Contexts, Connections, and Clovis: Opportunities for collaboration between information scientists and archaeologists

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Abstract. Our poster discusses the potential for collaboration between information scientists and archaeologists. In particular, this poster uses a case study of Clovis spear points to illustrate the importance of collaboration between the two disciplines in order to better understand the management of archaeological data. These artifacts are rare and are curated at widespread utilities across North America. We argue that the focus of collaboration between information scientists and archaeologists should be shifted from field methods to understanding data management practices along with digital metadata acquisition and maintenance. Research in this area should also focus on understanding the innovative data creation and curation approaches archaeologists taken given time and resource constraints. In addition, we will also use the preliminary results of a survey of archaeologists’ research data management practices to help support the potential avenues for collaboration. While the Clovis dataset is informative, many other archaeological datasets could benefit from the attention of information scientists.

Keywords: data management, archaeology, metadata, collaboration

1 Introduction

Archaeologists have long adopted field and lab methods for finding and preserving artifacts of the past. They are, arguably, experts at data creation, curation, and reproduction. Unfortunately, while information scientists have studied these methods to some extent, they have yet to work collaboratively with archaeologists to understand the innovative methods they adopt when working with rare and difficult to obtain artifacts. We see the potential for collaboration between information scientists and archaeologists, particularly when it comes to understanding how archaeologists describe and manage data.

Although limited, previous work in the information field that focuses on archaeologists has examined the use of metadata as a tool for archaeological collections as well as their information behavior and interactions among themselves and between varying stakeholder groups [6-8]. Huvila’s [6] study explored how archaeological reports act as boundary objects between different groups of stakeholders. This study found that archaeological reports function as boundary objects and point to issues of power and legitimation among various stakeholders involved in the report. As Tysick [13] argues,
librarians who attend conferences outside their field may learn more about collaboration opportunities between librarians and archaeologists, particularly when it comes to implementing innovative strategies for creating and managing research data.

However, this previous work has limited viability when considering a) what information scientists can learn from these studies and b) what information scientists can bring in terms of collaborating with archaeologists in data management projects.

Our paper is concerned with examining how a case study of digitized spear points, known as Clovis points in archaeology, can inform the potential for collaboration between information scientists and archaeologists. Our study will also present the preliminary results of a questionnaire administered to archaeologists working in academic and professional settings to better understand the challenges of archaeologists’ research data management practices. Our case study illustrates how archaeologists are employing innovative research methods and finding ways to curate the past given resource constraints. We argue that by better ascertaining archaeologists’ practices in terms of creating and providing access to heritage arguments, we can identify methods by which to augment the ways in which archaeologists can curate and describe scientific data, as well as how information professionals may collaborate with archaeologists.

2 Case Study

One of the more popular subjects in North America archaeology is seeking the origin and method of spread of an ancient spear point known as the Clovis point. There are, however, several challenges that archaeologists face when dealing with these data. We will use the research of Clovis points as a case study to better understand how archaeologists and information scientists could work together to address these specific challenges and in doing so, create solutions to similar problems that are faced by archaeologists working with other datasets. Our case study will also show how information scientists can learn from the practices of archaeologists, who adopt novel approaches to data collection and management.

The specific dataset at hand includes the study of morphological variability of Clovis spear points which are thought to have been made between 13,110–12,660 calendar years ago [14], though some sites are outside the boundaries of these dates [12]. The people who made and utilized these spear points are known to be one of the earliest cultures in North America and this spear point technology was widespread across North America [2-3,15] though it is now widely agreed that there were several cultures that existed in the new world prior to Clovis [9]. These spear points are often found in association with extinct Megafauna such as Mammoth and Mastodon [5,15].
Compared to other archaeological cultures, Clovis is, geographically, very well spread. Clovis points are found throughout the United States [2-3, 5, 15], in Northern Mexico [10, 12]. Thus, Clovis points are held by numerous museums and institutions which are widely spread across the United States and Mexico. It can therefore be very expensive and time consuming for a research to visit these institutions to conduct research.

Second, Clovis points are very aesthetically pleasing and are unfortunately prized by non-archaeologists, such as collectors (See Figure 1 for an example). Clovis points, which are already rare are increasingly hard for archaeologists to access for research purposes, in part due to their frequency in non-curated private collections.

Lastly, Clovis points that are found in good context, meaning excavated carefully by archaeologists, are exceedingly rare. In archaeology, context is the most important aspect of the information about an artifact. Many artifacts can only be accurately dated due to their proximity or association with another feature or artifact. Therefore, the rarity of accurately excavated Clovis points, makes efforts to study more difficult.

To address these challenges many archaeologists have moved away from analyzing actual Clovis spear points and switched to the analysis of digital images of them (see [2-3, 15] for a few examples). However, finding funds, building databases and repositories for digital images, and acquiring these digital images has been a significant challenge for archaeologists. For this project, author [15] took images of over 1,000 images and several measurements on each of those images. As a result, the dataset includes

Fig. 1. Example of Clovis Point and the type of measurements that can be taken on a digital image. Image Courtesy of the Washington State Museum of Anthropology and the United States Bureau of Reclamation.
thousands of measurements and images that are not currently accessible to anyone except the researcher.

To address interoperability issues, some archaeologists have collaborated to create repositories for fluted spear points (of which Clovis is one type). One example of this is the Paleoindian Database of the Americas (PIDBA) [1]. The PIDBA curates information about the location and morphology of Clovis and other fluted points for the Paleoindian Period. Although enjoying some success, these efforts are done on a minimal budget and with limited scope. The Author [15] utilized images during his analysis, while Prasciunas [11] utilized geographical data to discuss fluted points. The PIDBA is a wonderful example of an archaeological online data repository, but it could be improved via collaboration to develop specialized metadata for not only images, but their contexts, their spatial measurements, and their images.

3 Discussion and Conclusion

While Archaeologists have mastered field work methodology and have already embraced modern tools such as GIS technology to map sites, they could benefit from what information scientists have learned about data management. In the case being discussed here, Clovis spear points, information scientists could work with archaeologists and aid them in better describing their digital data such that it can be easily found and utilized. Many archaeology datasets exist which could benefit from help developing metadata specific to describing not just the artifacts themselves, but the context in which they are found and studied. Archaeologists are interested in creating better metadata for their research data and partnerships between archaeologists and information scientists to implement metadata in archaeological repositories. In the case discussed here, Clovis spear points, information scientists could work with archaeologists and aid them in better describing their digital data such that it can be easily found and utilized. While Clovis spear point digital is a wonderful example, many other archaeology data sets exist which could benefit from help developing metadata specific to describing not just the artifacts themselves, but the context in which they are found and studied. Our study will further gauge the potential for collaboration by examining how archaeologists in a variety of contexts create and manage research data related to field projects.

References


