



A unique project is making great strides in developing key understandings of the way environmental disasters have shaped and continue to shape human evolution and history

Using Past Environmental Events as Analytical Mirrors into Prehistory

The Laboratory for Past Disaster Science - LaPaDis - is a newly established research cluster which focuses on how humans have coped with natural disasters such as volcanic eruptions, tsunamis and earthquakes in the past. Moreover, it aims to provide an historical prospectus in the form of an open-access database that will aid studies focused more towards future events, something which is historically known to be 'extremely limited', says project director Felix Riede.

Associate Professor Riede of Aarhus University explains that this unique and highly interdisciplinary research project is dedicated to acting as a bridge between many subject groups such as the historical sciences, the social sciences and natural sciences, providing groundbreaking data from the depths of human history and prehistory. Recent studies add more and more weight to the argument that environmental change has had - and continues to have - important effects on humanity and evolution; Riede believes we simply cannot afford to ignore these ideas anymore.

"The last 20 years in particular have brought a wealth of climate and environmental data showing how turbulent the past was and this is now having an impact on how we see humans in relation to their environment in the past," he said.

He is also quick to point out though

that "this is not a new form of environmental determinism, but stems from the realisation that we simply cannot afford to ignore the role that environmental changes and events have had on the course of our prehistory and history."

The project's main aim is to investigate the vulnerability of small-scale societies (small-scale farmers, horticulturalists and hunter-gatherers) during rapid environmental changes, in particular volcanic eruptions. Although it touches on current times and even provides platforms between historical and future events, it is predominantly an historical project, which is strongly archeologically oriented.

"Although it is very important to look at current societies, we cannot of course predict the future. So, if you want to see how a society has been affected you have to look into the case studies of past events," said Riede.

Currently, the research group is focusing on the Laacher See volcanic eruption from 10,966 BCE to see how it impacted on the culture-history of contemporaneous hunter-gatherer populations in Northern Europe during this so-called Late Glacial period that marks the end of the last ice age. By investigating local changes in the archaeological record in relation to the eruption, and by matching local patterns to global trends seen in responses of other societies during similar events, the

research project will provide a better understanding of these events as a whole. At the same time, the project will provide a much more solid base for interpreting the ways in which other more recent as well as more ancient eruptions have affected human societies.

The project seeks to document and analyse the multitude of ways in which humans have handled the types of events in question. This would help to better understand what made the affected societies vulnerable in the first place. The hope is to then relate these insights to current situations, where societies are affected but where, currently, we cannot predict future consequences of such events.

"We're aiming to glue this historical prospectus together with aspirations that the framework will inform ways in which plans, especially longer-term plans, are made to deal with such events in the present and future." Riede says.

Riede believes strongly that the information needed to produce frameworks in this area is very complex and requires historical depth. Referring to the recent Icelandic eruption, he points out that even in today's highly advanced society, we are still vulnerable to these events. It is all relative to how we travel and work. "This 2010 Eyjafjallajökull eruption starkly highlighted several dimensions of fragility in the present, so we're developing conceptual tools, thanks to

this information and data, which can be applied to a whole range of other case studies.”

Inherently interdisciplinary, LaPaDiS is primarily concerned with the cultural and social dimensions and effects of such environmental events.

“Religion, for example, has evolved and changed in light of such events; people start to think differently and act differently when you flip the order of what they have come to know and believe,” says Riede.

“Over the past few years it has become apparent that volcanic eruptions have affected societies during key parts of our evolution, for example during the re-colonisation of Europe after the last ice age, around the extinction of the Neanderthals, and perhaps even at the time our species evolved in Africa.”

Riede says that there are visible results so far that take shape in the form of published papers, some more technical than others, which document key issues of the project’s current focus case study. They have been collecting data that shows clear chronological relationships between the events and the cultural historical changes seen, as predicted by Riede and his team.

In 2011, Riede himself published a paper outlining the key structure of the project, highlighting why it is important to consider past events when discussing current catastrophes. In 2012, Riede and project partner Kevan Edinborough from the Institute of Archaeology at University College London in the UK published a paper titled Bayesian radiocarbon models for the cultural transition during Allerød in Southern Scandinavia, in which they refined the chronology for the project’s main case study, the Laacher See eruption which took place in or around 10,966 BCE, documenting how the impact on hunter-gatherer societies at the time.

Riede hopes that the project’s future will lead to a monograph to be published with Aarhus University Press on the major case study (Laacher See eruption) as well as a conference anthology from an international conference to be held in early 2013 under the auspices of LaPaDiS. The latter publication will become a major sourcebook for this field.

The past vulnerability conference taking place early 2013, as well as other elements of the project, owes its thanks

to the funding from the Danish Research Council through the Independent Research’s Culture and Communication section as well as additional funding through the Sapere Aude Research Excellence initiative. The combined total so far secured equates to 2.1m DKK.

As well as the money for the conference, new laboratory facilities, and a wide range of analyses, the funding also covers the costs of research assistants and critical sabbatical time for Riede himself. Other parts of the funding are used for a series of Work Packages.

The output of Work Package 1 consists of a global open-access database of forager responses to volcanic events seeking to provide a comparative database of societies’ responses to volcanic events that will go online in 2013.

The second Work Package is laid out in two parts; 2A is the mapping of archaeological localities. This is associated with mapping the occurrence of archaeological phenomena on the North European Plain prior to and after the Laacher See eruption in order to quantify the spatial dimensions of risk and vulnerability at the time. The results of this Work Package, albeit preliminary at this stage, are available for everybody to browse and use at www.lateglacial.org.

Work Package 2B is concerned with radiocarbon dating and modelling. This particular work package is designed to improve the chronology for the Scandinavian Stone Age societies affected by the Laacher See eruption through radiocarbon dating.

The third and final Work Package is designed to deliver a theory-driven synthesis of the generated data. ★

Prof. Felix Riede



Born in Kassel (GER) November 16th, 1978. 199-2002 Durham (B.A. 1st class in Arch & Anth). 2002-2007 M.Phil. and Ph.D. at Cambridge. 2006-7 Junior Research Fellow/Research Associate at Wolfson College and the Leverhulme Centre for Human Evolutionary Studies. 2007-9 British Academy Post-doctoral Fellow at the Centre for the Evolution of Cultural Diversity at UCL. 2009-2012 Assistant Professor, Dept. of Culture & Society, Aarhus University, since April 1st, 2012

At a glance

Project Information

Project Title:

LaPaDiS: Laboratory for Past Disaster Science

Subtitle: Volcanic eruptions and prehistoric culture change. Cross-cultural context for the Laacher See eruption and its impact on Late Glacial foragers in southern Scandinavia

Project Objective:

LaPaDiS’ mission is to investigate the ways in which individuals and groups in the past responded to and coped with rapid environmental change and events on both a local and global comparative scale. We draw on natural scientific and other methods to address questions of archaeological, anthropological, and sociological concern.

Project Duration and Timing:

2 years, July 2011 to July 2013

Project Funding:

The project is funded by the Danish Council for Independent Research’s Culture and Communication section and the Sapere Aude Research Excellence early-career programme. Total funding: 2.1 million DKK.

Project Partners:

- Reader in Volcanology Clive Oppenheimer, Department of Geography, University of Cambridge (UK)
- Professor John Grattan, Institute of Geography & Earth Sciences, Aberystwyth University (UK)
- Associate Professor Jens Seeberg, Department of Culture and Society (Anthropology), Aarhus University (DK)
- Associate Professor Christian Tegner, Department of Geoscience, Aarhus University (DK)
- Professor Bent Vad Odgaard, Department of Geoscience, Aarhus University (DK)
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