The Collections of Anna O. Shepard:

A Collection Strategy
and
User's Guide

Masters Project
Museum and Field Studies
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2002 Inventory and Collection Strategy Project

The goal for my Masters Project was to complete a basic inventory of the Anna O. Shepard material collections housed at the CU Museum to help facilitate research, collections management, and the preservation of these materials. From the fall of 2001 until the spring of 2002, I worked on inventorying and assessing storage and conservation needs of the Shepard collections. Approximately 120 cubic feet of material samples, 10 cubic feet of photographs, and 5000 thin sections were included in this 2002 inventory. I then created a database in Microsoft Access consisting of three different tables for the three types of material: material samples, photographs, and thin sections. During the inventory, collections were rehoused as necessary by being placed into appropriate containers made of inert materials. While the photographs and thin sections were mostly in stable containers and required minimal rehousing, the material samples had to be completely rehoused in polyethylene bags with acid-free tags. I trained an Anthropology Section volunteer, Sheila Goff, to help me with the inventory and rehousing of the material sample collections.

During the inventory of these materials, I recorded information on conservation problems or concerns. I also recorded any information on collections management activities that had yet to be completed. I used these sources of information to develop a list of prioritized steps that should be taken to improve access to and preservation of these materials. Along with collections priorities, I have given some examples of how to carry out or fund the activities left to be completed with the AOS collection. I also produced a short User's Guide to allow museum staff easy access to the materials through the use of the Access database.

The following paper is a complete report, written for the current and future Anthropology Section staff, of the processes used to complete the 2002 inventory, including methods of inventorying and rehousing collections, information on the database and tables, and a list of collection priorities that should be addressed in the future.

Anna O. Shepard Collection

Anna Osler Shepard (1903-1973) worked for the Carnegie Institution researching ceramic technologies and manufacture. Her groundbreaking studies and methods utilized geological and chemical analyses. She used petrographic analysis, experimental firing tests, and compared ethnographic pottery and manufacturing methods with archaeological materials. Her studies proved that pottery could be used much more extensively than previously considered. In one of her earliest studies of the pottery of Pecos Pueblo (1936), Shepard was able to use petrographic thin sections of sherds found at the site to identify local and imported ceramic materials, leading to conclusions on social interactions and trade within the region.

Her published research focused mainly on the American Southwest and Mesoamerica, although her interests led to her to collect materials from all over the world. Her collections were stored at her laboratory in Boulder, Colorado, and included many different types of material samples, photographs of both a personal and professional nature, and her archival collections of lab and field notes as well as her correspondence with colleagues and professionals throughout the world. Shepard worked with many archaeologists such as Alfred V. Kidder, Earl Morris, Wesley Bradfield, and Frederick Matson, and kept materials from their excavations as well as correspondence about their mutual research and study interests. By far her most famous publication is *Ceramics for the Archaeologist*, originally published in 1956. Still considered one of the foremost texts in the field, it is heavily relied upon by archaeologists, ceramic technologists, and students in many disciplines.

After Shepard's death in 1973, her collections of material samples, photographs, and papers were transferred from her lab to the University of Colorado Museum. Since then her work and collection have inspired many researchers and students. Her work was the focus of a conference in November of 1988, entitled "Ceramic Analysis and Social Inference in American Archaeology: The Ceramic Legacy of Anna O. Shepard." This conference resulted in an edited volume also entitled *The Ceramic Legacy of Anna O. Shepard* (Bishop and Lange, 1991). The collections of Anna O. Shepard have been housed at the University of Colorado Museum for almost 30 years. During that time, a number of inventories and organizational projects have taken place. In 1985, an initial inventory and finder's guide of Shepard's correspondence and archival collections was made. Shepard's photographs were also inventoried and rehoused in 1987. Student interns inventoried a

portion of the pottery sherds and material samples form the American Southwest in 2000 and 2001. In the fall of 2001, a more thorough inventory of the correspondence files in Shepard's archives was started. Now, in 2002, another inventory of the material samples, photographic collections, and ceramic thin sections has been completed, and is the subject of this paper.

Project

Types of Material

The Anna O. Shepard (AOS) Collection housed at the University of Colorado Museum of Natural History consists of many different types of material: archival collections (42 linear feet), library books, manuscripts, and journals (55 linear feet), pottery sherds and other ceramic materials such as test firing billets, clay samples, and sand samples (120 cubic feet), ceramic thin sections (5000), and photographic materials such as black and white and color photographs, slides, negatives, spectrographic plates, glass plate negatives, and lantern slides (10 cubic feet). The Anthropology Section of the CU Museum currently houses all of these materials in the Museum's Henderson Building.

Current Environmental Conditions

The AOS collections are currently spread throughout storage and other rooms in the Anthropology Section of the Museum, located in the Henderson building. Library and manuscript materials are housed in rooms 210, 217, 307, and 402, and photographic materials, thin sections, sherds, and other material samples are housed in room 307. The Henderson building has heat in the winter, but no other forms of air temperature control. Even when the heat is on, staff has very little control over the temperature in individual rooms because the system is linked to the University heating system. Some rooms reach at least 80 degrees Fahrenheit in the winter due to overheating, and others dip down to 50 degrees Fahrenheit. During the summer, temperatures can climb well above 90 degrees Fahrenheit in the room where many of the AOS collections are housed, as there is no cooling system in any part of the building. The sherds and photographs are housed in South and West facing rooms on the top floor, allowing for even greater extremes of heat in the summer. The manuscripts are

housed in a storage room on the North side of the building in order to reduce the sun's heating of the room as much as possible.

The building has no relative humidity control. In the Boulder climate, humidity levels are generally quite low, and in the winter much below recommended levels for most types of museum collections, typically stated as 45%-65% relative humidity (Craddock, 1992). Sudden weather changes throughout the year also contribute to sudden and extreme changes in both temperature and relative humidity. For example, in the areas where the Shepard collection is housed, extremes within a 24-hour period can range over 10 degrees and 10% relative humidity. Throughout a typical year the extremes can range 40 degrees and over 50% relative humidity, as shown by recording hygrothermographs. Starting in 2001, storage areas in the Henderson Building, including areas where the Shepard collections are kept, have been monitored using data loggers so that information on long-term temperature and relative humidity can be downloaded into a computer program to be recorded and analyzed (Weintraub and Wolf, 1995: 189).

Extreme changes in relative humidity can have a deteriorating affect on certain types of collections, such as paper, photographic materials, and other organics that are included in this collection. While the sherds and ceramic materials may not be as susceptible to damage from these environmental conditions, archaeological materials, such as most of the sherds in the Shepard collection, can develop the growth of soluble or insoluble salt crystals on their surfaces in environments of inappropriate relative humidity. Relative humidity below a critical point can cause salts to crystallize and eventually be deposited on the ceramic surface, especially ceramic removed from damp excavation conditions (Paterakis, 1987: 68). Ceramics excavated from dry soil can also have efflorescence of salts if they are stored in conditions where relative humidity rises above and critical point and then drops again to drier conditions (Paterakis, 1987: 68). Salts were not observed on these collections during the 2002 inventory. These materials should be monitored, however, because if fluctuating relative humidity reaches above or below the threshold limits for different types of salts, future problems may occur (Paterakis, 1987: 69).

Storage Conditions Before 2002 Inventory

The Shepard archival and manuscript collections were inventoried and partially processed in 1985. At this time they were transferred to acid-free archival quality folders and

placed into two metal filing cabinets. The larger field notebooks and manuscripts were placed directly into the file drawers. The correspondence files were generally sorted in alphabetical order by either organization name or last name of the correspondent and then arranged chronologically within these groups. Other materials, such as field notes and lab books, do not appear to have been reorganized but were simply inventoried so that location and general topics could be recorded. This organizational order is how the materials remain in 2002. A finding guide exists for these collections only in hard copy.

