Median Village

Background Information

The Fremont

Throughout central Utah, and into very eastern Nevada and western Colorado, archaeologists have uncovered the remnants of an archeological culture they call the Fremont, named for the Fremont River in Utah.

The Fremont differed in several ways from their more famous contemporaries in the 11th to 14th centuries, the Ancestral Puebloan peoples who built Mesa Verde and Chaco Canyon. Four distinct artifacts set them apart: very unique "one rod and bundle" basketry construction, mocassins constructed from the hock of a deer or sheep leg, trapezoidal shaped figures found as clay figurines and in rock art, and the unique materials used to make their gray, coiled pottery.

Unlike native tribes before and after them, the Fremont were primarily sedentary. They built villages of pit houses with adobe structures to store food. They collected wild foods and hunted game, but also cultivated corn, beans, and squash using irrigation techniques. The presence of obsidian, turquoise, and shells show that the Fremont traded with distant villages.

- The prehistoric societies of the western Colorado Plateau and the eastern Great Basin can be characterized by variation and diversity; they are neither readily defined nor easily encapsulated within a single description.

- Some people were primarily settled farmers, growing corn, beans, and squash in small plots along streams at the base of mountain ranges; some were nomads, collecting wild plants and animals to support themselves; still others would shift between these lifestyles.

- In some areas the population was relatively dense; in other places only small groups were found widely scattered across the landscape. People living in this region may even have spoken different languages or had widely divergent dialects. Yet, despite the diversity of these lifestyles and the varied geography which helped structure their actions, these people seem to have shared patterns of behavior and ways of living that tie them together.

- Today we call these scattered groups of *hunters and farmers the Fremont, but that name may be more reflective of our own need to categorize things than it is a reflection of how closely related these people were to each other.

- "Fremont" is really a generic label for a people who, like the land in which they lived, are not easily described or classified. The Fremont culture was first defined in 1931 by Noel Morss, a young Harvard anthropology student working along the Fremont River in south-central Utah.
Because the Fremont are not easily categorized and do not readily fit into archaeological classification schemes, they have been a source of confusion and debate among archaeologists since they were first identified in the late 1920s.

The differences between the many small bands of the Great Basin and those of the northern Colorado Plateau areas of the Intermountain West were often quite great. As a result, archaeologists have had a difficult time defining just who these people were and how they were related to each other.

There are actually few artifact similarities among these groups. While the similarities include such things as a particular way of making baskets, a unique moccasin style, clay figurines, and gray pottery, the problem of categorizing Fremont groups is compounded by a number of factors.

- The figurines are quite rare, for example, and the baskets and moccasins are perishable materials which do not survive in most archaeological sites.
- There is, in fact, only one single non-perishable trait which ties these people together—a thin-walled gray pottery whose many variations have been found as far west as Ely and Elko, Nevada, in the central Great Basin, as far north as Pocatello, Idaho, on the Snake River Plain, as far east as Grand Junction, Colorado, at the foot of the western Rocky Mountains, and as far south as Moab, St. George, Utah, along the Colorado and Virgin rivers, respectively.

Fremont rock art and structures are still visible in the canyons of Fremont Indian State Park.

Summary: Fremont Culture from Beginning to End

- Originally considered to be an inferior, out-back branch of the well-studied Anasazi culture, the Fremont are now considered to be a distinct and unique prehistoric culture that once inhabited the western Colorado Plateau and the eastern Great Basin. This confusion stemmed largely from the wide variety of lifestyles represented in the Fremont archaeological record, indicating that the people we now call Fremont were less socially organized than their Anasazi counterparts, but also highly adaptable.
- Fremont" is actually a catch-all term used to describe scattered groups of hunters and farmers as diverse as the landscapes they inhabited and somewhat difficult to classify. In fact, anthropologist David B. Madsen (1989) states that the name Fremont "may be more reflective of our own need to categorize things than it is a reflection of how closely related these people were" and that "variation is the key word in describing them." Thus there is not a distinctly defined Fremont lifestyle, as some were settled farmers, and some were nomads, and still others shifted between these lifestyles, either seasonally or over the course of a lifetime. It is possible that people living in the region spoke several dialects or even different languages. Yet, although the Fremont do not fit into standard archaeological classification schemes as easily as other ancient cultures, certain behaviors and living patterns tie this variable cultural group together.
Most archaeologists believe that between 2500 and 1500 years ago, the existing groups of hunter-gatherers on the Colorado Plateau and eastern Great Basin gradually developed into the Fremont. By 2000 years ago, corn and other cultivated plants were being grown east and west of the central Wasatch Plateau in what is now central Utah, although these early Fremont farmers did not build settled villages, but remained nomadic for most of the year.

Farming and the associated pottery making gradually spread from this region to the rest of the Fremont area, which includes most of present day Utah and extends well into central Nevada, and slightly into southern Idaho and western Colorado.

By 750 A.D., settled village life had developed in the heart of the Fremont region, with a number of farming villages consisting of semi-subterranean timber and mud pithouses and above-ground granaries. Fremont farming techniques appear to have been as sophisticated as those of other contemporary farming societies, involving water diversion techniques such as irrigation. This lifestyle continued relatively unchanged along the drainages on the sides of the Wasatch Plateau for about 500 years, although hunting and gathering remained important, especially on the fringes of the Fremont region.

