

**Betwixt and Between: Bridging the Gap between Field and Repository**

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## Introduction

All too often, archaeologists have viewed curation as a process that manages, rather than investigates, archaeological collections. The resulting curation crisis is the result of a serious imbalance between the continued generation of field collections and a corresponding lack of standards, best practices, resources and facilities devoted to accessioning, analyzing, reporting, curating and otherwise caring for archaeological collections. Researchers mistakenly prioritize ‘interpretation at the trowel’s edge’ with emphasis on excavation, field work and subsequent research, without considering the downstream issues of data standards, best practices and how and where the objects they excavate will be stored (collection management). Researchers, educators, and the general public will remain unable to reap the benefits of their cultural and historical significance until archaeologists and museum professionals can work together to determine a long-term strategy for the efficient management and care of these collections.

Legislation, in the form of the Curation of Federally Owned and Administered Archaeological Collections (36 CFR Part 79) (<https://www.govinfo.gov/content/pkg/CFR-2011-title36-vol11/pdf/CFR-2011-title36-vol11-part79.pdf>), was intended to ensure the long-term management and care of these resources. However, insufficient funding at institutional and federal levels, the absence of legislative enforcement by the National Park Service, and compliance issues at both the research and collection level, have resulted in collections at risk of loss through deterioration, mismanagement, and neglect. In the following chapters I will demonstrate that accessioning, inventorying, cataloguing, rehousing and conserving are meaningful generative encounters among scholars, objects and collections staff, not simply byproducts of research. An online database specifically designed for archaeological collections is

suggested as one way to address the curation crisis. Implementing digitization will enhance preservation by reducing damage to the artifacts caused by physical handling. Persons working in archaeology will gain a better understanding of collections care and the collections transition to the repository. The solution must extend beyond one discipline alone and needs a dialogue between archaeologists and museum professionals.

This paper will explore the hypothesis that there are problems that arise in the field that can be informed by better communication with collections professionals about data standards, best practices and what is required in order to curate, accession and catalog specimens that will best inform scientific exploration of the materials while there are elements of field work and research that can inform the curatorial process in return. These issues can be resolved by better communication and collaboration between the two sides and also the implementation and better understanding of certain structures: accessioning, collections management systems (CMS), data sharing and transparency. In exploring these issues, this paper will offer suggestions as to how archaeological collections can have their potential maximized through these efforts.

Section I will provide a historical overview of archaeological collecting practices. These practices have largely influenced the position in which museums and archaeological repositories find themselves today. Section II will discuss the legal issues involving archaeology collecting and collections care. This section will be divided into two subsections; the first of which is collecting practice legal issues concerning collecting, import, export permits, and the second is concerned with collection related legal issues such as accessioning. Section III will discuss the “curation crisis,” which became widely recognized in the 1970’s. It will address how this crisis manifested itself and will explain the ways in which it currently impacts collections management in repositories.

Section IV analyzes a Collections Management Cycle which was created by S. Terry Childs and Danielle M. Benden. They advocate that planning for collections to be integrated into project administration from inception such that the management of archaeological collections begins before fieldwork and continues well after recovered collections reach the repository. The cycle is broken up into nine different categories for the collections management process. Section V goes into detail about what exactly a collections management system is, and a justification of a collections management system. Section VI discusses a survey I conducted concerning archaeology databases, to gain a better understanding of the type of databases institutions are currently using to hold their data and digitize their collections. The results of the survey will be discussed and analyzed in this section.

Section VII will discuss several of the standard collections databases used by repositories today and their pit falls due to reasons such as; limited funding and the of knowledge about archaeology when creating a proper database. Section VIII entails a push for training and education not only for archaeologists, but collection managers. By having a better understanding of field techniques and proper collections management care, the curation crisis could be lightened. A concluding section will summarize the information presented in previous sections, discussing some of the difficulties and issues surrounding current archaeology practices in an attempt to alleviate the “curation crisis.”

### **Section I: Archaeological Collecting Practice: An Historical Framework**

The Society for American Archaeology (SAA) (<https://www.saa.org/>) states that collections are preserved for both scientific research and public education. The application of new technologies and dating techniques to old collections yields valuable information that may lead to new theories and understandings about our human past (Archaeological Collections).

Collections are also preserved for use in museum exhibits so the public may benefit from the archaeological research that unearthed them. While both archaeologists and repository collections management professionals agree that collections are important resources for scientific research and public outreach, the ongoing curation crisis prevents some collections from reaching their full potential.

All archaeological investigations, whether for Cultural Resources Management (CRM) or academic research, result in the creation of a collection that the museum profession is ethically bound to preserve for future research, interpretation, and education. A single site can produce thousands of artifacts and documentation, and in an ideal world these items should be both preserved and made accessible for future research; the past should be curated responsibly for the future. The very term *curation* implies careful stewardship of collections; management that includes accessioning, cataloging, conserving, maintaining, processing, publishing, and storing artifacts and the associated documentation. Their management and long-term care require physical resources (storage space, buildings, supplies, etc.) as well as monetary and personnel resources which have not been adequately provided since the significant influx of collections began in the United States with the enactment of state and federal historic preservation laws in the 1960's and 1970's. Inadequate, unsecure or vulnerable storage space, shortage of professional curatorial staff, inaccessibility of collections for research and other uses, lack of an adequate collections management system (CMS) for Archaeological collections, and orphaned collections are some of the many problems identified as part of the curation crisis besieging the United States.

A study conducted by the American Association of Museums (AAM) in 1984 indicated that while some major collections were adequately catalogued and organized, most collections

needed massive reorganization. Many small museums are without even a basic inventory of their holdings. Almost all museums need to make an increased commitment to a comprehensive collection's management system to effectively -inventory, catalog, photograph and store collections data in some retrievable form (American Association of Museums 1984:32). A museum repository, a place to care for collections, that is properly set up and maintained by its staff, plays the primary role in the long-term stability and usefulness of the materials it holds for research, interpretation, cultural heritage, and public exhibition (Sullivan and Childs 2003:3). The long-term care of collections includes maintaining the general wellbeing of artifacts and associated documents, making sure those collections are well organized, making sure the data are accessible to researchers and the public and sorting through the legal issues involved with maintenance and storage of collections.

## **Section II: Legal Issues**

The first law passed in the United States that provided protection for cultural resources was the Antiquities Act of 1906 which stated:

That the examinations, excavations, and gatherings are undertaken for the benefit of reputable museums, universities, colleges, or other recognized scientific or educational institutions, with a view to increasing the knowledge of such objects, and that the gatherings shall be made for permanent preservation in public museums (16 U.S.C. 431-433, Section 3).

This statute prohibits the removal or destruction of antiquities found on any public lands (McManamon 1996:19). Laws such as these provided little specific guidelines as to how excavated materials should be properly processed, managed, and curated on a long-term basis. Ten years later in 1916, the National Park Service (NPS) was established and vested with the responsibility of protecting and preserving cultural and natural resources on the lands so designated (King, T.F. 1998:13). In the 1950's, the NPS and the Smithsonian Institution,

established the River Basin Survey Program (Jennings 1985:285) to begin large salvage operations on numerous archaeological sites prior to reservoir construction by the Corps of Engineer Reservoirs (King, T.F. 1998:14). For many years, there was no forethought as to the final deposition of archaeological materials because in the past, like their academic colleagues, many contract archaeologists did not take into consideration the long-term preservation needs of the wide range of different materials procured through their excavations, surveys, and analyses (Bettison 1996:157).

In 1966, the National Historic Preservation Act (NHPA) was promulgated. The NHPA was the catalyst for a major expansion in contract archaeology and the birth of Cultural Resource Management (CRM) (King, T.F. 1998:18). For the first time in the United States, there was a major law that set forth a series of requirements related to the care and treatment of archaeological materials after field investigations had been concluded. There are however still shortcomings as there is no deadline for compliance, no established grant process to provide money for curating artifacts, and at present no means of enforcement (Traver 2001:30). While these laws aimed to protect archaeological sites, they did not provide any specific instruction regarding the long-term curation and protection of excavated materials. Site salvage was the battle cry of the day; [but] no little thought was given to the materials once they were collected (Sullivan and Childs 2003: 18).

In 1983, the Secretary of the Interior issued general guidelines for the federal agencies' use in determining the adequacy of curation facilities. However, these guidelines were not binding on the agencies and did not include specific criteria or procedures for determining whether a facility is adequate (United States General Accounting Office 1987:74). In 1984 the federal government approved regulation 43 CFR 7, a new regulation governing the preservation



of collections and data (Traver 2001:30). These regulations implement provisions of the Archaeological Resources Protection Act of 1979 (ARPA), by establishing the uniform definitions, standards, and procedures to be followed by all federal land managers in providing protection for archaeological resources located on public lands and Indian lands of the United States. These regulations enable federal land managers to protect archaeological resources, taking into consideration provisions of the American Indian Religious Freedom Act, through permits authorizing excavation and/or removal of archaeological resources, through civil penalties for unauthorized excavation and/or removal, through provisions for the preservation of archaeological resource collections and data, and through provisions for ensuring confidentiality of information about archaeological resources when disclosure would threaten the archaeological resources.

In 1991, the SAA established a “Task Force on Curation” committee. In 1993 the committee prepared a report entitled *Urgent Preservation Needs for the Nation’s Archaeological Collections, Records, and Reports* (Childs 1995:11). In 1999, the SAA then created an advisory committee on curation, which led to the development of a symposium at the 65<sup>th</sup> Annual meeting of the SAA in 2000 entitled *The Crisis in Curation: Problems and Solution*. While 36 CFR Part 79 represents a major advance in this area, it has shortcomings: a lack of monitoring and sanctioning against non-compliant curation repositories. For instance, the regulation requires that periodic inventories take place, but there are no provisions to fund this requirement, or enforce it. A survey conducted by Bobbie Ferguson and Myra Giesen, nine years after the implementation of 36 CFR Part 79, drew several conclusions:

- (1) Most agencies do not appear to have formal policies governing curation;
- (2) Many agencies do not have a grasp of where their collections are housed, do not report all locations, or do not view collections as their responsibility;
- (3) Units used in reporting collection size are not comparable among sources;

- (4) When reporting is done, it is often inaccurate or inconsistent; and
- (5) There is no real source of current information on government-wide accountability for collections (1999:23).

They also suggest that federal agencies “should work to establish agreed upon units for reporting collection information,” particularly in the form of uniform and consistent collections databases (ibid).

A major issue is whether all curation repositories are qualified pursuant to 36 CFR Part 79. Curation was seemingly an afterthought with no concern for the consequences of investigations undertaken by the United States General Accounting Office, as to the disposition of artifacts, samples, or records. Adequate funding is of major importance in the management of any collection and its parent institution (Haag 1985:275). If there are no funds (or budgets shrink), then the economic impact may cause irreversible harm to collections. For many decades prior to 36 CFR Part 79 and the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), museums and repositories curated federal collections at their own expense in return for unfettered access to the material for research or exhibit. Now, in times of shrinking budgets, increased sizes and numbers of incoming collections, and stricter curation legislation, many repositories are requesting federal agencies to acknowledge ownership and be fully accountable for funding collections care (Sullivan and Childs 2003:31).

#### *Accessions in Archaeology*

Accessioning, as defined by John Simmons (2018:193), “is the formal process used to legally accept and record an object as part of a collection; the act of accepting objects into the category of materials that a museum holds in the public trust; the creation of an immediate, brief, and permanent record using a control number for an object or group of objects added to the collection from the same source at the same time, and for which the museum assumes custody, right, or

title”. The process of adding objects to the collection is similar in all repositories. The typical steps for accessioning a collection or object are:

1. Evaluate and authorize an acquisition according to agreed museum policy and retain written documentation of this process.
2. Ensure that the receipt of the object is properly planned for and that appropriate long-term storage or display space is available for the object(s) to be acquired.
3. Complete a condition report for the object(s) to be acquired.
4. Obtain unambiguous evidence of title to the object.
5. Describe the method of acquisition (e.g., bequest, field collection, gift).
6. Assign a unique number to the object or collection.
7. Record the information about the acquisition in the accessions register.

Objects destined for the permanent collection are accessioned (the process by which the museum takes ownership of the objects) and assigned an individual identification number that is used to link the object with documentation and other information and to track the object throughout its life in the museum. An accession is composed of everything acquired at the same time, from the same source, as a single transaction between the museum and that source.

Because the accessions record is so important, the accession policy should specify what information is to be recorded concerning the transaction. The accession policy establishes that objects accepted for the collection conform to the institutional mission and that they enhance and strengthen the existing collections. Most museum accession policies stipulate that accessions must be free and clear (without restrictions). It is recommended that the accession policy state who is responsible for accessioning and cataloging the objects and maintaining the associated records (usually it is the registrar or collection manager). A statement of the museum’s choice of a standard nomenclature (or taxonomy) for categorizing its collections may also be included in the accession policy document. “All accessioned objects are acquired, but not all acquisitions are meant to be accessioned” (Carnell and Buck 2010:44). Most accession policies state that accessions must conform to the museum’s mission, enhance and strengthen the existing

collections, come to the museum with free and clear title (unencumbered by the liens or restrictions), and be designated for the collection. The accession policy might specify the level of authorization needed before staff undertake field collecting, or the level of review required to approve field collections for accessioning. Simmons (2018) created a table to help consider an institution’s accessioning decisions, which is outlined below:

**Table 6.1.** Considerations for accessioning decisions

Criteria	Comments
Care	Are there sufficient resources (staff, space, and facilities) to provide proper storage, management, and care of the object without compromising the rest of the collection?
Condition	Is the object in reasonable good condition? Will it require a large amount of resources to stabilize it or restore it? Is it so badly damaged that it will soon be worthless?
Cost of upkeep	Is the cost of keeping the object equal to the benefits of having it in the collection?
Documentation	Is the documentation adequate to establish provenance and justify the significance of the object to the museum? Some museums require specific types of documentation (e.g. deed of gift, copies of licenses and permits, signed letter from donor); others evaluate documentation on a case-by-case basis.
Legality of accession	The museum is responsible for making sure that everything it accessions was legally obtained, exported, and imported (which are also necessary for the museum to claim ownership of the object). There may be special legal considerations, such as whether the object proposed for accession falls within a NAGPRA category.
Potential use	Is the object likely to be used for research, loan, exhibition, education, or exchange? Is the object a voucher (an example or proof) for research, other scholarly activity, or publication?
Scope	Does the object fit the scope of the collection (geographic, subject, temporal, and use)?

Note: Based on Burcaw, 1997; Gardner and Merritt, 2002; and Malaro and DeAngelis, 2012.

The types of things acquired in repository collections may be federally owned or protected objects or specimens, confiscated objects, or collections belonging to another institution or country that the museum agrees to manage for a set period of time without claiming ownership. Management terms are part of the repository contract. Specimens or objects that are

held under the terms of a repository agreement cannot be accessioned because a repository agreement does not involve transfer of ownership. Some museums keep a record-keeping system that parallels the accessioning system to track objects and specimens on repository agreements in the institution's care (Simmons 2018:54). Some museums act as repositories for collections they do not own by entering into a mutual agreement to provide care and management for collections that belong to other institutions, groups, or agencies. For example, a government agency might contract with a museum to care for archaeological collections made on federal lands, or a Native American tribal organization may develop an agreement with a museum to care for archaeological collections. Repository agreements are becoming increasingly common for many other types of collections, such as historic records, archival collections, and natural history collections.

In general, the repository agreement policy should parallel the accession policy as closely as possible. Some repository agreements require the host museum to catalog the objects in order to track the use of them and their data effectively. It is expected that the host repository institution will maintain the same standards of care for the objects belonging to another institution that it does for its own. The key aspect of repository agreements is that the ownership of the collection is not transferred, although the objects in the collection are physically sent to another institution for long-term care. Despite the fact that most repository agreements are long-term arrangements, they should have a defined beginning and an ending date. Under a repository agreement, the costs of collection care may be primarily the responsibility of the owning institution or of the host institution; which institution has primary responsibility must be clearly stated in the agreement (Simmons 2018:167). The most likely organizations who would negotiate with a museum for repository space include the United States Department of Defense

(DOD), Army Corps of Engineers, Bureau of Land Management (BLM), and the Bureau of Indian Affairs (BIA).