The photographs in the Shepard collection were rehoused and partially processed in 1987. Many of the black and white prints, slides, and negatives were placed in plastic sleeves and then placed in acid-free archival quality folders. These folders were then placed in high quality acid-free standard archival style boxes. This organizational system is still in place as of the 2002 inventory. The processing system created by a former student involved recording information about each individual print, negative, or slide. This is a very time intensive process, and less than half of the collection was processed in this manner. The other half of the collection was partially rehoused but not inventoried or recorded. The finding guide for the photographs exists in hard copy only, and uses a complex coding system to identify the location, date, and contents of each photograph. The coding system is extremely difficult to work with and in some instances the finding guide does not define what the codes stand for, making retrieval of the information impossible. It was also noted in the 1987 inventory that many nitrate negatives and other photographic materials needed to be placed into cold storage in order to prevent further deterioration of the materials. This had not been done by the time the 2002 inventory took place and materials such as nitrate negatives have deteriorated beyond usefulness or repair.

Figure 1. Cellulose nitrate negative in a state of extensive deterioration.

The sherds and other material samples were stored mostly in metal drawers. Within the drawers, the materials were sometimes loose, but often were stored in their original collection containers. These containers consisted of deteriorating paper or plastic bags, often with labels written on them that were becoming illegible. Some other materials, especially temper and clay samples, were in small metal tins. The materials were often overcrowded and poorly packed into the drawers, some to the point that materials were damaged just trying to remove the drawer from the shelving unit. Each drawer was labeled with basic descriptions of what the drawer contained. The drawers are usually then sorted by content such that southwestern US materials were in one area and Mesoamerican materials in another. Many of these drawer labels were found to be either incomplete or incorrect. This was significant because the drawer labels were the only way for staff and researchers to locate materials.

The ceramic thin sections are housed in boxes or drawers specifically designed to hold microscopic slides. Some consist of cardboard and other paper products with metal or wood slots that hold the thin sections. Others are in decorative wooden drawers, perhaps carved especially for Shepard's thin sections by her father. The slides are individually placed into numbered slots in the boxes or drawers and are typically well labeled with provenience and

ceramic type information. These storage containers provide stable housing conditions that prevent physical forces from damaging slides and keep the slides from being exposed to light.

Inventory of Collections

The goal for my Masters Project was to complete an inventory of the Anna O. Shepard material collections to help facilitate research, collections management, and the preservation of these materials. As described above, many of the different material types had been partially organized and inventoried in the past. This project was designed to fully inventory as many of these materials as possible and to get the information into a searchable database format. The collections that were most easily inventoried without requiring special knowledge, such as archival processes, were the sherds and other materials samples, and the ceramic thin sections. Time also allowed for an initial inventory of the photographs.

The inventory project lasted from Fall 2001-Spring 2002 with assistance from an Anthropology Section volunteer specifically trained to work on this project. The inventory of sherds began in 2001 through the work of two student interns. They each completed an inventory of drawers of southwestern sherds and completed the inventory of two shelving units. The 2002 project continued these efforts by inventorying four other shelving units of drawers filled with sherds and other material samples. I completed this inventory as a Museum and Field Studies Masters student as part of my Masters project.

I also completed an inventory of the photographic collections. Because these collections were rehoused in the 1980's, I was able to complete a folder level inventory of the 22 boxes of photographic materials in order to provide a basic finding guide of the material. There are also over 5000 ceramic thin sections in the Shepard collection that were inventoried and recorded into a database format.

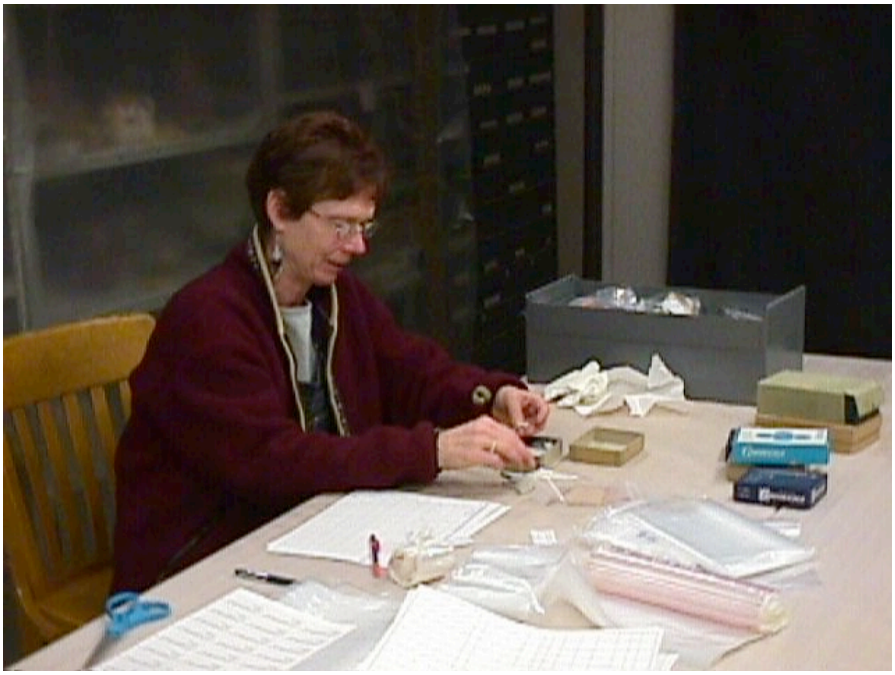

Figure 2. Volunteer Sheila Goff inventorying material collections.

The archival and manuscript collections were partially inventoried and organized by a student in 1985. Linda Cordell also worked on inventorying some parts of the correspondence files in 2001-2002 so that they could be entered into a database. The inventory of the correspondence has not been completed as of the completion of the 2002 inventory as there is a large amount of archival material. Likewise, the library materials have not been inventoried although the Anthropology Section is starting the process of identifying Library of Congress Call Numbers for these materials. Archival records, manuscript collections, and library materials are handled in a different way from other museum collections. Archival procedures are a very specialized profession and this collection may eventually need an archivist in order to be processed in the most efficient, usable, and professionally accepted manner.

Methods Used in Inventorying Sherds and Material Samples

2002 Inventory

The idea behind this part of the project was to complete an inventory of the sherds and other material samples in the Shepard collection. These materials included bags of documented and undocumented sherds, sherds that had been refired or used to make thin sections, clay samples collected by Shepard in the field, clay and other mineral samples sent

to Shepard from commercial plants and mines, temper samples including sand, minerals, and plant materials, glaze samples, paint samples, and fired clay billets created by Shepard to test different types of clay, glaze or paint, and the effects of different firing atmospheres and temperatures. With such a wide variety of materials, it was well understood by the earlier student interns that it would be important to note and record information about what a material was, any provenience information associated with the object, and where it could be found within the Shepard collection. A detailed description of the database table containing information about these collections can be found in the AOS Database section of this paper.

Material samples and sherds were inventoried to the bag level, meaning that the contents of each bag or individual container were recorded as individual entries in the database. Each bag of sherds therefore has a single entry in the database regardless of the number of sherds in the bag. On occasion, a bag of materials was found that was subdivided into smaller bags or other containers. In these cases, this subdivision within a bag was preserved. Smaller bags were placed within the larger inventoried bag and just the larger bag was recorded in the database.

Rehousing of Materials

Once all information associated with a material sample had been recorded, the materials were rehoused if necessary by removing them from their previous containers and placing them into 4mil polyethylene zipper-top bags. Any original notes or bag labels would be cut out if necessary and included within the new bags. Also included in the new bags were bag labels made of acid-free paper using a laser printer and archival ink pens. These labels identify the location of the bag, the bag number, and a short note on the contents of the bag. These labels should help researchers or staff members to quickly locate specific bags and keep bags from being placed in the wrong drawer.

