3-16-2018

Providing Information and Public Outreach Across Three U.S. State Archaeology Offices During the Age of Open Access

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Recommended Citation

PROVIDING INFORMATION AND PUBLIC OUTREACH ACROSS THREE
U.S. STATE ARCHAEOLOGY OFFICES DURING THE AGE OF OPEN
ACCESS

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Arts

in

The Department of Geography & Anthropology

by
Samuel Thomas Ayers
B.A., B.A., Louisiana State University, 2014
May 2018

I dedicate this thesis to my Mawmaw, Barbara J. Disedare ('92, LSU).

The graduate student community in the geography and anthropology department at LSU has been an invaluable source of fraternal support for me throughout my graduate studies. The collegial atmosphere (in the classroom and at State Bar, among other places) provided the most enriching experiences both professionally, socially, and academically. And I am glad to now count you among my friends: Michel François Pujazón, Marissa Vara, Jacob Warner, Alex Amaki, Kate Elder, Kobi Weaver, Emilee Hart, Kelsey Johnson, Kenny Sutherland, Eli Cruzado, and Rivers Berryhill.

To my mother and father, Thomas and Tonya Ayers, I cannot begin to thank you enough for your unreserved confidence in me and my academic pursuits. Never once did you question my choices in subjects to study and majors to pursue. Never once was I influenced to go after something more "practical." In a society which popularly reduces technocratic, material rationality and pragmatism with purposeful and worthwhile pursuits, your confidence in me to focus on interests and causes that move both the heart and mind is something I will forever cherish.

J.R.R. Tolkien once said, "Faithless is he, who bids farewell when the road darkens." I contrast this quote to the example of my faithful, darling wife Taylor Ayers to whom I am forever indebted. Quite often through graduate school and in the course of writing of this thesis the road indeed felt ominously dark and yet she persisted with me. She supported me when I had nothing left to give. And even when I did not believe, she did. I love you.

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

AHPA   Archaeological and Historic Preservation Act

AIA   American Institute of Archaeology

ARPA   Archaeological Resource Protection Act

CDL   California Digital Library

CRM   Cultural Resource Management

FASTRA   Fair Access to Science and Technology Research Act

IMLS   Institute of Museum and Library Services

LOD   Linked Open Data

MOA   Memorandum of Agreement

NADB   National Archaeological Database

NHPA   National Historic Preservation Act

NPS   National Park Service

NRHP   National Register of Historic Places

NTIS   National Technological Information Service

OA   Open Access

SHPO   State Historic Preservation Office/Officer

tDAR   The Digital Archaeological Record

UTM   Universal Transverse Mercator

WPA   Works Progress Administration

ABSTRACT

Archaeology in the United States has been transformed into a mainstream, practical science over the past fifty years by Cultural Resource Management (CRM) and the federal regulations imposed by the National Historic Preservation Act (NHPA) of 1966. However, this form of archaeology has been plagued with criticisms since the NHPA's enactment including issues of access and use of data maintained by state site files. State archaeology is publicly funded yet state and federal legislation often exempts CRM data from freedom of information laws. To mitigate this contradiction and stem the growing body of "gray literature", new open-access (OA) technologies are being developed to connect the general and academic publics with archaeological research. This thesis explores to what extent a consensus exists between state outreach and access features and how the implemented polices could be adapted with recent developments in OA information systems.

Understanding these questions requires information directly from state archaeologists. As such, seven interviews were conducted with personnel from three state archaeology departments across the country. To establish a survey of state policy offerings, these professionals were asked a series of questions as they related to their state's implementation of data access and public outreach outlets. Furthermore, each interviewee provided comments on their state's investment in OA development. Over sixty pages of transcripts revealed a consensus on the concepts of data access and public outreach. This agreement was checked by considerable variation in state policy offerings. A grounded theory analysis was applied to the transcripts to uncover why this variation in policy existed. Initially it appeared that underfunding of programs was the primary factor. However, a comprehensive assessment though revealed that concerns with data security led states to implement strict yet largely unstandardized data access and public outreach policies.

As such, I put forth that state archaeology departments across the nation look to implement

Open-Access data management systems like the Digital Index of North American Archaeology

(DINNA). Implementing such systems will provide a new platform for efficient researching and

help in the fight against the growing body of gray literature. What is more, systems like DINAA

will act as a clearinghouse of linked comprehensive data sets for state archaeologists, academic,

and CRM researchers to utilize for broad geographic analyses needed to understand the threats

posed to archaeological sites nationwide.

CHAPTER ONE: INTRODUCTION

Since the 1960s, the data produced by American archaeology has grown extensively. This is due in large part to the establishment of federally mandated cultural resource management (CRM) archaeology. CRM is the product of the 1966 National Historic Preservation Act (NHPA) which set guidelines for states to protect and manage the nation's cultural resources. Among its many features, Section 106 of this law provided a system of compliance documentation for developments that could potentially impact sites of historic and archaeological importance.

Stimulated by rapid development and urbanization, CRM archaeology has quickly come to represent the most common form of archaeology in the United States. In 2008 alone, total expenditures on state-supervised CRM archaeology were estimated at $683 million dollars (Altschul and Patterson 2010; Kansa et al. 2011). In addition, the CRM industry is hiring the majority of the nation's archaeology graduates. According to the Bureau of Labor Statistics and a survey of Society of American Archaeology, registered non-academic professional archaeologists numbered well over 9400 on the membership rolls while their academic colleagues listed only 1600 (Altschul and Patterson 2010; Bureau of Labor Statistics 2014; Snow 2006).

An unintended consequence of this growth is that CRM archaeology is outpacing university research with little to no structure connecting the disparate literature developed by each state (Seymour 2010). As early as the 1980s, CRM began outpacing universities and today represents the vast majority of archaeological literature produced in the United States (Green and Doershuk 1998; Seymour 2010). The thousands of Section 106 reports and other files processed each year presents a considerable problem in the form of gray literature. Not unique to archaeology, gray literature is unpublished data typically unavailable in most popular

commercial and academic repositories (Alberani 1990). Developed within library and information science writings, gray literature has been defined as:

> …document types produced on all levels of government, academics, business and industry in print and electronic formats that are protected by intellectual property rights, of sufficient quality to be collected and preserved by libraries and institutional repositories, but not controlled by commercial publishers; i.e. where publishing is not the primary activity of the producing body (Schopfel 2010: 25).

As described above, gray literature essentially describes both a document's prevalence as well as its accessibility. Within archaeology, Seymour (2010) identifies CRM and state-produced technical reports as "the most common form of grey literature in American archaeology" and over the past few decades this has been a recurring problem. This is problematic in the U.S. is because these reports represent the clear majority of archaeological data currently being produced in America.

The reason CRM literature is considered "gray" is due to the variety of access policies implemented by SHPOs. Initially established to protect data from looters and illegal antiquities markets, legislation exempts state archaeology files from most freedom of information laws. Clearly, data security is necessary. Further investigation is needed, however, to discern if these polices provide the best scenarios for researcher uses and public benefits (Kansa et al. 2010; Wells et al. 2014).

State archaeology access and outreach polices are inadequate. Current data access policies, while secure, preclude innovative ways to maximize both information protection and access. New access techniques being developed in the world of Internet database management are founded on Web 2.0 and open-access concepts. Briefly, defined, Web 2.0 and open-access emphasize approaches to data that are user-centric and promote wider availability and interoperability. The platforms these concepts inspire focus on ways that users generate

information and provide access that is "digital, online, free of charge, and free of most copyright and licensing restrictions" (Kansa et al. 2013; Suber 2012: 4). State archaeology has been slow in embracing such technologies, and previous attempts, like the National Park Service's National Archaeological Database (NADB), failed. This was due to a lack of federal commitment requiring states to submit CRM reports. As such, SHPOs did not prioritize the project in their data-sharing workflows, resulting in a "lack of currency…inaccurate, incomplete, and duplicate records" (Moore-Jansen 1997). Current developments, however, such as tDAR (The Digital Archaeological Record) and Open-Context, do show an increasing commitment to data-sharing technologies (Beale 2012; Kansa 2012; Kintigh and Altschul 2010; McManamon and Kintigh 2010). Nevertheless, even with these promising developments, state agencies maintain their strict access control policies. However, the technological tide does appear to be turning in favor of standardizing Open-Access outlets into all facets of American Archaeology, especially in the context of State-CRM. As research, industry, and government trend toward linked open data, the need to create expanded data access systems for American archaeology continues to grow (S. 779 2015; The White House, President Barack Obama: 2013; Wells et al. 2014).

Open access platforms regarding state-held CRM data and reports are also needed for creating a more engaging point of contact with the general public (Beale 2012). As a public service, state archaeology is responsible for providing public outreach. Web 2.0 technologies and Open-Access concepts are already expanding and flourishing in non-academic settings such as social media networks and other user-generated content platforms. These user-centric technologies are expanding the definition of "the community" and possess much potential for public outreach initiatives (Cavanagh 2007; Beale 2012). As the public interest in archaeology expands state archaeology should look to more effectively utilize the Web 2.0 and open access

technologies as vital points of contact. Doing so could have profoundly beneficial results as states scramble to find innovative and cost-effective ways to engage the public with their cultural heritage (Beale 2012).

Since the beginning of state-mandated CRM, how to provide appropriate public outreach and data access has been hotly debated (Lipe 1974; Renfrew 1983). This discussion occurs, not only within the discipline but also in the wider society, which sees access to and engagement with archaeological data as intrinsic with ideas of "public welfare" (McGimsey 2004). As a civil service, state management of CRM data must look to better fulfill this obligation.

The objective of this thesis is to compare the practices of three state agencies in the United States as they relate to promoting information access and public outreach. Federal legislation, such as the National Historic Preservation Act (NHPA) and Archaeological Resource Protection Act (ARPA), has standardized much of CRM archaeology data management. However, each state, regardless of historical and regional proximity, exhibits significant variation in their implementation of methods and policies. This is due in part to local legislation which allows state agencies to differentially apply NHPA requirements (Snow et al. 2006; Lees and King 2007). These differences allow for appropriate comparison and analysis of state access and outreach policies and how they facilitate scholarly and general knowledge.

Charles McGimsey III's book *Public Archaeology* (1972) is an exhaustive comparative study of state policy but an update is needed. No recent literature has been taken up to this extent. What little research exists makes only basic observations, but does not comparatively analyze state policy features (Kansa et al. 2010; Kintigh and Altschul 2010; Lees and King 2007; McGimsey and Davis 1977; Snow et al. 2006). As such, this research is necessary and relevant to the current situations facing state archaeology. Open-data, information access, and

connectivity are not futurist projections. These technologies are reality and archaeologists need to work with states to integrate them into the managing of CRM data (Beale 2012; Kansa et al. 2012; Kintigh and Altschul 2010). Otherwise, the discipline and public will suffer as valuable information becomes further obscured by outdated policy.

The Secretary of the Interior's Standard and Guidelines for Archaeology and Historic Preservation directs states to make CRM data "available to the full range of potential users" (NPS-28: Appendix C 2002). The purpose of this study is to gauge whether state agencies are appropriately executing the spirit of this and similar directives in a standardized fashion (AHPA 1974; ARPA 1979; NHPA 2014). To make this determination, I explore: 1) What, if any, consensus exists regarding access and public outreach policies between the three state archaeology departments in this study. 2) If there is significant variation in approaches between states, why is there such variation and what is the root cause determining their ability to provide access and outreach? 3) Can development of Open-Access platforms address both the barriers to standardized outreach and access policies? In sum, I would like to understand how state agencies could adapt their current access and outreach policies in the context of emerging Open-Access technologies.

Overview

The contents of this thesis are as follows: Chapter Two provides a discussion of the historical context of state archaeology in the United States. To further situate this background, the access and outreach issue that has plagued American archaeology will also be discussed. Chapter Three situates the current developments in archaeological information science. This chapter will provide a thorough discussion of the most promising technologies being used to make archaeological data more accessible. Chapter Four discusses the ways in which public

archaeology goals can be married with open data concepts. Here the discussion will also be addressing what new innovations are being used to engage a more online public. Chapter Five theorizes a standard of practice for linked, open data state-CRM archaeology. This will be done by drawing from by the combined literature of applied anthropology and digital archaeological theory (Downum and Price 1999; Zubrow 2006). The chapter will also include a discussion of the research methods used in this study, including the reasoning for the selection of participant states, personnel, and interview themes. Chapter Five ends with a discussion of the grounded theory approach which will be applied for the data analysis (Glaser and Strauss 1967).

Chapter Six includes the presentation and analysis of the data. To derive a basic consensus regarding state access and outreach policy, the data will be discussed in two sections. Section A will discuss the results as conceptual categories based on participant responses concerning state policy implementations and barriers regarding more open access and outreach. Section B will discuss the core categorical theme that comprises the conceptual categories of section A into a central topic. This central theme will be discussed as it relates to open access, public outreach, and the potential for CRM data to expand the larger archaeological discipline. Further analysis of the core conceptual category will be provided via a case study of a recently developed information system that seeks to provide a secure, open, and linked structure for disparate state data sets. The final chapter summarizes the research findings, and suggests future topical research.

CHAPTER TWO:
BEGINNINGS OF CULTURAL RESOURCE MANAGEMENT AND THE ISSUES OF INFORMATION ACCESS

Cultural resource management (CRM) is the encompassing term for the public-private industry and processes related to state administration of cultural, archaeological, and historical resources. The processes of CRM involve "the application of management…to achieve goals set through the political process to preserve important aspects of our cultural heritage for the benefit of the American people" (Wildesen 1980: 10). Most, if not all, modern countries have some sort of cultural resource management policies (McManamon and Hatton 2000). This study concentrates on CRM in the United States of America.

As the above (as well as many other) definition indicates, CRM archaeology is intrinsically the work of political process (Gray 1999). CRM was effectively born out of the 1966 National Historic Preservation Act (NHPA). With this act the United States government set up requirements for the preservation and management of culturally significant sites and information. The origins of this law are multifaceted and related to both historical and socio-cultural changes. In legislative history, the roots can be seen in the Antiquities Act of 1906 (Fowler 1982; Green and Doershuk 1998). The Antiquities Act established the rudimentary guidelines for protecting and documenting cultural resources on public lands. Undergirding the 1930s and 40s Works Progress Administration (WPA) salvage projects, the Antiquities Act facilitated the development of a vast descriptive archeological dataset through the standardization of reports and field methods (Green and Doershuk 1998; Wendorf 1962).

Over the next few decades, the world and the United States experienced irreversible changes. After two destructive World Wars, the United States entered a post-war era as a political, military, and cultural monolith. Little could stand in the way of the nation's pursuit of

cultural, economic, and political progress (Birch 2006; Davis 1972; Fowler 1982). This led to an explosion in industrial and commercial development which culminated in the Federal Aid Highway Act of 1956. It was with this project that cultural preservation seemed to be at its most vulnerable. As Lewis writes:

> In the 1950s and early 1960s, they often expressed our cold, brutalist aesthetics in concrete and steel. We could do anything then, and do it to excess; our Interstates boldly proclaimed the conquest of engineering. Like our cars, whose fins could not be too high and whose gas mileage could not be too low, they made a statement with adolescent vigor. We thought little of the Interstate's capacity to rend the landscape, to divide communities, and to alienate citizens. The roads were a concrete snapshot of ourselves when we fervently believed nothing was beyond our reach (Lewis 2013: 317).

In the succeeding decades of rapid industrialization and increased documentation, the cavalier pursuit of progress began to give way to a growing awareness of the threat posed to historical and cultural sites across the country. This awareness centered around the unintended effects of the destruction being caused due to the expansion in industrial and commercial development. In archaeological circles during the 1950s through the 1970s, researchers, professionals, and concerned citizens realized that current legislation and archaeological strategies were not sufficient to mitigate the damage cause by rapid development. As such, archaeologists emphasized the need for more archaeological perspectives and representation within political-commercial processes (Birch 2006; Fowler 1982; Jennings 1985).

The Foundation for CRM in Legislation: The Salvage Principle and the Conservation Ethic

Two major archaeological developments arose out of this era of enhanced industrialization and commercial development: the salvage principle and the conservation ethic (Lipe 1974; Jennings 1963). These two archaeological principles served as contexts for the development of CRM in legislative form. The "salvage principle" first developed in the writings of Jesse Jennings, defended the necessity of salvaging cultural resources in emergency settings.

Many viewed this form of archaeology with flippancy because of the commercial backing and the tendency for contract sites to not have any association with previous academic projects. To convince those naysayers, Jennings wrote, "Sites and their contents, by their mere presence, have equal importance and must be given the same conscientious attention" (1963:283). Jennings rationalized that, whether performed under contract or not, archaeology could be beneficial. The opportunity to salvage archaeological materials often represented "the only chance" (1963:283) to bring knowledge out of areas deemed "unimportant" by those involved in "pure" university-led archaeology (1963:258). As such, the salvage principle came to be understood as the discipline's responsibility to recover data from all areas.

Added to this principle is the "conservation ethic" developed by William Lipe (1974). This "ethic" involved a refinement of archaeological methods. Specifically, Lipe wished to reform the process of cultural resource management to be more than just a rush to excavate. Written in "A Conservation Model for American Archeology", Lipe agreed with Jennings that sites were critically threatened. Concerned for the future research and fieldwork possibilities, Lipe used this reasoning to highlight the dangers of unmitigated development and unthinking archaeological methods. Stating that all archaeology is "essentially salvage," he added that the archaeological record was a non-renewable, scholarly resource (Lipe 1974: 214). As such, Lipe wrote that excavation should be viewed "as a last resort to be undertaken only after all other avenues of protecting the resource have failed" (1974:214).

Lipe argued that, in the fight to save archaeological sites and data, it was important for archaeologist to get involved in the real world. Getting involved meant implementing public education initiatives and encouraging archaeologists to influence the planning and management

processes in government. "In this way, projects can be designed so that destruction of archaeological sites is minimized" (Lipe 1974: 223).

The salvage principle and the conservation ethic helped the discipline to become more prepared to participate in the crafting of national policy as it related to archaeological resource management (Canouts 1979). This preparation helped create a watershed era for institutionalizing archaeological principles through the passage of acts such as the Archaeological Historic Preservation Act of 1974 (AHPA). This law expanded the responsibility of all federal agencies to account for cultural resource projects under their jurisdiction. Before AHPA, only the National Park Service had such responsibility. Another impactful law from this era was the Archaeological Resources Protection Act of 1979 (ARPA), which provided more effective procedures for protecting sites from looters (McGimsey 1989; McManamon 2000a). However, the most important law to come out of this era, and the one that fully established archaeological ethics and best practices within cultural resource management, was the National Historic Preservation Act of 1966 (Green & Doershuk 1998).

Institutionalized Archaeology: The National Historic Preservation Act

As a result of these justifications for better management of cultural resources, the United State Congress ushered in the National Historic Preservation Act of 1966 (NHPA). This law greatly expanded on the preservation policies of the 1906 Antiquities Act and 1935 Historic Sites, Buildings and Antiquities Act, which initially provided rudimentary preservation measures which were overwhelmed by the rapid infrastructure development of the post-World War II era. To improve on previous legislation, the NHPA vastly increased federal responsibility —under the direction of the National Park Service— for protecting cultural resources. Through a process detailed in Section 106 of the NHPA, states were authorized to contract resource management

10

efforts and manage documentation of all projects across the state. Under NHPA, CRM became the dominant data- producer in American archaeology (Altschul& Patterson 2010; Green and Doershuk 1998; Renfrew 1983; Zeder 1997). Though my research focuses on all literature and data produced by CRM, the primary focus of state-archaeology is Section 106. As such, significant attention will be paid to this data type and its accumulation as gray literature.

An Overview of Section 106

Section 106 of the NHPA sets out specific rules and processes for submitting compliance documentation regarding any development activities related to historic properties. It requires all federal "undertakings" to "take into account" the measures and their effect on potentially significant historic sites (54 U.S.C. 306108). Undertakings in the NHPA were defined as activities:

> carried out by or on behalf of the Federal agency; those carried out with Federal financial assistance, those requiring a Federal permit, license or approval; and those subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency (54 U.S.C. 300320).

This includes protection for archaeological resources either known or potentially within the vicinity. An undertaking could extend to many types of projects. For example, any street widening, drainage project, or other transportation improvement completed along a state highway that could potentially affect a historic district or archaeological cache along the route must first comply with the Section 106 regulations. This ensures, in a step-by-step review process, that all historic properties are given proper consideration in order to mitigate any disruption or damage. For clarification, a paraphrased summary of the Section 106 regulations is as follows:

1.) Any federal agency undertaking a project that could potentially affect an historic property must consult the State Historic Preservation Office to determine if the property is listed on the National Register.
2.) Presuming the property in question is not on the National Register, the involved federal agency must then determine if their project will have <u>no effect</u>, <u>no adverse effect</u>, or <u>an adverse effect</u>.
3.) Depending on the proposed effect to the property the agency involved will consult with the SHPO in order to determine the necessary steps needed to mitigate damage to the property. Once an arrangement has been found, a Memorandum of Agreement (MOA) is issued.
4.) With the MOA issued, the project can begin under the specified mitigation terms (Advisory Council on Historic Preservation 2013).

In a given year, a state may process thousands of these Section 106 compliance reports, all of which are reviewed by the State Historic Preservation Office (SHPO) (Green & Doershuk 1998; Tyler 2009). The SHPO constitutes another major feature of the NHPA and serves as the enacting body concerning the Section 106 process. Per federal regulation, a SHPO is established in each state (as well as in Washington D.C. and the United States territories) and is staffed by specialists in "architecture, history, archaeology, and other appropriate disciplines" (54 U.S.C. 304101[a])). The NHPA also states that the responsibilities of the SHPO are, among others, to "advise and assist" the involved Federal and State agencies with projects involving culture resource preservation, management, and documentation (54 U.S.C. 302303[b][5]). This assistance ranges from approving nominations to the National Register of Historic Places to providing review of reports concerning "mitigation measures" to be taken on project sites (54 U.S.C. 302303 [b] [5]).

Before the NHPA, legislation did require projects affecting historic and archaeological sites to document and provide information on findings. However, the procedures through which federal agencies and contract staffs were expected to perform this compliance was often scattered, never uniformly structured, and hardly enforced (Fowler 1982; Grayson 1976). SHPO

administration of Section 106 procedures allowed states to systematically accumulate information on cultural resources on a scale previously not possible.

Data Accumulation: Section 106 in Detail

Report standards vary from state to state and differ depending on whether the site is under the jurisdiction of the state's Department of Archaeology or Department of Historic Preservation. In fact, it is the responsibility of each SHPO to tailor their standards for contingencies specific to their state (King et al 1977). Even with this variation, report standards are generally divided into three stages or "phases" of assessment, generally referred to as Phase 1, 2, or 3 stage assessments. Each phase denotes an increased level of project planning, archaeological investigation, and — most importantly for this study— increased documentation (NPS-28 Appendix C 2002).

Assuming a general visual survey of a potential project site has been performed and some background research or knowledge of the location exists, the SHPO will advise that the responsible parties proceed to the first field work phase. Phase 1 involves determining whether there are archaeological sites on the property under investigation. Phase 1 generally involves systematic shovel testing, often done with reference to pre-existing predictive modeling. Documentation of the project primarily involves the compilation of a multi-chapter reports, commonly containing several hundred pages. These reports discuss the current environment of the site, culture history of the region, the site history, previous investigations in the area, the methods used in the survey and excavations, and a summary of the results and recommendations. Also, any field notes, maps, photographs, and other documents, as well as a catalog of all artifacts and ecofacts recovered are required by the state agency for curation (LA DCRT 2017).