To gain a better understanding of accessioning policies and the legal aspects that it entails, I contacted Lori Schlenker, Collections and Facilities Coordinator at the University of Kansas for the Natural History Museum and Biodiversity Institute. At the University of Kansas, the archaeology division is included within the Biodiversity Institute (BI). Prior to archaeology becoming a division under the BI, accessioning did not go through a specified check list. Lori Schlenker is currently working with curators Mary Adair and Sandra Olsen to develop accession policies and a check list specifically for archaeology, using the BI's current forms (see Appendix A). The centralized accessioning policy has been in place for the Biological collections (animal, plants, fossils) since 1996, and it serves as a check and balance that protects the institution and all individuals (agents) involved. Having in place policies and a check list prior to collecting will help deter any unnecessary collecting and can help ease the curation crisis.

### **Section III: The “Curation Crisis”**

Archaeologists have been excavating prehistoric and historic sites for much longer than we have been focusing on the need for long-term curation. It has been estimated that only about 40% of curation facilities that have a collection management staff have one with any formal museum training, or training as a collection manager. This reflects an alarming disregard for the importance of qualified collections personnel who are responsible for the long-term care of these archaeological collections (Miller 1999:6). It has been stated that most archaeologists are trained in the field preparation and laboratory conservation measures regarding archaeological specimens. However, they are not adequately trained to serve as collections managers.

Barbara Voss (2012:166) pointed out in *Curation as Research: A Case Study in Underreported Archaeological Collections*, that archaeological professionals do not view the curation process as investigative research; curation is viewed as a management process. By disconnecting themselves from the curation process, archaeologists perhaps do not fully understand the research potential collections have post-excavation. It is unethical for archaeologists to excavate material without first considering how they are to be curated on a long-term basis.

Problems associated with the curation crisis often relate to the general lack of formal collections management and curation training for professional archaeologists. Relatively few graduate programs offer courses specifically on curation methods and best practices to address the crisis (Childs and Benden 2017:16). Archaeologists focus on conducting field investigations, while Museologists are museum-trained professionals or other related professionals who have been trained in collections management.

In the article *Resolving the Crisis in Archaeological Collections Curation*, the authors (Childs and Benden 2017) argue that archaeology students should be taught the importance of collections management and that it is shortsighted to train archaeology students in planning, research design, laboratory work, and publication, while continuing to consign the resulting documents and specimens to closets, basements, and attics without adequate care and management (Marquardt, Monet-White and Scholtz 1982:412). New collections personnel can be trained on the job in proper procedures for management, care, and use, but they should be supervised by a collections manager who has the appropriate training to provide the theoretical and practical knowledge and skills needed for the job. This will improve overall preservation of

the collections and improve collections management. All training should be reciprocal; curators need training in archaeology and archaeologists need training in curation (Miller 1999:7).

Collections are not simply long-term storage. They are research and comparative collections for use in scientific inquiry, which are also used for exhibits, interpretation, and educational programming. The improper management of a collection hinders scientific and educational investigation and prevents the materials found in these collections being made accessible to the general public and researchers. Alex Barker (2003:80) explains that archaeology has long implicated museums in a kind of ‘manana mentality,’ a sense that, because museums held their collections for posterity, curated collections were already safe, freeing the discipline to focus on fieldwork and research generating new collections.

It is important that planning for collections be integrated into project design from inception, such that the management of archaeological collections begins before fieldwork and continues well after recovered collection reach the repository. It has been recommended by Trimble and Marino (2003:102-103), in the article *Archaeological Curation: An Ethical Imperative for the Twenty-First Century*, that archaeologists consider curation from two perspectives: curation planning before fieldwork even begins and long-term management of the collections. Future access to well-managed collections for research, interpretation, and exhibit can be assured only if thought is put into specimen and data collection before going to the field, while in the field, in the laboratory processing and analyzing the artifacts, and back in the office after the project is finished (Sullivan and Childs 2003:79).

During an interview with Dr. Emily Williams, an associate professor in Archaeological Conservation at Durham University in the United Kingdom, she stressed the importance of proper planning prior to an archaeological excavation. She responded that there is tremendous



importance in planning prior to an excavation. Too many archaeologists profess astonishment at the number of artifacts collected and she feels this exacerbates collection care issues at every point in the chain; analysis, conservation, curation and inter-site comparatives. Good planning can alleviate these problems. Resources are available for collections management and conservation, but they are so seldom incorporated in formal education, or people simply ignore them (Williams 2018).

The underlying difficulty in solving the curation crisis is not simply whether to build more and better storage facilities, but whether the prevailing paradigm, favoring archaeological fieldwork over processing, publication, and permanent curation of materials from field projects, is sustainable. The crisis is further aggravated by the lack of funding dedicated to the final stage of post-excavation care and handling. Original fieldwork is typically favored by both the academy and other funding agencies. Funding for collection-based research is often inadequate with respect to the costs of analysis, reporting, and ongoing care of collections (Milanich 2005; King 2008; Luke 2012; Voss 2012). There have been impassioned, erudite pleas for the study of material housed in collections across the globe as an alternative mode of research (King 2008; Voss 2012).

Museum professionals acknowledge that curation and archival work are not the focus of significant inquiry because such work is perceived of as a routine, performed by technicians rather than archaeological “experts,” and that until curated/archival collections are seen as true research tools, they will always take second place to actual fieldwork (Voss 2012:148). A way in which to address this issue could be through increasing exposure for collections through creation of data sharing portals and information about collections being included in institutional web pages. By having information about the institution’s collections or the collections themselves

being broadcasted online, their research value becomes greater. By gaining more awareness of what the collections consist of, more outside research can be done, in turn creating a greater need for caring for these collections properly.

Archaeologists and museum professionals alike have clearly identified the problem. Moving forward, the challenge is how to alleviate the problem in an effective and practical manner that considers the long-term needs of both archaeological research and museum missions. S. Terry Childs, and Danielle M. Benden have formulated a plan to address this referred to as The Collections Management Cycle of An Archaeological Project.

#### **Section IV: Analyzing Childs and Benden**

I chose to analyze this cycle as it has a clear checklist and framework for archaeologists and collections managers to follow. It offers a step-by-step system of proper protocol to ensure the ease of the entire process of objects; from planning prior to excavation, from objects being excavated in the field, and to their transition and long-term care in a facility. This cycle proves that it is crucial for the planning process to begin long before the actual excavation. I also chose this cycle specifically for the two authors, Terry Childs and Danielle Benden. Terry Childs is currently the Manager of the Department of the Interior (DOI) Museum Program. Childs oversees 195 million museum objects and archives managed by ten DOI bureaus and offices, including the National Park Service, Bureau of Land Management, Bureau of Indian Affairs, and Fish and Wildlife Service. Danielle Benden owns and operates Driftless Pathways, which offers archaeological site tours, professional development/curation training, and museum consulting services. Danielle Benden is the current chair of the Society for American Archaeology's Committee on Museums, Collections, and Curation.

This Collections Management Cycle was developed to help align an archaeological project with the curation repository. The Cycle outlines collections-related tasks with an emphasis on considerations for new archaeological projects. The Cycle includes nine stages, which provide a framework to manage archaeological collections sustainably, both in terms of cost and time. The stages progress from one to the next in a logical order and are undertaken and managed by various stakeholders. The stages are interdependent and impact one another, making it increasingly important for all involved to be aware of what occurs in areas they do not normally work (Childs and Benden 2017:13).

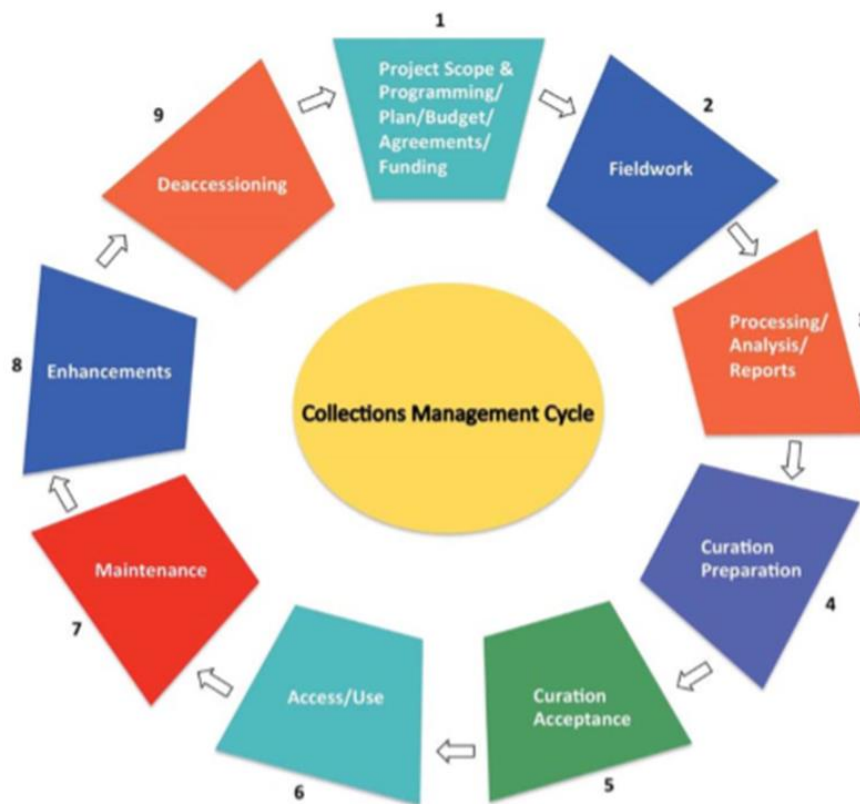


FIGURE 1. Collections management cycle of an archaeological project.

Stage 1 includes the **project scope and programming, plan, budget, agreements, and funding**. This first management stage is a suite of activities that may begin some years before a

project even starts. The cultural resource managers who are involved in developing and issuing the Request for Proposal (RFP) should:

- Be aware of the relevant federal, state, or local laws that govern the ownership and long-term care of the resulting collection.
- Identify the repository where the collection will be housed. An important factor in this determination is a repository's mission and scope, including its willingness and ability to be custodian of the collection recovered during the project.
- Include the associated costs of collections management in the initial government estimate for the project, including curation fees to be collected by the designated repository. Another consideration in the estimate is object conservation costs that might be needed.
- Lastly, consider the appropriate type of contract to award that recognizes a collection will be created.

Knowing the designated repository's fee structure (i.e. one time, "in perpetuity" fee per cubic foot box for objects) and their requirements for deposition is crucial at this stage. Including the costs of both collection preparation and long-term care in the project budget is vital to the future preservation and accessibility of the collection and is tied to the ethics of professional archaeologists. An archaeological fieldwork permit is usually required for projects on U.S. government lands and in most foreign countries. Such permits often identify the organization(s) or institution(s) responsible for the long-term management of the recovered collection, fiscal oversight associated with long-term curation, the appropriate repository to curate the collection, and the permittee's responsibilities for collections-related costs. Although the project proponent may identify the repository where the collection will be deposited, the contractor or researcher needs to secure a formal curation agreement, clearly stating the responsibilities of the depositor and the repository as the custodian of the collection.

Decisions made prior to, during, and after fieldwork have significant ramifications for the long-term care and viability of the archaeological collections. Therefore, archaeologists are directly responsible for the collections they make. The importance of considering collections care and management early in the project design, and the need for a collecting strategy, cannot be

underestimated (Sullivan and Childs 2003:90). Having a firm fill out a curation agreement form prior to excavation is a crucial component to the planning process. By filling out an agreement form, the firm is saying that they agree to the terms and conditions that the repository/museum put in place for them to accept these collections. An example of an agreement form can be seen in Appendix B.

Another essential part of the planning process prior to fieldwork is allocating funds for the conservation of objects after excavation. By doing so, this allows costs to be funneled into collections that need enhancements and maintenance. An example of curatorial fees is from the University of Wyoming Archaeological Repository (<http://wyoarchaeo.state.wy.us/index.php/about/uwar/curation-guidelines-and-fee-info>):

**Curation Costs**

Standard Box Fee	\$1000.00
One-half Box Fee	\$500.00
One-quarter Box Fee	\$250.00
Accessioning Fee	\$40.00/hour

However, it is difficult in archaeology to be able to predict exactly how much will actually be excavated, and the vast amount that will be processed and utilized when going to the lab.

Stage 2 entails **fieldwork**. Collections are generated when archaeologists remove physical objects from the ground and create associated records to document a project. A project proposal should endeavor to track the recovery and preparation of the objects from the field to the laboratory so that objects are not lost as well as identify objects that may require conservation in the field.

Stage 3 is **processing, analysis, and reports**. The project report and state site file should identify the collection owner and the repository where the collection is curated and include general information about what, if anything, was sampled or removed for destructive analysis. As Andrew Christensen (1979:162) noted in *The Role of Museums in Cultural Resource Management*, no archaeological report comes close to presenting the potential information contained in materials excavated from a site. Any report is a first approximation that can be improved and expanded as new techniques and new theories are developed.

Stage 4 consists of **curation preparation**. Archaeologists are responsible for properly packing, labeling, and cataloging artifacts and associated records according to the standards of the designated repository and then delivering the collection. Proper curation preparation should inform and streamline the curation process thereby decreasing the workload and funding needs of the collection. Repositories generally utilize a cataloging system to more easily track and retrieve collections and may require that certain data be entered electronically prior to depositing the collection. Since curation preparation is the last stage of a CRM project, any problems that arise during the project that require reallocating resources is often felt most by the repository.

Preparing the collection for long-term curation is usually the responsibility of the archaeologist making the collection. Much of this effort is laboratory work that the archaeologist must do before analyzing the materials. Any reputable repository will have guidelines for collections preparation including how materials are to be cleaned, labeled, cataloged, and arranged and the kinds of containers in which they are to be placed. Instructions for preparation procedures and other information about vendors for specific kinds of storage supplies should be obtained from the repository staff. Should any of a repository's preparation guidelines be at odds

with certain specialized analytical procedures, the archaeologist should make the repository staff aware of this problem so that accommodations can be made (Sullivan and Childs 2003:97).

Stage 5 involves **curation acceptance** of the artifacts from the archaeology project. In most cases, registrars and/or collections managers are charged with checking that all necessary catalog information is present, the collection was packed to repository standards in Stage 4, and the collection owner is designated in the accession database or other record. Repository staff will also assess any curation fees incurred up to and during this stage as specified in the curation agreement. This step would also include checking the necessary legal requirements of the collection such as collecting, import, and export permits to ensure that the objects in question have gone through the required legal portals for them to be obtained at the institution.

Stage 6 is concerned with the **access and use** of the artifacts. Access and use for public benefit are the primary reason why collections are made and preserved long-term. Curators decide on access to collections for use in scholarship, exhibits, public programming, and consultation with descendant communities, when applicable. All future uses are predicated on collections remaining accessible to many stakeholders, such as academics and CRM archaeologists, students, tribal members and other descendant communities, museum exhibit staff, interpreters in state and national parks, and the media who publicize archaeology. While some of these stakeholders have responsibilities that fall within other stages of the Cycle, all major stakeholders are linked to collections access and use. Due to a lack of incomplete Curation Preparation from Stage 4, some collections may not be readily accessible when requested for use. Archaeologists who create and study collections and the collection owners should work with the repository curator or other designated employee to promote collections access and use. While often undervalued, collection use for coursework that is focused on reanalysis, training in

curatorial responsibilities, and artifact conservation is a worthwhile endeavor. Further, faculty should encourage students to pursue thesis and dissertation topics with an emphasis on existing collections.