Archaeologists studying the Fremont have found only four distinct artifact categories which readily identify this society from others of its time, since pithouse design, horticulture, and projectile points were similar across cultures of this era. The four "classic" Fremont artifacts are as follows: 1) a unique one-rod-and-bundle basketry style, 2) moccasins constructed with the dew claws a deer or mountain sheep forming the heel, 3) a distinctive art style used in pictographs, petroglyphs, and clay figures depicting trapezoidal human figures bedecked in necklaces and blunt hairstyles, and 4) thin-walled gray pottery. Fremont archaeology sites, ranging from villages to small camp-sites, have been identified in virtually every ecosystem of the Great Basin/Colorado Plateau region. Artifacts such as snare traps, rabbit nets, fur clothing, leather mittens and pouches, and bows and arrows attest to the complex and diverse adaptations the Fremont people developed in order to reside in this imposing environment.

Due to generally favorable climatic conditions and a culminating indigenous knowledge of the area, the era between roughly 700 A.D. and 1250 A.D. was the height of Fremont culture, as well as other southwestern prehistoric cultures. The Fremont's southern neighbors, the Anasazi, also flourished during this time. With few exceptions, the Anasazi inhabited the south-central portion of the Colorado Plateau, particularly the Four Corners region, while the Fremont culture did not extend south of the Colorado River. In fact, Colorado Plateau Fremont sites are less common than Great Basin sites and are generally smaller and less developed, while Great Basin sites tend to be larger and more village-like.

The nature of the interface between the Fremont and the Anasazi remains a fascinating archaeological question: How much interaction existed between these people? A handful of sites in Grand Staircase-Escalante National Monument and the Henry Mountains near the current Arizona/Utah border indicate cultural mingling between the two groups, including trade and even possible intermarriage. Generally speaking, however, Anasazi archaeological features diminish and Fremont features increase as one moves north along the Green River.

Between 1250 and 1500 A.D., the Fremont culture vanished. As in the case of the Anasazi collapse, the exact reasons for this disappearance are not known, but there are several possible factors which likely worked together to bring about this change. Climatic changes, including decreased precipitation, may have forced the Fremont to increasingly rely on wild food resources as farming became difficult. In addition, Numic-speaking peoples, the ancestors of the Ute, Paiute and Shoshoni peoples, are believed to have migrated into the region around this
time, and may have displaced the Fremont in the competition for limited resources, or absorbed the Fremont into their own culture. Whatever the case for the Fremont demise, it is clear that these resourceful and impressive ancients had great knowledge of the land that they inhabited, allowing them to thrive for over fifteen hundred years. Today, the Fremont Indian State Park in Clear Creek, south-central Utah, protects the largest Fremont site ever excavated in Utah, including forty pithouses, twenty granaries and countless artifacts and rock art panels. Other notable Fremont archaeology sites include those found in Dinosaur National Monument, and Zion and Arches National Parks.

**Fremont Village Life**

- The Fremont people built extensive villages of 10 to up to 100 pithouses or more. It is likely, however, that not all of the pithouses would have been in use at once. Pithouses are not permanent residences; after ten years or so, you need to abandon your pithouse and build another. What today look like enormous villages might have represented a handful of families living in the same place for several decades.

- Villages near stream sheds had agricultural fields that were irrigated with excavated ditches. Smaller outlier groups of two or three pithouses (called rancherias) probably served as field houses, stopping points for hunter-gatherers away from home.

- For storing grain, the Fremont built communal, rectangular, free-standing, above-ground structures out of adobe brick called granaries. Granaries could be as large as five meters (15 feet) long and hold several cubic meters of grain. Some granaries were built in the middle of villages for communal use; others were placed in hard-to-reach places, in caves and rockshelters or on canyon walls. Archaeologists believe that storing grain in these locations, accessed by ladders or feats of rock-climbing, are evidence that there was competition for stored grain.

**Median Village**

- Median Village is a Fremont farming site that was occupied from AD900 to AD1020 and is located in the Parowan Valley of southwestern Utah.

- It is situated on a gently sloping alluvial fan, favorable for arable land, and had access to fresh water at Summit Creek.

- The site was excavated in 1968 by the University of Utah Archeological Center under contract with the Utah State Department of Highways. Because the State was planning to construct a road very near the site, it asked the University to salvage any archaeological data that would
otherwise be lost. Today this is known as “rescue archaeology” and while it was not common prior to the National Historic Preservation Act of 1969, it is the most common catalyst for archaeological excavation today.

- Excavation at Median Village was initiated with a series of four 5-foot-square test pits in order to preview the depth, nature, and extent of cultural and natural deposits at the site. Three test trenches were then extended northeast to southwest across the site. Two of the trenches exposed the two main areas of the village site where more expansive excavations subsequently took place. Soil was slowly peeled away in a controlled manner, typically in a 1m x 1m square. All soil changes, features, and artifacts (objects created by humans) found in situ were mapped and documented before the excavation continued. Buckets of dirt were sifted through screens and artifacts found were bagged for later analysis in the laboratory.

- At the completion of the excavation fourteen pithouses, two surface dwellings, and one multi-unit storage structure were uncovered, although no more than five structures were occupied at any given time.

- One of the most important devices employed to determine Median Village relative chronology was structure superposition. The axiom of the Law of Superposition is that “sedimentary layers are deposited in a time sequence, with the oldest on the bottom and the youngest on the top;” with architecture this translates to the oldest structure is on the bottom of the sequence and the most recent structure is on the top.

**The People of Median Village** (Marwitt 1970)

- The people who lived at Median Village were horticulturalists who grew corn and possibly beans and squash. In addition to farming they were heavily dependent upon gathering wild plants and hunting mule deer, mountain sheep, jackrabbits, and birds. This is in stark contrast to their Ancestral Puebloan neighbors to the south (the Virgin Anasazi) who were almost completely dependent upon agriculture.

