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## ALTERNATIVE METHODS OF DISSEMINATING ARCHAEOLOGICAL FINDINGS FROM CRM CONTEXTS: EXAMPLES FROM THE AMERICAN SOUTHWEST

### 1. INTRODUCTION

Since the passage of the National Historic Preservation Act in 1966, archaeological research in the United States has increased at an ever expanding pace. Most of this work is performed under the rubric of cultural resource management, or CRM. The premise underlying CRM is that cultural and historical values are important, and that these values need to be accommodated in development projects in which the federal government participates. For archaeological resources, accommodation usually takes one of two forms. The preferred approach is to redesign the project so that archaeological resources considered important or significant are avoided. Avoidance by itself, however, is insufficient, since the resource continues to be subjected to destructive forces, such as vandalism and erosion. Avoidance must be coupled with preservation techniques that stabilize the resource and educate the public about the resource's scientific and historic importance. If avoidance/preservation is not possible, the second form of accommodation comes to the fore. Significant archaeological resources are excavated and the materials recovered are analyzed and curated: a process termed "data recovery".

The dual approach to treating archaeological resources has a long history in the United States (LIPE 1974; LIPE, LINDSAY 1974; MCGIMSEY, DAVIS 1977; KING 1998), and what has changed in the last three decades is not so much the approach as the balance. Whereas before passage of the National Historic Preservation Act, the excavation of a handful of sites would have been considered adequate for the mitigation of effects to all sites in a river valley that was to be flooded, we now routinely excavate and analyze dozens of sites on such projects. Whereas in the past, costs of mitigation ranged in the tens of thousands of U.S. dollars, we now routinely command budgets exceeding \$1,000,000 U.S.

With the increased support has come greater scrutiny by funding agencies. CRM archaeology is subject to federal contracting laws that mandate completion of work in relatively short time frames. In the past it was not unusual for archaeologists to work their entire careers on one or two major projects. These scholars had the luxury of studying field and analytical results in depth, and if necessary, excavating additional parts of sites or nearby sites and re-analyzing materials. Today, many archaeological institutions

are simultaneously performing multiple multimillion dollar projects, each of which must be completed in a period of 4 or 5 years. There is no opportunity to go back to a site, and results of analyses must be integrated and synthesized in a hurried fashion. Not surprisingly, a premium is placed on information management. A disproportionate amount of the research effort involves assuring the quality of the data and presenting descriptive results.

Beyond the conduct of archaeology, CRM also faces challenges in the dissemination of information. The findings of large CRM projects are often presented in multiple technical volumes. These volumes are printed in limited quantities, with high unit costs. It is not unusual for the set of reports from a single archaeological project to cost in excess of several hundred U.S. dollars. The net result is that libraries, to say nothing of individual scholars, often cannot purchase them.

Finally, archaeologists are not the only ones interested in the results of CRM. Indigenous peoples of the United States, termed "Native Americans", have become increasingly vocal in their concerns about protection of cultural values. They, no less than archaeologists, are concerned about the fate of archaeological sites. Recent changes in the law have provided Native Americans more opportunity to voice their concerns and to incorporate their notions of accommodation into plans for treating endangered resources. Many times, Native Americans find scientific reports to be inadequate as the sole means of mitigating the destruction of cultural resources. CRM archaeologists, then, are faced with developing alternative formats for the presentation of archaeological results.

I explore some of these issues in this paper, and describe the ways in which new technologies have been incorporated. I begin with archaeological research, move on to the topic of scientific publication, and finally address the issue of dissemination of archaeological information to nonprofessionals. I examine these topics using case studies from contracts performed by Statistical Research, Inc. (SRI). I founded SRI in 1983, and over the last 18 years the company has completed more than 700 archaeological projects, primarily in the western United States. Most projects are small, although in the last decade, SRI has contracted to perform 8 multimillion, multiyear archaeological studies. Like most contract firms in the United States, SRI is a small business. We have about 80 employees, more than 20 of whom hold Ph.D degrees in anthropology or related field; another 20 hold M.A. degrees in similar disciplines. Although SRI is somewhat larger than many small CRM firms, I believe our experience can be considered representative of the manner in which most CRM archaeology is conducted in the United States: small institutions performing archaeological research in a for-profit setting.

