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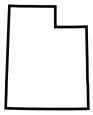

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**Cover:** Petroglyphs at 42Sa25388 in San Juan County. Original drawing by Dennis Hadenfeldt and Deb Legel (see page 99 this volume). Cover image redrawn from orginal by Scott Ure**.**

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**Message from the Editors**

This issue of Utah Archaeology is focused on the museums of Utah and their collections. Museums are wonderful repositories that offer safe storage for artifacts and documents, accommodate researchers and their interests, and reach out to the public to provide education and entertainment. With this special issue of the journal we hope to draw attention to the many research opportunities that are waiting to be explored within the collections, as well as the great fun and enjoyment that can be gained by visiting these institutions and participating in their activities and art. We encourage everyone to support and visit our local museums, and enjoy their many offerings.

*The Editors*

David T. Yoder
Chris N. Watkins

# History of the Utah Museum of Natural History's Anthropological Collections

Glenna Nielsen-Grimm

*Natural History Museum of Utah, University of Utah*

*The Utah Museum of Natural History (renamed the Natural History Museum of Utah in November 2011) has anthropology collections representing over 120 years of archaeological and ethnographic collecting. Objects held at the NHMU were acquired through field collecting, excavation, donations, purchase and federal reposited collections. The archaeological collections represent Great Basin and Southwest archaeological cultural areas, with artifacts dating from the paleo-archaic through the proto-historic period. The ethnographic collections emphasize Native American tribes that claim ancestral and historic lands in Utah, as well as objects that represent Native Americans cultures that have comparative value for Utah Tribes, and then extends to the rest of North America, South America and Oceania.*

The Utah Museum of Natural History (UMNH) (renamed the Natural History Museum of Utah in November 2011) is located on the campus of the University of Utah in Salt Lake City, Utah. Collections held by the UMNH represent the specialized fields of study of paleontology, malacology, entomology, anthropology, mineralogy, vertebrates, as well as the Garret herbarium. The anthropology collections represent over 120 years of archaeological and ethnographic collecting, and records demonstrate that acquisition of objects for both collections occurred simultaneously. Starting in 2008, the Museum staff has prepared to leave the George Thomas building and move the entire collection into the new Rio Tinto center, scheduled to open in November 2011. The UMNH anthropology staff has completed a 100% inventory of the archaeological and ethnographic collections, documenting that the collections represent objects from approximately 5,300 known archaeological sites, as well as numerous gifts and donations. The ethnographic collections include objects from all five Native American groups of Utah, as well as objects that are associated with cultures from other areas of America. These cultures include the Plains, Southwest, Great Basin, Pacific Coast and Eastern United States. Small collections representing others areas of the world include Oceania, New Guinea, Africa, the Middle East, Belize, Mexico, and South America.

More than 75 percent of the archaeological collections held by the Utah Museum of Natural History are federal collections representing archaeological investigations of over 3,800 federally owned sites. This includes not only the artifacts collected, but also the associated field notes, laboratory notes, maps, and photographs. Generally these materials were the result of work carried out by University of Utah archaeological projects on federal lands. The remaining 25 percent of the collections include artifacts and other materials from state lands, private lands, and donations.

The archaeological collections are notable for their research potential due to the time depth and geographic area they represent, including all of Utah, and portions of Colorado, Idaho, Nevada, Arizona, and Wyoming. Objects in the collections represent Southwest and Great Basin Paleo-Archaic, Archaic, Formative, Protohistoric, and Historic cultures. Geographically, the collection represents those areas occupied by the prehistoric Fremont culture and the San Juan, Kayenta and Virgin Anasazi/Ancestral Puebloan cultures. Protohistoric materials reflecting the transition to the historic Native American Numic speaking

 

nations of Utah are present in the collections as well. Most notable is the "Promontory Culture" identified by Julian Steward through his excavations of the caves on Promontory Point, located in north central Utah. Although many early archaeology collections were donated or collected under imperfect excavation protocols, the objects themselves represent incredible avenues of information. Along with more recent scientifically excavated research collections, they provide windows to the past 10,000 years of human occupation in Utah.

## Beginnings and Growth of the Anthropological Collections

Prehistoric objects were obtained from archeological sites visited by University of Utah faculty, beginning with the donated collections of Henry Montgomery (1891-1895) (collected during field trips while he was professor of Natural History at the University of Utah). In addition, historic pottery, beaded leather objects, baskets, and weapons were purchased from Native American groups in Utah and neighboring states. Donations of objects from local collectors added to the University's collections. In the 1891 catalog of the University of Deseret (the University of Utah's original name), there is a reference to the anthropological collection as "an archaeological collection and much that may be classed under the heading of curiosities," and "in 1895 the Museum listed one hundred complete anthropological specimens and two hundred curios" (Smith 1955:4).

Byron Cummings, who was a University of Utah faculty member from 1893 to 1915, immediately became interested in the archaeological collections even though his professorship was in Latin and Greek (Figure 1). Cummings conducted expeditions every year from 1895 to 1914 in Southeastern Utah and Northern Arizona. Objects from other museums were acquired through exchanges in order to make the collections more representative of all cultures of the United States. There is an early record of such an exchange of a projectile point collection from the "moundbuilder" cultures east of the Mississippi, received from the Smithsonian Institution in 1908. Cummings also taught the first archaeology courses at the University of Utah, beginning in 1914. In 1916, Professor Levi Edgar Young of the History Department "was put in charge of the Department of Archeology and archeological expeditions when Cummings left Utah. This arrangement existed until 1922" (Smith 1955:4).

In 1926, under the direction of Andrew Kerr, an Anthropology Department was separated from Sociology at the University of Utah. The new department included classes and degrees in archaeology and anthropology. The archaeological and ethnographic collections, which had continued to grow under Cummings and Kerr, were housed on the top floor of the Park Administration building. In 1930, Julian Steward was appointed chair of the Department of Anthropology. For the next five years, he carried on intensive archaeological and ethnological research and collected material for his later publication on archaeology and ethnology. When Steward departed the University in 1933, the department's status was suspended, and in 1935 it was re-combined with Sociology. At this time, John P. Gillin (chair of Sociology and Anthropology) and Elmer R. Smith (instructor at Snow Junior College at the time) initiated a Utah Statewide Survey with the intent of "mapping and making surface collections and test digs of all the then available and known sites in the state" (Smith 1955:6). Elmer R. Smith joined the University of Utah's faculty in 1937 as an instructor in Sociology and Anthropology, and also as the curator of the "Museum of Archaelogy" [sic]. Archaeological work during the next ten years included the excavation of cave sites around the Great Salt Lake, and some ethnological work among the Goshute and Washakie Indians of Utah and Idaho, both of which added to the museum collections. Charles E. Dibble joined the faculty in 1940 as the assistant curator for the Museum of Archaelogy [sic]; his main interest in Mexico, especially the Postclassic Aztec. His contributions to the

Figure 1. Byron Cummings (front row, left) during expedition. Original archival photo courtesy of Utah Museum of Natural History.

museum collections included pottery figurines from the Valley of Mexico—mostly Teotihuacan in style.

In 1948, the Department of Anthropology was once again separated from Sociology with E. Adamson Hoebel as chair. It was at this time that Jesse D. Jennings joined the staff as Associate Professor of Anthropology, and as Curator of the Museum of Anthropology. The museum collections entered a new era of expansion with Jennings' curatorship. The anthropology department acquired the use of a building formerly occupied by the Armed Services at Fort Douglas (the old World War II mess hall) where the museum would eventually be moved. The museum was re-opened there in April 1950, with Jesse Jennings as director and Don V. Hague and two others as assistants. The museum collections were moved from the administration building to the Fort Douglas building. Jennings hired several students, and together they designed and installed cases in a small "room within a room" (Jennings 1994:175). These exhibit cases (Figure 2) remained in place until 1966, and then they were "cannibalized, and some of the objects were included in exhibits in the Utah Museum of Natural History, which opened in 1968" (Jennings 1994:176). The collections, as described by Jennings, included "a large but unsystematic body of fine exhibit-quality artifacts including possibly the largest extant collections from Tsegi Canyon and Betatakin in Arizona" (Jennings 1994:162). According to Jennings


Figure 2. One of the original exhibit cases of the "new" UMNH when it opened in the George Thomas Building (1968). Courtesy of Utah Museum of Natural History.

(1994:162), the collections were accumulated from excavation and acquisitions by University professors, including objects from South America and Polynesia, and donations from "returning Mormon missionaries and local collectors." He also discovered that the perishable materials on the top floor of the administration building were being consumed at an alarming rate by an infestation of carpet beetles. Before moving the collections to the new location, he "hired a student full time for the fall quarter to spray or dunk every item except the record books in a DDT solution" (Jennings 1994:163). He then had the objects packed and moved them a few at time to the new racks being built in the "new" department headquarters. The move was completed by December 1949.

In Jennings' initial interview, the dean of the college and the University of Utah president at the time "emphatically mentioned that a museum would further enhance the department" and "they recognized that the prehistoric riches of the state were neither widely known nor understood and that the department should capitalize on that vast resource" (Jennings 1994:165). Jennings' conviction "that the museum is the best way to translate the ponderous prose of the scientific monograph into something lay people (who in final analysis pay for the archaeologists work) could understand, appreciate and perhaps enjoy" (1994:165) moved him to advocate for a state natural history museum. He realized that a statewide archaeology project, similar to one he had completed while working in the Midwest, was the way to increase knowledge of the archaeological resources of the state. Jesse Jennings established a field school in the summer of 1949, and re-established a statewide survey with a permanently employed director in 1950 as the two-part program for his Statewide Archaeology program. The 1949 field school initiated the famed work in the dry caves of Pilot and Desert Range, beginning with the excavations in Jukebox and Raven Caves. The first season at Danger Cave was spent clarifying Elmer Smith's earlier excavations, and work

continued for the next three years before ending in 1953. Danger Cave was one of the first sites in Utah to have "absolute dating" techniques used to establish the dates of the early Desert Culture revealed through excavation. Jennings had expected the cave deposits to be early because of the cave's location on the Gilbert strand line, "but the extreme age of more than 11,000 years ascribed by the C-14 analysis made the site more important because its age exceeded all but a few of the excavated sites in North America" (Jennings 1994:172). Later in Jennings' career, he excavated three more important cave sites (Hogup, Cowboy Cave and Sudden Shelter), but as Jennings states "none equaled for me the thrill of Danger Cave" (1994:173). He explained:

> The fascination of such varied finds—entirely new to me—finally was transformed into the realization that we had come upon a full and intimate glimpse into an entire lifeway geared to an ecosystem we could visualize and understand. I later learned that the same adaptation to the desert environment was documented in the ethnological record of the historic Shoshone-speaking tribes of the West [Jennings 1994:173].

The Utah Statewide Archaeological Survey, started by the University of Utah in 1949, was instrumental in creating interest amongst amateurs and professionals in the prehistory of Utah. It included a detailed survey/study of prehistoric Utah (all regions and counties), as well as salvage archaeology for threatened prehistoric sites due to natural forces, construction or vandalism. These collections, still held at the UMNH, contain materials from sites across the state of Utah, many of which were later excavated. Most of the materials have been published in the University of Utah Anthropological Papers series that began in 1950. The Utah Statewide Archeological Society ("USAS") was organized during this time with chapters created in different cities. With Jennings as Museum Director, the museum collections continued to grow. Donations expanded the ethnographic collections. The archaeological research collections (both proto-historic and prehistoric) grew exponentially from excavations of Utah cave sites, projects in the Southern Paiute and Goshute areas, and salvage and survey projects throughout the state. The Glen Canyon and the Flaming Gorge survey and salvage projects preceded the building of two major dams and extensive flooding of river basins along the Colorado and Green Rivers, and especially added to the collections.

Beginning in 1960, with the support of the Department of Anthropology faculty and USAS, Jennings started the initial lobbying of the Utah legislature for the establishment of a state museum of natural history. In 1963, legislation for a state natural history museum was passed, but without financial support. Jennings was appointed director of the Utah Museum of Natural History. Authorized funding for the museum finally occurred on the last day of February 1973. It was also during Jennings' time as director that the anthropology collections were permanently transferred to the UMNH for curation and care. With financial support assured, Jennings resigned as director.

Don Hague was hired as the full-time director of the Museum. Ann Hannibal, hired in 1976 as a researcher, became the Registrar and Curator of Collections. Her job mainly involved management of the Anthropology collections, which have historically been the largest collection at the UMNH. A notable achievement under Hannibal's curatorship was the digitization of records and archiving of field records. Object records were transferred from the original papers to a computer database, and field notes from archaeological excavations and surveys associated with the collections (transferred to the UMNH from the anthropology department) were scanned to microfiche. The original records, pictures, and slides were transferred to the U of U Marriot Library Archives where they are available to the public. When Don Hague retired in 1992, Ann Hannibal became the Acting Co-Director until Sarah George was hired as the new Director, and then Hannibal became the Assistant Director for Community Relations. She helped

write the legislation that defined the UMNH as the state museum. It was at this same time that the position of Curator for Anthropology was created, a position shared with the Department of Anthropology.

Duncan Metcalfe, a former student of Jesse Jennings at the University of Utah who received his Ph.D in 1987, was hired in 1994 as curator. He brought an extensive background in Great Basin Archaeology, theory, and field techniques. As an Associate Professor of the Anthropology Department, he has run field schools throughout Utah and has worked exclusively at Range Creek, Utah since 2003. He is presently Chief Curator for the Collections and Research Division of the UMNH, Science Director of the Range Creek Research Station for the University of Utah and SITLA, and Curator of Anthropology for the UMNH. His work continues to add to the anthropology collections, as well as clarify what we know of the Fremont culture. The anthropology collection remains the largest collection at the Utah Museum of Natural History, and the Museum continues to receive collections from University of Utah Anthropology Department activities. The Utah Museum of Natural History also serves as the state repository for archaeological collections, and is the largest federal repository for archaeological collections in Utah.

## Ethnographic Collections

The ethnographic collections at the Utah Museum of Natural History have particular significance because they derive either from Utah Native American groups, or from groups in neighboring regions that have significant ties with the historic Utah Native American nations. This is important since our archaeological collections also represent neighboring regions (Figure 3). For scholars interested in the protohistoric period, much can be explored in both collections. Ute, Southern Paiute, and Shoshone archaeological (historic) artifacts, though not abundant, are present in the Museum's collections and help tie the ethnographic collections (which were collected from the 1890s to the present) to the prehistoric archaeological collections. Beaded regalia and moccasins represent the best-known part of the UMNH ethnographic collection (Figures 4 and 5). However, historic pottery from the American southwest Native American groups date from the late 1800's through the present day.

The collection has been substantially increased both in numbers and areas represented through the acquisition of several excellent private collections. The textiles in the collection include Navajo, Southwest, and Mexican rugs, blankets and clothing (Figure 6). Masks in the collection represent not only the well known Northwest Coast wooden masks and rattles, but also masks from the northeast, southwest, and Mexico. Jewelry from southwest Pueblo groups and Navajo are another important part of the collection. Also, a very recent acquisition/donation of a modern Navajo basket collection adds greatly to the Navajo section of the ethnographic collections. Ethnographic collections are extremely valuable not only as collectors' items, but also because they are examples of earlier technology, and exhibit the continuation of Native American traditions.

One example is our notable basket/fiber collection which includes archaeological, ethnographic, and modern baskets from Ute, Paiute, Goshute, Shoshone, Navajo, and Puebloan groups, as well as California and Northwest Coast cultures. These Native American groups continue to weave styles that are found in the earliest fiber materials we have in the archaeological collections. Fiber specialists often access these collections. Our newest collection of more than 250 ceremonial baskets created by Utah Navajo families extends our collection into a current weaving tradition. The breadth and time depth of the collections such as the baskets allow scholars to identify and study continuities and changes in the record. For example, conical coiled baskets were found with Basketmaker burials in the earliest Euro-American expeditions of the 1800's, and conical coiled baskets continued to be the "burden basket" type for all the Utah cultures, both prehistoric and historic. Each identified

Figure 3. Utah Museum of Natural History displays dating from 2002-2011 (George Thomas building). Courtesy of Utah Museum of Natural History.

historic group has a specific way of weaving these containers, which help us to identify baskets as we research them. Knowing that such differences exist in modern and historic groups adds weight to researchers' attempts to identify weaving traditions that identify specific cultural groups in the protohistoric and prehistoric past.

Other areas of research in the ethnographic collections include the distribution of construction and design techniques, as well as design studies in beadwork, fiber, and dyes in textiles, leather, and feather work. Ethnographic collections represent the continuing traditions of Native Americans, and our collections continue to grow from donations, acquisitions of notable private collections, and commissioned pieces through the support of the UMNH Collector's Council.

The continuing use of "old collections" reveals new and exciting information on the late prehistoric and protohistoric periods of Utah; just one example of this is current research on the Promontory culture as an early Athabaskan-speaking group (identified as the historic Apachean and Navajo cultures of the southwest). This project is directed by Jack Ives of the University of Alberta, Edmonton, Canada (Ives and Rice 2006) and involves several scholars working with DNA residues from objects for new absolute dating, extensive re-documenting, and research on the Promontory moccasins (Figure 7)—all using collections recovered by Julian Steward in 1937. Other recent projects involving the use of UMNH collections include Edward Jolie's research on weaving techniques in the Great Basin and Southwest, utilizing fiber collections from Danger Cave; Nancy Fonicello's examination of the construction techniques of Promontory moccasins (and her subsequent replication of both an adult and infant pair of quill moccasins that are on exhibit in the First Peoples gallery); David Yoder's examination and analysis of Anasazi sandals using non-destructive soft X-ray radiography;

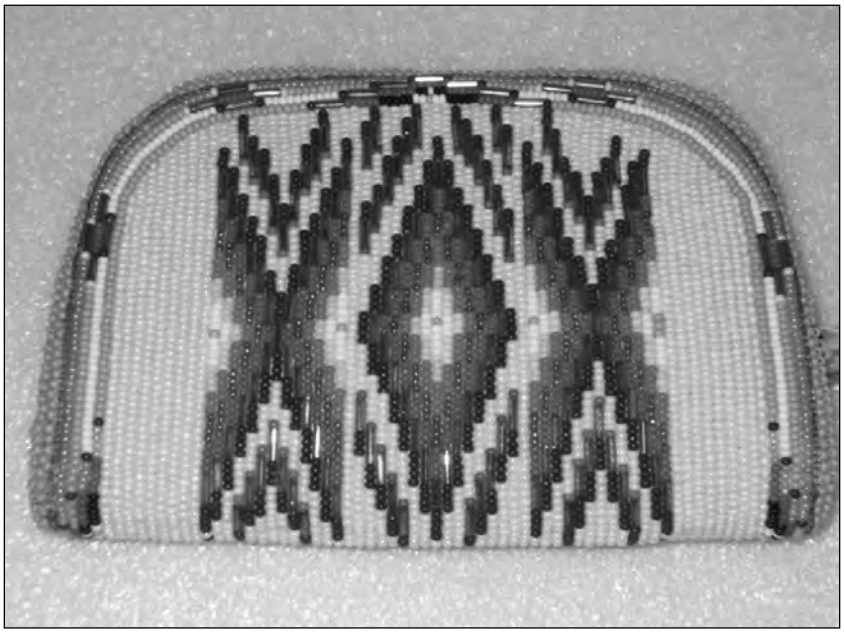

Figure 4. Beaded purse (UMNH catalog # ET300.473) from the Tony Taylor collection donated in 1998. This collection included over 740 ethnographic items that represents Native American groups from the Northeast to the Northwest Coast of North America. Courtesy of Utah Museum of Natural History.

Figure 5. Ute/Paiute beaded moccasins (UMNH catalog # ET438.491) from the Zion's Bank Four Corners collection. Over 135 pairs of beaded moccasins are held in the ethnographic collections. Courtesy of Utah Museum of Natural History.

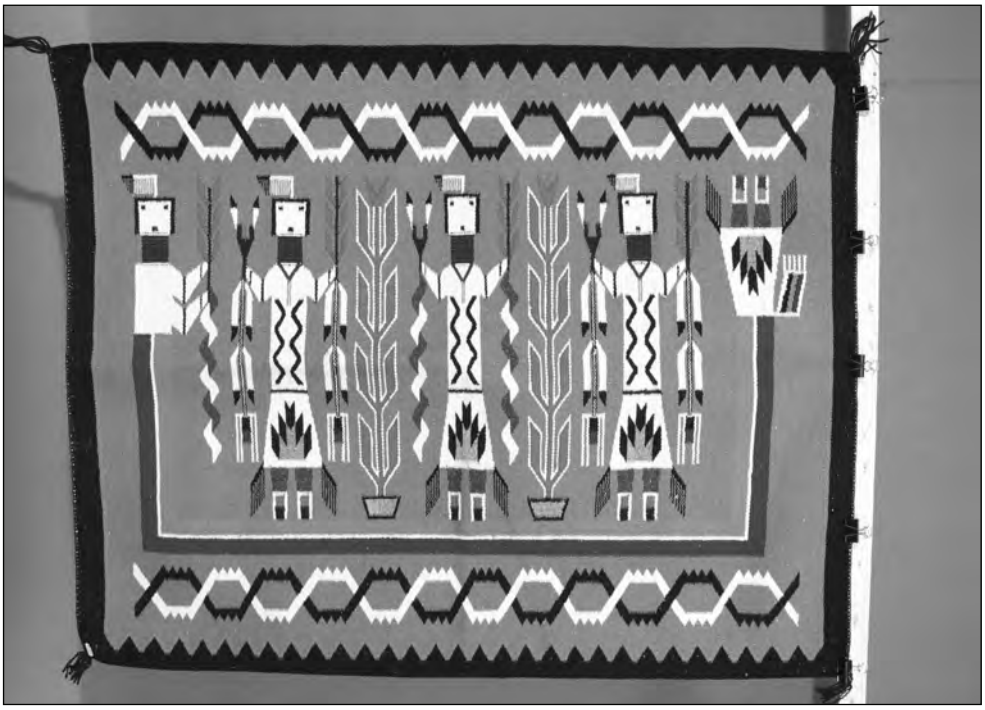

Figure 6. Yei Rug (UMNH catalog # ET438.335) from the Zion's Bank Four Corners collection. Courtesy of Utah Museum of Natural History.


Figure 7. Promontory Cave moccasin (42Bo1 10060), conserved and reshaped during a SAT grant. Courtesy of Utah Museum of Natural History.

Winston Hurst's research on the early collections of the UMNH (especially the Kerr collection); James Adovasio's study of a rabbit net from Kane County; and Deborah Westfall's work on artifacts from Alkali Ridge. This of course is not an exhaustive list, but does illustrate the type of research taking place that does not require excavation or destructive analysis. I would urge all Utah scholars working on the prehistory, proto-history, and history of Utah to begin their research with the anthropological collections held at the Utah Museum of Natural History. ■

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# The Research Potential and Challenges of Using Curated Archaeological Collections

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*Archaeological analysis of material remains has grown substantially more technological over the last 25 years. Traditional methodologies using macro-scale analysis have been augmented by analyses focused at the microscopic and molecular levels. But with advanced technologies comes new challenges when using museum collections. For each analytical technique addressed in this paper, the potential effects from past curation protocols is reviewed. This paper argues that when contamination can be identified and corrected, modern analytical techniques provide a means by which museum collections can be valuable resources for archaeological research.*

For more than 50 years the development of analytical techniques for the physical sciences has had a beneficial effect on archaeological practice. In just the last few decades there have been major advancements in the technologies that analyze artifacts at the microscopic and molecular levels. But with the advancement of new methods comes new challenges. Traditional archaeological research measures, describes, and interprets objects at the macro scale. When morphological characteristics are the primary value, museum collections are optimal resources for comparative research. Once the analysis moves to the microscopic and molecular levels, however, issues of preservation and contamination become major considerations. Three topics addressed throughout this paper—contamination, preservation, and sampling requirements—are directly impacted by past and current curatorial practice.

Contamination identification protocols were established by the museum community for NAGPRA compliance but apply here as well. Contamination in museum collections occurs when objects have been coated with pesticides or preservatives, glued, and improperly labeled and packed. Pesticides containing metal components like arsenic, mercury, lead, chromium, cadmium, and zinc were regularly used in the nineteenth and twentieth centuries (Ogden 2004:70) and can have adverse effects on some analyses. Likewise, carbon-based contamination (such as DDT) is a concern for radiocarbon analysis. Most museums have no record of past chemicals applied to artifacts, and pesticides often remain on organic artifacts as residuals for many years. Because exhibition is a major component of museum collections, pesticides that left no visible trace were preferred. Fortunately many classes of chemical compounds can now be detected (Odegaard et al. 2005) and researchers can work with museum personnel to identify contaminants. While current museum protocols do not allow or use potential contaminants— such as organic packing material, common adhesives or foam, and other non-archival materials—this was not always the case.

Preservation is an issue for residues on stone tools and ceramics when they are washed and handled. Most museums, including the Natural History Museum of Utah, do not have cleaning protocols for incoming collections; this decision is at the discretion of the archaeologist. Sampling size is becoming less of an issue as more sophisticated instruments require smaller amounts of raw material. The need to sample depends on the analytical technique employed, the material type, and the degree of homogeneity of the sample; ceramic sherds are a good example of heterogeneous objects that have to be partially destroyed in order to correctly read the geochemical composition. Not all analytical

 

techniques are appropriate for museum collections and so only those most applicable to curated objects will be addressed here (Table 1).

## Chronometric Analysis

Of all the chronometric methods used in material culture studies, radiocarbon dating is by far the most widely employed for determining the age of Late Pleistocene and Holocene organic objects. Most other chronometric techniques, excepting dendrochronology, are better suited for instances where on site environmental conditions can be measured (e.g., obsidian hydration and trapped charge methods). Organic objects from museum collections that can be sampled for radiocarbon dating include cellulose (plants), keratin (protein in hair, horns, nails), lipids (triglycerides in animal fats and plant oils), amorphous carbon (elemental carbon from charred plant remains), and collagen or dentin (protein in bones and teeth). Aragonite (calcium carbonate from shells) can also be dated but the results are not as reliable as with other material types. Phytoliths, mostly made of opaline silica, can also be dated with accelerated mass spectrometry (AMS) because they retain remnants of the original plant tissue (Piperno 2006:125). Recent applications of radiometric technology and museum collections include the dating of shell from California, used to establish some of the earliest evidence of long-distance trade in western North America (Fitzgerald et al. 2005) and to document the stylistic evolution of grooved Olivella beads (Vellanoweth 2001). Other studies document techno-stylistic changes in Archaic sandals on the Colorado Plateau (Geib 2000) and Anasazi sandals from the Four Corners region (Yoder 2009). AMS dates from museum collections are used to fill gaps in regional chronologies (Geib 1996; Jack Ives, personal communication 2009), to place ritual behavior within a chronological framework (Coulam and Schroedl 2004), and to question the relationship between coiled basketry technology and small seed processing (Geib and Jolie 2008).

AMS is a destructive technique, but the amount required from a specimen is small. Typically, a 20 to 50 mg sample from most materials will yield .1 mg of final carbon, which is sufficient for an AMS measurement (Wagner 1998:153), although AMS facilities typically request between 1 to 2 mg of final carbon. Phytoliths and pollen sample sizes should weigh about 300 mg and 20 mg, respectively. The latest advancement in radiometric dating is an almost non-destructive technique that removes carbon from organic artifacts using plasma-chemical or plasma-oxidation extraction. The techniques are purported to be non-visible, even at the microscopic level, but are highly sensitive to surface contamination (Steelman et al. 2004; Steelman and Rowe 2004).

Contamination from pesticides, packing material, preservatives, and glues can be an issue when radiocarbon dating perishable collections. Especially problematic are the organic-based pesticides such as organochlorines (e.g., DDT) or botanical pesticides (e.g., Pyrethrins). The former was banned in 1972, but the latter is still used today. In both cases, detrimental effects on radiocarbon measurements should not be an issue if the pesticide was not directly applied as a spray or a dip. Other potential contaminants that have been found in older museum collections are paper and cotton packing materials and cotton string. Common adhesives and coatings used in the past, such as starch paste, animal glues, pressure sensitive adhesives (Scott-Cummings, personal communication 2010), shellac, cellulose nitrate lacquer, soluble nylon, epoxies, and polyvinyl acetates (e.g., Alvar), can contaminate radiocarbon samples as well. Some old adhesives can be dissolved (Gilroy and Godfrey 1998:91) and most radiocarbon laboratories have pre-treatment methods that can identify a contaminant and potentially extract it using standard protocols (Hood, personal communication 2010).