- At Median Village faunal evidence indicates that people hunted large animals away from the main village and processed the meat at the kill site. Small animals, such as jackrabbit may have been caught near the village or away from the village and brought back whole.

- It is probable that the village was occupied year round; the main granary was not hidden indicating that there was no need to conceal food storage because at least some of the residents would have been around to guard it from raiding outsiders.

- Cultural materials found at the site include projectile points and other chipped stone tools, ceramics, bone and antler tools, milling stones, ornament made from bone, gaming pieces, stone balls, and unfired clay figurines.

**Reading a Site and Architecture**
Our “Median Village” in the NHMU’s First Peoples Gallery, illustrates to visitors how archaeologists document and interpret sites.

The Median Village recreation is from area B, which contained good examples of pithouse superpositioning and a variety of features.

In this gallery, activities in and around the pithouse include supervised and unsupervised excavations, sifting for artifacts, mapping, and interpreting a fictitious excavation based on the peeling back of “layers” of the visitor’s choosing.

Also along the rail of Median Village is a text panel describing Median Village (the excavation and the prehistory) with artifacts from Median Village. In addition, it was decided that this is a good area for a discussion of prehistoric architecture in Utah.

**Scientific Process, Data Collection**

Archaeology is a rigorous scientific investigation. Much like other scientists, archaeologists apply the scientific method to answering questions about the past.

First, an archaeologist asks a question about some part of the past and poses a hypothesis. He or she then formulates a research strategy to test the hypothesis. Archaeologists must obtain funds for their research projects.

Next, the archaeologist must collect and record evidence to test the hypothesis. This often involves surveying a site -- it helps to know where to dig in the first place -- carefully excavating the site and recording the positions and context of any artifacts found. Archaeologists oversee processing and analyzing of the artifacts. This includes classifying, categorizing, dating and preserving the artifacts. Some of this analysis is done on-site, and the rest takes place after returning to the laboratory.

Once the evidence is in, the archaeologist must interpret the findings to see if they support or refute the original hypothesis. Once he or she comes to a conclusion, the archaeologist or a team of investigators publishes the findings in reports, journals and books. Here, they describe their findings in detail, including site maps, photographs, drawings and the context of their findings. They interpret the findings and their conclusions about the hypothesis and make generalizations. The archaeologists' descriptions must be precise and detailed so that other archaeologists can learn about the site. Others may agree or dispute their interpretations.

These methods of archaeology were developed throughout the 19th and early-to-mid-20th centuries.

Today's archaeologists can thank early explorers for many of their modern methods. One of the most important aspects of archaeology is excavating a site. Augustus Pitt-Rivers (1827-1900) applied rigorous survey methods, plans, site plans/models and extensive written records of all objects found in a site, not just the interesting ones. William Petrie (1853-1942) developed a method of serial or sequence dating of objects within an excavation. Mortimer Wheeler (1890-1976) introduced the grid-square method of excavating a site: The team places a grid over the
entire site and excavates in sections, describing the location of artifacts according to the grid reference. Alfred Kidder (1885-1963) first used teams of specialists in excavations.

Finding Sites
Archaeologists look for and sometimes excavate sites for two main reasons. First, they may have a specific research question about the past that makes it necessary to search a certain area for certain types of sites or to excavate a site. Second, sites may be endangered by a development project or natural erosion, requiring archaeologists to salvage what information they can before the site is destroyed. In both cases, archaeologists structure the way they collect data so they can address a variety of research questions.

State and federal laws require that land use decisions take into account, among other things, the effect of a project on archaeological and historical sites. These are commonly called cultural resources. The laws apply to all federal and state lands, including those administered by the National Park Service, U.S. Forest Service, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and the military. They apply, too, to projects on private land that use federal or state funds or that involve issuing a permit of some kind. Any project that could disturb the land’s surface requires consideration of cultural resources. Typically, the company or agency proposing the project pays for the archaeological work.

To date, only a small fraction of the country (probably less than 5 percent) has been systematically explored for cultural resources. Thus, the archaeologist’s first step is to review existing records to see if the affected area has been examined already and if any sites are recorded for it. In North Carolina, the Office of State Archaeology in Raleigh maintains a central record for the state. The archaeologist may also check with colleagues based at universities and Indian tribes within the project area to see if they have concerns or know about areas of importance.

If an area has not been explored, the archaeologist conducts a survey. This is a systematic examination of the land looking for sites. Typically, archaeologists search for sites on foot, although aerial surveys are used to reveal sites that are invisible at close range and where the terrain makes walking difficult. How they conduct the pedestrian survey depends on the lay of the land. It may also depend on why the archaeologist is conducting a survey. If, for instance, a new power line is due to cut a 20 mile straight swath 60 feet wide, then archaeologists survey the straight line’s area. A reservoir, whose boundaries snake within 400 square miles of several drowned rivers, needs a different approach. Because archaeologists often cannot walk every inch of land, they search where experience has taught them are likely places to find sites. Sometimes, they map out an area in sections and survey a sample of sections.

Archaeologists use several tools to do surveys. These include clipboards and paper to make notes; bags to label and contain samples of artifacts; geologic maps to learn about the lay of the land and to record site locations; a compass for orientation; and a camera to capture photographic records.

During a survey, archaeologists look for anything that is not natural to the area. They are alert to things like a row of rocks (possibly the remnant of a wall), depressions or mounds (buried structures), chips of stone (debris from stone tool manufacture), dark soil (possible middens or garbage areas, hearths, or burned structures), and pottery sherds. Because archaeologists want to know how people used resources in their environment, information about where sites aren’t is also very important.
In the humid southeast, many sites are not visible on the ground’s surface. Often the sites are buried, and archaeologists check eroded hills above stream banks and plowed fields for evidence. In densely vegetated areas, archaeologists will sometimes dig a small hole every 50 feet or so, sampling the area to see if evidence of buried sites shows up.