In some instances, materials were not removed from their original containers. For example, the many tins of sand, clay, temper, paint, and organic materials could be adversely affected by the static charge present in the polyethylene bags. These tins were therefore placed as-is into polyethylene bags to avoid spills and leaks and to keep the labels with the materials. Another example is envelopes of potentially hazardous materials from mines and manufacturers. Some of the items Shepard used for tests included materials such as lead solids. These potentially hazardous materials were handled as little as possible and the entire original container was placed in a polyethylene bag to contain any loose particles.

Figure 3. Drawer in the process of being inventoried showing polyethylene bags used for rehousing.

Polyethylene bags were chosen to house the hazardous material samples due to their ability to provide an inexpensive, inert, sealed container. In environments with greater overall relative humidity, condensation forming within the bags can be a concern. However, in the overall dry Boulder climate there is little concern that the materials will start to "sweat" within the bags. Also, the bags provide some level of protection against sudden temperature and relative humidity fluctuations by creating a small, buffered environment. Polyethylene bags are not the only method of containment for the hazardous materials. In the future, it may be advisable to move these materials into glass or metal containers for safer storage.

Future Work

After the 2002 inventory, the material samples in this collection are housed in appropriate materials and have had most of their preservation concerns mitigated. The physical storage of these materials is sufficient and at this point needs only to be maintained. The only collections that may need storage upgrades are those that are labeled as being radioactive. Although the recorded readings are not thought to be dangerously high, former museum staff could not recall exactly when or why the readings were made. As yet no paperwork has been found relating to these measurements. It is recommended that new

readings be taken to assess the special needs of these materials as far as storage and handling are concerned.

Future work on these collections can also include research into provenience for many of the materials. The archives undoubtedly hold much information about the material samples in this collection and will eventually be able to shed much light on the provenience and research importance. The process of matching material samples with reference data from the archives will be very time consuming. It will be easier to implement once the archival materials have been processed and a complete finding guide is available. Information about these materials can also come directly from archaeologists and ceramicists that work with these materials. Already, a researcher looking through these collections has helped us identify sherds that were mislabeled and helped to clarify handwritten notes that were unintelligible to me as a non-specialist. Researchers using the collection should be encouraged to record as many of these findings as possible and modification of the field entries in the database table should be made to reflect these new findings.

Methods Used in Inventorying Photographic Materials

Past Work

The Anna O. Shepard photographic archive consists of many photographic materials and was partially inventoried and rehoused in 1987 by a student intern. The 1987 project consisted of placing prints and negatives in acid-free archival quality folders and some prints, slides, and negatives in Mylar sleeves. It is unknown to what extent the photographs were left in original order or reorganized, and it is unclear from the write-up of this project how decisions were made as to which materials were placed in sleeves and how things were grouped into folders or boxes. It also isn't clear how decisions were made as to which materials would be inventoried first, since the inventory is incomplete. This project also undertook some conservation treatments, such as the hydration of curled prints and negatives so that they could be flattened. Again, it is unknown how decisions were made as to which materials required immediate treatment and which were not treated at that time.

From the 1987 inventory project, a reference guide was produced on graph paper that gave information on different photographic mediums and the subject of the photograph. This information is heavily coded and is therefore difficult to access. Some codes are not defined and are therefore useless. The system describes about half of the photographic materials very

thoroughly, but does not describe the other half of the materials at all. The inventory also does not include any location information, and therefore researchers and staff are completely dependent on the accuracy of box and folder labels to locate materials.

2002 Inventory

The 2002 inventory was started at the broadest levels and worked down to more specific levels, rather than immediately starting with an item level inventory. In this case, the most specific level inventoried was the folder level. This was due to time constraints and the complicated nature of photographic materials. While the inventory should provide some direction to researchers and staff, photographs are typically considered part of archival or manuscript collections and these photographs should therefore be further processed along with the manuscript collections.

Each box of photographic materials was already numbered and these numbers were used to record location information. Within each box, folders were individually numbered in the order in which they were found within the box. Information about each folder's contents was then recorded. This data includes the format of materials within the folder, how the materials are currently housed, general topics or themes within the images such as indigenous potters or archaeological excavation, and any provenience information written either on the materials or on the folders. It is not known how the folders created in 1987 got their label information, but it was assumed to be accurate and therefore was recorded. This is a very basic inventory of photographic materials, but will provide researchers and staff members with the ability to conduct a directed search of the materials in the collection. Eventually, a more detailed inventory like that started in the 1980's will be helpful, although it will be a time consuming and potentially expensive process to inventory and rehouse each of the photographic images. A detailed description of the photographic database table can be found in the AOS Database section of this paper.

A number of preservation concerns arose during the 2002 inventory of the photographic collections. Although the materials were placed in acid-free folders during the 1987 inventory, the materials themselves are not acid-free. There are definite signs of acid migration, causing all of the previously acid-free folders to test positive for acidity. In some cases the acid migration was so extensive that the folders had become brittle and would crumble with even a light touch or gentle movement. Although some negatives and prints were hydrated to make them flat, other materials are still curled or rolled, causing them to be

crushed within the folders and boxes. These materials should either be flattened or stored in a manner separate from the flat materials.

This collection also includes very fragile objects, such as lantern slides, glass plate negatives and positives, and glass spectrographic plates. These materials should be rehoused in special containers and boxes to prevent damage caused by handling and other movement. Prints and negatives should also be housed in more appropriate containers. Although they were housed in archival quality materials, the material shapes and sizes are inappropriate. Folders full of prints are placed flat in the bottom of a box, allowing for prints and other contents to easily slide out of their appropriate folders. It is recommended that either these folders be placed upright in archival document boxes or that these materials be placed in enclosures with at least three sealed sides to better contain the materials.

Future Work

The 2002 folder level inventory is not intended to be the final step in the processing of the photographic collections. The folder-level processing and corresponding database table were completed in order to maximize the amount of work that could be done in a short period of time. The table should be useful for narrowing searches and allowing researchers or staff members to search by format, topic, or provenience. There are photographs that have little or no information associated with them, and undoubtedly some photos that have been mislabeled in the past. These problems are difficult to solve without thorough research using the archival materials. Therefore, once the archives are more fully processed, the photographs can also be further processed.

Methods Used in Inventorying Ceramic Thin Sections

2002 Inventory

The Anna O. Shepard Collection at the CU Museum contains over 5000 thin sections, almost entirely of ceramic materials. Other slides show sand and other tempering materials, glaze, and paint samples. These sections have not been inventoried in the past and are in the same containers and order that Shepard used them in. Shepard often organized them by archaeological site and further divided them by ceramic type. This is not always the case, however, and the different styles of organization made this a difficult collection to inventory efficiently. The goal behind this inventory was simply to get the thin sections and information associated with them into a searchable format. This inventory should help provide easier access to researchers and staff and allow for better tracking of the collections. Over the years, thin sections have been removed, loaned, misplaced, or lost. Having a working file of what thin sections are in the collection with space for notes can help to track overdue loans and identify thin sections that are found in other areas of the museum's collections. A detailed description of the ceramic thin section database table can be found in the AOS Database section of this guide.

Future Work

The preservation of these materials has been researched and discussed with others in the field. The current state of preservation is that the thin sections are intact and functional but the adhesive used to make them is yellowing. Most adhesives will yellow over time and the adhesive used for the thin sections, likely balsam, seems to be no exception. A discussion with the Geology Department's laboratory technician, Paul Boni, leads me to believe that the yellowing of the adhesive is not affecting the usefulness or stability of the thin sections. No other information is available on long-term preservation of these materials but because more and more geologists and archaeologists are viewing their slide libraries as irreplaceable resources, more information is likely to be available on this topic in the near future.

