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A Preliminary Study on Curation Concerns in Higher Education Anthropology Programs with a Focus on Archaeological Collections

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A PRELIMINARY STUDY ON CURATION CONCERNS IN HIGHER EDUCATION
ANTHROPOLOGY PROGRAMS WITH A FOCUS ON ARCHAEOLOGICAL
COLLECTIONS

by

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A Research Paper
Submitted in Partial Fulfillment of the Requirements for the
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Approved by:

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AN ABSTRACT OF THE RESEARCH PAPER

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TITLE: A PRELIMINARY STUDY ON CURATION CONCERNS IN HIGHER EDUCATION ANTHROPOLOGY PROGRAMS WITH A FOCUS ON ARCHAEOLOGICAL COLLECTIONS

MAJOR PROFESSOR: Lorilee Huffman

Curation is the long-term care and management of collections, which is essential to preserve objects, artifacts, and records for future generations. Yet, in the past, there had often been little concern given to the curation of archaeological collections, especially in higher education archaeology programs in the United States. This attitude began to change in the 1990s, when the federal government passed two critical laws, the Native American Graves Protection and Repatriation Act (known as NAGPRA) and the Curation of Federally-Owned and Administered Archeological Collections (36 CFR 79). Despite some positive changes over the past two decades, research suggests that archaeological collections curation remains undervalued.

This paper examines 21st century attitudes surrounding curation and the prevalence of long-term collections management in higher education archaeology programs. The assessment of over 40 college archaeology textbooks as well as a survey sent to professors in the top five archaeology programs by rank and enrollment confirm that curation concerns are still lacking. This preliminary study suggests that archaeology programs need to better integrate curation-focused courses into their curricula and demand that curation topic be discussed in archaeology textbooks to better train and educate students (i.e., the future archaeologists) about the proper care and management of archaeological collections.

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CHAPTER 1

INTRODUCTION

This paper investigates whether or not university-level archaeology students in the United States are being taught the principles of archaeological collection curation, which is the long-term preservation and management of all materials in a collection. An archaeology collection can include archaeological artifacts as well as associated records (e.g., field notes, maps, photographs, slides, reports, accession records, etc.). A review of the literature reveals that there is a lack of education about the curation and its practices with regard to archaeological collections (ACC, 2003; Bustard, 2000; Childs & Corcoran, 2000; CC, 2008; Sebastian & Lipe, 2009; Sullivan & Childs, 2003; Zimmerman, Vitelli, and Hollowell-Zimmer, 2003). This preliminary study also evaluates whether or not college textbooks and select archaeology programs expose archaeology students to standard practices and policies regarding the curation of archaeological collections.

This paper examines attitudes about and the prevalence of long-term collections management in higher education archaeology programs. To address this issue, I focus on two main questions: (1) Do higher education archaeology programs in the United States include formal training on the curation of archaeological collections? (2) Has concern for the long-term care and management of archaeological collections increased in the university setting over the past six decades, especially after the passage of cultural resource laws enacted in the 1950s through the 1990s?

The two-part investigation was conducted by examining a selection of archaeology textbooks used in both undergraduate and/or graduate archaeology courses over the past six decades (from the 1950s to the present). An investigation of university archaeology program

curricula was then undertaken, focusing on the top five graduate programs ranked by the

National Research Council (Armstrong, n.d.; *The Guardian*, 2000). Professors teaching

archaeology courses at these universities typically hold a Ph.D. in Anthropology or a related

discipline (such as Classics or Museum Studies). Teaching relates to the knowledge cycle and

how certain ideas and norms are passed from generation to generation. If the curation of

archaeological collections is not stressed in the education of students, some of whom will

become the future university archaeology professors, it seems unlikely that they, in turn, will

make the long-term care and management of archaeological collections core to their teachings. A

Ph.D. may not be required to manage collections in a repository, but it is assumed that the

persons most qualified to be in curator positions at such facilities are usually those with at least a

Master's degree, and many curator positions require a Ph.D. when research is required. The top

five anthropology programs by rank and enrollment, as determined by the United States National

Research Council, were chosen to be surveyed.[1]

The framework used to conduct the research involved a variety of methods. First, the

prevalence of curation was determined by selecting a least two university-level archaeology

textbooks from each decade since the 1950s. The textbooks were selected based on the

accomplishments of the author in the field of archaeology as well as the number of editions

published of each book.[2] The reasoning behind this selection strategy was that if the book was

unsuccessful and was not used, then production of the textbook would have stopped and

additional editions of the books would not have been published. The ability to access the book

through Southern Illinois University Carbondale's Morris Library was also a reason for the

selection because a physical examination of each book was required to search for curation terms.

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[1] For a detailed explanation of rank see page 31 under "Textbook Survey Methods and Relevant Terms."
[2] Accomplishments were determined by a review of authors' curriculum vitae, including their years of teaching experience and their publication history within the field of archaeology.

To calculate the reading level of a text, the Simple Measure of Gobbledygook (SMOG) Readability Formula was used to confirm that each textbook was written at the university-level (McLaughlin, 1969).

I examined the index of each book for the following key words to determine the extent to which curation could be figured in the teaching associated with each textbook: *curation*, *collections management*, *conservation*, and *preservation*. I also examined several editions of the same textbooks to determine if curation had become a greater concern over time. Several books published in 2000 or later were also examined because it was suspected that curation concerns have become a more recent phenomenon. From this information, I was able to ascertain how prevalent the concern for conservation and curation has become over the past decade in higher education archaeology textbooks as compared to those published before the 21st century. An evaluation as to whether the formal training of curation standards and practices in university-level archaeology programs is possible by examining the prevalence of curation information represented in the textbooks.[3]

Federal regulations passed in 1990, including the Curation of Federally-Owned and Administered Archeological Collections (36 CFR 79) and the Native American Graves Protection and Repatriation Act (NAGPRA), established standards of the care for federal archaeological collections, specifically federally-owed collections, and required institutions that have received federal funding since November, 16 1990 to inventory the human remains and sacred objects housed in the collections (43 CFR 10). This gave textbook authors more than a decade to incorporate information on curation concerns into their textbooks and to publish new

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[3] Just because curation concerns are not included in a formal textbook, does not mean that a faculty member does not teach curation topics as ancillary to the book. Handouts and articles may be used to teach courses or sections of courses on curation. Evaluating if this ancillary teaching is taking place requires a more detailed discussion that is beyond the scope of this paper, but may be a topic for future study.

editions with the updated material. Furthermore, a number of articles, reports, and non-textbooks were being published in the 1990s and early 2000s that addressed the curation concerns of archaeological collections, especially those related to the curation crisis (Bustard, 2000; Nepstad-Thornberry, Nepstad-Thornberry, Stoltz, de Dufour, & Wilshuesen, 2002; Society for Historical Archaeology [SHA], n.d.; Sullivan & Childs, 2003; Trimble & Myers, 1990; Zimmerman et al., 2003). To further the cause of curation, Childs and Corcoran (2000) established the Managing Archeological Collections Certificate Program on the National Park Service (NPS) website in 2000. Because discussions about curation-related concerns had increased in the archaeological literature by 2000, I suspected that textbooks published in the 21st century would begin to reflect this concern.

The second part of my preliminary study involved an investigation of the curricula of the top five graduate archaeology programs by rank and enrollment to assess the degree to which curation-related topics featured in course curricula. The top five anthropology programs of 2010, as identified by the United States National Research Council (NRC)—a committee within the United States National Academies that collects, analyzes, and disseminates information through studies and reports (NCR, 2013)—were Harvard University, Pennsylvania State University, University of California at Berkeley, University of Michigan at Ann Arbor, and University of Pennsylvania (Chronicle of Higher Education, 2010). For this research paper, a questionnaire was developed and then used to survey the importance of curation in each respective anthropology department's archaeology program, looking at both past and current courses in order to determine the prevalence of formal education about the curation of archaeology collections. This survey also included questions about the knowledge of other classes being taught in other departments within the university that dealt with curation. I included such

questions because anthropology programs often associate and/or work closely with professors in similar departments (e.g., history, museum studies, and library science) who may teach relevant courses about curation that could transfer to archeology, especially since some museums and special collections have archaeological items in their collections. The questionnaire was emailed to 78 archaeology professors at the five aforementioned universities.

CHAPTER 2

LITERATURE REVIEW

Repositories that curate archaeological collections include museums, academic

repositories, tribal museums and cultural centers, historical societies, archives, and government

repositories (Childs & Corcoran, 2000; Sullivan & Childs, 2003). Childs and Corcoran (2000,

Ch. 7, Types of repositories section, para. 13) found that the federal government "owns well over

60 million archaeological objects and many thousands of linear feet of associated records (there

are an estimated 1600 sheets of paper in a linear foot)." In fact, in 1999, the number of non-

federally owned repositories caring for federal archaeological collections was approximately five

hundred (Sullivan & Childs, 2003). Currently, it is unclear how many federal and non-federal

archaeological repositories there are that curate federal archaeological collections in the United

States since a report has not been issued since.

As noted, many federally owned collections are housed in non-federal repositories. The

exception to the rule is the National Park Service where in 1998 the agency administered over

three hundred curatorial facilities to store and manage its collections, most of which were

archaeological. However, this is not the norm and other-federal agencies, such as the Bureau of

Land Management, the US Forest Service, the Federal Highway Administration, and the US

Army Corps of Engineers, have their collections curated in non-federal repositories (Sullivan &

Childs, 2003; Federal Highway Administration, 1998; Trimble & Meyers, 1990). These agencies

have little or no curation repositories of their own and rely heavily on non-federal owned

repositories (e.g., museums, archives, cultural centers, universities, etc.) to curate their

collections (Sullivan & Childs, 2003). In other words, these federal agencies own archaeological

collections, which may come from in-house or outside contracted fieldwork, but do not have the

space or staff to care for the collections, and thus must contract out collections storage and care services to a non-federal repository. One such example is the Bureau of Land Management (BLM), which in 1999 was estimated to have approximately 300 million acres of land with 5 million cultural properties and only three repositories of its own. The BLM contracts with 189 non-federal museums and curation facilities to care for the remaining collections (Sullivan & Childs, 2003; Brook & Tisdale, 1992

It is safe to assume from these numbers that non-federal curation facilities managing federal collections out-number federal repositories. The lack of facilities and staff to manage federal archaeological collections is surprising since there are government laws and regulations, fully discussed in the next section, that apply only to curating federally-owned cultural and historical resources, which includes all components of an archaeological collections.

The following sections of this literature review will discuss the history of curation legislation by covering the most important laws starting with the American Antiquities Act of 1906 and ending with the Curation of Federally-Owned and Administered Archeological Collections (36 CFR 79) of 1990 and the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990. A discussion of the curation crisis as it relates to archaeological collections and their repositories as well as the overall importance of curation will be included in this section. Lastly, I will provide an overview of both archaeology program curricula and archaeological research and fieldwork and how their standards and practice relate to the education and training on the proper curation of archaeological collections.

Government Legislation: Past and Present

Curation is the process of "managing and preserving a collection according to professional museum and archival practices" (36 CFR § 79.4). Protection of the nation's cultural

and archaeological resources was not a major concern until the early 20th century when the first law pertaining to the issue of historical preservation was passed. This law is known as the American Antiquities Act of 1906 (16 USC 431-433). It provided for the general protection of archaeological sites, with specific concern towards protecting sites in the Southwest United States from the looting of cultural or historical resources. It also established fines and punishment for the following:

> ... any person who shall appropriate, excavate, injure, or destroy any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Government of the United States, without the permission of the Secretary of the Department of the Government (16 USC 433).