When they find a site, archaeologists make notes and record its location on maps. Back in the laboratories, they give each site an identification number and fill out a site form. Information about the vegetation, soil, elevation, and location is recorded on the form, as well as a description of the site and the artifacts present. Any photographs are attached, and a master map is made. The site is also evaluated for its information potential, and a determination is made about whether or not the site has buried deposits.

Excavating a site
If the survey was performed because of a development project proposal, archaeologists will recommend to the agency decision-maker what should be done about the cultural resources. For sites with limited information potential, little additional work is needed. On the other hand, archaeologists may recommend that sites containing important data or having other significance (such as spiritual importance to Native Americans) be left undisturbed or, in some cases, excavated. An effort is made to move a project to avoid disturbing an important site, but sometimes that is not feasible.

If a site is to be excavated, archaeologists prepare a research design. This outlines what questions the archaeologists will try to answer and the techniques they will use to excavate and analyze the data. The agency or landowner that manages the land, the state archaeologist, and archaeologists from either a university or a consulting firm will each review the research design to assure it meets professional standards. A permit is required to excavate on federal or state-owned lands.

Before the excavation begins, the directing archaeologist assembles a team of excavators. This group may include geologists, botanists, historians, students, and trained amateurs as well as archaeologists. The first step is to clear vegetation from the site and establish a grid on the surface.

Establishing the grid is a key step. The grid is the primary way to maintain context, which is the relationship artifacts and features have to each other. The process of excavation destroys a site, and once it is dug, you can’t go back and do it differently. Researchers of the future can study a site they never saw if good notes and maps are made of the excavation. Recording context is the key to interpreting the site from records.

The grid is a Cartesian coordinate system. It is established and marked off in relation to a datum, which is a stable point of reference from which all measurements occur. Archaeologists set up the grid using a survey instrument (usually a transit), measuring tapes, wooden stakes, and strings. Squares are marked on the ground using stakes for each corner and string to connect them. Usually, squares are measured in meters, 1 or 2 meters on a side. Each square has a unique identifying number based on its grid coordinates. A map is made of the site on graph paper; the graph squares correspond to the squares on the ground. Any artifacts, samples, or features (such as a hearth) that are found in a square are labeled with its grid number and the depth below the ground surface at which they were discovered. Sometimes, when there are distinct layers in the stratigraphy, the layer in which an artifact is found is recorded also.
Using shovels, trowels, screens, and measuring tapes, archaeologists uncover a site square by square. They move dirt slowly because they don’t know what they will be uncovering, and they don’t want to destroy something by being in a hurry. The locations where artifacts are found are carefully recorded. The excavated dirt is put through mesh screens. Some are trays you shake back and forth so that the dirt falls through, and artifacts are left on the screen. Others use water to push the dirt through a series of screens with graduated mesh size.

During excavation, numerous maps, drawings, and photos are made. Each references the grid location. Artifacts and various kinds of samples (animal bone, plant remains, pollen, charcoal) are sent to specialists for analysis.

Once the excavation is completed, the site is usually back-filled with the excavated dirt. This excavation procedure is followed regardless of whether archaeologists are doing salvage work before a development project or doing basic research funded by universities or foundations. If a development project spurred the excavation, the project would now be authorized to proceed.

Stratigraphy and the Principles of Relative Dating

Relative dating falls under the sub-discipline of geology known as stratigraphy. Stratigraphy is the science of rock strata, or layers. Layering occurs in sedimentary rocks as they accumulate through time, so rock layers hold the key to deciphering the succession of historical events in Earth’s past.

The fundamental principles of stratigraphy are deceptively simple and easy to understand, but applying them to real rocks and fossils can be quite challenging. Here are the four fundamental principles of stratigraphy that form the foundation of our understanding of Earth’s history:

- **The Principle of Original Horizontality**: When sediments are laid down on Earth’s surface, they form horizontal or nearly horizontal layers. This means that non-horizontal rock layers were tilted or folded after they were originally deposited.
- **The Principle of Lateral Continuity**: Rock layers extend for some distance over Earth’s surface—from a few meters to hundreds of kilometers, depending on the conditions of deposition. The point is that scientists can relate layers at one location to layers at another. This is critical for stratigraphic correlation (see below).
- **The Principle of Superposition**: As layers accumulate through time, older layers are buried beneath younger layers. If geologists can determine which way was originally “up” in a stack of layers, they can put those strata in the correct historical order. (Rarely, after a sequence of layers has been deposited and compressed to form rock, it may be literally overturned by thrusting of the Earth’s crust as continental plates collide. In these rare places the youngest rocks in a sequence are on the bottom, but such overturned sequences can be identified by the extensive faulting and breaking of rocks, and because the same original sequence of rocks is frequently present elsewhere in undisturbed order.)
- **The Principle of Faunal Succession**: This principle is attributed to William Smith, an English engineer in the late 1700s. Smith noticed that the kinds of fossils he found changed through a vertical succession of rock layers, and furthermore, that the same vertical changes in fossils occurred in different places. Using the fossils collected from rocks in one part of England, Smith could predict the succession of rocks and fossils in other parts of England. The observation that fossils change in a consistent manner through stratigraphic successions can be extended to the entire world. Smith’s discovery formed a key line of evidence for evolution (it predates the birth
of Charles Darwin in 1809), but it is an observed property of the rock record and is independent of natural selection, Darwin’s proposed mechanism of evolution.