If the Phase 1 survey does locate artifacts and archaeological sites in a project area, necessitating further investigation, the process develops to Phase 2. Continuing the initial investigation, this next phase gauges the extent of the historical and cultural importance of the site. To do this, Phase 2 typically adds several data gathering techniques to the investigation of the area. This includes radiocarbon‑14 dating of artifacts and soil samples, geospatial remote sensing of the area, and excavating larger (1x1 or 1x2 meter) test units at shorter intervals than in Phase 1. This phase can also include additional shovel tests or other subsurface methods such as trenching. Phase 2 archaeological testing also requires the development of a detailed map indicating the locations of all excavation units and their proximity to other topographic and subsurface features. This information is to be uploaded into a GPS device in order to integrate the map data within established Universal Transverse Mercator (UTM) grids. These maps, with their UTM coordinates, facilitate further use and integration into the SHPOs GIS database. Documentation of Phase 2 investigations go beyond Phase 1 in volume as well. In addition to the recordation of Phase 1, Phase 2 includes extra illustrations and photography of artifacts, soil samples and excavated unit walls, field notes, and justifications of analyses made throughout the investigation which are elaborated in the report. This increase in testing and documentation leads Phase 2 to its ultimate goal, determining whether or not the site is eligible or for the National Register of Historic Places (NRHP). This determination is made on a scale from A to D. In this scale, A indicates a site as being the least likely and D as being the most likely to provide significant historical and cultural information (LA DCRT 2017a).

 If a site is deemed eligible for the NRHP, the project moves further along to Phase 3. At this point, the responsible federal agencies submit an MOA to all parties involved with the site. The MOA describes the mitigation measures, artifact recovery procedures, and overall

recommendations for the site. Phase 3 projects are designed to answer questions specific to the

significance of the site, and involve more intensive, large-scale excavations. Additional

radiocarbon dates and processing of special samples (soils for pollen, sherds for residue or for

determining provenance) are generally part of the mitigation process. In addition to retaining all

documentation from Phases 1 and 2, Phase 3 includes expanding on the updated features of the

survey.

 While often repetitive and technical, the compliance process is the primary method for

creating the wealth of raw data and syntheses of archaeological information (Gray 1999;

Patterson 1999; Praetzellis and Praetzellis 2011). There are no estimates on the number of

Section 106 reports filed each year in the United States. Total estimated expenditures on CRM

and state archaeology resource management suggest that the number of reports filed yearly is in

the thousands (Altschul and Patterson 2010). The above summary highlights two points: First,

Section 106 reports comprise the bulk of "gray literature" in the U.S. because it is required to

meet regulations, but is unintended for mass publication. Secondly, policies for managing this

data are critical to appropriate communication within American archaeology (Bastian and

Bergstrom 1993; Green and Doershuk 1998). These two topics will be further developed in the

next two sections.

Gray Literature in CRM

 Defined by Merriam Webster, gray literature is "written material that is not published

commercially or is not generally accessible" (2017). While broad, this description works well in

that it emphasizes the quality of minimal exposure. The use of the word "gray" serves in a

progression between "white" literature which represents published books and journal articles to

"black" literature which represents transient ideas and thoughts not recorded. As a middle

ground, "gray" literature represents information that while important is not typically published (University of Victoria Libraries 2016). Technical reports and coded data sets usually fall under this description.

In the context of CRM and state archaeology, gray literature includes "primary data sets…evidence of regulatory compliance…appendices of project reports" that are not adequately published or made available (Seymour 2010). Compared to the Merriam Webster definition this seems unassumingly similar. This is not totally incorrect because gray literature affects other disciplines. Bastian and Bergstrom (1993) review the gray literature of public historians as "the historical directives, reports, and studies" with limited distribution (63-64). Similarly, Richard Corlett (2011) defines gray literature in tropical biology as primary data that is rendered useless to the larger discipline due to a lack of dissemination. Even with these examples, no discipline experiences this phenomenon within the dominant research area of the profession. CRM documentation is not fringe literature in archaeology. In many ways, it is defacto American Archaeology (Kansa et al. 2010). It is not only the primary form of archaeology in the U.S. but it is also vital to government and commercial planning (Altschul and Patterson 2010; Green and Doershuk 1998). Further development of how this literature presents problems to state data management will be discussed in the next section.

CRM's Information Problem

Managing and providing adequate access to the vast amount of literature that is produced through the compliance process has always been an issue for state archaeology in the United States (Brose 1985; Janetski 1986). As Robert Elston wrote, "There is resounding, unanimous agreement that the products of CRM archaeology (reports and voluminous data files) are poorly circulated and arduous to obtain" (1992: 42).

Several reasons contribute to State-CRM documentation being considered gray literature. For one, the sheer volume of reports that get filed due to the amount of compliance projects being conducted creates an overwhelming situation for state agency reviewers. No research has determined the number of reports filed yearly by the roughly 7000 to 10000 CRM agencies in the U.S. As mentioned before, Altschul and Patterson (2010), estimate that roughly $683 million was spent on state-CRM activity in 2008. With these numbers, it is safe to hypothesize the number of reports filed nationwide are in the thousands, if not tens of thousands. Regardless of the exact number, it is widely agreed that CRM has outpaced university-based research and become the dominant force of American archaeology since the 1970s (Green and Doershuk 1998; Meighan 1986; Zeder 1997). Because commercial development shows no signs of slowing, the accumulation of compliance literature and backlogged, unpublished materials will only continue.

Another reason contributing to the gray status of CRM-state literature is content and format. The technical content and format of compliance reports does not lend itself to easy synthesis for most academic journal requirements. Many journal editorial standards do not consider CRM processes of reporting findings. As a result, these differences, and the lacking flexibility in commercial academic publishing, preclude dissemination of CRM literature (Seymour 2010). According to some, the refusal to include CRM reports in commercial academic publishing is largely due to a prestige gap bias between pure university research and work performed under state issued contract (Cunningham 2002; Seymour 2009, 2010). In any event, CRM firms are less likely to submit a report knowing they will not get accepted, which allows the data to go unnoticed by the larger discipline. Other contributing factors concern the extreme financial and time- related restrictions that surround CRM projects and document

17

development. With little to no incentive to create synthesized reports, time is better spent working on the next compliance project (Birch 2006; Green and Doershuk 1998).

The need to protect sensitive, site specific information is of the utmost importance but is also the primary reason why CRM literature is described as "gray". With lootings, site vandalism, and the illegal antiquities trade a constant threat, CRM data must be released exceptionally carefully. This is not to mention that many sites are on private property and restrictions are placed at the behest of landowners (Brodie et al. 2002; Stertz n.d.). Dissemination of reports outside of the most necessary channels is simply not as high a priority when considering the potential dangers of expanding access (Kansa et al 2010; Kintigh and Altschul 2010). However, access restrictions are unstandardized across states, which raise questions and confusion for researchers and the public. For example, in one state a researcher may be allowed to access the state site file remotely while a neighboring state disallows this sort of access. What results is a case of information silos obscured to the profession and the public (Jeffrey 2009; Kansa and Kansa 2013; Ross et al. 2013; Snow et al. 2006).

Connected to security requirements is the lack of any standard system or process that could provide widespread distribution of gray literature (Bastian and Bergstrom 1993; Birch 2006; Renfrew 1983; Williamson 1999). Intermittent attempts have been made to collect literature such as the now defunct National Archaeological Database (NADB) (Canouts 1992; Cleere 1981; Schmidt 1984). Still, the appropriate breadth and depth of this vast body of research rarely makes it into readily accessible repositories (Canouts 1994; Kintigh and Altschul 2010). Determining the best practices for management and providing appropriate access and distribution to this literature has been debated since the inception of CRM archaeology. The following section will discuss the progression of this issue over the last few decades.

Decades of Debate: Access, Management and Distribution

One of the earliest comprehensive assessments of cultural resource management in the United States was by famed Arkansas archaeologist Charles McGimsey III. Writing just six years after the passage of the NHPA, McGimsey's *Public Archaeology* discussed the various issues involved with building a state archaeology program from the ground up. Because of the nascence of state archaeology departments at the time, McGimsey's assessment was a straightforward, introductory guide of what should be expected. He emphasized the duty of the state to provide information to researchers and the public. Otherwise, he wrote, "…a state program which does not itself produce results in the form of information…could hardly be considered adequate…" (McGimsey 1972: 26). To achieve adequacy, efficient review procedures and the breadth of distribution were of the utmost importance. To that point he continued that, "…the [state] program should have the capacity for prompt dissemination of its results… for both scientific and general educational purposes…" (McGimsey 1972: 26). Aside from emphasizing the ethical priority, McGimsey offered no concrete programs or structures for providing information access, because he realized that each state would be approaching NHPA compliance at its own pace and resource availability. In the four decades since this book was written, those suggestions would be technologically obsolete by now. Still, McGimsey set the tone regarding priority of proper data management when establishing state archaeology departments.

Continuing the idea of an ethical approach, William Lipe's 1974 article, "A Conservation Model for American Archeology" advocated for publishing raw excavation records in addition to traditional publications. This, he argued, was the only way the discipline could survive and maintain currency. With the expectation that rapid commercial and industrial development would

continue in the future, he envisioned a time would come when many sites would no longer be available for first hand evaluation. In preparation for such a time he stated, "…we should be even more concerned about the future indefinite preservation of our records and collections than about preservation of our published works…" (1974: 238) Essentially a continuation of his conservation ethic, Lipe found proper distribution of immediate and ephemeral records as constituent with the ideas grounding cultural resource management. It was critical to the "educational and political work" of being an archaeologist and the ethical mandate of expanding the public and discipline-wide knowledge of archaeology (Ibid.,).

Rounding out the 1970s was the release of the Airlie House Report. This publication was developed by participants in a seminar put on by the Society of American Archaeologists, the National Park Service, and the Interagency Archaeological Service in 1977. This seminar discussed the various issues related to environmental and cultural resource management efforts. Among these subjects was the problem of effectively communicating archaeological news and research. Chapter Four of this report, entitled Crisis in Communication, focused on this issue in particular. In this chapter, seminar participants identified three overlapping populations affected by archaeology: the general public, landowners, and those directly involved with archaeology. Also part of this discussion was the fact that the archaeological record was increasingly threatened by infrastructure development, population increase, and public interest. In order to mitigate these threats, as well inform the various public groups, there was general agreement that more effective communication channels needed to be developed (McGimsey and Davis 1977).

Of the novel approaches this seminar proposed, the creation of a central office or hub for disseminating information was the most notable. This hub would be able perform the role of a liaison of information. As such it could facilitate understanding of archaeological research as

well as disseminate information between the public, archaeologists, and state and federal agencies. To activate this plan, participants proposed creating an office within the recently developed Society of Professional Archaeologists (SOPA) now the Register of Professional Archaeologists (RPA). This idea was based on the belief that funding and work load restrictions would not permit SAA personnel to develop such an office. While an authoritative central office of archaeological communication has yet to materialize, coincidentally, the SAA does have a Public Education Committee. However, it serves as a mechanism for public outreach and does not facilitate the Airlie House goals of an office for communication liaison between archaeology and governing bodies (McGimsey & Davis 1977; SAA 2010).

By the 1980s, ensuring information accessibility had become an understood goal of best practice. The conversation turned to what sort of system could facilitate such large-scale accessibility needs. In 1981, at the First New World Rescue Archaeology Conference, one idea was to create "text-fiche" packages and other "on-demand publishing" options (Cleere 1981). While only developed in a surficial sense, these options worked from the premise of minimal production of master copies to minimize costs. The master copies of datasets and reports could then be widely reproduced for individual researchers and institutions as needed. The motivation for this idea was that the use of readily available technologies could facilitate both wide distribution as well as keep duplication costs down with microcomputing and word processing technologies still in their infancy, cost accessible measures were of the utmost concern. Still, even with cost limitations, the understanding was that the solution to archaeology's information struggle lie in harnessing new technologies that could feasibly replicate information cheaply, securely, and with a wide range of distribution (Cleere 1981).

Proper distribution issues were raised again in 1983, with the first Plenary Address to the

Society for American Archaeology. There British archaeologist Colin Renfrew berated the

assembly for what he considered a dismissive attitude toward CRM literature. In the spirit of

Lipe's conservation ethic, Renfrew emphasized the necessity of CRM data to the discipline's

collective knowledge. Frustrated at what he felt was an inadequate representation of CRM

research in publication, he stated, "I must say to you that the level of publication in the field of

contract archaeology in the United States is often so poor as to call into doubt the worth the

entire enterprise (Renfrew 1983: 7).

To ameliorate this, he implored his listeners-and the larger archaeological discipline- to

consider the benefits of the burgeoning computer database technologies (Renfrew 1983). He was

not naïve; he knew that some within archaeology held condescending views towards CRM

literature. Renfrew understood that there would be pushback against traditional publication of

CRM reports, not only from a purely funding perspective, but also because many were

unconvinced of their research worth. Still, convinced that electronic databases could strengthen

the entire discipline through increased availability and connectivity he stated,

> Now we are supposed to be in the midst of a revolution in information technology. Much
> of it relates to electronic data processing, and I still mean by publication the provision of
> a permanent human-readable report. But is it not a paradox that in the great age of
> archaeological expansion….[and] information revolution, the proportion of projects being
> adequately published, or indeed published at all, has fallen dramatically? Truly, future
> generations of archaeologists will judge that we have entered a new archaeological dark
> age, accompanied by the widespread loss of literacy (Renfrew, 1983: 8)

This was one of the first calls for computer-based information systems to be used for the

benefit of connecting the entire archaeological discipline. In 2017, it appears recent progress in

archaeology information systems and databases is only now beginning to fully realize Renfrew's

call (Cunningham 2000; Gaines 1981; Gibbs and Colley 2012; Jeffrey et al. 2009; Kansa et al. 2010; Kintigh and Altschul 2010; Llobera 2011; Ross et al. 2013; Wells et al. 2014).

The importance of connecting the archaeological profession through better access mechanisms encouraged librarians to enter the discussion with a noteworthy article in *American Antiquity.* In a 1984 article, Tozzer Library's anthropology specialist Nancy Schmidt wrote disparagingly of the lack of any "comprehensive bibliographic control over contract archaeology reports" (Schmidt 1984:1) Surveying 100 National Technical Information Service (NTIS) reports, she attempted to develop a representative sample of CRM literature for an academic library. However, she found that this could not be done. This was due to two major factors. First, she discovered an overall infrequency of publication, citing multiple instances where the total number of viewable reports from a given state paled in comparison to the number of sites investigated during a given year. The result was that attempts to establish a general selection of a given state's CRM activity could be skewed based on topic, time period, region, or other descriptors due to the inconsistency of reporting across states. As such, a library could not guarantee an appropriate survey of state literature. As Schmidt stated, "If the universe of contract archaeology reports is unknown, one cannot draw a sample from it". Second, she noticed a lack of standardization of abstracts, methods, and other site reporting criteria. From these observations she surmised it was "not possible" for repositories to provide a sample of contract archaeology literature (Schmidt 1984:586).

By the 1990s, the issue of establishing comprehensive control over the chronic issue of CRM gray literature continued (Canouts 1992 and 1994; Elston 1992; Green and Doershuk 1998). However, by this time, frustration had taken the place of the ethical altruism that characterized 1970s and 1980s attitude toward increasing information access. Many in

archaeology were angry at the lack of any sustainable systems for establishing connectivity and the threat of continued disconnection from CRM literature (Elston 1992; Janetski 1986; Williamson 1999). This frustration led one researcher to proclaim that "like the proverbial ass that starved to death standing between two bales of hay, [American archaeology] will fail to make up its collective mind until it is too late" (Elston 1992). Efforts were even slow to capitalize on the possibilities provided by the Internet, which had experienced explosive growth popular success at this time. One project that did manage to work for a time was The National Archaeological Database or NADB. The NADB was released by the National Park Service in 1992 and represented a significant leap in archaeology's harnessing of information technology to facilitate access to thousands of CRM reports. Several technical and administrative issues forced its dissolution by the mid-2000s (NPS 2016). Cathy Moore-Jansen (1997), who was the long-serving, Arkansas Archaeological Survey Registrar, noted that the NADB experienced two major problems: data currency and accuracy. These problems were a result of a lack of federal regulation requiring states' participation. Cooperation among states was inconsistent and resulted in the inability to develop controls on data quality and scheduled sharing procedures. As such, the database often held duplicates, incomplete, and inaccurate reports due to the inconsistent of cooperation. This caused a general decline in use and the perception that the NADB had wasted a potential opportunity for better data communication in American archaeology. Even with this failure, the access and management capability of information technologies was finally beginning to be realized in archaeology (Cleere 1981; Elston 1992).

As this chapter explained, state-mandated CRM research has become the majority of archaeological work conducted in the United States since the 1970s. By some estimates CRM generates half-a-billion dollars in public-private expenses and churns out thousands of reports

and data sets every year (Altschul and Patterson 2010). Still, despite no lack of debate and effort, gray literature and information access problems have continued to fester (Pilon 2000). With the 2000s though, American archaeology has made some gradual strides through the use of Internet databases (Kansa 2012; Kansa et al. 2010; McManamon and Kintigh 2010; Wells et al. 2014). Many of these online databases, unlike previous attempts, are undergirded by the open-access and Web 2.0 concepts which have grown with the Internet's development. These concepts seek to eliminate barriers to research and empower information creators in the distribution of their work (Suber 2012).The progress that has been made in the area of information flow is the topic of the next chapter.

CHAPTER THREE:
PROGRESS IN ARCHAEOLOGICAL INFORMATION MANAGEMENT

Progress in the management of archaeological information has been slow especially in the utilization of effective online, Internet database systems. Colin Renfrew first advocated the use of electronic database systems in 1983, but the full potential of such systems has only begun to be realized within the last 15 years. (Kansa et al 2010; Kintigh 2010; Richards 1998). This is due to the recent growth of two movements in Internet based information and data management: Web 2.0 and Open Access. Together these two concepts have provided the necessary means to direct information into socially linked, user-created spaces enhancing communication and collaboration (Kansa et al 2011). Further discussion of their influence in the development of linked archaeological information systems follows in the next few sections.

Web 2.0: A Short History and Description

To explain what Web 2.0 is, what came before in the form of Web 1.0 must first be explained. Simply put, Web 1.0 was the historic architecture of the Internet defined by the "unidirectional flow of information" from software developers to Internet users (Kansa et al 2011; Kansa et al 2010). Software providers of the Web 1.0 era operated under the "web as platform" framework which resulted in an Internet landscape dominated by proprietary content. This meant that Internet users could only store and search for information based on system updates provided by large software development companies or other client-server models (O'Reilly 2005).

The unidirectional flow of the Internet changed after the "dot com" bust which resulted in a crash and the failure of many sites in 2002 (O'Reilly 2005). However, out of the crash there emerged a new, decentralized way of experiencing content on the Internet. Those sites that survived the crash began to harness the power of "collective intelligence" (O'Reilly 2005; 2009).

This was accomplished through increased focus on hyperlinking data and other content to promote the collaborative sharing of information as is seen in the figure 1.1 below. Software developing companies no longer provided applications requiring updates, but, instead, provided service platforms which users could alter to generate their own content. With this new dynamic emerged the Web 2.0 era.

Figure 1.1

Web 1.0		Web 2.0

Internet Content/Sites

VS.

Internet Content/Sites

Users   Users   Users

User

The difference arises in the flow of information from top-down in Web 1.0 to multi-directional or participatory in Web 2.0.
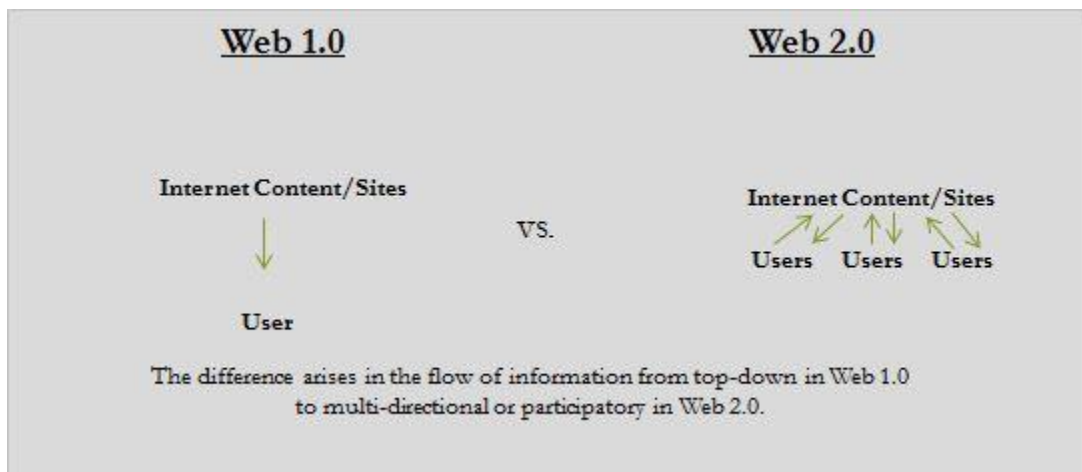
Difference in the flow of information from Web 1.0 to Web 2.0

Most histories of the developments from Web 1.0 and Web 2.0 will preface that the definitions and events that took place in the Internet's evolution are fluid, difficult to simplify, and constantly evolving. Indeed, in some respects the term Web 2.0 has become an anachronism for those who believe that the Internet has progressed to Web 3.0. This argument however, is for another thesis and will not be considered here as the challenges that archaeological information databases are undertaking still concern Web 2.0 in general (Kansa et al 2011). With the break-neck pace of change in the Internet, the imprecision in pinpointing the exact moments and methods of this evolution is understandable. Newspaper websites quickly update articles while other sites undergo wholesale interface redesigns with minimal interruption or notice. Still, for clarification as to how these features relate in archaeological information management contexts,

some features of Web 2.0 need to be defined. The following features, as described by Kansa et al. (2011) are essential to Web 2.0:

1.) User-generated content;

2.) Crowd-sourced classification;

3.) Remixable data;

4.) Enhancing and evaluating information quality;

Though not to be treated as static – which is an expressly antithetical quality of Web 2.0- these features serve as general guidelines for what to expect Web 2.0 applications to present. User-generated content places the onus of creating content onto the Internet user. From blogging, to uploading film files, to sharing data sets, the new paradigm of the Internet allows users to publish content. In a related sense, Web 2.0 empowers users to dictate the classification of uploaded content. Crowd-sourced referencing allows users to identify information with more information. Also called metadata, crowd-sourced taxonomies or "folksonomies" allow users to source information through a plethora of access points that develop through actual engagement with the content (Kansa et al. 2010).

Web 2.0 applications also feature the ability to customize uploaded content from larger software developers. These developers will often provide their basic tool and data service, called application program interfaces (API), that users manipulate for their needs. Google Maps and Weather Underground are relatively famous APIs that allow users to integrate their own data, maximizing the potential of the overall content. In archaeology, the Neotoma API, developed by Michael Anderson and Brian Bills, allows users to integrate their own research data with the Neotoma database (Goring 2012; Neotoma 2017).

The term, Web 2.0, initially coined by Tim O'Reilly in 2004, has been in vogue for nearly 15 years. While often derided as a useless marketing buzzword to generate interest in products, the larger emphasis on user involvement in content creation is here to stay and will continue to develop the way information is managed on the Internet (O'Reilly 2005; O'Reilly 2009; Kansa et al. 2011). The Web 2.0 phenomenon would not have developed had it not been for open access to data and other content sources. This complementary concept will be discussed in the next section.