One preservation topic that should be addressed is the use of wood in the storage of some of the thin sections. Wood is inherently acidic and can off-gas contaminants that damage museum collections. While the use of wood to store these thin sections may not be directly affecting the preservation of the sections, it is not recommended that wood be used in museum storage rooms. These wooden drawers and cabinets are close to other materials such

as archival documents and photographs that can be highly susceptible to acid migration and off gassing caused by wood products. There is also a chance that in the future, these thin sections may need to be relocated to another area of museum storage where other susceptible collections may be housed. It would be best to remove the wooden storage containers and replace them with inert materials, such as metal cabinets and drawers. One problem, however is that the age of these thin sections is such that they are not the current standard microscope slide size so new slide boxes cannot be used as their slots are too large to hold Shepard's slides. It is also a concern that the boxes made specifically to hold these thin sections may be considered as much a part of the collection as the thin sections themselves. Therefore it will simply be important to keep these wooden cases out of storage areas and away from highly susceptible collections, such as organic materials.

Guide to the AOS Database

The database of the Anna O. Shepard collections contains a number of tables with information relating to the different materials within the collection. The database is on the Anthropology Section server that is backed up to an off-site server, and is also available on compact disc in Henderson room 216 and in MCOL room E272. The Anthropology Section of the Museum currently uses Microsoft Access for their collections files. For consistency, the Anna Shepard Collection database was created in Access. Currently there are three main tables called *AOSMaterials*, *AOSPhotos, and AOSSlides*. These tables each contain the information available about the sherd and materials samples, photographic materials, and ceramic thin sections, respectively. The tables were created separately for each type of material and contain fields for recording information about a particular type of material.

Student interns created the sherd and material samples table in 2001 to complete their partial inventory of the Southwest US sherds in the Shepard collection. It appears as though this table was designed to be used with all of the materials in the Shepard collections, not including the archival materials. Sherds, material samples, photographs, and thin sections were all included in this table and in the data dictionary used to define the codes (see Appendix A). I decided to remove some of the material types and sample types from the data dictionary and to create separate tables for the thin sections and the photographic materials. The types of information available for these different types of collections were so different that I thought it was impractical and difficult to create a single table to incorporate all of these different materials. If the thin sections and photographs were recorded in the same table as the sherds and material collections, many of the data fields would have to be left blank. This slows search processes and creates an inefficient database.

Data Organization and Relationships

Relational databases allow for a lot of information to be stored and searched in a very efficient manner. This type of database allows for tables with like information to be linked together through the similar data fields. For example, if we had two tables, one dealing with archaeological site information and the other containing catalog information on artifacts found at these sites, we could link these two tables together using the field that contains the site

name. This would be considered a one-to-many or many-to-one relationship. This is because each artifact can come from only one site, but each site can have many artifacts. One-to-one relationships can also be converted into relational tables. Many-to-many relationships, however, need to be converted into multiple one-to-many or many-to-one relationships before they can be converted into database relationships.

With the Anna Shepard database, there is the question of how these materials could or should be linked together. It could be very helpful to a researcher to be able to link certain documents in the archival collections with sherds and material samples. At this point, however, this would be considered a many-to-many relationship. Each archival document could contain information on one or more bags of sherds, and each bag of sherds could be discussed in one or more documents. This relationship would have to be further evaluated and changed into multiple many-to-one or one-to-many relationships in order to be converted into a relational database. Because many of the materials are archaeological in nature, it seems like a good possibility that the materials can be linked by archaeological site, when appropriate. This would help to convert the many-to-many relationships into one-to-many relationships. For example, when trying to relate archival documents with bags of sherds, an archival document could relate to only one site. In a similar fashion, each bag of sherds could also relate to only one site. This converts the many-to-many relationship into two one-to-many relationships that can be used in relating tables within a database.

This is quite obviously an oversimplification of the actual materials and relationships within this collection, but it gives some idea of how such relationships can be developed. It also helps to justify the reasons that all of these different materials were broken into separate, flat-file tables for the time being. Once these complex relationships have been further defined, broken into specific relationships, and a data model of the information created, a relational database may be implemented for the Anna Shepard collection.

Having the information in flat-file tables in the database does not mean that staff cannot easily access the materials in the different collections. Microsoft Access allows for searches to be made in a format called a query. A query can be used to search a table for records that contain specific information in one or more fields, records that contain information other than a specific value, or records that contain any of a number of values. For instance, the sherds table can be queried for very general questions, such as a list of all the materials from Mesoamerica. It can also be used to find very specific records, such as clay samples without reference numbers from the Black-on-White Site. Queries are very powerful

tools and Access makes them very easy to create even for those who have never used this program before. Queries will allow staff to answer researchers' questions on materials and make retrieval of specimens or artifacts easy. Queries can be used on all of the tables within the Shepard database to accomplish tasks such as finding all the materials, thin sections, and photographs from the Mimbres region. Because of the relatively small size of the tables in the Shepard database, it is easy to run multiple queries to find records that are needed. For information on how to query tables in the AOS Database, see the User's Guide (Stoltz, 2002) in Henderson room 216.

Recently, a researcher was interested in locating some Teotihuacan style sherds and other materials from the site of Tikal. It was very easy to run a couple different queries to target the records and materials she was looking for. One query located materials labeled either Tikal or Teotihuacan. Another query allowed us to search for the numbering systems the researcher had previously assigned to the sherds. In the end, the queries allowed us to locate the materials the researcher had been trying to locate for almost 40 years.

Overall, while there is still work to be done on the Anna Shepard database, it is proving to be a useful tool in dealing with the management of these materials. Future work can include entering more data into the tables as it becomes available from archival documents and researchers. The more information available about these materials, the more easily these tables can have larger fields divided up to focus on more specific information. If more specific information becomes available, such as being able to clearly distinguish site names from ceramic types, relationships may be able to be made between these tables in the future.

***AOSMaterials* Table Fields** (see attached CD for tables)

The table used in recording the material samples is one adapted from the earlier student interns' table. A few small changes were made to this table for ease of use. For example, some categories were combined, such as "rock" and "mineral" being combined simply into "rock". This was done because the people inventorying the collections, as well as researchers and collections staff, may not be able to differentiate between these two categories simply by sight. Other categories were dropped because their definitions were unclear or that no such materials actually existed in the collections. These categories were combined to make the data within the table as consistent as possible, and to make queries of the

information as straightforward as possible. Also, a few additional categories were added as new types of materials were discovered and inventoried.

It is assumed that this table was created with many different fields in order to enhance searches and to provide necessary fields for linking this table to other tables in the database. Because of the many different fields and the varying quality of documentation associated with the material samples, it is common to find fields that are filled with the code "UD", meaning the information required for the field is as yet "undetermined". These fields may eventually be filled when information from the archives is added to the table or when experts in the field are able to fill in missing information.

Information recorded into the database includes the drawer and shelving unit location, the type of samples in a particular bag or container, presence or absence of reference numbers, the number of items in the bag, region, state and site that the materials come from, other provenience notes, the presence or absence of original labels, and a memo field for any other pertinent information to be recorded.

As materials were removed from the drawer, the type of material was recorded in a coded system of material type and sample type (see Appendix A). For example, material types included ceramic and geologic, and sample types included sherds, fired clay billets, sand, or rock. If more than one type of material existed in a bag or container, all of the applicable codes were recorded. Research was conducted into the possibility of using standard archaeological terms for the naming of these materials. It was discovered that presently there are no universally accepted terms for naming archaeological artifacts. Therefore, for this database, terms were applied that would make the entries consistent with other databases in the Anthropology Section of the Museum. There are already other institutions working on developing a standardized nomenclature for archaeological materials. One of these nomenclatures is being developed by the Wisconsin Historical Society and is in the process of being submitted to the Getty's Art and Architecture Thesaurus. It should be a simple process to change the currently used nomenclature in these tables to universal standards if they are adopted in the future. Access allows update queries to change large numbers of records at once allowing for an easy conversion to other systems of nomenclature.