Stage 7 addresses what the **maintenance** of the collections in a repository should entail. Repository personnel conduct physical inventories to inspect collections at regularly scheduled intervals. During these inspections, any conservation needs should be assessed, and ensuing treatments conducted as necessary. For collections owned by agencies or other organizations, this stage is carried out most effectively when the collection owner and repository staff work together to ensure completion. One can achieve proper maintenance of collections by planning and allocating funds prior to the excavation. This part of the process is often overlooked, as many archaeologists do not plan for the initial housing fees of collections, let alone the maintenance and upkeep of these collections. This can also be said for Stage 8 of the cycle, enhancements.

Stage 8 highlights any **enhancements** that can be applied to existing collections within a repository. New collections may eventually need to undergo remedial efforts to extend their longevity or “life”. One type of enhancement is rehousing whereby repository personnel remove objects from acidic field bags and repackage them into archival-quality bags and boxes for long-term preservation and accessibility. Enhancements are infrequent due to limited funding that is difficult to predict during project budgeting (in Stage 1). Enhancements should hopefully be negated if new collections follow the tasks presented.

Within the final process of the Cycle in Stage 9, the topic of **deaccessioning** is introduced. Effective collections management involves preserving collections, which in turn leads to deaccessioning not being needed for new, incoming collections. Such reasons may be



extreme physical degradation; loss of object provenience information that makes it useless for future research, outreach, or exhibition; or highly redundant objects with no research value. In the end, archaeologists should reflect on how well their previous projects followed the Cycle and determine any necessary improvements before undertaking new ones. Careful consideration should be given to engaging the various stakeholders that participate in different, but often overlapping stages of collections management in the archaeological process.

I believe this system can be very beneficial if institutions were to abide by it. The most crucial part of the process begins with the planning prior to the excavation and obtaining the objects. For more adherence, there needs to be better communication between archaeologists and collection managers by issuing guidelines stating what will happen to the objects in the field, during the transition to the lab, while accessioning them into the lab, and finally their long-term care (maintenance, enhancements if needed, and possible research). I believe this process can be achieved by educating archaeologists in the proper collections management for archaeological objects and I will discuss this in greater detail later in the paper.

Managing collections long term is detailed, costly work and funding is limited for the complete Cycle. It is essential to a sustainable process that the project proponents and archaeologists responsible for a new project recognize their legal and ethical responsibilities for a recovered collection and appropriately budget for it. Archeological repository personnel need to work with the professional archaeological community, including government cultural resource managers to do their part in alleviating the curation crisis. The use of a proper Collection Management System (CMS) in Universities and Repositories may be one of the answers.

## **Section V: Collection Management Systems (CMS)**

One major solution to the “Curation Crisis” may reside in the realm of data management technology. Well-designed collections management systems may serve as a way for archaeologists and museum personnel to agree on the efficient, responsible, and practical curation, preservation and accessibility of these collections. Specifically, a well-designed and highly functional collections database management program will provide a tool to improve archaeological collections, and provide a solid, data-rich baseline from which research can be conducted and the educational component of collections can be maximized.

Computerized collections management systems (CMS) serve a variety of functions that facilitate the management of museum collections and documentation. A CMS may be a highly appropriate avenue to alleviate certain aspects of the “Curation Crisis,” as it can streamline the process of information input, access, and retrieval. Collections databases allow users to effectively catalog, access and inventory large numbers of objects and records in an efficient, secure way. They also allow staff to track the location of objects, their loan status, and record physical condition and conservation needs. For archaeological collections, databases can also facilitate research through the documentation of additional contextual information from excavation sites. A CMS enables quicker and more efficient retrieval of information than historical manual card catalog system.

Database management for archaeological collections is somewhat challenging, as it requires a marriage of two disciplines: museum professions and archaeology. It is difficult to determine how to maintain the highest standards in both disciplines simultaneously. Typically, information entered into a collections database, at its most basic level, includes: the accession

number or catalog number, object name, location in the museum, material, dimensions, condition, and provenance.

For a database to contain valuable information on archaeological material, it must also include contextual data. Sullivan and Childs (2003), in their book, *Curating Archaeological Collections: from the Field to the Repository*, argues that basic descriptive and contextual data must accompany a collection if it is to have future research potential. In a collections database, it is therefore significant to enter information including the collector or archaeologist, site and site number, excavation unit, level within the excavation unit, GPS coordinates of the site, an archaeological feature in which the artifact may have been found, and the date of excavation. It is especially significant to record information about archaeological features, such as a fire pit or trash heap, since artifacts in them may differ in significance from other objects collected in the same layer (Miller 1999:29). Not only should these databases incorporate excavated archaeological materials, but they should also include relevant documentation pertaining to these materials.

When deciding on a collections management system there are several attributes to consider. Attributes of a good relational CMS include:

1. Extensive data model of relational tables and fields
2. Feature richness – what can it do?
3. Ease of use
4. Flexibility and customization
5. Data accessibility and publishing
6. Cost
7. Open source
8. Support and longevity

There are several “rules of thumb” concerning data management for archaeological collections. One important point regarding computerized systems, is that no piece of information should ever be entered into the database more than once (Quigley 2010:162). Having a CMS that

is based on a relational database model is important; since once certain pieces of information have been entered, it is possible to link objects to that information in the future without having to re-enter it. This method saves time and effort during the data entry process. The use of a relational database promotes adherence to this rule during the data entry process. It is beneficial to have as much information in the database as possible but then restrict access to that data to those who should not see it (ibid:169). Sensitive information could include anything from the georeferenced site locality to objects or human remains under NAGPRA legislation. Such items can be entered into the database but need to include restricted access depending on the individual working with or searching within the information.

Feature richness is a key component to a good CMS simply because it is the features that will enable better management of the data like georeferencing tools or data cleanup tools, or publishing tools, etc. As Lock (2003, 89) states, “Another main benefit of a relational database is that it allows a user to perform a variety of data manipulation operations and query searches”. By being able to customize a database an institution will then be able to add as much information as they need, and then will be able to share this information with whomever they choose. Most databases incorporate four main components: tables, queries, forms, and reports (Quigley 2010:162). Customization also allows the database to be set up (included, excluded, renamed) with fields that are pertinent to the discipline. Data is stored in tables, which can then be searched using queries. Forms are generated to mimic paper records, thereby allowing the database user to enter data in a clear, visually organized manner. Forms also frequently are used to specify search or sort criteria to be used by predefined queries. Finally, reports allow a user to see the results of a query in an organized fashion (ibid). Manipulating main components such as these tables, forms, and reports allows for a more streamline process for institutions when

digitizing their collections rather than trying to adhere to a CMS which does not have the proper fields needed for said collections.

When dealing with a CMS, ease of use, flexibility and customization are key components. By having a collections management system that is relatively easy to navigate, it becomes simple for staff to be trained, and takes a less time associating an employee with the database. By saving time on navigating the database, more objects can be entered into the CMS. This in turn increases productivity and will help increase accessibility of these collections. Flexibility and customization are crucial as no two collections are the same and each institution will have its own needs.

In order to allow a database user to successfully access information about the collections, terminology control comes into play. According to most collection's managers, it is important to choose a single term to describe an object. Many collections databases contain authority lists, which contain a list or thesaurus of terms that can be used in order to control and standardize vocabulary. A museum working on cataloging archaeological materials should consult a lexicon appropriate to the collection at hand.

Archaeology as a discipline is concerned with interpreting objects in their cultural contexts, often in a complex and multifaceted manner. Alternative ontologies, or other ways of conceptualizing and organizing the archaeological knowledge domain, must be better represented in our databases if we are to truly engage with multiplicities of meaning (Labrador 2012:241). Typically, an artifact catalog only describes one facet of an object. For instance, an artifact is either a brass point or a glass bead; it's not both (ibid:240). However, this approach limits archaeological interpretation. It would be more beneficial for archaeological research to structure a database to contain a series of relationships between an object and its attributes. There

are multiple ways of classifying and describing an object, all of which should be contained in a database in a clear, consistent, and standardized manner.

Collections management systems also have the potential to increase accessibility to archaeological collections. The integration of all the data for an organization within a database system has many advantages. First, it allows for data sharing among employees and others who have access to the system. Second, it gives users the ability to generate more information from a given amount of data than would be possible without the integration. Increasing accessibility to the outside world, the collections gain greater research value, simply because researchers now know that these collections exist and are readily available for them to be studied. Increasing the accessibility through digitization, could in turn lead to the possibility of more funding, which is crucial when dealing with collections.

In managing archaeological collections in a collections database, museums need to consider not only how to manage these materials from an administrative point of view, but how they can meet the needs of researchers, educators, and even the general public. Museum professionals need to act in collaboration with archaeologists, to make sure that these collections are made accessible and available. By keeping the needs of archaeologists in mind, museum professionals can act as proper stewards of these archaeological collections and help to bring their research potential to light. The process of cataloging and entering data into a database greatly influences how we see our data and how we predetermine future modes of access and interpretation (Labrador 2012:239). The argument is that archaeologists can play a large role in shaping the research potential of archaeological collections simply by cataloging and managing a database. Museums suffering from the “curation crisis” may greatly benefit from this type of

collaboration with archaeologists as they attempt to catalog and perform data-entry on the collections.

Cost could be the defining factor when choosing a CMS. Smaller institutions such as, state funded repositories and smaller county museums, would not be able to afford high cost systems as opposed to larger institutions, who have more funding for digitization projects and their collections. Funding is already an issue within museums, so being able to find a database that has a relatively low cost and the attributes one is looking for is key.

Open source refers to a program in which the source code is available to the public for use and/or modification from its original design free of charge, i.e., open. The rationale for this movement is that a larger group of programmers not concerned with proprietary ownership or financial gain will produce a more useful and bug-free product for everyone to use. Having an open source CMS goes along with being able to customize the database to an institution's needs. When choosing a collections management system, the amount of support that the commercial database offers should be weighed heavily. When working with a CMS, it is important to know that there will be help, and who can be contacted when an issue arises. Having a database that is scalable; meaning that it can be expanded to meet the changing needs of an institution and having one that can grow along with your collections, is crucial when justifying which database best suites your needs.

### *Justifications of a Collections Management System*

Funding becomes an immediate consideration with regards to database selection, installation, and maintenance. Automation requires long-term maintenance of both the software applications and the data gathered. Maintaining a database of any type requires upgrading the application software as new technology develops and/or migrating all existing data to a new

application as a repository develops new data management needs (Sullivan and Childs 2003: 105). However, most museums seem to agree on the notion that the functions and features of databases far outweigh the costs. The goal is to make archaeological data available in order to promote the use of collections for research. Museums that make use of a collections database increase the accessibility of their collections to researchers and the public, and as a result, they are not only more equipped to carry out their missions to cater to the public but are advocating for themselves and demonstrating their value as institutions that serve a greater good.

Collections databases allow collection managers to inventory and describe huge numbers of items and related records, to quickly retrieve basic descriptive and storage information, and to find items in storage. These information management capabilities improve collections accountability and allow for better budgeting of future collections, including more efficient inspections, routine conservation work, and basic equipment needs.

As part of my research on this crisis I spoke with several individuals in the Curation field. Barbara H. Magid, IT Coordinator for Archaeology at the Alexandria Archaeology Museum, talked about the importance of having a proper CMS for archaeology. She stated that over the past decade the Museum has used several different databases, including the current database created in Access. The Access database is based on a mainframe SPSS database created by her predecessors in the 1970's that used numerical codes and had four separate tables for ceramics, glass, miscellaneous finds and faunal materials. When they created the Access database, they preferred to keep the project in house rather than to use a commercial project, as they could exercise control and make changes themselves as needed. But now, more than a decade later, the database is badly in need of modernization (Magid 2019). After conversing with Barbara Magid,



it is clear that institutions are searching for new collections management systems that will fit their needs and wants, to better care for their collections.

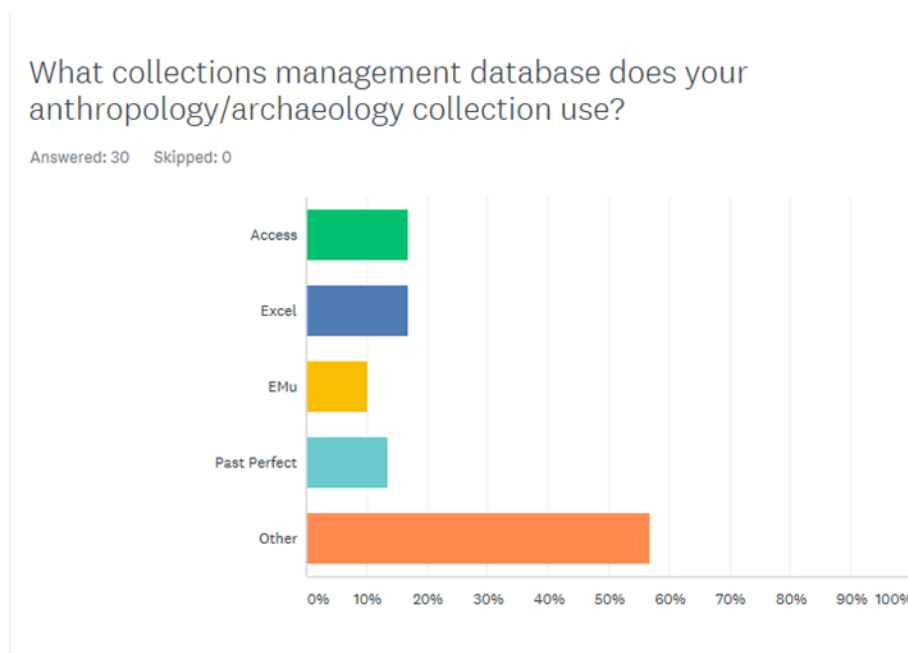
One might believe that creating and operating an in-house database is a good idea, when in reality it has many pitfalls. When dealing with an in-house CMS, there can be a possible loss of institutional knowledge about the development of the system itself through a lack of community standards and input from others outside of your institution. When running, maintaining, and possibly enhancing a database, it is important to gather the opinions of other individuals/institutions because collections care should be standard. Another downside to operating an in-house CMS is that they are not cost effective in the long run. A fully managed database-as-a-service is the consistently better value due to management costs. It is cheaper to hire a company for their management expertise rather than having in-house management. The cost of expertise required to operate databases always constitutes the largest share of total costs.

## **Section VI: Archaeology Database Survey and Results**

To better gauge the needs and wants for collections databases, I developed a survey that was sent to archaeologists and archaeological institutions within the United States. I wanted to gain a better understanding of what is being used in repositories and institutions, how well these systems function for archaeology, what the needs and wants for archaeology CMS's entail, and to evoke a discussion on the potential use of Specify software for archaeology collections. There were a total of 31 responses to my survey. The responses to the survey varied in their demographics with individuals responding from universities, museums, repositories; ranging from the University of Wyoming Archaeological Repository, an Archaeology firm in Colorado, Anthropology department in New York, Arizona State University, State Historical Society of North Dakota, South Dakota State Historical Society, Wyoming State Historic Preservation

Office (SHPO), Gault School for Archaeological Research, Indiana University, and Oklahoma University (see Appendix C). The size of the collections who responded varied from housing over 15,000 to 300,000 catalogued items. The number of questions in my survey numbered ten and the types of questions that were asked ranged from multiple choice to text box form where the individual taking the survey could write out their response and go into detail about the type of CMS they use, why, if they are satisfied, etc.

Question 1 asks:



PastPerfect and KE-EMu show that they are not well “suited” for archaeology collections, with only 13% and 10% respectively, answering that they still used these databases. The ‘Other’ category had a response of over 50% for collections management databases for their archaeology/anthropology collections. When asked to go into further detail if answering ‘Other’ for this question, respondents indicated Re: discovery as the CMS they are currently using.

## Question 2:

If using an Art based database, what fields/table relationships are lacking that are necessary for anthropology/archaeology?