Open Access: An Overview

The Open Access (OA) publication movement is the essential element to the diversity of content that users can interact with on the Web 2.0 Internet (Kansa et al. 2011; Suber 2012). If Web 2.0 is understood as the new structure for how interactions take place on the Internet, then Open Access serves as how that structure is made possible, by providing the necessary customizable or "re-mixable" data. The user-generated features and emphasis of Web 2.0 are not possible if data (photos, reports, and other files) are not freely available for users to engage with and to customize to create new information. Open Access encompasses a litany of aspects related to connecting Internet users with information by ensuring the widest possible distribution with the fewest barriers. Wikipedia, Flickr, Archive.org, and Delicious are just a few of the most popular websites operating under this open source context allowing users to freely classify, edit, archive, and create new content.

Defining Open Access

Different specializations within the fabric of the Internet have also customized the meaning of Open Access. In the research community, Open Access has come to be defined as how literature and data are disseminated. The following two definitions, provided by Peter Suber

29

and the Budapest Open Access Initiative (BOAI), will serve to frame further description. Proposed in 2002, the BOAI described the Open Access movement as the convergence of old and new traditions. The old tradition is the scholarly desire to publish research for the pure purpose of bettering the world. The new tradition is the Internet and its capacity for increasing connectivity. Together, they create a new dynamic of connected knowledge called Open Access. Describing the framework of this new dynamic, the BOAI's (2002) stated,

> By "open access" to this literature, we mean its free availability on the public Internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the Internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.

In the decade since this statement was released, the Internet and the amount of content considered for Open-Access have expanded exponentially. Still, the definition and expectation of openly accessible content has remained relatively the same. As Peter Suber (2012: 4) described, Open Access is the provision of content that is "digital, online, free of charge, and free of most copyright and licensing restrictions."

Suber's definition is especially helpful because it highlights the reality that there are some scenarios where restrictions are needed. Restrictions on OA content are made possible in large part due to Creative Commons (CC) licensing, which has helped researchers navigate the legal situations involving copyright. CC licensing provides a "some-rights reserved" rather than an "all rights reserved" copyright. This allows a researcher to freely provide open access to data while still being able to maintain legal ownership. The non-profit company Creative Commons has developed several legally binding licenses with specific guidelines based on a data-creator's needs and intentions for their content. The Attribution CC (BY) license is the most permissive

permit offered, allowing for "…maximum distribution and dissemination of license materials" (Creative Commons 2017). This license undergirds many of the archaeological information systems that will be discussed in the next section (Kansa and Kansa 2013).

Archaeological Information Systems

As mentioned in Chapter 2, developing comprehensive archaeological information management and communication systems has been difficult. A mix of technological barriers and a lack of consensus on appropriate data management approaches has thwarted nearly three decades of effort. However, in recent years, leading national granting foundations such as the National Science Foundation and the National Endowment for the Humanities have included data management regulations attached to their funding policy (Kansa 2012; NEH 2017; NSF 2017). Also, recently proposed legislation under the Fair Access to Science and Technology Research Act (FASTRA) would require earlier release of federally funded research (S.779 2017). As such, developing archaeological information systems is essential to the discipline as a means of maintaining currency with the world of research.

Current research in archaeological-information management systems emphasizes methods of information connectivity (Kansa et al. 2010; Kansa and Kansa 2013; Wells et al. 2014). Establishing connectivity means developing concept-oriented ontologies and linked data systems that establish broad, linked connections for content across the Internet (Digital Antiquity 2013; Kintigh 2006). Today, CRM reports and other, related data constitute much of the unpublished "gray literature" in American archaeology (Ferris 2002). Constructing systems that allow this body of literature and other archaeological data to be openly accessible is an emerging field of research and application in archaeological-information management (Jeffrey et al. 2009;

Kansa et al. 2012; Ross 2013). Three major systems that have been in development will be discussed in the following sections.

The National Archaeological Database (NADB)

For American archaeology, the first major online repository to be developed was the National Park Service's (NPS) National Archaeological Database (NADB). Launched in 1992, it was overseen in conjunction with the University of Arkansas' Center for Advanced Spatial Technologies (Kersel and Luke 2009; Moore-Jensen 1997). This database served as a bibliographic index of over 350,000 permits, records, GIS data, and other items related to cultural resource management. Divided into three modules: Reports, NAGPRA, and MAPS, NADB users could view and download resource metadata as well as perform search queries based on criteria ranging from state, cultural affiliation, material, year of publication, title, and author (NPS 2016). Novel for its time, the NADB was accessible via two methods, through the NADB website and by telnetting directly to the system. Access via the telnet also featured an instruction manual that users could download when requiring assistance with navigating the database.

By linking resources from isolated State Historic Preservation Offices, this system sought to "improve access to information on archaeological activities nationwide" (NPS 2016). For a time, the NADB did exactly that. By providing a centralized archaeological data repository the NADB was a fundamental step in eliminating the gap between the larger profession and the vast amount of gray literature that remained scattered across the fifty states (Seymour 2010). However, the system was not without problems. For instance, there were incessant complaints about the database's inventory and overall workflow mechanics. The NADB listed an extensive range of archaeological data from the 1700s through the 1990s. This range was heavily

imbalanced, with most reports and data coming from between 1970 and 1980. This resulted in a less than comprehensive inventory. Additionally, as the system aged, the information became increasingly out-of-date. This derived from the lack of any mechanisms or policy to require SHPOs to submit reports. By the mid-2000s, the database had ceased updating its system records (Moore-Jensen 1997; NPS 2016).

The Digital Archaeological Record (tDAR)

In 2011, the NADB was acquired by The Digital Archaeological Record (tDAR). This new depository was initially the product of a proposal developed at a 2004 workshop entitled, "Enabling the Study of Long-Term Human and Social Dynamics: A Cyberinfrastructure for Archaeology". This workshop sought to develop an answer to the question, "…how to synthesize systematically collected data recorded using different coding conventions, across multiple data sets and sites" (Digital Antiquity 2017). From that workshop, a list of recommendations emerged and was published in the *American Antiquity* article "The Promise and Challenge of Archaeological Data Integration" (Kintigh 2006*).* The article considered the overarching need for such cyberinfrastructure, the ethics of data sharing and preservation, the steps to be taken to developing standardized metadata and ontologies, as well as the basics of integrating new and legacy data housed all over the country. From these recommendations, in 2006, the National Science Foundation (NSF) funded a grant to develop a prototype information system that became tDAR.

Today, tDAR has become an international archive of archaeological records assembled by an interdisciplinary team of archaeologists and information scientists to enhance the connectivity of archaeological research. With the 2011 integration of the NADB collection,

tDAR's searchable holdings are now over 400,000 reports, data sets, and other information pertaining to archaeology around the world.

Like the NADB, tDAR allows users to view and download content in many digital formats. tDAR, though, takes an innovate step in the way it allows for the preservation of digital archaeological data. This new step is most noticeable in the system's file submission workflows. As opposed to the NADB, which required SHPOs to submit data for publishing, tDAR permits individual contributors to submit database records. Borrowing from the Web 2.0 concept of user-generated content, tDAR allows users to submit and edit metadata to new and preexisting records as well as to submit whole file sets through a user-friendly drag and drop interface. This invariably creates a space for yet another Web 2.0 concept, social-connectivity. For archaeology, tDAR acts as a sort of archaeology social media platform for exchanging information. All resources submitted to tDAR receive a unique DOI, which allows for easy citation, and all of the major search engines provide indexing to the resources, which facilitates even greater breadth of connection to submitted data. In creating a user-centric system, tDAR democratizes providing access and avoids the inventory and "recency" shortcomings that stifled the NADB (Digital Antiquity, 2013; Moore-Jensen 1997; NPS 2016).

tDAR's Structure for Data Connectivity

In order to develop an information management system that facilitates connected, user-generated, data publishing, there must be an expansive configuration manner in which data can be linked. With tDAR, ontology-based data integration provides just the needed structure. Ontologies are essentially "systematic representations of relationships among concepts" (Kintigh 2006: 573). The ontologies tDAR uses are based on two metadata (data which describes data) standards that are widely used throughout various discipline-specific information systems.

Descriptive information helps users locate records by encoding identifying features of information sets that range from cultural, temporal, and spatial data to authorship and granting support. Incorporating a combination of both Dublin Core and MDOS, tDAR has developed a "rich metadata schema" which is constantly developed (Digital Antiquity 2015). Ontologies are also established via contributor submissions which allow the system to formulate practice-based ways of linking disparate data sets (IDEALS 2013). For example, ontology for an artifact record on tDAR can be established based on metadata relating to relative dating of projectile points, geospatial occurrences, or any other concept-oriented associations. Without this practiced-based schema, comparative analysis as well as integration of different data sets would be impossible (Digital Antiquity 2013c; IDEALS 2013; Kansa and Kansa 2013; Kintigh 2006; Snow et al. 2006).

tDAR: Archiving and Potential for State-CRM

As noted above, in 2011, tDAR integrated over 400,000 state and federal CRM data from the NADB. As such, tDAR is more than just the data publisher for individual researchers. In addition to data connectivity workflows, tDAR's archiving system provides services to help mitigate the effects of file degradation. These preservation workflows include the capability of accepting nearly 20 digital file formats, including remote sensing files, 3D scans, shapefiles, GeoTIFF, GeoJPG, and many others. Once received, the data are then converted into .pdf, .doc, .csv, .xls, .accdb, .tiff, or .jpg, files and are archived in both the original format as well as a preservation format. The original format is curated at the bit level while the preserved version is migrated into different formats as needed to ensure compatibility with emerging software developments (Digital Antiquity 2013d). All files are digitally preserved through scheduled archiving and preservation. This entails scheduled inspection of files for possible deterioration

by through maintenance procedures as well as planning for file transfers in the event of technology advancements. Also, in the event tDAR dissolves, the entire system's collection will transfer the Arizona State University Digital Repository for permanent, open use. (Digital Antiquity 2013d; IDEALS 2013). In conjunction with the legacy data of the NADB, these offerings make tDAR an ideal repository for CRM and state agencies looking to store their data.

Considering the line between access and security, the capacity for user archiving of sensitive compliance reports, geospatial imagery, and other data does have its issues. (IDEALS 2013). Per state and federal law, SHPOs must restrict the level of information the public can derive from CRM reports. Understandably, this has proved a primary barrier to achieving greater connectivity to CRM data in the past. To observe these restrictions while also providing expanded access, tDAR has formed a partnership with Cultural Heritage Partners, PLLC. Collaborating with this legal firm, tDAR policy allows content contributors to maintain strict control over the levels of access to sensitive data (Digital Antiquity 2013a; Kintigh 2006). As such, tDAR advertises its access and security structures as a platform for states and CRM agencies looking to fulfill data management obligations required by federal cultural preservation laws. Even with these compliance assurances, the existence of data publishing and archiving fees have turned some states and researchers away. In a sense, this is why tDAR has not enjoyed more implementation as a national database.

Nevertheless, with innovative, user-centric platforms, systems like tDAR are keeping data safe while also permitting more access to data than has been previously possible (Digital Antiquity 2013). Infrastructure, like tDAR, represents one of the best collaborations in archaeology and information science. By effectively implementing Web 2.0 user-generated features and Open Access concepts, tDAR displays how archaeological-CRM research can be

more digitally connected while also ensuring site security and preservation (Beale 2012; Beck and Neylon, 2012; Gibbs and Colley, 2012; Jeffery et al. 2009; Ross et al. 2013). The progress achieved by tDAR is matched only by another equally unique development in archaeological information management: Open Context. This system will be the topic of the next section.

Open Context

Developed in 2007 by Eric and Sarah Kansa, Open Context is one of the other recently developed, platforms for publishing linked archaeological data. Managed by the non-profit tech publisher Alexandria Archive Institute, Open Context – in collaboration with the California Digital Library — is an open-access system capable of publishing and archiving primary archaeological data. Like tDAR, Open Context works to make structured (machine readable) data available to researchers. These data can be processed by software for visualization analysis or in combination with other data sets for research (Digital Futures, 2013). However, unlike tDAR, archiving is not the primary focus of Open Context. Taking a slightly different approach, Open Concept's primary goal is open access to linked data. Operating under the premise that digital publishing within traditional structures is not conducive to the needs of 21st century researching, Open Context facilitates data dissemination outside mainstream structures (Kansa 2012). This means utilizing platforms outside of both digital repositories that impose paywall access barriers and commercial academic publishers which profit off publicly funded research (Kansa et al, 2010; Kansa et al 2012; Kansa and Kansa 2013; Open Context n.d.). Instead, with respect to larger Linked Open Data concepts, Open Context emphasizes broad, multi-format record hosting they call the "data sharing as publication" model (Kansa et al, 2010).

Publishing in Open Context

Publishing with Open Context focuses on the concept that data needs to be prepared for reuse in order to be integrated with disparate data sets. As such, publishing in Open Context begins with data being assessed by specialized editors who analyze the records. Involving both the Open Context editors and the data contributor, the editorial process combs through the data, integrating metadata standards and vocabularies from peer-repositories (Kansa et al, 2012; Kansa and Kansa, 2013; Open Context, n.d.). This review is necessary because Open Context deals primarily in raw, field data which arrives in a variety of formats and descriptive features. As a "small science," archaeology operates with methodologies and technologies dictated by the researcher's training and the specifications of each site (Kansa et al. 2010). The result is that the techniques used to extract data create a body of records described in different metadata standards and formatted in various file types. These differences, though, are not an issue. Open Context stakes its claim by accepting a wide range of metadata schema and formats from field notes and disjointed Excel spreadsheets, to electronic distance measurements, GPS files, and other born digital recordings.

Once the data has been edited and standardized for integration, it needs to be published and structured within a data modeling system that can make it discoverable in relation to other records. Initially, Open Context used the ArchaeoML model, which focused on item-level description and broad, abstracted frameworks to create connections between datasets. At the time, this was a vital step forward in Open Context's development. This tool helped users select rich, by using widely known metadata standards like Web Ontology Language (OWL) and controlled vocabularies Simple Knowledge Organization System (SKOS) to code and describe the data. In the uploading process, a display showed potential relationships for the dataset with

the addition of each metadata. This allowed data submitters to see how their data connected to other information sets. Additionally, each item uploaded to Open Context received its own URL. The "one URL per potsherd" framework helped not only make citation easier, but also provided citation within Open Context (Kansa et al. 2010; Kansa and Kansa, 2013). Still, ArchaeoML was just one data model working within one digital repository. Outside of Open-Context, this data was still difficult to discover. Rather than perpetuate the information dissemination issue of hosting data in a complex online database, Open Context has turned its attention to development of Linked Open Data approaches (IDEALS 2013; Open Context n.d.).

Open Context as a Linked Open Data Platform

As a concept, Linked Open Data (LOD) concerns using web identifiers to connect data in relation to shared descriptors or other concepts" (Kansa et al. 2011). In practice, this means establishing integrated meanings between online repository's collections using shared vocabularies and public web Uniform Resource Locators (URLs) (Berners-Lee 2006; Kansa et al. 2011). With Open Context, LOD approaches are identified through two methods. Firstly, Open Context still emphasizes "one URL per potsherd" mantra that originated with the ArchaeoML by listing each item in a dataset. This makes it easy for researchers to understand which record is being cited and where it is referenced. By using the easy to locate "http://" reference location, users and software will be able to provide points of contact for entire datasets on the public Web (Kansa 2014).

Secondly, Open Context links data published in other discipline spheres on the Internet. One of the primary locations that Open Context references its datasets is the Pleiades gazetteer. This platform is a collaborative project created by the Institute for the Study of the Ancient World and the Ancient World Mapping Center at UNC Chapel Hill. Much of Open Context's

holdings concern the ancient world projects and other similar data. Referencing records in discipline- specific areas of the web makes it easier for users to create connections in context. Linking to Pleiades also makes it easier to connect users to content from other data resources that link records to Pleiades. In addition to traditional archaeological data, Open Context also hosts a variety of biological and zooarchaeological prehistoric data. To increase exposure of this information, Open Context also references records in environmental repositories such as the Encyclopedia of Life (Alexandria Archive 2016; Kansa 2014).

In conjunction with these methods, Open Context facilitates LOD by also referencing shared metadata schemas, vocabularies, and data organization models from notable institutions such as the British Museum (Kansa 2014). Also, described as comparative data integration, sharing records and identification schemes helps repositories ensure a stable means of identifying and referencing data across the web. Open Context's initial attempt at such a system – ArchaeoML— was a highly abstracted and generalized framework for creating relationships between archaeological content and other data (Kansa et al. 2010). Through the data import tool, *Penelope,* ArchaeoML permitted users to catalogue archaeological data at the item level, which gave other systems the ability to reference Open Context records using other broad schema (Kansa and Kansa 2013). Currently, Open Context is implementing CIDOC-CRM which has, for now, become the ontology standard in cultural heritage information management systems (Kansa 2014; CIDOC-CRM 2017).

Open Context for CRM

Overall, Open Context was developed as a platform to address data professionalism throughout American archaeology. Although primarily involved in commercial academic publishing alternatives, Open Context developers are also facilitating American CRM. Kansa et

al. (2010) identified three reasons why State-CRM data is not better distributed: time, client-orientation, and lack of incentive. Moreover, traditional publications dismiss primary CRM documentation due to professional bias, differences in content requirements, and formatting (Seymour 2010). Combined, these factors preclude proper dissemination of gray literature, which is the largest body of archaeological literature in the country. With declining Internet costs and the "Open Source" movements influencing data management policies, Open Context developers point to their platform as a solution to the gray literature issues plaguing CRM (Kansa et al. 2010; Kansa and Kansa 2013; NSF 2017).

Open Context initially introduced their data model, ArchaeoML, as a solution due to its ability to "accommodate the wide diversity of archaeological recording standards" (Kansa et al. 2010: 309). This model made Open Context a novel system that could "work for more than one project" (Ibid.). With CRM research reporting new parameters and different formats at each project, an integrating platform like Open Context would be useful for data management. Ultimately however, the combined applications of CIDOC-CRM and LOD replaced ArchaeoML because it could reference data outside of Open Context with broader descriptive standards. Other features were also attractive, such as the collaborations with Github – a software version control platform- and the California Digital Library, which provided Open Context with the ability to help state and CRM agencies preserve raw data for the long term (Kansa and Kansa 2013).

These modeling standards give Open Context the opportunity to surpass other OA platforms and assist CRM because of its specialization in raw, primary data. Traditional publications dismiss primary "gray" data, but Open Context understands that these data "often promise rich and under-realized interpretive potential" (Kansa et al. 2010: 308; Seymour 2010).

41

Going a step forward, Open-Context takes this data and makes it more useful by integrating it within the larger body of archaeological information, thus opening the context of the data. Offering editorial oversight that standardizes structured data through machine readable representations with common metadata elements, gray literature is put on an equal playing field with traditionally published data. This is because the publishing process tags data with item-level descriptive elements and a unique URL, thus broadcasting its discoverability on the common web. Through this standardization process, Open Context has the potential to provide secure, open access to gray CRM data (Kansa and Kansa, 2010).

Future Directions for Archaeological Information Systems

In 2017, the potential of platforms implementing Web 2.0 and Open Access concepts are only just beginning to be fully realized. This chapter's discussion of tDAR and Open Context highlight two of the best developments in archaeological information management and the continued progress toward connecting researchers to data (Beck and Neylon 2012; Jeffrey 2009; Kansa et al. 2012; McManamon and Kintigh 2010; Ross 2013). However, these Open Access systems lack widespread implementation on the state level in the United States. This is because both emphasize their role as alternatives for academic commercial publishing and neither is financially independent. Both platforms rely largely on grants from the national funding agencies and currently operate contributor fee schedules to process data. Critics have cited this as proof of the unsustainability of Open Access platforms (Bartman 2012).

It is true that Open Access repositories employ a diversity of financial models which need more development for long-term sustainability. However, developers of Open Access platforms are confident that, as OA concepts become more expected in data professionalism, new collaborations will result in financial sustainability (Kansa and Kansa 2013a). On the national

scene, making data more accessible appears to be the growing trend. In 2015, the Obama administration oversaw the introduction of the Fair Access to Science and Technology Research Act (FASTRA) which was accompanied by the White House Office of Science and Technology Policy memo requiring earlier release schedules for federally funded research (S. 779 2015; The White House, President Barack Obama 2013). Also, just this year, the NSF and the NEH updated policies promoting more open access for publicly funded research (NEH 2017; NSF 2017). These new policies require grant recipients to include detailed information management and access plans for their research to be considered for funding. This provision could essentially waive the contributor fee making depositing raw data into Open Access databases more attractive to state archaeology departments (Kansa 2012).

In any event, Linked Open Data information systems are not just the future but very much the present reality. These platforms are shaping the conversation on how archaeological information can be most effectively disseminated (Kansa and Kansa 2013). Their further development could better connect the wider discipline to CRM compliance and gray data (Kintigh and Altschul 2010). With the interdisciplinary push towards open-data, American archaeology should consider continued development of these information systems (Kansa and Kansa 2013; Kintigh and Altschul 2010). Ignoring these trends will result in the disconnection of researchers and the public from rich archaeological data. The next chapter will investigate how state public outreach has developed and how open access systems can be utilized to foster expanded interaction with archaeological information.

CHAPTER FOUR:
PUBLIC ARCHAEOLOGY DEVELOPMENTS IN OUTREACH

In conjunction with the suite of online information systems being developed, there is a renewed emphasis on public outreach strategies. Intradisciplinary communication is always important, but the larger society must benefit as well. Otherwise, as Jameson (1997: 13) writes, "…it [archaeology] is ultimately an empty endeavor". The distinctive form of outreach within American archaeology, often called public archaeology, has evolved as an all-encompassing outreach methodology. Specific to this method is professional collaboration with the public regarding archaeological research and techniques (Marshall 2002). Typically, this "distinctive set of practices within the wider discipline" has taken the form of exhibits at museums, lectures at community centers, and allowing visitors to take part in archaeological excavations (Marshall 2002: 211; Stone 1997). Unfortunately, the regularity of budget cuts has made these traditional techniques difficult. However, it is more pertinent now than ever to increase public understanding of the necessity of archaeology. Originally seen as an altruistic gesture, outreach is now critical to increasing public support (Beale 2012; Beale and Beale 2012; Birch 2006; McManamon 1991).

Coupled with this reality is the rise of the digital technologies and the social-media age, which is pushing outreach development to look outside of the traditional methods and toward the open Web (Beale 2012; Edwards-Ingram 1997; Lake 2012). For public outreach, the open Web significantly affects how information is communicated between archaeologists and the public needs updating. As Beale writes,

> …we can no longer justify project-based community archaeology as the most appropriate model for the relationship between academic and commercial archaeology on the one hand and communities on the other as. The web is providing other ways to form and join communities and to discover and participate in archaeology (2012: 626).

Exhibits, talks, and volunteer opportunities at dig sites will continue have their place in teaching archaeological principles. However, as Beale implores, this cannot be the end-game and that profession must find innovative ways to engage the public where they are, which is increasingly on the computer.

This chapter will first define public archaeology as well as track its historical development. Once established, attention will shift to the foundation for OA public outreach provided by the Internet. The chapter will end with a summary of Nicole and Gareth Beale's proposed online protocol for OA public outreach.

What is Public Archaeology?