Many sherds and other materials have some sort of numbering system or other reference marking associated with them. If such a reference number was present on the sherds or material samples, a checkmark was placed in the *Reference* field of the table. *Item Count* records the number of samples present within a bag or container.

Provenience information was recorded by *Region*, such as Southwest US or Mesoamerica, *State* (if applicable), and *Site* for materials from a particular archaeological site, city, or other specific place. This information is often missing. Any information that could be drawn from the given labels was recorded. The field of *Provenience Notes* allowed for the recording of locality information that did not fit easily into the other fields. For example, Shepard often collected sand and clay samples that have provenience information such as "1/2 mi. W. of Rio G. Bridge on road to Frijoles". From this information we may be able to determine a region or state location and would also record this more specific location description in the *Provenience Notes* field. At times, it is difficult to tell if notes associated with the material samples are referencing a specific location or if these names and notes refer to something like a pottery type. For example, if a note is found with a sherd that says "Mesa Verde", it is unknown whether this is stating that the sherds are from a location at Mesa Verde, or if they are perhaps part of a similarly named ceramic type, such as Mesa Verde Black-on-white. In these and other unclear situations, the names of regions or sites may be entered with a question mark following them. It will be beneficial for researchers or staff members with knowledge of ceramics and archaeological sites and regions to better identify the accuracy of these entries and make adjustments in the future.

The *Label* field was checked if an original note was present with the material. Usually as much information as possible from the original note would be recorded into the corresponding fields of the database table. Much of the information from longer, more detailed notes can be found in the *Memo* field.

The *Memo* field was used as a catchall category for any other information associated with the samples. This field may include information such as previous drawer or bag labels, examples of numbering systems used for reference, notes on collectors names or dates materials were collected, more specific information on the types of materials collected such as a ceramic type or a specific type of clay, and what type of container the material was originally packed in or found in. The type of material the specimen was found in was recorded to make future researchers aware of any possible contamination of specimens that are to be used for specific analyses. Usually notes and labels found with an object gave a limited amount of information that could all be recorded in the *Memo* field. Occasionally there is more information than could be fit into this field. This may be signified in this field by the inclusion of ellipses (…). Sometimes information was paraphrased in the *Memo* field

and other times it is written exactly as it was found on the note, denoted by the inclusion of quotation marks.

***AOSPhotos* Table Fields** (see attached CD for tables)

The photograph table is intended to record basic information about the materials within each folder. As already mentioned, a previous worker started an item level inventory in 1987, but this was only completed for about half of the photographs. The current system is not intended to identify individual photographs or images but can help narrow down the number of boxes and prints that must be searched in order to locate a particular image. Even with the 1987 inventory it was difficult to search for particular photographs. The codes were not clearly defined and the different subject codes were not used consistently. For example, a photograph of Anna Shepard firing experimental pots was located in a box labeled "personal," probably because the image had her in it. This could also have been filed in a box with other potters, or another box that has photographs relating to her work. This individual numbering system would be useful for locating the most commonly requested images, such as those used in The Ceramic Legacy of Anna O. Shepard (Bishop and Lange, eds. 1991). No one recorded what the assigned numbers were for these images, however, so locating them still requires a thorough search of the photographic collections. In many cases, photographs used in publications were removed from the rest of the collection and placed in other storage areas throughout the museum. With the 2002 inventory system allowing for images to be located in a systematic way, it seems best to return all images and photographs to the 22 boxes of Shepard photographs so that their location can be recorded in the associated table and database.

The fields used in the *AOSPhotos* table include *UCM Location*, *Format*, *Storage*, *Provenience*, *Description*, *Previous Cataloguing*, and *Memo*. The *UCM Location* gives the box and folder number. The *Format* field consists of a pull-down menu so that the photographic format(s) contained in the folder can be recorded in the table using consistent language. The *Storage* field is used to record any other information about how the materials are stored, such as loose in the folder or in polyethylene sleeves. The *Provenience* field will contain any provenience information available about the image such as it is of Mexico, San Ildefonso Pueblo, or of White House at Mesa Verde. *Description* will provide a brief description of the image subject(s), such as indigenous potters, landscapes, or images of artifacts. The *Previous Cataloguing* field will contain any previous catalog or inventory

numbers associated with the images in the folder. This way if a researcher or staff member is looking for a particular image and they do have a previously recorded number assigned to that image, they can search in this field for the corresponding image location. The final *Memo* field will allow for any other notes about the folder's images to be made, such as conservation concerns or specimens that have been removed for study or publication.

***AOSSlides* Table Fields** (see attached CD for tables)

The fields used in the Thin Section Table include *UCM Location*, *Number*, *Provenience/Type*, and *Memo*. The *Location* field records the thin section box number and then the slide number. Each of Shepard's boxes has an individual number and each thin section is stored in an individually numbered slot within that box. The *Number* field contains any numbers previously assigned to the thin section by Shepard. Sometimes there is more than one numbering system in which case all numbers associated with a thin section were recorded. All other information Shepard had provided about a thin section is in the *Provenience/Type* field. I was not easily able to divide this information into separate provenience and ceramic type data and so the information is presented in the same order and format used by Shepard. Further work on this collection, especially by archaeologists knowledgeable of the sites, regions, and ceramics she is describing, would likely allow for such divisions to be made. The *Memo* field is once again used to record any other information about slides, such as loans or notes on their condition.

Collection Priorities

The following prioritized list has been compiled to aid museum staff in setting priorities for tasks still to be completed. This section will place projects in order by priority and will serve as a quick reference guide to tasks not yet completed. The Museum can complete work towards these goals as they receive appropriate funding and have sufficient staff time. The results of competing these tasks will bring this collection to the highest possible preservation standards and to make it as accessible and useful as possible to researchers.

Test Radioactive Materials and Assess Storage Needs

The materials that have been labeled radioactive need to be tested again so that appropriate storage and handling procedures can be developed. This should be a fairly easy procedure since the University will test these materials through their Office of Environmental Health and Safety department. I discussed the previously recorded readings of these materials with Paul Boni from the Geology Department. He seemed to think these were very low readings and that storage in the metal drawers was appropriate. After more accurate readings are recorded, research and discussion with the University Office of Environmental Health and Safety should help to decide how and where these materials will be stored as well as safe procedures for museum staff to work near and with the samples. This Office also distributes booklets and other information on handling radioactive materials. Two drawers have been previously tested and have registered above normal readings. These two drawers should be specifically targeted and a general environmental test should also be completed to search for other materials that may have above normal levels of radioactivity.

Assess Storage, Handling, and Possible Disposal of Manufactured and Mining Samples

There are a number of drawers of material samples in the Shepard collection that contain clay, pigment, or glazing materials either purchased from manufacturing companies or provided by commercial mines. Many of these materials were collected in the 1920's through the 1940's and were sent to Anna Shepard in manila-style envelopes. The original packaged are often deteriorating, causing spills and leaks. Some of these materials may be hazardous, such as heavy metal salts and lead solids. In this inventory, these materials were placed as-is into 4mil polyethylene bags in order to prevent further spills of the materials inside the deteriorating envelopes.

The Anthropology Section should decide if these materials are vital to the collection for use by researchers such as archaeologists and ceramicists. It seems as though many of these manufactured materials have very specific ingredient lists or chemical formulations that could be recorded and reproduced if necessary. In some cases, it may still be possible to obtain these materials through manufacturing companies. If this is the case, the Museum may wish to dispose of these materials while keeping a record of what materials Shepard had in her collection. This would dispose of any hazardous materials and lessen the space required to store these materials. Materials that the Museum chooses to remove from the collection should be disposed of through the hazardous waste removal procedures, handled by the University Office of Environmental Health and Safety.

For any of the materials the Museum does wish to keep with the collections, storage and handling need to be addressed. A first priority would be to identify potentially hazardous materials and research appropriate storage containers. Once the materials were transferred, safe handling procedures should be written up and placed with the materials as well as with this report on the collection.