The American Antiquities Act shifted the focus of archaeology away from "antiquarian collecting toward scientific excavation, promotion of knowledge gained from excavation, and responsible curation of finds, all for the benefit of the American public" (Waldbaum, 2006, p. 4). The significance surrounding federal archaeological resources that were protected under this Act made Congress recognize the importance of having citizen participation in archaeological programs. Thus, the Antiquities Act also required that cultural and historical federal resources be permanently preserved in public museums and that "every collection made under the authority of the act […] shall be accessible to the public" (43 CFR § 3.17). While the Antiquities Act recognized a need for the curation of archaeological collections, it failed to recognize the need for standards or guidelines on how to perform curation functions and who was responsible for getting such tasks done (Childs & Corcoran, 2000; Sullivan & Childs, 2003). However, the Antiquities Act served as a foundation for later laws, such as the Reservoir Salvage Act (1960),

the National Historic Preservation Act (1966), the Archaeological and Historic Preservation Act (1974), and the Archaeological Resources Protection Act (1979), each of which had a larger impact on legislation affecting repositories (Childs & Corcoran, 2000; Nepstad-Thornberry et al., 2002; Sullivan & Childs, 2003; Waldbaum, 2006).

Other various laws protecting cultural resources were slowly passed from the mid-1930s to the mid-1970s including the Reservoir Salvage Act of 1960, which resulted from the need to protect numerous cultural and historical sites from destruction during major federal and state infrastructure projects of the time, such as new interstate roads and dams. Salvage archaeology, or the practice of quickly excavating and preserving the archeological record prior to its destruction by construction projects, caused an exponential growth in the creation of archaeological collections. The consequence of vast numbers of new collections flooding repositories was ill-considered by most, especially by the Act which failed to address the adequate care and management of these new, often large, collections (Childs & Corcoran, 2000; Nepstad-Thornberry et al., 2002; Sullivan & Childs, 2003).

Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966 had the greatest impact on the care of archaeological collections (Childs & Corcoran, 2000; Sullivan & Childs, 2003). Section 106 of NHPA states the following:

> The head of any Federal agency having direct or indirect jurisdiction over a
> proposed Federal or federally assisted undertaking in any State and the
> head of any Federal department or independent agency having authority to
> license any undertaking shall, prior to the approval of the expenditure of
> any Federal funds on the undertaking or prior to the issuance of any
> license, as the case may be, take into account the effect of the undertaking

on any district, site, building, structure, or object that is included in or

eligible for inclusion in the National Register. The head of any such

Federal agency shall afford the Advisory Council on Historic Preservation

established under Title II of this Act a reasonable opportunity to comment

with regard to such undertaking (16 USC 470f).

Section 110 also stated that a federal agency must "assume responsibility for the preservation of

historic properties which are owned or controlled by such agency" (16 USC 470h-2).

The Archaeological and Historic Preservation Act of 1974 (AHPA or the Moss-Bennett

Act) was part of a series of laws that were passed during the 1970s when lawmakers became

highly concerned with preserving cultural resources. The purpose of AHPA is "the preservation

of historical and archaeological data (including relics and specimens) which might otherwise be

irreparably lost or destroyed as the result of […] any Federal construction project or federally

licensed activity or program" (16 U.S.C. 469, Purpose). This Act also stipulated that *up to one

percent* of any project costing more than $50,000 in non-reimbursable fees *may* go towards

curation (16 U.S.C. 469c(a); Sullivan and Childs, 2003). It is unclear how many projects or what

percentage of their funding goes toward curation costs because of the loophole provided by the

vague wording of the Act.

The Archaeological Resources Protection Act (ARPA) of 1979 was another major

stepping stone in archaeological collections curation. It once again helped to define and prioritize

curation as an essential aspect of planning and implementing archeological projects (Childs &

Corcoran, 2000; Nepstad-Thornberry et al., 2002; Sullivan & Childs, 2003). The switch to a

greater focus on preservation can be seen in Section 2(b) of the law (16 U.S.C. 470aa, § 2(b))

that states:

…for the present and future benefit of the American people, the protection

of archaeological resources and sites which are on public lands and Indian

lands, and to foster increased cooperation and exchange of information

between governmental authorities, the professional archaeological

community, and private individuals having collections of archaeological

resources and data which were obtained before October 31, 1979 (16

U.S.C. 470aa, § 2(b).

ARPA helped to strengthen the Antiquities Act of 1906 by establishing stricter permitting laws

for anyone conducting archaeological fieldwork on federal lands by requiring the security of

archaeological resources or "any material remains of past human life or activities which are of

archaeological interest" (16 U.S.C. 470bb, Sec. 3(1)), and by requiring a written agreement from

a repository for curation before issuing a permit for an archaeological investigation on federal or

tribal land (Childs & Corcoran, 2000; Nepstad-Thornberry et al., 2002; Sullivan & Childs, 2003).

ARPA also designated federal ownership of objects recovered from federal and tribal lands

(Childs & Corcoran, 2000; Sullivan & Childs, 2003). This ownership required such items and

their associated records to be cared for in a "suitable" curation facility (Nepstad-Thornberry et

al., 2002). It also enacted harsher fines and penalties for unauthorized excavation (16 U.S.C.

470ff).

All of these laws were successful in minimizing threats to cultural and historical

resources on federal and tribal lands. Yet, problems still existed in how to manage the

archaeological collections that were created as a result of these, especially how to preserve

artifacts and their associated documents once in a repository (Childs & Corcoran, 2000; Nepstad-

Thornberry et al., 2002; Sullivan & Childs, 2003). It was not until the federal regulation

Curation of Federally-Owned and Administered Archaeological Collections (36 CFR 79) was

passed in 1990 that curation and long-term care became a forefront issue in the preservation of

national cultural and archaeological collections. 36 CFR 79 mandated that any institution that has

federal archaeological collections, which includes colleges and universities, must provide

curatorial services that manage and preserve collections according to professional museum and

archival practice (36 CFR 79.4; Childs & Corcoran, 2000; Nepstad-Thornberry et al., 2002;

Sullivan & Childs, 2003). This meant that repositories must catalog, store, and inventory a

collection, including the artifacts themselves and associated records, in perpetuity; to allow the

public access to collections; to hire professionally qualified staff to care for these collections; to

secure collections; and to conduct regular inspections of the collections (Childs & Corcoran,

2000; Sullivan & Childs, 2003). Also, 36 CFR 79 was the first law to acknowledge the real costs

of curating collections, which covered "costs for initially processing, cataloging and

accessioning the collection as well as costs for storing, inspecting, inventorying, maintaining,

and conserving the collection on a long-term basis" (36 CFR 79.7(d)). Unfortunately, 36 CFR 79

failed to set deadlines for compliance and held no enforcement powers over repositories who do

not comply with the mandates (Childs & Corcoran, 2000; Sullivan & Childs, 2003).

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 has

significantly assisted the collections management aspect of curation by forcing organizations and

repositories to conduct inventories and deal with the issue of deaccessioning through the

repatriation of items to the Native American or tribal groups who have proper claim to the

materials (Childs & Corcoran, 2000; Sullivan & Childs, 2003; 25 USC § 3001-3013). NAGPRA

forced repositories that received federal funding to summarize and inventory collections, identify

owners of objects, and to repatriate items to appropriate lineal descendants or Native American

groups by a given date, if the descendants requested repatriation. If the group did not want the items returned, the repositories were allowed to keep the collections. The first deadline of November 16, 1993, dealt with the following issues:

> Each Federal agency or museum which has possession or control over holdings or collections of Native American unassociated funerary objects, sacred objects, or objects of cultural patrimony shall provide a written summary of such objects based upon available information held by such agency or museum. The summary shall describe the scope of the collection, kinds of objects included, reference to geographical location, means and period of acquisition and cultural affiliation, where readily ascertainable (25 USC § 3004(a)).

The second deadline of November 16, 1995 involved similar responsibilities:

> Each Federal agency and each museum which has possession or control over holdings or collections of Native American human remains and associated funerary objects shall compile an inventory of such items and, to the extent possible based on information possessed by such museum or Federal agency, identify the geographical and cultural affiliation of such item (25 USC § 3003(a)).

These deadlines forced many agencies and repositories to expedite inventory evaluations (Nepstad-Thornberry et al., 2002). This law also held repositories responsible for meeting deadlines and contained the issuance of penalties, mostly fines, if deadlines or compliance requirements were not met (Childs & Corcoran, 2000; Nepstad-Thornberry et al., 2002; Sullivan & Childs, 2003; 25 USC § 3003-3013). NAGPRA also contained provisions to establish a grant

process to aid facilities in conducting the inventories and identification required under Sections

3003 and 3004; however, repositories needed to remain in compliance with requirements and

deadlines to receive such funding (Childs & Corcoran, 2000; 25 USC § 3008). Due to the high

volume of collections coupled with the low number of staff and the inadequate amount of money

to cover such collections, many repositories were not able to meet the three and five year

deadlines (Childs & Corcoran, 2000; Sullivan & Childs, 2003). Amendments to the law in 1993

and 1995 have allowed repositories to ask for extensions to remain compliant with the

regulations in order to remain receive grant funding to help cover inventory and repatriation of

tribal and cultural collections (25 USC § 3008-2012).

The need for improved curation of archeological collections has been reinforced by the

strengthening professionalism of the museum field and the passage of curation related laws

ranging from the Antiquities Act of 1906 to NAGPRA (Childs & Corcoran, 2000). According to

the Society of American Archaeology's Advisory Committee on Curation and the Committee on

Curriculum, most university-level archaeology programs in the United States failed to provide

courses on the topic of the curation of archaeological collections. While laws and museum and

curation facility professionals have make advances in establishing policies and procedures for the

proper long-term care of archaeological collections, the individuals making the collections

(mostly the field archaeologists) are often lacking the proper education and training on how to

complete the curation circle (Childs, 2006; ACC, 2003; Childs & Corcoran, 2000; CC, 2008;

Sullivan & Childs, 2003).

Laws pertaining to the proper management of archaeological collections need to be

enforced so that archaeologists and curation facilities can meet regulations. The lawmakers and

educational institutions need to address concerns surrounding curation as a long-term,

comprehensive process that involves the responsibility of multiple players, including the archaeologists conducting the excavations and their sponsors and employers as well as curators and collection managers and the institutions that employ them (Sullivan & Childs, 2003; Waugh & Weigel, 1993).

The vast majority of curation issues seem to lie with the archaeologists who are creating the collections and the educational institutions that are developing archaeology program standards and curricula by which students are taught. This means that most archaeology schools have failed, and in most cases still are failing, to teach about curation policies and standards (ACC, 2003; CC, 2008; Sullivan & Childs, 2003). This lack of curation education is especially baffling since the laws outlined above require archaeologists to establish protocols and have contracts with curation facilities before digging can even begin.

The Curation Crisis

Childs and Sullivan (2004, p.13) identified that "For nearly 30 years, reports on the status of archaeological curation have highlighted the lack of storage space. This problem is still with us and is worsening." Space issues and other problems in repositories housing federal collections were highlighted in the 1986 Government Accounting Office (GAO) report titled "Cultural Resources--Problems Protecting and Preserving Federal Archaeological Resources." This report found that "24% of the respondents had no inventory of their archeological collections, 30% had never inspected the condition of their collections, and 30% of non-federal repositories had already run out of room" (Childs & Cororan, 2000, Ch. 2, Is there a curation crisis? section, para. 4). There is no way for a repository to know what they have or where it is stored if an inventory has not been conducted by its staff. Thus, agencies cannot know what they own or are responsible for if such measures have not been taken. This only compounds the curation crisis

because essential information regarding accountability or 'what you have and where it is' (e.g., ownership and the type and number of items in the collection) needs to be known before the other issues regarding the curation crisis (i.e., access, deaccession, storage, and conservations and preservation) can be managed (Bustard, 2000; Sullivan & Childs, 2003).

