

## Towards a conceptual framework for environmental archaeology: environmental archaeology as a key to past geographies

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### Summary

In order to practise environmental archaeology effectively, it is important to define the subject, and its limits and concepts. This paper represents an initial exploration into the field of definition, recognising two apparently distinct threads in the application of environmental archaeology. On the one hand, the European practice has a strong biological emphasis, whereas there is a more geographical approach applied in North America. The geographical links are not, however, uniquely North American, and are perceived from both sides of the boundary, especially amongst British geographers. Environmental Archaeology has relationships with Quaternary palaeoecology, archaeology, and other analytical disciplines. Using the relationship with Quaternary palaeoecology, it is possible to define a conceptual framework for environmental archaeology.

### Introduction

This paper explores some aspects of definition which arise where Environmental Archaeology is seen as a distinct discipline within scientific research, and revolves around several related questions arising during the practice of environmental archaeology: Is there such a field or discipline as Environmental Archaeology, and, if there, how is it defined and what are its limits? Following this, can some basic philosophy or conceptual model be defined for this discipline known as Environmental Archaeology?

These questions stem from some basic methodological problems. Practising environmental archaeologists often are asked, by archaeologists, for opinions regarding two main problems. Firstly, what can environmental archaeology tell the archaeologist about a site (or, in other words, although it is in vogue to consider the environment in relation to a site, is it really worthwhile?), and secondly, what on-site sampling procedures must the excavator undertake to provide useful environmental evidence? To answer these questions requires a clear view of the scope and limit of environmental archaeology, and this is where a clearly defined

conceptual framework of the subject may provide a useful background.

To assess the value of such a conceptual approach to the subject, and to approach answering such questions as those posed above, it is convenient to group the practical approaches to the application of environmental archaeology into three generalised categories. The first may be regarded as the unfunded or under-funded approach, in which environmental evidence has not been budgeted for, and, therefore, cannot be examined; end of problem. Next is the uninformed or misinformed approach, in which the archaeologist either feels he or she should collect environmental evidence, or genuinely recognises the need to do so, but plans in isolation, i.e. consults an environmental specialist too late. The result is commonplace: collection of too few, too many, inadequate or inappropriate samples, poor storage, lack of research problems and design, and so on. The environmentalist tends to act as a 'service' scientist, and the results tend to be of relatively little use and/or intellectually unexciting. Finally, there is the well-funded, planned approach, in which the environmental specialist is involved in most if not all the relevant planning stages. The excavation strategy includes specific environmental

components, where these are viewed as necessary, and the environmental output may be highly valuable in terms of site interpretation. These three approaches often overlap, and more often than not, are imposed by external restrictions such as the availability of specialist staff, structure of funding and so on.

In order to assess the potential value of environmental research in an archaeological investigation, i.e. whether, given optimal conditions, it is scientifically valid to indulge in environmental archaeology, it is necessary to define the subject. A full understanding of what environmental archaeology is, is critical, especially in the latter two situations, i.e. in the un- or misinformed approach, where it may be possible to amend this for future work, and to optimise the research, and in the last approach, where thorough planning and implementation of plans is critical, this requiring the full understanding of the nature and limits of environmental archaeology. Thus, returning to the two archaeological questions: 'what can environmental archaeology tell us?' and 'how do we sample?', it is apparent that only with full understanding of the scope and limit of environmental archaeology can these questions be answered fully.

There is, however, a basic practical problem. Since much, if not most environmental archaeology is externally constrained (usually by funding limitations), much of it tends to become 'service science', and the practitioners frequently are unable to develop their work as a discipline. Consequently, the theory and practice of environmental archaeology, are often, for practical reasons, some way apart.

### Definitions of environmental archaeology

A review of the literature provides a sense that there are several different views between, for example, Europe and North America, regarding the definition and scope of environmental archaeology.

In the British scene, environmental archaeology is defined by the Association of Environmental Archaeology as "the

general field of the application of the natural sciences to archaeology" (*Circaea*, vol. 1, p.2). This general statement may be extended, such as by Myra Shackley, as in "the application of the biological sciences (bioarchaeology) and earth sciences (geoarchaeology) ... to extend the scope of archaeological research ..." (Shackley 1981, vii). This separation is interesting, since, by the time (1984) that Helen Keeley edited a major review of environmental archaeology in England, the definition stands as : "... the application of the natural sciences to the better understanding of the material remains of man's past, by the analysis of *biological remains and organic deposits* from archaeological excavations" (Keeley 1984, 12; emphasis inserted). This emphasis upon the biological evidence reflects the practical direction in which British and European Environmental Archaeology has developed, which in itself probably reflects the very strong growth of palaeoecology, especially botanical palaeoecology, in this region over the last half century. What is the purpose of this application of natural sciences to archaeology? Again there are several views, but generally they all indicate an awareness that ancient societies did not live in isolation, and therefore if we are to understand, as fully as possible, the nature of these societies, we need to know about the environment in which they operated and their interactions with that environment. The ideal of environmental archaeology is to produce that understanding. Following this is a view, which does not get wide exposure in Britain, that environmental archaeology should be the means to reconstructing past geographies.