Before discussion of using Internet-based approaches to connect the public with archaeological information, there must first be some clarification of the term 'public archaeology.' The first use of the term came in the *Public Archaeology*, in which Charles McGimsey (1972:1) stated that "there is no such thing as private archaeology...". This is a classic statement because of its emphasis on the notion of a shared entitlement to cultural heritage. However, the ambiguity of the explanation caused more confusion than direction. Coupled with the simultaneous explosion of publicly funded archaeology in the 1970s, "community archaeology," became interchangeable with CRM (Birch 2006; Marshall 2002; McGimsey 1989). In his edited text also titled *Public Archaeology,* Nick Merriman (2004) highlighted the blurring between CRM and public archaeology when recounting the history of state archaeology development. Citing the increasing professionalization of compliance archaeology, Merriman noted states and private firms were taking less interest in public outreach. The unspoken position was that public interest was sufficiently served "through the preservation of cultural resources or their careful recording during destruction" (Merriman 2004: 3). A public service in the abstract,

CRM became "public archaeology" in the sense that records and other products of archaeological inquiry were theoretically available for use in some "vaguely defined future time called posterity" (Merriman 2004:3). In some respects, this attitude is still pervasive in state policies—this attitude was one of the primary motivations for this study.

Public Archaeology as an Exercise in Collaboration

As CRM and public archaeology have become standardized, the terms are now thoroughly differentiated (White et al. 2004). Public archaeology has become better defined as a suite of approaches emphasizing outreach and education (Marshall, 2002; McDavid 2011; McManamon, 2000; Merriman, 2004; Simpson, 2008). Writing years later to clarify the difference, McGimsey (1989:73) described public archaeology as "the interplay or, better, interchange" between the professional archaeologist and the members of a community in a clearly educational endeavor (McGimsey 1989: 73). This interchange involved a system of responsibilities. For the archaeologist, there must be effective communication between professionals and the public. The public, on the other hand, was responsible for supporting archaeological legislation and participating in site activities. Unlike the passive approaches of the past, McGimsey's definition precluded a simple trickling down of information from archaeologists to the public. Most recently, McGimsey's (1989) emphasis on the collaborative nature of outreach has been expanded to include harnessing the local community's expertise to assist in research. Writing about the public's active ownership of the process as a definitive aspect of public archaeology, Yvonne Marshall (2002:212) notes, "…at every step in a project at least partial control remains with the community".

Some archaeologists have also offered definitions emphasizing a focus on innovating field methods or on the myriad of case-specific approaches they personally found to be

46

successful (Clark 2015; Gallivan et al. 2011; McManamon 2000). Still others have advised

against adopting a strict definition for 'public archaeology,' for fear that it may inadvertently

create artificial boundaries as to what can be considered public archaeology (Fagan 2002).

Nevertheless, McGimsey's (1989: 73) clarified definition has come to undergird the "essence of

public archaeology" as open communication and participation in the discovery and implications

of archaeology. In the next section we will consider public archaeology's epistemological

outgrowth from larger movements within archaeology as well as the professional and socio-

historical context that gave birth to the principles and methods of this approach.

The Development of Public Archaeology in the United States

      Developments in the Profession

      Public archaeology is essentially an outgrowth of the epistemological shift from

processualism to post-processualism in the 1960s and 1970s (Shanks 2008; Simpson 2008). In

the middle of the 20th century, archaeology was defined by a processual approach to method and

theory. Processualism placed an emphasis on understanding how peoples and cultures lived and

less on the classification of cultures and artifacts. Processual archaeology sought to understand

social change and explain how human *processes* related to adaptations across "the total range of

physical and cultural similarities and differences characteristic of the entire spatial-temporal span

of man's existence" (Binford 1962: 217; Trigger 2016). To explain this total range,

processualism advanced the use of the "hard science" methods and techniques to render

objective cultural truths. To a point, this was an improvement on what some have considered an

early failing of archaeology which focused primarily on descriptions, timelines, and hierarchical

categorization. Ultimately, though, processualism's reductivist approach ignored the broader

anthropological and sociological elements in the archaeological record (Hodder 2000; Simpson 2008; Trigger 2016; Yasaitis 2005).

The objectivist restraints of processualism ultimately created the post-processual movement (Simpson 2008; Trigger 2016). Unlike processualism, post-processualism denied the ability of research to arrive at absolute truth. Instead, post-processualism admitted relativity in all aspects of analyzing cultural material and human understanding. In place of "hard science" methodologies, post-processualism in archaeology brought in anthropological, sociological, and other qualitative social science theories. These external approaches helped to highlight the subjectivity and different dimensions to the human experience as it registers in archaeological contexts (Shanks 2008; Simpson 2008). Acknowledging external contextual theories expanded not only the manner of discovery and topics deemed worthy of study, but also who is permitted to take part in that discovery. Simpson (2008: 4) summarized this phenomenon stating: "These theoretical developments have also enabled a philosophical shift in power, and control… it is increasingly 'required' that archaeologists consider the values attached to the past outside their own sphere of thought and work". For historians of the discipline, this philosophical shift, at least in theory, represented the beginning of public outreach. This is because, for the first time, the discipline recognized the relative aspects of discovery and the theoretical value of external approaches – including knowledge and expertise of local communities – for addressing archaeological questions.

Developments in the Social Sphere

Public archaeology is not just the product of academic squabbling. It is arguably just as much an outgrowth of the larger socio-cultural shifts the U.S. experienced in the middle of the 20th century. Following the Second World War and the Civil Rights movements of the 1960s and

70s, a cultural fatigue hung over the nation (McGimsey 2004; Shackel and Chambers 2004; Silverman 2011). The traditional cultural forces of positivist, materialist security affirmed the power of authority and pure objectivity in investigation but also ignored the growing influences of globalism and post-modernist critiques. By the mid-century, these forces were waning in the popular U.S. cultural psyche and as such, the social understanding was growing to embrace a new paradigm focusing on the reflexive power of information to liberate, empower, and address contemporary issues (Lamphere 2004; McGimsey 2004; Trigger 2016; Yasaitis 2005).

Across the country, this new paradigm translated into increased civic engagement and empowerment of individuals to access and assist the development of public information for the "public welfare" (McGimsey 2004: 10). While this shift manifested differently across the social context, in archaeology the physical landscape came to be understood as also within the public domain of knowledge. As such, the "public welfare" came to be "the legal right…to information about that landscape, both past and present…" (McGimsey 2004: 10; Trigger 2016). In this era of activism and social struggle, information provided the keys for historically powerless publics to acquire power. Public archaeology, then, grew out of a cultural context where information experienced a renaissance as a resource for solving contemporary issues for these groups. Though it was not until the 1980s that outreach became widespread, an emphasis on outreach has always stressed the power of information to highlight communities traditionally silenced in the archaeological record (Blatti 1987; Edwards-Ingram 1997). From this perspective, Native American groups developed the language to fight for public-oriented legislation, such as the North American Graves Protection and Repatriation Act (NAGPRA) (Lamphere 2004; Simpson 2008; Yasaitis 2005).

Several high-profile public archaeology cases have shown, however, that contact with information and applying the principles of outreach can be challenging, especially when the array of interests related to discovery, disposition, interpretation of sites, and the implication of new knowledge pose challenges to or highlight cultural sensitivities and preconceived ideas about historical events (Gallivan et al. 2011; La Roche and Blakey 1997; McDavid 2011; Marshall 2002; Praetzellis and Praetzellis 2011). Added to these challenges is that public archaeology can take place in almost any setting. Increasingly, this setting is the Internet (Lamphere 2004). As such, public archaeology must understand how to use the Internet to engage the public with archaeological information (Beale 2012). Progress in this development will be the subject of the next few sections.

Developments in the Digital World

Much has been written about how CRM as public archaeology fits within archaeological theory (Hodder 2000; Marshall 2002; Simpson 2008; Smith 2004). A child of processualism, CRM embodies objectivist scientific methods. The simple motivation to record "the total range of physical and cultural similarities" through a system of compliance and procedure exudes a positivist confidence in the ability to research and record (Binford 1962: 217). The post-processual movement rejected this orientation, instead emphasizing a more critical approach (Shanks and Hodder 1995; Smith 1994). Bringing in a range of self-reflexive perspectives, post-processualism emphasized the applied, public potential of archaeology to mitigate contemporary issues (Simpson 2008; Smith 2004).

Digital archaeology is an emerging concept that acknowledges the influences of open, digital technologies on archaeological theory and method (Evans and Daly 2006). Although digital archaeology is not really at the same level in the processual vs. post-processual paradigm,

it is a perspective influencing how archaeologists practice archaeology. Writing in favor of digital archaeological perspectives, Ezra Zubrow's ideas have immensely influenced this discussion, setting it squarely against post-processualism. Declaring the two positions as "incompatible," he argues that digital technologies allow for reconstructive orientations to research as opposed to post-processualism's deconstructive approaches (2006:14). With data standard modeling, 3D imaging, and mapping techniques, researchers develop and broadly disseminate detailed site and artifacts renderings allowing for more "measured" understandings. Understandings, that Zubrow finds, no deconstructivitst philosophical approach can emulate (2006:17).

Unlike Zubrow though, this thesis, does not exclude post-processual influences especially concerning its deconstructive, "wisdom of the crowd" focuses. Instead the intention is to understand, how the proliferation of digital technologies fosters an increased dependence on post-processual collaboration, public outreach, and "open source knowledge" (Boast and Biehl 2011: 125). Connected by an increasingly complex network of digital signals and platforms, public archaeology is dependent on collaborative thought in digital spheres. The archaeology of today—be it outreach oriented or purely academic— rarely takes place with individuals operating in the same time or place. From the desktop researcher, to the volunteer field workers, records are born digitally, used digitally, and are non-concomitantly digitally communicated. Writing before Open Access entered the archaeological lexicon, theorists like Zubrow understood that digital methods represented a progression toward open and "broadening participation" (2006: 27). This broadening participation permeates the way data is created, disseminated, and utilized. How state departments adapt to this new progression will prove beneficial for the management of CRM data for research and public outreach.

The Internet and the Collaborative Foundation of Online Outreach

The potential of Web technologies for connecting researchers to data have only recently been realized, but they are not the only audience interested in archaeology (Kansa 2012; Kintigh 2010). The public is also interested in archaeology (SAA 2000). Progress, though, has been slow in developing web-based public platforms because of the scope of the potential audience. The Internet is the single largest information platform in our society. Internet Live Stats—a website which tracks Internet usage in real-time estimates the total number of users at over 3.7 billion in 2017. Nearly half the world population is engaging with information online. The challenge, then, lies in understanding how to engage this vastly expanded and interconnected public audience. With the growth of Web 2.0 and OA-based systems for researchers, online public archaeology developers are also turning to these concepts to create engaging platforms where synthesized research can be disseminated for outreach.

Across the disciplinary spectrum, current research is emphasizing migrating data onto the Open Web where intersecting user communities are congregating. Public archaeology is no exception to this (Allison 2008; Beale 2012; Brown 2011; Kansa et al. 2012; Kintigh 2010; Lake 2012; Llobera 2011; Ross 2013; SCOAP[3] 2017). Developed platforms, like the non-profit group Open Knowledge Foundation, which promotes open data exchange, has recently developed an Open Archaeology think tank. This think tank provides a web space for interested professionals and non-professionals to discuss and integrate archaeological data across the Internet (OKFN 2017). The Linked Open Data system PELAGIOS Commons (Pelagios: Enabled Linked Ancient Geodata in Open Systems) represents another unique approach to connecting intersecting online communities to discover and submit datasets of varying formats. Information is categorized in "Working Groups," which are governed by members of the PELAGIOS Commons community.

These members help users edit the scope, language, temporal, and pedagogical features of information to ensure that uploaded content reaches everyone possible (Barker 2011; Pelagios Commons 2017a). Through the use of "meta-links," connections between clusters of concept-related materials from an infinite number of sites are made, bringing online users in contact with the "numerous silos of data that exist online" (Barker 2011; Beale 2012).

Both open-focused developments signal the potential for online public outreach. By creating social networking web spaces, these systems make information more approachable. The specialist and non-specialist can now engage in decentralized analysis of geospatial, historical, and archaeological material (Barker 2011; Pelagios Commons 2017). What has made these systems so successful is their focus on collaboration and interdisciplinary efforts to achieving open data (Beale 2012; Kansa 2012). Pooling together the talent and resources necessary from different organizations has helped these programs thrive. For example, PELAGIOS Commons was a group effort of multiple partnering platforms including Pleiades and Nomisma. These partnering systems provided much needed help establishing data modeling and citation mechanisms (Kansa 2012). If the successful collaborative efforts of these systems are any indication, it is reasonable to presume that outreach researchers will be anxious to harness similar model for public archaeology approaches (Beale 2012; Lake 2012).

Nicole and Gareth Beale: Open Access Public Archaeology

Nicole and Gareth Beale are two such researchers; they find OA to be the most promising resource in developing online public archaeology. This is because both OA concepts and public archaeology thrive on the collaborative expertise of intersecting communities (Beale and Beale 2012; Lake 2012). As Nicole Beale (2012: 616), writes, "Community archaeology approaches support the organizational structure that underpins open practice." Unfortunately, however, the

Beales found that most public archaeology today does not emphasize collaboration but rather is grounded in a specific "project basis" (Beale 2012). The project basis exists because many public archaeology activities take place on government-commercial, compliance-related projects. At these types of sites, time and financial pressures force community projects to be carried on in the "archaeology from above" paradigm, with the public receiving only trickled down benefits (Beale 2012). Project- basis milestones determine how the program will unfold and how data is released all before contacting local communities. The result is that community programs often end up working away from the public or without their involvement entirely.

The Beales found public archaeology carried out in this manner stunts collaborative engagement. Simply approaching outreach projects as a product to be distributed to an interested, yet, passive crowd is not proper public archaeology (Beale 2012; Beale and Beale 2012; Lake 2012). Real, online-public archaeology is only actualized when the discovery and creation of data is collaboratively endeavored rather than stemming directly from the researcher. It is widely agreed that including local communities and other interested groups is essential to the process of conducting true public archaeology (Lees and King, 2007; Little 2007; McManamon 2000b; Silverman 2011; Shackel and Chambers 2004). This is because local communities possess expert knowledge of project sites and have insights into the disposition and interpretation of site data. The context of public outreach on the Internet highlights this need even more. As Nicole Beale (2012:621) writes, there needs to be a "shifting focus to the anticipated outcomes of releasing the data" as opposed to simply releasing the data itself (2012: 621). What this means is that online projects must develop extensive, collaborative research designs with invested communities. Such projects should design web-spaces, like the ones mentioned above, for the public's involvement in the production and interpretation of data. However, single institutions —much less individual

54

researchers— do not have the means to provide resources for collaborative, open data platforms, much less the capacity for developing entire research designs.

To resolve this shortcoming, Nicole Beale suggests the establishment of an outreach archaeology-based research design to be developed collaboratively by public archaeology specialists within an international cultural heritage institution. This organization could develop such a research design by creating a protocol for community archaeology projects that would provide standardized information for program leaders on how to integrate open data concepts and technologies into their public programs. This protocol would instruct community archaeology programs in the way they engage the public, how they take in data from the public, and how to prepare that data for open access web platforms. Most important, the primary focus of this protocol would be emphasizing the public's involvement at each stage of the process. Ideally, this standardized research design could be administered through a website that could provide Open Data resources, tool kits, guidelines, and data structuring models for researchers to consult. In essence, use of the site would resemble a hub for all pertinent reference material related to open access community archaeology (Beale, 2012).

The development of a comprehensive research design is necessary because no real standard for producing open, online public archaeology exists (Beale 2012). The SAA does have a Public Archaeology Committee, but this does not fully explicate the issues related to the full range of potential uses of data after projects are completed. When community outreach takes place, it is typically done outside of the usual time and funding schedules for various institutions. This is especially true for private CRM firms, which are already under severe time constraints to provide information to the necessary government agencies and clients (Green and Doershuk 1998). Time- sensitive deadlines make it impossible for private firms to devote resources to

synthesizing data for use in open-repositories. Also, university-led programs rely on grants, which expect measures of success to be expressed before projects begin. Measurements of success for public archaeology is understandably difficult to describe beforehand because of unforeseen changes in community member interests, unexpected findings, other changes in the initial research agenda. As such, there is an obvious need for an open-community protocol to be organized to produce standardized outreach approaches for the public (Beale 2012).

The Potential for OA Outreach in the Future of American Archaeology

If archaeology expects to progress through the financial, technological, and political challenges of the 21st century, it must embrace OA approaches with the public. As Marshall (2002: 218) writes, "There is a widespread belief…that the kind of collaborative research fostered by community archaeology will be crucial if archaeology is to have a future". Favorability with the public depends on being open with them about the discoveries, implications, and practicality of archaeology. OA outreach is still in its nascent stage and there are still serious issues, including financial feasibility, the logistics of integrating open data into research agendas, and designing workflows for securely publishing data online. These issues will be resolved with time, as the discipline works out the possibilities of a standardized public outreach protocol (Beale 2012; Klumpp and Su 2010). Open access concepts will continue to transform the Internet. The way in which people communicate and engage with information has never been so interconnected. To meet the public where they are, the archaeological discipline has a responsibility for future sustainability to push for the development of engaging online outreach platforms (Lake 2012).

The next chapter will cover two topics concerning the relationship between the inclusion of OA in CRM and state archaeology and the larger themes of applied anthropology and digital

archaeological theory. First, the chapter will situate CRM and state archaeology within applied anthropology and describe how OA approaches constitute a further applied progression. Secondly, it will be argued that acceptance of OA concepts attests to archaeology's increasingly digital character. Combined, this discussion will provide further justification for the inclusion of OA approaches in state archaeology data management and public outreach policies. The chapter will conclude with a discussion of the theoretical and methodological implementations for this study.

CHAPTER FIVE:
APPLIED ANTHROPOLOGY, DIGITAL ARCHAEOLOGY, AND THEORIZING POLICY STANDARDIZATION

The previous chapters have shown that Open Access concepts are influencing the public outreach and data management conversation in American archaeology. Even those in disagreement with the movement have felt pressured to establish formal stances or offer similar OA concessions. After receiving some backlash in an official statement formulating her organization's opposition to OA, then-President of the AIA Elizabeth Bartman, stated, "…the AIA is not opposed to open access as a concept—indeed, the AIA and its publications are already committed to sponsoring as much open access as is financially sustainable and ethically reasonable…" (Bartman 2012). Despite this backtracking and discord in American Archaeology, OA is here to stay. As its influence continues to seep into CRM contexts, OA thrusts state archaeology into an enhanced applied anthropological role (Downum and Price 1999; Lamphere 2004). To make this assertion clear, the next few sections will define applied anthropology, how CRM meets this qualification, and how emerging digital techniques encourage more applied approaches (Rylko-Bauer and van Willigen 1991; Rylko-Bauer et al. 2006). Borrowing from Ezra Zubrow (2006), I argue that the pervasiveness of open, digital techniques gives a context for standardizing access and outreach policies and practices.

Applied Anthropology Defined

Applied anthropology is an established feature in the history of the discipline, beginning in the United States in the 1930s as well as during the European colonial eras of the mid-nineteenth century. From government administrators working in colonial European Africa to the American researchers engaged in medical programs with Native Americans applied anthropology grew up out of the idea to spread scientific, anthropological study to social and

public policy (Lamphere 2004; Rylko-Bauer et al. 2006). And while the results differed from country to country and often brought about problematic epochs of human interaction, applied anthropology strove, in the positivist sense, to be a more practical science. Differing from "pure research," this early practitioner approach set out "to produce scientific knowledge for the solution of human problems" (Lamphere 2004: 433). Even with this practitioner orientation, the processes of applying anthropology in these early stages were still understood as a top-down mechanism. Though discoveries were more directed towards addressing practical problems than previously, it was expected that professionals and specialists would share their discoveries to the local populations. Self-reflexive theoretical influences changed the orientation of applied anthropology, shifting focus from "professional expertise," but the goal of applying research for practical solutions remains. Today, applied anthropology emphasizes interdisciplinary collaboration and non-professional expertise to assist in determining research approaches and data gathering to affect current policy (Chambers 2004; Gardner and Lewis 1996; Lamphere 2004; SfAA 2017).

Influencing policy and using research to affect contemporary issues starts with better data communication between scholars and the public (Weaver 1985). Bemoaning the poor data communication in the 1990s, Van Willigen (1991:19) wrote, "much authentic anthropological knowledge is scattered…in the fugitive literature of technical and contract reports." Since then, a defining aspect of applied anthropology has been the proper dissemination of disparate data "into the core" to better implement the discipline's knowledge base (Jackson and Anderson 2014; Rylko-Bauer et al. 2006). Without this combination of interdisciplinary collaboration and effective data communication, applied anthropology cannot address real world issues (Downum

and Price 1999). This explanation provides a context for describing CRM as an example of applied anthropology.

CRM as Applied Anthropology

In their coauthored article, *Applied Archaeology,* Christian E. Downum and Laurie J. Price list seven typologies for how archaeology is applied anthropology. One of the seven typologies is CRM, which they argue deserves this understanding because it "helps solve real-world problems" (Downum and Price 1999:230). Specifically, they describe three key ways in which CRM provides practical information from applied perspectives.

Downum and Price initially describe CRM as applied anthropology due to the information CRM studies provide on historic spatial and environmental contents. Over the last one hundred years, and increasingly since the passage of NHPA, CRM has developed a plethora of techniques for extracting historical and other scientific data from landscapes. Because deposits are covered by multiple layers of sediment, archaeological excavations can be particularly informative for geological and environmental applications. Once a site is excavated, CRM can provide descriptive information on historical, environmental, and human activity in the area (Downum and Price 1999). These data are critical, for instance, for informing planners and policy makers about current climate readings and their relation to historic contexts (Benson and Berry 2009; NPS 2016).

The second way CRM embodies an applied approach is through the historical and anthropological documentation it creates to help researchers identify the "significance" of sites. Creating this documentation provides the only way to identify culturally significant materials and places in the United States for designation on the National Register. While this may not seem important to some, the ability to define significance is an invaluable resource for minority

groups. Archaeology's historically tenuous relationship with Native American communities has markedly improved due to this applied anthropological approach. By developing "significance" documentation, archaeologists provide specialist knowledge- derived from CRM data- for reparations as well as resource and territorial claims (Russell 1996). As such, this documentation has allowed CRM to work as a vital a resource for socio-economic justice initiatives (Downum and Price 1999; Gallivan et al. 2011).

The third applied perspective of CRM is in addressing the effects of development on culturally sensitive sites. Applying anthropological understandings to resource preservation and management, CRM provides the only structure for relocating culturally sensitive artifacts and remains while not impeding development projects. Without CRM, the loss of cultural and historical data would be unmitigated.

Aside from these three applied perspectives, Downum and Price (1999:226-227), describe CRM as "the engine that drives much applied archaeology….and applied anthropology in general". They situate this claim based on what Wulff and Fiske call, "anthropological difference," (1987: 2), which, essentially, requires one to consider how a project outcome would differ if no anthropologist were involved. Broadly disseminating information to researchers and developers to affect planning, implementation, and evaluation of real world issues is a major responsibility. In the context of CRM, much consideration is taken in determining the dissemination of archaeological data to show "why anthropological input is essential" (Downum and Price 1999: 232). Added to this, CRM firms must observe cultural and legal restrictions requiring them to consider the most appropriate ways to communicate their work. As such, the fixation on data communication is the significant link for understanding CRM as an applied anthropology.

