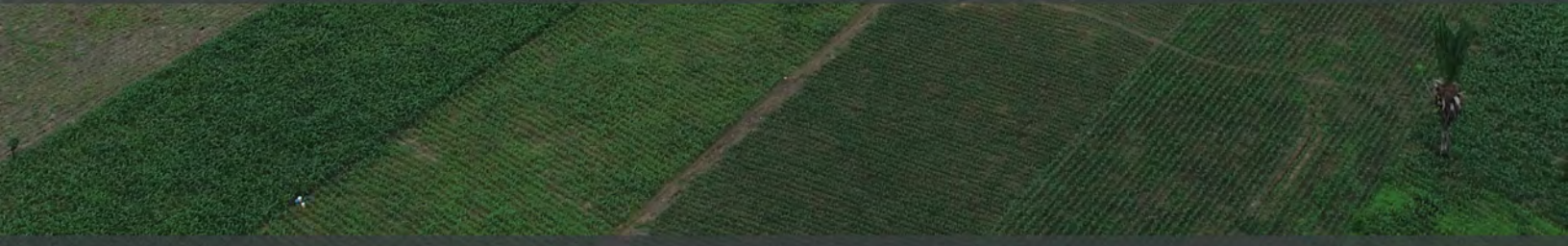
ISSUE FOURTEEN : SUMMER 2019

OPEN RIVERS :
RETHINKING WATER, PLACE & COMMUNITY

CLIMATE, CHANGE & PEOPLE



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The cover image is a view of the Chixoy River, Guatemala. Image courtesy of Brent K. S. Woodfill.

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INTRODUCTION

GUEST EDITORS' INTRODUCTION TO ISSUE FOURTEEN : CLIMATE, CHANGE & PEOPLE

By Lewis C. Messenger Jr. and Brent K. S. Woodfill

Thinking about Climate Change in the Past and Present

Archaeologists, by definition, are interested in using various techniques to learn about the human experience in diverse places, from ancient through contemporary times. Understanding the past environments that humans shared has meant that archaeologists must integrate fields such as geology, botany, paleoecology, and so on. Increasingly, recognition of the importance of incorporation of Indigenous voices has led to their inclusion in archaeological projects. A

View of the Chixoy River, the Tortugas salt dome, and the Nueve Cerros ridge in 2018. This part of Guatemala was covered in lush forest for over a millennium between the Classic collapse and the land initiatives of the 1980s. Image courtesy of Brent K. S. Woodfill.

common theme throughout all of this integration has been understanding human adaptation to diverse environmental and climatic changes over time, and for archaeologists, the long arc of human existence refers to at least around three million years.

Throughout much of the history of the discipline of archaeology, and the broader one of anthropology as well, it has been primarily centered on academia. The editors of this introduction are both archaeologists and have witnessed an increasing awareness within the academic community of the realities of the impact of global climate change. Messenger was instrumental in developing a session at a major national archaeological conference focusing on bringing perspectives on climate, human societies, and adaptability to changing environments into college classrooms. Woodfill was one of the discussants of that session, and a number of the contributors to this issue of *Open Rivers* were also presenters.

Global climate change has been a known fact for scientists for a very long time. Understanding the subtleties of it, the detailed mapping of it over time, and especially the causal dynamics of it, is something that only relatively recently we have come to appreciate more closely. The relationship between us, *Homo sapiens*, and those dynamics, has only quite recently become part of global conversations, ones that are often quite contentious.

Today, among the global community of scientists, we see that those conversations have taken a new turn from a recognition of global change to accelerated global warming, and the primary causal agent turns out to be us. In terms of the scientific community, it no longer is a contentious debate (even though there are yet some who would deny that). It is happening, and those gathered together have brought "to this table"—for this issue of *Open Rivers*—a number of diverse perspectives that can help us understand how we know what we know, and why we might want to care.

The Articles in this Issue

We handpicked the authors of this special issue and received an impressive array of perspectives and regions that coalesce among three primary topics. The first focuses on the ability of scientific research—archaeological and beyond—to reveal just how different the world has been at different times in history. The second concerns approaches to spreading our knowledge and models to the larger public, and the last is focused on understanding other approaches to environmental conditions and dealing with the effects of climate change globally and locally.

