Storing and Sharing Central Asian GIS: The Alexandria Archive

Eric Kansa
San Francisco, California

While GIS and related technologies are revolutionizing archaeology and related disciplines, they present their own challenges. Vast amounts of data are generated in digitizing regional data-sets, and in contemporary techniques of data collection in "digital" archaeology. Projects that use GIS, such as those described in this section, are a case in point. A single archaeological excavation or survey can produce literally thousands of digital photos, maps, plans, drawings, analyses, databases and reports. Archaeologists produce all this information because such detailed recording and observation is fundamental to understanding the past. Excavation is also an inherently destructive enterprise. In some ways, to dig a site is to destroy it. Therefore it is absolutely vital that archaeologists record, preserve, and share the results of their work. Without thorough publication and wide dissemination of research, we run the risk of losing the past and our historical memory.

However, the sheer volume of information generated by digital archaeology makes thorough and complete publication almost impossible with traditional means (Fig. 1, preceding page; Fig. 2). More and more, archaeologists are looking toward the Internet to share the results of their research.

The Internet poses special opportunities and challenges for the dissemination of scholarship. Most researchers now depend on e-mail for casual correspondence and coordination of projects between colleagues. However, while e-mail has seen general acceptance in the scholarly community (despite the twin curses of junk mail and the daily deluge of messages that require instant replies), the Internet has yet to become an important avenue for the dissemination of research.

Given the obvious power of the Internet, why the resistance? One of its greatest advantages is that it is ubiquitous and relatively cheap in the contemporary world. In contrast, paper journals, books and other publications are all very costly, both to acquire and to store. However, the Internet is a dynamic, decentralized, and largely unregulated free-for-all of ever changing news, rumor, wild speculation, commercialism, and the bizarre. While this has certain advantages for some applications, it poses difficulties for scholarship. How do you find sources that you can trust, cite, and rely upon?

The vast majoity of current web-content lacks the rigor and longevity needed to support scholarship and instruction. Though many researchers make limited use of the Web for "public relations" efforts and limited instructional purposes, few rely on the Internet as a means of authoritative publication. In general, scholars are resistant to using the Internet as a vehicle for formal publication, because they are not yet rewarded for doing so. Researchers advance their professional careers primarily through successful publication in peer-review journals (the more prestigious and rigorous the better). There are now very few outlets for online, peer-review publication on the Internet, so there is little incentive for researchers to produce online content.

The Alexandria Archive Institute (http://www.alexandriaarchive.org) is meeting this challenge by working with professional societies to develop scholarly online dissemination channels. We are currently developing "AnthroCommons" for the American Anthropological Association (AAA). AnthroCommons will enable researchers to share and comment upon conference papers presented at the annual meetings

Fig. 2. A GIS plan and digital imagery of a massive bone deposit from Domuztepe, a Neolithic site in Turkey.

of the AAA. The same review process that selects abstracts and moderates sessions for the AAA meeting will work in AnthroCommons. We will provide multiple copyright license choices for AnthroCommons participants, including the option of using "open" Creative Commons licenses [see Brown 2003; Kelty 2004]. These licenses remove copyright restrictions and permit anyone to copy and share a work, so long as the author is properly attributed. Thus, Creative Commons licenses represent an essential aspect to digital dissemination; they help insure scholars are recognized for their contributions while freeing content for widespread distribution, use, and incorporation into new scholarly works.

In addition, online content still faces tough questions regarding permanence. Information on the Internet is highly volatile. Scholars require some guarantee that the sources they cite today will be available to be referenced and reevaluated tomorrow. Most now turn to a very limited application of the Internet for scholarship by using online offprints of printed journals. The Andrew Mellon Foundation's JSTOR project has been a leading force in using the Internet to deliver offprints of articles published in leading journals across several disciplines. Many popular archaeological journals, including the *Journal of Archaeological Science*, *Current Anthropology*, and the *Journal of Anthropological Archaeology* are disseminated online via JSTOR. Not only do users of JSTOR gain instant access to the scholarship contained in these peer-reviewed publications, they are also assured that the information they use and cite is backed by the permanence of print.

Despite the impressive success of JSTOR and similar services, they cannot, in themselves, meet the needs of contemporary archaeology. JSTOR uses the Internet essentially to deliver facsimiles of printed journals. These facsimiles suffer from the same constraints as paper. Since large data sets are too unwieldy to be published on paper, they are also too unwieldy to be useful as mere electronic facsimiles.

Other strategies are needed to complement JSTOR and printed journals. JSTOR and printed journals deliver mainly summaries and interpretations of larger data sets. Without preservation and dissemination of all the data, our knowledge of the past is limited to such summaries and idiosyncratic interpretations. Science (and scholarship in general) requires theories and interpretations to be constantly re-evaluated and reformulated in order to advance. By not publishing the full picture of our archaeological excavations and surveys, we limit the freedom future generations will have to reach their own understanding of history.