The passage of laws in the 1960s and 1970s that established salvage and cultural resource management (CRM) archaeology practices led to the exponential growth of archaeological materials that needed to be curated. As a result, this rapid growth and the lack of space to curate materials have led to the curation crisis that is still rampant among repositories today (Bustard, 2000; Childs & Corcoran, 2000; Kodack & Trimble, 1993; Lindsay, Williams-Dean, & Haas, 1979; Sebastian & Lipe, 2009; Nepstad-Thornberry et al., 2002; Sullivan and Childs, 2003; Trimble & Marino, 2003; Waugh & Weigel, 1993; Zimmerman et al., 2003).

It is highly important for archaeologists and other professionals aligned with the field to understand the history of the curation crisis in order to mitigate it. A "rough progression is sketched in which, the further one goes [back in time] the less curation there appears to be" (Raymond, 1976, p. 55). A frequently ignored aspect of archaeology is curation, or the "proper care of the specimens and records generated in the field and the lab" (Sullivan & Childs, 2003, p. viii-ix), which is used to interpret "archaeological collections over the long-term" (Sullivan & Childs, 2003, p. 2). Archaeologists "believe curation is something that happens only *after* fieldwork" (Sullivan & Childs, 2003, p. 1). Sullivan and Childs aimed to prove that curation is a process that begins before the fieldwork even starts and continues in perpetuity at a repository. The authors discussed what is necessary to properly curate archaeological collections and give examples of general preservation models in regard to collection management practices. Sullivan and Childs (2003) also conducted an in-depth examination of federal laws and regulations and

the curation crisis—issues concerning accountability, access, deaccession, storage, and conservations and preservation—that is plaguing curation facilities across the nation. This book and its companion, the distance learning online portal Managing Archeological Collections, developed by the National Park Service, are promoted as the top resources regarding the curation concerns of archaeological collections (Agnew, N, & Bridgland, 2006; Barker, 2006; Bawaya, 2007; Barker, 2010; Lyons et al., 2006; SHA, n.d.).

The Importance of Curation

At this point you may be asking, why is the curation of archaeology collections so important? There are several reasons why as discussed below. (For further reading see: Caldararo, 1987; Sullivan & Childs, 2003; Sebastian & Lipe, 2009; Zimmerman et al., 2003). Besides the mandate to comply with federal laws and regulations that require federal cultural and historical collections to be cared for in perpetuity, the importance of archaeological curation lies in the heritage and cultural knowledge we can gather from our past (Barker, 2004; Childs, 2006; Childs & Corcoran, 2000; Kodack & Trimble, 1993; Sullivan & Childs, 2003; Willems, 2008). It was stated best by Willems (2008, p. 283):

> …the central importance of cultural heritage for social and economic progress around the globe is increasingly recognised as a vital element in creating a different kind of world and as an essential building block in the social and economic well-being of people. Indeed, archaeology and its allied cultural-historical disciplines are more important than its practitioners care to admit. […T]oday we start from the proposition that we simply cannot have social and economic development without recognition of our cultural heritage and history. It is widely recognised by international bodies, national and local governments, the

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international world of commerce; academia; the media and non-governmental

bodies that society cannot move forward into the future unless it understands and

acknowledges the past from which we come. This view of the relationship

between cultural heritage and socio-economic development is not controversial

nor is it solely the view of an elitist practitioner. It is a view that will be found in

towns and villages […] who cherish their sense of place and provide the fuel for

many debates regarding its future.

Archaeological collections are something more than just objects to collect and display.

They are a record of our past. Archaeological collections need to be preserved in perpetuity in

order to continue to learn from them (Butler, 1979; Childs, 2006; Childs & Corcoran, 2000;

Society for American Archaeology, 1996; Sullivan & Childs, 2003; Willems, 2008). They hold

invaluable information about the changes and their causes of human cultures. It gives us a record

of who we were, in addition to where and how we have lived. It allows researchers to learn from

past societies so that present and future societies may have the knowledge to advance themselves

and avoid some of the same mistakes made by peoples in the past (Mallory & Kaupp, n.d.;

Society for American Archaeology, 1996). Such an example is given by Waugh & Weigel (1993,

p. 187) in the following statement:

Increasingly, future research will undoubtedly rely more heavily on and include

the additional analysis of older collections, and we must provide for the proper

housing for those collections as well as for more recent materials that some day

will be "old," too.

Curation of archaeological materials is especially important since the United States lacks the

control over archaeology work that is present in some European nations (see *Figure 1*) (Waugh

& Weigel, 1993). Proper curation involves the adoption of preservation measures to prevent objects from natural and artificial acceleration of decay that objects would otherwise experience in the ground or in a poorly maintained curation facility (Grenville, 1993). Control of archaeological objects depends on whether they are above or underground as well as the protection level afforded to the object (Butler, 1979; Grenville, 1993). For example, ancient monuments such as Stonehenge or the Pyramids of Giza are afforded protection levels that well surpass many objects found on most archaeological digs. The curation responsibility of archaeological materials found on United States federal lands ultimately lies with the agency or organization who govern the land where the objects are found unless permission has been given for the archaeologist to keep their find, which means that curation lies with the archaeologist or institution where they are employed (Grenville, 1993). Archaeological finds that lie on non-federal lands belong to the landowner or the party given permission to dig and keep finds on the landowner's property. Federal laws do not apply to such finds (Childs & Corcoran, 2000; Sullivan & Childs, 2003). Strong curation policies and well-documented practices of care in the present will aid future curators in their evaluation of the best practice to revamp "primitive" curation policies in order to mitigate the curation crisis (Sullivan & Childs, 2003).

Another reason archaeological collections need to be properly cared for and maintained is because the public pay taxes for the curation of federal archaeological collections (Childs, 2006; Sullivan & Childs, 2003). Collections are held in public trust in addition to laws granting the public access to the collections (Childs & Corcoran, 2000; 16 USC 431-433). Requests can be made by interested parties to use the collections (Sullivan & Childs, 2003). Giving the public access to the collection through exhibitions and outreach programs can aid the repositories in gaining the much needed public support for increasing the amount of federal funds going

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towards curating archaeological collections (Barker, 2004; Edwards, 2013; Willems, 2008). For example, these public programs can be used to show the need to preserve such resources and drive home the fact that the public are highly influential and that they need to voice their opinions to legislators about the use and stewardship of archaeological collections (Brook & Tisdale, 1992; Childs, 2006).

Figure 1. Archaeological resources management systems in Europe and North America (Willems, 2008, p. 285).

Archaeological Research, Fieldwork, and Curation

Archaeological research is often undertaken to meet standards for archaeological programs (i.e., field schools), recover objects and materials to mitigate adverse effects caused by construction projects, and plan interpretation and background studies for academic research (Dickenson, 1983). Preserving archaeological collections for future generations is very important (Childs & Corcoran, 2000; Dickenson, 1983; Sullivan & Childs, 2003). The issue of preserving materials for the future involves the ability to properly care for and curate collections over the long-term (Bustard, 2000; Childs & Corcoran, 2000; Sullivan & Childs, 2003).

The wealth of information contained within archaeological collections is frequently underestimated. Collections not only allow scientists and researchers to gain knowledge about past civilizations and cultures, but they also allow the general public to engage in learning about history through the interaction with the past (Butler, 1979; Moyer, 2006; Willems, 2008). Such benefits to the public should inspire the conscious preservation of archaeological collections, especially since the public are allowed to have access to collections as stated in the Antiquities Act of 1906.[4]

The loss of invaluable data happens when artifacts, specimens, and associated records are not properly curated. The long-term care of collections needs to be discussed and planned for during the development phase of any archaeological project (Childs & Corcoran, 2000; Dickenson, 1983). According to Dickenson (1983, Curation section, para. 3), the proper curation of archaeological collections requires that (see *Figure 2*):

1. Curation facilities have adequate space, facilities, professional personnel;

2. Archeological specimens are maintained so that their information values are not lost through deterioration, and records are maintained to a professional archival standard;

3. Curated collections are accessible to qualified researchers within a reasonable time of having been requested; and

4. Collections are available for interpretive purposes, subject to reasonable security precautions.

Despite the passage of several federal laws and regulations requiring the long-term care of archaeological collections, which has led to an increased consciousness of curation concerns, the Society for Historical Archaeology (SHA) is the only organization with written curation

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[4] Although the public is granted access, it is often neither unlimited nor unregulated. This can be attributed to the lack of staff able to oversee the use of collections or other security related issues.

guidelines. The SHA along with the Society of American Archaeology (SAA) established

advisory committees on collections management and curation more than a decade ago in the

hopes that archaeologists and repository managers would use them as a resource in establishing

their own curation guidelines (Childs & Corcoran, 2000; Sullivan & Childs, 2003). Even with

two of the top internationally recognized archaeology organizations providing a clear example on

how to create policies and guidelines for curation practices, US organizations and institutions

seem to be hesitant about establishing their own curation guidelines (Sullivan & Childs, 2003;

Willems, 2008). The reasons to why they are hesitant are unclear, but it may relate to a lack of

funds, lack of qualified staff, and/or the lack of impetus to establish guidelines because there is

no threat of consequence for not doing so. Hesitation may also result from curation managers not

seeing a need to establish their own curation guidelines because they rely on SHA standards and

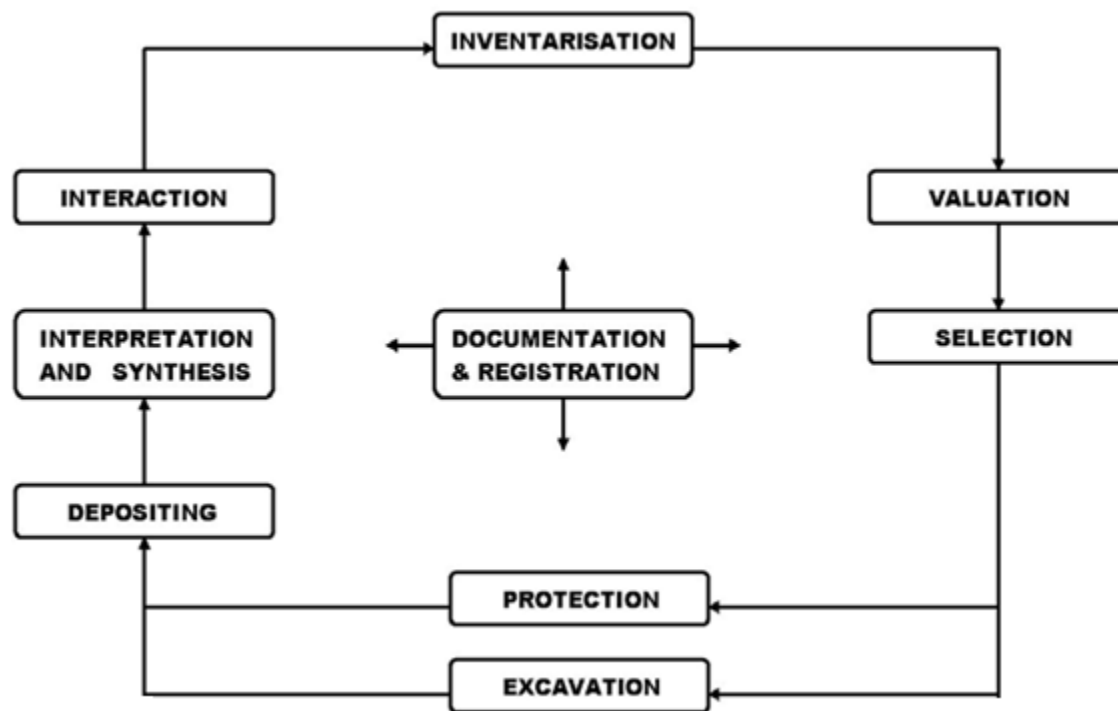SHA and SAA practices and guidelines instead of reinventing the wheel themselves.