Advances in Scientific Knowledge

Several columns and features focus on the ways that advances in technology and science offer new insights into the ancient world and climate change, then and now.

Lewis Messenger's illustrated feature, "Uncovering Amazonia," forces the reader to rethink the Amazon, which for centuries has defined "untouched wilderness" in the Western mind. Instead, archaeologists have given credit to ancient Amazonians and early explorers alike, detailing a vast swath of the South American continent that humans transformed to accommodate a series of complex societies that survived and luckily were witnessed by explorers at the beginning of the early colonial period. Messenger aims to inform a broad audience about the ancient past of the region and to address some of the generalizations and misunderstandings about it as well, ranging from the original discovery by Europeans to issues of understanding of future sustainability for the region. While it is true that

there may be many people who still think that the Amazon, and hence its Indigenous peoples, could never have developed anything even close to what most would call "civilization," there is a considerable academic community that thinks otherwise. There are now many academic institutions in Amazonia, speaking Portuguese, Spanish, French, and a few who speak English, conducting research and publishing to that effect. The Amazonian drainage system goes beyond the boundaries of Brazil. Its geography is vast, internally varied, has intriguing histories, and hopefully this feature will whet your intellectual appetite a bit.

New visualization techniques have revolutionized contemporary understanding of the ancient world. At the same time, they have created an avalanche of new data that will take years for us to fully understand. Lidar (Light Detection and Ranging) uses lasers that can pierce dense forest canopies to scan the surface of the earth, and as such has been used to great success in the Maya world. The piece by Mary Jane Acuña and Carlos R. Chiriboga shows how the new visualization techniques that lidar makes possible can provide us with a glimpse into a radically different environment. Although today the southern lowlands are a muggy swampland, during the apogee of El Tintal, Guatemala, the area was full of lakes providing a rich bounty of water and other resources that disappeared around the 3rd century A.D.

We will return to Alexander E. Rivas and William G. B. Odum's piece below, but the authors weave together cutting edge archaeological research into water management strategies by the ancient Maya of Salinas de los Nueve Cerros, Guatemala with a nuanced investigation into those of the contemporary Q'eqchi' living and farming in the ruins of the city. Regardless of the time period, the residents of the Nueve Cerros area live on a complex and ever-changing hydrological system that includes countless fresh water and brine springs and swamps. The area is crosscut by a segment of the largest river in Mesoamerica that regularly rises and falls over 10m, as does the water table. The ancient inhabitants were dependent on a stable source of water for drinking, agriculture, cooking, and myriad economic activities, and they were able to buffer against this instability through the construction of a complex water catchment system, some of which is still in use today.

In the Geographies column, "Libraries Burning," Phyllis Mauch Messenger looks at the impact of climate change on archaeological and heritage sites in the Arctic region. Just as new analysis techniques are providing increasingly rich results and evidence from archaeological sites is becoming recognized as a "distributed observing network of the past," the sites themselves are being destroyed by melting permafrost, flooding, and increasingly violent storms. Archaeologists and other scientists, realizing the extent and urgency of the threat, liken it to the burning of multiple libraries of Alexandria.

Scholarly Outreach to the Public

Brent Woodfill and Patrick Nunnally both take on different sides of the same issue—how to bring knowledge out of the academy and inform discussions about human-caused climate change. As is evinced by the articles discussed above, archaeologists spend a lot of time discussing human modifications of and adaptations to the environment, and modern climate change is a massive elephant in the room. We suggest that archaeology offers a way to think critically about the past and present, without dividing them into two separate cognitive frameworks.

Woodfill follows up on this point by expressing his frustration with the term "Anthropocene" that has become popular in acknowledging the central

role of human action in driving global climate change. He does not deny human causality, but points out that humans have long had significant local and global environmental effects, beginning at least with the agricultural revolutions that blossomed in the Old and New Worlds. The term Anthropocene is, thus, erroneous, and perpetuates a sense in the West that we are both the pinnacle of human society and a stand-in for the species as a whole. As a result, he argues for the term "Capitalocene," which is both more honest and less nihilistic, since the problem is not the species but the proliferation of a specific economic system throughout the globe.