Relative dating of rocks and fossils from an area is based on the Principle of Superposition, which enables scientists to put historical events in order. Relating the succession of events in one region to those in another requires that the two areas be stratigraphically correlated. Correlations can be made by tracing rock strata from one area to another by using the Principle of Lateral Continuity or by relating the fossils of the two areas using the Principle of Faunal Succession.

- Prior to the discovery of absolute (direct) dating techniques, archaeologists depended on relative (indirect) dating techniques to give temporal order to past events.

- Relative dating espouses the idea that something is older or younger than another without assigning a calendar date. Thus, it is an ordinal scale measurement.

- In the Classificatory-Historic Period (1914-1940), archaeologists began to incorporate a chronological dimension-time depth to archaeological studies using new techniques, such as seriation and stratigraphy.

“Stratigraphy” by Michelle Knolls
- Soil is deposited across the landscape in several ways:
  - Alluvial deposits are fine sediments that are transported by ephemeral (intermitant) water flow or perennial stream water flow and are subsequently distributed into fan shaped landforms called alluvial fans.
  - Colluvial deposits are materials that move downslope by force of gravity and/or erosion and collect at the base of mountains or foothills, with little or no size sorting.
  - Eolian deposits are moved by wind systems that transport and deposit loose sediments.
  - Moraine deposits are created by glaciers, lacustral deposits are deposited by lake action, and volcanic deposits are deposited after volcanic activity. Layers of soil formed during the depositional process are called strata. Strata can be sloping or horizontal, thick or thin, well defined by contrasts or almost impossible to discern.

- Stratigraphy is the study of stratification. Although this method was used by geologists as early as the 1860s, the first Southwest archaeologist to make use of the stratigraphic method on a large scale was A.V. Kidder at the Pecos Ruin in New Mexico from 1915 to 1929.

- The layering of deposits follows the Law of Superposition, which states that the oldest deposit is on the bottom of a column of sediments and the most recent deposit is on the top. This succession of deposition, barring any disturbance to the layers (e.g. bioturbation, trash pits, water action, etc.), should provide a relative chronological sequence.

- Thus, the Law of Superposition is an indirect dating technique because it refers to the sequence of deposition not the age of the materials in the strata (i.e., it only indicates when
an object was deposited, not when the object was made). However, through careful excavation, an archaeologist can reconstruct a sequence of human events, albeit indirect, based on relative dating. (Renfrew and Bahn 1996).

- In stratigraphic analysis the archaeologist uses the Law of Superposition with a consideration of context. Intact features are considered to be in primary context and can include ecofacts (objects of natural origin) as well as artifacts (objects of human manipulation). The archaeologist must judge whether the artifacts associated with the stratified deposits are undisturbed (primary context) or if they have been transported due to human or natural events (secondary context) (Sharer and Ashmore 1993). This determination is necessary to be able to place objects in a stratigraphic profile in its appropriate chronological order.

Objects that are buried in the same strata are said to be in association with one another. If one object can be dated by absolute methods then other objects in association with the dated object can be considered, albeit indirectly, the same age. However, it is important to understand the human activity that created the deposition. For example, a pot thrown in a trash pit (midden) with an absolute date will tell archaeologists the date the pot was thrown in the midden, but not necessarily the date the pot was made, which could be hundreds of years older than the midden. An old pot can also occur in a sealed depositional context. Therefore, it is important to know stylistic cultural and temporal markers as a comparative tool. (Renfrew and Bahn 1996).

**Absolute Dating**

- Absolute dating techniques offer archaeologists an opportunity to date artifacts, sites, and events in calendar year.

- There are many methods available: radiocarbon (or C14) dating, thermoluminescence dating, dendrochronology, varves, obsidian hydration, potassium argon dating (early hominids only), archeomagnetism, cation-ratio dating, etc. The techniques most commonly used are radiocarbon and dendrochronology. Because absolute dating assigns a “zero point” for the start or end of a process it is considered a ratio scale measurement.

**Radiocarbon Dating** (Taylor 2000)

- Radiocarbon dating is a type of radiometric technique. Of the seven techniques used, only radiocarbon and potassium-argon tests are used by archaeologists.

- The radiocarbon method has the shortest life span of the various techniques; it can measure the age of an organic specimen that is from 300 to 50,000 years old. Anything younger than 300 years old cannot be dated with any precision due to two effects of modern civilization: the testing of nuclear weapons and fossil fuel emissions. Potassium-argon tests is only used for early hominid sites due to its age range (100,000 or more years ago).
Radiocarbon dating is a technique that uses the principle of radioactive decay. More often than not radiocarbon dates are considered indirect dates because they do not date the actual artifact, but instead an organic object, such as charcoal assumed to be in association with the object. (Sharer and Ashmore 1993).

However, a radiocarbon date becomes a direct date when an organic artifact is dated. The process, invented by W. F. Libby in 1949, has revolutionized how archaeology is practiced. Radiocarbon dates are usually given in the form B.P. (before present), which is implied to mean prior to 1950. A date of 1000+/-50 B.P. means 1000 years before 1950 with a standard deviation of 50 years; thus a specimen could be as old as 1050 B.P. to as young as 950 B.P. Radiocarbon dating depends on a chain of natural events, some of which took place in deep space long ago.

In various parts of the galaxy cosmic rays are formed. A fraction of these particles eventually rain down on earth and strike molecules of atmospheric gas, producing neutrons. Some of these neutrons react with nitrogen (14N) to form 14C, which quickly combines with oxygen to form molecules of radioactive carbon dioxide 14CO2. The vast majority of the 14C enters the oceans, but one or two percent lands on the earth’s surface and is absorbed into plants during the process of photosynthesis. Animals eat the plants and humans, as omnivores, consume both. Thus, all living things continually consume and maintain a certain level of 14C that is about equal to the atmospheric concentration.

