

Workshop Examines Climate Change and Human Response in the History of Western Eurasia from AD 1 to 1600

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On November 28, the Harvard Initiative for the Science of the Human Past and the Harvard University Center for the Environment (HUCE) co-sponsored a day-long workshop on “Climate Change and Human Response in the History of Western Eurasia, AD 1-1600.” Convened and chaired by Michael McCormick, Goelet professor of medieval history, the workshop brought together scholars from all sides of the traditional divisions between the humanities, social and natural sciences. The goal was to review recent progress and explore the potential to further combine historical and archaeological records with high-resolution palaeo climate proxy data to better understand the development of climate across this broad period and region—and ultimately, climate’s influence on human society.

The workshop was preceded a day earlier by a lecture entitled “Climate and Cultural Change in Western Eurasia: Progress and Challenges from Millennia-Length Tree-Ring Records,” delivered by Edward R. Cook, Ewing research professor at the Tree-Ring Laboratory, Lamont-Doherty Earth Observatory of Columbia University. Cook, who co-founded the lab in 1975, has contributed his expertise in dendroclimatology to provide an environmental backdrop to major cultural changes in the Americas and Eurasia. For example, he identified the role of climate variability in the eventual decline of Angkor, the capital of the Khmer Empire in Cambodia, via the twin stressors of alternating multi-decadal drought and markedly intense monsoon years in the fourteenth and fifteenth centuries. He documented these stresses through a hydroclimatic reconstruction based on seven and half centuries of data from nearby Vietnamese tree-rings.

Cook’s lecture provided a striking preface to the workshop by introducing ongoing developments in the field of dendroclimatology, particularly the creation of millennia-length tree-ring chronologies and associated climate reconstructions for regions previously lacking proxy-based historic climate data. He reviewed recent

successes in synchronizing marked climate fluctuations with episodes of major cultural change that have been documented in the historical and archaeological record. At the same time he stressed that such efforts must be contextualized by recognizing uncertainties in climate reconstructions, and by acknowledging the complex relationship between humans and their environment. For example, proxy data also document instances of severe multi-decade-long droughts without any clear corresponding societal stress.

These considerations were carried into the workshop the following day. Among the participants in the workshop, there

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was a general understanding that attempts at uncovering simple, direct associations between climate change and social outcomes can be confounded by complex and potentially idiosyncratic societal responses.

The workshop considered at length the methodological challenges inherent in linking social and cultural responses to changes in climate, since climate can operate on a wide range of spatial and temporal scales. HUCE director Daniel P. Schrag remarked upon the unsuitability of globally or hemispherically-averaged climate reconstructions as input into such studies. He stressed the need for regional reconstructions of climate, in which

changes are often more dramatic and apparent, and which are likely to be more relevant to individual historic societies and their networks of trade and communication.

Natural scientists must work directly with their colleagues in the human and social sciences in order to understand the relationships between climate and historic social change, workshop participants agreed. The input of climate scientists was regarded as crucial to negotiating uncertainties in available climate reconstructions such as the onset, magnitude, seasonality and spatial extent of proposed large-scale climate phases including the Medieval Climate Anomaly (circa AD 900 to 1300) and Little Ice Age (circa AD 1350 to 1850).

In energetic exchanges, historians, archaeologists and other scholars of the human past were called upon to delineate the complex mechanisms by which climate change might promote significant social and cultural responses. Discussion ranged from the impact of extreme weather and abrupt climate change on food security, to the evolving disease environment experienced by societies under particular climate conditions. Climate scientists, for their part, were challenged to tailor their reconstructions to those variables most relevant to historic societies, such as the timing and length of the growing season. The workshop highlighted the fact that historians and other social science scholars must lead the way in identifying the means by which climate change might influence society in one period or region but not in another.

In conclusion, professor McCormick remarked on the striking extent to which historians and related scholars have begun to incorporate disciplinary terminology and results from the natural sciences in their work. He remarked, moreover, upon the extraordinarily rapid convergence of shared research concerns between the natural and human sciences at a time when a fuller understanding of our climate’s past and its influence on humanity has never been more relevant for the future. 