Move Deteriorating Negatives/Prints to Better Storage Environment

Many of the nitrate negatives located in the photographic collections have already deteriorated beyond usefulness or repair. These and other susceptible materials must be placed in a more stable and consistent environment in order to slow the deterioration process.

Hendriks (1992a: p. 41) recommends reducing fluctuations in relative humidity and temperature in order to lessen the strain on the adhesion of the gelatin layer. He suggests relative humidity levels between 20% and 50% for all photographic materials, and temperatures of 59F-77F for glass plates and paper prints, and below 68F for film, while storage at even lower temperatures will considerably extend the longevity of any photographic material (p. 42). At the very least, the photographic collections should be moved from the top floor storage they are in to one of the lower level storage rooms that have a more stable and consistently lower temperature, such as room 1b or 101.

Cold storage in refrigerators is even better for some of the very susceptible materials. The Anthropology Section has only two refrigerators and therefore the volume of material in these units is limited. Priority should be given to materials that are actively deteriorating, such as the nitrate negatives. Cellulose nitrate material is inherently unstable and its deterioration is simply a matter of time (Hendriks, 1992b: 49). Storage at low temperatures, even below freezing if relative humidity is kept around 35%, will slow the rate of deterioration (Hendriks, 1992b: 49). It is not possible to stop the deterioration of these materials completely, and so methods have been developed to preserve the images captured with these types of film. Emulsion layers can be stripped from the cellulose nitrate and transferred to a stable support (1992b: 49). This method is probably not possible with the Shepard collection, as most of the nitrate negatives have already begun to deteriorate. Another option is to make duplicate negatives out of more stable materials.

I contacted Amaranth Photo Imaging in Boulder to get some idea of how duplicate negatives or other copies of these images could be made. The images can be scanned into digital format and then transparencies can be made. The scanning of each image would cost about $27 and the transparency would cost around $12 for a total of $39 per image. Research should be done to assess the possibility of scanning these negatives and other images in-house using materials and labor provided by grants. It seems likely that the costs associated with the reproduction of these images could be greatly reduced if an in-house intern or contract staff is trained in the reproduction process. Even if grant funding is possible for one of these two scenarios, no doubt priorities will have to be made as to which images now recorded on cellulose nitrate have the highest reproduction priority.

Hire Archivist to Process Archives, Manuscripts, and Photographs

Hiring an archivist to process the Shepard archives is the most important task in providing better access and preservation to this collection. Many of the tasks left to be completed on the material samples and thin sections rely on being able to obtain specific information from the archives. A professional archivist, one being trained in archival processing procedures and having completed a Master of Library Science, must be hired in order to get the archives up to accepted archival standards and to produce a standard finding aid for the collection (an example of a standard finding aid made by a professional archivist at the Denver Public Library, can be found in room 216). Student labor has been used in the past to process these collections, and while they did create some order and accessibility it is nowhere near the level of accessibility many researchers will require. Archivists are trained to have knowledge of Individuals, Organizations, and Institutions, knowledge of records, knowledge of the uses of records, and knowledge of archival principles (O'Toole, 1990: 49-58). Through these specific types of knowledge, a professional archivist can gear an archive's processing towards a specific audience and can plan the arrangement and description of the archival material with that audience in mind (Miller, 1990: 5). In addition to the level of expertise necessary to efficiently process this collection, it will require a large amount of staff hours dedicated to this project. Current staff and faculty will likely not be able to commit the time necessary to complete this project.

It always seems that the hiring of more staff would solve many of the Museum's problems. It is, however, unfair to simply suggest that the Museum hire another staff member or contract an archivist to work on this collection without making any suggestions on how the Museum could fund this position. Processing of the Anna O. Shepard Archives could be funded through a National Historical Publications and Records Commission (NHPRC) grant. NHPRC supports projects that preserve and make available for use historically significant records. Grant funds can help repositories assess records conditions and needs, and provide support for historical photograph preservation and microfilming. These grants are awarded biannually, with application deadlines falling on June 1st and October 1st. It is suggested that applicants contact their State Historical Records Advisory Board Coordinator early in the application process to get their advice on proceeding with the application. Some states also have a pre-submission process that must be followed, so early contact with the State Coordinator is important. NHPRC Staff members are also available for help and will provide advice on draft proposals before the application deadline. More information is available on NHPRC grants on the web at www.nara.gov/nhprc.

It would be best to contact an NHPRC staff member when first starting this application process to discuss whether the single collection or the multiple collection projects would be more apt to be funded. The Anthropology Section's application for this type of grant could focus entirely on the Anna O. Shepard collections or could include the processing of other archival collections in the section. Other collections that need to be processed include the Earl H. Morris and Joe Ben Wheat archives. Research must also be completed on what the size of a typical grant is and what materials and services the NHPRC typically funds. This research needs to be completed before an application is submitted and should be completed as soon as possible in order to get the application process started. The processing of the archival and photograph collections is of vital importance to the entire Shepard collection and its usefulness to future researchers.

Rehouse Photographic Collections in Appropriate Containers

The Anna Shepard photographic collections need to be rehoused in appropriate enclosures and containers. Most materials were placed in archival quality materials during the 1987 inventory, although many of the envelopes, folders, and boxes remain overcrowded. For example, a single Mylar sleeve may be used to house ten or more prints or negatives, causing all of the materials to easily slip out of the enclosure. The same has been previously noted with the acid free folders. Because they are normal document folders laying flat in boxes, the materials slip out of them very easily.

Many archival suppliers have photographic document boxes, folders, and envelopes specifically designed for different photographic formats. These specialized containers are made specifically for negatives, specific sized prints, lanternslides, glass plates, and other photographic formats. While these materials are fairly expensive, they are designed to last and to protect the collection better than other materials. The purchase of such materials could also come from an NHPRC grant, or possibly an Institute of Museum and Library Services conservation grant.

Reattach Thin Section Labels

Some boxes of thin sections, including boxes 40-43, have slides with labels attached using adhesive. This adhesive is failing and in many cases the labels have already fallen off of the slide. This is a concern as the information recorded about a thin section is recorded in only two places: on the slide label and on the box label next to the slide's slot number. If slides without labels attached to them are removed from the box, they could easily become mixed up. In such a situation, almost all information about a thin section would be lost.

Research should be done on how to best label the slides. Perhaps the label can be reattached to the slide with a more stable adhesive that is less likely to fail, such as an acrylic-based glue. An alternative would be to label the slides directly, as many of the slides are already labeled. Photography stores and archival suppliers sell pens and markers that are intended to write permanently on smooth finishes. These types of pens should be tested to see if they could be used to mark the slides more permanently in order to prevent the loss of information associated with each slide.

Work on 2000-2001 Inventoried Sherds

Student interns inventoried two shelving units of drawers that housed Shepard material samples in 2000 and 2001. These inventories were very similar to those completed in the current round of collections inventory with a few minor exceptions. The materials tended to be divided into more material and sample types than were used in this inventory. These extra material and sample types should be changed to fit the new categories in order to keep the coding system for material and sample types consistent. This can be done with some simple update queries. This will also allow for the information in this separate table to be integrated into the larger *AOSSherd* file so that all of the sherds and material samples in the collection will have their information recorded in a single table.

The sherds have already been rehoused into 4mil polyethylene bags. The labels placed in each bag were small, handwritten notes simply identifying the bag number. The new labels created for this larger inventory project identify the materials as being from the AOS collection, have a space for the entire location including shelving unit, drawer number, and bag number, and provide a space for other notes on the contents of the bag. These labels make it easier to identify the materials and where they came from if a bag is removed from its permanent storage location. These acid free tags should be created and placed in each of the bags previously inventoried by the student interns.

