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Caving In: An Archaeology of Historical Cave Exploration and Exploitation

Stephen Damm and Allison Young

Abstract: While the archaeological investigation of caves with these dark zones has been developing for some time, this work has almost exclusively focused on prehistoric activities. This paper demonstrates the value of a historical archaeological examination of dark zone caves. Archaeology in caves with extended dark zones offers unique insight into the interaction of the natural world with the encroaching capitalist world system due both to the difficulty of access and the lack of generalized occupational sites. We propose a theoretical and methodological framework to explore how these caves have interacted with modern capitalist enterprises in the historical period.

Introduction

Archaeologically, the term cave is often used synonymously with rock shelter. However, as Crothers et al. (2007) point out, caves differ from rock shelters in several important ways, most notably the existence of “extensive dark zones” which were often visited but uninhabited both prehistorically and historically. While the archaeological investigation of caves with these dark zones has been developing for some time, this work has almost exclusively focused on prehistoric activities (see Duncan 1997 for a notable exception). In this paper, we propose a theoretical and methodological framework to explore how these caves have interacted with modern capitalist enterprises. Archaeology in caves with extended dark zones offers a unique insight into the interaction of the natural world with the encroaching capitalist world systems due both to the difficulty of access and the lack of occupational sites.

An archaeological approach to the study of historical cave use is an emerging subfield in North American archaeology. An examination of relevant literature provides a base for the methodological and theoretical framework put forth in this paper. The cave archaeology of prehistoric sites is a somewhat more established field. A brief overview of the work done at well-known sites is

provided here. There are also multiple related subfields that are relevant to archaeological investigations of caves. These include the archaeology of mining sites and the archaeology of tourism. Secondary historical sources and caving literature are also relevant.

Previous Archaeological Research in Caves

European archaeologists began studying deposits in caves as early as the mid-nineteenth century. Crothers et al. (2007) describe the first widely known archaeological investigation of caves as the documentation of cave paintings in southwestern Europe. In North America, the interest in archaeological cave research did not develop until the twentieth century. Pond (1937) investigated desiccated prehistoric human remains in Mammoth Cave. Cave archaeology in North America truly expanded in the 1960s with the establishment of the Cave Research Foundation Archaeological project by Patty Jo Watson. The focus of this project was to bring dark zone cave archaeology into the scientific mainstream. The 'CRF' Archaeological project expanded research into Mammoth Cave and undertook studies at Salts Cave in Kentucky (Robbins 1971). In the southwest, cave explorers discovered an extensive deposit of cultural material in Feather Cave, an established archaeological site in New Mexico (Ellis and Hammack 1968). The explorers reported their findings to archaeologists, who documented the cave portion as an addition to the known features of the site.

Crothers et al. (2007) argue that cave archaeology entered the academic archaeological mainstream in the 1970s. This expansion was strongly associated with the efforts of cavers from the National Speleological Society consistently reporting archaeological finds to the academic community. Any archaeological investigations into caves should account for and utilize this resource. The knowledge of local caving associations can help focus investigations, and provide a set of stakeholders and an active and interested community which has already fostered a positive relationship.

In recent decades, cave archaeology research has become more commonplace throughout North America. Watson et al. (2005) discuss the discovery of human footprints that date to 5400 BP in Jaguar Cave in Tennessee. Faulkner and Simek (1996) examine the ceremonial use of Mud Glyph Cave in Tennessee. In Missouri, Diaz-Granados and Duncan (2000) review symbolic pictographs in Picture Cave. Cave archaeology has also expanded as far west as the Rocky Mountains with the study of human remains in Hourglass Cave. Archaeologists have dated the remains to 8000 BP (Mosch and Watson

1997). Crothers et al. (2006) also highlight several instances of dark zone archaeology that have taken place in Mexico and South America. Brady and Rissulo (2006) discuss ritual mining activities in the dark zones of caves in the Mayan world. Brady compares the extraction at dark zone sites with surface mining sites in order to better understand how the Maya were utilizing the caves. Comparisons between similar surface and subterranean activities provide a way in which the archaeology of the cave resources can help further the understanding of these activities. Archaeological investigations of cave dark zones have occurred in a variety of regions of the Americas. Dark zones of caves contain a diverse assortment of evidence of human occupation including human remains, footprints, pictographs, and quarrying. They are frequently sites of religious or ceremonial significance, and they are an invaluable component of the archaeological record.