Around 1958 it was noted that radiocarbon ages were not corresponding to the true ages, probably because the assumption of a constant concentration of 14C in the atmosphere was incorrect. By 1974, scientists realized that by comparing 14C ages with dendrochronology dates, true can be calibrated by subtracting or adding the appropriate offset. Dates that have been calibrated will often appear as B.C., A.D., C.E. (Common Era), or B.C.E. (Before Common Era); these measure time based on the Gregorian calendar with year one as the “zero point.” The limitation of calibration methods is that it can only be used on samples that do not date any earlier than the extent of the regional dendrochronological sequence.

**Criteria:** To perform a radiocarbon assay three facts must be known (1) the original amount of radioactive isotope present at the onset of decay, (2) the amount now present, and (3) the rate of radioactive decay. (Sharer and Ashmore 1993).

**Assumptions:** This process assumes that the presumed half-life of 5,730 years is correct.

**Restrictions:** In order for radiocarbon age to correspond with its actual age several conditions must be satisfied. (1) the atmospheric ratio of 14C to normal carbon (12C) must have remained essentially constant, (2) the ratio of carbon isotopes in the measured material must not have changed, except by radioactive decay since the death of the organism, and (3) there should have been a rapid and complete mixing of 14C through the various carbon reservoirs.
Pithouses

- Pithouses were being constructed as early as the Late Archaic period in the eastern great Basin and BII-BIII periods on the northern Colorado Plateau.

- A pithouse is a relatively simple dwelling built partially underground and partially above ground. Pithouses were essentially single room structures constructed by excavating a hole or depression in the ground, which was then covered with an above ground superstructure of timbers, wood, and mud.

- Entry into the structure was gained through a simple opening in the wall or, and particularly in the later pithouses, through a hatchway in the roof which gave access to a ladder on the inside.

- The structures were usually round to oval in plan, but slightly square versions with rounded corners also occurred. The typical pit structure ranged from 12 to 15 feet in diameter and 3 to 4 feet deep. Sometimes the side walls were lined with stone slabs.

- The truncated, pyramidal roof was supported by upright interior posts set in the floor, typically near the interior corners of the structure, which in turn were topped with a square framework of timbers comprising the major roof elements.

- The internal frame was covered with secondary roofing materials composed of smaller branches, twigs, bark, and sometimes matting. The structure was then entirely covered with a heavy coat of mud or adobe making the finished building relatively waterproof and giving it the appearance of a flat-topped earthen mound (Baxter 2000:23).

- The pithouse had a group of distinctive features: a hearth, a ventilation shaft, a draft deflector, and in the Anasazi region a small hole in the floor referred to as the sipapu. The hearth could be a clay-lined pit, stone rings, or slab-lined. (Baxter 2000:23). Ventilation shafts were added to bring in fresh air by another source other than the smokehole/entrance and the draft deflector, a vertical stone slab set between the hearth and the antechamber or vent shaft, deflected drafts of air away from the fire and helped air to circulate through the pithouse and out the smokehole.

- Although outwardly unassuming in appearance, pithouses were an expeditious answer to the need for shelter at mid-latitude climates. Their semi-subterranean design made them cool in the summer and warm in the winter. These structures are of particular interest to archaeologists because the floor plan--along with its characteristic features--was adapted as the prototype for another important building type, the kiva (Baxter 2000:21)

- These structures may be used as places to tell stories, dance, sing, celebrate, and store food.

- Usually, all that remains of the ancient pit-house is a dug out hollow in the ground and any postholes used to support the roof.

Formative Period Settlement and Subsistence
Settlement pattern analysis is based on the generalization that people tend to live, work and play in chosen places. If people rely heavily on marsh resources for food, then they will located themselves in the vicinity of marshes; if farming is important, they will situate themselves near arable land; if pinyon nut collection is critical for surviving the harsh Utah winters, then people will tend to locate themselves near pinion woodlands.

The question of course is what resources and activities are the “best” given the geographic possibilities (Metcalfe 2008, personal communication)? Optimal Foraging Theory (OFT), derived from the broader theoretical perspective of behavioral ecology, is a set of mathematical models designed to predict the “best” choices given an array of options.

The prey choice model is just one of the many mathematical models in OFT. It addresses the simple question: of the array of resource that is available, which subset will give the average forager the most calories (energy from food) for the least amount of work.

Other OFT models, such as the patch choice and margin value theorem, address slightly different questions: in an environment where resources a clumped, which and for how long should individual patches be exploited?

Although often simple in concept, utilizing these models in the actual landscapes of the past is a difficult and daunting task. Nevertheless, taken together these models provide a series of predictions about where and why sites should be located across the Great Basin. And predictions allow tests that can potentially invalidate those predictions. That is the basis for using the scientific method to better understand the past (Metcalfe 2008, personal communication).

Modeling prehistoric behavior also requires an understanding of how modern humans, in physical and socio-economic environments similar to those in the prehistoric period, make decisions.

Ethnoarchaeology is the ethnographic study of peoples for archaeological reasons, usually focusing on the material remains and behavioral patterns. Ethnoarchaeology aids archaeologists in reconstructing ancient lifeways by studying the material and non-material traditions of modern societies. Archaeologists can then infer that ancient societies used the same techniques as their modern counterparts given a similar set of environmental circumstances.