Table 1. Common analytical techniques used in archaeological analysis and museum practices that can potentially alter data preservation and instrument readings.

| | | | Curation Practices with Adverse Effects on Analytical Measurements | | |
|---|---|---|---|---|---|
| | Instrumentation | Sample Size | Preservation | Pesticides | Adhesives |
| Radiocarbon Dating | | | | | |
| Vegetal/shell/hide | AMS | 20–50 mg | NE | Organochlorines (DDT), botanical chemicals (camphor, pyrethrins, sabadilla, etc.), formaldehyde | Starch paste, animal glues, shellac, celluouse nitrate, soluble nylon, epoxies, and polyvinyl acetates |
| Bone | AMS | 2–10 mg | | | |
| Charcoal | AMS | 10–50 mg | | | |
| Phytoliths | AMS | 300 mg | | | |
| Pollen | AMS | 20 mg | | | |
| Vegetal/hide | Plasma extraction | <1mg | | | |
| Trace Element Analysis | | | | | |
| Lithic/Mineral | Neutron activation analysis, X-ray techniques, scanning systems, ICP (all variants) | Based on sample size. <100 mg if sampling req'd | NE | Not Applicable | NE |
| Ceramic | Neutron activation analysis, X-ray techniques, scanning systems, ICP (all variants) | <200 mg | | | |
| Vegetal/Hair/Bone | ICP, ICP-MS, LA-ICP-MS | 10 mg. No sampling for LA if small | | Inorganic pesticides (arsenic trioxide, copper, acetoarsenite, sodium fluoride, etc.) | |

NE: No Known Effect

AMS: Accelerated Mass Spectometry

ICP: Inductively Coupled Plasma (LA is Laser Ablation)

MS: Mass Spectometry

Table 1 cont.

| | | | Curation Practices and Their Effects on Analytical Measurements | | |
|---|---|---|---|---|---|
| | Instrumentation | Sample Size | Preservation | Pesticides | Adhesives |
| Isotope Analysis | | | | | |
| Bone/Teeth (C,N,H,O) | GC-MS, CF-IRMS | ± 500–700 mg, 10 mg powder | NE | Organochlorines (DDT), botanical chemicals (camphor, pyrethrins, sabadilla, etc.), form-aldehyde. | Starch paste, animal glues, shellac, celluouse nitrate, soluble nylon, epoxies, and polyvinyl acetates |
| Vegetal (C,N,H,O) | | ± 100 mg, 10 mg powder | | | |
| Mineral (O) | GC-MS, CF-IRMS | | | Not Applicable | NE |
| Bone/Teeth (Sr and other metals) | TIMS, MC-ICP-MS | ± 500–700 mg, 10 mg powder | | Inorganic pesticides (arsenic trioxide, copper, acetoarsenite, sodium fluoride, etc.) | |
| Vegetal (Sr and other metals) | TIMS, MC-ICP-MS | ± 100 mg, 10 mg powder | | | |

NE: No Known Effect

ICP: Inductively Coupled Plasma (LA is Laser Ablation)

MS: Mass Spectometry

GC: Gas Chromatography

CF-IRMS: Continuous Flow Combustion-Isotope Ratio Mass Spectrometer

TIMS: Thermal Ionization Mass Spectrometry

Table 1 cont.

| | | | Curation Practices and Their Effects on Analytical Measurements | | |
|---|---|---|---|---|---|
| | Instrumentation | Sample Size | Preservation | Pesticides | Adhesives |
| Biological Analysis | | | | | |
| Pollen/Phytoliths/Starch: soil samples & coprolites | Polarized light microscope, SEM, TEM | 100 cc soil, up to 3 g coprolites | NE | Not Applicable | Not Applicable |
| Pollen/Phytoliths/Starch: dental calculus | Polarized light microscope, SEM, TEM | <1 mg | | | |
| Pollen/Phytoliths/Starch: stone tools & ceramics | Polarized light microscope, SEM, TEM | varies | Rare due to washing, handling | | |
| Residue analyisis: lipids on ceramics | GC-MS, GC-C-IRMS | ± 100 mg, 10 mg powder | Good if residue is visible (no washing) | | Starch paste, animal glues, shellac, celluouse nitrate lacquer, pressure sensitive adhesives (e.g., tape, labels) |
| Residue analyisis: lipids on vegetal (e.g., basketry, mats) | GC-MS, GC-C-IRMS | | NE | Organochlorines (DDT), botanical chemicals (camphor, pyrethrins, sabadilla, etc.), formaldehyde | |
| Residue analyisis: protein on stone tools | Ouchterlony, CIEP, RIA, ELISA, DESI-MS | <1mg | Rare due to washing, handling | Not Applicable | |
| Ancient DNA | PCR | Varies based on material | Rare due to handling, natural degradation | All pesticides | |

NE: No Known Effect

SEM: Scanning Electron Microscopy

TEM: Transmission Electron Microscopy

MS: Mass Spectometry

GC: Gas Chromatography

C-IRMS: Combustion-Isotope Ratio Mass Spectrometer

CIEP: Cross-over Immunoelectrophoresis

RIA: Radio-immunoassay

ELISA: Enzyme-linked Immunosorbant assay

DESI: Desorption Electrospray Ionization

PCR: Polymerase Chain Reaction

## Trace Element Analysis

Analytical techniques most frequently employed for the identification of an artifact's geochemical composition at trace levels are neutron activation analysis (NAA), X-ray techniques, electron scanning systems, and inductively coupled plasma-mass spectrometry (ICP-MS). When the methods described below are applied to inorganic objects, pesticide contamination is not an issue. Preservation and contamination from organic adhesives should not be problematic for the identification of heavy elements that constitute geological specimens. Sampling requirements vary depending on the object's degree of homogeneity and/or the technique used.

### Neutron Activation Analysis

Until recently, Neutron Activation Analysis (NAA) was one of the most widely used analytical techniques for multiple elemental analysis. It was developed in the 1950s by the archaeological chemistry community for ceramic provenience studies, but was quickly adopted by geologists for lithic analysis (Pollard et al. 2007:123). The use of NAA has steadily declined since the development of ICP-MS in 1983 and the recent downsizing of neutron irradiation facilities. NAA has three shortcomings compared to other trace element methods: it is destructive for both ceramics and stone (if larger than a coin), it cannot detect barium or strontium, and the material can be radioactive for years (Garrison 2003:243). Even if a sample is small enough to be irradiated as a whole, the process will alter the geochemical composition and make it unusable for future study (Pollard et al. 2007:128). Required sample size is under 200 mg and pesticide contamination from museum curation is not an issue, given that NAA applications focus on inorganic objects. Instrumental Neutron Activation Analysis (INAA) has been used to identify several manufacturing loci in an assemblage of Snake Valley ceramic sherds (Reed and Speakman 2005), to identify concentrated manufacturing loci of San Juan redware in southeastern Utah (Hegmon et al. 1997), and to source chert tools from a bison butchering site in southeastern Oregon (Lyons et al. 2003).

### X-ray Techniques

Several techniques use the properties of X-rays to identify heavy element composition, including X-ray fluorescence (XRF), X-ray diffraction (XRD), and proton-induced X-ray emission (PIXE). As with NAA, contamination from museum curation practices will not be an issue for inorganic objects identified with X-ray techniques. Artifact classes best suited for XRF include metals and their alloys, ceramics, jet, basalt, glass, pigments, and glazes. X-ray diffraction is a destructive analytical technique for ceramics and is only applicable to crystalline materials. However, for some archaeological applications it provides data that cannot be obtained with other methods (Garrison 2003:209, 212; Pollard et al. 2007:113, 120). The strength of PIXE lies in its ability to detect low concentrations of elements by scanning without needing to sub-sample if the specimen is flat (Govil 2001:1548; Pollard et al. 2007:121). Samples that are not flat can only provide results that are qualitative and, at best, semi-quantitative. X-ray techniques have been used on ceramics from Formative and Protohistoric sites to test the relationship between a raw material source and degree of mobility (Simms et al. 1997), to source obsidian from Paleoarchaic sites (Jones et al. 2003; Russell 2004) and basalt from Archaic sites in the Great Basin (Page 2008), and to assess the relationship between distance to source and lithic artifact type in the Great Basin and California (Eerkens et al. 2007). Both PIXE (Erlandson et al. 1999) and Instrumental Neutron Activation Analysis (INAA) (Popelka-Filcoff et al. 2008) were used to identify the geochemical characterization of modern ochre sources.

**Electron Scanning Systems**

Scanning systems for trace element analysis include electron microprobe analysis and scanning electron microscopy. Electron microprobe analysis (EMP) combines the high image resolution of the electron microscope with the analysis of X-ray characteristics, but the sample is bombarded with electrons instead of X-rays. It is particularly well-suited for analyzing small regions in ceramics, metals, and biological tissue. The small spot size (1 µm diameter or less) also means that different layers on a sample (e.g., paint, slip, and fabric) can be analyzed separately (Pollard et al. 2007:109, 119). It has higher detection limits, more accurate readings, and a smaller spot size than the scanning electron microscope (SEM). EMP specimens have to fit in a 10 cm chamber and be microscopically flat, highly polished, and free of contaminants and dust. Non-conductive specimens must be coated in carbon for analysis or gold for imaging. SEM is a powerful tool in trace element analysis when coupled with an energy dispersive X-ray spectrometer (SEM-EDS). Unlike EMP, specimen preparation for SEM-EDS does not require ultrathin sectioning; whole specimens can be analyzed if they fit in the 15 cm chamber. However, samples must be devoid of water and solvents, mountable, and electrically conductive. Archaeological samples that do not meet these requirements must go through a series of preparatory steps, including dehydration and coating with a thin layer of carbon (Echlin 2009; Flegler et al. 1993).

Scanning systems were used in trace element analysis to source phyllite-tempered pottery from the Phoenix Basin (Abbott and Watts 2010) and to distinguish between mineral- and carbon-based black paints on ceramics (Stewart and Adams 1999; Stewart et al. 2002; van der Weerd et al. 2004; see Speakman and Neff 2002 for an alternative method using LA-ICP-MS). Given the intensive preparation protocols for both techniques, it is likely that pesticide contamination, if present, will be removed. Both EMP and SEM are destructive techniques for most artifacts.

**Inductively Coupled Plasma-Mass Spectrometry**

In 1983, scientists developed a flame source capable of supporting argon plasma at temperatures ranging from 8,000–10,000 °C hotter flame increases atomization and lessens spectral interference and flame ionization in comparison to previous methods while simultaneously producing charged particles (ions) from the sample (Pollard et al 2007:57–58). ICP-MS and laser ablation-ICP-MS (LA-ICP-MS) are the current "gold standards" for heavy element analysis; the main difference between them is whether the sample is introduced into the plasma as a solution or by laser. ICP-MS requires that a sample (as small as 10 mg) be transformed into a solution so it is a destructive technique. In contrast, LA-ICP-MS can analyze a sample in the solid state if the specimen fits in the sample chamber and is microscopically flat; if not, sub-sampling is necessary. Both variants of ICP technology are capable of multi-element detection with limits below parts per billion, and on occasion to parts per trillion. By combining near 100 percent ionic efficiency and low incidence of doubly charged ions of ICP with mass spectrometry, one of the most versatile instruments in use for trace element analysis was produced (Garrison 2003:229; Pollard et al. 2007:195). However, ICP instrumentation has poor sensitivity for 64 percent of the non-metal elements and thus works best for heavy element analysis.

ICP and its variants have been used by archaeologists for mobility studies in Owens Valley (Eerkens et al. 2008), to identify production loci of Fremont ceramics on the Upper Humboldt drainage (Hockett and Morgenstein 2003), to identify the geochemical composition of ceramic slips and pigments in east-central Arizona (Duwe and Neff 2007), and to identify the geochemical composition of temper in Virgin Anasazi ceramics (Kennett et al. 2002). In addition to sourcing inorganic objects, ICP-MS has also been used to identify trace elements (e.g., strontium, barium, calcium, zinc, and lead) in bone, hair, and teeth (Simonetti et al. 2008), to infer diet (Sillen 1992;

Sillen and Smith 1984; Sillen et al. 1995), and to source timber beams in Chaco Canyon (English et al. 2001). One application of laser ablation LA-ICP-MS is for mobility studies using human hair. Hair, particularly melanin, acts as a sink for trace metals from the body. Because hair typically grows one centimeter per month and does not change biogenically once formed, it provides a high resolution environmental record of the last few months before death or discard. The advantage of LA-ICP-MS over the other techniques is that elemental distributions can be semi-quantified along the length of the hair (Pollard et al. 2007:197, 210) as a measurement of short term mobility.

Because some applications of ICP for trace element analysis utilize organic objects, contamination from pest management is possible. Metal-compound pesticides may adversely affect the instrument readings; pesticides with a metal component were used until the 1990s and some (e.g., sodium fluoride) are still used today (Pool et al. 2005: vvv.1). Organic contaminants, such as organochlorine pesticides, botanical pesticides, and adhesives should have little effect because of the instrument's low sensitivity for non-metal elements.

## Isotope Analysis

### Light Isotopes

In the last three decades, research at the elemental level has shifted from trace elements to include stable isotopes. Stable carbon isotopes ($^{13}C/^{12}C$) are the best understood and most widely applied isotopes. The carbon isotope pattern is primarily determined by isotopic fractionation caused by photosynthesis. The main focus of carbon isotope studies has been the identification of $C_4$ plants (e.g., maize) in paleodietary studies using human remains (Coltrain 1993; Coltrain and Leavitt 2002; Coltrain et al. 2007; Matson and Chisholm 1991), while oxygen and hydrogen isotope studies are increasingly being employed to answer questions about mobility. Water and food carry a biogenic signal that is region-specific, transferred to the consumer (Sealy 2001: 273), and measureable as the $\delta^{18}O$ value in bone and tooth enamel carbonates and phosphates. Oxygen isotopes were used to source ochre (Smith and Pell 1997) and to target water sources for prehistoric maize on the Colorado Plateau (Williams et al. 2005). Human hair was sampled to identify mobility patterns in the Great Basin and Colorado Plateau (Thompson et al. 2008, Thompson 2010) and Argentina (Sharp et al. 2003), and olivella shells were sourced to specific coastal areas in California (Eerkens et al. 2005).

In general, light isotopes are measured using gas sources whereas heavy isotopes are measured using samples in the solid state. Carbon and nitrogen isotopes are routinely separated and measured by combining gas chromatography with mass spectrometry (GC-MS) or using a continuous flow combustion isotope ratio mass spectrometer (CF-IRMS). Both techniques are destructive; the sample size requirement for the latter is under 10 mg of dried, powdered material. In the last 10 years, laser ablation combined with mass spectrometry (LA-MS) has been used to measure sulfur, oxygen, and carbon isotopes in some geologic samples and to measure oxygen isotopes on tooth enamel phosphate with good precision and high resolution (Pollard et al. 2007:160–161, 170). This method does not require sample preparation as long as the specimen fits in the small sample chamber and is flat. Contamination from pesticides with non-metal components, preservatives, and glues may affect the measurement of carbon, hydrogen, nitrogen, and oxygen isotopes. Isotopes will degrade over time, but for samples from the Colorado Plateau and Great Basin this may not be an issue due to high aridity. While it would seem unlikely that residues for isotope studies would preserve on washed museum collections, a recent study on newly-excavated and gently washed ceramics identified $C_4$ plants using IRMS (Seinfeld et al. 2009), suggesting that technology has overcome the problem of cleaning and handling.

### Heavy Isotopes

Strontium isotope analysis differs from the approaches above because fractionation does not

occur biologically; the *in vivo* ratio in bones or teeth reflects that of the lithosphere from which the element originated and can be compared to local geologic formations. Thus, the strontium isotope composition in bone can be used to map humans and animals onto the landscape, if the strontium isotope composition of local geologic formations is known (Sealy 2001:275). Although some skeletal elements (like tooth enamel) stop absorbing strontium after formation, bone minerals, due to ongoing turnover every ten years or so, continue to absorb local strontium (Pollard et al. 2007:188). Strontium isotope measurements have been used to answer questions about mobility in the Southwest (Price et al. 1994), to determine paleodiet (Knudson et al. 2010; Sealy et al. 1991), and to source architectural materials (English et al. 2001; Reynolds et al. 2005). Strontium isotope analysis has also been used to identify imported maize at Chaco Canyon (Benson 2010) and to source willow and tule artifacts from sites in the Great Basin (Benson et al. 2006).

Instruments used for the measurement of heavy metal isotopes, like lead and strontium, include thermal ionization mass spectrometry (TIMS) and the Multi Collector-Inductively Coupled Plasma Mass Spectrometer (MC-ICP-MS). The sample size requirement is under 10 mg of dried, powdered material. Pesticides containing metal compounds may affect the accuracy of an instrument's reading. Given the current focus on organic objects in strontium isotope analyses, contamination from past curation practices can be an issue.

## Biological Analysis

### Pollen, Starch, and Phytolith Analysis

Preservation on artifacts in museum collections is the main concern for pollen, starch and phytolith analysis. Micro-remains can be readily found as residues on newly excavated stone tools (Hart et al. 2003), but preservation on curated tools is generally poor due to washing and excessive handling. Pollen and phytolith extraction from flotation and pollen samples, coprolites (Reinhard and Danielson 2005), and dental calculus (Lalueza-Fox et al. 1994) is now common practice. Given the minimal handling of these artifact classes it is very likely that research using museum collections will be a fruitful endeavor. Starch, which is typically identified at the microscopic level, shares the same preservation issues as pollen and phytoliths when analyzed as a residue. However, the extraction success rate will increase if the artifacts have not been washed, or only lightly washed, and if they are relatively dust-free (Barton 2007). Like pollen and phytoliths, starch grains have been identified in coprolites and in dental calculus as well; for the latter, non-destructive techniques are now being used (Hardy et al. 2009).

Pollen, phytoliths, and starch are taxonomically identified based on morphological attributes unique to a particular genus or species. The most common systems used for micro-remains are transmission electron microscopy (TEM) and scanning electron microscopy (SEM). Both have greater resolution (from .2 to 6 nm, respectively) and a higher magnification range than light microscopy, but sample preparation is more involved. The main differences between SEM and TEM are the sample size and the preparation. In TEM, the small chamber size (3 mm in diameter) makes the technique applicable for viewing small particles (e.g., pollen) or specimens than can be prepared by ultrathin sectioning (less than 100 nm). Samples will also have to be made electrically conductive (Flegler et al. 1993; Pearsall 2000:175; Piperno 2006:102). For SEM analysis, complete biological samples must be dehydrated, mounted, and made electrically conductive by coating them with a thin layer of gold (Flegler et al. 1993). Contamination from pesticides is not applicable to most artifact classes using these techniques. And while preservation on museum collections is expected to be poor, starch, phytolith, and carbon isotopes from residues on curated ceramics were identified and used to map the spread of maize into New York (Boyd et al. 2008; cf. Hart et al. 2009).

### Residue Analysis

Residue analysis indentifies organic materials found in small traces on the surface of artifacts.

General classes of residues identified on artifacts include carbohydrates, lipids, and proteins. Residue can be visible on the surface of the object, as in the case of resins, but can also be in the porous structure of the object, especially in unglazed ceramics where small pores act as traps that block microorganisms from destroying biological components while buried (Evershed et al. 2001:332; Oudemans et al. 2007). Lipids—a generic term used for animal fat, vegetable oils, waxes, and resins—have been found as components of organic residues on pottery and in amorphous deposits (e.g., resins, waxes, etc.). Cholesterol lipids preserve in dental calculus and in large quantities in human vascular bone, the fat content of bone marrow, and in bone cells. The preservation potential for lipids is higher than other organic material (e.g., nucleic acids, carbohydrates, and proteins) because they are not susceptible to hydrolysis (Pollard et al. 2007:23, 149), although some fatty acids in plant oils are highly susceptible to rapid oxidative degradation (Evershed et al. 2001:334). Lipids are also more likely to survive in an unchanged state because of their resistance to chemical and microbiological degradation.

Plant resins and their heated derivatives (wood tar and pitch) were used as sealants, adhesives, and caulking materials. The identification of natural bitumens, plant resins, and their derivatives is highly dependent on the characterization of diterpenoid and triterpenoid compounds, the largest family of plant products. Compared to other ancient organic materials, terpenoids generally exhibit good preservation (Eerkens 2002; Evershed et al. 2001:343; Pollard et al. 2007:153). The preservation of residues on curated collections may depend on the manner of attachment. Visible matrices (like carbon rinds or pitch) are less likely to have been cleaned by museum personnel and so should retain residues. Although lipids were extracted from the pores of non-curated (i.e., unwashed) sherds with no visible residue and used to identify the range of foods prepared and stored in vessels from the western Great Basin (Eerkens 2005), residue extraction from the pores of curated ceramics is generally expected to be problematic.

Like the non-metal isotopes, the most common technique for the separation and identification of lipids is gas chromatography-mass spectrometry (GC-MS). With gas chromatography combustion isotope ratio mass spectrometry (GC-C-IRMS), the ability to measure $\delta^{13}C$ values of cholesterol and to thus differentiate the sources of ancient lipid residues is now possible and has been used to demonstrate a change in diet from $C_3$ to $C_4$ plants (Pollard et al. 2007:24). A recent development is the use of GC to isolate lipids from ceramics in order to AMS date the processing of a particular plant or animal (Evershed et al. 2001:332, 342). Sampling size for gas chromatography is under 10 mg of powdered substance. Organic pesticides or preservatives on perishable artifacts (e.g., baskets with pitch that were sprayed with DDT) as well as glues on ceramics can have a detrimental effect on spectrometry measurements.

Blood residue analysis for remnant proteins is typically applied to stone tools and has been controversial since it began in earnest in the 1980s. Preservation is the main cause for concern (because of natural taphonomic processes as well as museum handling and washing), but if residues can be found, (Kooyman et al. 1992; c.f., Smith and Wilson 1992) they can provide information on the taxa of animals hunted and butchered. Current immunological techniques used to identify blood residue on stone tools include: ouchterlony, cross-over immunoelectrophoresis (CIEP), radio-immunoassay (RIA), and enzyme-linked immunosorbant assay (ELISA). Some believe that a newer technique, desorption electrospray ionization mass spectrometry (DESI-MS), may prove to be more reliable (Heaton et al. 2009). Smith and Wilson (2001) suggest that DNA amplified using polymerase chain reaction (PCR) is probably the most powerful technique for analyzing blood residue, although it is also the most susceptible to modern contamination. Sampling requires removing only a small amount of protein residue from the surface and is non-destructive to the artifact. Contamination from

pesticides and preservatives on stone tools and ceramics is not an issue, but old glues made from processed animals can skew results.

**DNA Analysis**

Ancient DNA analysis is the most recent application of the biological sciences to archaeology. As with every new technique introduced in the past, it has the potential to address extant archaeological questions from a unique perspective. Because DNA is not a stable molecule and is prone to fragmentation after the death of an organism, preservation in archaeological samples can be problematic. But even when only fragments remain, aDNA may still be detectable using the polymerase chain reaction (PCR) technique—the hair of a 9,800 year-old *Ovis canadensis nelsoni* from Smith Creek Cave was successfully sequenced using PCR (Bonnichsen et al. 2001). Heat and water are some of the most damaging external agents to the DNA molecule, although it has been demonstrated that even ancient tanned leather can still retain mtDNA (Vuissoz et al. 2007). Acidic soil in the burial context is also a concern for aDNA preservation (Hummel 2003:70). Human aDNA has been used for population studies in the greater Southwest (Carlyle et al. 2000; Snow et al. 2010) and the Great Basin (O'Rourke et al. 1999; Parr et al. 1999), and for sex and disease identification (Filon et al. 1995; Sutton et al. 1996). In plant studies, ancient chloroplast DNA was identified in ceramic vessels from a 2,400 year-old shipwreck when no visible residue remained (Hansson and Foley 2008) and was used to identify medicinal/hallucinogenic plants in human coprolites (Reinhard et al. 2008). Animal DNA can be extracted from bone, hide, fur, feathers, and hair. Many studies focus on the origins of domestication, especially for the dog (Vilà et al. 1997; Wayne et al. 2006) and turkey (Spellera et al. 2010). Another study successfully amplified aDNA from from a 1000 year-old curated squirrel and macaw feather pelt; the results showed it was manufactured in the San Juan region and not imported from Mexico as was previously argued (Borson et al. 1998).

Contamination is the most serious issue facing an aDNA researcher. It can be introduced through cross-contamination between samples, by people handling the samples (a major issue for museum collections), and by chemical or PCR carryover. Substances that reduce PCR efficiency are called inhibitors and include products with excess salts, isopropanol (a solvent), and phenol (used for tissue preservation). Other inhibitors are humic acids and heavy metals from the soil matrix. Given the prevalence of metals in pesticides used in the past and the known inhibiting effects of heavy metals in soils, it is almost certain that past curatorial practices would be detrimental if the object was treated. It has also been demonstrated that animal glue contains enough DNA to be amplified along with the target DNA (Hummel 2003:135). The extraction of aDNA from a specimen is destructive. Sample sizes depend on the research question, but 100 mg of powder per aliquot may be sufficient in most cases.

**Summary**

Over the last 25 years, archaeologists have increased their focus on material culture at the microscopic and molecular levels to answer questions about past human behavior. The technology is available and becoming more sophisticated every year. But with progress comes challenges for museum personnel and interested researchers who must now consider the effects of past curation practices on the efficacy of highly sensitive instrumentation. Of the examples listed in this paper, 44 percent were known to come from museum collections. Those from other sources were included where past curation practices are not expected to have a negative effect on the efficacy of a measurement; an example would be trace element analysis on stone tools. Over 80 percent of the radiocarbon analysis examples listed in this paper are from curated collections, with 55 percent of that number from collections that pre-date the 1980s (before most organochlorine pesticides, like DDT, were discontinued). The Promontory Caves collection (collected in 1931) now has

over 30 acceptable radiocarbon dates, despite the high probability that the organic collection was sprayed or dipped in pesticides. In addition, part of the 1941 Deadman Cave (42SL1) osteological collection was coated in Alvar (a preservative) yet still produced acceptable dates (Ron Rood, personal communication 2010). These successes are due to the high purification standards many radiocarbon laboratories now routinely practice.

In contrast, the effects of contamination on trace element analysis and isotope analysis (for heavy elements) using organic collections are still unknown. Of the examples used, only three were known to be from museum collections, so the potential for contamination from metal-compound pesticides should be considered when working with museum artifacts. Light isotope research using museum collections can also be compromised by most pesticides and adhesives unless laboratories are able to isolate and identify contaminants. Of the examples used, 68 percent were from museum collections, and of that number, 63 percent had some component that was collected before 1980. For example, Coltrain et al. (2007) were able to identify isotopes in several Basketmaker burials that were accessioned between 1914 and 1931 at the Harvard Peabody Museum.

Residue and aDNA studies are not well represented by museum collections. The majority of regional aDNA studies are conducted on recently recovered skeletal remains because the potential for human contamination on museum collections is too great. However, one aDNA study (Borson et al. 1998) on a curated—and likely treated—Anasazi animal pelt illustrates PCR amplification as more viable when using non-human collections. Microanalyses of botanical remains from flotation, pollen, and coprolite samples have been successfully conducted on museum collections for many years, and past curation practices should have no negative effect. The same cannot be said, however, for botanical remains on lithic tools and ceramics. Finally, the potential for protein, carbohydrate, and lipid residue analysis on museum collections is thus far untapped. None of the references given used museum collections, but the ability to extract molecular data from surface finds with no visible residue (Eerkens 2005) is promising. Also, the preservation likelihood of identifiable residues in visible matrices is high and could be used to answer questions about food processing and technology.

Expressing concerns about the applicability of curated collections to analytical studies at the microscopic and molecular levels does not mean that research with museum collections is not a worthwhile endeavor. In fact, it is argued that acknowledgment of potential issues gives researchers the ability to make better decisions about how curated collections can be used to their fullest extent. The research potential of a museum collection persists because of the continuing development of new analytical techniques. Even poorly provenienced collections can provide answers depending on the research question, the methodological criteria of the analytical technique, and the sampling restrictions of the curation facility (Lovis 1990:382). As new analytical methods are developed, collections are reexamined and new insights about the past come to light. In this sense, museum collections are not stagnant but dynamic representations of the past that will grow in research value over time. ■

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# Museum Collections Worth Revisiting

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*Museums often house artifacts from respected archaeological sites excavated years ago that have received little attention over time. Some of these items are textiles, which tend to be underappreciated by archaeologists largely due to their rarity. As analytical methods improve, museum collections of all kinds—including textiles—are becoming more valuable to researchers. Textiles could provide insight to long standing questions about past lifeways of prehistoric North Americans. Given a growing body of modern textile research across the globe, Great Basin textile impressions are a potential source of information in research designed to investigate prehistoric textiles and the behaviors of their makers.*

The Utah Museum of Natural History (UMNH) contains many artifacts from archaeological sites excavated over the years that have been studied by archaeologists from many different institutions. These collections provide much of the data that make up the backbone of what we know about the prehistoric Great Basin and Colorado Plateau. The museum also contains certain assemblages that have received little attention over time; given the development of research since their recovery, these assemblages deserve a second look. One example of an intriguing but little-studied collection at the Utah Museum of Natural History consists of fiber impressed clay artifacts. Over the last 20 years, a growing body of information about impressed clay artifacts has been created by researchers from many parts of the world, yet the clay impressions from the Great Basin have been largely overlooked, despite their association with some of the oldest and best preserved basketry and plant fiber artifacts in North America.

## FIBER IMPRESSIONS AT UMNH

The largest collection of fiber impressed clay artifacts at the Utah Museum of Natural History comes from Danger Cave (42To13). Hogup Cave (42Bo36), is also represented but in smaller numbers. The impressions from each of these sites are clean and sharp, and seem to represent a variety of weave structures on the concave side of the clay material. Sizes range from 7 mm to 58 mm across by 8 mm to 16 mm thick. Most of them appear composed of generally homogenous, somewhat granular unfired clay, light gray in color, but one or two exhibit much darker color and have most likely been burned (Figures 1–3).

It is often the case with textile collections that their fragile condition, small numbers, and poor survivability render them of little value to researchers. This may be even more true of clay impressions of textiles. They are often brittle and powdery, with vague impressions that can quite literally erode off the surface even under the best conditions. Yet textiles and their clay impressions are a highly unique kind of artifact because a considerable amount of information can be gained from very small and poorly preserved fragments. Textiles can preserve and convey individual identities, behaviors and choices—and they have a greater antiquity than ceramics. Nonperishable correlates such as bone tools and clay impressions have great potential in textile research as well because they sometimes survive where organic materials don't. In some places they are the only evidence of textiles at all.

 


Figure 1. 42TO13 23011.1 Level V. Impression from Danger Cave.


Figure 2. 42TO13 23060.1 Level V. Impression showing possible coiling.

Figure 3. 42TO13 23011.1 Level V. Impression from Danger Cave.

## RECENT RESEARCH

Improved techniques in textile and plant fiber analysis over the last thirty years have given them a greater role in interpretations of sites and artifacts. Also, an increase in gender studies and a growing consciousness of the contributions of women to the archaeological record (Hurcombe 2008, 2000) have added to the awareness of basketry and other woven fiber objects as viable fields of study (Webster and Drooker 2000). Archaeological textile studies cover a wide range of topics and technologies, and a growing body of specialists sees them as a rich source of data capable of defining such things as ethnic boundaries and economic and social systems (Adovasio 1986; Good 2001; Drooker and Webster 2000). Investigative studies into archaeological textiles have been conducted by anthropologists, museum conservators, and art historians in a variety of areas such as prehistoric fabrics and clothing, footwear, netting, cordage and matting, dyes, spinning, weaving, and basketry. Impressions of cordage, basketry, and woven fibers on clay have been a valuable part of this research as they represent artifacts that have long since disappeared from archaeological contexts due to poor preservation. With some exceptions, impressions are studied much the same way as organic textiles. Often it is possible to distinguish the spin and ply of cordage, structural weave patterns, construction technique, and whether the impression was created by a rigid container such as a basket, or by a more pliable object such as a mat, garment, or bag.

## DANGER AND HOGUP CAVE IMPRESSIONS

Located near Wendover, Utah and investigated by Jesse D. Jennings between 1949 and 1953, Danger Cave is a landmark site of the Great Basin. Famous for its deep stratigraphy and remarkable preservation, it has provided a valuable picture of the last ten thousand years of human life. Although an extensive description of organic textile remains from Danger Cave

was conducted by Sara Sue Rudy (Jennings 1957:235), Jennings' 1957 report only briefly mentions clay textile impressions. He notes that only a few of these specimens were actually saved and that more clay impressions were noted during excavations but were discarded. Jennings comments, "No effort was made to determine what basketry techniques were preserved in these casts in view of the abundance of basketry specimens available for direct study" (Jennings 1957:209). Therefore, the impressions were not included in the overall textile analysis.

The distribution of the clay impressions by strata is:

| D2 | D3 | D4 | D5 |
|---|---|---|---|
| 2 | 15 | 10 | 31 |

Both twined and coiled basketry were found in Danger Cave (v 1) and the impressions appear to represent both techniques, although they have not been closely analyzed. Most of the impressions were found in D5, although they were present in every stratum but D1.