Karl Butzer makes some strong comments upon the definition of environmental archaeology, comments reflecting a different attitude to the British school of thought or, at least, practice. It is clear from Butzer's writings that he takes a somewhat broader view of the subject than is largely practised in Britain, and he argues for the field to be called "prehistoric geography", a name which is unlikely to catch on in Britain, if only because the practising environmentalists are mainly botanists, zoologists and other life scientists. In Butzer's foreword to the 2nd edition of *Environment and Archaeology: an ecological approach to prehistory* (1971), he states his case thus:

"Contemporary human groups interact with their environment in many ways and at different levels, depending on their technology and organizational skills. The regional environment provides a resource base that may also be relevant to the development of individual economic traits, primary technology, subsistence patterns, and even social structure. Similarly, on a more local scale, the habitat provides settlement sites and the focus for human activities. Conversely, man leaves his imprint upon the local setting and even on the regional environment. Food-gatherers modify vegetation by fire and accidental dispersal of plants; they exploit and may over-exploit food resources, and they impart their mark upon the land. Food-producers leave a far more conspicuous record. Their structures are common and of some permanence. They clear or destroy forest, displace wild game with domesticated animals or mass crops, deplete or destroy the soil mantle, modify or upset the hydrological balance, and initiate the process of pollution that threatens us today.

"Prehistoric groups interacted with their environments in similar ways. No single discipline can hope to unravel the story in its entirety, but many can contribute. Palaeoecology is essentially an approach based on various classes of data. In searching for an understanding of prehistoric groups, their settlements and their way of life, we must not let data-gathering obscure understanding. Instead our work must be more problem-oriented. Each discipline must contribute directly to ecological synthesis, and the archaeologist must concentrate on deriving more meaningful results from his own data, rather than attempt to integrate all categories of evidence. More explicitly, I would hope for archaeologists who can think as geographers, who can derive more social and economic inference from their material and who can interact with other scientists also interested in prehistoric man."

Butzer writes a great deal more on this subject, and one could do a lot worse than continue quoting from his writings. Suffice to say that he views study of physical

environment to be as important as that of the biological environment in relation to archaeology. This may reflect the greater requirement in North America to understand the geological stratification of archaeological sites than has to some extent, occurred in Britain, although this may also reflect differences in the historical development of the subject in different places (Gifford and Rapp 1985).

Butzer makes the following comments about the practice of "prehistoric geography" (1971, 4-5; emphasis added):

"In view of the many disciplines concerned with the past, there are many different approaches to geography. Basically these approaches are of three kinds:

"(a) Individual research by the natural sciences, usually carried out independently in the field or laboratory by *geologists, geographers, soil scientists, botanists, zoologists, and meteorologists*. Although the range of specific goals or interests may vary greatly, most of our basic techniques and palaeo-environmental data have been obtained in this way.

"(b) Interdisciplinary work by natural scientists in collaboration with archaeologists, particularly in the field. Pleistocene geology, geomorphology, palaeontology, and pollen analysis probably form the most common backgrounds of the individuals concerned. Generally directed toward the study of archaeological sites, such interdisciplinary work is particularly valuable in that it contributes ecological as well as environmental information.

"(c) Palaeo-anthropological work by archaeologists directed toward a fuller understanding of the cultural ecology ... of prehistoric communities particularly of the economy, social organization, and interactions with the environment."

Approach (a) largely reflects environmental archaeology as it stands in many studies, whereas approach (b) is an ideal which is relatively rarely achieved in environmental archaeology. The last approach is probably beyond the scope of the individual environmental archaeologist, although,

definition, the materials and evidence used in environmental archaeological research all represent the Quaternary Period. In terms of the applicability of general palaeo-environmental study to archaeological problems, it should be noted that most regional environmental research tends to be non-archaeological or only contributing incidentally to archaeological research, although there are, of course, the exceptions of specifically archaeological regional studies. However, some site-specific studies, depending upon the nature of the site, may be explicitly archaeological and it is probably in this area that most environmental archaeology is practised.

### The relationship between environmental archaeology and archaeology

Since environmental archaeology is, by definition, intricately linked with archaeology, it is important to look at the relationships between these two fields. In this case, there are two basic positions that environmental archaeological research may take: (i) internally related to site- or region-specific archaeology, and (ii) externally related to site- or region-specific archaeological research. The first, the internal relationship, is probably the one most practised. In such a situation, environmental archaeology inputs into the description, identification and cataloguing of one or more of the three broad classes of archaeological evidence—structural, artefactual and 'ecofactual'. This evidence is analysed and interpreted by the environmental archaeologist, who may also, but less frequently, be involved at final analytical stages, that is, the site interpretations etc. The second, external relationship expresses itself at these latter stages, where archaeological, non-archaeological, environmental and/or non-environmental evidence, from various sources, input into the archaeological site or region integration. At this stage, one returns to Butzer's ideas, in particular, his third main "prehistoric practice", namely the search for a "fuller understanding of the cultural ecology ... of prehistoric communities—particularly of the economy, social organisation, and interactions with the environment" (Butzer 1971, p. 5). Although some archaeologists have been doing this for a long time, especially for

the pre-agricultural revolution eras, it is only relatively recently that British environmental archaeologists have developed this field. The bulk of environmental archaeology has been conducted within the first framework, i.e. internally, often being practised merely as a service science rather than as a discipline in its own right.

