

## **Environmental History vs. Palaeoenvironmental Science : Two disciplines. Two cultures. The same questions?**

*An essay by Richard Payne, Lecturer in Environmental Geography at the University of York*

Having recently joined the Russian Environmental History Network I was invited to write some introductory text about my research. In contrast to the majority of members of this network I'm a scientist and my work particularly focuses on reconstructing past environmental change. In the last couple of years I have started to work in Russia. Rather than bore you with too much detail about peat bogs, testate amoebae and age-depth models I thought this post might be an opportunity to jot down some thoughts about the relationship between *palaeoenvironmental science* and *environmental history*. This is entirely a personal perspective informed solely by an occasional peek at environmental history literature and the odd chat with historian colleagues over a beer. I'm not claiming any particular insight and am probably betraying my own ignorance... but maybe there is an interesting conversation to be had here.

So firstly it is perhaps worth saying what exactly I mean by *palaeoenvironmental science*. I use this as a catch-all term covering a variety of sub-disciplines which all have in common the attempt to use *natural archives* to understand what the environment was like in the past. Within this the methods we use and the questions we try to answer vary greatly. One of the main aims of my own research is to understand what climate was like in the past using material preserved in peat bogs. Peat bogs are useful because rates of decomposition are slow and accumulation of peat gradual. To produce a record of climate change I will take a core from a bog, use radiocarbon dates to work out how quickly the bog accumulated peat, extract and analyse the preserved remains of organisms which grew on the bog in the past and apply a statistical model to tell me what that means in terms of climate. Other researchers might for instance use tree rings to understand the environmental impacts of a volcanic eruption or analyse coral to understand changes in ocean acidity over thousands of years.

The ways in which past human societies have modified and utilised the environment are often important questions for us. We might, for instance, use charcoal particles in East African wetlands to understand how Palaeolithic people burned savannahs, use microscopic algae to reconstruct how Victorian tourism led to nutrient pollution in lakes or use tree rings to investigate radioactive leakage from Chernobyl. Less frequently our aim may be to investigate how humans were themselves affected by environmental change; we might for instance use pollen to look at how agricultural practises were affected by climatic cooling in the Little Ice Age. In a recent review of 'key questions in palaeoecology' (an important sub-discipline of palaeoenvironmental science) almost a quarter of the identified questions had clear links to human activity. Even when humans are not central to our questions we often need to consider their role. If our aim is to use plant macrofossils to reconstruct 5000 years of climate change in Russia we need to consider the possibility that ancient humans, not climate were the reason for any change we identify.

The terms *palaeoenvironmental science* and *environmental history* are essentially synonyms; both really mean just 'the history of the environment'. However the two terms are handy titles for two quite different disciplines, one in the sciences one in the humanities. These two disciplines have

different research practises and different research cultures but the interactions of people and their environment through time is a key question in both. Both palaeoenvironmental science and environmental history recognise the need to know what happened in the past in order to understand the present and plan for the future. It seems to me that the questions we are interested in are frequently the same, or at least frequently overlap.

However the relationship between the two academic disciplines is not close. While environmental history sometimes claims to be an interdisciplinary subject a glance at the content of environmental history journals or the membership of professional societies suggest that engagement with science is pretty limited and this is particularly true of palaeoenvironmental science (arguably the branch of science with most to offer). It seems very rare to find an academic who self-identifies as an 'environmental historian' outside of a history department. Of course there is a grey area between the two disciplines. Palaeoenvironmental scientists sometimes call what we do 'environmental history' and we sometimes even use documentary sources but I suspect that our aims in doing so, and our approach to those documents, contrast with that of a historian (with a strong emphasis on quantification).

The key difference, of course, is in how we consider people. As palaeoenvironmental scientists what people *thought* about their environment or *why* they attempted to change it are not our primary interest. Our records can only tell us about the products of human actions, not their motivations. Similarly, our records can tell us something about how natural environmental change effected people in the past but not what those people thought about it, and our ability to understand the mechanisms by which changing environments influenced human societies is often limited (and can tend towards the deterministic). In environmental history people always have a central role either as an agent of environmental change, a responder to change or simply recorders of change. This is not the case in palaeoenvironmental science. While the role of humans in environmental change is often important, this is far from always the case and for some time-scales and some questions can be safely ignored.

There is also an important difference in the temporal scale. Palaeoenvironmental methods allow us to reach much further back in time than the oldest historical records; to the evolution of humanity and beyond (although most records are much more recent). This not only makes historical records irrelevant to some of our questions but also perhaps gives us a different perspective on time itself. The temporal scope of a palaeoenvironmental study is rarely less than a century and typically many millennia. That of environmental history is typically a few decades and rarely more than a century or two.

Most fundamentally our two disciplines lie on either side of the 'two cultures' dividing line; one in the sciences and one in the humanities. The inherently qualitative nature of historical research is problematic for scientists; I like to have a P-value for my conclusions! The roots of environmental history within environmentalism is also a complication. The notion of scholarship with 'an agenda' sits uncomfortably with our scientific aim to be impartial observers (however unachievable that aim may be).

There is an interesting contrast between the relationship of palaeoenvironmental science with the discipline of environmental history and that we have with archaeology. In general I think it is fair to say that we are much more comfortable talking to archaeologists, and much more familiar with

doing so. Archaeologists use many of the same methods and share many of the same practical concerns (such as the perennial problem of establishing reliable chronology). We work on similar time-scales and the relevancy of our results for each other is perhaps clearer.

In my opinion the relationship between environmental history and palaeoenvironmental science is unlikely to ever be close but there are certainly occasions when we are interested in similar questions and our results have relevancy to each other. Of the five key foci of the 'Russia's Environmental History' research project, at least three would be amenable to methods from palaeoenvironmental science (exploitation of natural resources, environmental disasters and nature conservation).

*Richard Payne, April 2015*