Gourds, Squash, Corn and Other Subsistence

The Fremont lived on a mixed subsistence, growing maize, beans, and squash (a combination called the Three Sisters), and supplemented that with hunting and gathering of animals and
plants. Wild foods known to have been used by Fremont culture people include mountain sheep, deer and antelope; small game like jackrabbits and hares; and wild plants including pine nuts.

- The Three Sisters are squash, corn and beans which grow and thrive together. Corn serves as the natural trellis for the beans to grow on. The beans roots set nitrogen in the soil to nourish the corn. The bean vines help to stabilize the corn stalks on windy days. The squash plants shelter the shallow roots of the corn and shade the ground to discourage weeds and preserve moisture. Truly a symbiotic relationship.

- Pumpkins and squash are believed to have originated in the ancient Americas. Gourds: The shells of gourds were employed by the Indians for storage and carrying, as water jugs, dippers, spoons, and dishes, and for mixing bowls, pottery smoothers, rattles, sounders for the rasping stick, roof-drains, masks, parts of ornaments, and other purposes, and the flowers were used as food, coloring material, and in ceremonies.

- These early pumpkins were not the traditional round orange upright Jack-O-Lantern fruit we think of today when you hear the word pumpkin. They were a crooked neck variety which stored well.

- Archeologists have determined that variations of squash and pumpkins were cultivated along river and creek banks along with sunflowers and beans. This took place long before the emergence of maize (corn). After maize was introduced, ancient farmers learned to grow squash with maize and beans using the "Three Sisters" tradition.

- The early Native American farmers were practicing an early form of sustainable agriculture.

- These early Native Americans roasted pumpkin strips over campfires and used them as a food source, long before the arrival of European explorers. Pumpkins helped The Native Americans make it through long cold winters. They used the sweet flesh in numerous ways: roasted, baked, parched, boiled and dried. They ate pumpkin seeds and also used them as a medicine. The blossoms were added to stews. Dried pumpkin could be stored and ground into flour.

**Distinctive Fremont Material Culture**
Stone Tools

Within Median Village two slab metates, a grinding slab, 174 manos, 51 stone balls, 3 stone discs, a stone pendant, 42 stone pottery smoothers, an awl sharpener, and more were all uncovered. Each item was subsequently cataloged, measured, and recorded.

Chipped Stone Tools Description

- Chipped stone artifacts are those cultural objects created from stone by the removal of flakes rather than by grinding or polishing.

- Tools made by chipping include projectile points, bifaces, drills, scrapers, gravers, fleshers, and choppers.

- The materials most typically used for the production of flaked stone tools were vitreous or fine-grained silicates such as chert, obsidian, and quartzite.

- The breaking of stone in a predictable fashion is only possible due to the physical structure of certain types of stone.

- The types of stone used for “knapping” are largely composed of silica and have a crystalline matrix. These types of rocks behave like glass when met with a directed force and are said to fracture conchoidally, or cone-like in shape.
A conchoidal fracture represents a portion of what is known to physicists as a Hertzian Cone of Force. Many rocks with high silica content will produce cone fractures when direct force is focused on a small surface area.

Quartz crystal and obsidian are most like glass in terms of their physical behavior when struck. Other materials (such as chert, jasper, flint, and chalcedony) do not produce a conchoidal fracture so easily due to the presence of non-silica components and variations in its structure; these are often known as cryptocrystallines.

These stones were sometimes heat treated so that their flaking characteristics were vastly improved. To do this the stone was “cooked” beneath a hearth or in an earthen oven for a specified amount of time. One popular theory concerning the physical changes that occur during heat treatment is that heat causes the moisture within the stone to turn to steam, which expands. This causes microfractures in the lattice of the stone. Force then applied to the stone will follow the microfractures creating a smooth and more predictable break. The freshly broken surface of a heat-treated stone often takes on a waxy or glossy appearance, whereas untreated cryptocrystalline stone is dull-looking.

The common term for producing stone tools is flintknapping. The goal of the flintknapper is the production of a tool from a mass of stone through the process of reduction. Flaked stone tools are made from flakes that were removed from a core. There are two major methods used in reduction: percussion and pressure.

Percussion involves the use of a hammer made from antler, wood, or stone. If the hammer is held in the hand it is known as direct percussion and is the method most commonly used in New World lithic technologies. Pressure flaking is a process whereby pressure is applied to the stone’s surface causing chips to flake off and is usually reserved for the finishing of bifacial (flaked on both sides) tools. A pressure flaker made from an antler is most commonly used for this task.

The small chips of stone that are produced in the manufacture of stone tools are known as debitage, a French word meaning “waste.” Until recently, debitage was not considered to be significant to our understanding of human behavior and in some instances it was not collected by archaeologists. The analysis of debitage, however, has taken on an important role in chipped stone tool studies in large part due to replicative or experimental flintknapping. By identifying flakes to particular technological categories, it is possible to gain valuable insights into site-specific reduction/production strategies.

It is critical to recognize that flaked stone tool production is a process in which raw material is transformed into the desired implement. The original production of a completed tool is not necessarily the end of a tool’s use-life. The tool may break, be re-worked, and break again. The final result may be a tool that has a different use than its original purpose before entering the archaeological record as discarded material (e.g., drills).
Ground Stone Tools Description (from Adams 2002)

- The class of tools known as ground stone encompass many tools that can be divided into tools that abrade, smooth, and polish (abraders, shaft straighteners, polishing stones); tools that grind and pulverize (mortars, pestals, manos, and metates); percussion tools (hammerstones, axes, and mauls); spinning tools (spindle whorls); perforating, cutting, and scraping tools (reamers, saws, and adzes); containers and container closures; structural elements; and miscellaneous paraphernalia (jewelry, balls, and pipes).