Downum and Price were the first to intensely focus on the relationship between applied anthropology and the state-CRM context. Their research, though, was written just before the expansion of the Web 2.0 and OA movements that reshaped research communication. Nevertheless, they established that broad data dissemination was the guiding principle for applied anthropology. With the benefit of seeing OA platforms in use and knowledge of their potential today, it is possible to understand how data can be more readily applied to real world issues. Aside from security concerns and hesitations to devote finite resources to OA platforms, states are actively searching for systems that will "…combine data in new and useful ways and facilitate investigation..." (Kansa et al. 2011: 102). It can be asserted, then, that once widely implemented into state archaeological data management workflows, digital OA platforms will help CRM exemplify applied methodologies even more than is currently exhibited. The next section will discuss how these digital concepts and platforms also represent a progression in archaeological theory.

Theorizing the Effect of Digital Archaeology on Standardizing Practice and Policy

Much has been written about the need for standardized access to CRM data, with some recent examples of improvement (Kansa et al. 2012; Kintigh 2010). Nevertheless, there has been little comparative analysis of state information systems access and outreach policies. Research is needed to gauge how standardizing access and outreach policies in the United States can occur. To provide this understanding, the next chapter will discuss outreach and access policy data collected from three US state archaeology offices.

For this research, I seek to establish a body of knowledge that will add to our understanding of contemporary state information access and outreach features and specifically what effect open, digital technologies will have in the development and implementation of

policy. The main themes I am investigating are: 1) What, if any, consensus exists regarding access and public outreach policies between the three state archaeology departments in this study; 2) Why is there variation and what do the state departments attribute as the root causes determining their ability to provide greater access and outreach; 3) Can development of Open-Access platforms address both the barriers and primary duties of state archaeology to achieve standardized outreach and access policies? In sum, I would like to understand how state agencies could adapt their current access and outreach policies in the context of emerging Open-Access technologies.

CHAPTER SIX:
PRESENTATION OF METHODS AND ANALYSIS OF THE DATA

This chapter will present the methods for this thesis as well as analysis of the data in two sections. Both analysis sections will draw from the texts of the transcripts, though; section 1 will deal solely with interview data. Section 2 will refer to the interview data through a case study to provide further context. Both sections will include the supplemental data derived from observations of each state's web-based and in-person outreach platforms.

The discussion of these data will focus on three conceptual categories that developed from the interviews. These categories are data access, public outreach, and the barriers inhibiting state policy. Within each of these conceptual categories, specific policy-level features will be summarized as they relate to the overarching themes of access, outreach, and barriers. The summary focuses on the relationship between these categories and the central question: How do state data access and outreach policies compare and how can OA systems promote standardization? Section 1 will end with a description of the core category and will present a working, substantive theory to address the situation. Section 2 will present a case study of the Digital Index of North American Archaeology (DINAA). This case study will address the core category and implement the working theory by describing an OA system capable of standardizing state information access and outreach policies (Anderson et al. 2012; Anderson et al. 2016; Kansa and Kansa. 2013; Kansa 2012b; Wells et al. 2014).

Methodology

To understand how state agencies could adapt their current access and outreach policies in the context of emerging Open-Access technologies seven interviews were conducted with personnel from three United States state archaeology departments. Maintaining confidentiality for these participants was an absolute priority. To facilitate that requirement, the identity of the

interviewees will not be referred to in this analysis. Other identifying information such as names, titles, departments, states, or state specific locations or sites will also not be mentioned. Though this research involves a broad region, the focus of the topic is specific, and compromised identities could have negative ramifications for the respondents.

Participants

The selection of participants for this project was, initially, not a controlled factor. However, after interviewing several participants from one state who did not specialize in public archaeology or data management, the decision was made to select participants who were specialists in those areas. These individuals possessed expertise in site file maintenance and public outreach, as well as information trends and ethics. The final participant group varied from directors to field specialists, providing a considerable range in years of experience. Matching up the personnel schedules from three different states also placed constraints on the participant pool. For a variety of reasons, scheduled interviews for one state were put-off for several weeks due to miscommunications. Another state was in the midst of administering anniversary festivities and was forced to delay participating in the interviews for a month. In sum, the participants were interviewed over the course of two months between May 2017 and July 2017.

Data Collection

The data from this research resulted from interview responses by state agents concerning the most appropriate methods for increasing archaeological information access and public outreach. Using a qualitative approach to gather data, the primary tool for collection was the semi-structured interview. Semi-structured interviews provided guided discussion yet allowed for open-ended conversation. This interview style was the best approach for this type of study because it allowed participants to explain their ideas fully (Galletta 2013; Leavy 2011). A letter

of initial contact was sent out at least one month before the interviews began. The letter

transcript can be found in Appendix C of this thesis.

To ascertain a standard of access procedure among the states, each participant was asked

a series of questions related to how information is disseminated. The interview was structured

into three basic sections. The first section sought to record the participant's opinion of the goal of

state archaeology. The purpose of this section was to discover each interviewee's immediate

ideas about what state archaeology does and whom it serves. This section involved responses

detailing participant's role in processing of site reports, facilitating inter-agency information

requests, and performing site surveys. The second section covered the participant's views on

how states provide information to outside requests. Specifically, the in focus here was the need

to understand the limitations of site files as points of contact for academic researchers. The third

section sought to understand the role of engagement with the public. Overall, discussions

centered on the dual responsibility of site protection and engagement opportunities as well as the

growing inability to expand outreach due to budget cuts. The outline of the interview schedule is

available for review in appendix A of this research. Further description of these sections will

appear in the following chapter.

Data from the interviews was collected using the QuickTime Player 7 audio recording

software on my personal laptop. This allowed for play-back of entire discussions during

transcription. I personally typed the transcripts over several weeks after the interviews, editing

and redacted sections for clarity and identifying information. The respondents were given their

transcripts for review. Some notes were taken during the interviews, but, in the best interest of

maintaining attention to the interviewee's responses, note taking was kept to a minimum.

The primary data is supplemented by a general observation of the web-based and in-person outreach contributions of each state. This included analyzing each agency's website, social media accounts, and any public programs offered to engage the community. Information gleaned from these observations served to verify the data provided in the interviews. To observe the public outreach component, it was necessary to travel to each state to observe the programs. This was originally scheduled to take place during each state's Archaeology Month, but, as noted above, that proved unfeasible. As a result, these observations were scheduled in conjunction with travels to conduct the interviews. By combining interviews with these supplemental observations, the expectation was to discover the similar and contrasting policy features of each state.

Data Analysis: Grounded Theory

To analyze the data, a grounded theory approach was applied. The grounded theory approach is a qualitative, comparative method of analysis which allows the researcher to derive or "ground" theory from categories found in the interpretation of the data (Glaser and Strauss 1967). This is done by systematically processing data using either hand-coding or employing one of various qualitative coding software programs. In this study, grounded theory was implemented by first transcribing the individual interviews from QuickTime "m4a" audio files into Microsoft Word document files. Hand-coding was used in the analysis and coding process to achieve a more in-depth understanding of the data. The interviews transcripts were then analyzed with selected responses coded in-bracketed text corresponding to their respective conceptual categories. As an example, the transcript is provided in full in Appendix B. An excerpt is provided below:

Example of Transcript

Samuel Ayers
Interview Transcript
State C

Samuel Ayers: Basically…let's just get started. You can introduce yourself.

State C Interviewee: Well you already know who I am, **** at the Department of
    Archaeological Research and keeper of the ****** archaeological state site file
    since 19**.

Ayers: Ok, kind of a general question. What is the main, overall goal of the office of
    archaeological research and what you do?

State C: Well, it's kind of odd because first let me explain we're not really a state office.
    We're part of the university, the site file gets no funding from the state
    whatsoever either through the university or the SHPO. So it has to be self-
    supporting. We have to underwrite grants for our programs. Its just all external
    funding. [FUNDING] We have a couple of people who've just retired and taken
    other jobs so we're probably down to a staff of about 35 and we get two
    positions funded by the university and everything else is contracts and grants
    [STAFFING]. *So* its from the proceeds of the contracts and grants programs that
    we operate the site file [BARRIERS TO PROVIDING STANDARDIZED
    DATA ACCESS AND OUTREACH POLICY].

Ayers: So…

State C: So it's not really a state office.

Ayers: Ok.

State C: In that sense of the word. Now there is a state archaeologist in the SHPOs office

Ayers: But the state doesn't have a traditional state office. It's more….

State C: Not like ****** or ****** or any place like that.

Ayers: Ok. Alright, and some of these will be pretty direct questions.

State C: Ok. I always tell people you can ask me pretty much anything you want its just
    that I may choose not to answer.

Ayers: That's perfectly fine. Does the office and I guess the state have an interactive,
    online site file?

State C: We do. [SITE FILE]

Ayers: Ok.

State C: In fact we were one of the first in the country. We went online, I think it was
2010 when we first went on [SITE FILE]. And shortly after that I participated in
a symposium at SAA about site file developments and there were 15 states in the
symposium and we went in alphabetical order so I went first and the person from
Arizona was next she started off by saying "I was basically going to say how
we're hoping we could do what *******done." This office used to have very
close working relationship with an IBM development office on campus. We used
to be an IBM shop, the university's gone to Oracle in the past few years but we
had a group of people called the Advanced Technology Group, funded by IBM
and they were developers and Beta testers and all sorts of things and they needed
subject matter for their work and they decided archaeology was interesting
[PROFESSIONAL ORGANIZATIONS]. So they made contact with us and for
several years we had a close working relationship with them and so that gave us
an opportunity to get online at a very early stage [SITE FILE PLATFORM AND
REMOTE ACCESS].

The initial coding process used open-coding. This involves combing through the data to find low and high level conceptual categories. Lower level categories develop from similar responses and are given a one or two-word code for identification. For example, a response stating, "What we tend to do as a security measure is to limit the scope of whatever their request is" and "…we have two tiers of access: one is basic and one is advanced" would be given an initial code term of "security policies". The lower level categories are combined to develop higher categories and are given an axial code (Leavy 2011). Taking the two above example again, both statements would receive an axial code of "data access" seeing as both statements concerned the same general topic of access to site file data. Higher categories reveal shared concepts between the lower categories. These conceptual categories can be arranged in the analysis process based on the researcher's intentions. This approach gives the researcher the autonomy to focus on the critical categories that develop through the analysis as they emerge.

Coding continues until no new categories develop. These codes are then integrated to form the "conceptual elements of a theory" (Glaser and Strauss 1967: 36; Hallberg 2006). After an analysis of the combined lower and higher conceptual categories, a core category emerges. The core category is the culmination of "emerging codes, categories, properties, and dimensions as well as different parts of the data" which are all used to distillate a topic under investigation (Hallberg 2009: 143). It encapsulates the essential problem of a grounded research approach and a working theory is developed to address this problem. In this study, the core category surrounded the competing duties to provide both broad public access and legally required security barriers to sensitive state archaeology data.

Grounded theory is a primarily sociological theoretical approach, but is used in a variety of discipline settings. Part of its approach is the understanding that the researcher will be able to make repeated visits to the participants to develop a core category of data. Glaser and Strauss insistence on repeated visits was developed to create "intense involvement with the phenomenon under study" (1995: 33). Due to the participant's schedules and the distance between the states, only one interview session was scheduled with each. Any follow-up questioning was facilitated through email. These procedures produced an appropriate degree of data saturation.

In the following sections, I will describe the collected data and develop a premise addressing state data and outreach policies and how Open Access platforms could provide a level of standardization.

Section 1: Results of the Interview

This section of the chapter addresses the first two research questions: 1) Does any consensus exist regarding access and public outreach policies and features between the three state archaeology departments? 2) If there is variation, why is there variation? What do the state

departments consider the root cause of their inability to provide greater access and outreach? In the following sections, a discussion of the interviewee's responses will summarize each conceptual category. Quoted passages, as well as two illustrative figures, and other supplemental data will be used to emphasize all major themes.

Data Access

This category centered on several state policy features and other topics, which served to direct the discussion of how access is specifically provided. The following categories were found to be the most informative regarding each state's policies and concerns with providing access.

Site File Platform and Remote Access

Each state possessed a digital master site file that housed all state archaeological and historical manuscripts, survey, and GIS data. All interviewees designated this platform as the central point of access to state CRM information. States A and B host their sensitive site data using the cloud- based mapping software ESRI-ArcGIS. In addition to mapping their data in ESRI-ArcGIS, State B also listed their files in a World Geodetic System (WGS) 1984 standard. For less-hyphen sensitive and non-geospatial data, these two states hosted their files in separate, in-house systems that collectively formed the site file database. Conversely, State C hosts their site file through a customized system which combined an Oracle cloud structure while also retaining a secondary query-able database with NADB features on their local server.

How states go about providing access to the site file, also, varies. States A and C allowed users to have remote access into the system. States A and C provided access to the site file primarily through a subscription package. This subscription system allowed CRM firms, other agencies, and university researchers to have 24/7 access the site files. For State C, the site file was broken into two tiers: basic and advanced. The primary difference between these two access

levels was that the advanced section possessed GIS locations while the basic level left this

feature out. State A did not specify tiered access for its site file. However, approval for an

account to access sensitive reports and the GIS map required approval from the state

archaeologist. Unlike the other two, as is seen in Figure 1.2, State B did not provide a remote

feature for the site file. State B policy preferred to have interested users either call or email the

department with an inquiry. As one State B participant mentioned, "… we do 99%...in the format

of email request or telephone request." Through this procedure, the request for access could be

monitored by a state agent.

Figure 1.2

Illustration of State Policy Features (Conceptual Categories)

Policy Features – Conceptual Categories	State A	State B	State C
Interactive, Remote Site File	Yes~	No~	Yes~
Fee-Based, Site File	Yes	No	Yes
Open Access Platform Investment	Yes	Yes	Yes**
User Access Vetting	Yes	Yes	Yes
User-Generated Technology Investment	No*	Yes	No
Distinct Public Outreach Dept/Personnel	No^	Yes	No
Archaeology Month	Yes	Yes	No*
Collaborate with Professional Societies	Yes	Yes	Yes
Social Media	No*	Yes	Yes
Outreach Products	Yes	Yes	Yes
Community Training	No	Yes	No

*Indicates that the participants mentioned future plans or desires to develop this feature

**Respondent was unaware of the extent to which the state had invested resources.

^at the time of this research the public outreach position was vacant

~Indicates that each State operated a site file using a different system.

Illustration of State Policy Features

Fees for Access

Another particular feature relating to access among the states was the addition of fees to access site files. State C offered a fee-based subscription system for remote access to its tiered site file. The advanced access tier was twice the cost of basic and primarily charged to CRM firms throughout the state. Interestingly, State C implemented a non-commercial access level for academic researchers for which no fee was assessed. State A also required a fee for access to the site file, but only in some cases. It was emphasized that the fee was assessed only for "those who use it [site file records] as a business." State A justified their fee because of the convenience of having remote access and noted that universities typically covered the expense for academic researchers. Any researcher, commercial or not, could come to the state office and use the database free of charge. Regardless of the reasoning, fees and paywalls have come under tremendous scrutiny in recent years (Costa et al. 2012; Kansa et al. 2013; Richardson 2014). Opponents of paywalls find that they are inherently problematic, in that, by blocking those scholars who cannot afford the fees, they exclude a significant portion of the potential research base.

In the case of State B, a fee was never assessed. Currently, they implement a site-file data sharing workflow with numerous CRM firms, state, and federal agencies that regularly require their archaeological data. The scheduled data workflow was believed by many of the State B participants to be an open, "pretty forthcoming" feature situating them "in a better place technologically than a lot of our other states."

Each state participant identified the site file as the central locus for state archaeology research and information for all interested researchers. Whether specifying between tiered or non-tiered access or remote or non-remote access or the implementation of subscription fees,

each state possessed, were unique variations for how they controlled access without compromising their data security. These approaches site file access revealed a noticeable theme of states emphasizing their accessibility to specific, known entities and individuals and, not expanded, "Open-Access" access, for broader outlets and populations. Further discussion of the specifying processes employed by each state will be the topic of the next section.

Vetting

Continuing the theme of data access was the consensus policy of vetting. Participants from all three states unequivocally agreed that some degree of vetting researchers and their queries is crucial to proper data management. That being said, each state provided slightly different details regarding the vetting process. For State A, a review of the researcher's credentials was discussed as the basic requirement. When asked what that review process entailed the reply was that "We [State A] basically ask for a C.V." This policy applied not only to known archaeologists, but also to graduate students and researchers from other disciplines. State C had a somewhat confining policy, requiring that only established archaeologists be permitted access to the site file and that graduate students provide a reference from their advisors. State B was slightly less specific with their requirements. Interviewees from this state mentioned that there was no guideline specifying that information could only be requested by archaeologists. However, the department preferred that an academically trained archaeologist be the recipient of any information request.

When asked why such restrictions were needed, the conversation trended toward the idea of site preservation and security as a means of facilitating access. As one participant replied, "…ultimately that is what we're interested in… to help preserve these sites so they're not destroyed." If access to site data is not carefully guarded, then both the physical and documented

evidence of significant cultural heritage becomes compromised. Regarding sites and material culture, William Lipe (2000) stated that, "Archaeologists must be conservative in their own uses of the archaeological record…" State B's emphasis on site data protection extended Lipe's meaning in that to observe such conservation of the physical remains, site data protection also must be regulated on a case-by-case basis. When pressed if this policy could be expanded to permit a more open research base, participants emphasized again that access to archaeological data was predicated on strict security. Through mechanisms like vetting, the information could be safely distributed and accessed by appropriate audiences now and in the future.

Open Access Platforms

Even with a primary focus on data security, participants were not neglectful of the emerging open-access (OA) platforms and their uses for archaeology. Developments in OA technologies were generally supported for their ability to connect appropriate audiences with archaeological data. Like the above-mentioned policies, each state possessed its own unique understandings of these technologies and the extent to which they implement them in their own policies.

Perhaps the most supportive of OA technologies was State B. Several interviewees from this state endorsed the use of open data platforms to connect users to state data. The reasons given for emphasizing the data connectivity through OA databases focused on the pure research potential that could result from integrating datasets. As one State B participant mentioned, "…the benefit of that [open-access databases] is… instead of just one state's worth of data you get a regional data set and you can ask different kinds of research questions…" When the topic of open-data platforms was mentioned, the discussion shifted. Instead of being a mechanism for Section 106, the discussion changed to how state CRM data advanced archaeology as a whole.

Data protection remained a concern for State B even when discussing the potential of OA technologies. Commenting on their involvement with an OA database, a State B participant stated, "It was a system that was not going to reveal the precise locations…It seemed like there was potential from a research perspective…" Other participants agreed that state policies would be more willing to facilitate OA platforms given better data security assurances.

Awareness of this qualified commitment among OA developers appears to be a growing trend. As emerging OA systems look to securely facilitate regional geographic patterning in cultural resource datasets, platforms that possess data visualization and other mapping capabilities are emphasizing to states about the security of their systems. For example, many OA platforms highlight to state agencies the fact that the data they integrate is rendered at a "very reduced level of geographic precision" making it difficult if for looters to plot sites but also to show that the type of data required for public, Open-Access goals will not compromise state holdings. (Anderson 2012: 2). Data publishing workflows like this could allow states to facilitate OA concepts without jeopardizing security.

State A offered a confusing response about their implementation of OA systems, but also emphasized data access in terms of security. Initially, State A responded that the distribution of data through OA platforms was the responsibility of individual researchers and CRM professionals. Additional research showed that the state had submitted data to a recently developed OA project. A follow-up question was submitted to the State A participant for clarification. The reply confirmed that the state had released data to a recently developed OA platform. The participant explained that this was done only after the project developers agreed to sign a terms of use agreement crafted by the state office. The respondent continued that working with OA projects fell in line with their inclination to provide access to data as much as possible.

This motivation was only present insofar as "all the appropriate caveats on use and non-disclosure of locations" were upheld.

Since the beginning of online data publishing in the early 1990s, State C has offered its non-sensitive reference data through the NADB. With the NADB's demise, tDAR grandfathered those files into their system, where they are now accessible. Even with their history of online data publishing, State C focused on the financial limitations that preclude further investment in Open-Access databases. Referring to tDAR's publishing fees, the State C respondent stated, "…if you want to put some information there you've got to give them some money and we're not interested in that…" Post-interview research showed that State C, like State A had recently submitted data to the same newly developed OA project. In a follow-up email, the respondent was unaware of the extent, but recalled that a lack of fees motivated the data publishing activity.

Aside from financial restrictions, the respondent asserted that data security was the most important factor for not increasing OA development. This did not appear to be a slight against any particular OA system. Instead, referring to OA platforms in general, the State C participant stated, "…if all the proper restrictions and securities were in place, I don't think we'd have any objection…" One OA project developer informed me that his platform's researchers are holding workshops with state agencies; these workshops specifically address the security of OA systems (Yerka *private communication* September 14, 2017). Thus, OA developers are aware of the perception among state agencies that OA platforms are not secure. The expectation is that, along with continued communication with state agencies concerning the feasibility and security of their systems, established data sharing protocols between states and OA platforms will develop.

User-Generated Content Technologies

Each state emphasized the potential of the public and professionals to interact with the processes of state data maintenance and recording. One method mentioned at length was through user-generated content technologies. The perceived benefit of these tools stems from the insistence that user-generated content technologies can facilitate site file access and public outreach despite funding and security issues.

State A did not have a current user-generated platform in place at the time of the interview. Responding about a future policy, State A replied, "You know, having…an online form that people could submit, you know a photograph, a KMZ file or something like that so that we can integrate all that information…I think something like that would be very popular…". To do this, a system would need to allow avocational and professional archaeologists to provide digital information from the field. Once received, the participant added, the state office could review the data for quality and integrate it with the existing site file data. These new technologies could facilitate public participation and assist state archaeology offices with data recording and management. The State A participant mentioned that, unfortunately, such a project would require an initial external funding source for implementation.

Unlike the other two states, State B was currently performing initial tests with the new tablet-based survey application called CRSurveyor. A collaborative project funded by the National Park Service, this tool allows the public to submit data to the SHPO at the local, grassroots level. To maintain data security, only approved volunteers, members of professional societies, and CRM firms would use CRSurveyor during SHPO approved projects. In this way, the users would be individuals who fully understand the necessity of site protection. As a mechanism for establishing decentralized involvement with state data, this system holds

tremendous potential. Not only does it permit users to create their own metadata fields when surveying sites, it also allows for information to be synced directly to the site file for cross referencing records. As such, this application is a step forward for SHPOs in facilitating public outreach and access to the records and the process of data management.

Implementing this system is not without some concern. State B participants specifically mentioned wanting to work more closely with certified local governments (CLGs) to verify potential CRSurveyor users. This was primarily a concern in local governments where no cultural resource professional could provide oversight of the data gathering. Such a professional could ensure proper training of volunteer surveyors and provide support for CRM firms. This measure would ensure that submitted data would comply with the state's legal standards. As one participant mentioned, "…we don't want to get in a situation where we're lessening our guidelines…" This application was primarily discussed in the context of historic standing structures but the expectation is that CRSurveyor will expand into the recording of archaeological sites as well (McCarthy and Oaks 2016).

Discussing user-generated content technologies, state participants emphasized the commitment to data security. None advocated indiscriminately disseminating this application to the public. Reiterating the larger theme of access, state participants emphasized expanded access to specific audiences. Participants concluded that the future of cultural resource management lay in promoting more local-level access points for engagement with state site files and more direct assistance in the data creation process. How each participant perceived their state's outreach features and implementations with the general, non-archaeology public will be the topic of the next section.