### Relationships with other disciplines

In reality, the practice of environmental archaeology is closely inter-related with many other fields of research, such as human biology, zoology, botany, agricultural science, geology, pedology and many others. The link between each of these and environmental archaeology tends to be a two-way, with a flow of methods, concepts and accepted wisdom towards environmental archaeology, where these are applied and then used to derive a set of information (and, in some cases, new techniques) which feeds back into the non-archaeological discipline. The outputs from environmental archaeology provide both historical and geographical information, and it should be noted that there is this specifically geographical component; the output from environmental archaeology increases understanding of past distributions, since most environmental archaeology research is site-specific. This last point returns to Goudie's first geography/prehistory link.

### Basic philosophy or conceptual model

In 1980, John and Hilary Birks discussed the philosophy of palaeoecology, drawing parallels and distinctions with ecology on the one hand, and geology on the other. Their comments are particularly relevant to environmental archaeology, especially if environmental archaeology is seen to be closely related to, if not a subset of, Quaternary palaeoecology. Birks and Birks (1980, 6–8) outline seven major features, a list which can be slightly amended and added to, to form a possible philosophical framework for environmental archaeology.

1. Environmental archaeology is a descriptive historical science largely depending upon inductive inferences

and reasoning, and often depending upon a multidisciplinary approach.

2. The analytical methodology is opportunistic, reflecting the wide range of types of evidence; experimental investigation is largely restricted to methodological problem solving (e.g. identification techniques etc.), and is not central to data interpretation.

3. The interpretive methodology should entail the method of multiple working hypotheses.

4. Explanation must, logically, embrace the simplest explanation until more evidence is available.

5. Although the main aim of environmental archaeology is not to study taxonomy and processes *per se*, a full understanding of these is necessary, therefore much work often goes into investigating these.

6. Concepts of space, time and evolution are of central importance.

7. The language is mainly, by necessity, that of biology and geology.

8. The data collected are both qualitative and quantitative, invariably complex, incomplete and multivariate, being, in many cases, ideally suited to multivariate mathematical analysis.

9. Uniformitarianism ('The present is the key to the past') provides the basic assumption and philosophical tenant, and, as best working hypotheses, present taxonomy, processes, etc. must be used to explain past situations.

## Conclusions

After these considerations, it is possible to answer the questions presented at the outset. Firstly, what is environmental archaeology? There appears to be no one standard definition, and since this is so, the present author may as well contribute another: Environmental archaeology is the study of the material (usually non-artefactual) evidence which contributes to the understanding of past environments in relation to past human activity, with

particular emphasis on the interaction between social and natural environmental systems. As a single phrase, Butzer's "pre-historic geography" is a most useful definition. Secondly, is there such a field or discipline as environmental archaeology? The answer must be yes, although it appears to straddle, with a common aim such as that defined above, various other fields, notably archaeology, palaeoecology and other palaeoenvironmental disciplines. Thirdly, given that there does appear to be a discipline of environmental archaeology, what are its limits? These are probably undefined as yet, but perhaps best described by its links with other disciplines, that is, environmental archaeology as a subset of palaeoecology, having internal and external links with archaeology, and having input/output links with many other disciplines. Finally, can some philosophical or conceptual model be defined for the discipline of environmental archaeology? This is, in the author's opinion, possible, and the definition and the nine conceptual points outlined above offer a step towards the establishment of a philosophy for this discipline.

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## Cultural landscapes: some thoughts stimulated by Bill Boyd's paper: *Towards a conceptual framework for environmental archaeology: environmental archaeology as a key to past geographies*

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Bill Boyd highlights the need for critical reassessment of the objectives of environmental archaeology but some of the points he makes need to be challenged and some need to be taken further. He is right to suggest that because so many of our practitioners in Britain have been employed to report on biological evidence from specific excavations there has been some neglect of broader philosophical horizons including the relationship with our close relative geography and, I would go so far as to suggest, cultural aspects of archaeology. Another factor is that some archaeologists are keener to emphasize their distinctness rather than to embark on the long overdue task of breaking down barriers between disciplines which, like so much in Britain, are all too often fossilisations of Victorian and earlier academic structures.

The paper implies that in Britain little work has been done on the reconstruction of past landscapes. Whilst I accept that in the past too much emphasis has been given by funding bodies to individual site based research and service work, often on a small scale, the comments made do seriously underestimate over twenty years work on the past trajectory of present day landscape types. The success stories seem to have been forgotten: work on Dartmoor, the Somerset Levels, Evan's work on the chalk or Robinson's in the Thames Valley. These and many other pertinent examples are conveniently summarized by Jones (1986) who demonstrates the landscape emphasis of much British environmental archaeology and its links to the work of Hoskins which