Figure 2. The cyclical process of archaeological resource management. (Willems, 2008, p. 288).

The curation of federal archaeological collections is an ongoing process that has been shaped by cultural and historical preservation laws and regulations that began with the Antiquities Act of 1906 (Sullivan & Childs, 2003). The curation of archaeological collections includes the costs to care for and store objects and artifacts, non-cultural materials (e.g., flora and fauna remains, soil samples), associated records (e.g., field notes, maps, photos, gray literature[5], digital data such as GPS or CAD models), research materials (e.g., articles or books), and catalog records (Childs & Corcoran, 2000; Sullivan & Childs, 2003). These records must be kept and preserved because they are highly important in establishing the provenience of artifacts and specimens within the collection. The provenience information is important in archaeological research because it establishes the context from which the item was found such as the specific geographic or spatial location (Childs & Corcoran, 2000). Such information is required and "must be maintained at all times" (Sullivan & Childs, 2003, p. 69) because it is used to "collect and preserve information that is useful for research and interpretative purposes" (Sullivan & Childs, 2003, p. 2). Meaning, the research value of an archaeological artifact or specimen is dependent on the quality of the provenience information. Repositories put emphasis on the research potential a collection has and does not focus on the display of beautiful objects, as is common practice with some museums (Sullivan & Childs, 2003). This is why maintaining provenience by properly cataloging, marking, and labeling artifacts and specimens is important (Childs & Corcoran, 2000; Sullivan & Childs, 2003; Krakker, Rosenthal, & Hull-Walski, 1999). Clabaugh (1998) argues that most of the archeological materials curated in repositories are not associated with cultural materials. Instead, the vast majority of the care goes to non-cultural materials such as paleoecological samples (e.g., soil, radiocarbon, or other dating samples) because these samples take up so much room and are created more easily than collections

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[5] The unpublished technical reports from CRM assessment or fieldwork.

consisting of found objects and artifacts on an archaeological site. However, other curators may disagree with Clabaugh and illustrate that their collections consists mainly of artifacts— ceramics, lithics, flora, and fauna—such is the case at the Center for Archaeological Investigations at Southern Illinois University Carbondale.

Curation fees are an essential part of being able to care for and manage archaeological collections, especially since this is where most of the funds are secured to care for a collection over the long-term. There is currently no standard for the amount of curation fees charged or how often the fees occur. Though, attempts have been made in the past decade to do so (Childs & Kagan, 2008; Childs & Kinsey, 2003; Sullivan & Childs, 2003).

Repositories first began charging curation fees in the 1970s (Childs & Kinsey, 2003; Lyons, Adams, Altschul, Barton, & Roll, 2006). These fees covered a variety of costs such as the curation materials (e.g., shelving, boxes, packing material, etc.), the personnel required to process and provide access to the collections, the environmental controls required by 36 CFR 79, the procedures and technology to optimize accessibility to the artifacts and associated records (e.g., cataloging and database software) as well as a percentage of the overhead costs (Childs & Kinsey, 2003). Many archaeology collection creators complained about the costs, which is relatively cheap considering, as Butler (1979, p. 798) stated, "…what is the value of an irreplaceable resource?"

Curation facilities charge a set amount for the size of the collection in total cubic feet or the number of storage boxes, which generally equal one cubic foot each, however the fees can range from a one-time charge to an annual rental charge (Nepstad-Thornberry, Nepstad-Thornberry et al., 2002; Sullivan & Childs, 2003). No standards have been set as to how much repositories should charge or how often (Sullivan & Childs, 2003). However, the prevalence of

facilities charging curation fees increased from 8 percent in the 1970s to 87 percent in 2008 (Childs & Kagan, 2008; Childs & Kinsey, 2003; Lyons et al., 2006).

Repositories often choose to charge housing fees that cover the costs of incorporating computer files into their main databases and the cost of storage space, which can be broken down into dollars per square foot for annual rental (Nepstad-Thornberry et al., 2002). Most facilities opt to charge a fee for the *lifetime* of the collection, which means it is a one-time fee for the care of a collection, in perpetuity (Sullivan & Childs, 2003). A one-time curation fee in 2002 and 2003 cost anywhere from $33 a box or cubic foot to $1,080 per cubic foot plus a processing fee of $33 per hour of per cubic foot (Childs & Kagan 2008; Childs & Kinsey, 2003; Sullivan & Childs, 2003). (Note: See Childs & Kagan (2008) curation fee data table for an extensive list comparing fees 1997/98, 2002, and 2007/08 by state at http://www.nps.gov/archeology/pubs/ studies/study06FeeTab.htm). Even at the high end of approximately $1,100 per cubic foot means that the collection makers (i.e., archaeologists) pay a small fee for the staff and time it takes to catalog, house, preserve, and manage a collection in perpetuity. The question that Waugh and Weigel (1993, p. 187) pose is "How will institutions be able to set 'reasonable fees' and still plan to collect and curate in perpetuity," especially since "perpetuity is a long, long time and space is ultimately finite?" This is a problem that is continually being addressed in the literature and will most likely continue into the next decade (Childs & Corcoran, 2000; Childs & Kinsey, 2003; Nepstad-Thornberry et al., 2002; Sullivan & Childs, 2003; Trimble, & Myers, 1990). Standardizing the cost of curating archaeological collections will not likely end until the collections that are required to meet federal mandates, especially the Native American Graves Protection and Repatriation Act (NAGPRA), are inventoried so that a complete assessment can be done on the number and type of collections and the true cost that it takes to curate them.

The way curation fees are used propagates the curation crisis. Repositories typically

receive their funds as a lump sum up front. While these funds should be used for some overhead

costs, like maintaining the facility, in addition to caring for the collection on which the fees were

charged, in reality all too often the monies are immediately used to rehabilitate old collections,

update computer software, or fix major facility issues (e.g., to fix a leaky roof, improving

security systems, adding an addition onto the facility for extra space, etc.) (Nepstad-Thornberry

et al., 2002). These poor practices ultimately result from the lack of funding received from

federal sources, as well as the inadequate amount of curation fees charged to creators of

archaeological collections for both past and present collections (Childs & Kagan 2008; Childs &

Kinsey, 2003; Nepstad-Thornberry et al., 2002; Sullivan & Childs, 2003). However, such

practices need to stop because they are creating a cycle that will be perpetually harder to break,

as they fall farther behind in taking care of new collections. Repositories need to start using the

fees collected for a collection on that collection. That way there will be no need to borrow money

from a more recent acquisition in order to work on a previous collection from which the fees

were already collected and used, then the cycle will be broken (Nepstad-Thornberry et al., 2002).

There has been a great concern about archaeological collection management for the past

several decades, especially in regard to the cost of curation. The exponential increase of new

collections in the 1970s, along with the curation standards required by the 1990 laws of 36 CFR

79 and NAGPRA further heightened this concern (Childs & Corcoran, 2000; Nepstad-

Thornberry et al., 2002; Sullivan & Childs, 2003). In 1990, 36 CFR 79 added 21 new costs to the

curation process that applied to both new and preexisting collections. Yet, most agencies could

not afford to meet the requirements set-forth by this law due to the inadequate funding to use for

curation concerns such as increasing staff and space, upgrading facilities, and cataloging

artifacts, specimens, and associated records to make items accessible to users (Sullivan & Childs, 2003).

Archaeology Program Curricula and Curation

Archaeologists' main concern is with the conduction of excavations and surveys to gather items for research (Sullivan & Childs, 2003). Archaeologists have often amassed large collections with little concern for what was going to happen to their collections after they leave the ground. Little, if any, thought had been given to managing collections in perpetuity (Childs & Corcoran, 2000; Lindsay et al., 1979; Sullivan & Childs, 2003). This antiquated mode of thought is still reflected in the higher level education system. The primary focus of undergraduate and graduate education is on research, excavation, and surveying. There are few curation courses in university-level archaeology programs (Advisory Committee on Curation [ACC], 2003; Bustard, 2000; Childs & Corcoran, 2000; Committee on Curriculum [CC], 2008; Sullivan & Childs, 2003). One of the main lessons taught by archaeological programs is that once an item is excavated and research has been done, it is not the concern of the researcher about what happens to the item afterwards (Sullivan & Childs, 2003). Meaning, most archaeologists view long-term care and preservation of archaeological collects as concerns for someone else (i.e., a curator, who may or may not be an archaeologist themself) who works in the repositories where collections are held.

The Society for American Archaeology's (SAA) attempted to establish higher standards for university archaeology curriculums was made apparent by the creation of the Task Force on Curriculum in 1998. Their report, *Teaching Archaeology in the Twenty-first Century: Promoting a National Dialogue on Curricula Reform* (Bender & Smith, 1998), put forth six curricular reform principles—stewardship, diverse pasts, social relevance, ethics and values, written and

oral communication, and basic archaeology skills—that led to the MATRIX (Making

Archaeology Teaching Relevant in the XXI Century) project (Task Force on Curriculum

National Science Foundation Grant [TFC], c2003). In 2000, Bender put forth a seventh principle,

real-world problem solving, which became known with the other six as the "Seven Principles of

Curricular Reform" needed for university-level archaeology programs. For this project, the seven

principles were used as a guideline for professors to develop syllabi for core undergraduate and

graduate level archaeology courses (Gillespie, 2003; CC, 2008; TFC, c2003). The seventh

principle, real-world problem solving, involves developing "fundamental disciplinary skills in

fieldwork and laboratory analysis and promote effective learning via the incorporation of

problem solving, either through case studies or internships" (TFC, c2003). This seventh principle

is significant because it uses discussion about real life situations as a way to teach students about

practices that are not thoroughly examined during coursework such as the archaeological

collections curation crisis or the understanding of preservation laws and regulations (TFC,

c2003).

        The SAA's Committee on Curriculum also recognized that there has been

> …a growing awareness among archaeologists that today's students, who may
>
> pursue a variety of career paths and even work in different sectors at various
>
> stages of their careers, require greater exposure to topics such as the nature of
>
> historic preservation law, working with descendant populations, interpreting
>
> archaeological findings for the public, curating archaeological collections, and
>
> preserving archaeological records. In short, as our discipline has changed, the
>
> curriculum offered to those electing to pursue archaeology has also begun to
>
> change (2008, p. 1).

As a response to this need, the SAA established a permanent Committee on Curriculum in 2003, but it has not provided enough impetus for anthropology programs to make changes to their curricula. It appears that if archaeology departments are not forced to make curriculum changes to incorporate more curation education and training, they will not incorporate such courses into their programs. Yet, the issue lies with how to force these changes upon archaeology programs who do not wish to incorporate curation courses into their curricula. The topic of curriculum reform is still actively discussed in the *SAA Archaeological Record* since White and colleagues' (2004) article *Academic Archaeology is Public Archaeology* (CC, 2008) first appeared. The SAA Board of Directors led a plan to develop "appropriate graduate curricula by providing specific recommendations concerning Master's degrees designed to meet the needs of today's professional archaeologists" in late 2006 (CC, 2008, p. 1). The Board requested the SAA Committee on Curriculum to complete the following tasks:

> …to work in conjunction with other SAA committees to develop a concise curricular outline for a Masters in Applied Archaeology. Committees to be consulted in this process included the Committee on Consulting Archaeology, the Committee on Government Archaeology, the Committee on the Americas, the Student Affairs Committee, the Committee on Professional Development, and the Committee on Museums, Collections and Curation (CC, 2008, p. 1).