It should be possible to determine the construction techniques and other relevant attributes represented in the impressions, and therefore supplement or perhaps modify Rudy's analysis. The twined basketry fragments from Danger Cave are recognized as some of the oldest textile artifacts in the Americas. Increasing the number of known twining examples further supports the idea that basket and weaving technology were widely practiced by prehistoric North Americans. It is generally believed that twining preceded coiling in the Great Basin (Adovasio 1970, 1986), but this may simply be due to the lack of available coiled specimens. Additionally, it has been suggested that the advent of coiled basketry may be linked to the specialized processing of seeds (Adovasio 1970, 1986; Geib and Jolie 2008), which archaeologists believe may be associated with a broadening diet during the Pleistocene/Holocene transition (Rhode et al 2006). If coiled basketry is found in the Danger Cave impressions, it will add to our current knowledge of the temporal history of this technology in this region and contribute to this interesting hypothesis.

Excavated in 1967 and 1968, Hogup Cave is seventy five miles northwest of Salt Lake City and ten miles from the shore of the Great Salt Lake. Like Danger Cave, a number of well-preserved basketry specimens were recovered from this deep limestone cavern. Numerous classes of twined and coiled materials were identified by James M. Adovasio, who determined that coiling techniques made up 77 percent of the collection (124 of 160 specimens) and were found in most all of the strata, occurring first in Stratum three (8800±100) (Aikens 1970:133). Six clay impressions from Hogup Cave were recovered from Stratum eight, which returned two C-14 dates of 4610±100 and 3200±140 (Aikens 1970:29). However, the impressions could vary widely in age as Aikens notes the possible occurrence of mixing between strata eight through twelve. In 2004 a feathered basket fragment from lower Stratum eight was dated to 6440±50, validating his concerns (Jolie 2004). More specific provenience for the Hogup impressions would have to be obtained through AMS dating. Unlike Danger Cave, coiling occurs before twining at Hogup Cave and dominates the basketry assemblage (124 of 160 specimens) (Aikens 1970:150), although coiling appears much earlier at Danger Cave (Figures 4–6).

The term basketry, according to Adovasio, applies to many different kinds of items including matting, bags, cradles, and hats. Though these artifacts vary greatly in appearance and function, they are often treated as one unit because they all share the same attribute of being woven manually without a loom or frame (Adovasio 1977:1). Basketry is usually divided into three different sub-classes: twining, coiling, and plaiting. In twining, two or more horizontal elements, or wefts, are twisted across one or more vertical elements, or warps (Figure 7). Coiling involves a continuous outwardly spiraling element, or bundle of elements that is wrapped, or stitched, by successive circuits of another element (Figure 8). Plaiting is the least complex sub-type, and

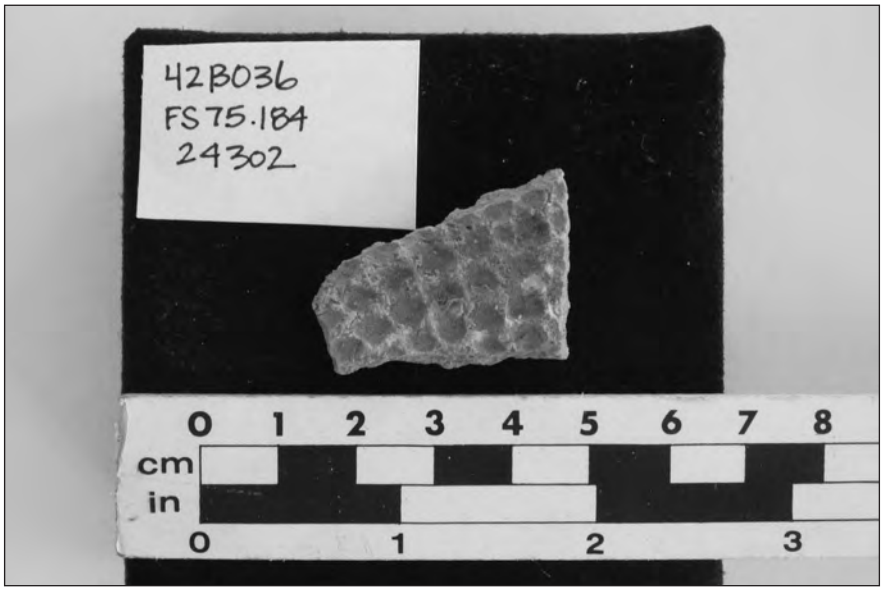


Figure 4. 42BO36 FS75.184. Impression showing S-twist weft twining (Ed Jolie photo analysis 2011).


Figure 5. 42BO36 FS130.47. Impression showing coiling (Ed Jolie photo analysis 2011).

involves elements which pass over and under each other at 90 degrees (Adovasio 1977).

Analyzing the Danger and Hogup impressions accurately would require familiarity with prehistoric basketry techniques in order to tease out differences between twining and coiling where passive elements are not immediately visible. This may be possible under strong magnification. It has also proven helpful to some researchers to make casts from impressions in

Table 1. Danger Cave basketry technique by stratigraphic level (from Jennings 1957:257–258)

| | D2 | D3 | D4 | D5 |
|---|---|---|---|---|
| | 9789±630 | – | 3819±160 | 4900±500 |
| Twining | 100% (n=7) | 48% (n=14) | 54% (n=14) | 15% (n=11) |
| Coiling | – | 52% (n=15) | 46% (n=12) | 85% (n=62) |
| Total Artifacts | 7 | 29 | 26 | 73 |

order to create a positive image of artifact, but given the fragile state of these particular objects, this approach might not be possible. High contrast photography, low angled light, and low magnification microscopes can be very helpful in many cases by revealing details of construction and material not evident to the naked eye. Working closely with museum collections personnel to establish what is best for the artifact while obtaining the best possible images for study is highly recommended.

How the Danger Cave and Hogup Cave impressions were formed is not known, although Jennings describes their origins as "nothing more than the mud which adhered to basketry utensils when they were set on the ground" (Jennings 1957:209). Perhaps this is true. Experts speculate impressions are a result of many behaviors, from inadvertent placement of textiles upon a receptive surface and use of fabrics in pottery manufacture to deliberate applications of cordage and basketry for intricate designs (Adovasio 1996; Drooker 2001a; Hurcombe 2008; Peterson 1996). Basket and fabric impressions are known to have survived in a variety of places such as clay hearths and floors, daub and adobe, and also on the interior and exterior of ceramics (Drooker 2001b; Good 2001). Recently, fabric and basketry impressions have been the subject of intense investigation in many parts of the world, including North America, Eastern Europe, and the Caribbean. Better conservation methods in the field and in museums have contributed greatly to the recognition and preservation of these objects as well, which means greater numbers of viable specimens available for research.

## LATE PLEISTOCENE INVESTIGATIONS

It is because of cordage impressions from Eastern Europe that we know of the existence of fiber technologies during the Upper Paleolithic. In 1954, numerous clay ceramic pieces dating to 27,000 B.C. were recovered from Pavlov I in the Czech Republic (Adovasio et al. 1996). Interestingly, it was 40 years after their excavation—during a comparative study of ceramics— that Illinois anthropologist Olga Soffer noticed the presence of impressions on the surfaces of four of the ceramic sherds. Using high-resolution photographs, researchers discovered the imprints were of twined material of an unknown kind, from technically well-constructed basketry or cloth items. This provided direct evidence for fabrics at the site. Under close examination it was determined that both the warps and the wefts were made of cordage, leading to the confident assumption that string and rope technologies were used at Pavlov I (Soffer et al. 2000a). Because of the technical caliber of the fabrics that created the impressions, investigators concluded significant "antecedent development not only for these techniques but also for the perishable industry or industries at large" (Adovasio et al. 1996:531). These conclusions—combined with additional evidence


Figure 6. 42BO36 FS688.253. Impression showing coiling (Ed Jolie photo analysis 2011).

from late Pleistocene bone and ivory artifacts believed to be associated with the processing of plant fibers from France, Germany and Russia—support the idea that textile technologies such as netting, sewing, and weaving were more common during the Upper Paleolithic than once thought (Soffer et al. 2000b; Soffer 2004).

## NORTH EASTERN IMPRESSIONS

In North America, only a handful of studies utilizing basket and fabric impressions were conducted before the 1990s (McPherron 1967; Quimby 1961; Saylor 1978). Since then, impressions have benefitted from the growth of textile research as a whole and have become objects of serious interest to researchers specifically in the eastern states, where prehistoric organic artifacts rarely survive the wet conditions. In many cases, ceramic and clay impressions have served as the only evidence for basketry and fabric industries of the prehistoric cultures in the region. It has been proposed by several respected textile experts that basketry and fabrics can be instrumental in defining cultural and group boundaries as well as identifying economic and social exchange (Adovasio 1986). In the eastern states, researchers have followed these lines of thinking when analyzing impressed sherds left by Mississippian and Woodland peoples (Good 2001). With the development of more standard approaches to analyzing textile structures, regional sequences in the Northeast (Petersen 1996) and Southeast (Drooker 1992) have been


Figure 7. 42TO13 AR59052. Level V. Twined basketry from Danger Cave.

made possible by organizing impression data by type, temporal distribution, and geographical distribution. Textile sequences in some areas of New England span from 1000 B.C. to European contact, based from information formulated primarily through textile impressions (Petersen 1996). Penelope Drooker's impressive work on Mississippian textiles is by far the most extensive work on North American textile impressions and archaeological textile research. Through careful examination of thousands of diverse ceramic impressions from Wickliffe Mounds, Kentucky, Drooker conducted extensive technical analyses of the yarn types, fabric types, and construction methods represented on the outsides of "saltpan" ceramics manufactured at the site between A.D. 1000 and 1350. Based on the extensive variety of fabric impressions present, she reconstructed a multi-dimensional portrait of life in the prehistoric village that included the social interactions and technical capabilities of its inhabitants, especially those of women. Her work provides an excellent example of the questions that could be asked of the UMNH impressions.

## LIMITATIONS, PRESERVATION

Despite the amount of information they have provided, textile impressions have their limitations. For example, structural analysis can be difficult because it is impossible to see the reverse side of the organic object in the impression, so observing all of the interacting elements is often not possible (for instance, in cases where weft elements completely cover warp elements). Also, unless an impression is very large, it can be nearly impossible to infer the shape or size of the original object. Clay objects, both fired and


Figure 8. 42TO13 22980.1. Level V. Coiled basketry from Danger Cave.

unfired, can change shape over time and suffer the salting, spalling, and crumbling inherent in all prehistoric clay artifacts (King 1978; Drooker 2001a). Museum collections staff can preserve the life of impressions in their care by providing stable, acid free cavity mounts to protect the object from movement while eliminating any chance of friction, static, or contact on the impressed surfaces. Impressions do not reveal dyes and they often do not exhibit material clues as to what the impressed object was made of. However, future analytical methods could go beyond descriptive and comparative studies. A research design employing approaches such as pollen and fiber residue sampling, could possibly give insight into what the clay itself contains or detect what materials it was impressed with. Organic residue analysis may tell us if the impressions were connected to food preparation or cooking processes. Clay sourcing might reveal where the clay was obtained. Finally, the application of 3D modeling may offer a substitute to the riskier process of clay or plasticine casting while creating detailed images of the parts of the object that created the impression.

## DISCUSSION

Great Basin unfired clay impressions stand apart from other impression assemblages mentioned in this paper for several reasons. Like the textiles they are associated with, they are some of the oldest examples in North America. They also come from stratified and well-dated sites. Unlike eastern collections, the Danger and Hogup Cave impressions were recovered from pre-ceramic contexts, ruling out their association with ceramic manufacture. Also unlike many other collections, Great Basin impressions are not the product of complex societies but of smaller hunting and gathering groups. While

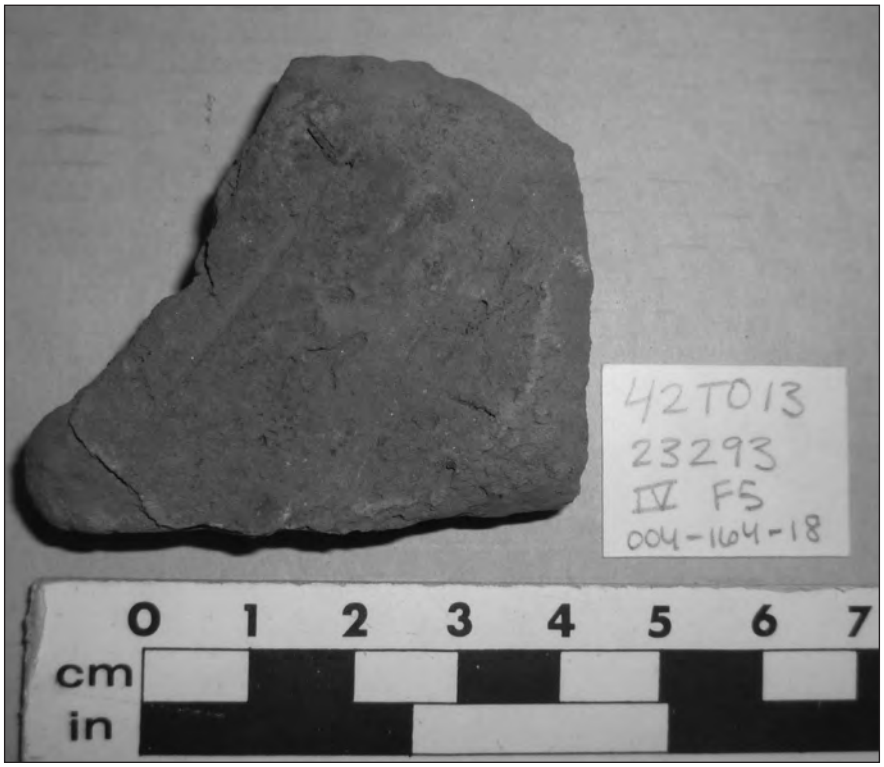


Figure 9. 42TO13 23293. Level IV. Unfired clay lacking basket impression.

few remnants of organic textiles have survived through time in wetter locations, hundreds of well-preserved basket and textile fragments have been recovered from these two caves alone. It was the sheer number of basket artifacts recovered from Danger Cave that gave Jesse Jennings reason to believe the clay impressions worthless. But it is known that these items show technical variability (Jolie, personal communication 2011) and can be viewed as valuable additions to the textile collections of these sites. The placement of these objects within the two deep limestone caves is also unique. The cool, dry locations provided remarkable preservation, allowing archaeologists to see a whole spectrum of objects from daily life with which they can better understand textiles and the intentions behind their creation and use. For example, bone tools with wear that most likely indicates basket weaving were plentiful, as were remnants of processed raw plant materials used in basketry. Interestingly, Danger Cave D4 also produced a collection of sixteen pieces of unfired clay of similar composition and size that are devoid of any textile impression at all (Figures 9 and 10). These seem to have similar material composition and gentle concave shaping as the impressions. Random impressions of grass-like vegetal material appear on one side of three pieces. The relationship, if any, these unimpressed clay pieces have to the basket impressed objects is not known and the question of whether these artifacts are the result of purposeful or accidental behavior is not known, but determining this is an important aspect that deserves investigation, possibly through experimental archaeology (Hurcombe 2008).

The occupants of Danger Cave and Hogup Cave utilized the sites intermittently over a span of nearly ten thousand years, gradually filling them


Figure 10. Figure 10. 42TI13 23289. Level IV. Unfired clay lacking basket impression.

with the remnants of their daily lives. As Aikens describes, "The [Hogup] cave deposit is merely an accumulation, over a long period, of the debris of daily living. In its fine structure it is made up of innumerable small lenses, bands or clumps of refuse" (Aikens 1970:14). Somehow, whether intentionally created or not, the impressions are a part of this daily accumulation. Determining how these impressions connected with other materials of daily life of the prehistoric cave occupants is an important step to increasing our knowledge about prehistoric behavior. Linda Hurcombe offers a refreshing perspective of material culture in her 2008 "Organics from inorganics" study:

> Though artifacts are categorized by archaeologists and studied according to their materials, … in life they were part of the integrated suite of material culture in which ideas were borrowed between materials, implements or working edges of one material were used to work another material, tools were composites of many different kinds of materials and one item interacted with others of different kinds in complex groupings and narratives [Hurcombe 2008:85].

That these impressions are older and fewer in number than other assemblages presents some investigation pitfalls. Ethnographic studies inform us that the majority of material culture is often composed of organic materials which do not survive well in temperate conditions. Perishable materials, including basketry, can be seen as a missing majority of archaeological material. But, as Hurcombe's quote suggests, the fact that they are associated with a large textile component as well as abundant other archaeological material—which could be connected to textile manufacture—is a benefit which can be used to the researcher's advantage.

The point of this paper has been to call attention to various parts of notable archaeological collections at the Utah Museum of Natural History, specifically impressions of textiles from Danger and Hogup Cave, which have largely been passed over by researchers studying the prehistoric cultures of the Great Basin. Much of the focus on textiles from this area has been centered around descriptive studies and defining regional, cultural, and temporal boundaries. Archaeologists have yet to utilize the potential of these impressions as part of a research plan designed to better understand textiles as they relate to behavior at these sites. This may require new analytical methods and alternate ways of thinking about material culture that are unique to these sites and the people who lived there. ■

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# Artifact Collecting at Brigham Young University 1875–1968

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*The history of any museum begins before the actual formation of the institution. This article describes the complicated history of archaeological collecting at Brigham Young University (BYU) before the creation and recognition of a museum for archaeology and anthropology leading to the presently named Museum of Peoples and Cultures. A long period of development, from 1875–1968, consisted of early amateur collectors/curators; a collecting expedition from Provo, Utah to Bogota, Columbia; university-led excavations in Utah; and multiple attempts to found a museum that could house archaeological collections. A result of this period of undulating professionalism was the loss and destruction of collected specimens relating to evolutionary theory, misplacement and loss of artifacts and excavation records, as well as missed opportunities for collecting and research.*

The public perception of museums as displays of history generally overshadows the fact that a museum has a long and intricate history aside from the collections. Understanding the development of museums as institutions is an important part of establishing goals, a mission, and an identity. The history of Brigham Young University's Museum of Peoples and Cultures (MPC) can be traced back to the late 1800s. From 1875–1961, the time leading up to the formalization of an anthropology museum at BYU, the museum movement underwent a long period of development that included amateur collecting, an expedition to Central and South America, and multiple attempts to create a university museum. Critical to positioning itself as a twenty-first century museum, the MPC has placed new emphasis on understanding its history in order to fill gaps in records left by previous workers, solve issues within collections, and put to rest rumors about the Museum's developmental period. Since April 2009, student MPC employees have been working with Director Paul Stavast to research the Museum's development and the origins of early BYU collections. Throughout the process it has become clear that the Museum and its collections have a history of survival far more complicated than previously imagined. Developing a better understanding of the difficulties and failures faced by the Museum's predecessors, MPC employees have come to appreciate even more the collections in their care.

Each of the early attempts to collect and display ethnographic and archaeological collections at BYU was referred to by contemporaries as the "first museum." Unfortunately, the remaining documentation that describes these semi-professional establishments allows us to decipher little more than that basic collecting goals were established, donations from amateur and semi-professional collectors occurred, displays existed, and titles of "museum" and "curator" were applied. It is difficult to understand what these institutions were like and whether or not they would be defined as "museums" by today's standards (McDonald 2006). By modern definition, many of these early attempts would probably be considered little more than amateur collections on display (Schwarzer 2006). This has as much to do with the changing concept of what constitutes a museum as the quality of records still available. However, it is important to bear in mind that the concept of a museum is one that has developed significantly since collecting began at BYU. Agencies of display that today fall under the definition of museum may not have been considered as such by professionals of previous

 

eras and vice versa (Schwarzer 2006, McDonald 2006). While it is important to point out that the "museum" definition has changed much since 1875, there is not space in this article to further explore the interaction between the definition and BYU. Thus, any displays or entities that were called museums in contemporaneous documents will be referred to as such in this paper.

## Brigham Young Academy Natural History Museum

As early as the 1890s, Brigham Young Academy (BYA), predecessor to Brigham Young University, was collecting natural history specimens. Walter M. Wolfe (1859–1932), a professor of Latin and history at the Academy, served as curator of what was called the Academy Museum at least as early as 1892. In an article printed October 1892 in the Academy's newspaper, Wolfe encouraged students to assist the Department of Natural Science in collecting specimens of mineralogy, flora, and fauna throughout the Utah Territory to "add to the value and completeness of the B.Y.A. Museum" (The Normal 1892). The wording used suggests that some type of collection existed prior to the article's printing, possibly even before the construction of the new Academy Building (The Normal 1892). As a last note, Wolfe added that he "would also be pleased to receive donations of archaeological and ethnological specimens" such as "old pottery, hieroglyphics, picture writings, implements, weapons and relics" (The Normal 1892). Wolfe wanted to create a collection that would represent Utah Territory and, in so doing, tie the Academy to the natural and cultural environment the school inhabited (The Normal 1892). His desire was surely influenced by the excitement surrounding the World's Columbian Exposition, or Chicago World's Fair, to be held in the next year, 1893. The year preceding the Expo was an important one in the development of archaeological and ethnographic collections throughout Utah, as each county worked to provide natural and cultural resources representative of their respective counties to send to Chicago (Maguire 1892).[1] Within a few months, the Academy museum had received donations of fossils, petrified animals, snake skins and archaeological specimens. Even Karl G. Maeser, headmaster of the Academy, made a donation of "several beautiful specimens" from Mexico (The Normal 1892). Very little documentation still exists today to describe these nineteenth century collections. It is unclear whether or not Wolfe kept records or catalogs of the objects brought to the museum; sparse publications in Provo and BYU newspapers are a single, foggy window into the Academy Museum at BYU.

## Cluff Expedition

Making a scientific expedition to South America had been a lifelong dream of BYA President Benjamin Cluff, Jr. As president of the BYA, he was in a position to make it happen (Christensen 1955). In 1900, President Cluff and Professor Wolfe set out with 22 others on an exploring expedition to Central and South America sanctioned by The Church of Jesus Christ of Latter-day Saints (Figure 1). The purpose of the so-called "Cluff Expedition" was three-fold: First, to find archaeological evidences bearing upon the claims of the Book of Mormon; second, to collect scientific specimens for the Academy's museum; and third, to assemble information of use for LDS proselyting and colonizing activities (Christensen 1970, Wilkinson 1976). This expedition was the first organized attempt to bring back archaeological, anthropological, and natural history specimens to BYU. Members of the expedition included President Benjamin Cluff Jr., professor and curator Walter M. Wolfe, artist/photographer John B. Fairbanks and his assistant Walter S. Tolton, official translator Paul Henning, and students Joseph Adams, William R. Adams, Gordon S. Beckstead, George Q. Cannon Jr., Henry E. Giles Jr., Soren Hanson, Thomas Wm. Higgs, William M. Hughes, Asa Kienke, Heber L. Magelby, Parley Nelson, Christian Olson, Henry

Figure 1. Brigham Young Academy Expedition April 17, 1900.

Olson, Mosher Pack, Lafayette 'Lafe' Reese, Eugene L. Roberts, Warren Shepherd, Chester G. Van Buren, and Myron (Royal) Woolley (Tolton 1900, Christensen 1955). The LDS Church had a vested interest in the expedition; all members of the expedition were set apart as missionaries and the expedition was Church funded. At various points along the expedition, members sent boxes of specimens back to the Academy with the goal in mind to strengthen the Academy Museum, whose collections—including a human skull unearthed in 1899—were on display in the Academy Building (today, the Provo City Library) (White & Blue 1899).

April 17, 1900 marked the official beginning of the expedition. In uniform, the explorers mounted their horses and mules and set out from Provo with an American flag at their head. As the group trekked south through Utah, they were met with banquets, dances, and cheerful welcomes in every Mormon town through which they passed. On May 1, the group arrived in Kanab and four days later crossed the border into Arizona. Within a week, the group reached the Buckskin Mountains. They camped for a few days to hunt deer and to explore the homes of the "Cliff Dwellers," where they discovered "specimens of crockery, corn, etc" (Tolton 1900). On May 23, the expedition was in Blackfalls, Arizona on the banks of the Little Colorado. Tolton and Fairbanks took the afternoon to explore the area and came across a site of Indian ruins. Tolton's diary entry states that they found "old pottery, etc." but does not indicate whether any artifacts were collected. Because part of the mission was to collect specimens for the Academy Museum, it is important to note that while mention is made in various diaries of archaeological or ethnographic items discovered on the expedition, they do not explicitly say what was collected and returned to Provo.

By mid July, all expedition members arrived at Nogales, Arizona, where they intended to cross into Mexico. Customs officials refused to let the members through without paying a 2000 peso cash bond for each member, plus extra for horse and wagon—money the explorers did not have. Cluff wrote to the Academy asking for money, and was informed that Church delegates were already on their way. Church officials in Salt Lake City had

Table 1. Members of Cluff Expedition

| Expedition Member | Role | Date Left Expedition |
|---|---|---|
| William R. Adams | Student | August 1900 |
| Gordon S. Beckstead | Student | August 1900 |
| George Q. Cannon Jr | Student | August 1900 |
| Henry E. Giles Jr. | Student | August 1900 |
| Soren Hanson | Student | August 1900 |
| Thomas Wm. Higgs | Student | August 1900 |
| William M. Hughes | Student | August 1900 |
| Parley Nelson | Student | August 1900 |
| Christian Olson | Student | August 1900 |
| Henry Olson | Student | August 1900 |
| Mosher Pack | Student | August 1900 |
| Lafayette 'Lafe' Reese | Student | August 1900 |
| Eugene L. Roberts | Student | August 1900 |
| Warren Shepherd | Student | August 1900 |
| Myron (Royal) Woolley | Student | August 1900 |
| Paul Henning | Translator | early April 1901 |
| Walter M. Wolfe | Museum Curator, Professor | late April 1901 |
| Joseph Adams | Student | late April 1901 |
| John B. Fairbanks | Artist, Photographer | July 1901 |
| Benjamin Cluff Jr. | President of BYA and Expedition | February 1902 |
| Asa Kienke | Student | February 1902 |
| Walter S. Tolton | Student, Artist's Assistant | February 1902 |
| Heber L. Magelby | Student | February 1902 |
| Chester G. Van Buren | Student, Taxidermist | October 1903 |

become concerned with the expedition's progress, and were coming to investigate after receiving discontented letters and telegraphs from expedition members and people from various settlements the expedition had traveled through. On August 12, Joseph F. Smith, counselor in the First Presidency, Seymour B. Young, of the Quorum of the Twelve Apostles, and the Juarez Stake President A. W. Ivans arrived at the expedition's camp to carry out deliberations (Tolton 1900, Jensen 1900).

The expedition members soon discovered that the arrival of Church leaders at the border was as much about helping the expedition continue as it was about ending it and sending them home (Jensen 1900). The Church leaders were concerned with problems internal to the expedition, including fighting and unbecoming conduct. President Cluff in particular was confronted with allegations of dishonest conduct, indiscretionary use of expedition funds, and entering into a polygamous marriage. Church leaders supported ending the expedition and encouraged Cluff to return to Utah. But Cluff's reputation was so thoroughly staked on the expedition that he would not give

up "his cherished scheme" (Jensen 1900). After much deliberation, it was decided that of the 24 members, 15 would be released from the expedition leaving 9 members to continue on. Additionally, the Church withdrew all support, financial or otherwise, of the expedition. The remaining members included: President Benjamin Cluff, Prof. Walter M. Wolfe, John B. Fairbanks, Walter S. Tolton, Paul Henning and four students: Asa Kienke, Chester Van Buren, Heber Magleby, and Joseph Adams (Tanner 1947).

With smaller numbers, they were able to cross into Mexico without further difficulty (Figure 2). Within a few days, the group set out again on burros purchased in Nogales, Mexico. On September 9, Tolton wrote, "In afternoon went out through the field visiting mounds and ancient relics" near the William's Ranch about 30 miles from Colonia Juarez, Chihuahua within the Casas Grandes culture region (Tolton 1900). In October, President Cluff wrote a letter to the BYA announcing that the expedition would be shipping the "next box" of specimens, indicating that at least one previous shipment had already been made (White & Blue 1900). In late November, the expedition made it to Mazatlan. On November 29, President Cluff and Professor Wolfe remained in Agua Caliente "to ship some specimens back to B.Y. Academy, Provo" (Tolton 1900).[2] Early in January, the expedition arrived in Mexico City and stayed there from November 11 until at least November 18. While in Mexico City, members visited museums and traveled to nearby cities purchasing souvenirs and trinkets. Pottery "designed and painted by Indians" was particularly popular. Tolton wrote in his diary that he purchased "some specimens of pottery" as well as "boxes" in which he "packed out goods for shipping home" (Tolton 1901). A statement in the BYA newspaper from mid February indicates that another "box of specimens [had] been shipped from Mexico" by the expedition members (White & Blue 1901).

The spring of 1901 was spent collecting specimens and exploring the sites of Palenque, Comitan, and Copan (Tolton 1901). While there is no record of artifacts collected at these famous sites in Central America, it is possible that expedition members picked up items and sent them to BYA or to their families. In early April, Paul Henning became very ill and was forced to remain in Guatemala. After he was well again, it was decided that he should stay in Guatemala to pursue language studies. He eventually became a curator at the Museo Nacional in Mexico City (Henning 1903), spending much of the rest of his life in Central America.

Only a few weeks after Henning's departure, Joseph Adams became sick. Prof. Wolfe, who was unhappy with how the expedition was going and was also experiencing poor health, decided to return home with Adams. Wolfe, the only professor besides Cluff on the expedition, no longer supported the expedition. He had concerns about how the funds he and others contributed to the expedition were being used. Thus, it is not surprising that after returning to Provo, Wolfe was the instigator of a full investigation into the expedition and specifically the conduct of President Cluff (Wolfe 1901).

Wolfe resumed his responsibilities at the museum upon his return to the Academy on the September 28, 1901. An article printed soon after their return stated:

> [Wolfe] has collected many valuable archaeological specimens, which are on the way to the academy, and will be added to the museum, which has been greatly augmented by specimens sent from the expedition from time to time since their arrival in Mexico [Deseret News 1901].