led to the development in Britain of the sub-discipline of landscape archaeology. Even so, many of our most successful practitioners have come to archaeology from a background in botany and zoology so the research emphasis of the 'palaeo' branches of these disciplines have tended to predominate in our thinking, and critical thought about the cultural aspect of the equation has to some extent taken a secondary position. This is perhaps suggested by Boyd's statement that "environmental archaeology is seen as closely related to, if not a subset of Quaternary palaeoecology." The problem is not a new one, over a decade ago Butzer (1975) noted that collaborating scientists all too often do not identify with the overriding goals of such projects, the study of man's past. This means that some theoretical archaeologists are increasingly criticizing our work as lacking in 'relevance'. We do not of course need to justify our existence purely in terms of the criteria selected by 'big brother' archaeologists but it should encourage us to look more critically at our own academic objectives. This means abandoning the role of industrious technicians presenting objective 'facts' in the service of cultural archaeology. It is worth quoting Adams (1988) on the subject of facts which, he says are "now understood as compelling interpretative statements reached by comparing the results of more-or-less precise measurements undertaken within a theoretical scheme". The point is, as Butzer (1982) and Brandt and Van der Leeuw (1987) have emphasised, human activity is not constrained by the 'factual' landscape

which can be reconstructed with more-or-less reliability from biota and sediments but by the perceived landscape of contemporary lovers. Thus if we fail to give due emphasis to the cultural perspective the whole study lacks meaning. A subsidiary implication is that, as Boyd suggests, we need to involve ourselves more, not just in data gathering, but in project formulation and interpretation.

Emphasis is given in the paper to the views of Butzer (1971) and the argument that our central task should be the reconstruction of past geographies. Boyd does not spell out in a precise way what this means or why it should be accorded such emphasis. A curious omission is mention of Butzer (1982) which considerably enlarges on his earlier ecological emphasis. A useful definition of environmental archaeology is the scientific study of the ecological relationships of past human communities. This emphasises the ecological, i.e. interdisciplinary, dimension more clearly than the idea of 'prehistoric geography'. The latter sounds rather like the backcloth to human activity and is redolent of earlier deterministic views of man-environment relationships.

A central task is focusing on the interactions between people and the environment. To some extent, however, the cultural aspects of landscape are not perceived as a major interest of ours. The recent volume *Landscape and Culture* (Wagstaff 1987) integrates geographical and archaeological perspectives in a highly stimulating way. Its emphasis is very much on the contribution of recent developments in humanistic geography which is surprising in view of Boyd's valid point that hitherto archaeology has had the strongest links with the 'physical' side of geography. Even more surprising is the absence of any chapter on environmental archaeology. A key concept which we need to develop and articulate, is that of the cultural landscape, recently given welcome

emphasis by the publication of a conference in Bergen (Birks *et al.* 1988). The study of cultural landscapes necessarily involves the close integration of social and natural sciences so that we can achieve a fuller understanding of their origin and development and the interaction of humanity with environment.

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## Comments on Boyd: *Towards a conceptual framework for environmental archaeology: environmental archaeology as a key to past geographies*

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I wonder whether chemists are as worried about the definition of chemistry, and if not why not. They share all sorts of fuzzy boundaries with, for example, physics and biology, yet I'm not sure that this impedes their quest for a better understanding of the nature of matter.

It is my suspicion that environmental archaeologists actually enjoy and flourish along the fuzzy borderlines between more august disciplines, which is why we chose to inhabit them in the first place. So where is sharpening the outline going to get us?

Stamping out the boundaries has of course to do with politics (with a small p) rather than substance. As Boyd comments, the issue is whether environmental archaeology is practised "merely as a service science rather than as a discipline in its own right". From that distinction follows differences in career structure, academic power, research resources and so on. I certainly concur with Boyd's sentiments that, if we consider our intellectual pursuits to be of worth, then we should pay heed to the academic politics of those pursuits. As a foundation to this, Boyd has presented us with a nine point conceptual model.

In presenting his model for environmental archaeology, the insecurity is displayed of a subject that is in a quandary about its own definition. The model presented is, by Boyd's own admission, only slightly amended from one constructed for quaternary palaeoecology. If a subject is to exist in its own right, then its prescriptive statement should not be "slightly amended" from anything. Indeed, the list presented of "major features ... to form a philosophical framework", is so general that it could be slightly amended to apply to any of a whole number of subjects. It says nothing about what environmental archaeologists are trying to do and why.

The only contentious feature in this otherwise bland list is the first. There is in reality no consensus among environmental archaeologists as to the appropriate place for inductive reasoning in our methodology. My personal opinion is that something defined as a "descriptive historical science largely depending upon inductive inferences and reasoning" belongs in any case to some century other than our own. Moreover, I feel this cautious "opportunistic inductivism" is the very thing that fosters an image of environmental archaeology as a rather pedestrian Dr Watson to cultural archaeology's Sherlock Holmes.

Our strength as an academic discipline lies in the questions we can answer, not the structure within which we answer them. If those questions are deemed significant by our academic peers, our subject will prosper; if not, no amount of redefinition and prescriptive statement will save us.

The quotes from Karl Butzer are quite enough to put us on the right track. There are some human groups who have lived independently of pottery, architecture, civilisation, even of post-holes, but all have belonged to the global ecosystem and, try as they may, have been unable to exist, change or develop independently of it. Every transition in the human past has had an ecological dimension, and environmental archaeologists have become steadily better equipped to examine that dimension.

