Coalition for Archaeological Synthesis

## CALENDAR OF EVENTS 2018

**Advancing Archaeological Synthesis: Using the Past to Benefit the Future. CfAS sponsored session at the European Association of Archaeologists annual meeting, Barcelona, Spain, September 5–8**

**Convergence Research and the Coalition for Archaeological Synthesis (Jeff Altschul and Keith Kintigh) at the PanAfrican Archaeological Association for Prehistory and Related Studies, Rabat, Morocco, September 10–14**

**Convergence Research, Climate Change, and the Coalition for Archaeological Synthesis at the ICOMOS International Scientific Committee for Archaeological Heritage Management, Montalbano Elicona, Sicily, October 25–28**

*Co-Presidents Jeff Altschul (left) and Keith Kintigh (right)*


# *The Synthetic Report*

A Quarterly Newsletter of the Coalition for Archaeological Synthesis

Volume 1 / Issue 2 Summer 2018


## MEET THE NEW BOARD

On July 19, 2018, the Coalition for Archaeological Synthesis (CfAS) held its inaugural board meeting. Board members were nominated by CfAS partners. Each members of the initial board will serve an 18-month term. The board elected Jeff Altschul and Keith Kintigh to serve as co-Presidents. Jerry Sabloff, who has served as the interim Secretary/Treasurer, will step down at the next board meeting, replaced by two standing board members elected by the full board for Secretary and Treasurer, respectively.

The CfAS board is composed of:

### Officers

Jeff Altschul, co-President, SRI Foundation

Keith Kintigh, co-President, Arizona State University Center for Archaeology and Society

Ran Boytner, Institute for Field Research, Treasurer

Sarah Miller, Society for Historical Archaeology, Secretary

Terry Klein, Interim Director, National Center for Archaeological Synthesis

### Board Members

Levent Atici, International Council for Archaeozoology

Michael Brown, School for Advanced Research

Leigh Anne Ellison, Arizona State University Center for Digital Antiquity

Gary Feinman, The Field Museum

Jay Gray, Cultural Resource Analysts, Inc.

Michael Heilen, Statistical Research, Inc.

Eric Kansa, Open Context

Paul Lane, Integrated History and Future of People on Earth

Jackie Mullen, Alpine Archaeological Consultants, Inc.

Christine Szuter, Amerind Foundation

*Photo courtesy of the Santa Fe Institute*

## A FEW LAST WORDS

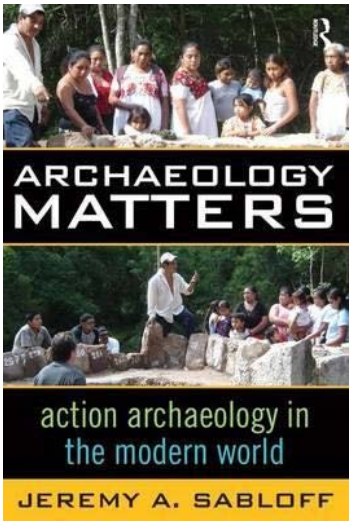
On August 28, 2018, Jerry Sabloff will end his term as CfAS Secretary/Treasurer. Jerry has been a vocal supporter of CfAS from the beginning, being an active participant in the School for Advanced Research workshop in February 2017 that led to the creation of the organization. Of course, Jerry has supported and conducted archaeological synthesis for more than 50 years. A student of American Archaeology's grand synthesizer, Gordon Willey, Jerry has held a variety of academic and professional posts and garnered numerous awards and honors. It has been a privilege to work with Jerry and we know that he will remain a committed and active CfAS Associate.

### Why I support Archaeological Synthesis – Jerry Sabloff

If archaeologists are to reach the goals of better understanding the past and using such understandings to provide new perspectives on modern-day concerns, then syntheses of diverse data sets and interpretations at a wide variety of scales are certain to play a key role in such endeavors.