With the departure of Professor Wolfe, and with many members of the company experiencing illnesses, the expedition broke into smaller groups to allow for some to recover and others to continue exploring. Chester Van Buren, one of the remaining students, separated from the group to seek out biological and botanical specimens in Guatemala. Soon after, Magelby became seriously ill, and Tolton agreed to stay

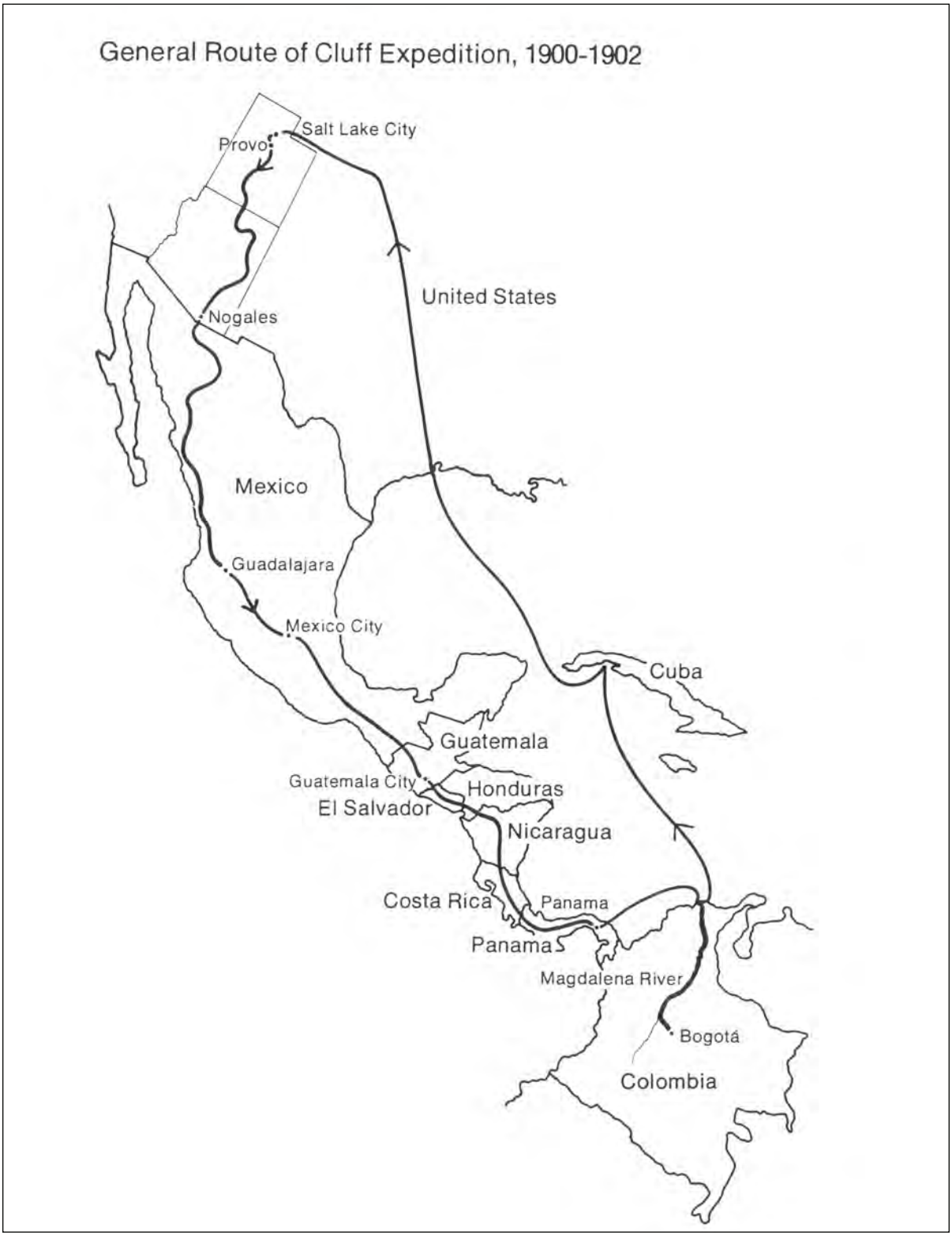


Figure 2. Approximate route of the 1900 Exploring Expedition to South and Central America.

with him in Costa Rica until he recovered. Cluff, Fairbanks, and Kienke continued on to Panama. Once in Panama, Fairbanks left the company, feeling that his artistic talent could be better put to use if he was not traveling with the rest of the company.[3]

Cluff and Kienke continued on to Columbia where they dealt with many problems. They were in want of food, they had to forge crocodile infested waters, their pack animals frequently wandered off in the night, and they were navigating an unfamiliar country in the middle of a revolution (Minster 2010).[4] Kienke later remarked that while in Columbia he and Cluff were shot at 22 times (Christensen 1955). When they reached Bogota in August, the authorities insisted that, for their own safety, they head back to Panama. On September 14, Cluff and Kienke were reunited with Van Buren, Tolton, and Magelby in Colon, Panama.

These five remaining members of the expedition spent the rest of September trying to sell their animals, gear, and supplies, but were met with little success. In October, they boarded a steamer on a three month tour of the Magdalena River. During this time, Tolton and Van Buren were able to collect many specimens. The steamer arrived in Puerto Columbia on January 7, 1902. It was then that Van Buren decided not to return home with the rest of the expedition but to remain in Columbia to collect more specimens.

On January 8, 1902, Cluff, Magelby, Tolton, and Kienke began their journey from Cartagena, Columbia, back to Utah via Havana, Galveston, Houston, Fort Worth, and Denver. On February 5, after arriving in Denver, Colorado, they boarded the Union Pacific Railway to Wyoming. The four arrived in Provo on February 7, 1902.

Within weeks of their arrival at the Academy, a part of the expedition relics were on display (Kienke 1902). The "South American relics" as well as "the beasts, the birds, and the bugs brought from South America" were displayed "for the first time" at a dance hosted by the class of 1905 on February 28, 1902 (White & Blue 1902). The next year, the specimens were displayed at a second ball, this time as a fundraising event for the two expedition members still in South and Central America. The proceeds from the Expedition Dance, at which "some very interesting South American relics were displayed," were used to support Chester Van Buren and Paul Henning (White & Blue 1903).

Accompanied by "1,200 birds, snakes, mammals, plants and Indian artifacts," Chester Van Buren returned home to the newly renamed Brigham Young University in October 1903 (Cluff 1903). The Indian artifacts included a collection of pottery dubbed "possibly the finest collection of ancient Columbian pottery in the western United States" (Christensen 1947). This "large, well-chosen collection of ancient Indian pottery" was purchased outside of some caves in Medellin, Columbia (Tanner 1947:3). When Van Buren returned, he set to work organizing his specimens into displays that were located in "Room 320-E in the Education Building (Provo City Library) on lower campus" (Tanner 2008:21). One exhibit consisted of two cases: one displayed several birds, a large iguana, and a crocodile; the other displayed three monkeys, one a baby clinging to the mother's back (Figure 3). Based on descriptions of the displays and space limitations created by the one-room location, these displays could not have incorporated many of the artifacts and specimens within the Academy Museum's collections. Thus, the rest of the collections had to have been kept at an unknown storage location on or perhaps even off campus.

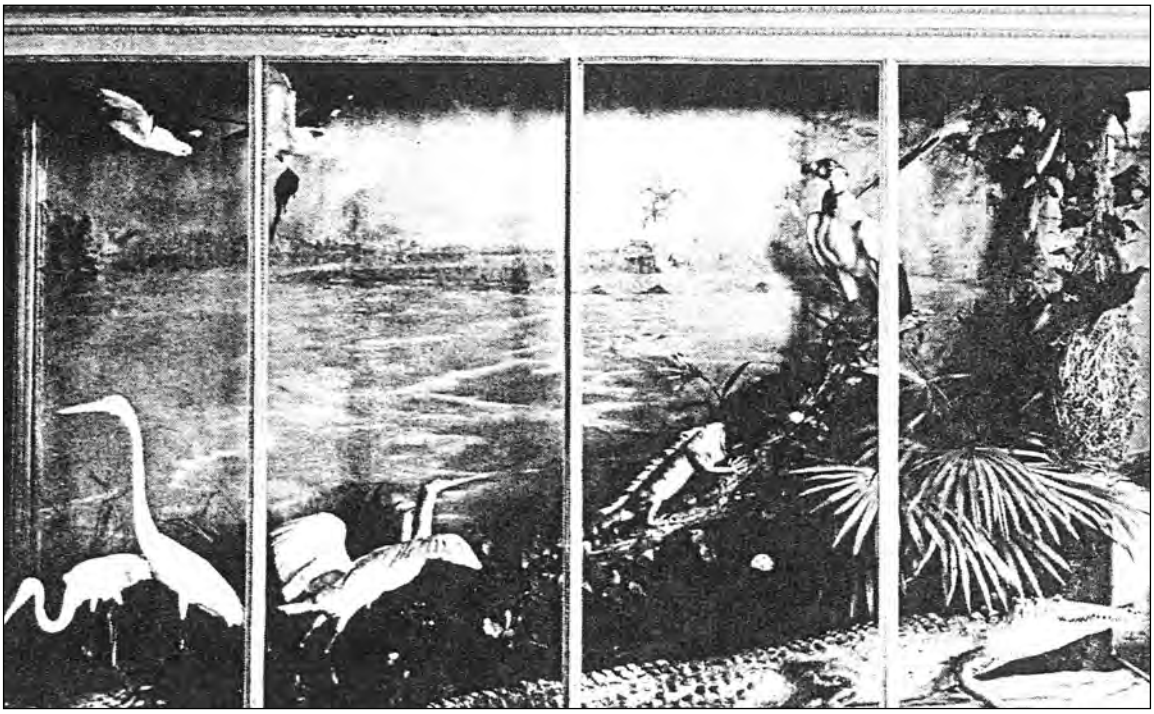

Figure 3. Display case prepared by Chester Van Buren to display specimens collected by members of the Cluff Expedition.

From 1909, when Van Buren left BYU, until the early 1930s, the university museum experienced a period of darkness. Little attention was paid to the specimens collected during the Cluff expedition or during the previous attempts to create a reputable museum. George H. Brimhall, who replaced Cluff as President of BYU in 1904, was opposed to evolution and restructured many departments around campus to reflect a conscientious return to religion over science. His "lack of appreciation for the previous museum efforts" and disinterest in the scientific worth of the Van Buren collection led to the loss of many collections as attempts were made, perhaps blatantly, to destroy the scientific collections (Tanner 2008:27). By 1912, the display cases had been relocated, and the animal specimens boxed up. The boxed specimens were stored wherever there was room, with no attention paid to security or preservation. The pottery collection was scattered across campus in various offices (Tanner 2008). Eventually, George Talmage, a student conscious of the value of the specimens, secured a collection of birds from South and Central America and took them home (Tanner 2008:27). Unfortunately, many of the remaining collections were lost, stolen, scattered, misplaced, or purposefully destroyed. The botanical specimens, for example, were boxed up and allocated to storage in the boiler room of the University Building. As a result, by 1927, the well-prepared specimens had mostly been shoveled into the furnace (Tanner 2008:28). During this period, it is clear that collecting goals at BYU were reversed, and no care was taken to preserve the artifacts and specimens collected on the South American expedition and donated to the University. The collections into which so much time and effort had been invested were reduced to a minimal amount. While some pottery from the Cluff expedition is housed at the MPC, the majority of artifacts collected before the 1930s in Utah, Arizona, or Mexico and any accompanying

documentation are gone, victims of neglect during the Brimhall era. Fortunately, some of Van Buren's collection of animal specimens was contributed to the collections of the Monte L. Bean Life Sciences Museum, established in 1978, including the collection of birds rescued by George Talmage.

## Archaeology Revival

Beginning in the late 1920s and accelerating in the 1930s was a resurgence of interest in archaeology at BYU. Julian Steward became the chair of the Department of Anthropology at the University of Utah in 1930, and soon after, similar courses in anthropology began to be offered at BYU (Janetski 2004). Dr. Sidney B. Sperry began his career as a professor of ancient scripture in 1932 after completing his post-doctoral work at the American School of Oriental Research in Jerusalem (UAS 1979).[5] He taught courses in archaeology including "Hebrew Archaeology" through the Religion Department.

While BYU did not have a true Department of Anthropology, Dr. Albert Reagan was appointed a "Special Professor of Anthropology" in 1934 to teach archaeology courses and possibly to start an anthropology museum (Christensen 1947). He joined the BYU faculty as a recently retired officer from the United States Indian Field Service, where he had gained a reputation as an "authority on archaeology of the Uintah Basin" (UAS June 1953, Christensen 1947). Reagan was assisted by Dr. George H. Hansen of the geology department in teaching courses in Southwestern archaeology. Both excavated archaeological sites in the Uinta Basin and Utah Valley, including a burial site at Utah Lake, and made early contributions to the archaeology collections at BYU (Janetski 2004, Christensen 1967). Hansen also brought nineteen petroglyphs to BYU in 1929 from Lincoln Beach in southern Utah Lake (UAS 1953). During this time, "The [natural history] museum occupied the entire area of Room D of the old Administration Building," but it is unclear what artifacts were on display and which department was responsible for it (Christensen 1967:ix). Unfortunately, with the untimely death of Albert Reagan in 1936, the courses in archaeology dwindled—although Hansen continued to excavate and teach his class in physical anthropology until at least 1947 (Christensen 1967:ix). Photographs of artifacts Hansen collected over the years reveal that he had a large collection of projectile points, worked bone, stone tools, and even a human skull. However, the severe housing shortage that developed during WWII demanded that the museum collections be relinquished to storage "in boxes and bushel baskets" in the basement of the Eyring Science Center (Christensen 1967).

## The Archaeology Department

In 1946, after several years of revived interest from students, a decision by the Dean's Council established the "preliminary" Department of Archaeology. During the autumn quarter, the curriculum was approved for courses to lead to an undergraduate major and a Master's degree in archaeology (Christensen 1947:v). The Department's first class was held on March 26, 1946 with Dr. M. Wells Jakeman lecturing on archaeology and the Book of Mormon. By fall 1946, Jakeman had been named chair of archaeology and the Department of Archaeology was officially established on December 13, 1946 (UAS 1956).

From the very beginning, Jakeman and university administrators had intended to develop an archaeology museum in which to display excavated artifacts and do research. An article in Y News dated October 16, 1947, announced the newly formed Department and stated:

> A research institute and museum will be developed along with the department, and promises to be the best west of the Mississippi. Pottery and other artifacts of ancient cultures in Utah, South and Central American areas will start the museum. Prominent among them will be the artifacts discovered by Dr. Jakeman and Mr. Christensen in their diggings near Utah Lake [in Berge 1988].

Faculty and students continued to design small exhibits and to petition the administration for space to create a museum. A letter written by archaeology undergraduate Carl Hugh Jones to the editor of the school newspaper in 1947 explained the feelings of many archaeology students and faculty:

> Much has been said of late about the value of certain proposed buildings on this campus. No one doubts the importance of swimming pools or the student union building, but *what great university is without a museum!* In one of my classes I remember a professor stating, *"There is no such thing as a great university without a museum, except Brigham Young University!"* Would not this university be a much better university if it did have a building to house its fine collections? *The students and visitors to this campus can benefit from the collections now at BYU and from the collections that would come to this university if we had a place to display them.* I would at this time like to make a building recommendation that this university: construct a building adequate to house a museum that will do a university of this size and caliber credit (signed) Carl Hugh Jones [in Berge 1988] (emphasis added).

Several displays, and what contemporaries termed a "museum," existed in the coming years. The displays created by archaeology students of this time consisted of artifacts uncovered during the first field methods courses and department excavations. These were displayed in the Heber J. Grant Library and Eyring Science Center. However, it would be decades until a professional stand-alone museum would become a reality, and even then, not in a building fit to house its fine collections.

The two primary areas of interest to the faculty in the Department of Archaeology were Mesoamerica and the Southwestern United States. Archaeology of Mesoamerica was of "special interest" to faculty and students at BYU because of the believed consequences archaeology in the region could have for proving the "divine origins of the Book of Mormon" (Christensen 1947:v). To many, the creation of the Department of Archaeology at BYU was synonymous with the establishment of "a center for research and publication in the archaeology of the scriptures," which would allow faculty and students to objectively test their religion (UAS 1959).

The secondary area of interest was the surrounding Southwest, as "it was clearly recognized at an early date that the local area, the 'Northern Periphery of the Southwest', would be invaluable for training students in the field and laboratory techniques of archaeology, and would always be readily accessible" (Christensen 1947). Local archaeology was conducted near Utah Lake by students in field methods classes. The first archaeological field methods course conducted by the Department excavated a burial mound near Utah Lake, located on the Hinckley Farm during the summer of 1946. Dr. Jakeman and several students in archaeology discovered "numerous artifacts of the ancient culture including clay figurines, gaming pieces and human skeletons in one of several low lying mounds west of Provo" (in Berge 1988).

University sponsored excavations in Mesoamerican sites were conducted from the infancy of the Department, but were reserved for faculty and advanced students in archaeology. Most frequently, these expeditions were led by the Department chair, were highly publicized, and had a primary purpose of finding physical evidence of Book of Mormon peoples. The Department of Archaeology's first archaeological expedition (referred to at this time by the Department as the second expedition, President Cluff's expedition half a century earlier being the first) went to Aguacatal in Campeche, Mexico in 1948. Dr. Jakeman believed that the expedition discovered "important evidence bearing upon the location of the city Bountiful of the Book of Mormon" (UAS 1956). The expedition involved about six weeks of reconnaissance in the Xicalango Area of Western Campeche, Mexico, including an aerial

Figure 4. Excavations at Utah Lake in 1956 by field methods students.

reconnaissance survey. They also made surface collections of several hundred potsherds during reconnaissance and a stratigraphic test trench was dug in the plaza of Group A at the site of Aguacatal (Jakeman 1952: 34).

Throughout the 1950s, the Archaeology Department conducted many expeditions and field methods courses. Students did reconnaissance in Provo Canyon, in Lincoln Beach, and in the Four Corners area (UAS 1951). As a continuation of the excavations at Utah Lake done in the 1940s, students in field methods classes worked during the summers of 1956–1959 on the Hinckley Mounds by the Provo airport (Figures 4 and 5). During the field methods class in October 1956, students discovered fragments of large jars, bone gaming pieces, projectile points, stone utensils, awls, and bone fragments (UAS 1956). In 1957, students uncovered "many items including skeletons, arrowheads, pottery pieces, and other artifacts" (in Berge 1988).

Dr. Jakeman led a second expedition to Mesoamerica (although referred to as the third expedition by the Department) in February to April 1954. One of the expedition goals was to examine and photograph the "Lehi Tree-of-Life-Stone," more widely known as Stela V at the site of Izapa, in Chiapas, Mexico. Based on reports and drawings published by Matthew W. Stirling of the Smithsonian Institution in 1943, Jakeman had concluded that the depiction carved into the slab of volcanic stone represented Lehi's dream from the Book of Mormon scripture 1 Nephi 8:10–15 (UAS 1953). Before examining Stela V, Jakeman visited sites in Guatemala, El Salvador, and Honduras and, after visiting Izapa, the last and main part of the expedition included exploration of the lowland region and valley of the Usumacinta

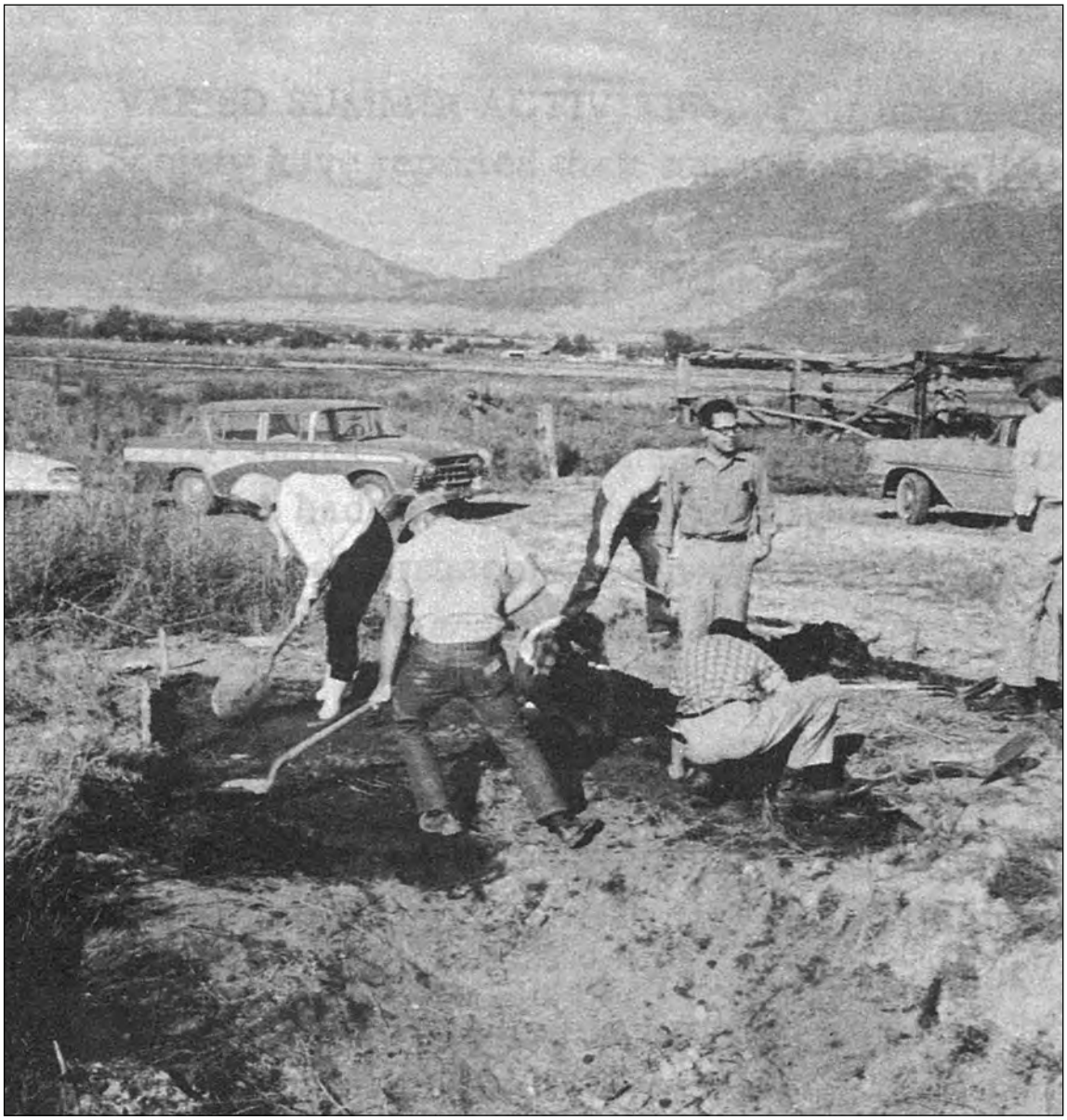

Figure 5. BYU archaeology students work at the Hinckley Mounds in the 1959 field methods class.

River. Expedition members believed that they had discovered a previously undiscovered ruined city (UAS 1954).

In 1955, the UAS began collecting donations to finance moving Izapa Stela V to the National Museum in Mexico City in order to protect it from wind and water erosion. However, the community surrounding Izapa prevented officials from moving it, and in 1956, Jakeman and the UAS gave up their efforts. They instead sent the monetary donations to the Mexican National Institute to be used for creating a latex mold and plaster casts for the National Museum and the Chiapas State Museum (UAS 1956).

Dr. Jakeman led what was known as the fourth expedition to Mexico and Central America in

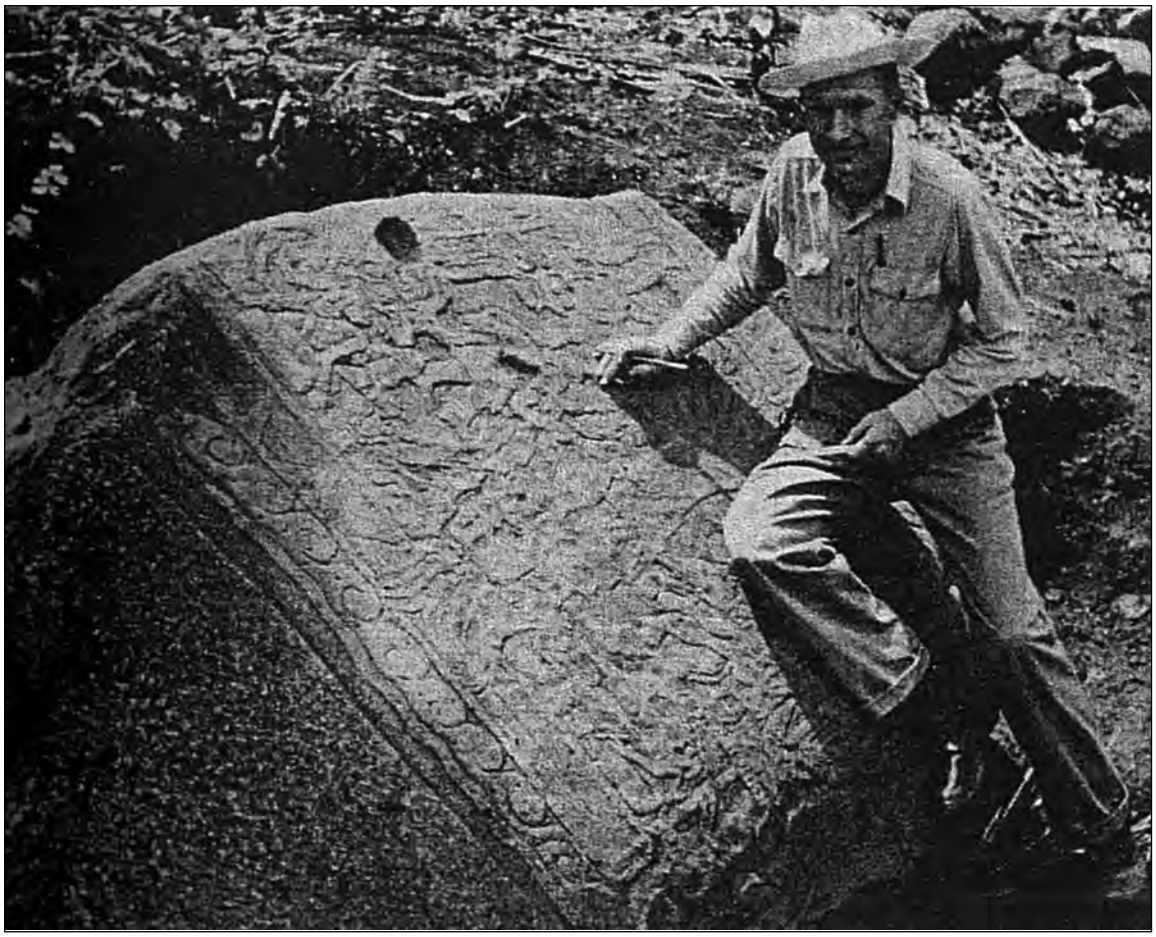

Figure 6. Dr. Ross Christensen poses with Izapa Stela V .

1956. It included a reconnaissance of the ruins of Cerillos, located west of Aguacatal on the Xicalango Peninsula of Campeche, Mexico. He returned in March with many sherds from Cerrillos.

In January 1958, Dr Ross Christensen, accompanied by BYU students Welby W. Ricks, Alfred L. Bush and Carl Hugh Jones, led another (the fifth) archaeological expedition to Mexico to conduct continuing excavations at Aguacatal in Campeche, Mexico. The expedition members excavated at Aguacatal, visited other important sites in Mesoamerica, and studied at museums. From Aguacatal, the archaeologists took soil samples, ceramics, and other artifacts which they brought back to BYU. The expedition sent nearly one ton of specimens, mostly pottery sherds, back to BYU, which arrived on May 20, 1958 (UAS 1958). An important goal of the expedition was to finally make a latex mold of Izapa Stela V (Figure 6). Welby Ricks, a graduate student at the time, was in charge of making the mold that they brought back to BYU and used to make a plaster cast.

Aside from the extensive contributions of artifacts made by the Archaeology Department, with the 1950s came the first documented donations of exhibitable materials since the 1800s. The first outside donation of archaeological artifacts was given to the BYU Archaeology Department in

1955. John Goddard, a world traveler and lecturer, presented the BYU Archaeology Department with specimens from his collection of North American pottery from Arizona. Since the Department did not have a formal, established museum at this time, the Goddard collection was not formally cataloged until 1966 and 1973.

By June 1958, the Archaeology Department had created its first display in the showcases of the Eyring Science Center's main lobby. The highlight of the display was a plaster cast of Izapa Stela V, which was advertised across campus (UAS 1958). Along with the Stela V cast, the exhibit consisted of selected specimens from Aguacatal, including "a map of the site, aerial photographs, and original photographs from the site" (UAS 1958).

Dr. Ross T. Christensen was appointed as the second chair of the Department of Archaeology in September 1960 (UAS 1960). One of Christensen's main goals as chair of the Department was to create an Archaeology museum. He stated that,

> The archaeological museum is not only a place to preserve precious evidence. It is also an incomparable tool for teaching the public… concerning the ancient past. Since BYU is reported to have possessed a museum as early as 1892, it seems not too early now to restore this invaluable asset [UAS 1960].

In February 1961, Dr Jakeman and a team of BYU students left on the sixth and final numbered BYU Archaeological expedition to Campeche, Mexico, financed by a $5,000 donation from Mrs. Zella Lichfield. Students accompanying Jakeman included Ray Matheny, Carl Hugh Jones, M. Harvey Taylor, and Lawrence O. Anderson, as well as NWAF cartographer Eduardo Martinez. The main purpose of the expedition was to provide "advanced training in archeological field methods" (UAS 1961). In addition to continued excavations at Aguacatal, which began in March 1961 (Figure 7), the team completed a topographic survey and map of the site, discovered and tested a new site to the north called Cuyeros del Puerto Rico, dug stratigraphic test trenches, and put probes into the temple-pyramids. Students also performed aerial reconnaissance and photography of Aguacatal and other sites in the Xicalango Region, and carried out ground reconnaissance of other sites in the area, including Atasta. The expedition returned in May "with 50,000 of potsherds, hundreds of baked clay objects, numerous stone artifacts, organic material such as human and animal bones and charcoal samples for C14 dating" (UAS 1961).

In May 1961, the Department of Archaeology featured a small display on the archaeology of Utah Valley. The display was exhibited in the south wing of the Eyring Science Center. The focus was specifically on the material remains excavated from the Hinckley Mounds west of Provo near Utah Lake, which had been excavated by the Department's field methods classes during the past several years (UAS 1961). At that time, the most recent excavations were those done during the summer months of 1960.

## Museum of Archaeology

During the fall of 1961, the Department of Archaeology was relocated to the Karl G. Maeser Memorial Building (Figure 8). The archaeological materials, equipment, artifacts, and Stela V replica, which had been on display for three and a half years, were moved to the Maeser Building over the course of the semester. This included the contents of storage rooms which held "a large quantity of specimens that [had] accumulated since 1890" (UAS 1961).