In some areas we have been over-reticent about addressing the broader questions surrounding, in Boyd's words "the interaction between social and natural environmental systems". This is particularly true in the studies of the more recent past with which rescue and contract archaeology has been largely concerned. The site-specific empiricism which has so often characterised such work, and to which Boyd's paper repeatedly alludes, is only

too familiar to many of us. It constrains archaeologists of all descriptions, not just ourselves.

It is vital that we stand above such narrow restraints and follow the example set in palaeolithic and mesolithic studies, in which environmental archaeology requires no justification. We should grasp the nettle firmly, and set about rephrasing and tackling, in ecological terms, key questions on such topics as urbanisation, imperialism, migration and warfare.

Bill Boyd has done us a service by asking us to examine what we are doing, always a salutary task. I think if we look, we can find environmental archaeology's soul, not

in the rules that we follow or the approach that we take, but instead in the destination to which we aspire. Boyd certainly alludes to the destination that I would propose, which is to discover how the social complexity that is a hallmark of our species has allowed us to change our relationship with the global ecosystem of which we are a part. Not only do we have one of the best toolkits for studying the human past, we also have a great deal of support within the wider world of archaeology, which would be keen to see us take a stronger lead than we have hitherto taken.

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## What's in a name? Anyone can be an environmental archaeologist

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Bill Boyd raises a number of important questions about the nature of environmental archaeology which should be discussed. However, because both Boyd in his paper and I in this comment cite approvingly from the published work of Karl Butzer, the editors of *Circaea* might feel it appropriate to feed both of our contributions to the shredder and go direct to Professor Butzer for a 'definitive' statement!

Boyd's analysis of the development of environmental archaeology in Britain and North America is marred by highly selective use of the literature. His alleged dichotomy between a 'geographical' tradition in North America and a 'biological' one in Britain is, in reality, either very blurred or non-existent. Environmental archaeology, and archaeology in general, in Britain has made extensive use of concepts from geography: site-catchment analysis (Vita-Finzi and Higgs 1970), landscape analysis (Vita-Finzi 1978; Wagstaff 1987), spatial analysis (Hodder and Orton 1976) and geoarchaeology in general (Davidson and

Shackley 1976), are examples in which British scholars have set the pace. Zeuner's pioneering work, undertaken at this Institute, on the application of geological and geographical concepts and data to archaeological chronology (*Dating the Past*, 1946), laid the foundations for modern geoarchaeology. Ian Cornwall (1958), also working at this Institute, published a pioneering volume on soil science for the archaeologist; this has now been superseded by a book written by Susan Limbrey (1975), another British environmental archaeologist. Equally, one knows of many North American environmental archaeologists who are highly original and pioneering archaeobotanists and zooarchaeologists and who do not use geographical models or concepts in their work. These observations do not, of course, detract from the importance of the other points which Boyd makes.

Boyd clearly approves of the ideas of his mentor, Karl Butzer, whose book *Environment and Archaeology* (1971, 2nd edition) he quotes at some length. I have

two observations to make here: first, it is interesting to note the change in the subtitle of Butzer's book between the first (1964) and second editions, from *An Introduction to Pleistocene Geography* to *An Ecological Approach to Prehistory* (I will return to this subtle distinction later); second, Butzer has written a number of thoughtful works on the nature of environmental archaeology since 1971 (e.g. Butzer 1975, 1978 and, in particular, 1982). This last work, a book entitled *Archaeology as Human Ecology*, encapsulates for me what environmental archaeology should be concerned with and much of what I say below derives directly or indirectly from Butzer's stimulating ideas.

And so on to the substance of Boyd's paper. He provides a useful analysis of the research and funding structure of projects which involve environmental archaeologists; I feel that most workers would agree with this. I think, however, that a further breakdown of environmental archaeology would be useful: into the 'types' of practising environmental archaeologists. In Britain there are three main categories of people who could be classified as environmental archaeologists:

1. Those employed by universities or other educational institutions to teach and research in the area of environmental archaeology.
2. Those employed by national or local archaeological bodies to work as environmental archaeologist attached to local archaeological units, museums, universities or central environmental laboratories.
3. Those employed by universities, other educational institutions or museums to teach and/or research in areas not directly concerned with environmental archaeology (geography, geology, botany, zoology, etc.) but who generate research data which is relevant to environmental archaeology and who might, therefore, choose to designate themselves "environmental archaeologists".

This rather simplified system has probably omitted various other categories of workers, to whom I apologise. It does, however, include the majority of workers in environmental archaeology in Britain and, with only slight modification, would

probably apply to many other countries as well. This scheme is helpful for understanding why the Association for Environmental Archaeology (the AEA) was established in Britain some 10 years ago. Various environmental archaeologists, in particular Don Brothwell and Geoffrey Dimbleby (both of whom belong in category 1, above), were concerned that the subject should develop in such a way that all practitioners were involved (i.e. those in categories 1, 2 and 3) and that a forum for communication should be established. It was felt that workers in categories 1 and 3 were not always aware of the problems faced by the (mainly contract) workers in category 2, or of the important data which they were generating. Equally, workers in category 2, often highly specialised in terms of the materials which they studied, were considered vulnerable to isolation from broader (e.g. conceptual) developments in the subject and that this could limit both their development and the value of their contributions; this is why the Association has been especially concerned to recruit them. Most of the workers employed under category 2 are, inevitably, biologists. I say "inevitably" because most sites in Britain produce large quantities of bioarchaeological materials and funding bodies are usually prepared to employ specialists to work on them. Those environmental archaeologists concerned with non-biological materials are mainly employed under categories 1 and 3, or in central laboratories in category 2. Given this structural background, it is not surprising that Helen Keeley's (1984; 1987) reviews of regional archaeology in Britain, based largely on the work of the local and central units, should focus on the biological or organic materials. Boyd should not take this as confirming his view that environmental archaeologists in Britain think of their subject only, or even mainly, in biological terms (Helen Keeley is a pedologist, by the way!).