Answered: 20 Skipped: 10

**RESPONSES (20)** WORD CLOUD TAGS (0)

Apply to Selected ▾ Filter by tag ▾  🔍

Showing 20 responses

the types of material associated to the site. If there is field notes, photographs of the site/artifacts, burial records, etc.  
1/25/2019 3:43 PM [View respondent's answers](#) [Add tags](#)

N/A  
1/25/2019 2:50 PM [View respondent's answers](#) [Add tags](#)

There are many fields. Some quite useless. It was created by someone with no knowledge of archaeology.  
1/17/2019 11:20 AM [View respondent's answers](#) [Add tags](#)

A pertinent response, “There are many fields. Some quite useless. It was created by someone with no knowledge of archaeology.” I agree with this statement due to my personal experience with PastPerfect in their “archaeology” collection object forms. I have encountered the issue of there being a lack of a “Culture” text box/pick list, along with a “Geographic Region” text box/pick list. The history and art portion of PastPerfect include a ‘Culture’ portion. Why did this aspect get overlooked in the archaeology portion of the database? In my opinion you cannot have archaeology without culture. Without knowing the culture of an archaeological object, the object has no “identity”. One also needs to know the geographic region from which an object comes from. This could help determine which culture the object possibly came from. Not having these fields already within the database can cause an issue when searching key terms. By having a culture or geographical region already set in place, this makes it easier for researchers and staff to search objects within these fields.

Another pertinent response to Question 2, “My institution is currently using MimsyXG, which was designed primarily for art and history collections. We had to tailor fields to better accommodate excavation data (categories such as locus, excavation unit, depth, etc.), data concerning faunal material and ecofactual samples (taxonomic identification, anatomical element, sampling methods, etc.), and fieldnotes gathered at the same site over multiple seasons.” When researching MimsyXG, I came to find that it is owned and operated by Axiell, who recently purchased and took over the operations of EMu. The website states that MimsyXG has a particular strength in cultural history and multi-disciplinary collections.

Similar to Question 2, Question 3 asks:

If using a Natural History based database, what fields/table relationships are lacking that are necessary for anthropology/archaeology?

Answered: 22 Skipped: 8

RESPONSES (22) WORD CLOUD TAGS (0)

Apply to Selected Filter by tag Search responses

Showing 22 responses

<input type="checkbox"/>		1/25/2019 3:43 PM	<a href="#">View respondent's answers</a>	<a href="#">Add tags</a>
<input type="checkbox"/>	Nothing that can't be created, but the database is structured around DarwinCore metadata that don't quite apply to archaeology collections.	1/25/2019 2:51 PM	<a href="#">View respondent's answers</a>	<a href="#">Add tags</a>
<input type="checkbox"/>	N/A	1/25/2019 2:50 PM	<a href="#">View respondent's answers</a>	<a href="#">Add tags</a>
<input type="checkbox"/>	The version of EMu we purchased was initially created for an anthropology museum, meaning most of the fields necessary for our anthropology collections were already available.	1/25/2019 2:06 PM	<a href="#">View respondent's answers</a>	<a href="#">Add tags</a>

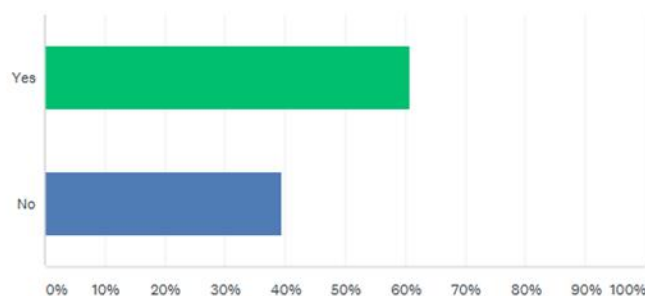
One response stated, “Nothing that can’t be created, but the database is structured around Darwin Core metadata that don’t quite apply to archaeology collections.” Darwin Core includes a glossary of terms (in other contexts these might be called properties, elements, fields, columns,

attributes, or concepts) intended to facilitate the sharing of information about biological diversity by providing identifiers, labels, and definitions. Darwin Core is primarily based on taxa, their occurrence in nature as documented by observations, specimens, samples, and related information. If a natural history-based CMS would like to facilitate archaeology collections, such as Specify, they would need to either allow the separate institutions using Specify to use their own nomenclature, or to use a specific nomenclature set in place. This is an issue when dealing with archaeology specifically because there is no one set of nomenclature to use when describing objects.

When asking whether or not the users are satisfied with their current database system, 60% stated yes, and 40% stated no.

Are you satisfied with your current database system?

Answered: 28 Skipped: 2



When asked what an institution would want for a customizable database, several people answered with quite a bit of information. One responder would like a database that links with GIS. Hundreds of thousands of organizations in virtually every field are using GIS to make maps that communicate, perform analysis, share information, and solve complex problems around the world. GIS technology applies geographic science with tools for understanding and collaboration. It helps people reach a common goal: to gain actionable intelligence from all types

of data. Another responder would like to have better interconnectivity between excavation context, specialist analysis, and finds storage. Finally, a responder would prefer a system that incorporated both object-centric data and site record management features. One big request that responders stated several times is that the database needs to be constructed by an archaeologist or an archaeologist needs to be consulted when designing the database.

When asking responders whether or not they have heard of Specify, only 40% are aware of the database software. I asked responders if they would consider switching to Specify if it could accommodate their needs and wants for archaeology/anthropology collections and only 26% of users stated they would be interested in switching to Specify, with 74% choosing no. This is due to the fact that Specify currently only handles natural history collections. I believe that the responders do not realize that Specify can be adaptable to different collections and different disciplines. A responder stated, “Our collections span various organism groups and formats, including artifacts. We are looking for a system that is flexible and allows us to connect our material.” Specify can be interdisciplinary, linking one discipline to another, along with linking objects together as well (see Appendix D for all survey results).

After analyzing the results of the survey, I have come to the conclusion that Specify is not well known by archaeologists. They do not know the benefits of Specify or how customizable it is for their institution’s collections. Specify needs to educate the archaeology world and start the process of funding for a proposed data model. By doing so Specify will gain more clients. Creating and developing a standardized lexicon specifically for archaeology is key for a CMS to gain popularity. By doing this, it will help the push for digitizing collections. I also found that responders desire a database that is interdisciplinary: have the ability for the institution to link objects and records across different disciplines. Cost is also a considerable

factor when choosing a collections management system. A database needs to be affordable for not only larger institutions with large collections, but also smaller institutions with lower budgets.

### **Section VII: Commercial Collections Management Systems**

Collections management systems have the potential to alleviate the “curation crisis” in a variety of ways. First, they may facilitate the accessioning and cataloging process, thereby allowing museums to maintain intellectual control over their collections. Most collections management systems are based on a relational database model, so that, once a certain piece of information has been entered, it is possible to link objects to this information in the future without having to enter it repeatedly. This method saves a great deal of time and effort during the data entry process.

In addition to facilitating the cataloging process, collections management systems also have the potential to increase accessibility to archaeological collections, which in turn may greatly alleviate the “curation crisis.” Collections and their associated documentation are not static objects. Ongoing research, on both the collections and their broader documentary and disciplinary context, energizes and informs subsequent research and adds to the value and utility of those portions of the excavated or collected archaeological record already curated and available for study (Sullivan and Childs 2003:38). Improving the accessibility of these objects, particularly through a collections management system, may encourage the ongoing research of previously excavated materials, renew their untapped research potential, and dissuade archaeologists from excavating new sites when old materials have yet to be fully explored and interpreted.

In an interview with Dr. Tim Thomas, Senior Lecturer in Archaeology, he stated that the University of Otago does not have a set database or CMS, and the majority of the staff uses Excel spread sheets. However, the department has been “writing” a new database for the past several years called X Men. This database utilizes barcodes both in the bags of artifacts, and on boxes in which these artifacts are housed. The Archaeology department is hoping within the next ten years to officially have a proper database to work with for Collections Management.

Unfortunately, unlike natural history collections that have developed uniform cataloging across museums, there is no such coordination for archaeological collections research (Keene 2005:57). It is difficult to create uniform cataloging standards for archaeological collections, as materials pertaining to each culture are distinct. Most commercially available databases were not designed for archaeological collections and are not optimal for documentation of archaeological data.

Current “databases” being used today for archaeology collections include Excel, Access, PastPerfect, EMu, and Re:discovery. I put “database” in parentheses because some of these technically cannot be categorized as a database but are being used as such because there is no cost to the institution and there is more readily available proficiency in working with these programs, such as Excel and Access. Excel is described as a “spreadsheet that features calculation, graphing tools, pivot tables, and a macro programming language.” The keyword to focus on when discussing Excel is ‘spreadsheet’, this should be an indication that this is not a suitable format to be digitizing your collection’s information. Access is described a bit better as being a “database management system that combines a graphical user interface and software-development tools.” Although Access is customizable, it is not open source or relational, which are key issues when dealing with a CMS.



EMu is a collections management system that is considered applicable and relevant to natural history collections but also works well for archaeological collections. Unlike PastPerfect and Re:discovery, whose organizational structure is based on the type of collection, EMu has one cataloging module, broken down hierarchically according to discipline. EMu's archaeology cataloging is just part of its Cultural History Cataloging module. While the cataloging module in EMu is generalized to incorporate a wide variety of object types, it is adaptable to the specific needs of the institution's collection. It also ensures that the same management processes can be applied within each discipline. According to EMu, one of the main advantages of its cataloging module is that storing "the data of multiple disciplines in the one Catalogue facilitates cross-discipline research as it's possible to search across the entire collection and draw or discover associations between disparate but related items.

In terms of lexicon and terminology, EMu supports the Getty Art and Architecture Thesaurus (AAT), and the Library of Congress Subject Headings (LCSH). The National Museum of the American Indian uses EMu as its collections management system. Due to its high cost for installation, management, IT support, and maintenance, EMu is not a viable database for smaller institutions who do not have large enough budgets to cover these costs.

It should be stated that EMu has recently been bought out by Axiell. Axiell Group comprises four business areas – Axiell Public Library, Axiell ALM (Archives, Libraries & Museums), Axiell Education and Axiell Media – which together deliver innovative solutions to the cultural sector globally. It also serves its clients with Library Logistics services and products, as well as Vital Records Management systems.

Re:discovery is a CMS that has a wide range of benefits for museums with archaeological and ethnographic collections. It was first developed in order to manage the archaeological

excavations conducted at the Thomas Jefferson Foundation's sites as Monticello and Poplar Forest. In 1997, the National Park Service chose to use this software to manage collections of over 300 sites. Similar to PastPerfect, Re:discovery makes use of several cataloging screens, including Cultural Resources, Natural History, Archaeology, and Archives. At a significant extra cost, Re:discovery has a distinct Archaeology Module; this module, although costly compared to PastPerfect, documents all site information, from the general location down to the individual artifacts. Re:discovery provides particular support to clients associated with a National Park Service (NPS) site, which is highly advantageous for sites containing archaeological material striving to meet NPS standards. It has a rare NAGPRA feature that allows collections managers to record inventory information about sensitive materials pertaining to NAGPRA, including human remains and funerary objects, and track how museums can comply with NAGPRA. It has a terminology and related dictionary; users can choose between the Art and Architecture (AAT) or the Revised Nomenclature for Museum Cataloging. Re:discovery is not up front about their costs when trying to figure out if this database is sufficient enough to handle your collections. One must enter all of the institution's information and what you will be needing from the CMS and then get an estimate in an email.

A main concern regarding these commercial databases pertains to the lexicon and terminology embedded in the software. As Theresa Miller (2012:53) explains, "Most systems currently available offer some form of terminology control or flexibility, but few offer both". While many of these collections management systems have features that incorporate archival material and documentation, there is little indication that it is possible to connect these archival materials to archaeological objects in a relational database so that they can be properly managed in conjunction and interpreted in research.

Two commercial CMS's that I will be comparing are: PastPerfect 5.0, which is an art-based CMS and Specify 6.0, which is a Natural History based CMS. I chose to compare these to collections management systems because I have been working in both databases during my time at the University of Kansas and have identified the pros and cons to each. While many institutions currently use PastPerfect as a database for their archaeology collections, it has many negative aspects which do not fit the attributes of a good CMS which I previously described. I am suggesting Specify as a viable alternative even though it does not currently support archaeology, but with some community support – both logistically and financially – could work given the opportunity.

#### *PastPerfect 5.0 (PastPerfect Software)*

PastPerfect is a collections management system that helps manage and control archaeological collections at a relatively low cost. Fortunately, this software's entire user guide is available to the public online and a trial version of the software is available for free download, allowing for an in-depth analysis of how this CMS might help to alleviate the "curation crisis." Museums interested in this software can explore its features at no cost and learn how to use it for functions pertinent to archaeological material.

PastPerfect has a 'unique objects' cataloging module that contains several different tabs: *Archaeology, Art, Geology, History, and Natural History*. This allows a museum to manage a variety of different collections. It is also one of the few commercial databases that have an Archaeology-specific cataloging tab. This tab allows for additional information to be entered on an object. The top portion of the cataloging module remains the same for all cataloging tabs, and allows users to enter the object ID, object name, other name, other number, old number, accession number, home location, date range, and catalog and status information. The

*Archaeology* tab also has a section in which a long description can be written about the object. It allows the user to also enter archaeological information in areas titled Collector, Excavated by, Identified by, Collections date, Excavation date, Identification date, Site/Site number, Unit, Level, Stratum, Feature, Material, Dating Method, Provenience, and X, Y, and Z Coordinates (Please see Appendix E).

PastPerfect has several unique features. The first feature is the Repatriation screen in the Other Views section. In this section, users can enter information pertaining to repatriation including Repatriation Type, Authorized by, Authorized Date, Date of Notice in Federal Register, Claimants, Handling Requirements, Disposition, and additional notes. Users can also indicate that an object has been repatriated in the Status view. Another feature, located on the software's main menu, is the Site & Localities section. This section allows additional site information to be added and linked to catalog records. Once a Site Name has been entered for a catalog record, it will link this object to the site and its associated information. PastPerfect is therefore capable of relating objects from the same provenance location at an archaeological site to one another for research purposes. In addition to these features, one of the main benefits of this CMS is that it accounts for the potentially sensitive nature of site information; PastPerfect allows a museum to implement restricted access to site record information in the Sites & Localities files.

In the Sites & Localities section, users can enter a variety of information including Description Range, Section, Quarter, Township, County, State, Country, Prime Meridian, Maps & Publications, Latitude, Longitude, elevation, and Notes. In addition, this section allows the user to enter information on the site's position based on GPS readings and check off whether these readings were taken using a Global Positioning System reading. However, the database

does not allow these GPS readings to be entered directly from the device on which they are recorded, such as a Total Station. As a result, these readings need to be manually entered into the database, when it would be far more efficient to allow all of these numerical values to be transferred digitally from a device on which they have already been recorded. However, these features are not necessarily unique to PastPerfect; most commercial databases understand the significance of collections research and enable a variety of search functions to facilitate these investigations. The PastPerfect Research section and Online Program attempt to make the collections accessible for research once the cataloging process is complete, which may assist archaeologists conducting research on processed collections in museums.

While PastPerfect is highly flexible in certain regards, it has a great deal of limitations when it comes to assisting with research endeavors. While an archaeologist can perform search queries on previously entered material, this CMS does little to assist with the process of interpretation and evaluation of the archaeological material itself. It simply allows researchers to know and understand what types of objects are available in the collection; there is little indication that PastPerfect allows archaeologists or other researchers to analyze their search queries in a meaningful, interpretive manner. Their research may begin with the collections management system, but access to the physical objects may be necessary when research needs to become more in-depth.

In terms of dictionaries and terminology control, PastPerfect lexicon is based on the latest standard, *Nomenclature 3.0 for Museum Cataloging*. In order to improve consistent terminology during the data entry or cataloging process, the software checks newly entered objects names and makes sure the terminology coincides with its preapproved list of terms. While the software attempts to make use of standard terminology, PastPerfect also allows a term to be added to the

dictionary if need be. However, it does not allow a user to categorize added terms, thereby essentially making the addition useless. The biggest issue with PastPerfect is that there is no lexicon for Archaeology. Each institution must make its own, so terms are not standardized universally, and they cannot be categorized. Since a large portion of managing an archaeological collection is also maintaining its associated documentation, this aspect of PastPerfect is highly disadvantageous for archaeological collections. Without proper maintenance of the archaeological records, the objects lose a great deal of significance and research potential.