## 2. ARCHAEOLOGICAL RESEARCH

Archaeologists are constantly required to make field decisions: Which features will be excavated? How many crew-days do we devote to midden excavation? How do we handle surprises? Often, academic archaeologists can defer these types of decisions until the next field season, but rarely is this an option for a contract archaeologist. Generally, the field director is delegated authority to make these decisions; regulatory archaeologists, Native Americans, and other project personnel, often including the principal investigator, are apprised of these decisions, but have no say in them. Changes in technology, particular the Internet, have provided the means of altering this dynamic.

Between June 2000 and June 2001, SRI excavated the Mescal Wash site in southern Arizona (ALTSCHUL *et al.* 2000). The Mescal Wash site was repeatedly occupied by small-scale farmers for between 2,000 and 3,000 years. The site contains an estimated 200 to 300 structures, mostly pithouses and above-ground adobe rooms, and thousands of extramural features, including cemeteries and isolated burials, ramadas, cooking areas, and public spaces. Much of the site was destroyed by an interstate highway and a railroad, both of which predate the National Historic Preservation Act, so no excavations were performed in conjunction with their construction. Because of their age, both the railroad bridge over the interstate and the highway interchange located within the site need to be upgraded. These actions will destroy much of what is left of the site. Because federal highway funds are involved, the Arizona Department of Transportation was obligated to sponsor data recovery through excavation, analysis, and curation.

Data recovery fieldwork was divided into two phases. Phase 1, which took place between June and November of 2000, consisted primarily of excavation using mechanical equipment to determine the number and types of features present. Phase 2 was completed between January and June of 2001, and involved intensive hand excavation of about 100 houses, 60 burials, and 400 extramural features.

Decisions about what to excavate were based on a research design centered on the notion of a “persistent place”; this concept was developed in the Anasazi region to describe places on the landscape that are repeatedly used, regardless of changes in culture (SCHLANGER 1992; ALTSCHUL *et al.* 2000). One of the field goals was to distinguish temporal components and to ensure that all types of features within each component were adequately sampled. Native Americans, who were consulted about the research, were particularly concerned that all burials be identified, excavated, and repatriated.

With only six months available for the Phase 2 excavation, it was clear that sampling decisions would have to be made quickly. Instead of relying solely on the field director to make these decisions, we wanted a mechanism

that would provide for rapid dissemination of field results and allow for group decisions. We looked to the Internet as a possible solution. Our goal was to create a web page that provided interested parties – project principals, analysts, regulators, and Native Americans – with information about field results and a forum for making field decisions. The web page opened to a computer-aided design (CAD) map of the site that could be explored by panning and zooming in and around the image. The map was created in AutoCAD, and viewers were allowed access to the image through a plug-in available from SRI or from the AutoCAD website. The map was updated twice a week with field data. Simultaneously, maps of excavated features were digitized in the lab and uploaded as they became available. Field photographs and drawings were tied to the feature images through tags. The web page also included a series of additional pages that discussed the features in depth; what was found, what time period was represented, and whether it was slated for excavation. Project participants discussed the results via an e-mail discussion, and weekly priorities were set for excavation.

The web page allowed groups who would otherwise have been excluded to participate in field work. The Hopi Indian Reservation, for example, lies about 650 km north of the site. The Hopi Tribe recognizes the Mes-cal Wash site as an ancestral Hopi site. Tribal members, particularly those on the Tribe's cultural preservation committee, voiced interest in the archaeology and concern over the number of burials being excavated. Unfortunately, tribal members were not able to visit the site during the excavations; they were, however, able to keep up with the progress of our work through the website. Regulators also were able to check the results during the excavation to ensure that all aspects of the research design were being completed as proposed. Initially, we had hoped that the web page could be made public, allowing all our colleagues and the interested public to follow our work. Unfortunately, concerns about site vandalism precluded this access. The web page provides a very precise location of the archaeological site and all its features. In the future, we plan to develop a page that allows the public to follow our work without endangering the site.