What are we to make of Boyd's approval of the term "prehistoric geography" as a definition of (or even a replacement name for) environmental archaeology? As far as *this* British biologist is concerned, Bill Boyd is quite correct in thinking that it is a name unlikely to find favour over here. My prejudice is not because the name fails to include the word "biological" but because it is a hybrid of the too specific and the too

vague. "Prehistoric" would exclude the many people who work as environmental archaeologists in the historical periods which, in some parts of the world, "began" more than 3,000 years ago. In North America there is a flourishing field of study called "Historical Archaeology" (which involves environmental archaeologists) and even post-bicentennial Australia will soon discover, if it has not done so already, that it too has an historical archaeology.

"Geography", on the other hand, is too vague a term. In the 1960s and 1970s, geographers consumed an enormous amount of time, energy and paper discussing the nature of their subject. The upshot of this contemplation of the geographers' communal navel was that no-one could agree where it was located, what it looked like and what it signified. My own impression of the nature of Geography, gained from an admittedly superficial examination of only a few university departments, is that "Geography is what Geography does" and that many scholars currently located in departments quaintly named "Geography" (one of those old-fashioned, 19th century, disciplines) would be equally at home in departments labelled "Biology", "Geology", "Economics", "Politics", etc. Geography has evolved into a thriving and intellectually-exciting multidisciplinary subject-area but I see no merit in *namining* our own subject in relation to such a chimaera because it would not clarify in any way what environmental archaeology is, or should be, about.

This is not to deny that geography and environmental archaeology have many methodologies and ends in common, or that some workers located in departments of geography could not legitimately call themselves environmental archaeologists. The search for academic boundaries between so-called disciplines, which Boyd seems to think important for defining environmental archaeology, is surely a waste of effort. The traditional limits between disciplines are increasingly being seen by scholars as irrelevant (historical accidents, to some extent); it is research which straddles the borders of the old-fashioned "subjects" which is most exciting.

In my opinion, the term "environmental archaeology" is, itself, too exclusive in its

implications for many workers. The implied focus on the external physical or biological environment may not be disturbing to geographers or ecological biologists, but how do palaeodemographers, palaeopathologists and students of animal and plant domestication feel about it? It would indeed be a pity if, in our desire to arrive at some philosophically-acceptable (and tidy) definition of environmental archaeology, we excluded many of those practitioners who consider themselves to be environmental archaeologists in the broad sense. We must look for common areas of interest which will be *inclusive* of all relevant specialisms. How can we best achieve this? In my view, by focusing attention on the *objectives* of environmental archaeology (something which is conspicuously absent from Boyd's analysis).

How does Boyd define environmental archaeology? As "the study of (1) the material (usually non-artefactual) evidence which contributes to the understanding of (2) past environments in relation to (3) past human activity..." (numbers in parentheses are my additions). Here, the material evidence comes first, then the environment and finally human beings. This does not necessarily represent Boyd's priorities, but it is interesting to see that people come last. Surely, in any subject which claims to be archaeological, people are the focus of study (this is what distinguishes much of Quaternary palaeoecology, for example, from some aspects of environmental archaeology)?

How would I 'define' environmental archaeology (without imposing a too rigid framework)? As the human ecology of the past; seeking to understand the relationships between past human populations and their environments. The term "environment" is used here in its broadest sense, to include physical, biological and socio-economic aspects. Environmental archaeologists should use any relevant source of evidence (this will most commonly be physical evidence of a geological, geographical or biological nature) including, unlike Boyd, artifacts (archaeological sites are artifacts, and we can hardly ignore them!), ethnographic (especially ethnoecological) data and data derived from experimentation. I would not disagree with Boyd that John and Hilary Birks' philosophy of palaeoecology could

usefully be modified to form a *methodological* philosophy for environmental archaeology; ours is also a historical science. Where our subject diverges from palaeoecology is in its objectives: we don't merely reconstruct the 'diorama backdrop' against which human prehistory and history has been enacted, we attempt to reconstruct the dialogue between peoples and their environments. This is why the academic department in which I have the privilege to work is designated "Human Environment" and not "Environmental Archaeology".