This move was an important milestone for the Department because the new facility provided much needed space for "processing and storing of artifacts acquired through field work and private donation," as well as more space for exhibits and displays (UAS 1961). This marked the official beginning of the Museum of Archaeology at BYU and the first time that space and facilities dedicated for display were given to the archaeological collections since World War II (Christensen 1970). It was during 1961 that the first formal accessioning and cataloging of museum collection was done—all of which were

Figure 7. Excavations in Aguacatal in 1961.

artifacts from Carl Hugh Jones' Master's thesis (1961). Other Masters' theses from Dale Berge and Ray Matheny (both of whom later became faculty at BYU) also represent some of the earliest accessioned collections at the museum.

A new museum of archaeology is taking shape on the ground floor of the Maeser Building. One whole section for example, will be dedicated to displays relating to the Tree of Life. It is hoped that with these new

Figure 8. Karl G. Maeser Memorial building became home to the Museum of Archaeology in 1961.

> and expanded facilities, for research and instruction, there will also come greater opportunities for students of archaeology at BYU [UAS 1961].

By 1962, Dr. Jakeman was recognized as the archaeology museum's official curator, with student Dale Berge acting as his assistant. Most displays focused on New World archaeology. One featured a small display of Egyptian archaeology, but the most prominent displays were those that exhibited pieces from Aguacatal. Other displays at the museum represented the archaeology of the American Southwest. One such display was of three human skulls collected in Utah County as part of one Master's student's thesis research. Dale Berge, assistant curator and student of archaeology, believed the museum was greatly in need of a full-time curator to care for the growing collections (in Berge 1988).

Even with the move to the Maeser building, few students were aware that an archaeology museum existed at BYU. Articles printed in the Daily Universe throughout the 1960s frequently referred to the archaeology museum as an "out of the way attraction," "small," and a "basement museum" (in Berge 1988). In the spring of 1964, the museum saw some improvement when ten "modern, vertical exhibit cases" were installed with internal overhead lighting and removable backs (in Berge 1988). Instruction for students in museum work began during this time. Jakeman, who had been the curator for the previous two years, also employed student aids who were helping to "perfect the museum catalogue and to prepare exhibits" (UAS 1965).

During late 1965, the museum officially announced in the SEHA/UAS newsletter that it would be accepting donations from the public:

> Donations of archaeological materials to the Museum are now welcome, according to Dr. Jakeman. In sending in specimens, the donor should give as full information as possible concerning where they came from. Copies of any existing field notes, drawings, photographs, or other records should be furnished [UAS 1965].

The museum's collections were greatly affected by this announcement, and the museum received several collections shortly thereafter. The first, which came from Paul R. Chessman, was a collection of ancient Peruvian and Ecuadorian artifacts (MPC archives, UAS 1965). According to the newsletter, the collection included approximately one dozen colorful, woven cloths from the cemeteries of coastal Peru; spindle whorls; pottery vessels, including Chancay Black-on-White specimens; 2 cylinder seals; a stamp seal; a figurine; a tripod grinding stone; and what appears to be a bronze axe head. Excitement surrounding the collection led to its immediate display in the center of the main hall of the museum (UAS 1965).

Also in 1965, the Archaeology Museum received the Ernest F. Foote collection donated by his granddaughter, Mrs. Ross Fairchild. Foote had been collecting archaeological artifacts mostly in and around his hometown of Nephi since 1890 (UAS 1965). Part of Foote's collection had already been brought to the University by Dr. Albert Reagan in 1935. After Foote passed away, his granddaughter saw fit to donate the remainder of his collections to the University. An itemized list of the objects within Foote's collection refers to more than 100 archaeological specimens (MPC archives).

**Museum of Archaeology and Ethnology**

The twentieth anniversary of the Department of Archaeology was celebrated in 1966. It was at this time that the name of the archaeology museum was changed by the BYU Board of Trustees to the Museum of Archaeology and Ethnology (Christensen 1970).

The National Historic Preservation Act, passed in 1966, set new standards for the protection and preservation of historic and archaeological sites. This marked the beginning of changes in Federal legislation that, during the 1970s, "ushered in the era of Cultural Resource Management (CRM) archaeology, resulting in a dramatic increase in both the numbers of archaeologists and in the amount of archaeological data being generated" (Janetski 2004). Partially as a result of the increasing regulations, the LDS Church began transferring its Native American artifacts (previously transferred from the Deseret Museum) to BYU's Museum of Archaeology and Ethnology. The first of the Native American artifacts were brought to BYU in October of 1966, but more of the collection was transferred to Provo in later years (1973, 1995, and 1998). This collection includes the Lang and Lyman collections that had traveled all the way to the Chicago World's Fair in 1893. By early 1967, the museum's exhibits, laboratory, preparation, and storage space occupied a substantial portion of the ground floor of the Maeser Building.

After 1968, instruction in field methods shifted to southern Utah and the excavations in Utah County ended. In 1969, the Department of Archaeology held its first field school (a longer, more intensive experience than field methods classes which had been done with students since 1946). Seventeen students spent 10 weeks during the summer under the instruction of Dr. Ray Matheny doing reconnaissance and excavating Anasazi villages near Montezuma Canyon. This was the first time that a group of students lived at the site and worked daily on excavating, washing, labeling, drawing, photographing, and

packing artifacts for transportation back to BYU (UAS 1969).

## Conclusion

A majority of the early archaeological and ethnographic collections that made their way to BYU's campus are gone. While there is little documentation to account for the extensiveness of losses incurred over the years, we can be sure that the lack of a continuous institution in which to house the artifacts and specimens collected before 1966 has resulted in the loss and destruction of collections as well as missed opportunities for research and further collecting. Many collections of ethnographic, archaeological and anthropological artifacts were donated to other institutions such as the Harold B. Lee Library or Deseret Museum because the museum at BYU was not formalized.

Beginning with the Academy Museum, there was interest and excitement surrounding the creation of a representative Natural History Museum. This excitement, along with undulating periods of professionalism, was greatly affected by the general feeling on BYU's campus. At some times, collecting was a priority with goals set to accomplish it. At other times, the artifacts already within the holdings of BYU were neglected, leading to loss and destruction. Without a constant institution to care for the objects, it is sometimes unclear who was responsible for the care of the specimens collected by those involved in the early museums. This mix up in jurisdiction is at least partly responsible for the lack of documentation and misplacement of objects in the earliest attempts at creating a true museum.

As early as the Cluff Expedition, it is almost impossible to distinguish between what items belonged to BYU and what were souvenirs belonging to individuals. Can these items be considered lost by the MPC? Perhaps they never actually belonged to BYU. This confusing practice has followed the Museum into the present day. Some of Hansen's archaeology collections, for example, which he collected in the 1930s and 1940s, were not handed over to the Museum until 1995. Unfortunately, because of the lack of documentation on early artifacts, any of these early collections still housed at the MPC have been largely disassociated from their original paperwork and/or donors.

Understanding the challenges faced by those persevering individuals involved in the early attempts to create a professional archaeology museum has been influential in helping current personnel come to terms with the MPC's rough beginning. The research of early collections has also positioned the MPC to prepare for moving forward. With appreciation for the process of the MPC's development, employees of the MPC can now begin solving specific puzzles involved with the early collections. The collecting of archaeological and anthropological artifacts—that eventually necessitated the renaming and creation of the Museum of Peoples and Cultures—may be a single thread running through the fabric of BYU, but as it turns out, that thread is much longer and more intricately connected than previously thought. ■

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## Endnotes

1. In the years immediately following the World's Fair (1893–1898), many of the specimens and artifacts returning from Chicago were donated to or purchased by the Deseret Museum in Salt Lake City. Some of these, including the Lang and Lyman collections of Native American artifacts and mummies were later transferred to BYU (time period not covered in this article). See Rebekah Monahan's 2011 BYU Honors Thesis for more information.
2. There are multiple cities in Mexico bearing the name Agua Caliente. Thus, it is un-clear which state they were in when Tolton wrote this; Nayarit, Chihuahua, Michoacán and Durango are all viable options.
3. Fairbanks spent the next year making numerous sketches in Panama and Columbia. After returning to Utah, he used these sketches to produce several paintings, some of which can be viewed at the Brigham Young University Museum of Art and the Springville Museum of Art.
4. Columbia's Thousand Days' War lasted from 1899 to 1902.
5. UAS or University Archaeology Society was created in 1951 as an adjunct to the Department of Archaeology. The newsletters were created to publish and circulate to members the latest archaeological findings. In 1965, UAS changed its name to SEHA, Society for Early Historic Archaeology.

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# Institutional Development at the Museum of Peoples and Cultures, BYU

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*This article documents the growth of the small museum affiliated with the Department of Anthropology at Brigham Young University in the early 1960s into the much larger Museum of Peoples and Cultures of 2011. Using institutional records and oral history interviews with previous directors, this article explores different approaches of running an anthropology/archaeology museum governed by a private non-profit. The museum grew from a repository with simple or few educational objectives into an institution focused on providing practical and theoretical study for students in museum studies, archaeology, and anthropology, while also enlightening visitors about various cultures.*

The vast majority of museums in the United States are considered small museums. "A small museum's characteristics are varied, but they typically have an annual budget of less than $250,000, operate with a small staff with multiple responsibilities, and employ volunteers to perform key staff functions" (American Association for State and Local History [AASLH], Small Museums 2007). The Museum of Peoples and Cultures (MPC) is considered a small museum using the AASLH definition, despite its connection to Brigham Young University (BYU), the largest private university in Utah. The single most important element in determining whether a museum is "small" is budget size (AASLH, Survey Results 2007). The MPC's operating budget is significantly less than the $250,000 specified limit. A small staff size is defined as six or fewer employees. As of 2010, permanent MPC staff consist of one full-time Director and one part-time Curator of Education. While the MPC employs between 8 and 16 students each semester, they are all temporary employees. These temporary, part-time employees perform key staff functions, but have external primary commitments (such as schoolwork), and have a high rate of turnover. In these areas they resemble volunteers more than permanent employees; however, this does not diminish the high quality of work performed by students. After training by permanent staff and advanced students, they perform at professional levels in cataloging, developing exhibits, leading education programs, etc.

Despite difficulties that come with being a small museum, such as a lack of adequate professional staff members, insufficient funding, limited resources, and inadequate buildings, the MPC has become an important educational tool for BYU students and the Provo community. The MPC has grown from an archaeological repository into an institution that provides practical experience for students and educational opportunities for visitors. The unique contributions and interests of previous Museum directors have molded the institution into a model of mentoring which produces highly trained students and effective programs at this "small" anthropology/archaeology museum (Figure 1).

Our research for this article draws from oral history interviews with the three directors from 1968 to 2006 and institutional records. In 2009, Carlee Reed, then an undergraduate in history, separately interviewed Dr. Dale Berge, Dr. Joel Janetski, and Dr. Marti Allen. All three were responsible for the day-to-day operations of the museum, sometimes as Associate Director

 


Figure 1. Museum of Peoples and Cultures, photographed in 2010.

and at other times as the Director. During these interviews, each former director expressed the challenges they individually faced during their time at the museum and how they coped with issues such as securing funding, locating adequate physical facilities, or initiating educational programs. The institutional records researched consist mainly of correspondence, reports, meeting minutes, proposals, and memos located in the archives of the Museum, the College of Family, Home and Social Sciences, and the Anthropology Department.

The institutional records combined with the director interviews provided a two-pronged approach for documenting the history of the MPC from the 1960s to the present. The records offered precise dates of when policies were initiated and when the MPC was given space and funding, and recorded the growth of its collections. The interviews explained and aided in understanding the reasons decisions were made.

## Formalizing an Archaeology Museum

BYU has been accumulating archaeological collections since 1892 (see Monahan and Stavast this volume). With the establishment of a Department of Archaeology in the late 1940s, the growth of collections accelerated. Initially, these collections were stored in a repository headed by the Anthropology Department. A repository is "a facility managed by a university, college, museum, other educational or scientific institution, a Federal, State or local Government agency or Indian tribe that can provide professional, systematic and accountable curatorial services on a long-term basis" (36 CFR Part 79.9). Early archaeological storage, before an official museum was formed, was located sporadically around BYU. Some items

were stored in back corners and hallways in the Eyring Science Building (BYU Department of Anthropology, et. al., 1988 and MPC, General Administration Archives (G.A.), 2006MS.030, 1967) and the BYU Women's Gym located on University Avenue in Provo (across from the current Provo City Library) (Ray Matheny, personal communication 2010). There was minimal display of items.

The formation of a museum associated with the Department occurred after the Archaeology Department moved to the basement of the Maeser Building in 1961 (MPC, G.A., 2006MS.033, 1970). At that time the name "Museum of Archaeology" was used to refer to the collections, research labs, and displays of the Department. Despite the problem of limited space, the Maeser building had enough room for a preparatory area, a seminar room, and office space, in addition to storage and exhibit space (Berge, personal interview, 2009).

During 1961–1962, archaeology graduate student Dale Berge investigated the various storage sites and offices across campus where objects were hiding.

> I scoured professor's offices particularly the "catacombs" behind their offices, through old shafts, and in hideouts behind the old school vaults when it was the administration building. Many valuable objects were recovered and it was decided to put them on display in any display cases that could be found [Berge, personal communication, 2010].

During his search he found display cases from the defunct Deseret Museum. Taking the initiative to use these cases, Berge started displaying the archaeology collections that had been in storage (Dale Berge, personal interview, 2009) (Figure 2). Berge's progress in developing displays at BYU was momentarily halted when he graduated from BYU in 1964 with a Master's degree in archaeology

In 1966, the name of the museum was changed and formalized to the Museum of Archaeology and Ethnology, with department chair Dr. M. Wells Jakeman named director. The motivation in establishing the Museum was to show students and the public that there was an archaeological program on BYU campus (Berge, personal communication 2010). After receiving his PhD in 1968 from the University of Arizona, Dr. Dale Berge was hired as a faculty member and Assistant Director of the new Museum. Although he was Assistant Director in name, he handled all of the hands-on museum work (Berge, personal interview, 2009). Berge worked with students that participated in field projects and the local field school so the museum could double as a laboratory to process artifacts. Additionally, the museum's existence allowed for the development of museology classes for graduate students. These classes provided an opportunity for students to learn more about museum practices. A few of the students even had paid part-time museum positions in processing and studying artifacts.

The space allocated in the Maeser building did not allow for a great deal of museum growth in regards to collections or research, partly because the Museum shared space with the Department of Anthropology and Archaeology, and also because the Museum had no budget of its own. Funding came from whatever the Department could spare (Berge, personal interview, 2009). As material from excavations and surveys continued to come in, the Museum became crowded and storage space grew limited. Space limitations made it difficult for museum staff to keep the collections organized and impacted their ability to properly educate visitors.

Berge spent much of his time at the Museum promoting it as an educational resource. He also sought to foster interest in the Museum as a valuable tool for the university, with the hope that the staff would acquire a new facility. Berge implemented promotional strategies to attract student and general public visitors to the Museum's rotating displays. The Museum sent articles to the student anthropology club


Figure 2. Example 1 of a museum display in the Maeser Building.

newsletter, BYU's student newspaper (The Daily Universe), and Provo's Daily Herald (BYU Department of Anthropology, et. al., 1988). The articles let potential visitors know of changes in displays and other opportunities such as field trips and group activities sponsored by the Museum. Whenever there was a new display or a significant donation, Berge would contact the local newspapers and BYU's Daily Universe to provide coverage of the event. Because the collections were not extensive enough to provide themed displays, these early displays were simple and lacked cohesive themes between objects. Some displays were switched weekly to give visitors a reason and motivation to come back (Berge, personal interview, 2009) (Figure 3).

The fledgling museum did what it could to educate and serve the students of BYU and the local community by displaying artifacts from different cultures. At the same time, the museum lab continued to be where students learned proper cleaning and research techniques on excavated material. Merlin G. Meyers, Department chair in 1970, stated the importance of the Museum when he said,

> A museum can contribute to raise the level of education and increase the awareness of the world around us. It can stimulate a sense of wonder to the young and increase perceptive powers and perspective to others. It helps the public to broaden its comprehension of its own environment and can promote scientific and spiritual enrichment. And lastly, it can stimulate an appreciation of one's cultural heritage [MPC, G.A., 2006MS.033, 1970].

## Moving Forward

By the late 1970s, the basement of the Maeser Building was becoming so overcrowded it no longer provided adequate storage for the collections. At this time, Berge, along with several other BYU professors (Ross Christensen and Ray Matheny from the Anthropology and Archaeology Department, Paul Cheesman from the Religion Department, James Jensen and Keith Rigby from the Geology Department, and Ed Haines, Director of Space Utilization) started working on a proposal for a university museum, which would combine the displays of archaeology, ethnology, paleontology, and religion (MPC, G.A., 2006MS.036, 1973).

The proposal came from the Museum staff, as they felt compelled to uphold federal standards. Changes in legal requirements for doing archaeology and housing the resulting materials (such as the Archaeological Resources Protection Act of 1979) were requiring the Museum to find more room and provide better storage. Specifically, archaeological permits charged the Museum with "responsibility to make excavated materials available to scholars for study and for putting the materials on display for the benefit of the public" (MPC, G.A., 2006MS.033, 1970). The Museum of Archaeology and Ethnology did not have proper resources, funding, space, or time to make materials readily available; overcrowding made it hard to find and keep track of over 3,300 collections of objects at the end of

1979. The group of professors, referred to as the University Museum Committee, noted,

> Present museum-worthy materials are scattered among many colleges and departments. A reasonable estimate of their current value is of the order of at least $3.5 million. These materials are ill preserved, only partially displayed, inaccessible for study, and subject to misappropriation. It is as though the University's library consisted of a dozen scattered book collections, most stored in warehouses, uncatalogued, and largely unread. Were such the case for either our library or art holdings, it would be viewed as scandalous [UA661, LTPSC].

With this passionate statement as their guide and motivation, they started looking for ways to fundraise and plan for a new building. Regarding the Maeser Building, they recognized,

> BYU is already involved to the extent of around 15,000 square feet of space and substantial expenditures of money and time in direct care of collections. The costs and commitment increase yearly, yet lack of decent quarters, of coordination, of security and accountability, and of trained staff is robbing the school of the important benefits it could be receiving from these materials [UA661, Brigham Young University College of Family, Home and Social Sciences Records, 1952 – 1998, University Archives, L. Tom Perry Special Collections, Harold B. Lee Library, Brigham Young University (LTPSC)].

It was time for a new building, and combining educational purposes could provide enough incentive for a university museum.

## Moving Buildings

While the proposal for the University Museum Committee was waiting for support and acceptance, the staff of the Museum of Archaeology and Ethnology was given two options: the Museum could move to BYU's Grant Building where a portion of the building would be allocated for museum space, or the Museum could move from upper campus to lower campus in Allen Hall, a dormitory built in 1938. Like the Maeser building, Allen Hall would be shared between the Museum and the Department (MPC, G.A., 2006MS.038, 1980's), but the square footage space would be larger. Dr. John Sorenson, Department chair at the time, decided that the best choice would be Allen Hall. According to the University, Allen Hall had a seven-year life span; Sorenson felt this would allow time to push for a getting a new building built on upper campus, which was frequented more by visitors. However, with the change of buildings and administration at BYU, the initial proposal for a university museum building was set aside and finally dropped sometime in mid-1980s (UA 675; Department of Anthropology and Archaeology Records, 1947–1977; University Archives; LTPSC).

Figure 3. Example 2 of a museum display in the Maeser Building.

The allocated space in Allen Hall provided more storage space, a small exhibit space, and higher security (as the building was not shared with other departments). The new space allowed the Anthropology Department to bring together

teaching rooms, lab space, and storage areas into one building instead of being spread throughout campus. In 1982, the Museum opened in Allen Hall and changed its name to the Museum of Peoples and Cultures.

The name change and new location helped highlight some milestones the Museum had met since its establishment in the 1960s. By 1982, the MPC was more than just an archaeological repository for University sponsored excavations and surveys. It was a museum, with legal and ethical responsibility for the care of its collections. The MPC equipped, housed, and served undergraduate, graduate, and faculty research while serving as the classroom for many of the upper division and graduate courses in archaeology. The MPC's exhibits and programs enlightened the BYU community about various cultures on a budget of less than $11,000 a year (MPC, G.A., 2006MS.041, 1982) (Figure 4). (We begin using the term exhibits at this point to refer to increasing sophistication of the visual presentation of objects.)

Because of additional space, the MPC was better capable of fulfilling duties assigned to it by law and by BYU. Allen Hall supplied a reasonably secure location to hold University owned artifacts of substantial monetary and research value. The building also provided space to order the collections in a manner that allowed researchers improved access to artifacts (MPC, G.A., 2006MS.041, 1982). Once the collections were organized in the new building, staff created a more professional means of keeping track of the collections, a process that increased efficiency in research and collections care (Berge, personal communication 2010).

Since the formalization of the museum in 1966, the museum had added learning opportunities for students via displays, classes, student employee positions, and a museum certificate program developed by Berge and Dr. Ray Matheny. The program added three museum classes to the BYU curriculum that allowed students from various departments to earn the certificate. Additionally, the Museum made increasing, though limited, progress in becoming more accountable and responsible for the physical care and organization of its collections. Policies and collection management practices had been written down, but their full implementation was limited by the absence of dedicated funding, a lack of professional staff, and an ever-changing student workforce (MPC, G.A., 2006MS.038, 1980's). Berge could only spend part of his time working on the museum, as he was also teaching classes, and actively excavating historic sites. Museum staff did their best, but more help was needed. By 1983, with his responsibilities pulling him in too many directions, Berge was asked to step down as the Director of the MPC and focus more on his archaeology work. As he left, Berge made a proposal that the Director position be given to an individual who could focus on the museum specifically (Berge, personal interview, 2009).

## A New Director

In 1984, Dr. Joel Janetski replaced Berge as the MPC's Director. Janetski was hired to spend most of his time focusing on developing the MPC, and the rest on teaching as an adjunct faculty member. Standardizing the Museum according to national standards and increasing opportunities for student and faculty research were his priorities. The development of the MPC included trying to get a new building. Early on in his term as Director, Janetski renewed the efforts to submit a proposal for a university museum.

Janetski received his bachelor's degree in English from BYU in 1965 and went on to receive both his master's degree (1977) and doctorate degree (1983) in Anthropology at the University of Utah. His dissertation work on the Ute of Utah Valley fit well with the focus of the MPC. Throughout his term as Director, Janetski's passion for research led to increased research opportunities for students. He established the MPC as a research-based museum, notably with the creation of the MPC's publication series as a venue for the increasing Cultural Resource


Figure 4. Example of an exhibit in Allen Hall during 1980s.

Management work and excavations by the anthropology faculty.

The mid to late 1980s and 1990s saw the MPC improve on meeting national museum standards. Among other improvements, Janetski upgraded collections management by creating and implementing written policies (1985), revamping the acquisition policy to increase emphasis on preservation of collections (1989), and establishing a loan policy (1990). The creation of an emergency recovery plan (1990) demonstrated the MPC's commitment to preserving the materials in the museum for future generations (MPC, G.A., 2006MS.049, 1990s).

By 1990, there was no hope that the original proposal (or the renewed one in the late 1980s) for a university museum complex would be accepted. With no new building forthcoming, Janetski began to guide the MPC in a different direction; he focused on how it could develop in Allen Hall. Janetski endeavored to set the museum apart as an individual institution. As a result of his efforts, the MPC was separated administratively from the Department and placed under the direct administration of the College of Family, Home, and Social Sciences. The hope was that the MPC would receive more funding and be more flexible.

As Janetski worked on improving the MPC, he began applying for federal grants that would help the museum. In 1990, the MPC received funds through the Institute of Museum Services to survey and conserve its collection of Pre-Columbian textiles. The grant allowed students, under the guidance of a professional conservator, to evaluate and document the condition of textiles, provide recommended treatments, and carry out basic treatments (Americana Collection, GN 42. O34x, 1990 LTPSC).

By 1991, Janetski recognized that the MPC needed the aid of someone professionally trained in the development and management of museums, particularly since he was ready to focus more on his archaeology work and mentoring student research. Dr. Marti Allen was hired as the Assistant Director and took over many responsibilities of the MPC. Allen used her museum focused expertise to start reaching out to the community, and developing the usefulness of the MPC as an academic institution.

### Professionalizing Staff and Students

Dr. Marti Allen worked for seven years as Assistant Director to Dr. Janetski before officially becoming the Director in 1998. Allen received her bachelor's degree (1975) from the University of Missouri, Columbia in Art History and Archaeology, and a master's degree (1978) and PhD (1985) in Classical Art and Archaeology from the University of Michigan. She also certified in Museum Practices through the University of Michigan in 1986. Allen was the first MPC administrator who had studied the operation and running of museums as a key component of formal training.

With her hire, the MPC continued focusing on updating its standards. Utilizing her training, she set about determining whether the Museum was meeting national standards.

> The first thing I did was [complete an] audit of the museum. I audited the security, the conservation environment, and I reported it because I needed to know what I was dealing with there. So, I came up with a deficiencies list and plans for correcting them and I probably spent the first year or two really doing that and figuring out a plan of attack to get the museum up to standards [Allen, personal interview, 2009].

These standards moved beyond the work of managing the collections to include national exhibition and programming standards. Allen expanded the MPC's programming and exhibitions to include the public by hosting workshops and tour programs, and by creating learning opportunities for students outside of the university (Americana Collection, 1992, LTPSC) (Figure 5). (From this point we use the term exhibitions as the most complex and multi-themed display of objects utilized at the MPC.)

A significant contribution of Allen to the development of the MPC was her dedication to museum studies programs and integrating these courses and museum functions with the needs of the Department of Anthropology. In 1993, Allen started exploring the idea of a formalized Museum Studies program at BYU, run through the MPC. In that same year, she helped to formalize a volunteer program and continued hosting an Anthropology lecture series that had started the previous year. Museum Studies classes taught through the Anthropology Department provided a solid foundation in museum registration and collections management, laws and ethics, curation, educational programming, and exhibition planning (UA661, LTPSC). Students were taught about legal issues involved in running a museum, and how to broaden their scope of experience and improve the quality of their work. A graduate certificate in Museum Practices, approved in 2003, "better prepared [students] to go on to graduate work in museum studies or directly into professional museum employment" (Lisa Jackson, 1999).

As the scope of potential university students broadened, the MPC also increased teaching opportunities for the community. Allen directed a project to create "teaching kits," which could be checked out to public school teachers or BYU professors. They held various replica artifacts from a specific region, books on the area of interest, and a couple of basic lesson plans. These kits gave students hands-on experience with replica arrowheads, ceramic sherds, beadwork, etc.

Allen Hall, while better than previous buildings and facilities, still lacked adequate space and environmental necessities to take care of all its collections. In 1986, a few rooms in nearby Amanda Knight Hall had been secured for storage, but it was not enough to alleviate the cramped conditions. In 1993, it was proposed that the new Museum of Art provide the MPC with storage space to hold the more environmentally sensitive and valuable collections. This opportunity created an environment with the consistent temperature, steady humidity, and higher security necessary to preserve artifacts from further deterioration and damage (Buck and Gilmore, 2010). While the MPC could


Figure 5. Portion of the Paquime and the Casas Grandes Culture exhibit, 1994–95, developed by Dr. Allen and students.

not put all of its collections in the new space, having room for the more sensitive collections was a huge accomplishment (UA661, LTPSC). Additional collection storage space was obtained in a portion of a converted grocery store, known as Building B-67, in 2000. More storage space meant less crowding in Allen Hall and the removal of all collections from Amanda Knight Hall. The stacks of boxes 6 feet high that had lined the hallways of Allen Hall were removed and placed in compactor storage units in B-67 (MPC, G.A., 2006MS.059, 1999).

With the addition of formalized educational programs and improved organization space, the MPC had become a contributing educational institution within BYU. In 2000, the MPC received a State Certification Award from the Utah Office of Museum Services (UOMS) for completing Phase I of the UOMS State Performance Goals program. These goals included reaffirming the mission statement; describing its scope, purpose and audience; maintaining founding and governing documents; and setting goals to be a regular part of the museum's operational procedures and long-range plans (Americana Collection, 2001, LTPSC).

By the end of Allen's term as Director in 2006, the Museum of Peoples and Cultures had transformed itself into a practical and theoretical learning institution. Rotating exhibitions with multiple overlapping themes developed by students under the direction of professional staff provided hands-on practical experience for students interested in museum studies. Exhibitions were more accessible and interactive, and they better fit the educational needs of the public. The exhibitions gave visitors many opportunities to learn about different cultures in the region. More importantly, the MPC had established itself as an independent, significant educational facility (h 6).


Figure 6. Portion of the Faces on Parade: Symbol and Tradition in Mexican Masks exhibit, 1995–1996, developed by Dr. Allen and BYU students

## Conclusion

According to the approved 2003 MPC mission statement, the MPC exists to care for the anthropological, archaeological, and ethnological collections of the university (MPC, Mission Statement). At the end of 2010, the MPC collections consisted of more than 113,000 object lots, adding up to more than one million individual artifacts. Collections come from cultures around the world with significant holdings from archaeological excavations by BYU around Utah Lake, Southern Utah, and Mesoamerica, as well as donations from individuals that include items from Polynesia, textiles and masks from Mexico and Guatemala, and ancient textiles from the Andes (BYU Department of Anthropology (BYU), et. al., 1988). A secondary, but no less important focus, is teaching students collection practices that reinforce BYU ideals of lifelong learning, spiritual strengthening, and character building. The museum studies classes offered by the MPC staff and anthropology faculty allow students additional practical experience and theoretical study of museum management principles. The students who work at the MPC are given appropriate levels of responsibility in managing the collections, developing the rotating exhibits, and creating educational programming. As a small anthropology/archaeology museum, the MPC has become a mentoring institution effectively training and preparing students for professional careers after graduation.

Under the direction of current Director Paul Stavast, museum staff continues to organize its archives and collections into an efficient database that allows for better research and production of exhibitions. The organization of the collections has allowed staff to explore other opportunities. Some student employees are dedicating their

time to the research of significant collections or contributors to the museum in an effort to better understand the history of the institution. The Museum continues to be a place of education and entertainment as it brings the past to life through interactive exhibits, date nights, and learning opportunities.

The constant flow of students has compelled the directors and professional staff to quickly judge the effectiveness of training and procedures. The result is a mentoring system that effectively trains students to perform at national standards. As a result, the MPC has achieved standards that at first glance would seem impossible for this "small museum."