Outreach: Information Access for the Public

Engaging the public with archaeological information and processes is a noble effort to increase the public good. More than that, it is a federal requirement. As such, each state in this study regarded public archaeology and outreach as a central goal of their work. Data security, as well as time and financial and human resources, made consistent outreach difficult. The following sections describe how each state implemented public engagement. This includes the structure of the outreach department, collaborations with outside organizations, and what platforms and products of public archeology each state offered. These three topics helped to highlight the conceptual categories surrounding public engagement and were mentioned as the most relevant to this concern by the study participants.

Outreach Presence and Structure

Acknowledgement of the public interest in archeology is central to state maintenance of cultural materials and archaeological sites. The Federal laws that birthed CRM make this clear, charging each state to "provide public information, education, and training and technical assistance" concerning historical and archaeological resources (ARPA 1979; NHPA 1966). Each state determines the execution of this charge through the establishment of the appropriate programs. Even with this standard federal requirement, there is considerable variation in implementations and programs.

The states in this study were no exception. While each state possessed some public outreach features, the structure varied considerably. The most obvious example of variation was whether the state office had a specific public archaeology department. State C did not have an established public outreach department or an outreach position. State A did have an outreach position, but at the time of the interview, the outreach department was experiencing a personnel

vacancy they were attempting to fill. In these cases, the interviews highlighted the alternative ways the state provided outreach. Later sections will discuss these methods.

At the time of this research, only State B possessed a functioning public archaeology department in charge of organizing outreach activities. Well-funded by the state legislature, the outreach department comprised a significant portion of the state office, employing nearly 30 fulltime employees. Statewide, the public program divides into regional offices. These sub-offices work in collaboration with nearby universities to provide local communities with opportunities to engage with archaeology

State B's outreach department operations was unique compared to the other states in this research. The year-round focus of the office provided a consistent advantage for engaging the public, whereas most state outreach departments culminate their efforts in an archaeology month. The range of locations the department visited to discuss archaeology– from archaeological sites to schools to local bars- made regular public participation possible. The year-round activities were not the only advantage. State B participants also perceived the program as relevant to the public at all life stages, and especially with children. As one participant mentioned, school-based outreach helps "the change of culture" by highlighting the necessity of cultural resource protection at the beginning of the citizen's life. Some participants shifted between public education and enforcing protection laws as more important to preserving archaeological sites. Still, all agreed that a consistently available outreach department was instrumental in saving cultural heritage and ensuring the maintenance of archaeological information.

State B was unique in the extent of its outreach structure. For reasons that will be discussed later in this chapter, States A and C had less defined outreach programs and neither had a departmental structure similar to State B. The next section will discusses the more

comparable programs between the states focusing on their collaborations with outside organizations to provide public outreach.

Professional Organizations

Each state had some form of a professional archaeological society. In States B and C, this organization was a state affiliate. This was not the case with State A's archaeology society, which developed independently through the collaboration of professional archaeologists. All the states regarded their collaborative relationships with these local societies as an essential element in public outreach.

Having local professional societies take on public outreach services, organizing conferences, and other events has proven very helpful to state archaeology offices. This is especially true in general for states around the country which are increasingly forced to be "more reliant now on organizations" because they no longer "have the staff to make that level of effort anymore" due to budget cuts. Similarly, State B mentioned that local professional societies have been essential in cutting costs in helping share resources ranging from providing spaces for annual meetings to hosting monthly archaeology events. State C did not have a public outreach department, but did mention some collaboration with professional societies. The State C archaeology office operates out of a university museum system and most cultural heritage outreach took place through that outlet. However, the State C site file personnel did have working relationships with the state's professional society, which helped to host an annual Native American festival at a nearby archaeological preserve. Overall, the discussion of professional societies –more than specifying the specific programs they performed- highlighted their necessity in the face of budget and personnel cuts.

Products

Regardless of their public outreach capacity, each state participant emphasized the various outreach materials created by their department. This included the creation of brochures, posters, and other products for public information about state archaeology and cultural heritage. Each state placed a different emphasis on the uses of these products, ranging from cultural tourism to education.

Historically, State A placed considerable effort on disseminating posters and teaching kits based on the results of the last year's archaeological research. These were given to public libraries and historical or archaeological societies throughout the state. Each library, school, or historic society received ten copies of the poster. Circuit presentations involving state professional archaeologists were also developed to accompany the poster. Over the years, however, that approach has dissipated. Today, State A continues their creation of teaching kits and a yearly poster, but presentations are no longer developed. Instead, they are focusing more on using the state platform to advertise the outreach services provided by archaeological societies and develop more efficient outreach materials. To do this, State A has refocused its efforts on making outreach products adaptable to the state's public-school standards. As the State A participant mentioned, "…if you really want it [outreach materials] to be usable…then you have to tie it directly to…education curricula in your particular state". Otherwise, the effort to create the products is deemed not worth the expense because the materials cannot have integrated uses with other pressing state and federal education requirements.

For State B the purpose of outreach products was twofold: the educational value in raising awareness for site preservation, and advertising cultural tourism. One State B participant highlighted the dual-task of outreach products stating, "…getting tourists and [State B residents]

to visit these sites and understand. Like, this is why this is protected." Combining site preservation awareness and cultural tourism also had a beneficial side-effect that was mentioned. As one State B official stated, "…when a site is in the public realm...it's more visible. It becomes possibly more secure." So, with increased awareness and tourism originating from outreach materials, sites become more known and less likely to be looted.

Unlike the other two, State C was housed within a state university museum system. As part of this larger institution, department research is included in a quarterly magazine issued by the university museum. This publication, written for a general audience, promotes upcoming cultural heritage events and highlights case studies of recent state archaeological research. State C also maintains an onsite library consisting of thousands of reports and invites all researchers and members of the public to visit for further investigation of specific sites and concepts.

A common aside in these interviews concerned how technology is making paper-based outreach obsolete. Across the three states, paper-based outreach had dropped off severely and was only reserved for the most significant sites and presentations during the year. Remembering a booklet project that had once been a prominent yearly public outreach feature, one State A participant succinctly stated, "that's not really how people communicate today." The next section will discuss the promising frontier of online public outreach.

Websites

As Hoffman et al. (2002: 32) have written, public archaeology is "…bringing archaeology to the public". Today, more than ever, bringing archaeology means addressing the public presence on the Internet (Beale 2012; McDavid 2004). This understanding was shared among all the participants and each described their digital offerings as an essential, innovative method for public engagement. More than just a space to list answers to frequently asked

questions, state archaeology offices have been exploring new ways to highlight cultural heritage in ways that are informative and assistive.

State B was particularly interested in discussing their newest project to model sunken shipwrecks on their website; a project that was developed from several photogrammetry projects. This new website feature will allow visitors to manipulate the model for 360-degree viewing. Photogrammetry is a digital imaging technique that combines survey photographs from different angles. The photos are then rendered on a computer screen as an interactive three-dimensional model. Part of a suite of new features that State B is developing, the photogrammetry model emphasizes increased access through interactivity. As one State B participant mentioned, "…we're trying to…facilitate having more access to these sites by doing 3D photogrammetry…I think it helps a lot because it's like a living museum …" State B was in the testing phase of photogrammetry use on their website at the time of these interviews. Nevertheless, the expectation is that these techniques will provide a more interactive point of access to archaeology in a more relevant space on the Internet.

Continuing the theme of interactivity, the State A interviewee discussed a popular site-specific, interactive page on their website created a few years ago. This page highlighted a colonial outpost and allowed users to visualize how the fortifications historically interacted with the environment. Despite the site's age (it was developed in the early 2000s), web traffic data revealed that the site received nearly 50,000-60,000 visitors last year. The State A participant remarked that such high rates of interest could be used to justify creating future projects on the website once budget situations improved. The State A participant also expressed the need for more explanatory features on their website to handle frequent public inquiries. State A often receives calls from individuals wanting help determining the age, region, or culture type of sites

and artifacts. Lacking the personnel to answer every question, the State A participant hoped to soon develop a visual reference inventory for artifact and site types common throughout the region. State C made very few comments about their website and its ability to engage the public. Secondary data gathering shows that the State C's department of archaeology website is formatted primarily for researchers, CRM, and other state agency audiences. Information for the public seems to be more the responsibility of the state's university museum.

Social Media

According to Pew Research Reports (2016), 62% of US adults receive at least a portion of their news from social media outlets such as Facebook or Twitter. This translates to roughly over a hundred million individuals – in the U.S. alone – engaging with information through social media (Ugander et al. 2011). If the recent socio-political climate is any indication, providing accurate archaeological information through social media is critical to establishing good outreach.

Interestingly though, social media was not heavily referenced in the interviews as major part of outreach efforts. State B made no mention of social media. However, supplemental data gathering revealed that each state engaged in outreach through Facebook, with multiple posts per week. For State B, the individual regional outreach offices directed their own social media accounts separately. Similarly, a parent department directed State A's social media presence. State C, however, hosted a direct platform on social media from its main state office. For State C, there was a more direct usage of weekly posts on at least one major social media outlet. Despite its lack of emphasis in the interviews, when social media was discussed it was acknowledged as a necessary but challenging outlet to use. The challenge of harnessing social media platforms concerned the difficulty of distilling complex and sensitive information into

publicly consumable packages. As the State A interviewee remarked, "To try and do something archaeologically in 140 characters is kind of hard." In order do this effectively, a state archaeology office would need a professional trained in public outreach. At the time of this interview, State A lacked this sort of personnel.

Overall, the necessity of a web presence was a commonly agreed-to, but variously applied, method used across the states surveyed in this research. Limited exposure on social media and the central website was due to the lack of funds or personnel to develop approachable, yet security conscious, features. Still, each state understood that the future of state archaeology lay in meeting the public's new information behaviors on the Internet. Effectiveness in this realm consists of providing information that is both frequently required and interactive. Doing so provides not only a relevant method of engagement, but also ensures the future security of sites themselves. State application of in-person public outreach will be the discussion of the next several sections.

Annual Archeology Event

Even with the proliferation of Internet-based engagement, these states had not abandoned traditional, outreach outright. A valued outlet for in-person public outreach was the establishment of an Archaeology Week or Month. This yearly scheduled event allowed the state archaeology office to sponsor or host talks, digs, and site interpretations in collaboration with professional archaeology groups and local universities and museums. For State A, this program was initially hosted as a one-week event, but had grown to a month-long series of statewide talks and demonstrations. However, lately financial burdens have forced a "much more low-key" approach to the point where State A now only acts as a promotor of events taking place. Historically, State C also presented an Archaeology Month program, but has since had to shutter

87

it due to financial situations. To compensate, the archaeology department promotes activities throughout the year put on by the both the state university museum system and professional archaeology organization. State B also conducts a yearly Archaeology Month. However, with the public outreach office scheduling programs year-round, this event did not receive any appreciable mention in the interviews.

Regardless of the state's ability to emphasize a yearly archaeology event, the consensus was that this type of outreach program was vital to any functioning state archaeology department. Even without an official archaeology month, State C emphasized their promotional role of outreach because there is a "professional responsibility to do that sort of thing." As such, these events serve as an invaluable point to reaffirm relationships with the public by peeling back the mystery of what archaeologists-in-government actually do. More direct examples of public engagement will be discussed in the next section.

Community Training

Another varying aspect of outreach was the use of community training seminars or protocols. The State B participants primarily discussed community training in heritage awareness and site preservation, emphasizing its sustainability as a method for involving the public in two respects. First community training engages the public. Developing training protocols teaches the necessity of preservation and acquainting the public with the laws that protect cultural heritage. Secondly, with states lacking funds to field enforcement divisions, an educated and willing volunteer-public can prove helpful on-site data security. Participants from State B described hosting such events to educate locals on the best methods for spotting artifacts, accessing, and reporting damage, and the best way to contact authorities. This collaborative approach seems to

be working and, according to some of the participants from State B, the trainings seems to provide a sense of cultural stewardship.

At the point of this writing State A did not have a functioning training program in place. In the near future, the State A participant hoped to begin creating a training protocol for reporting historic cemeteries. Similarly, State C did not have a specific training protocol originating directly from the state office. There was, however, a site protection seminar hosted by the state's professional archaeology society in years past. The intention was for this seminar to mobilize non-professional archaeologists seeking to help preserve archaeological sites. The program shuttered, though, due to finances, personnel shortages, and concerns over data security in the hands of non-professionals. The next section will discuss these reoccurring issues as conceptual categories and their influence on variation across state policies.

Barriers to Providing Standardized Data Access and Outreach Policy

The previous two sections on access and outreach answered the first question of this thesis in the affirmative by establishing a clear consensus. The consensus was that state offices uniformly consider access and outreach to be important aspects of policy. Despite this agreement across the states, their individual policies varied considerably. This calls attention to the second question: 2.) Why is there such variation? What do the state departments attribute as the root causes determining their ability to provide greater access and outreach? The section answering the first part of this question will present the respondents initial ideas as to why variation exists. The second part of question two concerns the more fundamental, or core reason as to why states vary in their ability to establish more standardized access and outreach policies. Section 2 of this chapter discusses the core category.

Funding

The initial problem mentioned by the participants was the lack of funding. Finances were a major source of variation in state policy; lack of funds hampered the ability of the states to promote programs and to invest in secure technologies. State A was particularly keen to discuss the problem of insubstantial funding, remarking that, increasingly; state governments are simply not funding state archaeology. The State A participant mentioned that just getting proper funding to support the basic "activities of the office" is difficult. Without any assurance that basic activities will be funded, the question of other operations becomes "moot." This response was significant in that State C also described that support was specifically lacking from state government. The State C participant remarked that in their case, the site file receives "no funding from the state whatsoever…" Instead, State C underwrites grants and relies solely on external funding to perform state activities.

Across the three states, interviewees relayed that, in the current economic climate, state archaeology is essentially a federal venture. Only through NPS grants and meager federal appropriations does state archaeology exist and only primarily serve to maintain operations for Section 106 requirements. With Section 106 receiving the majority funding and attention, the capacity for state archaeology to contribute to access and outreach is stifled (Jameson 2000). This is an existential problem for state archaeology. One of the initial justifications for the NHPA was because "the present governmental and nongovernmental preservation programs" around the country were "inadequate" to the task of comprehensive preservation (NPHA 2014). As such, the NHPA set up a structure for federal funding to compliment the development of each state's individual efforts. Federal funding was predicated, though, on the notion that states would actually uphold their end of the arrangement. With little to no attention or financial commitment

from state legislatures, SHPOs are falling further away from their original goals of cultural preservation for research and the public good. One State B interviewee responded that the department wants to "survey a lot more land" and "really focus on research" but cannot, due to lack of funding. As such, in its currently funded position, state archaeology is not being conducted to its fullest potential and is arguably out of compliance with the NHPA, AHPA, and other federal cultural preservation law. Aside from the efforts of a few committed individuals, in their current form, state archaeology departments function primarily as channels for federal compliance, a box checked off. This is not what Charles McGimsey and Hester Davis, among others, had in mind when they helped craft the preservation laws of the 1960s and 1970s. The next section will further discuss how funding is contributing to variation in state policy.

Staffing

The immediate result of deep budget cuts over the years has been the significant loss of personnel. The effects of staff reduction, though, are not limited to individuals; prolonged cuts have slashed entire departments, a fact attested by the participants for this research. In State A, about sixty percent of the workforce had been eliminated. This reduced the department from twenty-four to seven and left only one participant available for comments at the time of data gathering. It was the goal of this research to interview at least two individuals from each state, with one specializing in data access and another in public outreach. With State A, this was not possible because the public outreach position was vacant at the time of this thesis. On the other hand, State C possessed a significant staff size, but had only two permanently funded positions statewide. Their remaining thirty-three positions drew from federal and national "contracts and grants." State B respondents mentioned funding and staffing issues the least. However, they were

aware of problems elsewhere and felt that state archaeology offices nationwide need more staff to perform their full range of responsibilities.

Reliance on grants does not appear to be a sufficient long-term answer. As early as the 1970s, archaeologists warned about increased reliance on grants and the instability this creates (Casteel 1980). McGimsey remarked that permanent funding for staffing will only exist through a reliance on both state and federal appropriation codified in law. For this to occur he advises that, "…archaeologists…. are going to have to take their heads out of their two-meter pits and become involved with the outside world" (McGimsey 1971: 125). Gauging by the current situation, the stability of state archaeology has never been more questionable.

In discussing reduced staff levels with participants, they were most concerned with how it affects the major duties of state archaeology, especially regarding the promotion of public outreach and facilitating research. State A operates several publicly available website databases which hosts the bibliographies of monographs, field reports, and other publications, but they have been unable to update them. Between staff levels and the focus required by the Section 106 process, they cannot devote time to provide secure data updates to these databases. A State A participant mentioned, "We just don't…haven't had the flexibility to go through and compile all that information." Outreach projects, like Archaeology Month, seemed to be similarly stunted. When asked about their future projects for that department, considering that the position was vacant, the participant replied that plans were unsure. With the ongoing financial climate, State C remarked that they had no "office or assigned person that's involved in public outreach." The State C participant still spoke well of the personnel who had made independent outreach efforts. Referring to staff who held community cemetery clean-ups, the State C participant believed their outreach activity outside of proscribed duties was a testament to their public commitment. All

told, each participant concluded that on the surface, funding and staffing would continue to cause variation across state outreach and access policy.

So far, the data showcases that all the states agree that access to research and public outreach is necessary for the completion of legislated duties. That agreement, though, is influenced by funding and staffing barriers which cause variation in the ability to apply access and outreach features uniformly in policy. The next section though will reveal that each state's approach to access and outreach is determined by an even more central issue.

Data Security: Core Category

Section A presents the conceptual categories of access, outreach, and the barriers across state policy. Together, they reveal a core theme. The core issue concerns the legal responsibility for the security of archaeological sites and data which pervaded every conversation. Whether focusing on access to the site file or disclosing site locations for outreach, each respondent affirmed the primacy of protecting data. Even despite funding and staffing levels, participants would not consider policy features if they did not provide appropriate data security. This section elaborates on how data security is the core category issue determining the standardization of state archaeology policy.

Data Security and Site Information Access

States initially contextualized data security as a preservation technique, making access features a secondary responsibility. By selectively restricting site file access to some groups, the state office prevented sites from being compromised and ensured the enjoyment of archaeological preserves for future generations. It followed that the method of providing access was irrelevant if everyone- including potential looters- had knowledge of specific site locations. If GIS maps were openly published and they "let everybody have access", one respondent

mentioned, "there would be a lot of people, unfortunately too many, who would go and collect."

Access in this form runs counter to the founding principles of state management of cultural

resources. State C offered similar agreement stating that because "archaeological sites don't

reproduce" the preservation mindset dictates security measures.

States also mentioned site file data security in the context of ensuring information quality.

For example, respondents described that restrictions allow for oversight or controls mechanisms

to be set on who is distributing, receiving, and updating datasets. Without these restrictions, data

integrity would always be in question. Users could wantonly extract information from the site

file and develop backdoor databases built on unsupervised, incorrect data. This was especially

the case for State B, which, unlike the other two states, directly distributed data based on

individual queries since they did not provide remote access to the site file. When considering

information requests from legitimate researchers, one State B respondent stated, "…we would

rather make sure the data is accurate and not having people trading sort of…behind our backs..."

In other words, if state agencies are not the sole data managers, there could be no accuracy

assurance of the state's archaeological data.

Data Security and Public Outreach

In the context of public outreach, data security was again the primary concern. Here

participants considered the extent of information they were comfortable giving to non-

archaeologists. Aware of the general interest in archaeology and the public's frequent inquiries,

the State A participant described a future project involving integrating four databases currently

available on its website into a single resource. Once launched, this system would be a

clearinghouse for all inquiries regarding radiocarbon dating, national register designations, a list

of all excavated sites, and a bibliography of every contract report ever completed. The only

element that would be left out of this integrated system would be the exact GIS locations of sites as a security measure.

State B was arguably the most permissive among the participating states concerning the level of information given to the public. Outreach was not viewed as a potential liability for data security, but more as a way to ensure their protection by partnering with locals. State B respondents mentioned implementing occasional training sessions and door-to-door outreach. As one State B respondent described in working with riverine communities, "…most of the people we talk to…Most of them are receptive, they're like, 'what a cool site…we'll keep everyone away from it so that you guys can do what you need to do.'" In this, understandably, limited case, addressing the sites location can be a positive collaborative, educational moment for outreach. By training the public how to protect cultural sites, State B respondents found that a sense of stewardship and cooperation developed.

Data Security and Barriers to Open Access Development

It is difficult to address the core category of data security as a barrier to standard state policies when there are also smaller, initial barriers represented as conceptual categories. Arguing that each state's data security concerns creates variation in access and outreach policies in addition to funding can seem circular. As is the case with grounded theory analysis, though, the core categorical phenomenon is directly related to the lower- level conceptual categories and issues. In this research, data security concerns are a combined result of financial barriers and the various ways states implement access tools and outreach methods.

Data security was a major factor in discussions concerning investments into Open Access (OA) databases, a decision often made harder by funding barriers. Each state had submitted site file data to OA platforms, but efforts were irregular and limited to projects that required no

publishing fees. These submissions were test-contributions to a recently developed OA platform

and, since this initial stage, the amount of data released varied. For instance, when asked about

their data releases, the State C respondent was unaware of the extent of data released. States were

very aware of, and championed the leading, OA platforms tDAR and Open Context for their

ability to connect datasets securely. However, the state participants viewed their data publishing

costs as extremely prohibitive making development in OA databases relatively underdeveloped.

Developers of open platforms insist that this reluctance to release data to OA platforms –

even ones that are secure- will change as states become more aware of their security and

collaborative potential (Yerka *private communication* September 14, 2017). Their intent is to

show how OA platforms securely complement preexisting workflows for compliance and

preservation data. By doing this, they believe states will work to integrate publishing and

archiving data in linked, open systems (Kansa 2012; Wells et al. 2014).

Substantive Theory

The core category of this research is that states cannot provide standardized policies

because of unique data compromising hazards that arise in the process of providing access and

outreach. Fiscal and personnel cuts exacerbate this scenario. With this understanding, I will

develop a substantive theory which is essentially a "transferable rather than generalizable"

perspective which comparatively analyzes various elements within a case study (Dwivedi et al.

2009). The substantive theory for this thesis helps analyze the responses given by the state agents

to address why state policy is so unstandardized.

Such a theory needs to provide a way to mitigate state concerns over data security,

access, and outreach while also skirting prohibitive funding issues. This research proposes the

following: a web- based OA system that meets state security levels for site data and requires

minimal fees would sufficiently standardize state archaeology data access and outreach policy. With this working theory in place, the third question of this thesis can be addressed, "Can development of Open-Access platforms address both the barriers and primary duties of state archaeology to achieve standardized outreach and access policies." In section B, I will answer this question and contextualize the above theoretical assertion through a case study. This case study will present how a recently developed OA platform is successfully assisting state archaeology departments and the goals of Open Access.

Section 2: The Digital Index of North American Archaeology (DINNA), the secure, open solution to access and outreach policy

A system that provides secure, Open-Access to archaeological information for public research is the best way to standardize policies across the country. To reiterate, Open Access affirms that data be "digital, online, free of charge, and free of most copyright and licensing restrictions" in order to better serve scholars and the public (Suber 2015). For years, access to CRM literature has been the exact opposite for those outside the CRM and state information channels. This is because currently, states permit access in various ways, implementing different information system that use diverse schema and metadata structures to manage the data. This makes integrating datasets into a single schema or OA platform very difficult. Instead, state archaeology need a complimentary system that runs parallel to the already-in-place information systems and metadata schema. As discussed, tDAR and Open Context are blazing a new trail of Open Access to archaeological data. Those systems though, are not specific to state archaeology where most of the country's archaeological data is produced. This section will discuss a platform, in recent development that is focusing on securely linking the nation's site file data in a complimentary, Open Access space.