Environmental archaeologists (in the sense which I outline above) should not only adopt the theory and philosophy of Quaternary Palaeoecology for their subject; the theory and philosophy of Archaeology is also vitally important. Environmental archaeologists working with on-site evidence will be aware that it has been transformed by both natural and cultural processes and that both must be understood before any valid reconstruction can be attempted. A discussion of the theoretical basis of Archaeology is beyond the scope of this commentary, but the recent article by Schiffer (1988) provides much food for thought for environmental archaeologists. Schiffer notes the problems of using the term "reconstruction" in relation to any aspect of Archaeology: we are never able to achieve a total reconstruction from the evidence preserved in the archaeological record. This limitation also applies to environmental archaeology, especially when ambitious reconstructions are attempted using one-sided data. An interesting example of this can be seen in the recent attempt by Shackleton and Van Andel (1986) to reconstruct changing patterns of availability (for human exploitation) of species of marine molluscs on early Post-glacial shorelines of the eastern Mediterranean using palaeogeographical data on past coastal morphologies. The hazards of this approach will be manifest to most ecologists and they have been discussed in detail elsewhere (Thomas 1987). Such examples argue for greater dialogue, and increased cooperation, between environmental archaeologists, something which the AEA was established to promote and which will occur only if we take a broader view of what environmental archaeology is, or should be.

Bill Boyd's article raises a number of issues which I am sure will be keenly debated by people who call themselves "environmental archaeologists". The 10th anniversary conference of the Association for Environmental Archaeology is being held at the Institute of Archaeology, University College London, from 30 June to 3 July 1989\*. There will be a whole-day session, provisionally entitled "Aims and achievements in environmental archaeology and closely related disciplines: convergence or divergence?", in which it will be possible to have friendly wrangles about the methods and objectives of our subject; these discussions will, no doubt, continue in the local hostelrys in the evening!

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## Commentary on Boyd's *Towards a conceptual framework for environmental archaeology: environmental archaeology as a key to past geographies*

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Dr Boyd's paper exploring the conceptual framework of Environmental Archaeology is a welcome contribution to the discussion of the aims of the discipline, especially in the light of one of the themes of the tenth anniversary Symposium of the Association for Environmental Archaeology next year\*. The issues raised in this article will undoubtedly be discussed in detail during the Symposium of the Association next Summer. Dr Boyd presents his contribution as an initial exploration into the field of definition by lengthy quotations from published work, though offering few new ideas.

The author, as a geographer, discusses and contrasts a European approach to the discipline (a biological emphasis) with a North American one (a geographical emphasis), while exclusively quoting *British* and *American* authors. This is a rather unfortunate use of the word 'European', especially in the light of recent developments towards a Unified Europe. In fact, the author may find that the so-called

prehistoric geography approach is more common in Europe than he realises—see, for example, the article by Waterbolk in *World Archaeology*, 1981.

In this short commentary there is no space for a lengthy discussion of the theoretical issues raised in the article, but I will say that I disagree with the author's view that Environmental Archaeology is either a discipline in its own right or a subset of Palaeoecology. The problems which sometimes beset the discipline (described by the author as the "under-funded and misinformed approaches" and the tendency to become a "service science") are likely to have arisen out of the separation of Environmental Archaeology from its core discipline, i.e. Archaeology. I personally see Environmental Archaeology as part and parcel of Archaeology, which I regard to be part of the historical sciences, rather than either the natural or social sciences. These issues will, no doubt, be discussed again and again.

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## Reply to Bell, Jones, Thomas and Van der Veen

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Where do I start? In the style of most "replies to response to ..." I will first say some suitably polite things, in particular a "thank you" to the respondents for your comments. However, unlike many other replies, I do not intend now to replace politeness with criticism of the respondents. The ideas that I have floated in my paper are, after all, speculative and exploratory, and are certainly not dogmatic assertions to which I or anyone else should necessarily adhere, and I consider that their greatest value is in the responses which they have elicited from Bell, Jones, Thomas and Van der Veen. When I received the commentaries on my paper, the covering letter from the editors of *Circaea* contained words to the effect of "...we enclose all the responses to your paper...over to you now—enjoy the challenge!". I will admit that my first reaction was "What challenge?". In many respects, the respondents have risen to the challenge (for want of a better word) that my paper offers, but rather than thinking in terms of challenges, I prefer Thomas's suggestion of "friendly wrangles". The importance of a discussion such as this is that it is a discussion, and a friendly one at that, and that we as environmental archaeologists (whatever we are) do not reach the levels of disagreement which is often encountered in "debate" in other fields of academic endeavour.

My initial reading of the responses invoked two reactions. The first was the eminently modest reaction that was I not being presumptuous in raising this issue when there are others better qualified than I am to do so? The second reaction was a slight sense of smugness and a definite sense of relief that my raising of these issues has not been in vain. The responses and their

contents justify my attempts at conceptual navel gazing (I use the term advisedly), and I have no doubt that the comments, both regarding ideas and facts, made by the four authors will be of interest and use to most, if not all, readers of *Circaea*.

So with the backpatting out of the way, let us look at the content of the responses. In general, I have little difficulty with most of the points raised in the responses, and indeed concur with many of them. In particular, my evidence does range rather narrowly, and I admit there are many examples which could have been cited; it is easier, after all, to make bold assertions with little evidence. However, whether my bold assertion is correct or not is largely immaterial; in this case it acts as a stimulant or hypothesis, and in that respect has served its purpose by extracting the responses of Bell, Jones, Thomas and Van der Veen. These respondents have raised many interesting points, some of a detailed nature and others of a broader nature, and in doing so, have provided a list of useful and relevant references to which I or any other environmental archaeologist can add. Although it is tempting to respond to these points in detail, or cite further references to argue the case one way or another, I do not intend to do so, since I think it is probably more useful at this stage to comment on some of the general overriding themes evident in the responses to my paper.