Archaeological understandings are already contributing new insights into contemporary problems, but they could have much greater impact if the vast data now available about the deeper and more recent past were harnessed in ways that would broaden their utility. Syntheses are just one key tool in the disciplinary arsenal that archaeologists might employ in this regard.

> *"The goal of better understanding the past and using such understandings to provide new perspectives on modern-day concerns requires syntheses of diverse data sets and interpretations at a wide variety of scales."*
> *— Jerry Sabloff*




With the ever-growing quantity of archaeological and ecological data now available to archaeologists, it is critical that it be brought together in forms that allow for the potential recognition of strong patterns of cultural development through time and space. In such work all possible sources from academic projects to cultural resource management to modern community efforts need to be synthesized on local, regional, and larger cross-cultural scales.

The growing recognition of this key goal is the reason that I am so encouraged by the founding of the Coalition for Archaeological Synthesis and am very hopeful that it will lead to the creation of a National Center for Archaeological Synthesis.

## UPDATES FROM THE FIELD

The first two CfAS-sponsored collaborative synthetic research projects are up and running. The Principal Investigators of each project provided the following status report.

### People, Fire, and Pines in the Border Lakes Region of North America

Organizer: Evan Larson, University of Wisconsin-Platteville

> Our group has held multiple in-person meetings and phone conferences among small groups of the project collaborators to plan the specific logistics and goals for the first workshop. Through these conversations we have discussed overall project timeline and product development goals to ensure an integrated outcome that celebrates the contributions and enriches all of the stakeholder groups involved. Manuscript development on related scientific manuscripts is ongoing, the earliest stages of revising the Quetico Provincial Park fire plan have been initiated, and management and stand treatment options are being explored at the University of Minnesota Cloquet Forestry Center.

### The ArchaeoEcology Project: How Human Interactions with Biodiversity Shape Socio-Ecological Dynamics and Sustainability

Organizer: Stefani Crabtree, Pennsylvania State University

> The ArchaeoEcology Project has been busy ensuring our data is all in working order and easy to compare. The leaders of the project—Stefani Crabtree and Jennifer Dunne—have been working on several publications that explore the ways that archaeologists and ecologists can work together for more holistic science. Before our meeting in October we will have all of our data collected, cleaned, and ready for synthesis!

## ADVANCING ARCHAEOLOGICAL SYNTHESIS: USING THE PAST TO BENEFIT THE FUTURE: A CFAS SPONSORED SESSION AT THE EUROPEAN ASSOCIATION OF ARCHAEOLOGISTS

CfAS is sponsoring a session at the European Association of Archaeologists (EAA), entitled "Advancing archaeological synthesis: Using the past to benefit the future." The conference is being held in Barcelona, Spain, with the session occurring on Thursday, September 6, from 2:00 to 6:30 PM. For those who are unable to attend, we have provided the titles and abstracts of the papers that will be presented.

***Synthesis and the Contemporary Relevance of Archaeology***—Scott Ortman (University of Colorado, Boulder and the Santa Fe Institute) and John Hanson (University of Colorado, Boulder)

> One of the goals of archaeological synthesis is to increase the practical relevance of archaeological data and findings. To accomplish this goal, archaeologists will need to convince other social scientists to jettison several widely-held beliefs: 1) that archaeological data are hopelessly partial and haphazard; 2) that modern societies are fundamentally different from those of the past; and 3) that human behavior is too contingent on context to be predictable. In this paper we present evidence that at the scale of settlement systems (and above) a different set of beliefs is justified: the archaeological record is a surprisingly good data source; differences between past and present are more a matter of degree than kind; and emergent patterns in human behavior are actually quite predictable. We illustrate these points using a database of information for cities of the Roman Empire, through which we show that it is easier to measure the areal extent of ancient cities than contemporary cities; that past and present urban systems exhibit the same allometric scaling patterns; and that one can predict statistical patterns in aggregate behavior using mathematical models that frame human settlements as social networks embedded in physical space. This example suggests that, with appropriate theoretical development, archaeological synthesis could contribute to new ways of viewing and analyzing social dynamics throughout the social sciences.