Over the decades of development, museum staff have turned the MPC into a efficiently working museum that fits current federal standards, which define a museum as a "public or private nonprofit institution which is organized on a permanent basis for essentially education or aesthetic purposes and which, using a professional staff, owns or uses tangible objects, cares for these objects, and exhibits them to the general public on a regular basis" (43 CFR 10.2) (emphasis added). Even though the MPC is connected to the largest private University in the state, the running of the museum has not been without struggles. The MPC still strives to obtain desired funding that would allow for the completion of more research and making collections more accessible. The successes of the exhibits and current research have come about because the directors required professional quality work from their staff and student employees. ■

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# Crossing the Divide: Transferring a Non-profit Collection to a Public Museum

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*In 2006, Brigham Young University's Museum of Peoples and Cultures (MPC) was offered and accepted a large collection of artifacts consisting mainly of Ancestral Puebloan pottery from East-Central Arizona collected during the mid 20th century. This article explores the ambitions of the Reidhead family to share the collection with the public after assembling it, their difficulties with maintaining and caring for a large private collection, and their decision to donate the artifacts to the MPC. Also explored is the MPC's evaluation of the collection's potential uses before the collection was acquired, including absence of specific archaeological provenience, interest in the collection from the academic community, and available financial and physical resources to properly care for the collection. An example of a successful transfer of a private collection to a permanent non-profit institution, the story of the Reidhead collection continues to unfold as the collection is made more accessible to the public and researchers.*

The Terrence and Jean Reidhead family approached the Brigham Young University (BYU) Museum of Peoples and Cultures (MPC) in 2006 about donating their large private collection. The family owned a collection containing thousands of artifacts collected by various family members during the mid-1900s. The collection contained over a thousand whole (or mostly whole) ceramic vessels, thousands of stone tools (arrowheads, axe heads, etc.), dozens of beads and shells, and many other Ancestral Puebloan artifacts. Most of the artifacts had been collected from sites near the family's home in East-Central Arizona.

The offer of such an extensive collection intrigued the MPC because it would provide significant learning opportunities for BYU students and would expand existing Ancestral Puebloan holdings from Arizona (Harris 2008a). Before the MPC agreed to accept the collection, its staff undertook an evaluation to determine if the collection would be a good fit for the museum under its collecting policy. This article explores the reasons why the family decided to donate their collection, why the MPC decided to acquire it, and the process involved in transferring it to Utah.

## Creating the Collection

Terrence "Shorty" Reidhead, the main collector of the artifacts in the Reidhead collection, was born in 1931 and grew up in East-Central Arizona. He was fascinated by Native American cultures from his youth. As an adult, he took every opportunity to learn about the Native American cultures of Arizona. He collected books about Native American peoples and collected the artifacts they left behind. He also involved his wife Jean and their children in his passion. Perhaps because of the great amount of time spent together collecting artifacts, the collection holds a special place in the heart of each family member. All share a feeling of connection to the artifacts in the collection and to the people who created them; each has favorite artifacts. One of the favorite artifacts of all the Reidhead children is the Sikyatki Polychrome parrot effigy jar (Figure 1), one of fewer than ten known to exist (Harris 2008b).

Most of the ceramic artifacts in the Reidhead collection came from Fourmile Ruin, an Ancestral Puebloan site near Taylor, Arizona on land formerly owned by a friend of the Reidheads (Figure 2). Fourmile Ruin was occupied from the late A.D. 1200s to the late 1300s. Hundreds of

 

Figure 1. Sikyatki Parrot Effigy from Fourmile Ruin (2006.60.581.1).

people lived at the site during its peak (Shumway Archaeological Research Project 2008). The site has tremendous importance, and yet has received very little scientific study. After Jesse Walter Fewkes' excavations at Fourmile Ruin in the late 1800s for the Smithsonian Institution, many looters damaged the site while trying to find similar artifacts (Fewkes 1904, Smithsonian National Museum of Natural History 2010). These looters ranged from individuals with shovels to teams with heavy equipment used to demolish architectural structures (MPC 2006).

The former landowner of Fourmile Ruin kept cattle on the property, and his animals reportedly got trapped in holes left by the looters. The landowner believed looters would be less likely to trespass on his land if the artifacts were removed. He gave Shorty permission to excavate part of the site with a front-end loader if Shorty would agree to cover the existing holes. The Reidheads describe Shorty as a careful excavator in terms of not damaging artifacts. However, he did not document the context of his finds, causing a tragic loss of information about the site and the artifacts that were collected there. The artifacts Shorty excavated were originally kept in the landowner's barn, but were given to the Reidhead family when he decided he no longer wanted them (Harris 2008b).

Some artifacts in the collection, such as the few whiteware ceramics, came from a ranch in northwestern New Mexico owned by family friends of the Reidheads. Other artifacts were found on private properties near Taylor, Arizona that were owned by various friends or family members (Figure 3). Additional artifacts, such as the Hohokam and Mimbres pieces, were purchased or traded from other collectors. These artifacts make up a very small portion of the collection (Harris 2008b).

## The Community Encounters the Collection

Shorty wanted to teach the community about Native American history of the Southwest using his family's collection. The family tried several

Figure 2. Photograph of Fourmile Ruin taken July 2008.

different methods of displaying and storing their artifacts to allow community members to benefit from them. First, they tried displaying a few pieces in a case in Shorty's business office. Later, he built a special room in his house to store the collection and invited people in to view it. Neither of these displays was very secure, and artifacts were stolen from both. They were also inconvenient locations to have large numbers of visitors view the collection (Harris 2008b).

Shorty dreamed of having a museum built to store and display the collection, and he felt that a museum would be the best way to keep his artifacts safe while still allowing the community to share them. He partnered with a friend, Marvin Hatch, and together they built the now defunct Museum of the Americas in Holbrook, Arizona in 1999 (Keith 1999, Lowe 1999) (Harris 2008b).

Although Shorty may not have realized it, his dream to build the Museum of the Americas was part of a late 20th century national movement towards museums representative of local communities. Many small local museums based on single collections were being formed across the country (McDonald 2008:88, Crooke 2008). This movement included museums as varied as the Morikami Museum and Gardens in Florida, which was founded from the lands of George Morikami to remember the Japanese community that once lived there, and the Kreeger Museum in Washington D.C., which displays a family's collection of fine art (Gillis 2007; Morikami Museum and Japanese Gardens 2010; Kreeger Museum 2010). Although these museums vary in their subject matter, each was formed to preserve a community identity and present it to the public. Shorty's museum represented a community that collected artifacts to learn about the ancient Native cultures they admired.

The Museum of the Americas was very successful when it first opened. It was well-supported by the community and tourists alike. The museum was a for-profit organization, relying on admission fees and sales from the large gift shop to pay for the cost of running the museum. The museum displayed Shorty's

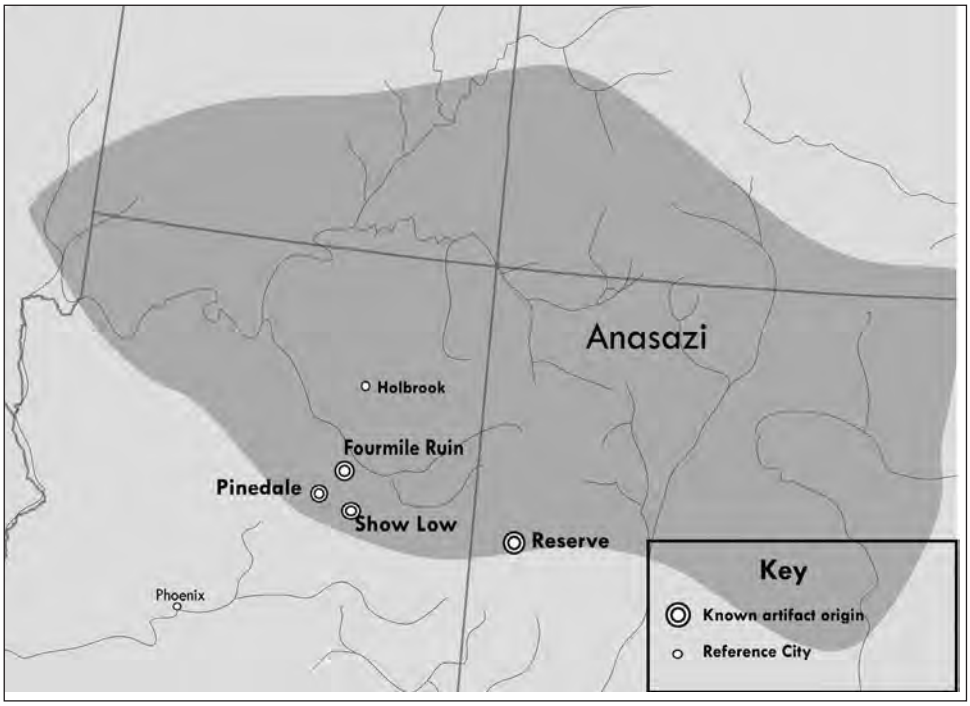


Figure 3. Map showing known origins of Reidhead artifacts.

Ancestral Puebloan collection, Marvin Hatch's "South American" collection, and Mike Holley's collection of modern-day replicas of Ancestral Puebloan pottery (Figure 4) (Harris 2008b). The museum bordered the Petrified Forest National Park, and nature trails around the outside of the building took visitors to see the petrified wood on the museum property. Navajo women demonstrated rug-weaving on weekends and holidays (Harris 2008b).

However, the Museum of the Americas did not last. The decision to run the museum as a for-profit rather than as a non-profit may be a reason that it was not able to withstand the conflicts that arose between the Hatch and Reidhead families. Most non-profits have a board with a legal trust relationship to the organization, which helps them to overcome challenges caused by personal differences. After Shorty's death in 2003, the Hatch and Reidhead families disagreed about the ownership of the collection, museum profits, and the museum building (White Mountain Independent 2003). Both families had invested a significant amount of money and labor into building the Museum of the Americas, in addition to displaying their collections there. The Hatch family felt that they owned a greater percent of interest in the museum than the Reidhead family, and also claimed ownership of the Reidhead family's collection. The Hatches attempted to sell the Reidheads' collection, which led the Reidheads to pursue legal action. After mediation, the Reidhead family decided to pull their collection out of the museum and agreed not to seek any share in the museum building or profits, losing their investment but retaining ownership of the collection. It was more important to the family that their collection be kept intact than that they recover the money they had invested in the museum (Harris 2008b).

Although the Reidhead family wanted to retain possession of their collection, they felt the artifacts would not be safe if kept at their home. Still wary from their former experiences, they worried they would be targeted by potential thieves who now knew the extent of the artifacts

Figure 4. Display of Reidhead collection artifacts in the Museum of the Americas.

in the collection because it had been on display. The family decided to investigate donating the collection to a museum rather than try to find a secure place to keep it on their property.

During his lifetime, Shorty had said that he did not want his collection to go to a university. After his death, his wife Jean felt that the best home for the collection would be at Brigham Young University, a school run by the Church of Jesus Christ of Latter-day Saints (LDS). Jean wanted the collection to be used for the Church's benefit to educate students. She said that "Shorty's objection to universities … was that a lot of them end up with donations and they end up … in their basements and some of it escapes out the back door… I felt confident that because it's the [LDS] church's university that this wouldn't happen, that they will keep it intact, keep track of it" (Harris 2008b).

## The MPC Acquires the Collection

When the Reidheads first approached BYU about donating their collection in September 2006, they were directed to LDS Philanthropies, the LDS Church's department that processes philanthropic donations, including those given to BYU. As the designated repository for such collections, the MPC was determined the most suitable entity within the University for the Reidheads' collection.

During the donation negotiations, the Reidheads informed LDS Philanthropies that they wanted to have their collection removed from the Museum of the Americas by the end of the year. This short time frame for an object transfer, especially one as large as the Reidhead collection, was a concern for the MPC (Harris 2008a). MPC staff visited Holbrook to see and evaluate the collection to ensure that it

was being correctly represented and to confirm that they were really interested in acquiring the collection. They determined that the collection had been accurately represented and that they would seriously consider acquiring the collection (Harris 2008a).

Before agreeing to accept the collection, MPC staff reviewed their own capabilities to care for the collection and the potential impact the collection would have on the BYU community. This was necessary to ensure that the donation would be an asset and not "a burden" (Harris 2008a). MPC staff considered budget, space, scholarly opinions, object provenience, and legal issues. Resolving all of these concerns allowed the MPC to feel confident that the donation would be a benefit to the BYU community and the public.

One issue was how to pay for the transfer of the objects and the subsequent work of cataloging and storing the objects. The MPC has a small staff comprised mainly of students, and the funds for 2006 and 2007 had already been committed before the museum was approached about the donation. Museum staff anticipated that it would take 1600–2400 working hours to store the collection and to minimally enter all the objects into the MPC catalog. They also estimated the cost of the materials for storing the objects and the cost of actually transferring the collection from the Museum of the Americas to the MPC to be about $20,000. LDS Philanthropies was able to locate a separate donor to cover the cost of the materials and much of the labor of storing and cataloging, and the MPC planned to cover the rest of the costs either from their own budget or from grants they would attempt to get in the future (MPC 2006). This donation was the first time the MPC required an additional monetary donation accompany a donation of objects; without the cash donation they would have been unable to accept the Reidheads' donation. MPC staff felt it was "important…[to] establish a precedent that large collections…need money to fund the processing;" if they did not receive additional funds, the MPC would not be able to adequately care for the new objects coming into their possession (Harris 2008a). Additionally, it was also decided in the negotiations that the Reidhead family would arrange transportation for the objects from Holbrook, Arizona, to Provo Utah to make the transfer feasible for the MPC (Harris 2008a).

MPC staff calculated that the collection would need about 575 cubic feet of storage space. They had recently transferred over 100 boxes of artifacts they had been housing to another Utah museum, which freed up the majority of the space they would need to store the Reidhead Collection. Staff determined that once the collection was properly housed and cataloged, future care of the collection could be accomplished with existing resources. The MPC's regular budget would include enough money to provide the student time and the supplies that would be necessary to monitor and maintain the collection in the future (MPC 2006).

When first notified of the possible donation of the Reidhead collection, MPC staff contacted scholars working in the region around Fourmile Ruin to see if the scholars were familiar with the collection. They wanted to find out if any of the researchers held opinions about whether the MPC should or should not acquire this specific collection. In the ongoing debate among archaeologists as to whether or not it is ethical to research unprovenienced collections, there are a wide range of opinions; some say that researching these materials promotes looting, and others say that it is important to save whatever information can be gleaned from these collections, despite their unfortunate origins (Alexander 1990, Donnan 1991, Allen 2002). Because the artifacts in the Reidhead collection were not scientifically excavated, the MPC wanted to make sure that researchers did not disapprove of the MPC and the University acquiring it, and that they would research the collection were it to come to BYU. All of the archaeologists contacted expressed a disapproval of the methods used to excavate the artifacts, but agreed that the collection was important and valuable for research. They also

expressed enthusiasm at the potential opportunity to be able to study the collection. When the collection was housed in the Museum of the Americas, researchers had not been permitted to study it. One of the archaeologists' main concerns was that the collection might be split up and sold if not acquired by BYU, which would destroy any opportunity for scientific study of the artifacts (MPC 2006).

The Reidheads informed the MPC that although none of the artifacts in the collection had been excavated scientifically, all of them had site-level provenience expressed in a document that was kept with the collection. When MPC staff went to Arizona to obtain the collection, this document was not located. Without such a document, very few of the artifacts in the collection can be certainly identified as having come from a specific site. (Some artifacts in the collection came from sites near Fourmile Ruin in addition to the majority that were found at the site, making it impossible to tell which artifacts came from which site) (Harris 2009). The MPC sent a researcher in 2008 to interview family members to obtain more information about original object locations, but very little additional information was acquired (Harris 2009). Although very few of the objects have site level provenience, this collection is still valuable for researchers because of the number and quality of artifacts it contains (MPC 2006). However, the collection lost much of its research potential because records of where each artifact had been collected were missing or had never been written.

As the collection was involved in the Museum of the Americas ownership dispute, the MPC needed to make sure that the Reidheads held clear title to the collection before they could accept it as a donation. LDS Philanthropies received confirmation in November that the ownership issues had been resolved, which made the MPC feel secure about accepting the donation (Harris 2008a). This left about one month to finalize plans for the transport of the objects.

The MPC also wanted to ensure that the objects would not be under any restrictions from national laws for research, display, or other uses. Because the Reidhead collection contains Native American artifacts, the MPC reviewed the applicability of the Native American Grave Protection and Repatriation Act (NAGPRA). NAGPRA specifies that Native American "human remains, funerary objects, sacred objects, or objects of cultural patrimony" that are held by museums be returned to their original tribe or its descendants (43CFR10). When MPC staff visited the collection, they established that there were no human remains among the collection. They did not have sufficient information at that time to determine if any of the objects were funerary items. MPC staff determined at the point of donation that none of the objects in the Reidhead Collection could be identified as funerary objects, so they would most likely be able to use the majority of the collection for research, display, and educational purposes. Because of the limited time frame they did not conduct consultation with Native American groups to see if any objects would need to be repatriated as sacred objects or objects of cultural patrimony. They preferred instead to leave those consultations for after the objects were MPC property so they could have more time to consult and discuss the objects with Native American groups interested in the collection (Harris 2008a). It was anticipated that documents would be found that could help identify funerary objects, but even after interviews with the family about original locations of the objects none can as yet be determined as funerary items (Harris 2009).

After conducting this research and evaluation, the MPC decided to accept the Reidhead family's donation. MPC staff knew they would be able to adequately care for the collection. They also felt strongly that the collection would be an asset to the general public and the BYU community. The next step was to physically transfer the objects from the Museum of the Americas in Holbrook, Arizona to the MPC in Provo, Utah.

## Transferring the Collection

Transferring the collection was a colossal effort, and circumstances that arose because of the short timeline did not make it any easier. Had there been more time to arrange the transfer and more firmly arrange the details, some problems could have been avoided. When MPC staff arrived at the Museum of the Americas in early December 2006 to pack objects for the move, they found that the resolution of the ownership dispute involving the collection had not been passed on to Museum of the Americas staff. Museum of the Americas staff refused to open the cases, forcing MPC staff to wait until the Reidheads' lawyer drove out from Phoenix and brought final proof to the Museum of the Americas staff that the Reidhead family had legal right to remove their objects. Once the cases were opened, MPC staff, Jean Reidhead, her daughter Teri Reidhead, other Reidhead family members, and volunteers from the Northern Arizona University spent a long week packing the collection to prepare it for the move. The packing process was interrupted by delayed arrival of supplies and a power outage that affected the entire region, but eventually all the objects were packed into boxes for the move (Harris 2008a).

According to agreement reached during donation discussions, the Reidheads were responsible to provide transportation for the objects from Holbrook to Provo, Utah. MPC staff was expecting a semi truck, and anticipated having sufficient room to fit all the artifacts. However, a semi was not retained. Upon arrival, MPC staff discovered that the Reidheads' plan had changed to have a family friend with a furniture moving trailer take the collection. His trailer turned out to be too small for the whole collection, so the Reidheads rented a large moving truck. The moving truck had about half as much space as MPC staff anticipated, and required the artifacts to be packed more closely than was originally planned—for example, instead of each ceramic bowl having its own box, the boxes were divided with cardboard to provide secure transport for multiple bowls. This put the artifacts at greater risk of damage during the transfer, but under the circumstances it was the best option (Harris 2008a). Teri Reidhead had several years of experience driving semi trucks, so it was decided she would be the best choice to drive the collection safely to Provo (Harris 2008b).

MPC staff and the Reidheads decided to take the collection west to Flagstaff and then drive north to Provo. A pickup truck followed the moving truck so all the staff would be able to drive back north. After a mere two-hour drive, the moving truck died outside of Cameron, Arizona. The truck was restarted, but it stopped working again soon after. After restarting again, the truck limped in to Page, Arizona late Saturday night and Teri Reidhead called a mechanic to fix the truck. The mechanic was unavailable until the next day, so they had to spend the night in Page. MPC staff alternated shifts watching the truck through the night so BYU insurance would cover the objects. In hindsight, they realized that the breakdown may have been advantageous: that night there was "one of the worst snowstorms that hit [Southern] Utah that winter," and the roads would have been treacherous, endangering the artifacts in the truck (Harris 2008b). The group spent a large portion of the next day waiting for the truck to be fixed. They finally arrived in Provo around 10:00 Sunday evening and immediately unloaded the truck (Harris 2008a). The physical transfer of the objects was a success, despite the many challenges the team faced.

## What the Collection Has Contributed So Far

The Reidhead family donated their collection to a non-profit educational institution with the intent that the artifacts would be used to benefit the community and the students. Jean Reidhead said of her husband, "he wanted to be able to share [the collection] so people would appreciate the cultures and the beauty of [the artifacts], the same as he did" (Harris 2008b).

The Terrence and Jean Reidhead collection has already contributed to the BYU community. University classes have used objects from the Reidhead collection for research and teaching purposes, such as a ceramic analysis class that used artifacts from the Reidhead collection for students' final projects. The Reidhead collection has also brought outside researchers to BYU to study the collection and to present their research to the BYU community. This has allowed BYU students to hear from experts they might not otherwise have been exposed to, and has increased the body of knowledge available about Ancestral Puebloan peoples.

The collection has also been a benefit to students working at the MPC. The Reidhead collection has been used to train many students about how to handle artifacts and how to properly store and care for them. Between four and five student employees consistently worked on the collection for two years, learning how to label, photograph, and catalog the Reidheads' donation. Objects from the collection have also been used in MPC exhibitions to teach the public. Selections of artifacts from the Reidhead collection were used in two MPC exhibitions: *Touching the Past: Traditions of Casas Grandes* (2007–2009) and *Kachinas of the Southwest: Dances, Dolls, and Rain* (2008–2010). A third exhibition, *New Lives: Building Community at Fourmile Ruin* (2009–2011), focused exclusively on Fourmile Ruin (the site where most of the Reidhead artifacts came from), with all objects on display coming from the Reidhead collection (Figure 5).

The MPC is committed to continuing to make the collection accessible to the community in the future as it continues to be used for exhibitions, research, and other educational purposes. This article is one avenue the MPC is using to make people aware of the collection. The MPC also hopes to create "popular style catalogs [to] encourage interest" in the collection, and hopes that as the collection becomes better known it will be used more frequently for research and educational purposes (Harris 2008a).

## Conclusion

This article has presented one example of an acquisition of a family's private collection by a museum. The acquisition occurred because of the Reidhead family's commitment to using their private collection for education and the public good. The Reidheads tried for many years to properly care for their collection while using it for educational purposes, and when they realized they couldn't continue to do it alone, they donated their collection to an entity that could. Private individuals often do not have the time or resources to properly preserve their artifacts and protect them from thieves or damage, especially if they want to use the artifacts for educational purposes at the same time. Non-profit museums as educational institutions that focus on the preservation and protection of artifacts can be an answer to such challenges.

The Reidhead collection transfer highlights the importance of the review process before potential donations are accepted. Museums must evaluate their own abilities to care for the potential acquisition and ensure that the acquisition fits with the institutional mission and the museum's other holdings. The Reidhead collection meshed very well with the mission and holdings of the MPC, and the MPC was able to properly process and care for the collection with the help of an additional financial donation. While the transfer ended well, more time for planning could have reduced stress.

The Reidhead collection transfer raises the issue of how to deal with unprovenienced collections. While some archaeologists and others may disapprove of the MPC's acquisition, others (including the MPC) feel that storing the collection and providing opportunities for it to be used for research is a good way to prevent the further loss of information. All of those contacted by the MPC prior to the transfer as well as all of the reviewers of this article agreed that acquiring the collection was the best option under the circumstances. It does not solve the problem of preventing unscientific collecting in the future,

Figure 5. Photograph from Fourmile Ruin Exhibition at the MPC.

but it does allow the salvage of information from collections that already exist.

The Reidhead collection also provides an example for other families with collections. It is important to record as much as is known about the objects in family collections to give them context for the future. Although the Reidhead collection began with information about the artifacts in the collection, the information was lost, and after the collector died it became irretrievable. Now that the collection is in a museum, all information about the objects will be preserved. As new information becomes known about the collection through research, it will also be kept within the museum to give the artifacts a richer context.

So far this transfer has been a success. The Reidhead family gained peace of mind knowing that their collection was being used for community education, as they had always wanted it to be used, by an organization that would also preserve and protect the artifacts. The MPC gained a spectacular addition to its collections and a greater ability to teach the public about the early peoples of the Southwest. The community gained access to study and learn from the Reidhead collection as it is displayed in the MPC. The MPC anticipates continued success as they continue to work with interested groups in understanding and preserving the collection. ∎

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# The BLM/Earthwatch Rock Art Archives at Edge of the Cedars State Park Museum

Erica Olsen and Deborah A. Westfall

*Edge of the Cedars State Park Museum*

*Edge of the Cedars State Park Museum is an Ancestral Puebloan site, a museum, and a federally accredited archaeological repository located in Blanding, Utah. The facility includes archives and a noncirculating research library. The museum's archives include holdings associated with archaeological projects conducted in San Juan County from the 1890s to the present, representing human prehistory and history from southeastern Utah's earliest inhabitants, the PaleoIndians, through the Basketmaker and Puebloan periods and into the historic period. In addition to records and artifact collections from projects conducted by various universities and independent archaeological organizations, the museum curates archaeological site forms, maps, reports, and artifacts on behalf of the Bureau of Land Management (BLM) and the United States Department of Agriculture (USDA) Forest Service. This article provides an overview of the archives at Edge of the Cedars State Park Museum and a detailed look at one of the museum's largest archival collections, the Earthwatch/BLM Rock Art Archives. Comprising approximately 3,000 drawings; 11,000 color slides; 5,000 photographic prints, negatives, and transparencies; and field notes and other project records; the Earthwatch/BLM Rock Art Archives is the largest and best-documented collection of prehistoric and ethnographic rock art images for southeastern Utah. The article includes an overview of the original rock art survey and discusses the processing of the collection; the pilot digitization program, funded by a Utah State Historical Records Advisory Board (USHRAB) grant; and issues of preservation, access, and outreach.*

"More than just a repository of artifacts, Edge of the Cedars is an archive for the archaeological documentation that preserves the links between artifacts and their places of discovery."
—Edge of the Cedars State Park Museum, 2009

Edge of the Cedars State Park Museum is an Ancestral Puebloan site, a museum, and a federally accredited archaeological repository located in Blanding, Utah. The facility includes archives and a noncirculating research library.

The archives at Edge of the Cedars Museum include holdings associated with archaeological projects conducted in San Juan County, Utah, from the 1890s to the present, and represent 9,000 years of human prehistory and history. Documentation for southeastern Utah's earliest inhabitants, the PaleoIndians, is contained within the Lime Ridge Clovis Site collection. Post-Ice Age Archaic hunter-gatherers are represented in rock art images documented by the Earthwatch/BLM Utah Canyons Rock Art Project, conducted in San Juan and Grand Counties. The archaeological remains of the region's earliest farmers, the Basketmakers (ca. 400 B.C.–A.D. 500), were initially discovered during the 1890s by explorers and settlers who collected Basketmaker artifacts and sent them to museums back east. One hundred years later, volunteers with the Wetherill-Grand Gulch "reverse archaeology" project relocated these artifacts through exhaustive archival research; Edge of the Cedars Museum houses their documentation, including many photographs. Substantive, scientific documentation of the Basketmaker period was accomplished by Brigham Young University students who worked on the Recapture Wash Dam project north of Blanding; the museum curates their records and associated artifact collections.

The museum's most substantial group of holdings consists of the records and artifact

 

collections from projects conducted by various universities and independent archaeological organizations. These include the University of Denver's Butler Wash Archaeological Project and the excavation of the Jensen Site by the all-volunteer Trails of the Ancients chapter of the Utah Statewide Archaeological Society, documenting the transformation of the Basketmaker tradition to the Puebloan tradition (A.D. 500–700); the long-running White Mesa Uranium Mill Project and UDOT Highway 191 Reconstruction Project south of Blanding, conducted by various independent archaeological organizations, which filled out the history of human land use throughout the later Puebloan Period (A.D. 900–1150); and the excavations at Westwater-Five Kiva Ruin (by the Utah Division of State History), Site ML-1147 in the Abajo Mountains north of Blanding (by the USDA Forest Service), and Nancy Patterson Village, east of Blanding (by Brigham Young University), which illuminated the waning years of the Puebloan occupation (circa A.D. 1150–1200).

In addition to these records and artifact collections, the museum curates archaeological site forms, maps, reports, and artifacts on behalf of the Bureau of Land Management (BLM) and the USDA Forest Service.

Archaeology is a cross-disciplinary field, and archaeological records are useful not only to archaeologists but also to geologists, soils scientists, botanists, climatologists, and other specialists engaged in reconstructing the prehistoric past for present and future research. Archaeological records also constitute a substantial body of information that is used by museum curators for interpretive exhibits and educational outreach programs.

This article focuses on the Earthwatch/BLM Rock Art Archives; additional information about collections available for research at Edge of the Cedars can be found in the museum's catalog of collections, published in 2009 (Edge of the Cedars State Park Museum 2009).

## The Earthwatch/BLM Rock Art Project

The Earthwatch/BLM Utah Canyons Rock Art Project was conducted from 1993 to 2001 as a cooperative effort of the Earthwatch Institute, a nonprofit organization that funds scientific fieldwork, and the BLM's Monticello and Moab Field Offices and Utah State Office. The project documented archaeological sites in Grand and San Juan Counties through maps, drawings, photographs, and descriptive notes. Archaeologist Sally J. Cole was the principal investigator and supervised the professional staff and Earthwatch volunteers who carried out the work. The BLM offices provided significant logistical and staff support.

The research focus of the project was prehistoric rock art; however, all inventoried sites located within the designated survey areas were recorded. Cole described the goal of the survey as "baseline data collection, because that's what was lacking. You can't do anything if you don't know what you've got." Intermountain Antiquities Computer System (IMACS) site forms were completed and submitted to the Utah Division of State History and to the respective BLM offices (Sally J. Cole, personal communication 2009).

The Monticello Field Office project involved eight years (1993–1996, 1998–2001) of archaeological site survey and documentation in remote areas of San Juan County, including Cedar Mesa and Grand Gulch, Beef Basin, Fable Valley, the San Juan River corridor (Figure 1), Montezuma Creek (Figures 2 and 3), and Indian Creek. For this work, Sally J. Cole was the principal investigator, assisted by Sheri Bowman, Laurel Casjens, and Grant Fahrni (Cole 2004).