Yet, no formal action has been taken to impose these standards on university-level anthropology programs. The most than can be done at this point is to hope that archaeology program committees and professors teaching archaeology classes realize the devastating effects that the curation crisis is having on archaeological collections from the increased publications on the subject within the field's literature over the past fifteen years and integrate courses that provide

archaeology students with formal education and training on archaeological curation practices and standards.

A lack of focus on curation in anthropology is also clearly seen when assessing the focus of North American graduate degree granting museum studies programs. According to Williams and Hawks (2006), of the 31 museum studies graduate degrees surveyed, 13 focused on museum studies, management, or education; 12 focused on art or art history; 6 focused on history or historical administration; 5 focused on anthropology; and 6 focused on other academic areas.[6] One of the five anthropology-focused programs emphasized exhibit research and design, while it was unclear as to whether the other four anthropology programs dealt with cultural, physical, or archaeological anthropology. Williams and Hawks (2006) also found that only one museum studies training program had a primary focus on anthropology within the colleges surveyed in North America. Anthropology is the primary focus of three percent (1 out of 31) of the colleges with graduate museum studies programs in North America (Canada and the United States) and four percent (1 out of 26) within the United States.

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[6] Schools could list more than one focus area per degree.

CHAPTER 3

METHODOLOGY

Methods for both the textbook survey and the email survey will be discussed in this

section. Details about the Simplified Measure of Gobbledygook (SMOG) Readability Formula

will be discussed as to how it was used to conduct the textbook survey. Also, this section will

explain the methodology used to choose the top five university archaeology programs whose

archaeology professors were asked to participate in the online survey about curation concerns in

archaeology programs.

Textbook Survey Methods and Relevant Terms

The online *Oxford English Dictionary*, which is a widely recognized authority on the

proper use of the English language, defines a textbook as, "A book used as a standard work for

the study of a particular subject; now usually one written specifically for this purpose; a manual

of instruction in any science or branch of study, esp. a work recognized as an authority." Other

telltale signs of a textbook are a comparison of the total number of pages in the book to the

following: number of pages of text, proportion of text space, frequency of photographs,

proportion of photograph space, frequency of tables/charts/illustration, proportion of

tables/charts/illustration space, and proportion of other space (Huetteman, 1989).

Less obvious though, is the question of what makes one textbook more readable than

another? Formulas to determine the level of education needed to read a text have been in

development since the early 1940s (Kerr, 1949; Rawlinson, Lupton, & Petterson, 2006; Rush,

1985). Readability formulas take into account factors such as sentence and word length to

calculate a score, which is then translated into an estimated grade level for text comprehension

(National Institute of Adult Continuing Education [NIACE], 2009; Smith, n.d.). Formulas such

as the Simplified Measure of Gobbledygook (SMOG) Readability Formula or SMOG Grade

often are recommended to teachers as a way of telling the reading level of a textbook

(Fitzsimmons, Michael, Hulley, & Scott, 2010; Smith, n.d.). It was developed in 1969 by G.

Harry McLaughlin as a more accurate and easier method of calculating readability than the then

standards that included the Gunning-Fog Index and the Fry Graph Readability Formula

(McLaughlin, 1969; Smith, n.d.).

The Flesh-Kincaid Test is another way to determine readability of text. It was developed

in 1975 as a way to determine both the reading ease and the grade level of information presented

in a document by computing the readability from the average number of syllables per word and

the average number of words per sentence (Smith, c1993-2012). It relies on a formula like the

SMOG test. Microsoft uses Flesh-Kincaid Test in its' Word software when checking and

displaying readability statics under the grammar check function (Fitzsimmons et al., 2010;

Smith, c1993-2012). The Flesh-Kincaid Grade Level Readability Test uses a comprehension

criterion of 75 percent. However, the 100 percent comprehension rate used for SMOG also

accounts for why its calculated measure yields a higher reading level than the Flesh-Kincaid

(Fitzsimmons et al., 2010; McLaughlin, n.d). Thus, SMOG was chosen for my analysis because

it uses a 100 percent comprehension rate.

Many argue that determining the readability of a text should also take into account

additional factors such as structure, organization, appeal of the material, layout, tone, and writing

quality (Irwin & Davis, 1980; NIACE, 2009; Osborne, 2000; Rush, 1985). These are all valid

arguments, but they will not be challenged in the scope of this paper. The limitations of time

only allowed me to perform the simplest and most accurate way of conducting a readability test,

which is through the SMOG Readability Formula.

The SMOG test is also used to determine the education needed to comprehend the material in a textbook (Huetteman, 1989; McLaughlin, 1969). It is one of the most commonly used formulas to assess a text's reading-level (Walsh & Volsko, 2008). To calculate the SMOG Grade level (McLaughlin, 1969, p. 639):

1. Count 10 consecutive sentences near the beginning of the text to be assessed, 10 in the middle and 10 near the end.

2. In the 30 selected sentences count every word of three or more syllables.

3. Estimate the square root of the number of polysyllables words [i.e. words with 3 or more syllables] counted.

4. Add 3 to the approximate square root. This gives the SMOG Grade, which is the reading grade that a person must have reached if he is to understand fully the text assessed.

McLaughlin's (1969) study showed a 0.985 correlation (±1.5159 standard error) to the actual grade at which readers had a 100% comprehension rate. This test was used to verify that all of the textbooks selected for review in this research paper are suitable for higher level education. SMOG Grades of 13-16 are equal to an undergraduate level education, while grades of 17 and 18 means that one must have a graduate level education to comprehend the textbook (McLaughlin, 1969). In most instances, the reader needs to have a college education to comprehend books that score a SMOG Grade of 13 through 16. A score of 17 or 18 indicate the need for a graduate level understanding and 19 and above signifies that the reader must possess a higher professional aptitude (McLaughlin, 1969). Textbooks that received a SMOG Grade of 13 or higher were used for this paper's findings and inspected for all curation terms (see Table 2).

As stated in the introduction, the textbooks were selected by the accomplishment of the author in the field of archaeology as well as the number of editions published of each book. The ability to access the book through the Southern Illinois University Carbondale's Morris Library in order to calculate SMOG Grades from each book was also a must.[7] Among the 42 editions of textbooks reviewed (13 total textbooks, some with several editions), the main content in almost 70 percent (n=29) of the textbooks was at least 300 pages, with an additional 20 to 50 pages that included appendices and glossaries. Less than 12 percent (n=5) had only 100 pages of main content, whereas less than 20 percent (n=8) were around 200 pages in length. As noted above, the assessment of lengthy texts requires samples from the beginning, middle, and end sections in order to get appropriate SMOG Grades (Osborn, 2000; Rush, 1985). The prescribed method of selecting my random samples came from pages 33, 150, and 267 of each book 300+ page book. This evenly spaced each sample and ensured that nothing other than the main content of the book was sampled. The same sample method was used for the textbooks that were around 100 and 200 pages in length. For the 100 page books, I assessed pages 20, 55, and 90 to get the SMOG Grade. Pages 20, 80, and 180 were consulted for the 200 page textbooks. These standardized measures allowed me to get accurate and reliable, and thus comparable, scores across all of the textbooks. The range of the SMOG Grades across the textbooks was from 13 to 19, which means that the reader must have at least a college level education to comprehend that material. The average SMOG Grade of the 42 editions of textbooks reviewed was 16.7. This signifies that the reader must have between a senior and graduate level education in order to comprehend the material (see Table 2). Therefore, all of the books surveyed fall within the appropriate reading level for University archaeology programs. This means that the scores are credible and are reliable in my

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[7] It is not known if the textbooks have been or are being used in United State archaeology programs, although they are available in university libraries around the county.

evaluation of whether university-level archaeology textbooks contain the terms related to curation.

Email Survey Methods

The United States National Research Council (NRC) is part of the US National Academies. Its mission is to provide elected officials and the public with expert advice on policies and issues based on scientific data (NRC, 2013). The NRC produces both a survey-based ranking and a regression-based ranking of colleges and universities based on 20 criteria (Rocca, c2011-2013). A high survey-based (S) value reflects a program strong in criteria that scholars deem as most important such as publications per faculty member, citation rates, students' time-to-degree, and percentage of student completion rates (Chronicle of Higher Education, 2010). A high regression-based (R) value means that a program shares similar features with faculty ranked top-tier programs. The NRC also splits each S and R ranking into 5th and 95th percentile rankings (Chronicle of Higher Education, 2010; Rocca, c2011-2013). Here is an example for explanation of the NRC ranking system as applied to higher education: Harvard University's 5th percentile S ranking is #1 and its 95th percentile S ranking is #5. What this means is that we can say with 90% confidence that Harvard's 'true' ranking is somewhere between #1 and #5. The NRC also produces rankings using other criteria like enrollment counts, department diversity, and student completion rates to strive for de-emphasis on having just one ranking system (NRC, 2013; Rocca, c2011-2013).

In 2010, the NRC published a ranking of 82 anthropology programs in the United States. From that list, the top five archaeology programs by rank and enrollment were chosen to be surveyed. Five universities also seemed to be a reasonable number to include in the survey based on the time and funds that were available for my preliminary study. The top five schools were

Harvard University, Pennsylvania State University, University of California at Berkeley, University of Michigan at Ann Arbor, and University of Pennsylvania (Chronicle of Higher Education, 2010). Participation in the survey was solicited via email by using archaeology professors' contact information obtained through their department's website. The email method was used because time and monetary resources were not available to complete phone surveys or mail surveys to the 78 individuals identified as potential participants in this preliminary study. The use of email also allowed the creation of the survey using the free web service StellarSurvey.com that tabulated the results, while also keeping the participants anonymous. This method also seemed to be easiest for the potential respondents since the survey was easily accessible through a link in the email and could be accessed at any time.[8] This survey asked questions about the importance of curation in archaeology programs in general as well as about past and current courses devoted to the curation of archaeological collections offered by their anthropology department. No differentiation was made between undergraduate and graduate level courses. This survey also included questions about the knowledge of other classes being taught at the individual's university that dealt with curation but that may have been listed under another department (such as Classics or Museum Studies). A copy of the survey can be viewed in Table 4.

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[8] The survey was closed to each respondent upon completion so the respondents could not go back and change answers or complete another survey.

CHAPTER 4

DISCUSSION AND CONCLUSIONS

Results and Discussion

An in-depth examination of the results from the textbook survey and the email survey will be discussed in this section. First, I will analyze the findings of the textbook survey and then discuss the implication of the results on the possibility of curation education and training about archaeological collections at the university-level. Secondly, I will discuss the findings of the email survey sent to archaeology professors in the top five anthropology programs of 2010. These findings will then be used to discuss implications relating to archaeological collection curation education and training.

Textbook survey results.

The 42 total university-level archaeology editions of textbooks consulted during my preliminary study represent the last 60 years of what has been taught in university-level archaeology programs (see Table 3). Specifically, I examined textbooks' indexes for key terms (curation, collections management, conservation, and preservation) from two textbooks for each decade since the 1950s, and consulted at least three consecutive editions of seven textbooks to identify any trends in increasing (or decreasing) concerns regarding the long-term care of archaeological collections. This was done by surveying textbooks' indexes for the following terms related to the management and long-term care of a collection: curation, collections management, conservation, and preservation. The term *curation* was identified as the most relevant term to measure the prevalence of long-term care and management training. The term *collection management* was also chosen because long-term concerns is often associated with or exists under this term (Childs & Corcoran, 2000; Henderson, 2007; State Historical Resources

Commission, 1993). *Conservation* was chosen because it encompasses the measures taken to prolong the life of an artifact or object, which is directly related to the long-term preservation and management (curation) of an artifact (Bustard, 2000; NPA, 2009). The choice to look for *preservation* was because curation is the long-term management and care or *preservation* of artifacts (ACC, 2003; Bustard, 2000; Childs & Corcoran, 2000).