Digital Index of North American Archaeology (DINAA)

In 2012, the NSF announced that it would fund a linked open data (LOD) project under the direction of David G. Anderson. This project would initially look to connect data from fifteen to twenty SHPOs to provide better data communication between researchers and government. In 2017, this project, now known as the Digital Index of North American Archaeology (DINAA) is making extensive progress toward this goal. Hosted by Open Context, DINAA essentially promote interoperability by integrating data from each state site file onto a single platform. Hosting records related to nearly 500,000 sites nationwide, this system provides open research potential for government agencies, scholars, and the public. Eventually the system will integrate CRM data and environmental literature from all 49-mainland states by creating linked-data search and text-mining features that will periodically crawl each site file (IMLS, 2016; Kansa & Kansa, 2013; Kansa, 2012b; Wells et al, 2014; Anderson, et al, 2012).

Infrastructure as an Index

DINAA emphasizes that it is a complimentary data index. What this means is that the DINAA indexing schema and platform will not supersede what each SHPO currently operates (Harris 2012; Wells et al. 2014). This system is intended to be a data inventory connecting each state's archaeological site file to other states. To be this central data hub, DINAA focuses on creating open workflows to structure data interoperability and contextual standards to streamline the integration and use of disparate data in one system. Collaborating with a suite of other open-source technologies makes this possible. Partnered platforms such as OpenRefine, Protégé, MySQL, Solr index, GitHub and tDAR provide DINAA with an overlay protocol for annotating data to make it complimentary and discoverable with other site files. This collaboration helps develop inclusive vocabularies and storage formats for broader transferability.

The constant emphasis, though, is that these protocols do not supersede what is already in existence for each state site file. It would be unwise, if not unfeasible, to attempt to impose a single data protocol. Most states established their site files over a half-century ago and these systems contain tens of thousands of site records. The descriptive protocols used in these systems are contextually relevant to descriptive properties for each record. As such, DINAA preserves each state's unique site file schemas and vocabularies while also creating a space for enhanced discoverability through the open web (Kansa, 2012b; Wells et al, 2014).

DINAA's overlay protocols promote interoperability by editing data sets with conceptual ontologies. Ontologies are simply a set of coded concepts which organize the data, files, and reports using defined relationships. In archaeological information systems, such ontologies reference, among identifiers, cultural, temporal, or even regional groupings. DINAA uses the open source ontology called OWL. This popular ontology language freely allows developers to create file standardization processes or "data version controls" to further interoperability (Kansa 2012; Wells et al. 2014). For example, Moundville is a site dating to the Mississippi period. DINAA then records those data pertaining to Moundville within the larger ontology of Mississippian files. In addition, if two site files refer to similar sites or artifact-types under different terms, DINAA can prescribe additional metadata that links the terms together. This use of ontologies streamlines data processing and facilitates discoverability between systems while retaining legacy terminologies.

DINAA as Linked, Open, Archaeological Data

DINAA hosts its model through the Linked Open Data (LOD) platform Open Context. As mentioned, Open Context links item- level data to the open web by giving each file its own unique Web-Uniform Resource Locator (URL) and references expert data from across the

Internet. Similarly, DINAA also links third-party data from other websites to each record. Integrating state database records and links from other sites, such as GeoNames.org, allows DINNA to include data "such as names of places in various languages, elevation, population and others from various sources" (GeoNames n.d). Linking data in this manner highlights the practical, intersectional use of a DINAA record to the public and enhances its discoverability for scholars (Kansa 2012b; Wells et al 2014). In December 2016, DINAA developers announced another LOD partnership to connect DINAA with the Federal Register. The Federal Register provides current information on federal administrative law, new policies, and other regulatory actions. A natural marriage with DINAA's records, this will provide up-to-date insight concerning how the use and management of CRM data is constantly evolving (Kansa 2016).

Visualization in DINNA

Progress in linked, archaeological-information systems also focuses on visual representations. Data needs context to be useful, no matter the level of access or connectivity. To provide context, systems must allow connections not limited to relational databases. In DINNA, visualization techniques further highlight the possibilities of research driven by temporal and geo-spatial patterns in linked data systems (Wells et al. 2014). Their map-based browser is based on a hierarchic quad-tree visualization technique which renders each metadata on the map in a color-coded geospatial tile. The browser renders sites at a spatial resolution of approximately 400 square kilometers (or 20 kilometers) grid tiles allowing for patterning insights (Anderson et al. 2012).

DINAA also visualizes time scales in their mapping feature. Implementing the same tile structure, DINAA hierarchically arranges time-data in color coded tiles. These tiles cluster based on scale range used to represent patterning of similar, surrounding data. For example, Figure 1.3

100

below shows a screenshot of the DINAA map application with the color coding feature along with the resolution set to provide general location of sites. The multi-visual approach of this browser helps users investigate both spatial and temporal occurrences of sites, which are not easily represented in faceted classification systems (Wells et al. 2014). As such, this technique represents the future of archaeological information systems because researchers require tools that can effectively provide information at diverse scales.

Figure 1.3
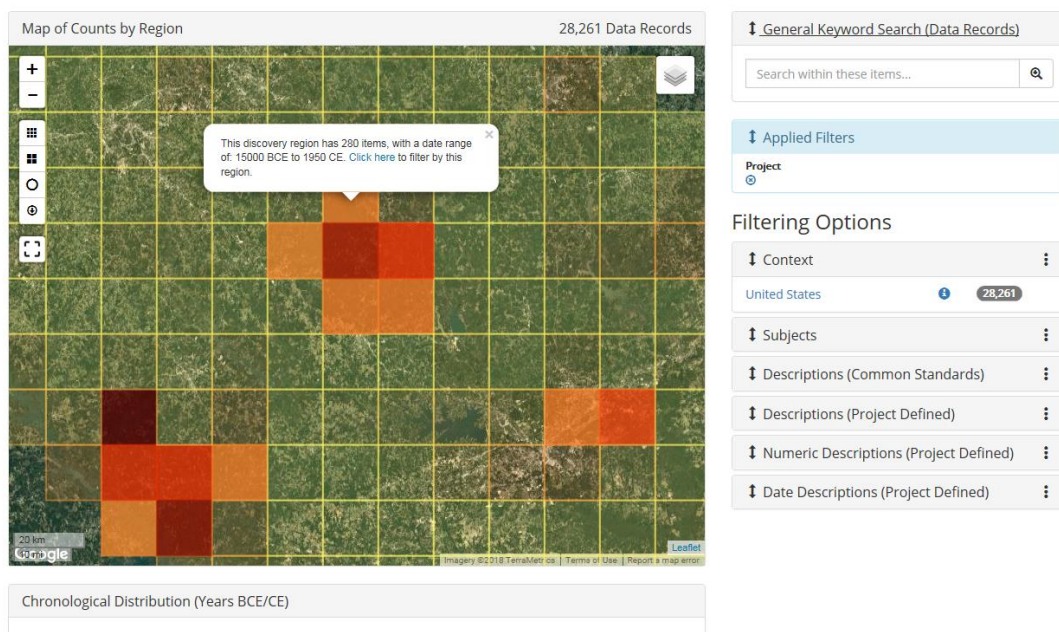
Open Context Illustration of Mapping Resolution, 2018

Open Access is Free Access

Like its parent platform, Open Context, DINAA observes an Open Access policy. As such, access to DINAA's state-archaeology collection is login and paywall free, allowing anyone with Internet access to view non-sensitive material. States often deny access to non-archaeology researchers due to concerns over lack of experience with sensitive information. In addition, In these days of consistent budget cuts, many institutions cannot finance remote access to the site

file. This leaves historians and museologists, who need cultural heritage data for researching and creating exhibits, without a major professional resource (Seymour 2010). With DINAA's open system, the potential practitioner and research base vastly expands.

In addition to being free for users to explore, since its initial development and testing phases, DINAA has solicited data from states free of charge. Substantial funding from both the NSF and Institute of Museum and Library Services (IMLS) supports DINAA. The Alexandria Archive Institute provides additional institutional support. With this backing, DINAA has no plans to charge participating states for indexing or archiving state data (Yerka *personal communication,* September 14, 2017). Understanding that public goods are often difficult to sustain, DINAA developers are confident that even after grant funds run out, partnering institutional support will continue. Sustainability will invariably be a point of emphasis as DINAA strives to educate state on the need to invest in linked data systems and their ability to facilitate research, outreach, and government projects.

Security Measures

Regarding the core category of this research, DINAA assesses the management of archaeological data with strong security measures. Due to property rights of landowners, the concerns of Native American over desecrating their sacred spaces and objects, as well as the potential for criminal activity, sensitive site data will invariably need safeguarding. Looters are all too prepared to take advantage of noble efforts like DINAA which seek to expand the public good of promoting archaeological information. To eliminate this threat from the outset, DINAA is forthcoming that they are not interested in maintaining exact site data. Detailed site location data is, as their initial report to the National Association of State Archaeologists (NASA) mentions, "beyond the scope of this project" (Anderson 2012). With NASA's approval, DINAA

projects site data at only an approximately 20-kilometer spatial resolution. The intent here is that the data would include enough detail to describe regional patterning, but that the coordinate detail would not facilitate potential criminal exploitation (Anderson 2012).

Some of the data provided to DINAA will invariably be sensitive to site location and require extra security measures. To facilitate this security need, DINAA has developed workflows with two giants, Open Context and tDAR. Open Context will provide oversight for hosting structured data which is essentially data coded in to relational categories. tDAR, will assist in the archiving of unstructured data, which includes primarily text and is less easily stored and analyzed. Mentioned earlier, tDAR places greater emphasis on archiving, preservation, and information security. With login barriers and security level customization features, the partnership with tDAR allows DINAA to direct researchers to more sensitive information under a more secure platform (DINAA, 2011; tDAR 2016). In this way, DINAA is able to observe the Open Access mantra of serving ever-larger research bases while also continuing to work as a diligent partnering inventory for state agencies.

DINAA as an Indirectly Applied Approach to Public Outreach

At its most basic level, DINAA's approach is applied, because providing access free of most institutional barriers and linked by common ontologies inherently makes data more discoverable. With the current pace of technological innovation such as mobile applications the intent is that more direct access to raw data will spur reuse potential in unforeseen, wider community contexts. As such, data made available by DINAA will have significant impacts on outreach and helping communities address real world projects (Yellen 2013).

At the 2015, Disasters, Displacement, and Human Rights Conference, Anderson et al. presented a paper entitled "Climate Change and the Destruction of History: Documenting Sea

Level Change and Site Loss Using DINAA". In the paper, they argue that proving the

"encompassing broad geographic and temporal scales" of anthropogenic climate change is

difficult due to the unavailability of comprehensive datasets (Anderson et al. 2015). Having these

data housed in discordant repositories precludes the development of generalizable findings.

Using DINAA as an example, they make the case that OA databases can serve as a repository

that links disparate data to fight real world issues like climate change.

In collaboration with Tribal Historic Preservation Officers (THPOs), DINAA developers

are also active in using their system for cultural heritage outreach and repatriation work. The

NEH and IMLS recently sponsored the Mukurtu project, which is an open source platform

established for "indigenous communities to manage and share digital cultural heritage" (Mukurtu

n.d.). DINAA looks to compliment this system and empower Native American communities in

the management of their personal and tribal records. Making DINAA's holdings accessible helps

descendant communities research information needed in navigating the bureaucratic NAGPRA

process. DINAA also looks to revolutionize the way data is classified. To do this, DINAA is

adapting their OWL ontologies to include a new data gazetteer called PeriodO. This gazetteer is

a data modeling system that specializes in attributing historic and chronological schemes and

documents in a format akin to "folksonomy" tagging (Open Context 2018a; PeriodO 2018). The

descriptive attributes provided by PeriodO are set as guidelines, but are not rigid. This allows for

indigenous community perspectives in the process of classifying data in DINAA.

For the past four years, DINAA hosted a series of workshops elaborating on the practical

uses of their system. The first three years were technical and oriented more for professional

audiences. The 2016 workshop, though, focused on the broader outreach implications of linking

DINAA data with third-party sites, like the Federal Register. As mentioned, the Federal Register

is a clearinghouse which updates information on federal and NPS regulatory notices. Working

specifically with NAGPRA staff, DINAA is linking their data to all pertinent machine-readable

NAGPRA notices located in the Federal Register. By providing tribal and CRM records, which

are updated in-real time, DINAA seeks to embed itself in a new partnership with the Hearst

Museum's Cultural Policy and Repatriation (CPR) Division and the Native American Advisory

Council (NAAC). The CPR and NAAC work in tandem with the Hearst Museum to build

relationships with tribes in addition to researching acquisitions and exhibits related to indigenous

communities. In this collaboration, DINAA assists the Hearst Museum as a central resource for

indigenous groups seeking information in consultation, educational, and outreach settings.

DINAA developers believe that an open system like DINAA inherently embodies an

applied approach by facilitating more direct access to data (Wells et al, 2014). DINAA's

developers understand that it may be unlikely that the general public will initially approach their

system as they would popular search engines. As such, the approach is to provide information in

the manner that seamlessly integrates and intersects with websites and institutions crossing state

lines, interests, and specializations.

DINAA and State Archaeology Going Forward

Currently only 16 states are represented in DINAA. These numbers will undoubtedly

increase; the IMLS announced a grant in support of the system in 2016. Nevertheless, the slow-

but-steady progress highlights the arduous task of obtaining legal permission and gaining the

confidence of each SHPO. As discussed with one of the systems developers, many state officials

are still wary of Open Access platforms. The fear is that the achieving a linked, openly accessible

clearinghouse of state archaeological data will be unnecessarily inhibited because some states

remain hesitant , willfully or not, to Open Access goals and technologies of Open Access

(Yerka, *private communication,* September 14, 2017). Aware of this hesitancy to Open Access approaches, DIINAA continues to meet with the National Association of State Archaeologists (NASA). Meeting with SHPOs and holding workshops helps the developers receive feedback on how their system can improve. These meetings and workshops also allow developers to demonstrate to state archaeologists how DINAA can complement their workflows while upholding the commitments to data security (NASA 2012; Anderson et al. 2012; Anderson et al. 2016; Yerka *private communication,* September 14, 2017).

At present, DINAA represents the most concerted effort to standardize the access and outreach policies of state archaeology concerning CRM data. This effort is crucial to communicating "gray literature" in American archaeology and outreach to the public. Moving forward, states could increasingly look to collaborate with DINAA because of its ability to connect data securely and affordably on a national scale. Since the NADB, no platform has sought to focus on this consensus need in American archaeology. And NADB only failed because it was ahead of its time technologically and lacked the support of state archaeology writ large. DINAA's chance for success has increased with time. Today, the technological advancements and national support are present. With federal 'open government' initiatives and granting agencies advocating data management plans, the elements are in place to make Open Access a standard in state archaeology policy.

CHAPTER SEVEN:
CONCLUSION AND FUTURE RESEARCH AVENUES

This research compared the access and outreach initiatives of three states, the reasons why they differ, and how open access platforms can standardize policies nationwide. Through grounded theory analysis, I have shown that there is agreement among states about the potential of using open-access (OA) for outreach and data management. This agreement, though, does not translate to consistent policy. The barriers to developing OA technologies on the state level are significant; funding cuts make developing new procedures and tools difficult. Most importantly, though, states are concerned with legal data security measures when considering new technologies. These are serious issues, but they do not justify disregarding OA applications. Linked open-access structures offer affordable, secure data for research and outreach. The national granting agency data management plans and federal government expectations for publicly funded research have made these capabilities the new standard. As such, they cannot be ignored by archaeology (NEH 2017; NSF 2017). This research illustrates that information access and outreach policies in state archaeology need standardization. Based on this finding, I argue that to provide 21st century researching and public engagement, archaeologists must encourage policy makers and SHPOs to support OA policies in state archaeology.

Research Questions

This thesis posed three questions: Is there any existence of consensus on outreach and information access policies between states? What are the reason(s) for inconsistency? And what part OA platforms could play in providing some standardization? My analysis shows a consensus does exist. Participants' responses emphasized the need for programs that encourage access to and outreach with archaeological data. Even with decreased funding and personnel, each state highlighted that access and outreach were essential to state archaeology. The platforms used to

provide access and public outreach elicited considerable variation. From the type of site file servers to public outreach capability, no single feature was possessed by all three states. Because of this and because of the growth of linked access systems and outreach projects in other disciplines, there is a need for more standardized state archaeology policies.

To achieve this standardization, understanding the reasons for variation is critical. My analysis showed that an initial reason for inconsistency is funding. Unless stable financing structures are developed, investment in linked open data information systems will be slow. According to the states involved in this thesis, future OA development is contingent on the lack of publication fees. Open Access- based outreach programs will also struggle because states cannot afford to hire trained personnel. Without sure funding for state activities, professional archaeology societies will have to continue providing outreach services. The fundamental, core cause determining states' ability to provide access and outreach was the preservation of sensitive data. Among all the participants, strict data security was the primary responsibility. As mentioned in many of the interviews, archaeological artifacts are non-renewable resources. Looting and the illegal antiquities trade is a constant threat to state management of cultural resources and other data. Today, linked open data platforms and outreach methods focus on Internet-based outlets. This provides an even wider potential for criminals to exploit public services like open, digital access to archaeological site data. As such, respondents were emphatic that developments in open information access and outreach be affordable, but, primarily secure.

With this understanding, I sought to understand if OA systems and methods could address the inconsistencies of state policy and provide some standardization. My analysis of the interviews and presentation of the case study indicate that this scenario is correct. Each state responded that they are currently working with OA platforms to varying degrees. Some

respondents were unsure how financial issues would affect their ability to support linked open

data projects. All emphasized that lack of data security would preclude any participation in

assisting linked open data projects. Regardless of their qualifications, all participants

acknowledged the public good that OA platforms represent. Moreover, each respondent

attributed the discipline-wide research potential as the primary reason for their state's

involvement with such initiatives.

The DINAA case study highlights how an OA system can affordably and securely

standardize state access and outreach policies. With linked workflows, connecting disparate state

datasets to each other and the larger Web is now possible. These capabilities are increasingly

necessary for 21st century researching and information engagement. Archaeologists theorize that

digital technologies will continue to determine research and methods (Zubrow 2006).

Establishing such platforms for state data management and outreach constitutes an embracing of

the discipline's digital future. In sum, this research asserts that with a national linked data system

– like DINNA- states will better communicate archaeological "gray literature" and its

implications to both researchers and public.

Future Directions

Academic Opinions

Important among future studies would be a further analysis of academic opinions

concerning the management and research potential of state data. The academic literature is full of

accusations of poor state data management, without offering solutions. Chief among these

critiques is that state data management exacerbates the gray literature problem in the United

States (Arizona State University 2012; Kansa et al. 2010; Kintigh and Altschul 2010; Renfrew

1983; Seymour 2010; Snow et al 2006). Notably, participants in this study made little mention of

academic interest in state data. Few mentioned academic inquiries about state data and zero respondents regarded facilitating academic researchers as a major source of their workload. This raises research questions that state archaeologists cannot answer, requiring academic participants in future studies. Gauging academic input will fill this knowledge gap and provide understanding as to how states can facilitate literature communication throughout the discipline.

The Public's Opinion

We must first ask the public and involve them in the process in order to say we know how state data management serves the public. Much research refers to public interest levels in the abstract and glosses over particulars (e.g., Clark 2015; Lees and King, 2007; McGimsey 1972; McManamon 2000; Schadla-Hall 1999). Other studies on public interest are aging and have focused on the public's general perceptions of archaeology (Ramos and Duganne 2000; SAA 2000). There is a literature gap concerning the public's perception of state-CRM archaeology and its ability to facilitate their information needs. Information acquired during this research indicates that there is a public interest in archaeology, but, with new technologies in play, updated evaluations are necessary.

In the literature, there is concern over the slow communication of archaeological information (Russell 2006; Wallace 2009). Articles in professional journals discuss new results and concepts for years before they slowly make their way into public outreach programs. This dilemma mirrors the way states disseminate archaeological knowledge, and is the antithesis of what public archaeology stands for as an exercise in collaborative archaeology (Edwards-Ingram 1997; Marshall 2002). To say we know what the public needs regarding outreach and access to state data, we must first ask them and involve them in the process. If there is a genuine desire to provide better outreach, public perceptions are worth investigating.

Increased State Participant Pool

Lastly, archaeology needs more research, like this one, involving more state departments. This research only involved three states from the same region. Nevertheless, the intention was that these results would serve as an example of a trend as well as highlight the lacking comparative analysis literature on specific state policies and practices. Prior to this small study, only Charles McGimsey III's *Public Archaeology* comparatively analyzed each state's access and outreach offerings across the country. Prevalent in his assessment was the role of data management practices for successful state programs. This appears to be the case outside of the United States as well. A Canadian researcher determined that provincial archaeology structures are ineffective at appropriately communicating CRM data (Birch 2006). The United Kingdom seems to have found a winning model with the Archaeological Data Service, which catalogs disparate digital CRM data from across the UK. In American archaeology, there has been some progress toward more effective communication with projects such as tDAR and Open Context. But these platforms are more directed towards academic archaeological data publication.

For the United States, though, no recent research has comparatively analyzed state data access and outreach policy. Since the NADB's demise, only the DINAA project currently works toward the specific goal of standardizing state management systems (Wells et al. 2014). With new technologies and data requirements in play today, a current assessment of state policies is necessary. This research has sought to understand what three states are offering and how OA platforms can provide better engagement with archaeological data. Adding states to a similar study would provide new information and expand the generalizability of the results revealed in this research.

Conclusion: Pursuing Access and Outreach to Highlight Significance

In, *A Richer Heritage: Historic Preservation in the Twenty-First Century,* Elizabeth Lyon and David Brook explain that state archaeology is undervalued. As part of SHPO operations, the activities of state archaeology are not "recognized as a mechanism with which to meet contemporary problems" (2003: 116). To be sure, developers and policy makers ensure that a state archaeology Section 106 procedure continues to facilitate commercial development. Many respondents alluded to this phenomenon in the interviews. Invariably, this casts state archaeologists solely into "the role of regulators" (Lyon and Brooks 2003:116). Meanwhile, fulfilling the other, federally mandated duties of state archaeology remain underdeveloped.

In this climate, state archaeology is at an impasse. Maintaining the status quo means enduring continual budget cuts while focusing almost exclusively on Section 106 for development needs. This leaves public and research communities wanting. Alternatively, state departments can embrace burgeoning open-data technologies. These systems can provide more open access and outreach opportunities as well as highlight ways that state archaeology can "meet contemporary problems" (Ibid.,). Linked Open Data is now. Not only is the technology available, but government and granting institutions are issuing open management expectations concerning publicly funded research. Addressing this new paradigm, Wells et al., write,

> Recent policy shifts under the banner of 'open data', 'open government', and 'open science' highlight the value of publicizing public data and reflect growing ethical demands within archaeology for accessible online linkages between records, primary literature and data sets. SHPO data re-presents an opportunity for open knowledge (2014).

On the surface, these announcements signal how state archaeology must look to attract stable funding. More importantly, it also emphasizes the necessity of making research more applied to real world issues.

The original arguments of NHPA was that commercial development was a threat to future generation's "opportunity to...enjoy the rich heritage of our Nation" (NHPA 1966). As such, SHPOs were formed to assist in the equally important duties of managing archaeological resources in light of commercial and public development projects as well as disseminate cultural data to scholars and the public. However, the completion of the regulatory procedure of state-CRM is emphasized at the expense of appropriate outreach and data communication. To preserve the NHPA's original intensions, state archaeologists must work toward making the practical uses of CRM data more apparent.