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Shepard Collection User's Guide

Anna O. Shepard Collection

Anna Osler Shepard (1903-1973) studied ceramic technology and manufacturing processes using mainly petrographic analysis and experimental firing tests. Through her studies she acquired a vast amount of material including archaeological specimens and material samples. The majority of her work and materials are from the American Southwest and Mesoamerica, although she collected and studied materials from all over the world. After her death, her material samples, photographs, archives, and library were all transferred to the University of Colorado Museum.

The collections are housed in storage areas of the Henderson Building. Inventories have been made of different parts of the collection at different times. The various inventory projects have created different types of user's guides and finding aids. These materials and their current locations are listed in the table below.

Collection Type	Henderson Room Location	Collection Size	Guides Available	Guide Locations
Material Samples and Sherds	307	120 cubic feet	User's Guide 2001 (Bevilacqua, Bucur) User's Guide 2002 (Stoltz)	216 216
Archival Collections	210	42 linear feet	Finding Aid 1985 (Gilchrist, Leventen)	210
Photographic Collections	307	10 cubic feet (5000+/- images)	Reference Guide 1987 (Solomon) User's Guide 2002 (Stoltz)	307 and 216 216
Ceramic Thin Sections	307	5000+/- slides	User's Guide 2002 (Stoltz)	216
Library Materials	210, 216, 307, 402	55 linear feet	No User's Guide/Finding Aid Inventory started Spring 2002	N/A

Database Tables

The database of the Anna O. Shepard (AOS) collections contains tables with information relating to the different materials within the collection. The AOS database is in Microsoft Access 98 as this is the program used by the Anthropology Section of the Museum. Currently there are three main tables called *AOSMaterials*, *AOSSlides*, and *AOSPhotos.*. These tables contain information available about the sherd and materials samples, ceramic thin sections, and photographic materials, respectively. The tables were created separately for each type of material and contain fields that are appropriate for recording information about a particular type of material.

The AOS Database is stored on the Anthropology Section's server and can be accessed through terminals in the Section that are networked. This server is backed-up on another server located on campus in MCOL. Digital copies of the database are also available on compact disks, along with the larger Collection Strategy paper (Stoltz 2002) in the collection manager's office, Henderson room 216, and in the Museum and Field Studies office, Curtis Building E272. For additional information on the database and its tables, please see "The Collections of Anna O. Shepard: A Collection Strategy" (Stoltz 2002) located in Henderson room 216.

AOSMaterials Table

This table contains information gathered during the 2002 inventory (Stoltz, 2002) of the ceramic sherds, refired sherds, test firing clay billets, clay samples, mineral samples, sand samples, and other materials used by Shepard in her experimental research projects. The material varies greatly in the amount of information available and so there are many different fields in this table to record the information. *Material* and *Sample Types* use codes to define what the material is, and definitions of the codes are located in the data dictionary (see Appendix A). Provenience information is divided into a number of fields, depending on how specific the information is that that is associated with the materials. The memo field is used to record any important information that does not specifically fit into another field. This could include collections management information, as well as information such as the text from an original label. The following table gives a brief description of the information recorded in each field:

FIELD	DESCRIPTION
ID	Unique identification numbers assigned by Access for each entry in the database – these numbers do not relate directly to materials
UCM Location	Drawer tier number, drawer row letter, drawer number Ex: 17A4 is Tier 17, row A, drawer 4
Bag Number	Each bag within a drawer has a unique identification number assigned during 2002 inventory
Material	General material type, coded (see data dictionary in Appendix A)
Sample Type	More specific description of material, coded (see data dictionary in Appendix A)
Reference Number	A yes/no category, box is checked if preexisting numbers were found on sherds or other materials (If yes, more information may be recorded in *memo* field)
Item Count	Number of items in a bag
Region	Provenience information on region, coded: MES - Mesoamerica, SW – American Southwest, EUR – Europe, ME – Middle East, PLN – Plains, WNA – Western North America, ENA – Eastern North America
State	Provenience information for materials from US States, postal abbreviations used
Site	Archaeological site name
Provenience Notes	Any other information about provenience of material
Label	A yes/no category, checked if a preexisting label exists for the materials (if yes, more information may b recorded in *memo* field)
Memo	Other information regarding materials included but not limited to collections management and conservation concerns, examples or reference numbers, and information from original drawer or bag labels

AOSPhotos Table

Photographs from the AOS collection are recorded in this table. Each box of photographic materials was inventoried to the folder level so that entry in this table represents one folder, envelope, or other container of materials within the box. This table has information on storage conditions, format, and also records any numbers assigned to an image during the 1987 inventory. The following table gives a brief description of the information recorded in each field:

FIELD	DESCRIPTION
ID	Unique identification numbers assigned by Access for each entry in the database – these numbers do not relate directly to materials
UCM Location	Locations recorded by box number, folder number Ex: 12, 4 means box 12, folder 4
Format	Pull-down menu of photographic material formats, field can contain more than one format of material Possible formats: black and white prints, negative, slides, lantern slides, glass plates, spectrographic plates, hand-colored prints, nitrate negatives, color prints, photocopies, transparencies
Storage	Pull-down menu of current storage conditions Possible conditions: loose, in sleeves, in non-acid free materials, prints mounted on paper, interleafed
Provenience	Any information on where photo was taken or where materials and artifacts in photo may be from
Description	Description of photograph subjects within a folder
Previous Cataloguing	Record of previous catalog numbers and inventory codes, primarily from the 1987 survey (see 1987 Reference Guide for coding definitions) Ex: AOS MX 124-128, AOS US NM 1-167
Memo	Additional information relating to the images in the folder, mostly collections management information

AOSSlides Table

The ceramic thin sections in the AOS collection typically have a lot of information on provenience and/or ceramic type located with each slide, often written on a box label as well as on the slide itself. The difficulty is that each box seems to have a different recording system making it difficult to differentiate between the types of information. Therefore in the table, much of this information is in a single field labeled "*Provenience/Type*". There often were reference numbers associated with a slide that were assigned by Shepard. These numbers were recorded in the *Number(s)* field. The following table provides a brief description of the types of information recorded in each field:

FIELD	DESCRIPTION
ID	Unique identification numbers assigned by Access for each entry in the database – these numbers do not relate directly to materials
UCM Location	Locations recorded by box number, slide number Ex: 25, 84 means box 25, slide 84
Number(s)	Any preexisting numbers assigned to the slide by Shepard, may be reference to sherds or notes in archives*
Provenience/Type	Any information available on provenience or type of sherd taken directly from slide box labels**
Memo	Other information regarding thin sections, such as if they are missing or on loan

*As of the completion of the 2002 inventory, we do not have the ability to cross-reference these numbers with the material collections or archival documents. However, this may be possible in the future.

** The labels were copied exactly as written in the slide box so as to avoid incorrect information from being recorded through misinterpretation of abbreviations.

Directions for Accessing AOS Database and Collections

Step 1. Define Researcher Request

The first step in accessing the AOS database or collection is to define the types of materials that are required for the given project. It will be necessary to identify whether these include material samples or sherds, photographs, or ceramic thin sections. Each of these types of materials is inventoried separately and has its own database table that will need to be searched. It will also be necessary for the researcher to give any other qualifying information relating to the materials needed. This may include, but is not limited to, site names, regions, specific archaeological project names, specific types of clay or other raw material, specific types of pottery, and any other information that can help to narrow the search. It will be important for researchers and staff to be willing to try different approaches in order to find this information. Sometimes names of sites have changed over time, or there may be one or more phrases used to refer to the same types of pottery. Thinking about these possibilities ahead of time will make the searching faster and more productive.

Step 2. Designing A Query for a Particular Table

The three tables in the AOS database are *AOSMaterials*, *AOSPhotos*, and *AOSSlides*. Once the type of material being sought is known, the appropriate table can be searched using a query. A query is a simple search program used to identify records that contain specific information within a table. Below is an example of how to run a simple query:

A researcher may request to look at something like ceramic sherds from the site of Tikal. The search will therefore be within the *AOSMaterials* table, as that is where items such as sherds are inventoried.