From my own experience with PastPerfect, I have found the Collection Object Form on the Archaeology tab is lacking a “Culture” and “Geographic Region” text box/pick list. This is problematic as you cannot have Archaeology without designating a geographical region, let alone a culture; these give the objects at question an identity, if you will. Another issue concerning the lack of these fields is that researchers will not be able to simply run a query within PastPerfect for objects pertaining to certain cultures and geographic regions. No researcher will be willing to take the time to muddle through hundreds or even thousands of records; they simply do not have the time.

#### *Specify 6 (Specify Software)*

Specify 6 is a database platform for natural history museum and herbarium research data. It manages species and specimen information for computerizing biological collections, tracking museum specimen transactions, linking images to specimen records, and publishing cataloged data to the internet. It manages the information associated with repository agreements, accessions, conservation treatments, collection object containers, images, and document attachments. With the addition of several key data concepts, Specify can become an effective tool for managing archaeological collections.

Flexibility and customization: Data fields in Specify's form windows can be selected, organized, re-named, and re-sized to suite the curatorial preferences and to eliminate the need for tabbing through multiple data forms. Authority Files: Specify's "Tree" data windows for taxonomy, geography, storage location, provide access to hierarchal data for editing, drag and drop, synonymization, re-parenting, and for discovering linked collection object (Please see Appendix E).

Cost: The Specify Software Project recently announced the Specify Collections Consortium. The Consortium builds on the Specify's software platforms for specimen data processing and continues database technical support services that the Specify Project has provided to the collections community with US NSF grant funding for the last 21 years. Annual membership fees in the Specify Collections Consortium are based on the number of collections for which an institution requires support, the level of engagement they prefer in the Consortium's governance and the amount of technical support services needed. The Specify Consortium has different membership levels and benefits. Some of the Founding Membership-\$40,000/year/Institution benefits include:

- Two permanent seats on the Board of Directors
- Expedited technical issue resolution with direct access to Consortium engineers.
- Priority access to help desk staff and services, including remote login sessions.
- Technical collaboration for contributing code to the Specify source repository.
- Unlimited number of installations, collections, and users.
- Access to consortium database hosting, administration, security, and backup services.
- Priority access to consortium software platforms, tools, and updates.

Full Member - \$5,000/year/collection membership includes:

- A permanent seat on the Board of Directors.
- Direct access to consortium engineers for technical issue resolution.
- Immediate access to help desk support services, including remote login sessions.
- Personalized webinar-style training, as well as access to all other training services.
- Access to consortium database hosting, administration, security, and backup services.

- Preferred access to consortium software updates.
- Unlimited number of software users.

Solutions Member - \$1,250-\$3,000/year/collection membership includes:

- Eligibility for a rotating seat on the consortium Board of Directors.
- Access to help desk support including remote login sessions.
- Customization of user interface forms, and print outputs: labels and reports.
- Legacy data conversion services, including custom scripts and data management.
- Full access to the online forum, help documents, and video tutorials.
- Unlimited numbers of software users.

The last of the memberships is an Associate Member - \$1,000/year/collection which includes:

- A paid seat at the annual Specify Research Summit.
- Help desk support including remote login sessions.
- Access to online forum, help documents, and video tutorials.
- Access to all consortium software tools, features, and updates.
- Unlimited number of software users.

Community support and open-source: Specify is actively supported by programmers who are constantly updating it to add new features and make it more efficient and effective based on user feedback and requests. It is an intuitive program intended to make data entry and retrieval as efficient as possible. Support and customization of Specify is cost effective, allowing the users to make modifications to the database to accommodate their needs. It includes a web interface, allowing the users to put their data online, or at least the parts of the data that the user wants to make accessible to the public. These aspects of Specify make it available to any museum or academic research center with a computer and internet access regardless of budget; meaning that even museums with small budgets can adequately and efficiently document their collections and make the data available to the public.

Data conversion in Specify is also cost effective. Specify offers two ways of transferring data from a current system into Specify. Specify staff can transfer data for other institutions, importing it from any electronic system into the Specify database, or a feature called the



WorkBench allows a user to upload their own data. Once data are in the WorkBench, a user can “map” it, or say what field in Specify a spreadsheet column should enter. For example, the user can indicate that the column labeled “Date” should go into the Specify field called Collection Date.

Specify permits research to be conducted outside of the facility housing the collection by providing a web server interface for controlled access by anonymous public users over the web. Database accessibility over the internet is an invaluable asset to researchers and it opens up the collections to a larger public with controls for privacy and security. Easy accessibility promotes scientific collaboration that would otherwise be difficult because collections may be too distant or difficult to access in traditional ways. Increased accessibility allows for research on issues including tracing migration population patterns and cultural influence from one group on another or studying the introduction of specific artifacts. The software can be readily modified and customized by different users for their specific needs. It allows for adaptation of forms to accommodate the user and the enforcement or restriction of terminology for institutionally consistent data entry. It also supports quick, full-text searches and more structured database queries on relevant search fields.

The more effective documentation of collection object attributes will allow more effective data retrieval of the data as well. Because different forms are used for different object types, users can enter data in the fields relevant to the object they are describing. The effect is that more data can be documented in separate fields, which enables more effective searching and exporting of relevant data for analysis. Collections with data that have been previously inaccessible can be accessed. Specify will allow archaeologists and researchers to search the collections of remote or small museums or academic collections that they may never have been

able to search before. Small museums may only contain a small part of an area's history. In-depth analysis of objects in the collection can be done but comparative analyses are considerably more difficult.

Archaeological projects often include collaborators from a variety of disciplines, including biologists, geologists, paleontologists, architects, zoologists, and chemists. Working on multidisciplinary projects while presenting the advantage of more comprehensive understanding of the materials, can present archaeologists with significant challenges to capturing and recording the information documented in the course of an archaeological project by a variety of multidisciplinary experts. Existing database systems designed specifically for archaeologists currently lack the depth and breadth required to accomplish this goal. Other commercially available database systems not designed with these types of projects in mind are neither user-friendly nor do they offer the capacity to enter and retrieve the complex array of data generated in multidisciplinary studies such as Specify.

Specify will allow archaeologists and researchers to search the collections of remote or small museums or academic collections that they may not have been able to search before. These small museums may only contain a small part of an area's history, but their data may contribute to the research and help answer the investigator's question. Increased accessibility and more comprehensive records allow for investigations such as tracing migration patterns, tracing cultural influence, or the introduction of tools. The level of access and collaboration allows investigators to ask questions of archaeological data that would otherwise not be technically approachable.

Specify also allows for data integration to create merged datasets that can give a broader picture of the development of a region both culturally and biologically and the interaction of the

two. The advantages of Specify are: 1) increased accessibility, 2) interdisciplinarity, and 3) capacity for effective record keeping. The limitations of Specify are: 1) the fact that the model has not been tested with actual archaeological database information, 2) advances in technology that will occur in information representation, database architectures, hardware platforms, cannot be fully anticipated, and 3) software programmers have not yet attempted to use the model to create software. Because of this, the data concept relationships described in the information model may or may not be practical. Specify 6 uses Google Earth to plot localities that have latitude and longitudes recorded in the database. When using GPS to record localities, there are various choices of datum that can be used, which make a difference in where precisely that latitude-longitude point will fall on a map.

### *Summary*

Theresa Miller formed an investigation in 2012 as an MA thesis in Archaeology that determined that Specify could be adapted to effectively describe, catalog and manage archaeological collections. Several significant modifications would be necessary for Specify to become an effective archaeological database management environment. These changes would include accommodation for key archaeologically specific fields and tables in the Specify data model: provenience (provenance), feature, and context, all of which are not adequately implemented in Specify or any existing information system. Even without adaptation, many of the features that Specify offers natural history collections would be advantageous for archaeological collections.

A main concern regarding these commercial databases pertains to the lexicon and terminology embedded in the software. Specify falls short of the ideal because it does not attempt to create, nor does it use a common classification terminology. This allows each

institution to use and enforce whatever system they want. This will facilitate data entry and searching within a given institution by controlling vocabulary. However, without cross-institution standards, searches between databases of different institutions will continue to be problematic.

Miller (2012:53) explains that most systems currently available offer some form of terminology control or flexibility, but few offer both. On one hand it is important for a collections management system to implement a specific type of lexicon, preferable one suited to archaeological collections, in order to maintain consistency and standardization. On the other hand, many of these systems recognize that the lexicon often does not meet the needs of users, and therefore allows them to add terms to the pre-approved lexicon in the first place. It is also difficult to choose a specific lexicon for a museum that contains a wide variety of collections from multiple disciplines. There seems to be a great need in both the field of archaeology and museum studies to solve issues pertaining to terminology in collections databases.

To resolve this problem, the University of Wyoming Archaeological Repository (UWAR) is in the early stages of developing a standardized lexicon/thesaurus specifically for Archaeology. I spoke with Marica Arksey, Collections Manager at UWAR, who reported that they have recently finished their third round of in-house alpha testing and have resent another updated schema to the developers. They will be beta testing within a few weeks and have shared the vocabulary with the State Historic Preservation Office (SHPO) for them to use on their new database application also. Currently it exists only in an excel spreadsheet and in the back end of their editable schema that they will be using/keeping while they hammer out any other vocabulary issues that arise during the first year of use. UWAR will be sharing and posting the vocabulary on their website and soliciting feedback (Arksey 2019).

I will list the Pros and Cons of both PastPerfect and Specify. Even though both of the CMS's have working qualities, there are also downfalls to each.

#### PastPerfect

- Pros
  - Can attach different file types
  - Different data entry forms available in the same database
  - Uses a data dictionary, which can be edited
- Cons
  - Ability to attach images adds more money to the price of the software
    - The ability to attach images costs the user an additional \$296-\$370 on top of the cost of the basic PastPerfect package.
  - Anyone can edit the data dictionary
    - Does not allow for categories to be edited. If a term is added to the object description list, the term is not categorized, nor can it be, essentially making the addition useless. You can add a term for pottery but you can't establish that it is a pottery term or associated with statues not vessels.
  - Cannot associate collection objects with other objects
  - Did not consult an archaeologist when creating PastPerfect for archaeology

#### Specify

- Pros
  - Can attach different file types
  - Can associate collection objects with other objects
    - Can be interdisciplinary
  - open sourced
    - Software free for anyone to install
    - Code used to create it is freely available to anyone interested in reviewing or modifying it
  - Data conversion is relatively low in cost
    - Transferring data from current system into Specify
  - Relational
  - Can personalize database for your institution/discipline
    - Can change/add/subtract fields on all forms, tables, nomenclature, trees, etc.
- Cons
  - Needs funding to complete and implement a database by Specify specifically for archaeology collections
  - Needs to get name out there for archaeologists to know that it can be customized to their needs/wants
  - Cannot anticipate every datum that might be desired.
    - If every datum was recorded in a different field, data entry and search would be clumsy to the point of being more of a burden than an advantage
  - Proposed data model by Theresa Miller does not attempt to create, nor does it use a common classification terminology

- Allows each institution to use and enforce whatever system they want to use, whether it is commonly used (Getty Museum's Art and Architecture Thesaurus) or an institutional one

### **Section VIII: Push for Training and Education**

Few archaeologists have formal training in managing collections. Courses in collections management more typically are taught in museum studies programs than in anthropology departments. As S. Terry Childs states, "I don't remember any courses on the curation of archaeological collections, but I do remember artifacts from various professors' and graduate students' excavations that were boxed and stacked on shelves in the lab, in closets, and under desks...for years." Even when anthropology departments offer courses in museum work, these classes tend to focus on developing exhibits rather than managing collections. Although archaeologists do not need to become experts in collections management, a working knowledge of basic principles, issues, and terminology is useful for effective communication with repository staff and for being sensitive to their concerns, policies, and procedures (Sullivan and Childs 2003:59).

While doing research at the Otago University in New Zealand, I interviewed Dr. Tim Thomas, senior lecturer of archaeology. I asked if any collections management courses were offered to undergraduate, graduate, or PhD students. His reply was that at the time there were no courses that were strictly for collections management as the department of anthropology and archaeology at Otago University were understaffed. Dr. Thomas stated that he implements some collections care within the methods courses that he teaches along with implementing it in his field school. He mentioned that the university was evaluating a collections management course along with the zooarchaeology course which would allow students to have a hands-on experience

with collections care. He also stated that many if not all graduate students work within the archaeology lab to gain experience.

After meeting with Dr. Thomas, I was very interested in creating a syllabus for a class on the Introduction to Archaeological Collections Management (Please see Appendix F). I felt the need to create this syllabus, because of the lack of education that archaeology students have when it comes to proper care for archaeological collections. The goal of the course is to teach students about proper handling and care of archaeological materials in a repository environment. The students will be expected to develop these skills through participation in an inventory project completed by the end of the course. Students will also gain hands-on training using database tools (any database available at the institution) and learn how to manage both paper and digital archives. Course topics will focus on larger issues of collection accessibility, preservation and conservation, facilitation of future research, curation and repository policy information, issues pertaining to working with various levels of government and non-government entities, curation accountability, and ethical concerns. The combination of readings, classroom discussion, and practical application gives students a solid introduction to archaeological collection management.

The students will have a required text, Volume 6: *Curating Archaeological Collections: From the Field to the Repository*, by Lynne Sullivan and S. Terry Childs (2003). This text breaks down the proper protocols and what-to-dos for the easy transition of archaeology objects from the field to the repository. Lynne P. Sullivan is a curator of archaeology at the Frank H. McClung Museum and research associate professor in the Department of Anthropology at the University of Tennessee. S. Terry Childs is an archaeologist in the Archaeology and Ethnography Program of the National Park Service in Washington, D.C. The book is part of The Archaeologist's Toolkit, which is an integrated set of seven volumes designed to teach novice archaeologists and

students the basics of doing archaeology, “The Toolkit is essential for anyone working in the field and ideal for training students in classrooms and field schools.”

To have a well-rounded course, some projects that the students will be assigned include a mock mission and scope of collections statements, and a disaster plan for a randomly chosen disaster event. A final presentation and project based on the inventory and accession of a portion of an archaeological site housed at (desired institution) will be required. Concerning the final project, students are expected to re-house, stabilize, inventory, accession, and complete data entry into the archaeological repository (desired) database. Students will then form a paper detailing how their project relates to the larger class topics of proper housing, handling, storage, and collection ethics. The course will discuss topics from the “Curation Crisis”, proper labeling and handling, material culture: stone and glass, bone, ceramic, etc, disaster planning, human remains and NAGPRA, archives, photographs, and the future of collections management. It should be made clear that this syllabus can be customized for the institution that desires to use it. One can focus more on certain topics rather than others or create different assignments as they wish.

While in New Zealand I also had the opportunity to interview several directors at the Otago Museum. Robert Morris, who is Director of Collections, Research, and Education at Otago Museum, has completed his education in classical and Near Eastern archaeology, as well as industrial archaeology and heritage management. Anne Harlow, who is the Collections Manager of Humanities, has education and training in art history and cultural anthropology, along with museum studies. Both Morris and Harlow indicated that the museum brings in students from Otago University to help label and catalogue the artifacts/objects to gain hands-on experience.



Another option for educating archaeologists in proper collections care is seminars, such as the ones set up by the National Preservation Institute (NPI). NPI was founded as a nonprofit organization in 1980 with the purpose of offering continuing stewardship of cultural heritage. NPI serves a broad spectrum of individuals and groups, from both government and private sectors, by providing professional training seminars in historic preservation and cultural resource management; specifically for Archaeological Curation and Collections Management. The seminars are conducted by Barbara H. Magid, from the Alexandria Archaeology Museum, and Emily Williams, associate professor in Archaeological Conservation at Durham University. Barbara and Emily both have vast knowledge and experience of archaeological curations and collections management. Magid states that the seminars focus on becoming familiar with principles and methods for curation and management of archaeological collections and reviewing the role of conservation in the field and in the laboratory for archaeological projects. Topics include responsibilities under federal regulations (36 CFR Part 79), archaeological standards, collections policies, costs of curation, storage facilities, proper housing of collections, archaeological laboratory procedures, cataloging systems, and educating the public with archaeological collections.