***Open Collaborative Models for Advancing Archaeological Synthesis: Linking Research, Resource Management, and Public Education***—David Anderson (University of Tennessee), Eric Kansa (Open Context/The Archaeological Archive Institute), Sarah Kansa (Open Context/The Archaeological Archive Institute), Joshua Wells (Indiana University, South Bend), Stephen Yerka (Eastern Band of Cherokee Indians, Tribal Historic Preservation Office)

> Archaeology in the 21st century must of necessity develop open, multi-institutional and multidisciplinary collaborative efforts at national and international scales. Critical to research, resource management, and public education will be capacity building, the development of publically accessible informatics tools and flexible practitioners, capable of creating, linking, and working with distributed networks of heritage and environmental

data at broad scales. The DINAA (Digital Index of North American Archaeology) project is one example of the kind of tools that will be needed, a publicly accessible index of existing archaeological site file, collection, research, and report data distributed across multiple regional, state, and local repositories, linked with modern and paleoenvironmental data sets. Such tools will be needed, not only to help us better to understand and interpret the past, but to making well informed forecasts and policy decisions about how to respond to threats posed by rapid climate change, extreme weather events, displaced populations, and changes in infrastructure, factors that will shape our civilization profoundly in the years to come. Cultural resources are a critical factor to consider when planning for such changes. They are essential to our sense of self and well-being, and a continuing source of inspiration. Construction of large linked data sets of what will be impacted and what will be lost is essential to developing procedures for sampling, triage, and mitigation efforts. They will also allow researchers, land managers, and interested members of the public to examine human responses and solutions to the dramatic fluctuations in temperature, biota, and sea level that have occurred in the past, and help guide the implementation of possible human responses as we move forward in a changing world.

***Archaeological Synthesis for Long-term Interdisciplinary Research on Social Change***—Barbara Mills (University of Arizona), Sudha Ram (University of Arizona), Jeffery Clark (Archaeology Southwest), Scott Ortman (University of Colorado, Boulder), and Matthew Peeples (Arizona State University)

Archaeological synthesis is not new to archaeology but how it is being done, and the kinds of questions being asked and answered, have been significantly transformed over the past decade. Central to this transformation is ensuring that the results are of broad interest to archaeologists in different parts of the world, researchers in other disciplines, as well as to the general public. Granting agencies are similarly interested in results that can be translated across disciplines. A unique feature of archaeological data of interest to many other disciplines is the ability to investigate social changes at different temporal scales—decadal, centennial, and millennial. We describe efforts in the Southwest U.S. to synthesize archaeological data for interdisciplinary research on a number of topics addressing human demography, social inequality, migration, and the spread of social movements. Several of these projects are currently being combined to form cyberSW, including data integration from projects over a large region, new data collection, and the creation of an online cyberinfrastructure for knowledge discovery and dissemination. This paper discusses the evolution of the project and some of the challenges faced in the synthesis process. These include the creation of flexible yet explicit entity relationship models and working across disciplinary boundaries to address research questions relevant to contemporary society.

***The Challenges and Prospects of Developing Radiocarbon 'Big Data' for the Study of Prehistoric Demography***—Robert Kelly (University of Wyoming) and Erick Robinson (University of Wyoming)

> The use of large radiocarbon datasets has the potential to transform archaeology and its place in the social and natural sciences in the coming decades. Radiocarbon 'big data' enhances the unique contribution of archaeology to reconstruct human demography over vast spans of time. This move towards big data is confronted by some central challenges in archaeological method and theory, such as the use of legacy data of disparate quality and working over broad spatial and temporal scales. For some, these challenges pose insurmountable barriers to the use of radiocarbon big data. We disagree: radiocarbon big data can be used with appropriate kinds of questions, ones that concern processes working at broad temporal and spatial scales. This presentation discusses our ongoing work to develop a radiocarbon database for the US, focusing on the problems of data collection and potential for using these data to ask questions regarding long-term human demographic change, human-environment interactions, and cultural dynamics.