The Alexandria Archive Institute (AAI) was formed in 2001 to meet this pressing need to preserve and fully disseminate archaeological information. Among the AAI's first projects, is an online information resource for Central Asian Archaeology. The results of this project on Bactrian archaeology will be delivered to students and scholars everywhere by the Alexandria Archive Institute.

In order to meet this mission, the AAI is adopting a sophisticated information management system developed by Prof. David Schloen at the University of Chicago. His "Archaeological Markup Language" has several key advantages that will give archaeologists enhanced abilities to share and preserve their data. What is the "Archaeological Markup Language?" It is an implementation of XML (extensible markup language) developed for archaeology. While most Web pages are written in the more familiar HTML standard, XML is a vastly more powerful development now used in business to business communication and numerous scientific applications. XML enables us to bring the analytic power of databases to the open communication and connectivity of the Internet.

A key advantage of using an XML scheme like the "Archaeological Markup Language" is that we are not dependent on proprietary standards. This has tremendous data preservation advantages because proprietary data formats often change and can quickly lapse into a "cyber-death" of unreadability. Moreover, any scholar or institution can implement the Archaeological Markup Language. This opens the door for building tremendously powerful "distributed archives" that chronicle the entirety of world history! For archaeologists who try to develop meaningful understandings of huge amounts of complex data, these capabilities are very exciting. By implementing the XML "Archaeological Markup Language," we will go beyond a simple repository of information, and create new research tools and resources to share, explore, integrate and synthesize information about the past.

Because archaeologists have such great difficulty using (and even finding) primary data, they face enormous challenges in synthesizing an understanding of even one site, much less an entire region. Thus, our understanding of social and cultural change on the regional or interregional level is limited to impressionistic summaries of already second-hand summaries and interpretations. As research accumulates it is becoming ever more difficult adequately to command the primary literature. Given the glut of information and

the lack of good tools for regional comparison and synthesis, researchers are becoming ever more specialized and afraid of tackling the "big questions" of the past.

By using the Archaeological Markup Language, we will enable unprecedented capabilities fully to use and reexamine primary data. The Archaeological Markup Language has a powerful flexible data model that can provide a common structure to diverse sets of archaeological and philological data sets. This flexibility is essential to insuring that online data repositories do more than just preserve information. With this tool, scholars can fully integrate different archaeological data sets and develop analytically rigorous and comprehensive new syntheses. It enables scholars to put together small pieces of knowledge to reveal the full picture of the past. When these technology solutions are combined with innovative intellectual property frameworks, as developed by Creative Commons, the result is an information infrastructure that enables research to be created, shared, used and reused globally. This collaboration between the AAI and Central Asian specialists is just one step in enabling this vision to become a reality.

About the Author

Eric Kansa received his Ph.D. from Harvard University in 2001. He has participated in archaeological excavations in Egypt, Israel, Jordan, and currently is working at the Neolithic site of Domuz-tepe in Turkey. He is the founder and Executive Director of the Alexandria Archive Institute and is a Visiting Scholar at Stanford University.

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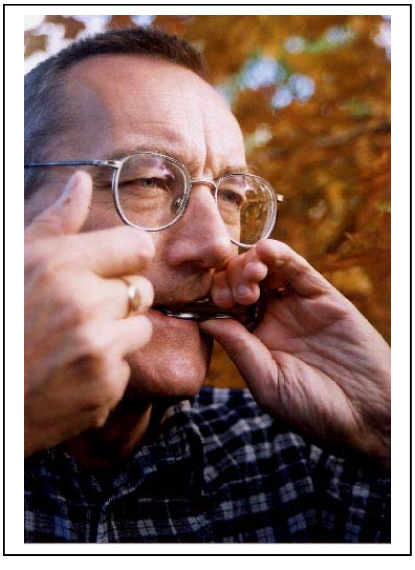
The Search for the Origins of the Jew's Harp

Michael Wright
Oxford, England



As a player of the musical instrument known as the Jew's or jaws harp, the two most frequent questions asked by my audience are, "How did it get its name?" and "Where does it come from?" One of the challenging and, at times, frustrating aspects of researching popular instruments is the lack of reference material we have to work with. Early writers simply did not think the instrument worthy of comment, or if they did it was often in derisory terms, not meriting serious study and, like many throw-away items, once the novelty had worn off or the instrument had been broken, it was discarded. Nevertheless, we have enough information to help us understand an instrument manufactured and played worldwide, constructed by craftsmen or mass produced in numerous forms and shapes reflecting the material available to the makers, and of ancient origin.

This article explains what a Jew's harp is and its global appeal; briefly explains what we know about the English language name; looks at the archaeological evidence; considers the relationship between instruments in Asia and Europe; and, finally, their likely transfer east to west.

What is a Jew's harp?

The first thing to recognise is that Jew's harps are subtle musical instruments with an extraordinary variety of shapes, sizes and methods of playing.