The choice to survey the books' indexes for the word *curation* was made because it is the most relevant term to measure the prevalence of long-term care and management training in university archaeology programs. The results of my survey of these 42 editions of textbooks for the term curation were largely disappointing, although not entirely unexpected based upon my literature review. The results for the textbooks published before 2000 with curation listed as a term in the index resulted in only <u>one</u> book (2.4%), the 1997 edition of Thomas R. Hester, Harry J. Shafer, and Kenneth L. Feder's 1997 edition of *Field Methods in Archaeology*, meeting the criteria. Of the 21 books that were published in 2000 or later, fewer than half of them (9 books or 42.9%, with two sets of three editions per book) contained the word curation: Fagan, (2006; 2009; 2012) Grant, Gorin, and Fleming (2002; 2005; 2008), Hester and colleagues (2009), Kelly & Thomas (2006), and Zimmerman and colleagues (2003). Yet upon closer review, Grant and colleagues' textbooks did not refer to curation as the long-term care and management of collections in a repository and the books containing the term curation in the index as relevant to this paper were soon narrowed from ten to seven textbooks out of the 21 books that were published in 2000 or later. In total, out of the 42 editions of books published between 1950 and 2012, only seven (16.7%) out of 42 editions of books contained the term curation in the index as relevant to this paper.

The term *collection management* was also chosen because long-term concerns are often associated with or exist under this term (Childs & Corcoran, 2000; Henderson, 2007; State Historical Resources Commission, 1993). My survey of textbook indexes found no instances where the term collection management was included in the index. Thus, the conclusion can be made that collection management is not a term used in university-level archaeology textbooks to signify the long-term care and protection of archaeological collections.

The choice to look for the term *preservation* occurred because curation is the long-term management and care or *preservation* of artifacts (ACC, 2003; Bustard, 2000; Childs & Corcoran, 2000). This term was found only in relation to preserving the site or items while in the field or in transport to a lab (Bahn & Tidy, 1996; Fagan, 1983, 1999, 2003, 2009; Grant et al., 2002; Heizer, 1950, 1958; Heizer & Graham, 1967; Heizer, Graham, & Hester, 1975; Kelly & Thomas, 2006, 2009, 2012; Renfrew & Bahn, 2007, 2010; Zimmerman et al., 2003). As with the term collection management, the keyword preservation does not represent an alternative term for curation in textbooks used by college archaeology programs.

Conservation was chosen because it encompasses the measures taken to prolong the life of an artifact or object, which is directly related to the long-term preservation and management (curation) of an artifact (Bustard, 2000; NPA, 2009). About fifty percent (20 out of 42) of the books contained the keyword conservation (see Table 3). Most discussions about conservation were in relation to cultural research management projects or were concerned with the care of objects or sites during the fieldwork or analysis phase (Bahn & Tidy, 1996; Fagan, 1978; Greene, 1983, 1995, 2002; Greene & Moore, 2010; Heizer et al., 1975; Kelly & Thomas, 2009, 2012; Renfrew & Bahn, 2007, 2010). Only seven (16.7%) out of 42 editions mentioned the long-term

conservation of objects (Fagan, 2006; Fagan, 2009; Fagan, 2012; Hester, Shafer, & Feder, 1997; Hester, Shafer, & Feder, 2009; Kelly & Thomas, 2006; Zimmerman et al., 2003).

   Discussion of archaeology textbooks survey.

   To specifically target the use of the term "curation" in university-level archaeology textbooks, I conducted an in-depth examination of each textbook that used the term (which included 10 books in total or 23.8% of all textbooks). The term's use ranged from a simple definition to a chapter full of discussion. Table 1 shows what was found upon deeper examination of the ten (23.8%) of the 42 editions of textbooks that had the term *curation* in their indexes. The in-depth examination revealed that the Grant and colleagues books that had curation in their indexes but did not use the term to signify long-term care and management of collections, as noted in Table 1. Therefore, these three textbooks were not used to calculate the percentage of books that used the term curation in a way significant to this paper. This means that only seven (16.7%) of the 42 editions of textbooks used the term curation (7 out of 42 editions of books or 16.7%) to refer to the long-term care and management of archaeological collections.

   Table 1 also illustrates that the small percentage of content related to the curation of archaeological collections within archaeology textbooks is not enough to teach formal classes about curation. Teaching a curation course would require that ancillary materials be used in addition to an archaeology textbook. Such supplemental resources that could be used to teach a university-level course on the curation of archaeological collections are journal articles, handouts, the National Park Service's Managing Archaeological Collections online training portal, *Curating Archaeological Collections* by Sullivan and Childs (2003), and literature, newsletters, and reports published by professional organizations (e.g., SAA, SHA, and the

American Cultural Resources Association) and government agencies (e.g., Department of the

Interior, National Park Service, United States Army Corps of Engineers).

Table 1

Evaluation of the Term "Curation" in Archaeology Textbooks

Publication year	Number of times "curation" was cited in index	Page length of curation section(s)	Use of the term "curation" refers to the long-term care and management of archaeological collections
Fagan, B. M. *Archaeology: A brief introduction.*			
2006	1	2 pages	Yes
2009	1	2 pages	Yes
2012*	1	half page	Yes
Grant, J., Gorin, S., & Fleming, N. *The archaeology coursebook: An introduction to study skills, topics and methods.***			
2002*	2	half page	No
2005*	3	half page	No
2008*	3	half page	No
Hester, T. R., Shafer, H. J., & Feder, K. L. *Field methods in archaeology*			
1997	1	1.5 pages	Yes
2009	1	1.5 pages	Yes
Kelly, R. L., & Thomas, D. H. *Archaeology.*			
2006	1	1 page	Yes
Zimmerman, L. J., Vitelli, K. D., & Hollowell-Zimmer, J. *Ethical issues in archaeology.*			
2003	3	13 pages	Yes
*Curation was defined in the glossary of terms. **Grant and colleagues (2002; 2005; 2008) used curation to mean a personal preservation or continuation of the life of an object by coveting it over a lifetime and then passing it on to others so that it is found in a different time period than when originally created.			

Email survey results.

A 20 question survey about the curation concerns of archaeological collections in

university anthropology programs was sent to the top five university anthropology programs in

rank and enrollment (see Table 4). The five schools for which I surveyed archaeology professors

were Harvard University, Pennsylvania State University, University of California at Berkeley,

University of Michigan at Ann Arbor, and University of Pennsylvania. The survey was first sent

out on Wednesday, February 13, 2013 because this was the day I received approval from Southern Illinois University Carbondale's Human Subjects Committee to administer the survey. The survey did not specify a deadline by which the survey must be completed. The hope was that a survey sent this early in the semester would garner at least a 15 percent response rate because this time of year tends to be less busy than mid- or late-semester. However, only a 14 percent response rate (11 of 78 respondents) had been achieved before a reminder email was sent on Wednesday, March 13, 2013.

A response rate of 15 to 20 percent was expected because Sheehan (2001) found that the mean email survey response rate has decreased 48 percent from 1992 to 2000 from its original return rate of 72 percent. This means that email survey participation decreased an average of 5 percent per year. This trend has likely continued and has probably decreased at least another couple of percent from 2000 to 2013. I conservatively estimated that between 15 and 20 percent of individuals contacted would complete the survey. However, the Instructional Assessment Resources (2011), which is a comprehensive resource to use for conducting educational research and program evaluations, recommends that the average acceptable responses rate is a 40 percent response rate, whereas a 50 percent response rate ranks as good and a 60 percent response rate equals very good.

Sheehan (2001) states that a follow-up or reminder email can increase response rates up to 25 percent. Thus, a follow-up email to remind perspective participants about the survey was sent on Wednesday, March 13, 2013 (one month after the original email), in the hopes that there would be at least a few additional respondents to meet the 15 percent minimum expected response rate. There was no listed deadline for the survey in the follow-up email that I sent out, but it was closed at 10 p.m. on March 15, 2013, so that results could be finalized in time to meet

paper submission deadlines. The response rate increased 45.5 percent (from 11 to 16 respondents), after the follow-up email was sent to potential survey participants giving a final response rate of 20.5 percent. While this response rate well surpassed Sheehan's estimates of a 5 to 25 percent increase in response rate for follow-up emails, the total response rate (16 participants or 20.5 percent) was not high enough to meet the 40 percent acceptable standards level set out by the Instructional Assessment Resources. The lack of more responses to this survey could have been due to the follow-up email falling within the mid-semester in addition to it being sent in the week after Spring Break for Pennsylvania State University, the University of Michigan at Ann Arbor, and the University of Pennsylvania; two days before Harvard University's Spring Break; and 10 days before the University of California at Berkeley's Spring Break.

Out of the 78 requests for participation, there were 16 survey participants, which equates to a 20.5 percent participation rate, which correlated with my expect response rate of 15 to 20 percent. Although I did not receive an adequate amount of responses to generalize the statistics to all five anthropology programs, there was a finding in the data from the 16 respondents that matched what was found in the literature review—that curation courses are not being taught in anthropology programs. However, almost half of the respondents commented on how such classes are being taught in other areas in their respective university, especially within museum studies programs.

Discussion of email survey responses.

Although I did not receive an adequate amount of responses, there were trends in the data that was received from the 16 (out of 78) respondents. The patterns I found were not altogether surprising. For the most part, curation courses are not being taught in anthropology programs,

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but they are being taught in other departments, especially within museum studies programs. However, all 16 respondents either agreed or strongly agreed that curation training should be included in an archaeology program's curriculum. Furthermore, of the 16 respondents, 8 (50%) of respondents claimed that teaching about the curation of archaeology collections is supported by their university's anthropology program. If almost half of the respondent's anthropology departments care about giving their students a formal education about curation, then why is there a lack of curation related courses being taught in archaeology programs? Is it just these select few individuals who answered the survey who consider formal education about curation important? Is this same perspective represented among the larger portion of the archaeologists who did not respond to the survey? Have these few individuals voiced their concerns to their department about the lack of such courses?

The general lack of curation courses being taught in anthropology programs was shown by the fact that there are no courses being taught in the Spring 2013 semester at any of the top five archaeology schools that had one of the following curation terms in the course title: curation, collections management, conservation, or preservation. However, 7 (43.8%) of the 16 respondents said that there are courses that focus on curation concerns within the anthropology program that are available for students to take[9]. Participants were able to select all that applied from the following list as a focus of these classes: curation, collection management, conservation, and preservation. Out of the 7 respondents that answered yes to there being courses within their university's anthropology program that focuses on curation, 4 respondents (57.1%) said that there are courses that focus on curation and collection management. There were also 3 selections (42.9%) each for conservation and preservation being a focus of courses available through their university's anthropology program.

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[9] The regularity of these classes availability was not assessed.

The rates for such classes being taught in other departments were higher than those in the anthropology departments. Seven (43.8%) of 16 respondents stated that there were classes being taught in other programs that dealt with curation, collection management, conservation, and/or preservation. Participants were then again able to select all terms that applied to the course(s) to which they were referring. Out of the total 9 selections made for this question, 4 respondents (44.4%) selected preservation as the main focus of these classes, whereas 3 respondents (33.3%) claimed conservation was the focus. There was 1 respondent (11.1%) that selected both collections management and curation as being the focused for course not listed under the anthropology department.

Because of the anonymity of the survey and grouping of responses by question, it was not known if these responses were more prevalent for particular university's anthropology programs. If this survey were to be redone, I would ensure that question responses would be linked to a particular university's anthropology program to determine whether curation courses are more concentrated at certain universities. The archaeology programs found to have curation courses in their curricula could then serve as case studies in order to set up a framework of how curation training and education can be established into archaeology program curricula in general.