Firstly, it is clear that environmental archaeology is a diverse subject. Such a view is, of course, neither novel nor contentious. This diversity is one of the major strengths of environmental archaeology, and is certainly appealing to the practitioners who may or may not call

themselves environmental archaeologists. In this respect, whether one prefers Butzer's terms "prehistoric geography" or "human ecology" as summary descriptors of the subject, both of these phrases emphasise the powerful and exciting theme of the unifying, wide-ranging and multi-disciplinary approach to understanding past human-environment interaction. However, I would still argue that this diversity tends to be only vaguely defined. This lack of definition, furthermore, may place environmental archaeologists at a disadvantage against, for example, traditional archaeologists, many of whom may be unclear about what environmental archaeology can contribute to archaeological investigations.

The second apparent theme is that there is a perceived need for a discussion regarding the nature of environmental archaeology. All the respondents agree on this, and the convening of a symposium session at the AEA 10th Anniversary Meeting in 1989\* seems to confirm this general view. Different environmental archaeologists will see different reasons for this need, and most would, I suspect, concur with Thomas's reluctance to indulge in "navel gazing", but preferred that we should examine the whole, and not the hole, of the body! However, I still consider that it is important to know what we are doing, as environmental archaeologists, in order to undertake environmental archaeology investigations effectively. In this respect, Jones makes some succinct comments on an issue that I also consider to be important, where he refers to the necessity of paying heed to academic politics. Whether we like it or not, it is now common practice within higher education and research institutes to think in terms of business methods, and a common and sensible theme in this context is that a vital precursor to success is the careful definition of aims and objectives. All I am suggesting is that if we are to be successful within the science and non-science community we must consider these.

The third theme which is relevant in this discussion revolves around the definition of our subject area. This is clearly where most of the discussion, and certainly some debate will lie, and probably where individual opinions will part company. The first key issue is whether, if environmental archaeology is to operate successfully, we

need to know and/or define what we, as a corporate body of scientists, do. If the answer to this is negative, then the discussion can end. However, if the answer to this fundamental question is in the affirmative, as is likely, judging by the respondents' view, then we must discuss how we set about defining "environmental archaeology", and what we include in or exclude from such a discussion. For example, do we need philosophical or conceptual rules or guidelines, or is it perhaps more useful to follow a less formal path? How do we identify the future direction of environmental archaeology? What does environmental archaeology expect to produce? And so on. In this context, Jones' image of comparing the "rather pedestrian Dr Watson [environmental archaeology] to cultural archaeology's Sherlock Holmes" is, I think, a useful one, since it in particular begs the question of whether this is not actually the case in many situations. Such an analogy may force us to consider the relative roles of data collection and data analysis and integration which are apparent throughout the "environmental archaeology" literature. For example, how more or less valid is the basic data collection and consequent production of species lists (for example) that occurs at many sites, compared with the relatively fewer higher level analyses and integrated studies reported by, for example, authors cited by Thomas, Bell and Van der Veen? How does one assess these different types of approaches? I suspect that Thomas's "friendly wrangles" are, at present, the place to address these types of issues, and I regret that I was unable to be part of them in London last year.

To conclude, it is perhaps rather obvious to state that the discussion regarding the definition and direction of environmental archaeology is on. However, this is not because I have raised it, but because there is a sense amongst environmental archaeologists, expressed in the nature of last year's AEA 10th Anniversary Conference in London, that such discussion is worthwhile and timely. Indeed the participants of any field of scientific endeavour ought to engage in such discussion, since to be a good practitioner requires one to understand the context of one's expertise. Many reasons may, if deemed necessary, be forwarded to justify such discussion, these ranging from a

purely esoteric interest in the philosophical position of any field of enquiry, to the thoroughly pragmatic needs encapsulated in Jones' "academic politics". The debate, at least for environmental archaeology, is not whether such discussion ought to take place (all the respondents to my paper agree that it should) but should concern itself with what ideas ought to be discussed.

Since I now reside in Australia, it is pertinent to finish this reply by paraphrasing one of many Aboriginal comments on life. Amongst traditional Aboriginal Communities, camp sites show a high degree of spatial organisation, with the relative locations and orientations of individuals' humpies (temporary shelters) being determined by, and thus reflecting the social structure of the group living at the site. Derived from this is a saying which goes something like: "Show me where you live, and I will tell you who

you are". To me, this summarises the reason for my preliminary efforts at discussing the conceptual framework of environmental archaeology and, I suspect, the respondents' willingness to react to my efforts.

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[\*Editors' note: the 'manuscript received' dates on these six contributions indicate a very long period between first receipt of Dr Boyd's original paper and publication; much of the delay has been a result of dilatoriness by the Editors. We apologise to all the authors and to the readership of *Circaea* for the unduly long gestation of this set of papers. Please note that, in particular, the 10th Anniversary Meeting of the AEA took place during this period but we have preserved the authors' original text rather than amending the tense accordingly.]