The joint Utah State Office and Moab Field Office project took place over four years (1997–2000) and was conducted in the Mill Creek canyons near Moab in Grand County. Sally J. Cole and Jeanne Moe (with the Utah State Office) were co-principal investigators (Cole and Moe 1999). The initial goal was to document prehistoric rock art panels in the Mill Creek canyons, but gradually the project became

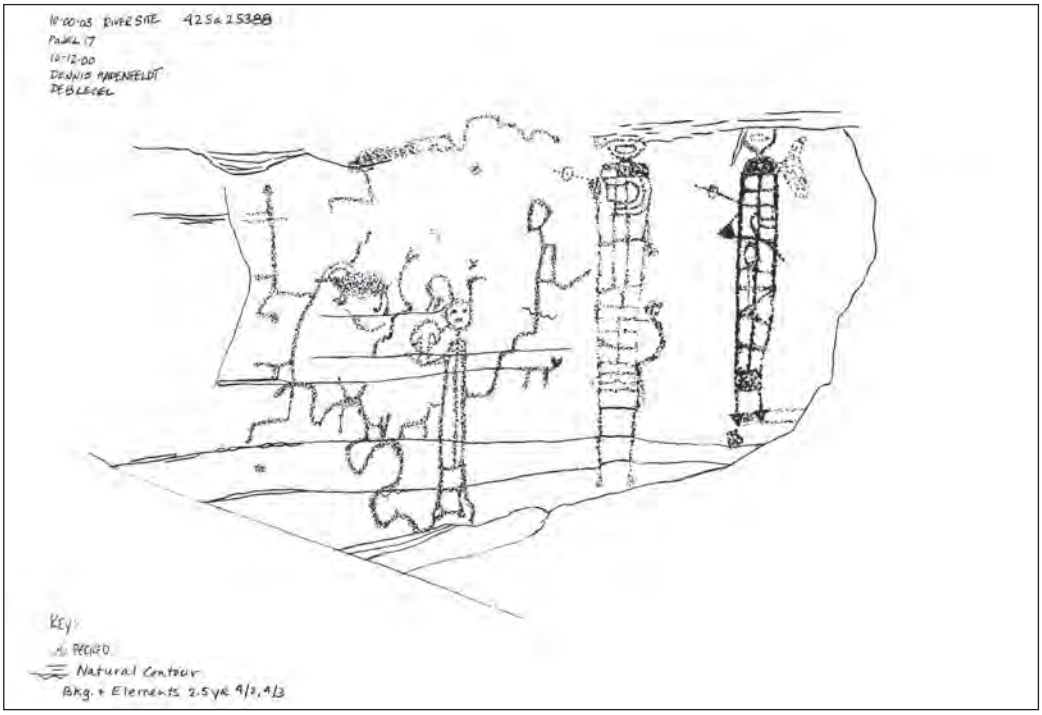


Figure 1. Petroglyphs at 42Sa25388 in San Juan County. Drawing by Dennis Hadenfeldt and Deb Legel.

a comprehensive archaeological and cultural resource management effort. Archaeological site survey and documentation were performed in the north and main forks of Mill Creek between 1997 and 1999. Ancillary work was done under the title of the Mill Creek Archaeological Project (1997–2000) and included a Mill Creek geomorphology study, an environmental history study, a ceramic study, and an archaeological site-testing program.

At the conclusion of the Earthwatch/BLM Utah Canyons Rock Art Project, documentation of sites in the Montezuma Creek area (11 sites) and San Juan River corridor (four sites) was housed at Edge of the Cedars State Park Museum. Documentation of the other areas, including Beef Basin/Fable Valley (37 sites) and Cedar Mesa and Grand Gulch (152 sites)—by far the largest portion of the collection—was stored at the Utah Museum of Natural History (UMNH) in Salt Lake City.

## Preservation and Access

In 2007, the Earthwatch/BLM rock art documentation originally stored at UMNH was transferred to Edge of the Cedars State Park Museum. This accession consolidated the project records at a repository more local to the resource. Following the 2007 transfer, Edge of the Cedars Museum housed the complete collection of original project records, including archaeological site forms; approximately 3,000 drawings; 11,000 color slides; and 5,000 photographic prints, negatives, and transparencies. For the first time, the collection was physically accessible in its entirety to the southeast Utah BLM field offices and to other researchers.

Processing the large amount of records transferred from UMNH presented challenges in terms of staff time, preservation of the physical collection, and making the collection accessible to researchers. The museum and the

Figure 2. Close-up of pictographs at 42Sa25157 in San Juan County. Photo by Laurel Casjens.

BLM Monticello Field Office executed a cost-share agreement to provide funding and support for a professional archivist to inventory and rehouse the records and catalog the collection into Re:discovery, the collections management software used by Edge of the Cedars Museum to manage its artifact collections and its archives.

Because of the large number of archaeological sites that were documented and the large number of drawings, maps, and photographs in the collection, the Earthwatch/BLM collection benefited from more detailed description than was the museum's routine for BLM records transfers. Arrangement and description were performed to archival standards, in order to preserve the original order of the project fieldwork (drawings in folders by site number; photographs in binders, identified with photo logs) and also to be compatible with the searchable fields in the Re:discovery collections management database. Thus, in Re:discovery a collection-level record exists for BLM records housed at the museum; a series-level record was created for the BLM records transfer, i.e. the Earthwatch materials accessioned in 2007; file unit-level records were created for drawings, photographs, maps, and project administrative records; and, at the item level, records were created for items such as a folder containing the drawings for a single archaeological site. After cataloging the 2007 accession to archival standards, the Re:discovery catalog records for the smaller 2003 accession were updated for consistency with the records created in 2007.

Since completion of the cataloging in Re:discovery in 2007, it has been possible to search the BLM/Earthwatch project maps, rock art panel drawings, and photographs by the topic term "rock art" and terms such as site number, place (e.g., Cedar Mesa or Grand Gulch), or site name (e.g., Turkey Pen Ruin). In a free-text descriptive field, names of project staff and

Figure 3. Pictographs at 42Sa25157 in San Juan County. Drawing by V. Jefferies.

Earthwatch volunteer illustrators were entered as creators of the maps or drawings; this has made it possible to search for names of individuals, which benefits project participants wishing to revisit their work and curators looking for the work of individuals.

In terms of the preservation of the physical collection, the Earthwatch/BLM Rock Art Archives posed different challenges from the usual collection of archaeological records. The Earthwatch volunteers included professional artists, avocational artists, and scientific illustrators who created maps and drawings that not only documented archaeological sites but, in many cases, were works of art themselves. Some of the Earthwatch project participants returned year after year (Cole, personal communication, 2009). The drawings needed to be housed in a way that would protect the various media used to create them (pencil, color pencil, ink) as well as the various sizes and types of paper. Smaller drawings were housed in file folder inserts within site folders to protect them from abrasion. Drawings and maps that had been folded were unfolded; where dirt from the fieldwork of years ago had settled into the folds, the paper was surface-cleaned by lightly using an eraser. Oversize materials were housed in flat boxes; where a folded oversize drawing was removed from a file folder, a sheet was placed in that original folder indicating what action had been taken by the project archivist, and on what date. Photographs and negatives came to the museum, for the most part, in archival sleeves kept in nonarchival three-ring binders; these materials were rehoused in archival binder box albums to protect the contents from light and dust. The original order of the photographic materials (rolls of film with accompanying photo logs, in one or more binders per field season) was preserved in the rehousing.

## Creating a Digital Archives

In 2008, Edge of the Cedars Museum was awarded a grant from the Utah State Historical Records Advisory Board (USHRAB), as part of the program entitled Regional Repository Training and Development—Preserving Utah's Historical Documents, to begin digitizing the Earthwatch/BLM rock art documentation. The goals of the digitization program were (1) to preserve the original project documentation through digital image capture, and (2) to provide enhanced access for researchers through improved database searching and enhanced public access via Re:discovery on a dedicated computer in the museum library.

Priority was given to the digitization of drawings, which Sally J. Cole described as "the archaeological notes for rock art" (Cole, personal communication, 2009). A priority list for digitization was generated in consultation with Cole and with longtime BLM backcountry ranger Laura Lantz (whose territory includes Cedar Mesa and Grand Gulch and who participated in the Earthwatch project). The priority list took into consideration such factors as archaeological significance of individual rock art panels (site context, style, and technical and artistic content) and cultural resource management significance (potential for impact from visitation and vandalism). When viewed with photographs of a rock art site, drawings of rock art panels provide significant analytical detail (Figures 2 and 3). The drawings created by project participants indicate information such as the colors of pictographs (specified using the Munsell color system), whether a petroglyph is pecked or abraded, and the superimposition of images. Some inaccessible panels were drawn with the aid of binoculars.

(In establishing priorities for this digitization project, physical deterioration of the original images was of less concern than the factors of archaeological and cultural resource management significance—i.e., the goal was to make documentation of the most at-risk sites more readily accessible to land management agencies and to researchers. A basic preservation assessment of the collection materials—which as of this writing are less than 20 years old—was completed at the time of the 2007 inventory, rehousing, and cataloging. A digitization project focusing on older or more deteriorated originals would, of course, take additional factors into account.)

Images were scanned using an Epson Expression 10000XL flatbed 11 x 17 scanner and saved as TIFFs (archival master images). For drawings, scanning was at 400 dpi, using 24-bit color; two JPEGs were derived from each TIFF, one for access (a 400 dpi high-quality JPEG) and the other a 150 dpi thumbnail image linked to the Re:discovery collections management database, an efficient process using batch processing in Photoshop. Images are stored on an external hard drive and backed up onto a second external hard drive, which is stored in an antimagnetic, fireproof safe.

The file structure for saving the digital images and naming conventions for the images were based on the accession number, collection number, file unit number, and item number, for consistency with the existing Re:discovery records. While the file names may seem cumbersome, they allow for precise identification of individual items. For example:

> ECPR07005_001_001_PA1 drawing of panel 1
> ECPR07005_001_001_PA1_1of2, PA1_2of2, etc. drawing of panel 1, where the drawing is on two pages
> ECPR07005_001_001_MA map
> ECPR07005_001_001_1_24 roll 1, frame 24

The Re:discovery records allow attachment of multiple images, so that multiple drawings may be viewed per rock art site.

The digitization program was conducted in compliance with the standards of the Mountain West Digital Library (www.mwdl.org), as stipulated by the USHRAB grant requirements,

including mapping Re:discovery fields to the 10 Dublin Core metadata fields required by MWDL. The grant-funded digitization was completed during spring-summer 2009.

Currently, the Earthwatch/BLM Rock Art Digital Archives features more than 1,500 images of rock art, including all of the project drawings from Beef Basin and Fable Valley, Montezuma Creek, and the San Juan River corridor, and the drawings from 66 of the 152 sites in the Cedar Mesa/Grand Gulch area (Westfall and Olsen 2009). The digital images represent the full spectrum of style and associated culture periods from Archaic through Basketmaker, Pueblo, and into the historic period. Through consultation with the Hopi tribe, archaeologist Sally Cole identified culturally sensitive images, which were not linked to the Re:discovery catalog records; instead, these remain in secure storage at the museum.

As part of the USHRAB grant-funded project, culture periods were added as topic terms to the digitized records. Whereas the existing catalog records assigned all records in the Earthwatch/BLM Rock Art Archives the topic term "rock art," records with digitized images were updated with terms such as Archaic and the various Basketmaker and Pueblo culture periods. For researchers, the ability to narrow their searches by culture period as well as geographic area is a significant benefit.

In the future, the museum anticipates adding a searchable, lexicon-based field for classification of rock art imagery. In consultation with Sally Cole, draft rock art classification terms have been developed and will be finalized; such a lexicon will enhance researcher access to the project documentation by providing the ability to search, for instance, for representational images (anthropomorphs, animals, plants) or abstract/geometric elements (spirals, zigzags). Within those major classifications, researchers would be able to search for anthropomorphs and their associated features (headdresses, weapons); animals (artiodactyls, avians, reptiles); plants (corn, yucca); and so on. Such terms could fit into a lexicon such as the Getty Art & Architecture Thesaurus, which classifies "rock art" as an upper-level term but does not offer a detailed classification containing the kinds of terms that researchers in archaeology might search for. Edge of the Cedars staff are not aware of another rock art lexicon in existence and it is hoped that such a lexicon, when implemented, could be made available to other interested museums.

In addition to making the Earthwatch/BLM Rock Art Archives more accessible to researchers through improved search capability, the digitization of selected drawings and photos has captured a very high level of detail in the original project documentation. As seen in Figure 2 and Figure 3, drawing of rock art can often capture more detail than is readily apparent in photographs. In Figure 3, the drawing of the Alcove Site pictographs skillfully represents the colors and superimposition of images at this complex panel; the observations of the Earthwatch participant who created this detailed drawing become even more apparent to researchers who zoom in on the digital version.

In addition to helping preserve the physical project documentation, digitization of the rock art documentation preserves a record of the actual rock art images. Over time, the original rock art will eventually fade, erode, or be subject to vandalism. Digitized photos and drawings can preserve a visual record of the rock art in its natural context at the time of documentation. Enhanced preservation of these archival records and enhanced researcher access also supports appropriate management of these significant cultural heritage resources.

Digitization of additional Earthwatch/BLM materials will continue as time and funding permit. Priorities include digitization of the remaining drawings for sites in the Cedar Mesa/Grand Gulch area, additional project records such as maps and photographs, and records of sites in the Mill Creek area.

### Information for Visitors and Researchers

The Earthwatch/BLM Rock Art Archives is the largest and best-documented collection of prehistoric and ethnographic rock art images for southeastern Utah and is a significant resource for comparative archaeological research, museum exhibits, public education, and public land management. Both the original documentation and the digital archives are available for research on site at the museum. As of this writing, the museum is exploring ways to enable online access to the digital archives.

Some drawings and photos from the Earthwatch/BLM project appear in the revised and updated edition of Sally J. Cole's book, *Legacy on Stone: Rock Art of the Colorado Plateau and Four Corners Region* (Boulder: Johnson Books, 2009). Copies of some of the drawings have been on display at the BLM's Kane Gulch Ranger Station (open seasonally), off Highway 261 near Grand Gulch.

Edge of the Cedars State Park Museum is located at 660 West 400 North in Blanding. Hours: Monday-Saturday, 9 AM–5 PM; closed Sundays. The library is open for research during museum hours. Research in the collections and archives is by appointment; please call 435–678–2238 or email deborahwestfall@utah.gov. For more information about the museum and its collections, visit the museum's website, http://stateparks.utah.gov/parks/edge-of-the-cedars, or see *Edge of the Cedars State Park Museum Collections*, a full-color catalog edited by museum director Teri Paul and published by the museum in 2009. ■

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# The Past Meets the Future at the Utah State University Museum of Anthropology

Bonnie Pitblado, Jon Alfred, Monique Pomerleau, and Holly Andrew
*Utah State University Museum of Anthropology*

*We discuss the founding, growth, and future of the Utah State University (USU) Museum of Anthropology (MOA). In 1963, Dr. Gordon Keller launched what would later become the MOA in the basement of USU's historic Old Main building in an effort to share archaeological collections with students and to facilitate learning outside the classroom. Subsequently, other professors donated or otherwise transferred the fruits of their anthropological labors to the growing museum's holdings, as did members of the Cache Valley community. The museum now houses ethnographic and archaeological collections from around the world, a few of which we highlight in this paper, together with examples of our public programming. We weave into our discussion the stories of two historic USU spaces and their roles in the MOA's evolution: the museum's current home in the south turret of the Old Main building and the USU Horse Barn-cum-Art Barn, which is the soon-to-be renovated new facility for a much-expanded MOA.*

*This article is dedicated to the memory of Dr. Gordon Keller (1919–2010), founder of the USU Anthropology Program and the Utah State University Museum of Anthropology. Dr. Keller's lifelong appreciation for cultural diversity and his desire to share the material expressions of that diversity with others continue to inspire USU anthropologists, museum studies scholars, USU students, and museum visitors.*

The Utah State University (USU) Museum of Anthropology (MOA) occupies 2,074 sq ft space on the second floor of the south turret of USU's Old Main Building (Figure 1), including 1,683 sq ft of exhibit space and a 250 sq ft curation and work room. Nearing its 50th anniversary, the museum has attempted since its inception to fulfill a mission to educate the USU and northern Utah communities about anthropology and about museums themselves.

Administered by USU's Anthropology Program (Department of Sociology, Social Work and Anthropology) and College of Humanities and Social Sciences, the MOA curates global and regional collections ranging from prehistoric stone tools to contemporary ceramics and weavings. The museum's collections consist of transfers, gifts, and a few loans from two principal groups: USU anthropologists and faculty members from related disciplines whose research programs have generated ethnographic or archaeological collections, and members of the broader community wishing to share ethnographic collections gathered over the course of a lifetime and sometimes multiple generations.

The institution is a teaching museum in that it educates not only visitors, but also USU graduate and undergraduate students interested in careers or other futures involving museums. The MOA therefore offers myriad educational opportunities for USU students, including a vibrant docent program, museum studies coursework, internships, paid work experiences, and a 24-credit museum certification program that caters to students from across USU's many disciplines at the graduate and undergraduate levels. USU students, in turn, play a fundamental role in educating our community audience, including more than 6,000 annual in-museum visitors (1,600 of them Cache Valley elementary and middle school kids) and another

 

Figure 1. Looking northeast at USU's Old Main building, with the south turret in the foreground and the iconic "A" bell tower in the background. The second floor of the south turret houses the MOA as of this writing, although as this article discusses, that will soon change. Photo by Holly Andrew, USU MOA, January 7, 2011.
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7,000 visitor-contacts drawn each year through outreach settings such as educational booths at Cache Valley's American West Heritage Center annual spring "Baby Animal Days" festival, regional elementary school literacy nights and cultural celebrations, the annual "Utah Museum Day at the Capitol" in Salt Lake City, and many others.

At this time, the MOA finds itself at an exciting crossroad. The museum has outgrown its space in Old Main and has been formally granted use of one of the university's oldest and most iconic buildings, the 1919 "Art Barn" as its future home. The Art Barn, or "Aggie Barn" as it will be known henceforth, will provide the MOA with more than five times the space it controls today and a vastly more accessible campus location. As a result, the future for public anthropology and museum studies education in northern Utah is bright.

In the pages that follow, we focus on the past, the present, and the future of the MOA and of the storied historic spaces it has occupied and will occupy. Our discussion of the past begins with a short history of Old Main, particularly its south turret, and then segues to highlights of the museum's dynamic history. Our discussion of the present first spotlights three important collections in the museum's holdings as a means to convey the breadth and quality of our physical holdings, and then offers in parallel fashion snapshots of three of the museum's most successful and rewarding programming initiatives of the past decade. We conclude our paper by sharing our vision for the MOA of 2012 and beyond, a vision already moving inexorably toward reality and likely to be tangibly expressed by the time Utah Archaeology subscribers read this paper.

## The Past

The USU MOA today occupies the second floor of the south turret of Old Main, USU's original "college building," the campus's landmark structure for more than a century and the oldest academic building still in use in Utah (Facilities Planning Design and Construction 2002) (Figure 1). Construction of Old Main's south wing, one of three parts of the building, began in 1889, a year after the founding of the "Agricultural College of Utah" (USU's name until 1957). Construction of the south wing ended in 1890. In 1892, USU Trustees received a larger appropriation than expected, and began construction of the central section and north wing, which were completed in 1902. Old Main originally housed, among other entities, all of USU's academic departments, a 1,500-seat auditorium, a gymnasium, and a chapel in the south turret (Figure 2).

From the time of its construction through 1916, USU students were summoned daily by the still-chiming (although now electronic) college bells to attend mandatory 8:00 a.m. religious exercises in the chapel. Initially, USU's first president, New England native and devout Methodist Jeremiah W. Sanborn, influenced the content of the non-denominational meetings. Ultimately leaders of all of Cache Valley's churches as well as USU faculty members convened the services to ensure representation of various faiths. In 1916, the daily meetings morphed into a weekly religious and eventually more secular convocation each Thursday at 10:00 a.m. In 1963, pressure for space put an end to the regular Thursday chapel programming entirely (Parson n.d.).

In addition to serving as USU's chapel, the south turret doubled as a performance hall for USU's College of Fine Arts, which hired new instructors for instrumental and vocal music in 1895 and staged recitals and concerts in the chapel through the turn of the century. USU's first-ever theater production, Galley Slave, also premiered in the chapel in 1895 (Parson n.d.). Other theatrical performances continued through 1904, when such events shifted to Old Main's north wing auditorium. Use of the south turret by early 20th century artists and the later transformation of the space into the USU MOA presaged the contemporary rehabilitating and repurposing of the 1919 Barn as the future home of an expanded MOA. Where go USU artists, it seems, USU anthropologists eventually follow.

Since its completion in 1902, Old Main has undergone many renovations as the USU campus expanded and new buildings provided dedicated space for flourishing programs (Simmonds 1988). At the same time, Old Main's interior underwent regular remodeling to accommodate new units, although the long-term integrity of its exterior led to National Register of Historic Places listing in 1970. One of Old Main's new units was the USU MOA, informally launched in 1963 by the late Dr. Gordon Keller (Figure 3), who had been hired a year earlier as USU's first anthropology professor.

An archaeologist, Dr. Keller conducted fieldwork in southern Utah, amassing a substantial collection of ancestral Puebloan artifacts (see discussion of the Keller Collection below). He viewed these as not only subjects for research, but as vehicles for extending classroom lessons beyond books and lectures. He collected objects, primarily from Bureau of Land Management property in the vicinity of stabilization projects he conducted for the agency, with teaching in mind. These objects were displayed in glass cases lining the halls of the basement of Old Main, then the location of the university's nascent anthropology program. He routinely instructed his students to describe and interpret the objects, an exercise he continued until his retirement in 1987, and one still often a part of USU anthropology course syllabi. Importantly, Dr. Keller's ardent support for the MOA, shared by his beloved wife Dolores (herself a graduate of USU's Social Work program and an anthropology benefactor), continued for a quarter-century after his retirement and until his death on July 24, 2010 at age 91.

In 1981, six years after accepting a USU anthropology professorship, late osteologist

Figure 2. Interior view of the USU chapel, 1895. Photo courtesy, USU Special Collections.

Dr. Carol Loveland (Figure 4) assumed the role of Museum Director. Over the next seven years, she expanded the scope and doubled the number of exhibits, began systematically cataloguing the museum's collections, and involved undergraduate students in all facets of museum work. She also entered into a fertile partnership that continues today between the MOA and USU's Mountain West Center for Regional Studies (MWC), founded in 1985 by USU historian and current USU Vice President for Advancement Dr. Ross Peterson with a grant from the National Endowment for the Humanities (NEH). Modest annual contributions from the MWC's NEH-funded endowment helped Dr. Loveland implement new MOA-based learning opportunities for USU students. As clearly as Gordon Keller established a tradition of conveying anthropological knowledge through displays, Carol Loveland must be credited with not just furthering hands-on anthropological learning at USU, but also with sparking what later became a full-blown museum studies program.

Dr. Loveland opened the museum to the public in 1984, and then successfully campaigned to move the growing number of exhibits from the Old Main basement to the museum's present second-floor, south turret location. The MOA thus moved into USU's former chapel and enjoyed a formal founding in 1992, only to close from 1995 to 1997 during the final phase of renovations triggered by a 1983 fire in Old Main's north wing. The renovations, although time-consuming, yielded a larger MOA exhibit gallery, a small but dedicated curation/exhibit preparation room, protective exhibit lighting, and temperature and humidity controls to improve collections care. Sadly, Dr. Loveland did not live to attend the

April 1997 rededication of the museum, having passed away on December 26, 1995. However, she would surely have appreciated the 16 newly installed exhibits that greeted visitors to the new MOA, which represented the shared labor of 50 undergraduate students and their anthropology faculty advisors.

After the renovation, the museum directorship rotated among USU anthropology faculty members, including archaeologist Dr. Steven Simms in 1998 and cultural anthropologist Dr. David Lancy in 2000. Both professors actively perpetuated Dr. Loveland's commitment to incorporating undergraduate students into exhibit production, curation, and other elements of museum operations. In 2002, archaeologist Dr. Bonnie Pitblado (lead author of this paper) assumed her current position as USU MOA director. From that point through today, she has worked to build upon the myriad accomplishments and student-focused philosophy of her predecessors, developing new opportunities for student learning, increasing the accessibility of the museum to the USU and northern Utah communities, enhancing community awareness of this unique Cache Valley resource and diversifying its constituency, implementing improvements to museum infrastructure and collections management, and charting a future for the MOA that expands its capacity significantly.

Figure 3. The late Dr. Gordon Keller (1919 – 2010), Founder of the USU Museum of Anthropology, just prior to his 1962 appointment to the USU faculty. Photo courtesy, Dolores and Gordon Keller.

## The Present

### Museum of Anthropology Collections

The USU MOA's collections constitute the foundation for all of the museum's educational and outreach functions. To improve management of these important resources, the MOA recently completed digitization of most museum objects and their associated paper and photographic records, sponsored by The Institute of Museum and Library Services (IMLS). The museum has accessioned dozens of collections that include more than 5,700 objects, 200 photographs (many more of these are in progress), and 80 sets of documentary records. The museum's physical holdings include ethnographic and archaeological items representing the following regions in particular: the Intermountain and Southwestern U.S. (archaeological and ethnographic material); Peru (archaeological and ethnographic); the Middle East (archaeological and ethnographic); East and South Africa (ethnographic); and Polynesia (ethnographic).

Summarized by discipline, the museum's archaeological collections include rich and diverse assemblages of chipped and ground stone tools, ceramics (including jars, bowls, oil lamps, and ubiquitous sherds) and samples of ancient currencies from around the world. The museum exhibits about 4% of its prehistoric artifacts at any given time. The MOA's ethnographic collections represent equally rich and diverse holdings, with particularly strong assemblages of baskets (fish traps, cooking baskets, and cradle baskets), masks from several world regions, clothing ranging

Figure 4. Late USU Anthropologist and Museum Director Dr. Carol Loveland, ca. 1980. Photo courtesy, USU Special Collections.

from Shoshone beaded gloves and moccasins to a Polynesian child's tapa-cloth dress, and other textiles, notably weavings from the Middle East, Peru, and Polynesia. The museum currently displays 19% of its ethnographic holdings. To convey a more concrete sense for MOA holdings, we highlight three collections in more detail.

### *The Keller Collection*

The Keller Collection consists of objects that helped launch the MOA in 1963. At 2,615 total artifacts, the Keller Collection remains the single largest MOA collection. This highly diverse assemblage represents Southwestern Ancestral Puebloan cultural material ranging chronologically from Basketmaker III through

Pueblo II time. Dr. Keller collected the materials at a variety of locales in San Juan County between 1963 and 1965, while working with the Bureau of Land Management (BLM) stabilizing Ancestral Puebloan structures. The collection, which is still owned by the BLM, features well-preserved Southwestern baskets exemplifying various manufacturing techniques, bow and arrow remnants, yucca-fiber sandals and cordage, organic and botanical specimens offering clues to Ancestral Puebloan subsistence and farming practices, and pottery types capturing the diversity of early ceramic manufacture in southeastern Utah.

Although amassed primarily as a teaching collection, and thus often not representing systematic excavations so much as limited trenches and surface collections, today the Keller Collection nonetheless holds significant untapped research potential and continued educational value. USU professors have used the Keller materials to develop ceramic, lithic and botanical type collections for use in the classroom and USU archaeology laboratory. Similarly, USU Museum Studies students routinely use the Keller Collection to learn cataloging techniques, collections management best practices, and how to incorporate museum collections into original research projects. Finally, objects from the Keller Collection grace a number of the MOA's most popular archaeological and ethnographic exhibits.

In addition to the Keller artifacts, the USU MOA archives an extensive compilation of Dr. Keller's field photographs. Over 400 images document the architectural stabilization work he conducted at ruins and cliff dwellings in Grand Gulch, Squaw Point, Beef Basin and Allen Canyon locales in San Juan County. Because note-taking in the early 1960s often recorded less detail than archaeologists today typically gather, the MOA is currently conceptualizing a research project for student and non-student researchers that would involve matching the 400 photographs with Keller Collection objects through extant notes, interviews with members of the Keller family, and retracing Dr. Keller's 1960s footsteps.

### *The Dathan Collection*

Donated to the USU Museum of Anthropology in 1998, the Dathan Collection is the museum's third largest collection, consisting of 258 privately acquired ethnographic and archaeological objects. This total includes more than 100 Native American baskets from California, principally the northern and central coastal regions, but also from southern California, the Great Basin, Alaska, and Canada. The Dathan family collected most of the baskets in the past 60 years, although about one-quarter of them date to the early 20th century. All of the baskets are extremely well preserved and come in a variety of forms: burden, cooking, and gathering baskets; winnowing trays; water jugs; hats; and cradle baskets (Figure 5). Many MOA visitors find a series of Western Apache watertight baskets sealed with pine pitch and red ochre particularly compelling. In addition to Native American basketry, the Dathan collection features a diverse assortment of food grinding implements such as milling slabs, portable milling stone bowls, manos, pestles, worked bone and wooden tools from the Northwest coast, and an elegantly designed carved wooden mask inlaid with shell, also from the Northwest coast.

Museum staff, outside researchers, and students have at this point researched less than 15 percent of the baskets in the Dathan Collection, and in most cases only cursorily. Thus, the Dathan collection offers significant research value that museum staffers hope to see realized in the future. Currently, the MOA displays 30 of the objects in three exhibits that explore indigenous American lifeways and the form, functions, and manufacturing processes of some of the oldest basketry traditions in the American West.

### *The Willardson Collection*

Dr. Lyman Willardson, a USU professor from 1974 to 2005, traveled extensively for

his work as a civil engineer. In his meticulous journals and letters home, Dr. Willardson detailed his fascination with the diverse cultures he encountered in Africa, South America, and the Middle East. During his travels, many undertaken with his wife Vivian, Dr. Willardson collected a wide range of ethnographic and archaeological objects, 107 of which his daughter Laura Huffman donated to the museum in 2006 in her father's memory. The collection is wide-ranging with tremendous research potential for many object types, but perhaps most particularly Middle Eastern carpets and textiles. In the summer of 2009, USU students incorporated several of the Willardson textiles into a MOA exhibit called Fibers of Inheritance, which compares weaving traditions from the Middle East, Polynesia and Peru. Figure 6, a Namdha carpet and part of the Willardson collection, reveals a floor covering style that originated in Central Asia and dispersed to Kashmir through trade. Namdha carpets are made of unspun wool (usually 50–80%, with durability increasing with the wool percentage), or wool and cotton pressed and then felted. Decorative embroidery adds strength to Namdha material, which is valued for its low cost and colorful patterns.

## Museum of Anthropology Programming

In each of our collections' highlights mentioned above, we referenced the research and interpretive value of the objects in those assemblages. We also mentioned previously that as a teaching museum, USU students enjoy opportunities to participate in every element of museum administration, object care, interpretation, and outreach. In the sections that follow, we mention three of the most notable programming contributions USU students have made to the MOA in recent years, while by no means intending to minimize the innumerable other invaluable contributions that have been made.

### *Exhibit Production*

The MOA hosts about two dozen exhibits at any given time, each of which has been carefully researched, designed, and executed by teams of USU students mentored by museum staff and anthropology faculty members representing the relevant anthropological subdiscipline(s). The breadth of exhibits introduces museum visitors to all four anthropological subfields, and teams work hard to showcase cultures from the regions of the world best represented in MOA collections. Depending on the scope of the exhibit, student teams range from two to (more typically) five students, and they nearly always include a mix of anthropology and art majors, as well as students recruited from other disciplines pertinent to the exhibit subject (e.g., music, biology, or engineering). Students work on exhibits over the course of a semester or a year, depending again on the scope of the undertaking, but they always organize and execute exhibits from definition of a theme through a well-staged grand opening event. Current MOA exhibits include, among others, AtlAtls, Nets and Piñon Nuts: Gathering Food in the Prehistoric Great Basin; Message on a Body: Body Modification through Time and across Space; Ötzi the Ice Man; Petra Past and Present: City of Discovery and Trade; and Ritual and Religion in Dogon Culture.