Cave exploration as both a hobby and form of scientific research has generated a great deal of literature in numerous disciplines. Many of these works are valuable to archaeologists interested in studying caves. Historical works like cave histories and regional overviews can be useful to archaeologists. Primary sources like memoirs and diaries of cave explorers provide a valuable data set for historical archaeologists researching caves. These sources help both guide research directions and expectations as well as aid in building microhistorical analyses. Guides for hobbyists explain caving techniques and provide safety guidelines of critical importance. Lastly, many scientific periodicals explore the geological aspects of cave formation as well as the unique environment created by caves with dark zones. The National Speleological Society is a driving force behind cave scholarship in many disciplines, including archaeology.

Artifactual remains are likely to be difficult to find, but will be directly related to the activities that occurred in the cave. These materials can be divided into four broad categories. First, there is exploration gear, which may be the most difficult to find. Because exploration occurred off any trail well-marked from later uses, the location of gear is difficult to pinpoint. Identifying it in the dark confines of the cave requires a careful eye and close examination. The second category is mining gear, including both the tools and equipment and the scars left upon the cave. This evidence is likely to be in more accessible areas of the cave, likely closer to the entrance or with clear paths leading back to the entrance. Third, items left behind by tourists and the tourism industry is likely on well-marked trails. These trails themselves, including possibly cave entrances, are often heavily modified to make the going easier, with paving and widening being evident and lighting installed. Tourists also often left their mark in the

form of names and dates written in soot. At Wind Cave old newspapers were used to transport cave minerals to the surface for sale. Finally, agricultural evidence, including evidence of storage, water control, air usage, and small horticultural projects, will generally be near an entrance close to a farm yard on the surface. These materials are not necessarily mutually exclusive any more than the industries are themselves. Nor are they necessarily discrete artifacts, but also include marks, both intentionally and otherwise, left on the cave itself.

Historical Cave Uses and Theoretical Approaches

The use of caves in historical times can be understood in multiple ways. First, a microhistorical approach of the individuals who initially explored a cave offers a conceptual tool for tying these activities into larger social, economic, and political trends. At Wind Cave National Park, this can be seen via a microhistory of the McDonalds. The McDonalds were pioneers in cave exploration at Wind Cave. Jesse McDonald oversaw the first mining claim for the cave. When the mining effort was abandoned, his son Alvin explored the cave. These trends offer a framework for understanding the role these caves played in the development of a region. In addition, caves allow us to see how the natural and cultural worlds interacted. The argument put forth here is that the study of the historical uses of caves is not an idiosyncratic exercise, but rather allows for a deeper understanding of the way this cultural/natural division is played out within the larger capitalist system developing at the time.

Outside of these exploratory endeavors, which straddle the following categorizations, there are three main ways caves have been utilized historically, all of which are varying treatments of the caves vis a vis a natural/cultural division. These various uses highlight the artificiality of this division, and an examination of them can foster a more holistic understanding of how these forces interact to define each other. First, there are efforts to extract value from the caves. This includes both mining interests and tourism, although they are capitalizing on two different types of value. Second, there are recreational and personal uses of the caves, which include short term recreational activities, such as picnics, day trips, and even modern caving (or spelunking) activities, and hunting. Finally, there are types of occupational activities that have occurred in caves. Landowners have utilized caves as ready-made root cellars, thus incorporating the caves into the farm landscape.