I reached out to Barbara Magid from the Alexandria Archaeology Museum because of her extensive background in archaeological collections care and management, as well as her work in creating a database for archaeological collections at the institution. When contacting Magid, I asked her view on the importance of educating archaeologists in collections care. Her response:

“Clearly, the principles of collections care must be understood by archaeologists at all levels, in order to preserve collections for future research (and exhibition when appropriate), and to not perpetuate the dire conditions that resulted by poor practices and storage conditions in the past. Field archaeologists need to handle artifacts in a

responsible manner and need to identify repositories where the collections will be stored and follow the repository standards for care and packing of the collection. Much has been written about the horrible conditions that resulted from generations of archaeologists who didn't know how to care for collections and who didn't have a plan for permanent storage. In 1989 the National Science Foundation had a grant program for storage of anthropological collections, meant to deal with past deficiencies but not to deal with problems perpetuated after that year. Now we are supposed to be aware of regulations and standards regarding the care of collections" (Magid 2018).

My conversations with Barbara Magid and Emily Williams conclude that there are options for archaeologists after formal education. It is crucial that archaeologists have knowledge of everything that is entailed in an archaeological excavation, and what is required of them to care for excavated materials. In order to ensure these artifacts can be utilized in the future, archaeologists need to better plan for the preservation of not only the artifacts, but the sites themselves.

### **Section VIII: Conclusion**

Basic archaeological collections management should be a required course in graduate archaeology programs, so archaeologists learn their responsibilities and understand the long-term impact of their actions. By obtaining a basic knowledge and understanding of proper collections management, archaeologists can ensure that objects get the best possible care in the field, which ensures the longevity of their research potential. There is a need to increase the number of curatorial jobs in repositories and in large cultural resource management firms to handle the significant workload. Guidelines written for curation standards should reflect the voices of both the repository and CRM professionals. Open and frequent communication is essential to make sure every project and transfer of collections runs as smoothly as possible. Archaeologists need to be involved in developing and updating collection management policies because these policies can significantly affect research efforts. At the same time, curators need to be involved in the

development of archaeological search designs and collecting strategies. An archaeologist setting up a curation agreement minimally should expect to:

- Provide the repository with some detailed information about the collection;
- Await an acquisition decision;
- Pay curation fees, especially if it is a CRM project;
- Prepare the collections according to the repository's guidelines;
- Include records with the artifacts and specimens;
- Deliver the collection to the repository at a mutually arranged time;
- Receive written confirmation from the repository that the curation agreement is in effect.

As more archaeologists learn about curation, more repository staff members understand the multifaceted significance of the collections under their care, and more people become aware of the irreplaceable representation of their heritage in collections, the number of advocates for quality care of collections grows and the collective voice becomes stronger. The ability to garner needed resources also will grow with a strengthened voice. To be strong and effective, all groups and individuals with interests in curated collections must respect each other's roles and views. As Sullivan and Childs (2003), "The curation crisis is much more than a storage problem. It's about what our progeny will inherit. How they view us as caretakers of their heritage, from the field to the repository, and into the future"

Archaeology as a science of description, analysis, and interpretation is not restricted to field excavation activities. It is a process that begins before the archaeologist begins to collect and continues after an excavation is completed. Systematic archaeological collections with accompanying documentation are created to produce and preserve information for the purposes of research and interpretation. By filling out proper legal paperwork, agreement forms, and accessioning forms, archaeologists and collections managers ensure that objects will obtain the best care not only in the field, but once they arrive at the repository.

Since documentation of objects and transactions is, along with object care, the central task of a collection management staff, a CMS is a backbone to the collection. Choosing a CMS is one of the most important decisions that a museum or department within a museum will make, whether it is to choose a new CMS or to transition from one CMS to another. The CMS will be used every day for almost every aspect of collections management, so it is important that all possible factors are considered in making the choice, from usability to cost. The committee making the final decision should consider the short term and the long-term impact of their choice, as the new CMS should be able to serve the museum or collection for the foreseeable future. A unified CMS can make museum collections run much more smoothly. As importantly, a unified CMS facilitates global data sharing, which is the central goal of modern collections. Any museum transitioning to Specify or any other new CMS will experience challenges, but the challenges can be outweighed by the successes.

**Appendix A: University of Kansas BI Accessions Policy & Forms**

**KU Biodiversity Institute – Specimen Acquisition Checklist**

Name of Provider: \_\_\_\_\_

Division: \_\_\_\_\_

Date: \_\_\_\_\_

***Type of Specimen Transaction:***

- |  |                                      |
|--|--------------------------------------|
| <input type="checkbox"/> Original collection by KUBI staff/student/associate | <input type="checkbox"/> Gift        |
| <input type="checkbox"/> Exchange  | <input type="checkbox"/> Bequest     |
| <input type="checkbox"/> Purchase  | <input type="checkbox"/> Abandonment |
| <input type="checkbox"/> Contract  |                                      |
| <input type="checkbox"/> Other (e.g., salvage; explain) _____                |                                      |

	Yes	Applied	Doc.	No	Not
		For	Attached		Applicable
A. Do you have the source country's:					
1. collecting permit(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. the source country's export permit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. the US "Declaration for Importation" form 3-177?	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Have you notified US Fish & Wildlife of your port of entry?	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
C. Is the source country a CITES signatory?	<input type="checkbox"/>			<input type="checkbox"/>	
D. Are any anticipated specimens CITES listed? If CITES listed specimens included, do you have:	<input type="checkbox"/>			<input type="checkbox"/>	
1. a copy of the source country's CITES export permit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. the US CITES import permit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
E. Will you be transporting tissues or other animal parts removed from the specimens?	<input type="checkbox"/>			<input type="checkbox"/>	

1. if yes, do you have an APHIS certification?

F. Do you have all of the required specialized permits:

Antarctic Conservation Act permit

Bald Eagle Protection Act permit

Bureau of Land Management permit

Controlled Substances Act

Feather Import Quota

Federal Noxious Weed Act

Fur Seal Act

Marine Mammal Protection Act permit

Migratory Bird Treaty Act permit

Plant Pest Act

Plant Quarantine Act

State Collecting Permit

US Fish and Wildlife Service salvage permit

State salvage permit

Other: \_\_\_\_\_

COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

## KU Biodiversity Institute – Accession Checklist

The following checklist is to be completed and approved before any specimen or object may be accessioned by the Biodiversity Institute. Check boxes ONLY if the required documents are in hand. 'NA' signifies 'Not applicable'.

<b>FOR RECEIPT OF SPECIMENS PREVIOUSLY CATALOGED IN ANOTHER INSTITUTION</b>			
	Yes	No	NA
(by donation, exchange, gift, abandonment, or purchase)			
Transmittal form or letter from appropriate authority at the institution of origin	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Signed Deed of Transfer form	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Export permit (if from a non-US institution)	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Import permit (if from a non-US institution)	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> CITES permits (if transaction involves CITES-listed specimens)	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> APHIS certification	<input type="checkbox"/>	<input type="checkbox"/>	
Other: _____ _____ <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>FOR RECEIPT OF SPECIMENS <u>NOT</u> PREVIOUSLY CATALOGED IN ANOTHER INSTITUTION</b>			
(field work, gift, exchange, purchase, donation, bequest, or contract)			
Original or copy of collecting permit(s)	<input type="checkbox"/>	<input type="checkbox"/>	
Original or copy of export permit (if from a non-US locale or institution)	<input type="checkbox"/>	<input type="checkbox"/>	
Signed Deed of Transfer form	<input type="checkbox"/>	<input type="checkbox"/>	
US Fish and Wildlife Service ESA permit	<input type="checkbox"/>	<input type="checkbox"/>	
Copy of 3-177 form (if from a non-US locale or institution)	<input type="checkbox"/>	<input type="checkbox"/>	
CITES permit(s) (if transaction involves CITES-listed specimens)	<input type="checkbox"/>	<input type="checkbox"/>	
Migratory Bird Treaty Act permit	<input type="checkbox"/>	<input type="checkbox"/>	
APHIS certification(s)	<input type="checkbox"/>	<input type="checkbox"/>	
Original or copy of field notes for specimens in this accession	<input type="checkbox"/>	<input type="checkbox"/>	
Originals or copies of any correspondence relating to this accession	<input type="checkbox"/>	<input type="checkbox"/>	
Antarctic Conservation Act permit	<input type="checkbox"/>	<input type="checkbox"/>	
Bald Eagle Protection Act permit	<input type="checkbox"/>	<input type="checkbox"/>	
Bureau of Land Management permit	<input type="checkbox"/>	<input type="checkbox"/>	
Controlled Substances Act	<input type="checkbox"/>	<input type="checkbox"/>	
Feather Import Quota	<input type="checkbox"/>	<input type="checkbox"/>	

Federal Noxious Weed Act	<input type="checkbox"/>	<input type="checkbox"/>
Fur Seal Act	<input type="checkbox"/>	<input type="checkbox"/>
Marine Mammal Protection Act permit	<input type="checkbox"/>	<input type="checkbox"/>
Plant Pest Act	<input type="checkbox"/>	<input type="checkbox"/>
Plant Quarantine Act	<input type="checkbox"/>	<input type="checkbox"/>
State Collecting permit	<input type="checkbox"/>	<input type="checkbox"/>
US Fish and Wildlife Salvage permit	<input type="checkbox"/>	<input type="checkbox"/>
Other: _____	<input type="checkbox"/>	<input type="checkbox"/>
_____ <input type="checkbox"/>		

Description of Accession:  See attached complete description

I hereby attest that to the best of my knowledge the above information is correct and accurate and that the specimens and/or objects comprising this accession were obtained legally and are suitable for accession.

Signature \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

Printed name: \_\_\_\_\_



**The University of Kansas Biodiversity Institute**

**Deed of Transfer**

Date

---

Received from:

Name

---

Address

---

---

---

---

Telephone

---

Description of Accession:

**AGREEMENT**

I hereby acknowledge that I have read the terms of acceptance (below), and that to the best of my knowledge, the specimens and/or objects comprising this accession were obtained legally and further, that I have the authority to transfer their ownership to the University of Kansas Biodiversity Institute.

Signature of agent/donor:

Date:

### Terms of Acceptance

1. Signing this document legally transfers ownership of all specimens and/or objects listed on the accession form(s) to the Biodiversity Institute of the University of Kansas (institute). By the execution of this Deed of Transfer the donor or agent represents and warrants that he/she has full power and authority to transfer or give the specimens and/or objects to the institute. All donations, exchanges, gifts, purchases, bequests, and receipt of specimens or objects from regular fieldwork are considered outright and unconditional accessions to be used at the institute’s discretion.
  
2. The donor or agent acknowledges that the institute has not promised, and is in no way obliged, to exhibit or restrict the use of these specimens and/or objects and may deaccession or dispose of these specimens and/or objects, if appropriate.
  
3. Donations to the institute may be tax deductible. Although the institute is unable to provide appraisals of donations, the staff will provide a list of qualified appraisers upon request.
  
4. The institute shall have the absolute and unconditional ownership of the specimens and/or objects listed on this Deed of Transfer form.

### KU Biodiversity Institute – Repository Checklist

The following checklist is to be completed before any specimen or object may be accepted under a repository agreement by the Biodiversity Institute. Check boxes ONLY if the required documents are in hand. “NA” signifies “Not applicable.”

<b>FOR RECEIPT OF SPECIMENS PREVIOUSLY CATALOGED IN ANOTHER INSTITUTION</b>			
	Yes	No	NA
(by donation, exchange, gift, abandonment, or purchase)			
Transmittal form or letter from appropriate authority at the institution of origin <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Export permit (if from a non-US institution) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Import permit (if from a non-US institution) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CITES permits (if transaction involves CITES-listed specimens) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
APHIS certification <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other: _____ _____ <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>FOR RECEIPT OF SPECIMENS <u>NOT</u> PREVIOUSLY CATALOGED IN ANOTHER INSTITUTION</b>			
	Yes	No	NA
(field work, gift, exchange, purchase, donation, bequest, or contract)			
Original or copy of collecting permit(s) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Original or copy of export permit (if from a non-US locale or institution) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
US Fish and Wildlife Service ESA permit <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Copy of 3-177 form (if from a non-US locale or institution) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

CITES permit(s) (if transaction involves CITES-listed specimens)	<input type="checkbox"/>	<input type="checkbox"/>
Migratory Bird Treaty Act permit	<input type="checkbox"/>	<input type="checkbox"/>
APHIS certification(s)	<input type="checkbox"/>	<input type="checkbox"/>
Original or copy of field notes for specimens in this accession	<input type="checkbox"/>	<input type="checkbox"/>
Originals or copies of any correspondence relating to this accession	<input type="checkbox"/>	<input type="checkbox"/>
Antarctic Conservation Act permit	<input type="checkbox"/>	<input type="checkbox"/>
Bald Eagle Protection Act permit	<input type="checkbox"/>	<input type="checkbox"/>
Bureau of Land Management permit	<input type="checkbox"/>	<input type="checkbox"/>
Controlled Substances Act	<input type="checkbox"/>	<input type="checkbox"/>
Feather Import Quota	<input type="checkbox"/>	<input type="checkbox"/>
Federal Noxious Weed Act	<input type="checkbox"/>	<input type="checkbox"/>
Fur Seal Act	<input type="checkbox"/>	<input type="checkbox"/>
Marine Mammal Protection Act permit	<input type="checkbox"/>	<input type="checkbox"/>
Plant Pest Act	<input type="checkbox"/>	<input type="checkbox"/>
Plant Quarantine Act	<input type="checkbox"/>	<input type="checkbox"/>
State Collecting permit	<input type="checkbox"/>	<input type="checkbox"/>
US Fish and Wildlife Salvage permit	<input type="checkbox"/>	<input type="checkbox"/>
Other: _____ _____ <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Description of acquisition on repository agreement:  See attached complete description

I hereby certify that to the best of my knowledge the above information is correct and accurate, and further that the terms of this repository agreement have been met.

Signature: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

Printed name: \_\_\_\_\_

This acquisition is approved by the Biodiversity Institute of the University of Kansas.

## Appendix B: Example of a Repository Agreement Form



### CURATION AGREEMENT

Firm Name				
Firm Address	Street, Number, PO Box	City	State	Zip
Firm Phone		Firm Email		
Representative Name		Representative Phone		
Date		Representative Email		

I, as representative of the above listed Firm, agree to deliver archaeological materials which are collected by the Firm within the State of Wyoming to the University of Wyoming Archaeological Repository (UWAR) in accordance with the UWAR curation standards.

I have read and understood the most recent version of the UWAR Guidelines and Standards for submitting a collection and agree to comply with its terms when delivering materials for curation.

This agreement is considered legitimate for the next three years from the date listed unless either signatory changes in individual or company name, or if either party is no longer considered an authorized institutional representative. A new agreement shall be drafted within that three year period if these circumstances arise.

Failure to comply with the most current UWAR Guidelines and Standards, or laws and policies regarding collecting and curating archaeological materials, may result in the suspension or revocation of this agreement.

Signature (Firm Representative)		Signature (UWAR Representative)	
Date		Date	

Return this form to: [uwar@uwyo.edu](mailto:uwar@uwyo.edu)



Matthew H. Mead | Governor  
Darin J. Westby, P.E. | Director  
Sara Needles | Administrator



**ARTS. PARKS.  
HISTORY.**  
Wyoming State Parks & Cultural Resources

## Appendix C: Survey about Archaeology Databases Needs/Wants

I am asking you to participate by filling out the survey below. The survey will be used for my thesis research that explores the relationship between field archaeologists and collections repository staff and how the current “curation crisis” may be alleviated. I feel we must do two things, educate the field archaeologists about collections management practices and show field practices to collection managers; and creating and implementing a collections management system (CMS) specifically for anthropology/archaeology collections.

I may pull quotes from the answered survey questions – if so I will not include your *full name*, nor will I attribute it to the *name of institution for which you work* unless you prefer otherwise.