### 3. CD-ROM PUBLICATION

Publication has always been a serious issue in archaeology, and this is no less the case in CRM. Sponsors will spend vast amounts of money on excavation, analysis, and curation, but will generally only support the publication of enough reports to meet the needs of regulatory agencies. The results of large excavations may be presented in a multivolume set, of which less than 100 copies are produced. Unit costs, therefore, are high, so that even if scholars could find a set to purchase, the costs might be prohibitive.

CD-ROMs offer means of circumventing the high cost of reporting. Their large storage capacity allows multivolume sets to be stored on a single disk. Importantly, the digital environment also offers a number of other attractive features. Hyperlinks provide investigators with the ability to navigate reams of information efficiently; photographs can be presented in color; and databases can be accessed interactively.

SRI explored the world of CD publishing on the Lower Verde Archaeological Project (WHITTLESEY *et al.* 1997). Between 1991 and 1997, SRI excavated 23 sites and analyzed in excess of 100,000 artifacts and other materials from the lower reaches of the Verde River in central Arizona. The sites were being destroyed as a result of the Safety of Dams program being implemented by the U.S. Bureau of Reclamation. The excavations produced a wealth of data on subjects ranging from the prehistoric Hohokam, to the massacre of Yavapai and Apache Indians by the U.S. Army at Skeleton Cave, to the early historical-period farmers of Arizona. By contract, SRI was required to produce 125 copies of a 5-volume set documenting the project. In discussions with the sponsor, however, it became clear that all parties were frustrated by the lack of wider publication of the results. By mutual agreement, we amended the contract to require publication of 1,000 copies of a report consisting of a casebound book and a CD-ROM. Three volumes originally planned for print were placed on the CD. These volumes covered the environment, site descriptions, and material culture analyses. The overview and synthesis of the project were printed as a book. SRI also produced a 10-minute video on the project and placed it in the introductory section of the CD. Additionally, we placed various technical reports, scores of databases and appendixes, and photographs of all burial goods that would be repatriated to Native Americans on the CD. The low cost of producing images allowed us to include more than 300 color images on the CD, making *Vanishing River* one of the best documented publications of an archaeological project in the American Southwest.

So, did our colleagues like it? Shortly after the publication, the project sponsor sent out a questionnaire. Perhaps not surprisingly, the volume received mixed reviews. The fault lines appear to be generational and situational. Those 40 years and older hated it; they are used to books and are not willing to change. In contrast, many younger scholars did not understand why we were asking the question; of course a CD was fine, how else would you read a book except on a computer monitor? Academic archaeologists largely, but not wholly, preferred books, whereas government archaeologists receive many of their publications in digital form, and prefer them that way. Indeed the government was so intrigued by the hybrid publication that the Government Printing Office printed an extra 500 copies of *Vanishing River* and placed them in libraries free of charge throughout the western United States.

#### 4. PUBLIC PRODUCTS OF CRM RESULTS

Who pays for CRM archaeology? And, what do they get? These are questions that I ponder a lot. In the United States, historic preservation is a billion dollar industry. Supported by laws passed by the U.S. Congress, state legislatures, and municipalities, CRM archaeology has an obligation to present its results in formats that the public can understand and enjoy. Do we? The end product of most CRM projects is a technical report. Written for professionals, by professionals, these reports are the stock-in-trade of archaeology. Although lip service is paid to the need to educate the public, financial support is hard to come by.