As the MOA has become increasingly well known in the region, our exhibits and reports thereof in the news media have led directly to important new collection acquisitions. These include the Willardson Collection discussed above and the recent, particularly noteworthy gift of a ceramic vessel. In 2005, USU MOA students interpreted the life and artwork of groundbreaking Puebloan potter Maria Martinez. The exhibit resulted in local press coverage read by Logan resident Genial Loveless. The story prompted Ms. Loveless to recall a ceramic vessel she had kept for years in a paper bag in her study as a favor to her friend, Logan school teacher Hattie Morrell. Ms. Morrell had originally owned the piece, but as she grew older and ailed, she asked Ms. Loveless to help her find an

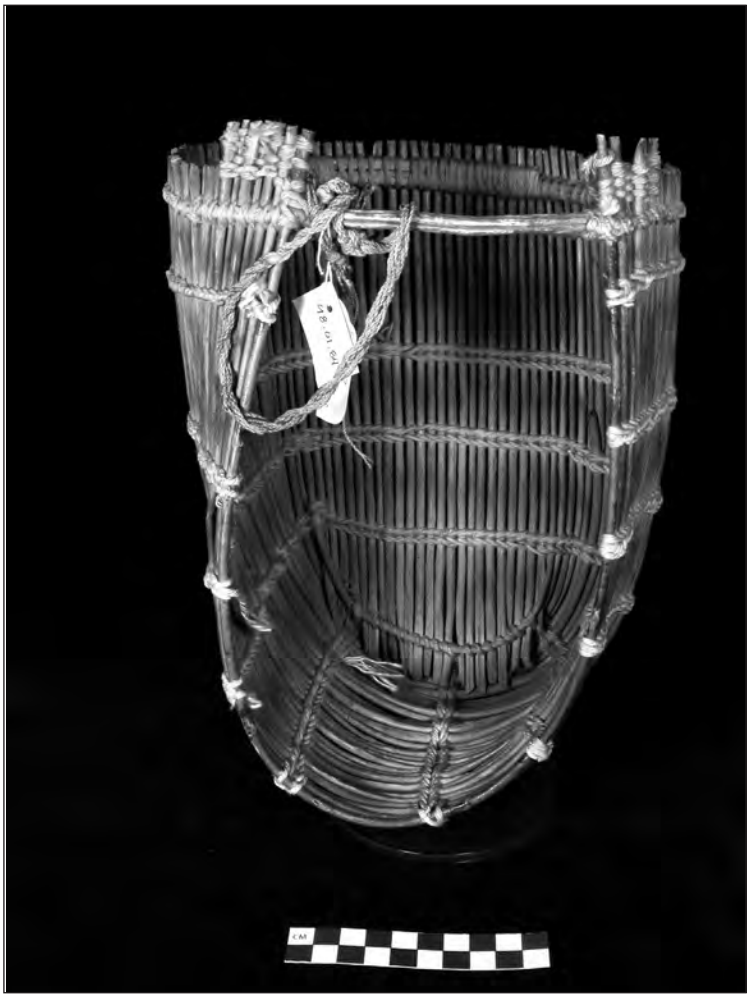

Figure 5. Pomo (northern California) cradle basket. Traditionally, the Pomo were hunter-gatherers and fishermen, and a willow rod and braided string cradle basket like this one helped Pomo mothers move about with their babies secured to their bodies. The oak hoop helped protect the baby's head while he or she occupied the cradle. Photo courtesy, Dathan Collection, USU Museum of Anthropology, September 20, 2010.

appropriate home for it. After visiting the student-produced exhibit and examining the vessel with information gleaned from the exhibit and news coverage in mind, Ms. Loveless concluded that she could finally fulfill her friend's request. Ms. Loveless generously arranged to donate the vessel – an original Martinez piece (Figure 7) – to the MOA, which has since incorporated it into the still-popular exhibit. The vessel bears a "Maria and Santana" signature that dates it to ca. 1950. Recognized by then as a world-renowned artist, Maria frequently threw pots that others, including her daughter-in-law Santana, painted, signed and sold at significantly higher prices than a lesser-known artist's solo-produced vessel would have commanded. The MOA vessel's black-on-black geometric forms represent a unique blending of traditional and abstract Puebloan motifs, which

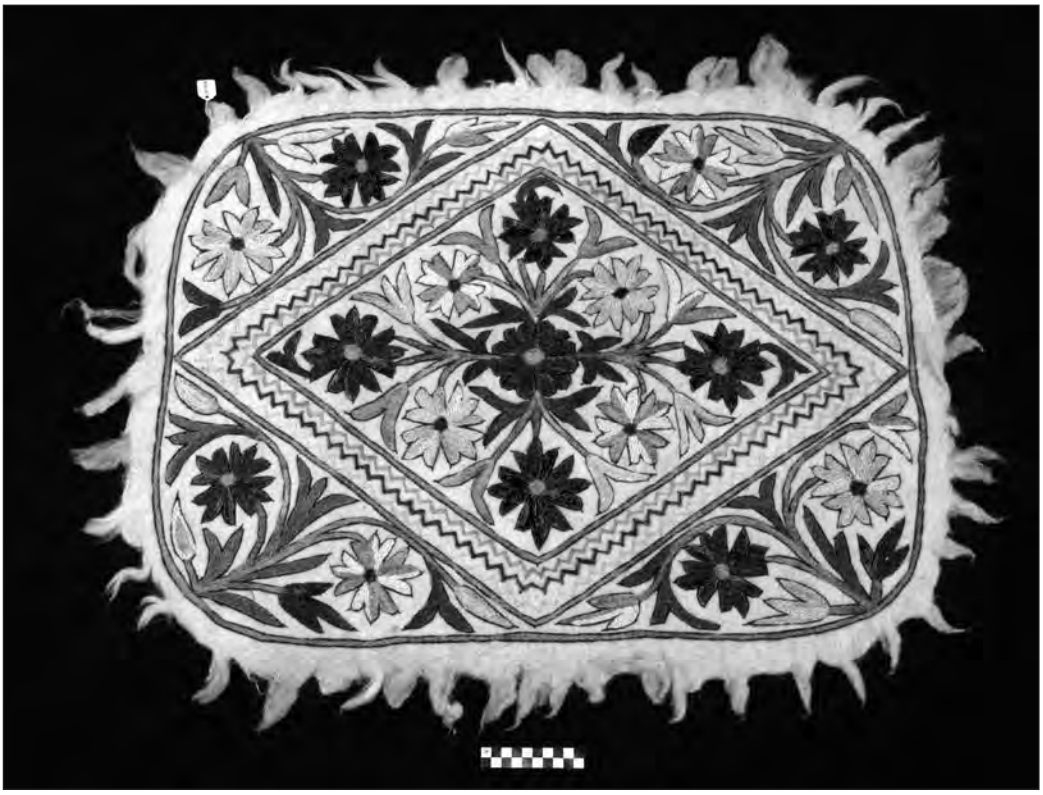

Figure 6. Namdha Carpet, Willardson Collection, donated to the MOA in 2010. People of the Kashmir region value carpets like these for their economical prices and colorful designs, although their sometimes low wool content can make them less durable than other rug styles. Photo courtesy, Willardson Collection, USU Museum of Anthropology, January 14, 2011.

characterized much of Santana's work, but its form is classic Maria (e.g. Spivey 2003). This object is significant from both a research and interpretive standpoint and illustrates nicely the close relationship that has developed between the MOA and the surrounding community.

### *Saturdays at the Museum of Anthropology*

In the summer of 2007, the MOA launched its most successful outreach program to date: Saturdays at the Museum of Anthropology, featuring different programs and activities every weekend of the year. Previously, limited funding permitted the MOA to open only during regular USU business hours, when it was impossible to find public parking near Old Main. Moreover, adults are at work and kids are in school during these times, making outreach difficult. Saturdays addresses this problem, with ample free parking available on site on weekends. Supported for the past four years by Utah's Office of Museum Services, the Utah Humanities Council, and IMLS, Saturdays student staffers brainstorm weekly themes (always with an anthropological "twist"), plan and prepare presentations and activities targeting visitors of all ages, arrange for visiting scholars, ensure adequate marketing, and staff the museum each Saturday. They encourage visitors (who in the early years of the program averaged 15–30 per Saturday but now often exceed 200) to engage in organized activities or to simply roam the museum and enjoy its many exhibits (Figure 8). Saturdays

Figure 7. Black-on-black "Maria and Santana" ceramic jar, ca. 1950. Photo courtesy, Loveless gift, USU Museum of Anthropology, September 20, 2011.

themes have ranged from "Mythology and Magic: An Anthropological View of the World of Harry Potter," to "Tribal Archaeology: A Lecture by T.J. Ferguson," to "Obsidian and Human Behavior with Richard Hughes." These are just a few among over 100 other themes that have been repeated only in the case of popular demand (e.g. "Medieval Madness").

### *Bilingual Audio Programming Initiative*

Like many communities, Cache Valley is experiencing a demographic shift that includes a rapidly increasing Latino population. Because the MOA aims to serve all of our constituents, we have responded to these changes by trying to create programming tailored to Spanish speakers. We began in the summer of 2008 with an internship program that proved so successful that we have permanently implemented it. Interns represent high school (2008) or USU (2009 – present) students who were raised as bilingual speakers of Spanish and English. The students work in teams to first understand the essence of an exhibit, then write scripts in both languages that capture that essence, and finally record the scripts in a USU sound studio. Museum staffers load the scripts onto audio wands programmed to correspond to the exhibits for which we provide audio programming (eventually this will be all exhibits; as of this writing, audio programming is included in about 50% of the exhibits). The interns also host two Saturdays at the Museum of Anthropology events per year in Spanish. Visitation figures for these Saturdays have topped 250 – among our highest numbers to date – and many new walk-in MOA visitors enjoy the


Figure 8. Young (and older) visitors examine an exhibit on ancient Egyptian mummification at a recent Saturdays at the Museum of Anthropology event. The background shows the student-produced Maria Martinez exhibit discussed above and a table bearing supplies for that particular Saturday's Maria-related children's activity. Photo by Holly Andrew, USU MOA, September 15, 2007.

opportunity to listen to a personalized exhibit interpretation in the language of their choice.

## The Future

### Expansion on the Horizon

As occurred in the late 1980s, when the Old Main basement could no longer accommodate the many exhibits accumulating there (compelling the 1992 move to Old Main's former chapel), the MOA has again outgrown its space. Exhibits spill from the turret into the second floor hallway of Old Main; the staff of two dozen or so student docents, employees, and certificate seekers labor at tables interspersed among the gallery exhibits; the curation room can accommodate no new collections, forcing museum staff to turn away often-valuable offers of donated collections; and Saturdays visitation numbers are so routinely large that the MOA has occasionally not only run out of space for visitors, but guests have inadvertently broken glass cases – clearly a danger to visitors and objects alike.

As the MOA expanded in the 2000s, the iconic USU Art Barn deteriorated. Condemned as a fire hazard in 2008, the Barn nonetheless still embodies USU's and Cache Valley's agricultural heritage in a way no other campus building does or could. Its historic architecture, ninety years of human stories, and parking-rich location at the heart of campus make it the perfect structure to house a larger MOA. And so, upon learning of the Barn's imperiled status, Dr. Pitblado approached USU's leadership to request that the building be rehabilitated to serve as the new site for the MOA as well as a cozy USU welcome center. USU president Stan Albrecht agreed, anthropology benefactors Richard L. and Joyce Shipley made a significant financial gift to the MOA in December 2008 to launch the effort, and Dr. Pitblado developed a strategic plan charting Aggie Barn renovation, culminating in the MOA's move in December 2012. We conclude this paper by sharing highlights of our vision for the new Aggie Barn, but first we offer a glimpse of its 90 years of service to horses, artists, and seemingly everyone in-between.

### The Aggie Barn: Back to the Future

In 1919, as part of a flurry of construction after World War I, USU built a new Horse Barn to replace a decrepit 1893 version, a move that engendered a spirited debate in the USU student newspaper between those who thought the 19th century barn was a smelly eyesore and others who wanted to preserve one of USU's oldest structures. The "eyesore" view prevailed, and in May 1919 USU demolished the 1893 Horse Barn. Logan architect W. Lorenzo Skidmore designed the new facility to reflect then-contemporary trends in barn construction, such as poured concrete floors and walls to facilitate cleaning and to decrease the building's susceptibility to fire (Figure 9) (Skidmore 1919). Alston & Higgins of Salt Lake City built the new Horse Barn, and in October 1919 it joined a robust agricultural complex that included similarly styled cattle and sheep barns, as well as a piggery, poultry plant, stock judging pavilion, grain silo, and other structures befitting Utah's premier agricultural institution of higher learning.

World War II spurred another growth spurt at USU, as well as a desire to relocate the centrally located barns off-campus to make room for modern buildings and to "increase the beauty of the landscape" (author unknown, Utah State Alumnus, September 1953). USU thus bid adieu to its entire agricultural complex save the Horse Barn, which remained rooted in place due to its concrete floors and walls, but stood empty from 1955–1959. At 9:55 p.m. on August 13, 1959, the Barn gained a new lease on life in dramatic fashion when a visiting ceramicist and USU artist Harrison Groutage overheated a campus kiln and blew it and the structure housing it to bits (author unknown, University Bulletin 1959). Homeless, a group of fine arts professors successfully lobbied to convert the Horse Barn into an Art Barn (Figure 10) (Tippets 1959). Later that year a group of potters moved in, followed by sculptors, painters, and graphic artists. In 1962,


Figure 9. Horse Barn, ca. 1948). The features shown in this image of the Barn's south face reflect the structure's original (1919) appearance. Changes to the Barn's windows and additions to the north and east sides post-date this photograph. Photo courtesy, USU Special Collections.

the term "Art Barn" replaced "Horse Barn" at USU, and the facility quickly gained prominence for housing the largest ceramics program in the Western U.S. (Alfred 2010).

In October 1967, the National Endowment for the Humanities and Arts director, Barnaby C. Keeney, offered the dedicatory speech for USU's new Fine Arts Center, and in 1981 a visual arts wing opened. The Barn's artists emigrated to the new facility, much as musicians and actors had previously abandoned Old Main's south chapel in favor of a larger space. The artist-free Barn then began to host a disparate succession of occupants, from Veterinary Science virologists (for a short time, Aggies knew the Barn as the "Virology Barn") to psychologists, speech professors, and philosophers. In the early 1970s, shed-like additions appear in photographs on the north and east sides of the Barn, together with exterior fire escapes and metal staircases (Oliver Conservation Group 2009). These changes, together with the 1960's installation of even more upper-story windows to better illuminate the space for its resident artists, yielded a Barn that looks rather different than the crisply lined 1919 original (Figure 11). They also impacted the Barn's exterior sufficiently that it is currently ineligible for listing on the National Register of Historic Places (NRHP); however, the reversible nature of most of the changes suggests that a careful restoration could restore NRHP eligibility (Hansen 2010).

Figure 10. USU Art Barn, ca. 1962. Note that new square windows have been installed below the original diamond-shaped windows and the traditional sliding barn doors have been replaced with a standard door. Photo courtesy, USU Special Collections.

**The Aggie Barn: USU Museum of Anthropology, December 2012 –**

Designed in consultation with MOA staff and Anthropology Program faculty, ajc architects of Salt Lake City drafted conceptual images (Figures 12, 13), floor plans, and a construction budget for the Barn renovation and expansion in the summer of 2009. The plans call for restoration of the Barn to its 1919 exterior and for an addition to the east consisting of a "silo" and a learning center. The silo houses an elevator and wrap-around stairs, to ensure accessibility to the entire complex for all visitors. The learning center includes a first-floor children's center with dedicated exhibits, hands-on activities, and easy access to the outdoors for the active set, as well as a second-floor library/conference room intended to provide a comfortable space for guest speakers and adult visitors seeking a contemplative space. The silo-learning center complex connects to the Barn in only one place (on the north side), via a glass bridge. We chose glass and a "soft attachment" to downplay the appearance of any connection and to thereby highlight the Barn's historicity. In December 2010, the National Endowment for the Humanities awarded the USU MOA a $500,000 Challenge Grant to help realize its "Barn Raising" initiative.

To return the Barn to its 1919 exterior and, we hope, to NRHP eligibility, we will consult W.L. Skidmore's original architectural blueprints, housed in USU's Special Collections. The interior, however, will be customized to fit MOA gallery, storage, and work space needs. The first floor, with its heavy-duty concrete, provides 1,630 sq ft of curation space, all of which will be fitted with compact storage units to maximize capacity. An additional 315 sq ft on the north end of the Barn will serve as an open (two-story) visitor center, where prospective students and others can

Figure 11. North side of the Barn, Summer 2009. Changes to the original diamond-shaped windows, additions for storage space, exterior fire escapes, and motorcycle parking detract from the classic lines of the 1919 Horse Barn. Photo courtesy, Mary Kay Gabriel, USU MOA.

be directed to their campus destinations – and to the MOA, increasing day-to-day visitation. The second floor hosts a large exhibit preparation and work room with a glass front that permits visitors to glimpse behind-the-scenes museum tasks in progress; a copy room; storage space for supplies; and three offices, including one for visiting scholar use. The Barn's gambrel-roofed third floor constitutes the main exhibit hall, with cultural anthropology, biological anthropology, and archaeology galleries. Exhibits will permeate other spaces as well. For example, the silo's walls offer a canvas for interpreting cultural milestones in USU's past as a person climbs the stairs; we will also adorn the glass bridge with linear time lines on the second and third floors depicting key events in human evolutionary and Western U.S. prehistory, respectively.

The new MOA will at once solve the space crunch caused by 50 years of continuous growth in collections, exhibits, and programming initiatives, while also honoring through various vehicles, program and museum founder Gordon Keller (for whom the new museum library will be named), director and "foremother" of USU museum studies Carol Loveland, and all of the other talented USU anthropologists who have worked tirelessly to improve and expand USU Anthropology and public outreach. The MOA's ability to fulfill its educational mission on both the anthropological and museum studies fronts will improve with the greater access all constituents have to the museum, and programming initiatives can continue to blossom without fear of bursting the walls of Old Main's long-ago chapel. The MOA welcomes visitors free of charge from 8:00 a.m. to 5:00 p.m. on Mondays


Figure 12. Conceptual view of the north side of the Aggie Barn and east-side additions. The silo houses an elevator and stairs; the addition behind the silo is a two-story learning center. Image courtesy, ajc architects, Salt Lake City.


Figure 13. Conceptual view of the south side of the Aggie Barn and east-side learning center. Image courtesy, ajc architects, Salt Lake City.

through Fridays, and from 10:00 a.m. to 4:00 p.m. on Saturdays. We also welcome researchers interested in working with our archaeological or ethnographic collections. More information about our collections, exhibits, tours, and Barn Raising initiative can be found at our web site: http://anthromuseum.usu.edu. ■

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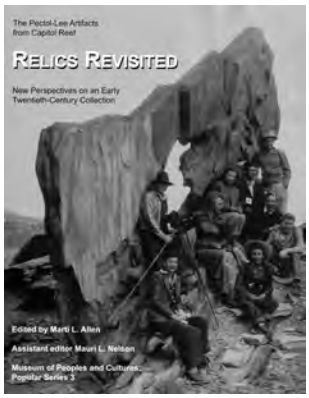
## Book Review




*"Relics Revisited: New Perspectives on an Early Twentieth-Century Collection". Edited by Marti L. Allen Museum of Peoples and Cultures: Popular Series 3, Brigham Young University, Provo. 2002. xxvii + 372 pages, illustrations, photographs, and maps.*

*Reviewed by Deborah A. Westfall, Curator of Collections, Edge of the Cedars State Park Museum, Blanding, Utah, 84511.*

This book is an outgrowth of Brigham Young University's Museum of Peoples and Cultures Pectol Project, which created a museum exhibition and accompanying catalogue of the Pectol-Lee artifact collection from the area of what is now Capitol Reef National Park in Wayne County, Utah. More than a standard museum catalogue with object photographs and descriptions, this book demonstrates the collaboration between professionals and students in BYU's "teaching museum." Relics Revisited presents the application of museum theory, methods, and ethics in an educational setting, incorporates substantial archaeological and historical contexts for the Pectol-Lee collection, and provides detailed descriptions of the individual artifacts in the collection.

The Pectol-Lee collection was originally assembled during the years 1910–1947 by Ephraim Portman Pectol and Charles William Lee, who were then living in the area of Torrey, which is situated directly southwest of what is now Capitol Reef National Park. Ephraim Pectol ran a grocery store in Torrey, and Charles Lee was involved in sheep and cattle ranching and farming in the area. Pectol was very active in ecclesiastical, civic, and political positions in Wayne County, and he was a persistent and enthusiastic promoter of the region's scenic, geological, and archaeological resources. Ultimately, his dream for a "Wayne Wonderland" was realized with the creation of Capitol Reef National Monument in 1937 (Capitol Reef became a National Park in 1971).

In addition to his love for the scenic qualities of Wayne County, Pectol was also fascinated with the relics left behind by the prehistoric inhabitants of south-central Utah. Over the years, he collected artifacts from archaeological sites in the area surrounding Torrey, and set up a small "museum" at the family store. Charles Lee also assembled a collection of artifacts and exhibited them in the basement of his home. Pectol hoped that eventually the artifacts collected by Lee and himself would be placed into a proper museum or visitor center within Capitol Reef National Monument. Other than a few notes, lists, and letters by Pectol, however, neither man kept detailed records about where they collected artifacts; hence the Pectol-Lee artifact collection consists largely of objects with no known provenience.

The book opens with a series of short, introductory chapters by the editor, Marti L. Allen, which describe the project personnel and the "teaching museum" concept, and discuss the ethics of studying unprovenienced collections. Allen reviews the era of undisciplined artifact collecting in the late nineteenth and early twentieth centuries in southern Utah, when rural people, university personnel, and museums focused primarily on filling museum shelves with antiquities. There was little or no documentation of artifact locations, neither in terms of specific geographical location nor in terms of stratigraphic archaeological context. Therein lay the challenge of the Pectol Project, in Marti Allen's words: "To recapture as much information as possible from these contextually disassociated objects." This sets the book's premise, and it achieves this objective in part through a well-organized catalogue section and detailed treatments of certain unique and unusual artifacts.

The subsequent chapters follow the theme of the exhibition: In Search of Relics: The Pectol-Lee Collection of Artifacts from Capitol Reef.

"In Search of the Ancient Utahns: The Prehistory of the Fremont River Drainage, A.D. 1–1800," by Richard K. Talbot, presents an overview of the known prehistory of the Capitol Reef area, from approximately 10,000 B.C. to A.D. 1800, and chronicles the occupations of the Archaic hunter-gatherers, Fremont agriculturalists, and ancestral Late Prehistoric Southern Paiute and Ute groups. Talbot begins with a description of early archaeological work in the region by Noel Morss of the Carnegie Museum, who first gave the name "Fremont" to the prehistoric people, their material culture remains, and their architecture. Plentiful endnotes and references provide the more serious scholar with directions to pursue reports of other archaeological investigations for more complete information about regional prehistory. Talbot's chapter provides the reader with a cultural-historical framework for the Pectol-Lee collection and the author notes that although the contextual information for the collection is poor, many of the artifacts are typologically consistent with known Fremont, Anasazi, and Late Prehistoric assemblages.

"In Search of Relics: The History of the Pectol-Lee Collection from Wayne County," by Shane A. Baker, traces the complicated history of the Pectol-Lee artifacts, beginning when the artifacts were moved from the small Torrey "museums" to the Temple Square Museum in Salt Lake City and then back to Capitol Reef National Park. Baker discusses federal government intervention into artifact collections that had been taken from public lands in violation of the Antiquities Act of 1906; the repatriation of certain objects in compliance with the Native American Graves and Repatriation Act (NAGPRA) of 1990; and the current ownership of the collection by the E.P. and Dorothy H. Pectol Family Organization. Baker's thorough methods are amply documented through well-cited letters, memos, published articles, and scholarly works.

"In Search of Function: The Pectol-Lee Cradle Board" by Marti L. Allen and Michelle R. Munsey presents an extremely detailed description and thorough analysis of a singular object: a cradleboard containing a swaddled clay figurine. This object is approximately one-half the size of an actual infant and cradleboard. It had been previously reported by Julian Steward (1936), and described in more detail by Noel Morss (1954); however, the Allen and Munsey article represents the most complete documentation of the cradleboard to date. The materials, construction, and assembly of the cradleboard and its accompanying swaddled infant figurine are described in a series of painstaking steps and documented through X-ray photography, line drawings, and color photographs. In addition, the authors provide examples of comparative research on ethnographic examples of Southwest "babes-in-cradles" and infant dolls in cradleboards, and they describe the roles these objects play in different cultural traditions.

"In Search of Meaning: The Pectol-Lee Deer Headdress," also by Marti L. Allen and Michelle R. Munsey, presents a similarly detailed examination

of another singular artifact: a partial headdress made from the flayed facial hide, ear, and antler of a deer. As with the cradleboard described above, the authors provide a comprehensive review of deer headdresses represented in the archaeological and ethnographic record, and offer interpretations relating to spirituality and the role of costume wearing in prehistory.

"In Search of Insights: Basketry in the Pectol-Lee Collection," by Leslie-lynne Sinkey, describes a select sample of baskets in the collection, with a focus on unusual examples of basketry construction (including the cradleboard described above). Sinkey concludes that two examples of basketry construction (close wrapped twined and rod in bundle), and decorated basketry bowls and trays (previously recognized as an Anasazi technique), represent newly-recognized basketry techniques within the Fremont basketry repertoire.

The book concludes with a series of color plates that complement the chapters on the cradleboard, deer headdress, and basketry. The final section is the catalogue proper. The catalogue is well organized, with objects grouped by raw material and functional class. Each object is described according to a consistent, standardized format that includes dimensions and condition reports, with further comments occasionally added. Black-and-white photographs of each object accompany the object descriptions. A total of 219 objects are described; presumably, this represents the entire Pectol-Lee Collection, minus three rawhide shields repatriated in accord with the provisions of the Native American Graves Protection and Repatriation Act.

In the Forward (p. xvii), Allen states the In Search of Relics exhibition "Targets a general audience . . . indeed, all audiences who seek introductory information about Utah's native cultures. The catalogue itself provides more in-depth content and seeks to serve students of anthropology, school teachers, and researchers. The catalog entries will facilitate studies by regional archaeologists who have long wanted to see the Pectol-Lee collection published."

How well does this book accomplish these goals? Talbot's background chapter provides a good overview of, and introduction to, regional prehistory and the cultural-historical context for the collection. Baker's chapter chronicles a researcher's journey through various archives in a quest to determine provenance in both the archaeological sense (artifact provenience) and in the archives sense (records and documents authenticating the history of an object's ownership). The catalog entries, as noted above, are well organized, making it easy to locate specific information; however, more in-depth information, such as comparison with known and well-documented similar artifacts, is provided for only a few entries. Clay figurines, burden straps, a wooden flute, snares, fish hooks, and several wooden objects are presented with only brief descriptions. These contrast with the detailed attention given to the unique and unusual objects (e.g., the cradleboard, deer headdress, and painted basketry). Had the more prosaic, "plain" objects received more consistent and thorough object analysis and comparison with other known Fremont and Anasazi collections from well-documented sites, more complete knowledge might have been obtained about the Fremont and Anasazi artifacts in the Pectol-Lee collection.

Early in the book, Allen and Nelson remark:

> The Pectol-Lee collection includes some of the most fascinating artifacts ever recovered in Utah, such as a deer headdress from a late prehistoric hunting costume…and a one-of-a-kind cradle board nestling a remarkable Fremont figurine. The famous hide shields were unavailable to the project for study due to a desire on the part of Capitol Reef National Park to respect the wishes of native groups pursuant to NAGPRA [Introductory Remarks, p. xxiv].

Subsequently, Baker quotes from Ephraim Pectol:

> We built a bonfire in front of the cave, and at ten o'clock we unearthed three of the most wonderful

> shields ever seen by man. For the space of two or three minutes, no one seemed to breathe as we were so astonished [In Search of Relics, p. 21].

What are these shields and where are they now? As presented in this book, the Pectol-Lee Collection consists of 219 objects, although the shields are not included in the catalogue. Utah archaeologists and museum curators are probably well acquainted with these shields, but these brief descriptions may leave the average reader mystified. Although the shields may not have been available for study, it would have been appropriate to include a brief description of them in this book, since they are an integral component of the Pectol-Lee Collection, and reference could have been made to previous studies that are in the public domain (Morss 1931; Kreutzer 1994). For the record, these well-preserved, painted hide shields constituted the only objects legally recognized as having come from public lands, and therefore the property of Capitol Reef National Park. They were also recognized as sacred objects under the provisions of the Native American Graves and Repatriation Act, and were repatriated to the Navajo Tribe in 2005. They are currently stored at the Tribal Museum in Window Rock, Arizona. The repatriation process has been related by Robert S. McPherson and John Fahey in "Seeing is Believing: The odyssey of the Pectol Shields" in the Utah Historical Quarterly (2008). In the same volume, Lee Kreutzer (2008) offers an archaeologist's perspective into issues surrounding scientific analysis and oral tradition in the NAGPRA process.

This book raises several ethical issues. Allen provides a brief discussion on the ethics of studying unprovenienced collections. Museum and curator ethics deal largely with the overall well-being and scope of a collection, collections acquisition and disposal, preservation and access, interpretation and exhibition, and research and publication (American Association of Museums 1983). Of these, the issues of preservation and access, and interpretation are germane to this particular collection. The Pectol-Lee Collection has been on public exhibit at a number of venues throughout its history, but is currently in private ownership (excepting the three hide shields). It is to be hoped that the long-term preservation of the collection can be ensured, and that researchers will be able to access the objects for study.

As presented in this book, the interpretation of the collection strives for accuracy in description, but the interpretation is weakened by lapses in scientific objectivity. For example, the chapter on basketry by Sinkey focuses on a number of basketry pieces that appear to have been selected for their unusual features. A more scientific approach would have been to present the basketry assemblage in its entirety, so that typical specimens could be compared to other known archaeological examples for a more complete context of Fremont and Anasazi basketry.

In summary, I would recommend this book to scholars and museum curators of Fremont and Anasazi archaeology for the descriptive and comparative value of the Pectol-Lee Collection artifacts. Further readings in the subsequent history of the Pectol Shields can yield valuable insights into the ethics of collecting, museum curation, and NAGPRA repatriation. ■

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