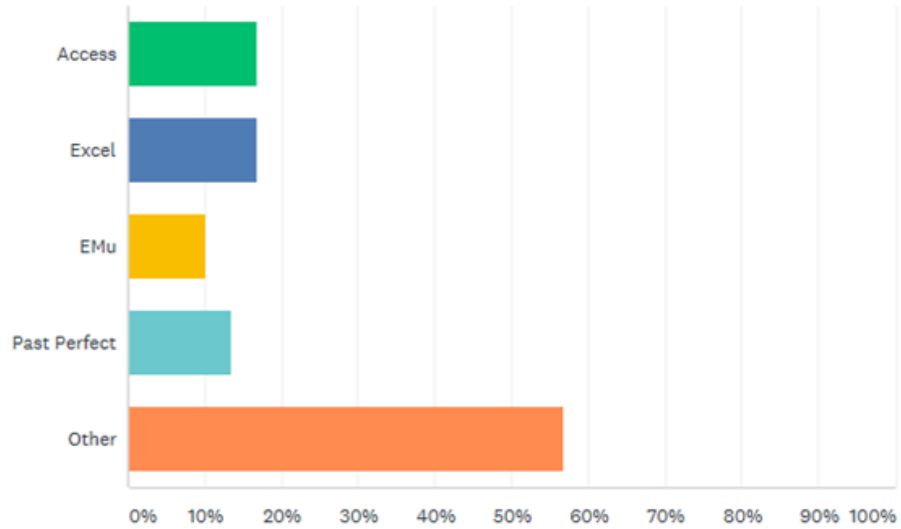
1. What collections management database does your anthropology/archaeology collection use? (Checkbox fields)
  - a. Access
  - b. Excel
  - c. EMu
  - d. Past Perfect
  - e. Other
2. If using an Art based database, what fields/table relationships are lacking that are necessary for anthropology/archaeology? (Remark field)
3. If using a Natural History based database, what fields/table relationships are lacking that are necessary for anthropology/archaeology? (Remark field)
4. Besides databasing, how are your collections documented? (Remark field)
5. Are you satisfied with your current database system? (Yes/No)
6. If no, what features/functionality are lacking from your current database system? (Remarks field)
7. What features are most important in informing your decision to use a database system? (Choice fields: very important, somewhat important, neutral, somewhat unimportant, very important)
  - a. User friendliness – ease of data entry and retrieval
  - b. Integration with other collection types at your institution (biological collections)
  - c. Data model (diversity of fields and tables)
  - d. Attachments - ability to attach objects (images, videos, pdf's etc.)
  - e. Bulk import
  - f. Security
  - g. Web access – ability to expose database to the public
  - h. Data publishing – ability to publish data to aggregators
  - i. Open source
  - j. Networked
  - k. Web based
  - l. Open Source
  - m. Cost
8. Are you aware of Specify (<http://www.sustain.specifysoftware.org/>)? (Yes/No field)
9. Would you be interested in switching to Specify if it was able to handle anthropology and/or archaeology data? (Yes/No field)
10. What would the most important consideration be in switching? (Remarks field)
11. Other comments (Remarks field)

Thank you for your time for answering the above questions. Please feel free to contact me at [mgrizzle@ku.edu](mailto:mgrizzle@ku.edu) if you have any further questions or comments that you feel are necessary.

## Appendix D: Survey Results

What collections management database does your anthropology/archaeology collection use?

Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES
▼ Access	16.67% 5
▼ Excel	16.67% 5
▼ EMu	10.00% 3
▼ Past Perfect	13.33% 4
▼ Other	56.67% 17
Total Respondents: 30	

## If using an Art based database, what fields/table relationships are lacking that are necessary for anthropology/archaeology?

Answered: 20 Skipped: 10

RESPONSES (20) WORD CLOUD TAGS (0)

Apply to Selected Filter by tag

Search responses

Showing 20 responses

- the types of material associated to the site. If there is field notes, photographs of the site/artifacts, burial records, etc.  
1/25/2019 3:43 PM View respondent's answers Add tags
- N/A  
1/25/2019 2:50 PM View respondent's answers Add tags
- There are many fields. Some quite useless. It was created by someone with no knowledge of archaeology.  
1/17/2019 11:20 AM View respondent's answers Add tags

## If using a Natural History based database, what fields/table relationships are lacking that are necessary for anthropology/archaeology?

Answered: 22 Skipped: 8

RESPONSES (22) WORD CLOUD TAGS (0)

Apply to Selected Filter by tag

Search responses

Showing 22 responses

- 1/25/2019 2:06 PM View respondent's answers Add tags
- We use PastPerfect. The biggest obstacle to using PP is the nomenclature system. They preload the software with Chenhall's nomenclature, which is great for historical or art artifacts but terrible for archaeology. So, we made our own lexicon using Chenhall's structure as a model so that it would be compatible with the database. I think a massive overall issue is the lack of standardized terminologies for artifact types that are cross-regional. Another issue with PP is the relative inability to search robustly in their sites module. Archaeological artifacts are largely organized by site and it would be so helpful to search meaningfully in that module.  
1/25/2019 1:59 PM View respondent's answers Add tags
- It is just an Excel spreadsheet. Supposedly very specific to archaeology but extremely time consuming. It is constantly being revised as well. It is neither Art nor Natural History based.  
1/17/2019 11:20 AM View respondent's answers Add tags



## Besides databasing, how are your collections documented?

Answered: 27 Skipped: 3

**RESPONSES (27)** WORD CLOUD TAGS (0)

Apply to Selected Filter by tag

Search resp

Showing 27 responses

Filemaker Pro, paradox

1/25/2019 3:43 PM

[View respondent's ans](#)

Ledgers

1/25/2019 2:50 PM

[View respondent's ans](#)

Paper records

1/25/2019 2:24 PM

[View respondent's ans](#)

Catalog cards, catalog ledgers, accession cards, accession ledgers, archival records, photographs, annual reports.

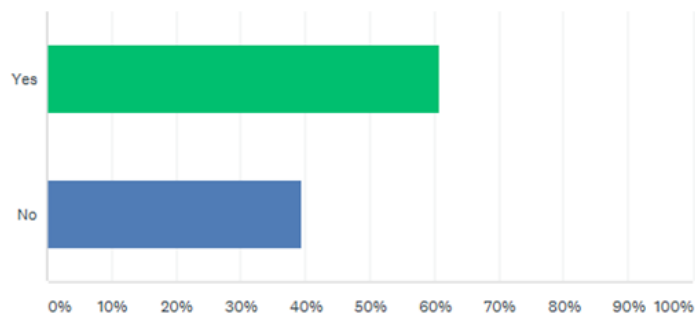
1/25/2019 2:06 PM

[View respondent's ans](#)

We maintain the original field notes (where available) and have the original paper records for the collection as well.

## Are you satisfied with your current database system?

Answered: 28 Skipped: 2



ANSWER CHOICES	RESPONSES	
Yes	60.71%	17
No	39.29%	11
<b>TOTAL</b>		28 <span style="float: right;">^</span>

**link with GIS**  
2/2/2019 12:09 PM [View respondent's answers](#) [Add tags](#) ▼

---

**We do not have a system yet to accommodate our archaeobotanical collection**  
2/1/2019 4:11 PM [View respondent's answers](#) [Add tags](#) ▼

---

**Currently in the process of integrating/managing two different database platforms; cross-platform compatability is strictly "artisanal" (ie, a matter of duplicate data entry) at present. Museum system-wide migration to online Arctos platform is in early/proposal stages, but would necessitate field/table relationship work as per Question 3, above. No details as yet.**  
1/30/2019 8:25 AM [View respondent's answers](#) [Add tags](#) ▼

---

**Not streamlined**  
1/26/2019 3:24 PM [View respondent's answers](#) [Add tags](#) ▼

---

**link with GIS**  
2/2/2019 12:09 PM [View respondent's answers](#) [Add tags](#) ▼

---

**We do not have a system yet to accommodate our archaeobotanical collection**  
2/1/2019 4:11 PM [View respondent's answers](#) [Add tags](#) ▼

---

**Currently in the process of integrating/managing two different database platforms; cross-platform compatability is strictly "artisanal" (ie, a matter of duplicate data entry) at present. Museum system-wide migration to online Arctos platform is in early/proposal stages, but would necessitate field/table relationship work as per Question 3, above. No details as yet.**  
1/30/2019 8:25 AM [View respondent's answers](#) [Add tags](#) ▼

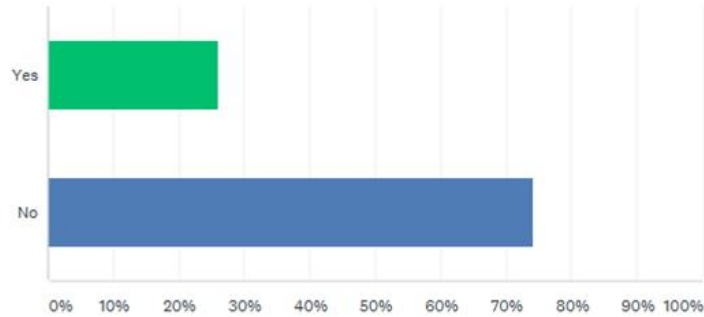
---

**Not streamlined**  
1/26/2019 3:24 PM [View respondent's answers](#) [Add tags](#) ▼

---

## Would you be interested in switching to Specify if it was able to handle anthropology and/or archaeology data?

Answered: 27 Skipped: 3



ANSWER CHOICES	RESPONSES	
Yes	25.93%	7
No	74.07%	20
<b>TOTAL</b>		<b>27</b>

## What would the most important consideration be in switching?

Answered: 28 Skipped: 2

RESPONSES (28) WORD CLOUD TAGS (0)

Apply to Selected Filter by tag

Search responses

Showing 28 responses

- Our collections span various organism groups and formats, incl. artifacts. We are looking for a system that is flexible and allows us to connect our material  
View respondent's answers   Adk  
2/1/2019 4:11 PM
- That it has a solid interface for recording detailed contextual information that is linked to artifact data.  
View respondent's answers   Adk  
2/1/2019 1:23 PM
- Ease of portability of large database files (thousands of records, spanning objects/artifacts, documents, and images in multiple formats). Ability to develop strong, detailed relational tables.  
View respondent's answers   Adk  
1/30/2019 8:25 AM
- we have a very broad range of collections - Humanities, Natural sciences - and Vernon works for all the various uses we need. I don't think we would consider switching

# What would the most important consideration be in switching?

Answered: 28 Skipped: 2

**RESPONSES (28)** WORD CLOUD TAGS (0)

Apply to Selected ▼ Filter by tag ▼

Search responses

Showing 28 responses

Ease of data integration, migration, and transfer.

1/25/2019 5:19 PM

[View respondent's answers](#) [Add tag](#)

Although the bulk of our collections are archaeological in nature, we also have historic, ethnographic, natural history, archives, fine art, and other objects, which are managed from the same database. So Past Perfect is working for us.

1/25/2019 4:59 PM

[View respondent's answers](#) [Add tag](#)

to be able to show supporting information about the site where the artifact was found

1/25/2019 3:43 PM

[View respondent's answers](#) [Add tag](#)

We would CONSIDER Specify, but we wouldn't necessarily be "interested in switching." For institutions with many kinds of collections, this decision isn't based on the needs of any one collection. We need something that works well for a very wide range of collection types, is flexible and extensible, makes it easy for us to connect to external resources (e.g. GBIF, iDigBio, BHL) and other institutional resources (e.g. DAMS), is possible for our IT and collections infrastructure to manage and support, and is affordable enough. There's no single "most important consideration".

## Appendix E: PastPerfect and Specify Object Forms

Objects Catalog
Sort by Object ID

---

Screen View

- Archaeology
- Art
- Geology
- History
- Natural History
- Custom

Other Views

- Appraisal
- Condition
- Dimensions
- Lexicon
- Location
- Notes & Legal
- People - Subjects
- Classification
- Search Terms
- Relations
- Repatriation
- Source
- Inscription
- Maker's Mark
- Lists
- Virtual Exhibit

Collection	Archaeology Division		Date	1050 +/-150 BP	
Object ID	1997.2.2		Year Range	950	thru 1200
Object Name	Point, Projectile		Catalog Date	08/28/1997	
Other Name			Cataloged by	Allen, Arthur	
Other#	3043042C0102430		Status Date	08/28/1997	
Old#			Status by	Allen, Arthur	
Accession#	1997.2	University of Washington	Status	OK	
Home Location	Museum Main Bldg				

**Archaeology**  Archaeology  Art  Geology  History  Natural History  Custom

**Description**

Projectile point made of gray banded chert. The point is bifacially worked with small pressure flakes along both edges. It is notched at the base. There is a small remnant of the original cortex surface near the base where the body of the point flares.


**Material** Stone/Chert

**Dating Method** Pollen Analysis

**Provenance**

Unit - 304304  
Facies/Level - 2C02  
Bucket# or FS# - 024  
Material/Location - 30

Collector	Carter, Jillian K. Ph.D.		Col. Date	05/11/1996	
Excavated by	Moore, Bette I.		Exc. Date	05/15/1996	
Identified by	Carter, Jillian K. Ph.D.		Id Date	01/21/1998	
Site /Site#	English Camp		45-SJ-24		
Unit	304/304	X Coordinate	33.70	Datum	Datum A
Level	2	Y Coordinate	103.20	Box No	2 of 15
Stratum	2C	Z Coordinate	15.90	Bag No	33
Feature					



001:1997.2.2.JPG  
Image Management (1 of 2)

Record 2 of 27

Include in Web Export

Updated by Unknown

Updated 06/28/2000 12:28 PM

[Update History](#)

**Collection Object** Year: 1950  
 Catalog Number: 21    Alt Cat Number: NIA    Acc#: 54 1952

**Determinations**  
 Name:     TE 1  
 Feature: 1

**Col Obj Attribute**  
 Mx L mm:     Wt gm:      Burned     Modified?     JUV?  
 Analysis Unit:     Completeness Category:     Rim Form:     Rim height - out:   
 Rim height - in:     Rim angle:     Lip form:     Lip thickness:   
 Collar thickness:     Neck Thickness:     Collar Height:     Channel depth:   
 Mat Type: Brown chert    Con: C     Decoration     Handle(s)?  
 Collar panel sha:     collar base shape:     Artifact Type: SS     Rim  
 L: 39    W: 20    T: 8    Wt: 5.27

**Collecting Information**  
 Ex Date: Full Date 05/14/1950    Collection Method:     Provenance:   
 Locality: Talking Crow, 39BF3, A, Trench 2

**Excavator**  

Last Name	First Name	Middle Initial

**Preparations**  
 Prep Type:     Count:     Element:     Code:   
 Side:     Portion:     Complete %:      Is On Loan    Show Loans  
 Remarks:

**Attachments**  
 Generate Label on Save   

Modified By Agent m, m    Modified Date: 11/19/2012    Save View

## Appendix F: Suggested Introduction to Archaeological Collections Management Syllabus

# Introduction to Archaeological Collections Management

### Course Description and Goals

The Archaeological Collections Management Class will teach students about the proper handling and care of archaeological materials in a repository environment. Students are expected to develop these skills through participation in an inventory project completed by the end of the semester. Students will gain hands-on training using database tools (any database available at the institution) and learn how to manage both paper and digital archives.

Course topics will focus on larger issues of collection accessibility, preservation and conservation, facilitation of future research, curation and repository policy information, issues pertaining to working with various levels of government and non-government entities, curation accountability, and ethical concerns. The combination of readings, classroom discussion, and practical application gives students a solid introduction to archaeological collection management.

This class is taught from the perspective of an archaeological repository and not from that of a traditional museum. An archaeological repository focuses on the preservation and storage of prehistoric materials for their continued use by researchers at state, university, and federal levels. Repositories do not typically develop exhibits but house a more specialized spectrum of items based on their region of emphasis and scope of collections. Consequently, the class will not cover exhibit building or issues of museum public education, museum outreach or museum theory.