The value extraction industries of mining and tourism are in many ways different, but both treat the caves as a commodity within

the larger capitalist framework. Mining interests, whether by individual prospectors or mining companies, emphasized the division between culture and nature in the way most often employed by the expanding capitalist system-by treating the natural as a resource to be exploited. Mining “rushes” served more than this extractive purpose, however. Billington, in the foreword to Paul's *Mining Frontiers of the Far West*, points out that they also served as a frontier expansion, bringing not only the miners but also “farmers, shopkeepers and lawyers and all the multitudinous creators of a modern civilization...to endow these future territories with their first permanent population” (1963:viii). Using Wind Cave National Park as an example, the first discovery by Euro-American settlers in 1881 post-dated the peak of the Black Hills Gold Rush (1876-77). However, as mining was still an active force, it is not surprising that a ready-made mine would appeal to the South Dakota Mining Company. Caves across the country were often the victims of mining activities on much smaller scales, and often the legacy of the mining is carried in the name (Paul 1963). There are numerous saltpeter caves, suggesting a common link between these caves and the extraction of saltpeter for gunpowder.

Many dark zone caves were tested for the possibility of mining potential before development as tourist attractions. While many of the investigations on this topic have been focused on the settlements that housed miners and their day to day lives, relatively little research has been done on historic mining practices themselves. Duncan (1997) discusses the saltpeter mining operations that took place in limestone caves in Kentucky. The War of 1812 caused a saltpeter shortage in the Southeast. A mining operation was set up in order to meet the demand. Duncan compared the material remains of the mining operation in Saltpeter Cave to two production models from historical sources. She found that there was a great deal of variation in saltpeter production in the region. Miners did not stick to a single production method; rather, they employed a combination of methods determined by what was suited to their environment. This study demonstrates the value of examining material evidence in addition to historical sources when investigating historic cave use.

That this mine at Wind Cave did not pan out was the driving force behind the other major extractive enterprise associated with the cave: tourism. While tourism can be seen as a type of recreation, the purpose behind it is to actively make money from the cave, thus making an association with mining more appropriate. Archaeologists have also studied sites related to the historical practice of tourism. This is highly relevant to historical cave archaeology since many caves like Wind Cave and Jewel Cave were developed as tourist sites after mining

efforts were deemed not profitable. Corbin and Russell (2009) edited a volume of work that discusses the historical archaeology of tourism in Yellowstone National Park. Russell et al. (2009) discuss the maritime archaeology of tourism in Yellowstone. Corbin et al. (2009) examine the remains of a particular hotel site in the park. The material culture of tourist activities provides a rich source of information for historical archaeologists to study. These studies of the development of the tourist industry within Yellowstone National Park provide a parallel for the archaeological study of tourism at Wind Cave National Park. The developments of dark zone caves as tourist destinations allows for a historical archaeological investigation of these sites.

In the volume, Hunt (2009) proposes a model for understanding tourism at Yellowstone that incorporates a traditional anthropological model for understanding the archaeology of early tourism in this time period. This model includes the phases “separation,” “advance,” “sojourn,” “return,” and “aggregation.” The caves serve as natural devices for this endeavor; as tourists are led into the cave they are separated from the outside world for their advance and sojourn in a state of liminality. Their return and aggregation come in the form of exiting the cave and sharing their experiences with others. Even today, tours at Wind Cave accomplish this task, with a variety of different experiences that can be chosen from. The role of choosing an experience for this pilgrimage incorporates the concept of consumer choice and consumption as active identity construction into the analysis, but this is beyond the scope of the current paper.

Recreational uses of the cave compose the second category. Similar to tourism, the caves here are seen as obstacles or destinations for a variety of activities, destinations separate from the normal (cultural) experiences of the people involved. Cave picnics, Weaver (2008) suggests, were a common activity in the late nineteenth and early twentieth centuries. An expanding middle class, eager for leisure activities, attended these elaborate events which followed a conceptual model similar to tourism. The caves were often heavily modified for both of these, with entrances widened, pathways delineated, lighting hung into the walls, and even the construction of dance floors.

