that most scientist are well aware of methodological limitations. There are cultural archaeologists, however, who have a tendency to overinterpret scientific (numerical) data and expect them to be unquestionable.

II. Archaeological sources of information

All evidences of past human activity, whether economic, social or religious must be considered as archaeological source materials. The sources may shift in character both in quality and quantity but there should be no hierarchical order among them (cf Davidson 1988). Still, the data may have a dependent or independent character something which we must also be aware of. For instance, what will tell us more about agriculture; a sickle, ardmarks or cereal grains? They are all independent indicators of arable farming but with different aspects. A combined use of materials and methods is advocated. However, cultural archaeologists often assume that artefacts have a higher explanatory value than environmental data. Such an attitude of preferential right of interpretation is consequently neither acceptable nor fruitful.

Human activities have constantly caused changes of biological, chemical and physical nature in the environment. Whereas in most features, the artefactual evidences are normally poor, measurable biological and chemical data are almost infinite. But most of these data are certainly archaeologically meaningless, irrespective of the sophisticated analytical tools that are used. Unless we have articulated the questions to be answered, we can not determine which data are relevant to recover nor the means for their retrieval.

Furthermore, the scientist has responsibility for the data. The distinction between descriptions and interpretations must be made clear when presenting results. There lies a danger for creating an illusive objectivity, when what appears to be "objective" descriptions in reality are nothing else than interpretations of data. If we produce uninterpreted raw data, cultural archaeologists can not always make this distinction and, as a result, quite often use the results as if they were representing artefacts.

As environmental archaeologists, we are often asked to produce manuals (cook-

books). But we can not and should not provide scientific prescriptions or recipes, with inherent interpretations included, easily applicable to different archaeological objects and situations, if only followed to the letter. A more appropriate approach is to take part in the process of defining the problems. This leads us on to discuss various forms of co-operation.

III. Co-operation within the archaeological framework. An interdisciplinary task

There are various types of integration of human, social and natural sciences. The meaning of the different terms, describing different forms of co-operation, are not often well defined. Broadbent (1996) gives the following definitions to various forms of co-operation in research:

Cross-disciplinary: Focus on the intersection of disciplines with common goals.

Multidisciplinary: Focus on parallel, independent studies addressing common research problems.

Interdisciplinary: Focus on integrated, innovative approaches to problem-solving of combining resources (theoretical, methodological, factual) of different disciplines.

Which are then the past and present situations and forms of co-operation in archaeology? There are two forms which have been and are prevalent (see also Bell 1992):

- i) The strict service role- Environmental archaeology involvement mostly at a post excavational stage.
- ii) The Project service role- Projects led by cultural archaeologists, hopefully with some mutual discussion/planning together with environmental archaeologists.

The first could be exemplified by several Swedish exploitation excavations where materials were/are collected without any discussions with environmental archaeologists (or other scientists/specialists) prior to the excavations. Here, the role of the environmental archaeologist is to present a nice data sheet with an offnote added, saying "this is the way to interpret". The second category may be exemplified by large Swedish research funded projects such as "The Cultural Landscape during 6000 Years in southern Sweden-the Ystad Project" (Larsson et. al. 1992) among others. Results from such projects (although huge in structure) are usually more interesting (beneficial) from a scientific point of view, since discussions on the outcome are held in a multi/cross disciplinary manner.

But what about the future? What forms of co-operation should we aim for and for what reasons?

- iii) The "real" interdisciplinary project. Co-operation, integration and coexistence. Ideally, the strategies for working together should mean an ongoing dialogue between equal partners (Bell 1992). Extradisciplinary ideas and visions are required.

On the issue of how this co-operation should be performed, it must be stated that there is constantly a need for new strategies for creating an interdisciplinary framework in its "true" meaning of the concept. There can be no static standard design for the interdisciplinary research. But the starting point is a focus on the combination of resources of different disciplines, where problem-solving is achieved by integration, both theoretical and methodological.

There are at least three vital points which must be fulfilled regarding interdisciplinary projects:

- 1) A joint endeavour in forming problems.
- 2) A joint endeavour in evaluating results and interpretations.
- 3) A joint endeavour regarding the influence and division of financial resources.

There are several reasons for employing this approach, firstly the state and art of the discipline itself, where the complexity and amount of data is already way over our heads. Secondly it's a matter of cost effectiveness where results must come into use and be evaluated so that similar basic research is not done repeatedly.

Conclusions

The scarcity and complexity of the archaeological sources of information and the means of retrieving this information, make it necessary to work in an interdisciplinary manner. The role of Environmental Archaeology, as well as other science based disciplines, should then be to measure and to interpret.

These meetings must provide a solid platform for the fulfilment of the initial aims, as stated in the foreword of the conference held in Elsinore 1982. We must make these meetings attractive to a more general public of archaeologists and scientists, where mutually beneficial discussions can be held. This will not be achieved by demonstrations on increasingly sophisticated techniques. If we want these conferences to play an important role in the future, the different fields of archaeology must take the opportunity to attend these meetings, to discuss the applications of science based methods. If not, the Nordic conferences will become a narrow society of mutual admiration.

Realising the importance of working in a interdisciplinary manner will force everyone to participate in the archaeological scientific process as a whole, since the formulation of problems (the simple questions of what we actually want to know about the past), collection of data and finally the interpretational work will become a joint venture. Here lies a very important task and a real challenge for all those participating in the future Nordic Conferences on the scientific methods in Archaeology.

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