Nunnally's Teaching and Practice column considers the value of using social media in the classroom. Focusing on recent floods on the Mississippi River, Nunnally offers a strategy for creating a connection between critical thinking and public conversations through Twitter. Students tweet about the flooding as a way to ask provocative questions and demonstrate how experience, critical thinking about global climate change, and public engagement can be drawn together for innovative learning.

Indigenous Perspectives on the Environment

Water management and the disproportionate impact of climate change and industrialization on Indigenous communities is woven throughout the three articles that focus on Indigenous perspectives of the environment. Tianna M. Odegard documents multiple generations of her Dakota community's adaptations to survive in a landscape hovering on catastrophe. Both the members of Upper Sioux Community, Minnesota (discussed by Odegard) and the Q'eqchi' Maya of the Lachua Ecoregion, Guatemala (discussed by Rivas and Odum) are located in marginalized, highly polluted regions subject to extreme flooding, illnesses caused by *E. coli*, pesticides, and other toxins. This has spurred profound transformations in the way Indigenous people in these places live their lives and interact with their respective environments.

However, as both of these pieces make clear, these damaged landscapes were able to support thriving populations as recently as a few generations ago. While both North American Indians (through traditional spearfishing) and the Q'eqchi' (through slash-and-burn agriculture) have been vilified for their role in environmental change and species endangerment, the root of the problems lies not in techniques that have proved sustainable over centuries of successful practice but in local and global problems caused by the Industrial Revolution and its seeping into nearly every aspect of the human experience. Or, as Odegard's maternal grandfather put it, "it's a white man's world; we better get used to living in it."

Like Odum and Rivas, Rebecca Bria and Doris Walter combine archaeology and ethnography to great effect. In their piece, ancient and contemporary climate change in the Andes becomes a springboard to considering how these drastic transformations are understood by the societies who are living through them. Just like the endless debate over the causes of climate change that splashes nightly over television screens throughout the West, the Quechua-speaking residents of the Cordillera Blanca, Peru look to religion, cursory scientific knowledge, and visible signs of human activity to explain receding glaciers and unpredictable temperatures and rainfall. As the climate continues to change today, new crops are becoming popular, brought in many cases by some of the same transnational corporations that are adding to the problems they are facing. This focus—apparently unconscious—on short-term adaptation dovetails nicely with the ancient Recuay who inhabited the same region between A.D. 1 and 800, who survived through 800 years

of living in a region that fluctuated between allowing agriculture and camelid grazing due to regional and global climatic shifts.

Climate change is predicted to alter nearly every aspect of how we live on earth. If these massive structural changes are to be managed to reduce harm for as many people as possible, and to point the ways toward a more sustainable way of living on a finite planet, we will need perspectives like those represented here: good, detailed science (by which we include specialized scholarly and professional knowledge more broadly), and clear connections between that specialized knowledge and the concerns of a broader public. Above all, we must include more, and more diverse voices; we must learn with and from people we have not (yet) been listening to closely.

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About the Authors

Lewis C. "Skip" Messenger Jr. is a Professor Emeritus from Hamline University in Saint Paul, Minnesota. His passion is teaching and introducing students to other cultures through his numerous study abroad courses in Latin America and Southeast Asia. His practice was anthropological archaeology with regional interests in Mesoamerica, primarily the ancient Maya, but also in the origins and developments of complex societies in moist ecosystems in other parts of the world. These interests were influential in his early recognition of the role climate changes may have played as sources of stress on the development of ancient civilizations. This expanded his regional focus to include Southeast Asia, the Andes and Amazonia, and elsewhere. He began research on climate change and human affairs in the late 1970s and published in the journal *Ancient Mesoamerica* (Ancient Winds of Change—Climatic setting and prehistoric complexity in ancient Mesoamerica [1990]; Los Mayas y El Niño—Paleoclimatic correlations, environmental dynamics and cultural implications for the ancient Maya [2002]). Later he began introducing his students to these concepts and included them in his research. He is proud of his record of having integrated climate change with anthropological archaeology for more than three decades with his Hamline students.

Brent K. S. Woodfill is an Assistant Professor at Winthrop University, a Research Associate at the Smithsonian Institution, and an Affiliated Scholar at the Institute for Advanced Study at the University of Minnesota. He is currently directing research focusing on Maya salt production, sacred places, and interregional exchange in central Guatemala and southeastern Mexico.