While not the site of permanent and devoted habitation, caves have been used for a variety of habitation activities. Farmers have utilized the caves as storage facilities, taking advantage of their natural temperature and humidity controls to store goods in them as a root cellar or springhouse. This incorporates the cave into the cultural setting of the farm, and makes a landscape view of the farm and its productive activities a useful exercise. Weaver states that evidence for this activity is common, and includes “crumbling dams, walled up

entrances with doorways, pipes, concrete- and rock-walled troughs, dilapidated shelving, platforms, and old water tanks and hydraulic rams” and even “reservoirs that are still providing water for livestock” (2008:33). Small agricultural pursuits were also undertaken, such as mushroom farming and experimental attempts at growing select crops. There are also reports that caves were used as an air source to cool homes in the summer.

Methodological Considerations for Caves

Caves with extended dark zones possess unique challenges for archaeologists. Typical techniques can be rendered unusable. New mapping techniques, borrowed from existing cave exploration and mapping efforts may be required to inventory cultural resources inside a cave.

Prior to entering a cave, archaeologists must be prepared. A detailed examination of the historical record offers much to guide both the research and the researchers inside the cave. Journals, manifests and supply lists, newspapers, company records, and property deeds all provide context and expectations for what will be found in the cave. Records of who owned the property can give a clue as to possible uses, local legends and histories can give insight, and even the cave name itself may suggest the cave’s history.

There are several important considerations archaeologists must keep in mind when investigating caves. First, proper safety precautions must be observed at all times. Second, new mapping procedures must be learned and developed. Third, cultural material can be difficult to spot within a cave setting, especially to eyes unaccustomed to the environment. Finally, there are necessary ethical considerations that must be addressed prior to entering the cave. Occupation in caves in prehistory and history is unknown, which means that these sites are all special purpose rather than habitation (Crother et al, 2007). Many caves hold special significance to Native American groups, and this significance must be respected. Also, archaeologists must also be aware of basic caving ethics and work to preserve the cave setting and environment.

Conclusion

There is immense potential for future research in the historical archaeology of dark zone caves. The cultural resource preservation practices of the National Park Service provide an invaluable data source for further investigations. When the NPS began managing these

sites, they documented and mapped the location of historical artifacts relating to the exploration, mining, and development of the cave sites with techniques adopted from the hobby of caving. This information is managed in databases at sites like Wind Cave, Jewel Cave, and Mammoth Cave. This archaeological data can be examined in conjunction with a wealth of historical sources, such as Alvin McDonald's cave exploration diary and economic records of cave exploitation. The authors of this paper hope to examine these types of data from Wind Cave and Jewel Cave with the framework put forth in this paper. Ideally this research will spurn an archaeological examination of historic cave use across North America. This would in turn allow for site specific and regional comparison to generate broader conclusions about historic cave use. The historical use of dark zone caves is a fascinating expression of human behavior that should be studied and understood more fully through a microhistorical lens and a capitalist framework of tourist development.

As a natural phenomenon, caves uniquely lack the anthropogenic nature of most landscapes. Human influence on cave development is largely absent, and thus the examples of interaction between the natural and cultural worlds within the context of caves can reveal how this divide was constructed within larger social and cultural contexts. As a source of raw materials, caves provided early settlers of an area with needed resources and, in some cases, served as a focus for regional development as mining interests brought in additional development. As a tourist destination, caves acted as a means to separate the tourist from their society, which was generally widely present not far from the cave. As a part of a productive landscape, caves were incorporated as ready-made springhouses and root cellars, and also served a function within livestock and horticultural programs. All of these interactions left marks on caves to be sure, but did so in a definable way that allows these larger societal trends to be more closely examined.

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