At SRI, we have explored low-cost solutions to public outreach that utilize the power of modern technology. The Antelope Hill project is a case in point. The hill is a sandstone formation on the Gila River in southwestern Arizona. Native Americans have used the sandstone on the hill for milling implements for thousands of years, making Antelope Hill the most intensively used milling implement quarry in western North America (SCHNEIDER 1993). The sandstone outcrops also were favored as surfaces for rock art, and more than 1000 elements cover the hill. Antelope Hill figures prominently in the cosmology of many tribes, and in addition to its archaeological significance, the site is considered sacred.

Just as Native Americans favored the rock, so do modern users, and Antelope Hill is an active quarry site. Because rock from the site was to be used in a federally permitted flood control project, the owners were required to sponsor a program to mitigate the effects of modern quarrying on the scientific and cultural values of the hill. For ten years, beginning in 1991, SRI conducted ethnographic, historical, and archaeological research at Antelope Hill. Part of our research focused on Native American traditions concerning cultural affiliation (SCHNEIDER, ALTSCHUL 2000). Seventeen Native American tribes and communities claim a cultural link to the site. Some have clan stories that speak of migrations through the area. According to clan elders, migrants marked their trail with rock art. Thus, the tribes were particularly interested in the symbols found at Antelope Hill. To assist tribes in deciding which clans and tribal members needed to visit the hill, SRI created digital images of many of the rock art panels and sent a CD with these images to each tribe. This afforded each tribe the opportunity to view the images and decide whether they wanted to press their claim of cultural affiliation. It also allowed elderly tribal members, who could not make the difficult climb up the hill, to see the images and provide ethnographers and tribal officials with their interpretations.

Like many archaeologists, we now routinely document projects with video tape. By the end of our work at Antelope Hill, we had more than 10

hours of video. We decided to edit the video into three short movies on the topics of prehistoric rock art, prehistoric milling implement production, and modern quarrying. For each movie, we captured portions of the video tape in digital form, added static images as necessary, and overlaid a sound track and narration. The resulting movies were then exported as Quick-Time files that can be accessed through media players that are available on Windows-based computers or can be downloaded from the Internet. The three movies, along with the representative digital images of the rock art, were then placed on a CD that accompanied the technical report.

## 5. CONCLUSION

At SRI we have explored uses of the Internet, CD-ROMs, and multi-media technologies to meet our contractual and ethical obligations as CRM archaeologists. I recognize that some of the forms of disseminating information may strike our colleagues as “not quite right” or “not sufficient”; certainly, “that’s not the way we’ve done it.” I make no pretense that our solutions are the right ones. Further, I understand that each of these technologies is not without problems. Migration, storage life, and high hidden overhead costs of data management are but a few of the challenges that must be addressed. Even so, the changes in technology allow us to re-examine how we communicate among ourselves and with others. How we organize ourselves to dig and how we present our findings – issues long held sacrosanct – can be explored for perhaps the first time since archaeology began as a science. It is a scary proposition. As a group, however, we all know the lesson of those who resist technological change. So, I encourage all of us to go down the path together.

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ABSTRACT

Archaeologists working in cultural resource management (CRM) face four major challenges. First, the work is performed under short, development-driven deadlines. Second, CRM projects often are quite large, generating more data than archaeologists traditionally encounter. Third, the results must be presented in forms that are understandable and enlighten the public. Finally, CRM archaeology must address concerns of native peoples. In this paper, I draw on case studies from the American Southwest to show how archaeologists at Statistical Research, Inc. have used the Internet and CD-ROM technology to address these challenges. I highlight a web-based system developed for a large excavation project designed to keep project sponsors, principals, and specialists from around the world abreast of the status of fieldwork and analyses, as well as a forum for dialogue. I also discuss the use of CD-ROM technology to disseminate project materials and reports in a cost-effective manner. Beyond text, these CDs include videos designed for a non professional audience. CD-ROM technology also is used to provide Native Americans with digital images of rock art and sacred sites that allows them to comment on proposed mitigation measures.