The lack of participants who responded to the survey could have been due to the timing of the initial and/or follow-up emails asking for participation. The email could have been filtered out by computer programs or the faculty themselves because it was thought of as spam. It seemed that the best was to avoid such an issue was using my @siu.edu email as well as the subject email title "Research Request for Master's Paper – Curation Concerns in Archaeology Programs Survey" to best indicate that the email solicitation for participation in a survey was not spam. The low response rate could have also been due to the possible method of delivery where

mail or phone surveys could have yielded better results. However, the amount of time and money to conduct and analyze mail or phone surveys were not available.

The lack of a survey response deadline could have been another reason that there was a low response rate because potential participants may have decided they would do it at a later and upon return found the survey to be closed. Another reason for the low response rate could be supported by the literature findings regarding the lack of concern for integrating curation of collections into archaeology programs. Meaning, archaeologist with no curation training or the lack of anthropology departments pushing curation as a requirement in the curricula could explain the low response rate to my email survey. This last issue of is a great concern. It seems that the old way of doing archaeology—excavate artifacts and then let someone else worry about the collection after it is out of the ground— may still be the norm.

There is a "lack of fit between traditional archaeological training and the realities of the current jobs that archaeologists find when they complete their degrees" (CC, 2008, p. 1). The need to institute curation training into graduate-level archaeology programs was recognized in 1974 (Sebastian & Lipe, 2009). However, there is still little information about curation present in university-level archaeology textbooks published in the 21st century. This may be transferring to a lack of formal education and training about preservation and long-term care of archaeological collections in the classroom. The 'dig not preserve' attitude of archaeologists has been the dominant culture in the field since the beginning of the 20th century (Brunswig, 1992; Childs & Corcoran, 2000; Hawkins, 1998; Sebastian & Lipe, 2009; Sullivan and Childs, 2003; Zimmerman et al., 2003). A transition needs to take place within the discipline in order for archaeological collections curation to be deemed an important topic. Archaeologists need to shift from the traditional way of thinking—excavating as many artifacts and samples out of the

ground as possible for research purposes—to a new way of thinking about archaeology that includes complying with federal statutes that require curation of archaeological collections as well as the concern for long-term curation of archaeological collections for the future generations.

Study Limitations, Conclusions, and Future Research

The following sections include the limitations of my preliminary study, as well as the overall conclusions that can be made from combining my textbook and email survey results with what was found in the literature review. The purpose of the future research subsection is to address the need to establish curation of archaeological collections courses in archaeology program curricula. Given that my email sample only surveyed the top five archaeology programs of 2010, I will briefly cover possible areas for future research that makes recommendations to expand this sample size that will be based on a random selection of respondents to find more conclusive results that can be broadly applied to archaeology programs in the United States.

Limits of the preliminary study.

Some potential limitations to soliciting participation via email were that some individuals may not have been responsive to such personal contact or willing to take the survey. Some participants may have also deleted the email, thinking it was spam. Using the subject "Research Request for Master's Paper – Curation Concerns in Archaeology Programs Survey" as well as sending the email from my @siu.edu account was the best way of preventing recipients from deleting the email because they thought it was spam as well as for legitimizing my request.

The use of email allowed the creation of the survey using the free web service StellarSurvey.com that tabulated the results, while also keeping the participants anonymous. However, there were several things that the free survey service did that were a hindrance while interpreting the results. The first issue that arose during my interpretation was that the survey

service tabulated the results as totals per question. This means that while I could give a list of how many professors participated from what university, I could not determine which answer went to which university. For example, I knew that nine archaeology professors from the University of Pennsylvania completed the survey, but I could not say how many of the University of Pennsylvania professors selected which answers for each question. All that could be said for question 2 (Curation training should be included in an archaeology program's curriculum.) was that out of the 16 total responses, six professors selected "strongly agree" while 10 selected "agree." The non-tabulation of results by school limited me from determining if any of the five top anthropology programs were more or less focused on curation than its peers.

A limitation during the design phase of the free email survey was the inability to have contingency questions. Respondents might have ended up confused by or frustrated with the survey since questions that did not apply to all participants would still show even though they answered no to a question for which the contingency question(s) were meant to used. In future studies, I will only use services that allow me to design question skips into surveys in order to decrease confusion and improve respondents' experiences.

Conclusions.

This paper focused on the prevalence of long-term curation in higher education archaeology programs with attempts to answer the following questions: (1) Do higher education archaeology programs in the United States include formal training on curation? (2) Has the concern of long-term care and management of archaeological collections increased over the past six decades, especially after the passage of cultural resource laws from the 1950s through the 1990s?

To answer the first question, the curation concerns survey was used to assess the curricula of the top five anthropology programs. The results showed that courses about the long-term care of archaeological collections were not core to these archaeology programs. The literature review also showed that this is mostly likely not an isolated phenomenon and that many archaeology programs fail to incorporate archaeological collections curation education and training into their curricula. The research study undertaken for this paper could serve as a preliminary study to a larger research project that would involve randomly selecting anthropology programs and assessing their archaeology program curricula as well as individual course syllabi in order to determine the prevalence of curation education and training.

I also conducted a quick search of the curricula for the top ten archaeology graduate programs by student enrollment according to Education-Portal.com (c2003-2013) to help answer the first question regarding formal education and training on curation of archaeological collections. The top ten archaeology graduate programs based on student enrollment were Arizona State University, Ohio State University, University of Florida, University of Texas at Austin, Pennsylvania State University, University of Illinois at Urbana-Champaign, New York University, University of Michigan at Ann Arbor, University of California at Los Angeles, and the University of Arizona (Education-Portal.com, c2003-2013). The search revealed that these archaeology programs are still not incorporating curation courses into their curricula. It can also be surmised from the literature that better education about archaeological curation at the undergraduate and graduate levels need to be instituted in most program curricula across the United States (Childs, 2006; ACC, 2003; Bustard, 2000; Childs & Corcoran, 2000; CC, 2008; Sullivan & Childs, 2003).

Archaeology textbook indexes were surveyed to answer the second question regarding a possible increase in the trend of curation concerns of archaeological collections after the passage of several cultural research laws from the 1950s through the 1990s. A better understanding of when curation became a concern was gained by examining the indexes for terms relevant to long-term care and management of archaeological items. This "need" did not present itself, at least in an educational since, until almost the 21st century and even then the details surrounding the issue are lacking in the textbooks and program curricula that I surveyed. The majority of the textbooks referred to preservation or conservation of archaeological sites or artifacts in the field and laboratory, and not to long-term care and management of the collections that the archaeological excavations have created. Furthermore, the curation of artifacts and records were not mentioned in these archaeology textbooks until almost the 21st century (Fagan, 2006; Fagan, 2009; Fagan, 2012; Hester, Shafer, & Feder, 1997; Hester, Shafer, & Feder, 2009; Kelly & Thomas, 2006; Zimmerman et al., 2003). The lack of concern for curation in university-level archaeology programs is also present in the 2003 and 2008 reports from committees of the Society of American Archaeology, which stated how archaeology programs need to institute curation courses into their curricula (ACC, 2003; CC, 2008).

The findings above coincide with the literature findings that most graduate archaeology programs are still failing to incorporate curation courses into their curricula (Childs, 2006; ACC, 2003; Bustard, 2000; Childs & Corcoran, 2000; CC, 2008; Sullivan & Childs, 2003). [10] This was also made apparent by the lack of the terms related to long-term care and management of collections in the survey of the textbooks published after the past decade with SMOG Grade

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[10] The email that was used to solicited survey participation stated that I was contacting them "to participate in a survey regarding curation concerns in graduate archaeology programs."

level of 17 or higher.[11] Yet, how much of the problem could be due to the low demand for curation material to be included in university-level archaeology textbooks, instead of being due to the committees and individuals who develop curricula? It is well-known that the lack of demand for certain material to be included in a textbook by a large enough portion of the market to make profit will not allow the textbook to survive against its competitors. After all, there needs to be literature, and lots of it, to have a university-level class devoted to one subject, and if there is no demand from archaeology scholars or researchers for textbooks to include chapters about curation, archaeology textbooks will continue to not include this information.[12] Then again, arguments can be made that the issue is one in the same. Meaning, scholars and researchers who create the textbooks are also some of the individuals teaching the university-level archaeology courses and making the guidelines for curricula.

Based on my research, there is need for anthropology departments and archaeology programs to incorporate curation courses into their curricula, which in turn will provide a better education for future archaeologists, those individuals who will be responsible for the curation of archaeological collections in the future (Childs, 2006; Childs & Corcoran, 2000). Archaeologists and scholars can also do their part by committing to writing material on the subject that can be used in university-level archaeology courses, in addition to teaching correct principles and methods about the long-term care and management of archaeological collections.

Future research.

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[11] Only 4 of the 15 books that scored a SMOG Grade of 17 or higher had curation in their indexes (see Tables 1 and 2).

[12] The possibility for professors to compile non-textbooks literature such as academic articles or reports and guidelines published by professional associations to make a course is highly likely due to the increase of literature about curation concerns (Bustard, 2000; NPS, 2007; SAA, 2013; SHA, n.d.; Sullivan & Childs, 2003). Some of the sources used in this paper could serve as preliminary study for establishing a framework to create curation courses, but the full discussion of this topic is out of the scope if this paper.

Until curation laws and regulations are better enforced, archaeologists will most likely continue in their old way of thinking about the care of archaeological collections. Integrating curation courses into archaeology program curricula would help train and educate future archaeologists about the ever growing concerns regarding the proper curation of archaeological collections. However, it would take time to develop and implement this requirement, and for the field to be fully trained in long-term collections management. In the meantime, there would continue to be a curation crisis at repositories until there is an increase in trained personnel as well as an increase in funds to curate archaeological collections. The development of required curation courses seems to be the best long-term approach in educating future archaeologists and archaeology students about the importance of curation. Another option would be to structure a curation certification course for those who are already archaeologists by using the NPS's online portal Managing Archaeological Collections and its accompanying print resource, *Curating Archaeological Collections* by Sullivan and Childs (2003). Training programs for established archaeologist to learn new skills and best practices through archaeological organizations such as the Society for American Archaeology, the Society for Historical Archaeology, and the American Cultural Resources Association or maybe even closely aligned professional organizations that deal with similar, if not some of the same, curation issues like the American Association for State and Local History, the American Alliance of Museums, the Special Libraries Association, the American Libraries Association, and the Society of American Archivists may also be future options.

According to the literature, the curation crisis is reaching critical mass and something more must be done, in addition to what is currently being done and the progress made over the past few decades. This will prevent the further loss of artifacts, samples, provenience

information, and other records that is due to the lack of funding and staff that is needed to provide the proper housing, security, pest management, and accession work for managing collections (Bustard, 2000; Childs & Corcoran, 2000; Sebastian & Lipe, 2009; Sullivan & Childs, 2003). Establishing a standardized formula for what it costs to curate archaeological collections in perpetuity seems that it will ultimately help solve the curation crisis because repositories can start charging and collecting the adequate fees necessary for long-term curation. Another route would be for the government to issue grants in addition to those already issued under NAGPRA, which only go toward curating collections of federally recognized Native American and tribal groups, to repositories so that they could curate both old and new archaeological collections.

To decrease the reliance on non-federal curation facilities, federal agencies need to build and staff their own repositories to care for their archaeological collections. By doing this, a federally-owned repository would better ensure that laws and regularions are being followed because federal agencies can better monitor what is occurring within their own organization compared to monitoring what is happening in non-federally owned repositories. Establishing additional federal repositories would also serve as a framework from which long-term curation cost studies could be undertaken, since all federal repositories would be working under the same guidelines and standards. The lack of standardized curation policies and guidelines and little knowledge about curation costs have been an issue since cultural resource management laws were enacted in the 1960s and 1970s (Childs & Kagan, 2008; Childs & Kinsey, 2003; Nepstad-Thornberry et al., 2002; Sullivan & Childs, 2003).