The relevance of state archaeology data can be made by increasing data visibility through OA systems. State archaeology offices cannot continue to manage data behind obscure systems that preclude the needs of 21st century research and engagement. Ultimately, OA platforms in state archaeology will promote better data communication within the discipline, as well as the general public and policy makers. This public good is the primary concern of this thesis and something American archeology has needed since the beginning of federally required CRM.

By ignoring this route, American archaeology will fall behind other disciplines that are experiencing the collaborative advantages of their linked OA platforms. Gray literature will remain largely inaccessible to those outside of Section 106 compliance projects, resulting in a continued lack of communication. We will only have ourselves to blame for allowing this outcome to persist. McGimsey and Davis (1977:78) said as much, stating, "Any discipline which does not communicate adequately to its own followers and to the general public cannot contribute to an area of knowledge, let alone prosper or even survive". Moving forward, let us aspire to make state archaeology prosperous by adopting OA platforms. Doing so, we not only

reaffirm the original intentions of preservation law but also embed state archaeology into 21st

century open access researching, data management, and outreach possibilities.

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APPENDIX A:
SCHEDULE OF QUESTIONS FOR INTERVIEWS

Note: This schedule of questions was used to direct the flow of the interview process. In all of the interviews the participants guided the conversation towards some themes focusing more so on their specialty in state archaeology. As topics, some questions were not discussed as heavily as others and likewise, some themes that developed were only identified during analysis and secondary, observation based data gathering and are not uniformly represented by the questions asked.

1. **Overall**
   a. What do you view is the overall goal of the division of archaeology?
   b. Do you feel that the language of state law fully explicates the range of activities for which the division is responsible?
      i. Does the language help or hinder the state agency?
         1. Could it be more expansive or less
         2. How so, explain
      ii. Is there any portion you feel is not appropriately attended?
   c. **Academic Information Access** Does your agency have an online, interactive site file database?
      i. Explain?
         1. Provider
         2. Format
      ii. Is there a fee for access?
      iii. Describe the site form submission process
         1. Is it digital or physical, both?
      iv. Do you house CRM info/data in any other forms?
   d. Does the division considered itself a facilitator of scholarly research?
      i. How is the agency working with recent trends toward open data concepts?
   e. Does your state agency allow non-archaeology scholars/professionals to view reports?
      i. Explain
      ii. Are exceptions allowed?
         1. Under what criteria
   f. Explain the legal and/or ethical concerns for providing full access to CRM reports.
      i. Are division controlled databases the only method for providing access?
      ii. Does the agency encourage CRM firms to share or publish their reports?
         1. In what way?

2. **Public Outreach/Archaeology**
    a. Is it the hope of the agency that the public views the agency as a primary source regarding state-related archaeological information?
        i. Explain why or why not
            1. How do you facilitate this presumption?
                a. How do you address the citizen inquiring about information in the excavation and bibliographic databases?
            2. How do you correct this assumption?
                a. Explain why.
                b. What would you suggest is the primary source?
        ii. Does the agency partner with local or national museums and universities?
    b. What methods of public outreach/archaeology does your agency perform?
        i. Does the agency encourage CRM firms to contribute to public outreach?
        ii. Does your agency use any form of social media?
    c. What methods of public outreach/archaeology do you view as the most effective?
        i. Explain?
3. **Summary**
    a. What do you consider the primary issue for state agencies moving forward?
        i. With regard to governing CRM activity
            1. Explain
        ii. With regard to facilitating research
            1. Explain
        iii. With regard to public outreach
            1. Explain
    b. How would you advise these issues be addressed in the future?

APPENDIX B: SAMPLE INTERVIEW TRANSCRIPT

Samuel Ayers
Interview Transcript
State C

Samuel Ayers: Basically…let's just get started. You can introduce yourself.

State C Interviewee: Well you already know who I am, **** at the Department of Archaeological Research and keeper of the ****** archaeological state site file since 19**.

Ayers: Ok, kind of a general question. What is the main, overall goal of the office of archaeological research and what you do?

State C: Well, it's kind of odd because first let me explain we're not really a state office. We're part of the university, the site file gets no funding from the state whatsoever either through the university or the SHPO. So it has to be self-supporting. We have to underwrite grants for our programs. Its just all external funding. [FUNDING] We have a couple of people who've just retired and taken other jobs so we're probably down to a staff of about 35 and we get two positions funded by the university and everything else is contracts and grants [STAFFING]. So its from the proceeds of the contracts and grants programs that we operate the site file [BARRIERS TO PROVIDING STANDARDIZED DATA ACCESS AND OUTREACH POLICY].

Ayers: So…

State C: So it's not really a state office.

Ayers: Ok.

State C: In that sense of the word. Now there is a state archaeologist in the SHPOs office

Ayers: But the state doesn't have a traditional state office. It's more….

State C: Not like ****** or ****** or any place like that.

Ayers: Ok. Alright, and some of these will be pretty direct questions.

State C: Ok. I always tell people you can ask me pretty much anything you want its just that I may choose not to answer.

Ayers: That's perfectly fine. Does the office and I guess the state have an interactive, online site file?

State C: We do. [SITE FILE]

Ayers: Ok.

State C: In fact we were one of the first in the country. We went online, I think it was 2010 when we first went on [SITE FILE]. And shortly after that I participated in a symposium at SAA about site file developments and there were 15 states in the symposium and we went in alphabetical order so I went first and the person from Arizona was next she started off by saying "I was basically going to say how we're hoping we could do what *******done." This office used to have very close working relationship with an IBM development office on campus. We used to be an IBM shop, the university's gone to Oracle in the past few years but we had a group of people called the Advanced Technology Group, funded by IBM and they were developers and Beta testers and all sorts of things and they needed subject matter for their work and they decided archaeology was interesting [PROFESSIONAL ORGANIZATIONS]. So they made contact with us and for several years we had a close working relationship with them and so that gave us an opportunity to get online at a very early stage [SITE FILE PLATFORM AND REMOTE ACCESS].

      I remember one of the projects we were working on with them…and this is just to put it in a technology time framework. We had been approached by the park service about possibly doing an educational CD on some southeastern archaeology and I was talking to the people in the Advanced Technology group and they said "well if the park services wants a CD, that's what we can do. We can produce one for them, but there's this thing coming called the world-wide web that's gonna make CDs obsolete."

      So that's how we got to it at such an early point.

Ayers: Is the site file…is it open to others to uses remotely or does one have to come here to use it for access?

State C: You can do everything remotely that you have authority to do. [ACCESS] [DATA ACCESS/VETTING]

Ayers: Could you explain that?

State C: I mean there are different levels of access. For example, there are only three people who have authority to edit the site and they are all here. Then, we have two tiers of access: one is basic and one is advanced. You have more authorities in advanced than you do in basic but whatever you have the authority to do in basic you have authority to do in advanced. Now one thing we didn't do because it was very difficult to do at the time and we just haven't gotten around to fix it anyway. You can't directly submit a map to the site file. You have to email those separately and then when site forms are submitted, you know, you're going to get some that are basically trash or they're duplicates of sites that are already recorded or whatever. [ACCESS & VETTING] So all sites that are recorded go into an electronic inbox and they are invisible to other users at that time until somebody here verifies that it's a new site and a valid site and the computer assigns it the next available site number for that county.

      Where was I going with that? Something about maps? Oh, that's the point at which the map gets added to the form

Ayers: You mentioned, I guess if you can speak on it in general terms the difference between the basic level and advanced…the criteria for that?

State C: There are two sides of the site file. [ACCESS] You can come around here in a little while and we can actually look at it and I'll step you through them but there's a site form side and a site file and a site map or GIS side. And we're in a process toward unification of those into a single site. But on the basic access gets you really access to just the basic site file form. Although that's a pretty circular way to describe basic access that it gives you access to the basic… [ACCESS] But essentially on the site file side you can submit site forms, you can do searches by township range and section and you can download site forms by number. On the GIS side you get a statewide site map with the coded data from the site forms as an attribute table on the site polygons. And then you also get on the site file side access to a queryable catalog to our reference collection. [SITE FILE/ACCESS]

Then the advanced level gives you access to a lot of the data behind the site forms [SITE FILE PLATFORM AND REMOTE ACCESS]. On the site file side you get access to a report module where you can query by site number or catalog number from our reference collections database and download pdfs based on the results of that query. For a catalog number obviously you get one title, the title is the product of the search and for a site you could theoretically get multiple titles and then those titles are links to pdfs so you get that data. And then you get an ad hoc query builder against all the coded data in the site file and some of the metadata tables as well but not to any of the text. You can't query the comments. And then on the GIS side you get statewide surveyed space coverage with links to survey reports. On the site file side links, you know that could be anything but the GIS links those are basically phase 1 reports attached to polygons of phase 1 survey areas. So that's the two levels. Most people, just about everybody takes the advanced access because its more useful. [SITE FILE PLATFORM AND REMOTE ACCESS].

Ayers: Who are the types of people that are allowed…which do you approve for basic and which do you approve for advanced?

State C: It's not a question of approval. If you're approved for one you're approved the other. Its just how much you want to pay and what information you're gonna have a need for. [VETTING/DATA ACCESS]

Ayers: Ok, so that's my next question….a fee for access.

State C: It is. Its $600 a year for basic and $1200 a year for advanced. And we just to be able to keep up whose dues are due everything is a calendar based but if some CRM firm starts working in Alabama in the middle of the year we'll prorate a subscription from then till the end of the year. And then, in addition to that that's basically for review agencies, CRM firms, and that sort of thing [FEE FOR ACCESS/DATA ACCESS]. But in addition to that we have complimentary non commercial access for research [FEE FOR ACCESS/DATA ACCESS]. And a lot of students working on their dissertations like ********or one of ******* students at the *********or ********. That's something that could be arranged for you if you had need for something to actually use the site file or see something about it, Rebecca would have to get the subscription and it would be in her name as a qualified archaeologist but then she could

designate you as having access. So we have commercial access and we have non-commercial access [VETTING/DATA ACCESS].

Ayers: Ok, and that kind of governs your policy for the types of researchers that are allowed? Archaeologists only?

State C: Basically yeah. Now in addition to that certain corporations in the state that have huge land management responsibilities but also have environmental offices that are used to dealing with sensitive information of all types, TNA species and things like that they understand the need for security on the site file data and have the mechanisms to do that and we will allow them access as well. [SITE FILE-REMOTE ACCESS/DATA ACCESS] And then a land owner has the authority to find out, as far as we're concerned, anything about their property. [VETTING/DATA ACCESS]You know, we got a call the other day from a farmer who said, "You know there's a big site on my property and I think someone did something there one time and has it ever been recorded and what do you know" and it actually was a site that William Sears recorded back in the 50s so we sent him a copy of the site form and that sort of stuff.

Ayers: It seems like you've got ways for….to open the site file to as many people as possible while protecting data. What use or what does this site file office look to or think of when you have platforms like The Digital Archaeological Record, Open Context, or The Digital Index of North American Archaeology…some of those open-access, open-data platforms that are coming out. Are they complimentary? What's the perspective as a site file manager with those platforms?

State C: We haven't really had much involvement with that at all. [OPEN ACCESS PLATFORMS/DATA ACCESS] Now tDAR. does have a lot of our data that they acquired from the park service. But its regarding our reference not our site file. You know we would….if all the proper restrictions and securities were in place I don't think we'd have any objection, you know, to getting involved with people like that. [OPEN ACCESS PLATFORMS/DATA ACCESS] Now tDAR is a commercial place so if you want to put some information there you've gotta give them some money and we're not interested in that. [OPEN ACCESS PLATFORMS/DATA ACCESS AND FEES-BARRIERS]

Ayers: As part of one of the first questions I asked about the general idea of the office of archaeological research. Is it primarily academic facilitating research or compliance?

State C: Its almost all compliance. Yeah I'd say 95% and then 5% academic research. We'd like to see that increase. We wish it would but this university in particular and this state in general its just not really interested in getting behind CRM even though that's where all their students are going to wind up. They only teach a CRM class every other year at the university and one of our staff teaches I think on a volunteer basis. They may get supplemental pay. I don't know who is there. [BARRIERS – FUNDING]

Ayers: So does being within the university system help or detract at all?
State C: Sure it helps a lot. Like I talked to you about how we had that long term relationship with the IBM guys. We had access to technology and knowledge that's just…it's part of the

general system now but back then these were people who were helping develop object oriented technology and stuff you see.

Ayers: And that relationship is gone now?

State C: It is because a new provost was hired a new position was created a person who was put in that position did not like IBM and they were in charge of all…kind of combining the computer center and educational media into one office and they broke all ties with IBM, chased off the Advanced Technology group most of whom went to work directly for IBM I'm sure making more money than they were making here and turned it into an oracle shop. So we kind of lost that tie. Now the people at the present computer center have always been very helpful and we've made some modifications and enhancements to the site file after it went to oracle and they've always been very helpful and very interested in that so we still have a good relationships with the computer center but its not an R&D computer center like it used to be.

Ayers: R&D?

State C: Yeah, Advanced Technology was basically R&D for IBM.

Ayers I guess could you explain that ethical concern for not releasing site data, why you're so protective?

State C: We'll its not so much an ethical concern as it is a practical concern. Site files are like pitcher plants. There are people who want to dig them up and put them in their yard and unlike pitcher plants, site files…archaeological sites don't reproduce. So it's essentially for protection of the resource base. [BARRIERS – SITE FILE ACCESS AND PROTECTION / CORE CATEGORY]

Ayers: Is there any mechanism within what yall do that encourages CRM firms to publish more for the public…to engage with academics.

State C: That's not really our purview. Those are worthy goals but they're not things we work on. We try to have as much public interaction as we can. [BARRIERS/PUBLIC OUTREACH]

Ayers: I guess switching gears to public outreach, is this office responsible in any way with public outreach?

State C: Not so much directly other than just our general professional, you know, I don't know if its an ethical or just a professional need to interact with the public. We recognize that its ultimately the public that's paying for what we do and they need to be getting something back for it and we do have a lot of public outreach in terms of giving programs here and there across the state, working with people on volunteer days. [PUBLIC OUTREACH] For example ******* one of our staff archaeologists, she's a bioarchaeologist by training and last weekend she led a group of people in the cemetery clean-up in a town a few miles west of here [PUBLIC OUTREACH] in ******* so we do a lot of that kind of stuff. The museum has a summer expedition program that runs for several weeks. They try to alternate between paleontology and

142

archaeology. [PROFESSIONAL ORGANIZATIONS/PUBLIC OUTREACH] People come and camp and actually engage in the excavation or whatever it is and when there are archaeology weeks we provide professional expertise and leaderships for those. [ANNUAL ARCHAEOLOGY EVENT/PUBLIC OUTREACH] We have people who are active in professional societies on the state and local level so we all our professional responsibility to do that sort of thing and being part of a museum and having a place like ****** we have a little bit more responsibility to do that sort of thing as well as more opportunity to do that as well. [PROFESSIONAL ORGANIZATIONS/PUBLIC OUTREACH] We help provide staff for the native American fall festival which brings 15,000 people to the park over four days. But at the same there's not like a branch of this office or assigned person that's involved in public outreach. [ANNUAL ARCHAEOLOGY EVENT/PUBLIC OUTREACH]

Ayers: Correct me if I'm wrong y'all do have a social media account, Facebook page? [SOCIAL MEDIA/PUBLIC OUTREACH]

State C: We do.

Ayers: That's novel, not many have that.

State C: I know I never go there.

Ayers: Ok, you answered my other question about being with the museum helps relieve the burden of providing some sort of access or for outreach….Archaeology month, yall have one?

State C: ******* does not do anything for archaeology month. [ANNUAL ARCHAEOLOGY EVENT/PUBLIC OUTREACH]

Ayers: Ok. Unfortunate.

State C: Yeah, it is.

Ayers: You said the native American festival…

State C: Yeah, that's here at the park. That's the park's big event every year. [ANNUAL ARCHAEOLOGY EVENT/PUBLIC OUTREACH]They turn the whole end of the museum toward the park becomes the center of the festival. There's a big area for vendors of native American arts and crafts and various foods….get an Indian taco or whatever **.** And then that's in the little central round-about, you'll see it when you go to the museum. I'm sure you will when you're here. And then the fields across from that are really the educational center and they have all sorts of native American educators come in and show various activities from pottery making to cooking traditional foods, traditional medicine. We have a reenactors group who usually come in and set up a 18th century trading camp [PROFESSIONAL ORGANIZATIONS/PUBLIC OUTREACH] and they've cut it a couple of days in the last few years but I think Wednesday, Thursday, and Friday are primarily school groups and then Saturday primarily the general public and next to the center you'll see kind of a low area and that's where they put up a stage and they have singers and dancers and story tellers and other things. That festival is the park's big event

every year and like I said they bring in…I think the peak was around 24,000. It's a little lower now because so many schools don't have the money to travel. [PUBLIC OUTREACH]

Ayers: I guess somewhat of a summary getting back to what you deal with specifically. What's the most pressing issue now with managing site files in the future and what you're dealing with right now? What's the most pressing issue as far as providing access to people who need it?

State C: Well I know the thing that's talked about the most. I don't know if it's actually pressing but linear researches are driving people crazy everywhere I think. In ****** we don't give them archaeological site numbers and a lot of the CRM firms would like to give them archaeological site numbers. In our own work, we consider them historical architectural resources but you know that seems to be the big burning question now things like historic ditches, roadways, railroad beds, tramways, and you know if you want to extend that fence lines, tree lines, pipelines transmission lines. You know a lot of these things are well over the threshold of 50 year cut off date for NRHP consideration and so we don't just…we don't record them in ******* as archaeological sites and we don't dispute that they need to be recorded we just think they should be recorded as something other than archaeological sites. As I said, in our own work we record them as historic architecture resources and treat them more like abandoned houses or any historic houses for that matter or farmsteads but if you start thinking of all those things as archaeological sites it opens up a tremendous amount of practical problems and intellectual problems of the sort like what linear resources are you going to record and what linear resources are you not going to record. How are you going to deal with linear resources that extend across the state. There's a lot of historic roadways and things too. What does it do for the management of those resources? If this is a highway that you're going to record as an archaeological site even though it's a still in-operation highway but its more than 50 years old. It is important on a local, regional, or national level and meets national register criteria are you going to thought the compliance process any time you want to restripe that highway, or repave it, or do sidewalks become linear resources?

Ayers: Sounds like a headache.

State C: It is in our opinion but like I said there's another faction that says well they're made by human beings therefore they're archaeological sites…there are a lot of things that we recognize have an archaeological side to them that we don't record as archaeological sites. A lot of times that's because they're recorded elsewhere and we think recording linear resources elsewhere is the right solution for that. For example, all standing structures can be presumed to have an archaeological component but we record them as standing structures not archaeological sites.

Same is true of cemeteries, you know all cemeteries are archaeological sites but we don't give cemeteries site numbers under ordinary conditions. Now there are times when we do give standing structures archaeological site numbers or cemeteries archaeological site numbers. One is, especially in the case of cemeteries, if they're not mapped, if they're abandoned, we'll give them archaeological site numbers just to get them in the public record and if they're subject to archaeological investigation we'll give them archaeological site numbers so that you can name some collections and we would do the same thing for a linear resource. But we don't across the board give those things archaeological numbers and that's the way we feel the resources should be done. So that's the burning issue at least in ****** and from what some of the CRM firms have said that it worked in multiple states it's the same way in other places. Some places record

144

them like ******** does, some places don't ****** doesn't so that seems to be the big unresolved question. You might know what ******* does.

Ayers: At the moment no. But another state that I was looking at was having a similar issue with 50 years ago a lot of stuff is starting to become important all of a sudden and there's just such a mass amount of it and they're not sure what to do with it. It seems to be an issue across the board.

Ayers: I guess that just about answers all my questions, anything else I'll send a follow-up email or something.

State C: Sure, just give me a call.

APPENDIX C:
INITIAL CONTACT LETTER

To whom it may concern,

My name is Samuel Ayers, and I am an anthropology graduate student at Louisiana State University working under the direction of Dr. Rebecca Saunders. I am writing to you because I am conducting research for my thesis which will compare the information access and public outreach policies of three state departments of archaeology in the southern United States. Through my initial researching, your agency presents considerably unique qualifications and was wondering if you might be interested in participating.

Should your agency choose to participate, the participation of any and all staff members is completely voluntary and all are free to change their participation status at any point in time. Staff identity will be kept strictly confidential. It is unlikely that this study will be published outside of the traditional thesis format; however, being that the study participants will be public servants I will not use agency staff names, positions, or any other identifying information.

Participation in this study would mean that I would set up 1 interview session with each agency staff member willing to participate. The interviews would last roughly 30 minutes each and I would make every effort to work around each participant's schedule. The interviews can be held in each staff member's office or another location of your choosing. The interviews will be recorded using the Apple Inc. application Voice Memos. I will also transcribe the interviews and return them to each participant for review before I begin my analysis.

I am very interested in the issues surrounding state compliance archaeology, information access, open-data concepts and public outreach archaeology. I think each state displays unique, varying examples of promoting archaeological information to the public and scholars, but I am looking for a potential base-line standard of practice for all states. It is my hope that the interview experiences, in addition to helping me better understand these issues, will also be insightful for your state agency.

I can be reached at 225-347-6005 or sayers3@lsu.edu to answer any questions you may have. I will follow up in 1–2 weeks with a phone call to see if you're interested in learning more (unless, of course, I hear from you first). Thank you.

Sincerely,

Samuel Ayers.

APPENDIX D: IRB APPROVAL FORM

ACTION ON EXEMPTION APPROVAL REQUEST

LSU

TO: Rebecca Saunders
           Geography & Anthropology

FROM: Dennis Landin
           Chair, Institutional Review Board

DATE: March 21, 2017

RE: **IRB# E10409**

TITLE: Compare Analysis of Information Access and Public Outreach Initiatives to Three Southern
           United States State Archaeology Divisions

Institutional Review Board
Dr. Dennis Landin, Chair
130 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
F: 225.578.5983
irb@lsu.edu
lsu.edu/research

New Protocol/Modification/Continuation: New Protocol

Review Date: 3/21/2017

Approved_____X_____ **Disapproved**_____

Approval Date: 3/21/2017   **Approval Expiration Date:** 3/20/2020

Exemption Category/Paragraph: 2a; 4a

Signed Consent Waived?: No

Re-review frequency: (three years unless otherwise stated)

LSU Proposal Number (if applicable):

Protocol Matches Scope of Work in Grant proposal: (if applicable)

By: Dennis Landin, Chairman _____

PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –
Continuing approval is CONDITIONAL on:
1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon   request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. **SPECIAL NOTE:**   When emailing more than one recipient, make sure you use bcc.   Approvals will automatically be closed by the IRB on the expiration date unless the PI requests a continuation.

*   *All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at http://www.lsu.edu/irb*

VITA

Samuel Thomas Clarence Ayers was born and raised in Baton Rouge, Louisiana. He attended Louisiana State University from 2010-2014 as undergraduate, graduating Cum Laude in May 2014 with two Bachelors of Arts degrees, one in History and the other in Political Science. His interests in archaeology and archives were combined out of a general interest in history, material culture, and preservation techniques. Samuel intends to further his career as a museum professional with the hope of pursuing doctoral studies in the future all while working to preserve Louisiana history and culture for future generations. He plans to graduate this May 2018.