### Required Text and Readings

Students are expected to read the articles provided which supplement the weekly discussion topics. Readings are available on (BlackBoard) webpage. In addition, students should purchase the main text:

Sullivan, Lynne P., and S. Terry Childs

2003 *Curating Archaeological Collections: From the Field to the Repository*. Altamira Press, Walnut Creek.

### Class Structure

This seminar class will meet for (desired time) a week during the semester. Time is divided between lecture and lab work related to student projects. Students are expected to devote additional time outside of class to perusing relevant readings and working on assignments.

### Exams and Grading

One mid-term exam will be given. Two smaller projects will be assigned: Mock Mission and Scope and Collections Statements, and a Disaster Plan for a randomly chosen disaster event. A final presentation and project based on the inventory and accession of a portion of an archaeological site housed at (desired institution) will be required. Graduate students are expected to complete a larger, more complex final project, be more vocal in class, and be more

detailed in their repository statements. All students are expected to participate in classroom discussion.

### Final Project Overview

The final project consists of an accession project from sites housed in the (desired institution). Students are expected to re-house, stabilize, inventory, accession, and complete data entry into the archaeological repository (desired) database. Students will hand in their completed inventory forms as well as a paper detailing how their project relates to the larger class topics of proper housing, handling, storage, and collection ethics.

### Grading Breakdown

Mock Mission & Scope of Collections Statements	25 Points
Midterm Exam	100 Points
Mock Disaster Plan	50 Points
Project Presentation	25 Points
Final Project	150 Points
Class Participation	25 Points
<b>Total</b>	<b>375 Points</b>

### Extra Credit

Undergraduate students may earn up to 20 extra points by attending any of the Anthropology Department lectures offered throughout the semester. Attendance at one lecture is equivalent to 5 points. A one-page write-up discussing the talk is required to receive credit.

## Course Weekly Schedule

**Week 1:** Course Overview; Meet & Greet

**Week 1:** History of Collecting in the (wherever class is located)

*Readings:* Sullivan and Childs 2003, Chapters 1 & 2, Chapter 3: pp. 22-28; 36CFR79 & Overview

**Week 2:** The Curation Crisis

*Readings:* Bawaya 2007; Bustard 2000; Marquardt et al. 1982; Reichardt 2007; Sullivan and Childs 2003, Chapter 3

**Week 2:** Continuation of The Curation Crisis

**Week 3:** Tour of (desired institution) and Curation Crisis Exercise; Mission and Scope of Collections Statements

*Assignment: Mission Statement and Scope of Collections Statement. Due (desired date)*

**Week 3:** Labels and Handling

*Readings:* Buck 2010; Delfino 2004; Ogden 2004a; Sullivan and Childs 2003, Chapter 5, pp. 64-67; Johnson and Meador-Woodruff 2010 (Reference Only)

**Week 4 & 4:** Lab Work Days, Learn to Inventory, Choosing Final Projects

*Readings:* Institution's Inventory Policy; Institution's Employee Policy



**Week 5:** Material Culture: Stone and Glass

*Readings:* Braun 2004a, 2004c; NPS Appendix P (sections on stone and glass)

**Week 5:** Material Culture: Metal

*Readings:* NPS Appendix O

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**Week 6:** Lab Work Day

**Week 6:** Adhesives, Principles of Storage

*Readings:* Davidson and Alderson 2009; Kilby 1995; Ogden 2004b: pp. 1-10; Pasiuk 2004

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**Week 7:** Material Culture: Bone, Ivory, Antler, Teeth

*Readings:* Espinoza and Mann 1991: pg. 1-13; Storch 2004b

**Week 7:** Material Culture: Shell, Wood, Leather

*Readings:* NPS Appendix N; NPS Appendix S; Storch 2004a

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**Week 8:** Material Culture: Ceramics

*Readings:* Braun 2004b; NPS Appendix P (sections on ceramics)

**Week 8: MIDTERM EXAM**

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**Week 9:** Archaeological Curation Facilities, The Repository Environment

*Readings:* NPS Chapter 4; Ogden 2004c; Sullivan and Childs, Chapter 4

**Week 9:** The Repository Environment (concluded), Exam Review

---

**Week 10:** Disaster Planning

*Readings:* NPS Chapter 10

*Assignment: Disaster Plan*

**Week 10:** Managing Collections

*Readings:* Demeroukas 2010; Sullivan and Childs 2003, Chapter 5

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**Week 11:** Human Remains and NAGPRA

*Readings:* Cassman et al. 2008; Clavir 2002; McKeown et al. 2010

**Week 11:** Lab Work Day

---

**Week 12:** Archives, Photographs, and Digital Records

*Readings:* Albright 1993; Duyck 2010; Fowler and Givens 1995; Van Houten 1985

**Week 12:** Collection Management Ethics

*Readings:* Barker 2003, Childs and Sullivan 2004; Rotroff 2001; Sonderman 2004; Sullivan and Childs 2003, Chapters 6 & 7

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**Week 13:** The Future of Collections Management

*Readings:* Barker 2004; Lyons nd; Newman 2010; O'Brien 2013; Sullivan and Childs 2003, Chapter 8; Voss 2012

**Week 13:** Lab Work Day

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**Week 14 & 14:** Lab Work Day

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**Week 15 & 15:** Class Presentations on Final Projects

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**Week 16: FINAL PROJECTS DUE**

**Bibliography**

Bawaya, Michael. 2007. Archaeology: Curation in Crisis. *Science* 317(5841):1025-1026.

Barker, A. W. 2003. Archaeological Ethics: Museums and Collections. In *Ethical Issues in Archaeology*, ed. by L. J. Zimmerman, K. D. Vitelli, J. Hollowell-Zimmer and J. J. Hollowell, pp. 71-83. Altamira, Walnut Creek, CA.

Braun, T. J. 2004. Metals and Alloys. In *Caring for American Indian Objects: A Practical and Cultural Guide*, edited by S. Ogden, pp. 154-159. Minnesota Historical Society Press, St. Paul, MN.

2004 Ceramics. In *Caring for American Indian Objects: A Practical and Cultural Guide*, edited by S. Ogden, pp. 165-169. Minnesota Historical Society Press, St. Paul, MN.

2004 Stone. In *Caring for American Indian Objects: A Practical and Cultural Guide*, edited by S. Ogden, pp. 170-173. Minnesota Historical Society Press, St. Paul, MN.

Bustard, Wendy. 2000. Archaeological Curation in the 21st Century: or, Making Sure the Roof Doesn't Blow Off. *Cultural Resource Management* 23 (5):10-15.

Cassman, V., N. Odegaard and J. Powell. 2008. Introduction: Dealing With the Dead. In *Human Remains: Guide for Museums and Academic Institutions*, edited by V. Cassman, N. Odegaard and J. Powell, pp. 1-4. AltaMira Press, Walnut Creek, CA.

2008 Policy. In *Human Remains: Guide for Museums and Academic Institutions*, edited by V. Cassman, N. Odegaard and J. Powell, pp. 21-28. AltaMira Press, Walnut Creek, CA.

Clavir, M. 2002. The Historical Development of Conservation and Its Values. In *Preserving What is Valued: Museums, Conservation, and First Nations*, pp. 3-25. University of British Columbia Press, Vancouver, BC.

Davidson, Amy and Alderson, Samantha. 2009. An Introduction to Solution and Reaction Adhesives for Fossil Preparation. 53-62.

Demeroukas, M. 2010. Collections Management: Condition Reporting. In *The New Museum Registration Methods*, edited by R. A. Buck and J. A. Gilmore, pp. 223-232. 5th ed. AAM Press, Wash., DC.

Duyck, E. D. 2010. Digital Storage Media. *Conserve O Gram* 22(5):1-4.

Delfino, G. N. 2004. Recommendations for Applying Accession Numbers to Museum Items. In

- Caring for American Indian Objects: A Practical and Cultural Guide*, edited by S. Ogden, pp. 214-220. Minnesota Historical Society Press, St. Paul, MN.
- Johnston, T. and R. Meador-Woodruff. 2010. Marking. In *The New Museum Registration Methods*, edited by R. A. Buck and J. A. Gilmore, pp. 233-276. 5th ed. AAM Press, Washington, DC.
- Kilby, V. 1995. Buffered and Unbuffered Storage Materials. *Conserve O Gram* 4(9):1-4.
- Lyons, P. D., S. T. Childs, L. P. Sullivan, M. K. Trimble and S. L. Whittington. nd NSF/SBE White Paper: The Scientific Strategy of Conserving and Researching Existing Anthropological Museum Collections.
- Marquardt, William, Antaa Montet-White, and Sandra Scholtz. 1982. "Resolving the Crisis in Archaeological Collections Curation." *American Antiquity*. 47(2):409-418.
- Meador-Woodruff, R. 2010. Ad Hoc Policies for Collections Managers. In *The New Museum Registration Methods*, edited by R. A. Buck and J. A. Gilmore, pp. 30-33. 5th ed. AAM Press, Washington, DC.
- McKeown, C. T., A. Murphy and J. Schansberg. 2010. Complying with NAGPRA. In *The New Museum Registration Methods*, edited by R. A. Buck and J. A. Gilmore, pp. 448-457. 5th ed. AAM Press, Washington, DC.
- Newman, M. 2010. Curation and Conceptualization: Archaeological Theory and Curatorial Archaeology, Strange Bed Fellows? *Assemblage* 10:1-15.
- NPS Archeology Program: 36CFR79 Detailed overview of the text of 36CFR79: "Curation of Federally-Owned and Administered Archeological Collections" also available at: <http://www.nps.gov/archeology/tools/36cfr79.htm>
- Brief overview of 36CFR79 is available at:  
[http://www.nps.gov/archeology/collections/laws\\_04.htm](http://www.nps.gov/archeology/collections/laws_04.htm)
- Society for Historical Archaeology nd Standards and Guidelines for the Curation of Archaeological Collections [http://www.sha.org/research/curation\\_standards.cfm](http://www.sha.org/research/curation_standards.cfm)
- Ogden, S. 2004. How Should Cultural Items Be Stored? In *Caring for American Indian Objects: A Practical and Cultural Guide*, edited by S. Ogden, pp. 40-56. Minnesota Historical Society Press, St. Paul, MN.
- Pasiuk, J. 2004. Safe Plastics and Fabrics for Exhibits and Storage. *Conserve O Gram* 18(2):1-7.
- Reichhardt, T. 2007. The difficulties of deaccessioning. *American Archaeology* 11(1): 32–39.
- Rotroff, S. I. 2001. Archaeologists on Conservation: How Codes of Archaeological Ethics and Professional Standards Treat Conservation. *Journal of the American Institute for Conservation*:137-146.

Storch, P. S. 2004. Shell. In *Caring for American Indian Objects: A Practical and Cultural Guide*, edited by S. Ogden, pp. 126-129. Minnesota Historical Society Press, St. Paul, MN.

2004 Bone, Antler, Ivory, and Teeth. In *Caring for American Indian Objects: A Practical and Cultural Guide*, edited by S. Ogden, pp. 130-134. Minnesota Historical Society Press, St. Paul, MN.

Sullivan, Lynne P., and S. Terry Childs. 2003. *Curating Archaeological Collections: from the Field to the Repository*. Altamira Press.

Voss, Barbara L. 2012. "Curation as Research. A Case Study in Orphaned and Underreported Archaeological Collections." *Archaeological Dialogues*, vol.19:02145–169.

## References

- American Association of Museums. 1984. *Caring for Collections*. Washington, D.C.: American Association of Museums.
- “Archaeological Collections,” [http://www.saa.org/publicftp/public/educators/05\\_collections.html](http://www.saa.org/publicftp/public/educators/05_collections.html). SAA, Accessed. April 29, 2018.
- Arksey, Marika. Collections Manager, University of Wyoming Archaeological Repository. Interview March 13, 2019.
- Barker, Alex W. 2003 “Archaeological Ethics: Museums and Collections.” *Ethical Issues in Archaeology*. Larry J Zimmerman, Karen D. Vitelli, and Julie Hollowell-Zimmer, Eds. Lanham, Maryland: AltaMira Press. Pp. 71-83.
- Bettison, C.A. 1996. “Collections Management.” *The Oxford Companion to Archaeology*. New York: Oxford University Press. pp.157-158
- Childs, S.T. 1995. “The Curation Crisis.” *Federal Archaeology*, 7(4):11-15.
- Childs, S. Terry, and Danielle M. Benden. 2017. “A Checklist for Sustainable Management of Archaeological Collections.” *Advances in Archaeological Practice*, 5(1):12-25.
- Christenson, Andrew L. 1979. “The Role of Museums in Cultural Resource Management.” *American Antiquity*, 44(1):161–163.
- Demoule, J.-P. 2011. We Still Have to Excavate—But Not at Any Price, *Archaeological Dialogues* 18:5-10.
- Drewett, Peter. 2011. *Field Archaeology: An Introduction*. Routledge.
- Haag, W.G. 1985. “Federal aid to archaeology in the Southeast, 1933-1942.” *American Antiquity*, 50(2):272-80
- Jennings, J.D. 1985. “River Basin surveys: Origins, operations, and results, 1945-1969.” *American Antiquity*, 50(2):281-296.
- King, J.A. 2008. Archaeological Collections, Government Warehouses, and Anxious Moderns: The Maryland Archaeological Conservation Laboratory. *Archaeologies* 4:264-87.
- King, T.F. 1998. *Cultural Resource Laws & Practice: An Introductory Guide*. Walnut Creek, California: AltaMira Press.
- Labrador, Angela M. 2012. “Ontologies of the Future and Interfaces for All: Archaeological Databases for the Twenty First Century.” *Archaeologies: Journal of the World Archaeological Congress*. 8(3):236-249.
- Luke, C. 2012. The Science behind United States Smart Power in Honduras: Archaeological

- Heritage Diplomacy. *Diplomacy & Statecraft* 23:110-39.
- Magid, Barbara. IT Coordinator for Archaeology, City of Alexandria. Interview January 15, 2019.
- Majewski, Teresita. 2010. "Not Just the End Game Anymore A Perspective from the Western United States on Proactive Budgeting for Project Curation Needs in a Changing Archaeological World." *Heritage & Society*, 3(2):167–188.
- Marquardt, William, Antaa Montet-White, and Sandra Scholtz. 1982. "Resolving the Crisis in Archaeological Collections Curation." *American Antiquity*. 47(2):409-418.
- McManamon, F. 1996. The Antiquities Act – Setting basic preservation policies. *CRM*, 19(7):18-23.
- Milanich, J.T. 2005. Homeless Collections: What Happens to Artifacts When They Have No Place to Go? *Archaeology* 58(6):57-64.
- Miller, Mark E. 1999. "Key Issues in Archaeological Collections Management." *Museum Anthropology* 23(2):6-8.
- Morris, Robert. Director of Collections/Research/Education, Otago Museum. Interview August 16, 2018.
- Simmons, John E. 2018. *Things Great and Small: Collections Management Policies*. Rowman & Littlefield.
- Sullivan, Lynne P., and S. Terry Childs. 2003. *Curating Archaeological Collections: from the Field to the Repository*. Altamira Press.
- Thomas, Tim. Senior Lecturer in Anthropology and Archaeology Department, University of Otago. Interview August 21, 2018.
- Trimble, Michael K. and Eugene A. Marino. 2003. "Archaeological Curation: An Ethical Imperative for the Twenty-First Century." In *Ethical Issues in Archaeology*. Larry J. Zimmerman, Karen D. Vitelli, and Julie Hollowell Zimmer, Eds. Lanham, Maryland: AltaMira Press. Pp. 99-112.
- Traver, N. 2001. A curation crisis. *American Archaeology*. 5(4):28-34.
- United States General Accounting Office. 1987. *Cultural Resources: Problems Protecting and Preserving Federal Archaeological Resources*. Washington D.C.: Government Printing Office, GAO, RCED 88(3):1-131.
- Voss, Barbara L. 2012. "Curation as Research. A Case Study in Orphaned and Underreported Archaeological Collections." *Archaeological Dialogues*, 19:145–169.

Williams, Emily. Associated Professor in the Department of Archaeology, Durham University.  
Interview January 16, 2019.