Future research related to archaeology programs curricula and university-level archaeology textbooks needs to be done to supplement my preliminary study. One example of

such research is to design a more in-depth study of archaeology textbooks used in university-level archaeology programs. Just because a topic is mentioned in university-level textbooks does not mean this topic is being adequately taught at the university-level. Additional study of university-level archaeology programs that use textbooks that discuss archaeological collections curation needs to be done to determine if this material is or is not being taught in the classroom. One way to determine if the topic of curation is being taught alongside a textbook's teaching would be to examine course syllabi for this information indicating that textbooks are being consulted in courses that teach about curation. Meaning, one can determine if there is any overlap with the courses teaching about curation and the course textbooks containing a section on curation. If overlap occurs, this means that the textbooks that contain information about curation are actually being used in university-level courses to teach about curation concerns within said course. Alternatively, professors may be teaching courses that include the topic of curation and are using supplemental material outside of the textbook to teach students about archaeological collections curation. If supplemental material is being used to teach university-level archaeology courses, a survey as to why they are being used instead of textbooks could be done.

Another avenue of future research would be to look into the cause of the lack of curation training in archaeology programs and determine whether it is an issue with a lack of curation focus in archaeology programs, archaeology textbooks, or a combination of the two; or something else completely. Interestingly, all 16 survey respondents stated that their anthropology programs were affiliated with museums which seem to have a greater concern about curation policies and procedures as supported by the comment section of the survey as well as in the literature (Bustard, 2000; National Institute for the Conservation of Cultural Property [NICCP],

1990; Sullivan & Childs, 2003). There seems to be a disconnect between what is being practiced in archaeological repositories and what is being taught in the top five anthropology programs, especially since the respondents' archaeology programs are affiliated with museums which are organizations that emphasize long-term preservation and care of collections (NICCP, 1990; Sullivan & Childs, 2003). Curation concerns would be better addressed at these top five anthropology programs if they decided to institute formal curation education and training into their curricula. Maybe partnering with the museums with which each archaeology program is affiliated, in addition to using resources such as journal articles, reports, and online learning portals about the archaeological curation, will help archaeology programs formulate a course, or maybe even a concentration, that focuses on curation of archaeological collections.

The non-tabulation of results by school limited me from determining if any of the five top anthropology programs was more or less focused on curation than its peers. A survey addressing this limitation could be done to evaluate whether some archaeology programs are teaching curation courses more than others. Additionally, the participant list of the surveys could be expanded to include archaeology professor from the top twenty-five anthropology programs as determined by the NRC ranking system to provide a more complete study.

It would also be interesting to compare the curricula standards of museum studies, archive studies, and library science programs to those of archaeology programs, with a special focus on courses or concentrations that pertain to curation. This framework could then be used to build an archaeology plan of study and/or a concentration within the program that better aligns with curation crisis concerns in addition to providing the education and training needed by archaeologists to meet federal laws and regulations requiring the long-term care of the collections they create. This plan would need to include recommendations for core and elective

courses, as well as other requirements such as field experience, internships and a thesis. Included in this study could be a survey on whether archaeology faculty know about the partnership of Society of American Archaeology with the Society for Historic Archaeology, the American Anthropological Association, and the Archaeological Institute of America to establish a training program for archaeology students on collections management and curation which includes "why to budget for curation, how to work with a repository to prepare a collection for curation, how to manage associated documents, or why there is a curation crisis" (ACC, 2003). The survey could also include whether archaeology faculty are aware of the curriculum guidelines for a Master's in Applied Archaeology as outlined by the SAA's Committee of Curriculum that concentrates on cultural resources management and curation of archaeological collections. This curriculum focuses on two tiered approach to archaeological training: hands-on experience gained through required internships and field work in addition to traditional courses in archaeology theory and method ending with a thesis.

Nine (56.3%) of the 16 respondents to the curation concerns survey believed that there were students interested in or saw the need to learn about curating archaeological collections. Thus, another avenue for future research is to test if such claims are true by polling archaeology students to see if there is an interest in or a desire to learn about curating archaeological collections. A lack of interest or knowledge about curation would explain why there has not been a push from students to request curation courses be added to their program of study.

As my discussion of potential avenues for future research has shown, there are many future studies that can be conducted to continue the assessment of the attitudes and needs surrounding archaeological collections curation in higher education anthropology programs. This includes surveys that examine curation concerns in university-level archaeological programs

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curricula as well as the attitudes of archaeology professors and archaeology students from anthropology programs across the United States. Surveys of textbooks and other material used to teach curation focused courses also need to be done in order to build a bibliography of sources that archaeology programs across the nation can use as a reference when establishing a curation course or concentration as part of their curricula. Regardless of the training method (e.g., formal courses, online modules, or certificate programs) archaeology programs decide to use to educate archaeology students about the long-term care and management of archaeological collections, curation training needs to be better incorporated into university-level archaeology curricula to prevent the propagation of the curation crisis.

TABLES

Table 2			
SMOG Grades for the Surveyed Archaeology Textbooks			
Publication year	Number of polysyllables	Square root of polysyllables*	SMOG Grade
Ashmore, W, & Sharer, R. J. *Discovering our past: A brief introduction to archaeology.*			
1988	192	14	17
1996	208	14	17
2000	218	15	18
2006	211	14	17
2010	210	14	17
Bahn, P. G., & Tidy, B. *Archaeology: A very short introduction.*			
1996**	130	11	14
2000**	217	15	18
2012**	168	13	16
Dancey, W. S. *Archaeological field methods: An introduction.*			
1981	178	13	16
Fagan, B. M. *Archaeology: A brief introduction.*			
1978***	139	12	15
1983***	110	10	13
1988***	136	12	15
1991***	181	13	16
1994	165	13	16
1997	159	13	16
1999	212	15	18
2003	106	10	13
2006	185	14	17
2009	158	12	15
2012	208	14	17
Grant, J., Gorin, S., & Fleming, N. *The archaeology coursebook: An introduction to study skills, topics and methods.*			
2002	99	10	13
2005	91	10	13
2008	101	10	13
Greene, K. *Archaeology, an introduction: The history, principles, and methods of modern archaeology.*			
1983***	145	12	15
1995***	188	14	17

2002	271	16	19
(& Moore) 2010	229	15	18
Heizer, R. F. *A manual of archaeological field methods.*			
1950**	112	10	13
Field methods in archaeology.			
Heizer 1958**	153	12	15
Heizer & Graham 1967	185	14	17
Heizer, Graham & Hester 1975	120	11	14
Hester, Shafer, & Feder 1997	140	12	15
Hester, Shafer, & Feder 2009	191	14	17
Kelly, R. L., & Thomas, D. H. *Archaeology.*			
2006	126	11	14
2010	147	12	15
2012	111	11	14
Johnson, M. *Archaeology theory: An introduction.*			
1999***	142	12	15
2010	173	13	16
Meighan, C. W. *Archaeology: An introduction.*			
1966***	115	11	14
Renfrew, C, & Bahn, P. *Archaeology essentials: Theories, methods, and practice.*			
2007	143	12	15
2010	151	12	15
Zimmerman, L. J., Vitelli, K. D., & Hollowell-Zimmer, J. *Ethical issues in archaeology.*			
2003	184	14	17

* "This is done by taking the square root of the nearest perfect square. For example, if the count is 95, the nearest perfect square is 100, which yields a square root of 10. If the count lies roughly between two perfect squares, choose the lower number. For instance, if the count is 110, take the square root of 100 rather than that of 121." (McLaughlin, 1969, p. 639)

** Denotes a book with 100 pages of main content.

*** Denotes a book with 200 pages of main content.

			Collections		
Publication year	Curation	Conservation	Management	Preservation	Heritage*
Ashmore, W, & Sharer, R. J. *Discovering our past: A brief introduction to archaeology.*					
1988					
1996					
2000				X	
2006				X	
2010					
Bahn, P. G., & Tidy, B. *Archaeology: A very short introduction.*					
1996		X			X
2000		X			X
2012		X			X
Dancey, W. S. *Archaeological field methods: An introduction.*					
1981				X	
Fagan, B. M. *Archaeology: A brief introduction.*					
1978		X		X	
1983				X	
1988				X	
1991				X	
1994				X	
1997				X	
1999				X	
2003				X	
2006	X			X	
2009	X			X	
2012	X			X	
Grant, J., Gorin, S., & Fleming, N. *The archaeology coursebook: An introduction to study skills, topics and methods.*					
2002***	X	X		X	X
2005***	X	X		X	X
2008***	X	X		X	X
Greene, K. *Archaeology, an introduction: The history, principles, and methods of modern archaeology.*					
1983		X			
1995		X			X
2002		X			X
(& Moore) 2010		X			X

Table 3

Evaluation of Key Terms in Archaeology Textbooks

Heizer, R. F. *A manual of archaeological field methods.*					
1950**				X	
Field methods in archaeology					
Heizer, 1958**				X	
Heizer & Graham, 1967				X	
Heizer, Graham, & Hester, 1975		X		X	
Hester, Shafer, & Feder, 1997	X	X		X	
Hester, Shafer, & Feder, 2009	X	X		X	
Kelly, R. L., & Thomas, D. H. *Archaeology.*					
2006	X	X		X	
2010		X		X	
2012		X		X	
Johnson, M. *Archaeology theory: An introduction.*					
1999					
2010					X
Meighan, C. W. *Archaeology: An introduction.*					
1966					
Renfrew, C, & Bahn, P. *Archaeology essentials: Theories, methods, and practice.*					
2007		X		X	
2010		X		X	
Zimmerman, L. J., Vitelli, K. D., & Hollowell-Zimmer, J. *Ethical issues in archaeology.*					
2003	X	X		X	

* Term applies only to books published in the U.K.
** CRM was not practiced during this time
*** Curation does not refer to the long-term care and management of objects in a repository.

Table 4					
Curation Concerns Twenty Question Survey					
1. Please indicate the University where you currently work or where you have emeritus status:					
	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
2. Curation training should be included in an archaeology program's curriculum.					
3. Teaching about curation of archaeological collections is supported by my University's anthropology program.					
4. The students in my University's anthropology program are interested in or want to learn about curating archaeological collections.					
		Yes	No	Don't Know	No Answer
5. Are you <u>currently</u> teaching any courses with the following terms in the <u>course title</u>: curation, collections management, conservation, or preservation?					
If yes to question 5:					
6. How many such classes are you currently teaching?					
7. Which terms did the class title(s) contain? (*please circle all that apply*) curation, collections management, conservation, or preservation					
8. In the past, have you taught any courses with the following terms in the <u>course title</u>: curation, collections management, conservation, or preservation?					
If yes to question 8:					
9. How many such classes have you taught in the past?					
10. Which terms did the class title(s) contain? (*please circle all that apply*) curation, collections management, conservation, or preservation					
11. Did you teach the course at your currently affiliated University?					
If no to question 11:					
12. Please list the Institution(s) where you taught the relevant course					
13. Are there any courses taught (by you or other faculty members) at your affiliated University's anthropology program that focus on any of the					

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following: curation, collections management, conservation, or preservation?				
If yes to question 12:				
14. What is the specific focus of this course? (*please circle all that apply*) curation, collections management, conservation, or preservation				
15. Do you know of any other courses taught in your affiliated University that are **NOT** part of the anthropology program that focus on any of the following: curation, collections management, conservation, or preservation?				
If yes to question 15:				
16. What Department is the course listed with?				
17. What is the specific focus of this course? (*please circle all that apply*) curation, collections management, conservation, or preservation				
18. Is your University's anthropology program affiliated with a museum?				
19. Is the museum operated by the University?				
20. Comments?				

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