1. Open the AOS Database and on the left-hand side of the menu box, select Queries.
2. From the menu box, select “Create query in design view”.
3. A small box labeled “Show Table” will open. Select the desired table and click on the Add button (in this case it is the AOSMaterials table). Click on the Close button.
4. Fields that need to be viewed in the final query can now be added by clicking on them and dragging them into the grid at the bottom of the window. For this sample query, the fields that might be required are *UCM Location*, *Bag #*, *Material*, *Sample Type*, *Site*, *Provenience Notes*, and *Memo*.

5. Once the necessary fields are in the grid at the bottom of the Query box, parameters must be set to limit the search. The grid is set up like a table, and labels for each line can be read on the left-hand side of the grid. The top line is always the field name, and the second line is the name of the table the field is from, in this case AOSMaterials. The third row is Sort, which can be ignored for the time being. The fourth row is Show, and each box should be checked so that these fields are visible in the final query. The fifth row, labeled Criteria, is where the parameters will be set.

   For this example, our criteria are that we are looking for sherds from Tikal. Therefore, we must make the query show us only sherds. The data dictionary in Appendix A lists codes for sample and material types, and shows that the code for sherds is 'sh'. In the column under *Sample Type* field, type 'sh' in the criteria line. Once the cursor is taken out of the field, it becomes "sh". Directly typing something into the criteria field, or placing it in quotes, means that the computer will search for exactly what is in the quotes with nothing preceding or following it. This is fine for the sherd parameter, because this information is coded and will appear as only 'sh' in the table.

   In order to find not just any sherds, but sherds from Tikal, we must also set the parameter in the *Site* field to read 'Tikal'. In this case, enter 'tikal' in the criteria line of the site field, but add an asterisk both before and after the word (the search will not be case sensitive). Entering *tikal* allows for the program to search for Tikal, but the wildcard asterisks mean that it will search for these letters no matter what they are preceded or followed with. By setting criteria in more than one field, it is assumed by the program that a record must meet both criteria in order to be visible in the final query.
6. Once the parameters of the query are set, the view can be changed from design view to data view in order to see the records that match the query criteria. This can be done either by going to the View menu at the top of the screen and selecting Data, or by clicking on the red exclamation mark icon on the task bar near the top of the screen. After changing the view, the records shown are those that matched your criteria. If the fields are blank, no records matched your criteria.
7. To change the search criteria, simply change back to Design view and change any necessary criteria. It may be best to search for the same material in a few different ways, such as searching for Tikal in not only the Site field, but also in the *Provenience Notes Field*, and in the *Memo field*. This may be useful in case a record did not have Tikal in the Site field. Perhaps that name was on a drawer label and was entered into the other

fields to show these sherds were found in that drawer, but it is unknown if the sherds are actually from Tikal A researcher might be interested in this kind of material and be able to make the identification of materials from that site. As mentioned before, it is best to try searching for materials using a number of different criteria as this will often produce the most thorough results.

For more information on how to write different types of queries, see *Continuing Education Computer Applications Program: Access* or *Access 97 for Windows for Dummies*, both located in room 216.

Step 3. Find Physical Location of Collections Material

From the query that has been created, it should be easy to locate any type of material. In the *AOSMaterials* table, used for this example, it will be necessary to have the *UCM Location* information as well as the Bag # for each record. Using the table on the first page of this User's Guide, find which room in Henderson houses the material type requested. Materials such as sherds are located in Henderson, room 307. Once in 307, use the *UCM Location* information to locate the shelving tier, the appropriate row of drawers, and the appropriate drawer. Then use the bag number to find the specific bag within the drawer. For the photos and slides, box numbers and folder or slide numbers can be used to locate materials in a similar fashion.

Step 4. Check Other User's Guides or Finding Aids for Additional Information

The 2002 Inventory finished work done by previous students, interns, and staff. Some inventories before the 2002 project do provide more thorough information for some of the material types and small portions of the collection. It may be helpful to locate any guides made earlier than 2002 to see if they contain more information about the requested collections. For example, the photographic inventory completed in 2002 is only to the folder level. The 1987 inventory and guide (Solomon) were made on an image-by-image level, but for only part of the collections. This guide may be able to provide more specific information on some of the materials in the photographic collections. Also, part of the material samples, mostly Southwestern US materials, were inventoried and databased in 2001. These materials will eventually be merged into the 2002 AOS database, but until they are, they must be searched separately using their own User's Guide (Bevilacqua 2001) and database. In order to easily locate these guides, all guides, inventory reports, and finding aids

known for each collection are listed in the first table in this User's Guide along with their locations in the Henderson building.

Adding Materials to the AOS Database

It has become quite common for materials in the Anna Shepard collection to be found in unexpected locations throughout the Museum. No doubt in the future, other materials may be found and need to be entered into the AOS database. If new materials are to be added to the database, such as the correspondence files, it is likely that a new table will need to be created. Each of the three existing tables was created specifically for the material formats they contain, such as photographic images or ceramic thin sections. New tables can be easily created in the same Access database, and may be created by using the exiting tables as templates for how tables can look and the types of fields and information they should contain.

If materials are found that fit into the existing three tables, it would be best to enter these materials as new records into the appropriate existing table. Data entry into these tables should be fairly straightforward, as this paper and the Collection Strategy paper (Stoltz, 2002) provide information as to how these tables were created and what information is included in each field. The tables in this User's Guide list definitions of what type of material is located in each field and any specifics on how it should be entered. Many times, if there are specific formats to follow, the information is included in pull-down menus within the database. The data dictionary also provides the information on how to code material and sample types, and can be updated as necessary to account for all types of materials and samples.

Any information added or changed within the database tables will have to be approved by the Anthropology Curator and Collection Manager. The database that is available to staff through the Anthropology Section server will likely be a read-only file, and therefore will not allow any changes or queries to be made. Any access requiring queries to be made or data entry will require special access to the database.

Appendix A. Data Dictionary

Read across to find the appropriate material and sample type codes for a specific artifact (e.g. CR, SH stands for ceramic sherds).

MATERIAL	CODE 1	SAMPLE TYPE	CODE 2	EXPLANATION
Ceramic	CR	fire-test samples	FT	
Ceramic	CR	sherds	SH	
Ceramic	CR	thin-section controls	TS	
Chipped stone artifacts	CS	biface	BF	
Chipped stone artifacts	CS	core	CO	
Chipped stone artifacts	CS	flakes	FL	
Chipped stone artifacts	CS	projectile point	PP	
Geologic materials	GE	ash	AS	
Geologic materials	GE	clay	CL	
Geologic materials	GE	fossil shells	FS	
Geologic materials	GE	fire tests	FT	
Geologic materials	GE	polished stone	PS	naturally or humanly polished
Geologic materials	GE	rock sample	RC	
Geologic materials	GE	sand	SA	
Geologic materials	GE	test tile	TT	
Geologic materials	GE	unfired clay	UL	
Groundstone artifacts	GS	axe	AX	
Groundstone artifacts	GS	mano	MN	
Groundstone artifacts	GS	metate	MT	
Groundstone artifacts	GS	other	OTH	
Organic material	OG	bone	BN	
Organic material	OG	corn cob	CB	
Organic material	OG	charcoal	CH	
Organic material	OG	hair	HR	
Organic material	OG	nuts and seeds	NS	
Organic material	OG	other	OTH	
Organic material	OG	wood	WD	
Other	OTH	Other	OTH	
Photographic materials	PH	other negatives	ON	
Photographic materials	PH	prints	PR	
Photographic materials	PH	slides	SL	
Photographic materials	PH	35mm negatives	SN	
Undetermined	UD	undetermined	UD	