***Archaeological Synthesis: The role of digital repositories and the FAIR principles***—Julian Richards (Archaeological Data Service, University of York)

> It is increasingly difficult for academic research to keep up with the deluge of data that has been generated by new archaeological investigations, particularly in those countries where these are often undertaken by commercial contractors. In many cases it can even be difficult to find out what has been discovered, or where the results can be found, and grey literature reports and data may not be available in a form that can be properly referenced. In short, new interpretations may rely on very weak foundations, and archaeological textbooks and synthetic research can be decades out of date. This paper will discuss the role of digital repositories, such as ADS in the UK, and tDAR in the United States, in providing online access to Open Access fieldwork reports and primary data. This role is crucial in ensuring that archaeological data and reports conform to the FAIR principles, i.e. are Findable, Accessible, Interoperable, and Reusable (https://www.force11.org/group/fairgroup/fairprinciples). I will discuss some recent projects, such as the Rural Settlement of Roman Britain (https://doi.org/10.5284/1030449) which have made extensive use of grey literature to generate new works of synthesis, and the role of ADS in providing research resources and presenting and preserving the new information. I will argue that such institutions are central to the future of the discipline as we deal with the tsunami of archaeological and related information that continues to grow daily.

***Computational Tools Supporting Synthetic Research: Data Integration using tDAR and Delivering Paleoenvironmental Reconstructions with SKOPE*** –Keith Kintigh (Arizona State University), Timothy Kohler (Washington State University), Bertram

Ludäscher (University of Illinois), Katherine Spielmann (Arizona State University), and Kyle Bocinsky (Crow Canyon Archaeological Center)

Addressing archaeology's most compelling substantive challenges requires synthetic research that exploits the expanding corpus of systematically collected archaeological data along with data from allied disciplines. While synthetic research is always data- and labor-intensive, computational tools can facilitate key components. We introduce two tools designed to support synthetic research: one for data integration and one for acquiring and analyzing paleoenvironmental data.

Synthetic research typically requires combining datasets recorded using different systematics, while at the same time preserving the semantics of the data. To that end, we have developed a general procedure that we call query-driven, on-the-fly data integration that is deployed within the tDAR (the Digital Archaeological Record; http://tdar.org) digital repository. The integration procedure employs ontologies mapped to the original data sets. Integration of the ontology-based dataset representations is done at the time the query is executed, based on the specific query content. In this way, the original data are preserved and data are aggregated only to the extent needed to obtain semantic comparability. Our presentation draws examples from an effort by a research community of Southwest US faunal analysts. Using 24 ontologies, we integrate faunal data from 33 sites including 300,000 individually recorded faunal specimens.

Knowledge of past environments is generally needed to place archaeological datasets in their environmental contexts and to evaluate cultural transformations in light of changing environments. Unfortunately, relevant paleoenvironmental data is often difficult to discover, acquire, visualize, and effectively analyze—especially for less technically-focused scientists. To that end we have developed SKOPE (Synthesizing Knowledge of Past Environments; http://openskope.org), a Web tool that provides easy access to paleoenvironmental data and that allows users to rerun paleoenvironmental models with different parameters. Although the current implementation is focused on North America, it provides a data discovery and exploration software framework that can readily incorporate models and data worldwide.

***Data Post-Recovery***—Sarah Herr (Desert Archaeology, Inc.)

Although the laws that enable archaeological investigations in the United States laud the value of research for scientific and educational purposes, in daily practice it is the policies that allow archaeological investigations for management purposes that are prioritized. The framework and funding of the ensuing cultural resource management work is thus, necessarily, focused on the completion of individual projects. The United States cultural resource management industry has evolved to efficiently meet these management needs

while variously interpreting the more idealized and less present goals that obligate archaeological work for a public good. In this paper, I consider cultural resource management's readiness for scientific synthesis by considering internal data collection and management practices and the technical and peer reviewed publication record of a sample of medium and large private-sector companies. I also ask what "synthesis" looks like from the vantage point of companies, and what goals for industry-collected data might be.

The goal of the Coalition for Archaeological Synthesis is to create collaborations that will, ideally, catalyze new understandings of the past using existing data that has largely been collected by cultural resource management firms. This paper is intended to assess the industry's role and readiness to participate in these partnerships.

***The Need and Potential for Archaeological Synthesis in US Heritage Resource Management***—Michael Heilen (Statistical Research, Inc.)

In the United States, the National Historic Preservation Act (NHPA) of 1966 has required government agencies to identify important resources under their jurisdiction, evaluate their significance and integrity, and resolve effects to those resources that will be impacted. In the 52 years since passage NHPA, over 56 million hectares of land have been surveyed and nearly one million heritage resources have been identified and recorded. These efforts have produced hundreds of thousands of project reports, vast collections of data, and a wealth of descriptive information about the past. The accumulated data and information have many scientific and management implications and can be used to generate important new knowledge about the past, but remain largely untapped. This paper argues that proactive and informed management and research decisions cannot be productively made in heritage resource management (HRM) without comprehensive synthesis of existing archaeological data. Synthesis is needed to identify which resources to preserve and/or study and how best to do so with limited time and funding. Following current approaches, many resources will be damaged or lost long before effective strategies for studying or preserving them can be developed. As such, the lack of synthesis in HRM comes with a large and irretrievable opportunity cost. Using recent archaeological modeling projects as examples, this paper explores the potential for compiling and synthesizing large HRM and environmental datasets within a GIS environment to model the nature and distribution of heritage resources. It is argued that dedicated synthesis of HRM data will allow for more effective and proactive research and management strategies to be developed and implemented and will allow HRM investigations to provide lasting benefit to diverse scientific and traditional communities and the public that they serve.

***Promise and Peril: Archaeological Collections and Synthesis-Building***—Teresita Majewski (Statistical Research, Inc.)

Preexisting and yet-to-be-created archaeological collections (artifacts and associated records as well as digital collections) are a key component of synthesis-building. Unfortunately, the reality is that future use of collections is not the driving force behind generating them in the first place. Recent research using collections to advance archaeological synthesis illustrates many of the inherent challenges, including accessibility, data-quality issues, and funding. Many of the perceived or real barriers to collections-based research relate directly to decisions made during the life cycle of an archaeological project regarding data management, field and laboratory methods, and curation, all of which can affect the long-term integrity of collections and impact their future uses. Realizing the full potential of using collections for advancing synthetic knowledge in archaeology requires a refocusing of our collections management and curation "ethos" and refinement and development of the skills and methods we traditionally use for material culture analysis and other components of the archaeological process. Using collections for the important work of synthesis-building is tied to our ethical responsibilities as archaeologists to share and disseminate the results of our work. A restructuring of our attitudes and approaches to the use of collections for research, and ultimately synthesis, must become part of the conversation about how we teach and practice archaeology.

***The Coalition for Archaeological Synthesis: Fostering Collaborative Research in Pursuit of Public Good***—Jeffrey H. Altschul (SRI Foundation)

Archaeology offers the means of evaluating claims about the past in ways that can support a variety of public goals. Archaeology can give voice to the voiceless as a means of rectifying politically motivated histories. It can provide a means of cultural expression that ties disenfranchised social groups to the land and its resources. It is the only social science that examines long-term behavioral trends at multiple temporal and spatial scales.

The longer the temporal scales and the larger the spatial area encompassed, the more data are required to address research goals. Thanks to laws and regulations requiring the identification and treatment of archaeological resources affected by development, we now have huge, ever-increasing, amounts of data. However, these same laws generally do not provide for more than project-specific interpretation. As a discipline, we find ourselves in the position of having more than enough data to address questions of public interest, but lacking the funding and institutional support to pursue them.

The Coalition for Archaeological Synthesis (CfAS) was established to meet this need. CfAS is a “bottom-up” approach composed of organizational Partners and individuals Affiliate members that promotes and funds innovative, collaborative synthetic research that rapidly advances our understanding of the past in ways that contribute to solutions

to contemporary problems, for the benefit of society in all its diversity. CfAS is open to all. In this presentation, I will provide background on CfAS, what types of collaborative research projects the organization has funded, and how you can become part of the Coalition.

***Archaeological Synthesis: A Joint Statement by the Society for American Archaeology (SAA) and the European Association of Archaeologists (EAA)***—Susan M. Chandler (President, SAA) and Felipe Criado-Boado (President, EAA)

The Society for American Archaeology (SAA) and the European Association of Archaeologists (EAA) are membership-based international associations dedicated to research, interpretation, and protection of archaeological heritage. Together they gather about 10,000 members from virtually almost every country in the world. Within their own spheres of Europe and of the Americas, both associations promote the development of collaborative and interdisciplinary research, the management and interpretation of archaeological heritage, and the exchange of archaeological information through their annual conferences, publications, and advocacy work. EAA and SAA are committed to sharing and using archaeological data to advance science and to benefit contemporary society. The current Presidents of SAA and EAA share a common goal of integrating data from development-led Archaeology, cultural resource management projects and research conducted by academic institutions.

> *"we believe that this new synthetic effort of archaeological data must move forward from a regional scale to a global scale, reconcile methodologically informed approaches with a strong interpretive agenda, and combine quantitative with qualitative research."*
> *— Susan Chandler and Felipe Criado-Boado*

From these activities, the amount of archaeological information has grown in huge proportions throughout the last 25 years. Making use of this documentation in critical knowledge about the past and the present must be of the maximum concern for archaeologists of any field of specialization and activity. Such synthesis could benefit present

developments in big data, data mining, lower costs of computing facilities, digital technologies, advances in AI, and new trends in scientific applications in Archaeology, among others. But we believe that this new synthetic effort of archaeological data must move forward from a regional scale to a global scale, reconcile methodologically informed approaches with a strong interpretive agenda, and combine quantitative with qualitative research. The best archaeology has been based in the coalescence of our humanistic and scientific traditions. Therefore, we believe is necessary to provide a forum for archaeologists from both Europe and the Americas to collaborate. The first joint SAA/EAA conference, held in Curacao in 2015, had the theme *Connecting Continents: Archaeological Perspectives on Slavery, Trade and Colonialism* – a theme of great current interest to archaeologists on both sides of the Atlantic. EAA and SAA are now exploring other topics of interest to archaeologists and the public that can be studied across multiple cultures and at multiple spatial and temporal scales. We believe that Population Movement is one such theme, as it is directly relevant to current world events and has also been a major element of human culture through time and across the globe. Other themes should also be considered, including the best theoretical and practical foundations to produce such big synthesis, keeping in mind the critical reflection about to whom and what these syntheses could serve intentionally and unintentionally. At a time when fake news and alt-reality fight to be hegemonic, we must be aware of the potential uses and missuses of such new synthesis.

# Coalition for Archaeological Synthesis

*Fostering Synthesis in Archaeology to Advance Science and Benefit Society*

## Officers and Contact Information


Jeffrey H. Altschul, Co-President, jhaltschul@canelogroup.net
Keith W. Kintigh, Co-President, kintigh@asu.edu
Ron Boytner, Treasurer
Sarah Miller, Secretary

Terry Klein, Director, NCAS, tklein@srifoundation.org

www.archsynth.org

333 Rio Rancho Drive, Suite 103, Rio Rancho, New Mexico 87124
505-892-5587