- Abraders are handstones that have one or more rough surfaces useful for removing material from contact surfaces thereby modifying the shape of an object (e.g., shaping a bone to make an awl) or sharpening an object (like a stone ax).

- Shaft straighteners have smaller work surfaces than flat abraders. The U-shaped grooves confine cylindrical or shaft-like objects during their manufacture (e.g., arrow shafts and weaving sticks).

- Mortars are designed with a basin that confines an intermediate substance that is worked with a pestle in some combination of crushing, stirring, or pounding strokes. The designed sizes and configurations of mortars vary greatly depending on the task for which they were designed.

- One of the first processes is manufacturing a ground stone object is locating appropriate stone for the final product. Rocks may be chosen from among those loose on the landscape, in streambeds, or quarried from bedrock formations. Rock size and weight are more important selection criteria for some tools than for others. For example, a metate can be no larger than the rocks available and a mano no wider than the width of the metate.

- Texture (the granularity of a stone) is another important attribute for manufacturing tools. For example a coarse-grained rock may be chosen for an abrader because it is rough enough to remove material from the surface of another item. If a stone with the required level of texture is not naturally available (i.e., all the stones are too smooth), the tool maker can alter the surface through pecking until it reaches its desired granularity.

- Durability is another quality sought after, especially for tools where processing of other materials will cause major alterations to the object. Especially when grinding food it may be more important that the material is durable enough to not erode into the food than it is for it to be coarse-grained or fine-grained.

- A polishing stone, such as those used for manufacturing ornaments, must be smooth enough to polish rather than abrade and the rock grains need to be well cemented and hard enough to create a surface that polishes without disintegrating into an abrasive powder.

Basketry

- The term basketry is used to define objects that are manually woven without a frame or a loom. This can include, but is not limited to, baskets, mats, bags, headware, fish traps, and
• Baskets are often classified by object shape, degree of rigidity or flexibility, and the elements of decoration. Subclasses are defined based on the wall-or body-construction, which is determined by the class of weave used: twining, coiling, or plaiting. These are then divided by technological types.

• Basketry technology precedes ceramic technology by several thousand years in North America; prior to the invention of ceramics, stews and porridge were cooked by throwing hot stones into pitch-covered baskets filled with water and ground seeds.

**Manufacturing Techniques**

• To produce a basket, the weaver must determine in advance the overall shape and size of the desired piece from a potential inventory of forms which is constrained only by the limitations inherent in the technique itself.

• Next, and at the proper time of year, the weaver must select the appropriate kind and quantity of raw materials for the selected vessel form. While the inventory of potential raw materials in the Great Basin is relatively large, it has been demonstrated that only a small percentage of available plants was actually used for basketry manufacture in any one subregion of the Great Basin (Adavasio 1986:203).

  o The basketweaver used wide or narrow strips or whole elements derived from sources such as willow, broad and narrow leaf yucca, beargrass, desert willow, bulrushes, cattail, squawbush, sages, rabbitbrush, the outer bark from several plants, and various other grasses and rushes (Tanner 1976).

  o The selection process for individual baskets may well involve different plant sources of different physical dimensions, colors, and properties for rods, stitches, bundles, or decorative embellishments. Non-plant materials, such as feathers may also be required for the selected form.

• The center or point of initiation of the coiled basket may be one of at least four basic varieties (normal, oval, plaited, or overhand knot), it may be reinforced with accessory stitches or unreinforced, and it may or may not have a central aperture.

• The stitching work direction may be right-to-left or left-to-right. The basket wall vessel may be composed of individual coils that are closely spaced (close coiling) or physically separated (open coiling).

• There is also considerable choice in the selection of foundation material, the arrangement of foundation elements, and the type of stitch employed in their construction. For example within the four major coiling foundation varieties (single element-rod, single element-bundle, multiple element horizontal, or multiple element stacked) over 100 varieties have been documented ethnographically and archaeologically.
- Stitches may be simple or intricate, interlocking or non-interlocking, and may encircle and/or pierce the foundation. The addition of new stitches via splicing involves dozens of possible permutations, as does the choice of designs, the execution of design mechanics, and, finally, the type and method of execution selected for the rim finish (Adavasio et al. 2002:6)

**Twining** (Adavasio 1977)
- **Twining** is defined by the passing of moving horizontal elements (wefts) around stationary vertical elements (warps).

- Twining techniques are often employed to create containers, mats, bags, fish traps, cradleboards, hats, and clothing.

- There are three ways to arrange weft rows and each produces a distinct result. In *close twining* the rows are so tightly spaced that the warps are completely or almost completely concealed. In *open twining* the weft rows are spaced at intervals so that the warps are exposed intermittently. *Open and close twining* is used to conceal and expose warps; usually the intention of this technique is a decorative pattern.

- *Simple twining* is a common variety in which a single warp unit is wrapped at each weft crossing. A single warp unit may consist of more than one warp as long as the multiple warps function as a unit. *Diagonal twining* is another common variety in which a pair of warps is alternately engaged at each weft crossing (i.e., the weft crosses two evenly spaced warps). This technique creates a diagonal effect.

- The stitch slant indicates the pitch, or lean, of the wefts. The two most common stitch slants are the same as those used to describe cordage, an “S-twist” or a “Z-twist.” When a stitch slants to the left it is called an S-twist and when it slants to the right it is called a Z-twist. In order to determine the slant, archaeologists turn the artifact so that the warps are horizontal.

**Coiling** (Adavasio 1977)
- With **coiling**, a stationary horizontal element—the foundation—is wrapped with moving vertical elements-stitches. The stitches are active and the foundation is passive.

- The basic structural unit of coiled basketry is the coil. In the strictest sense a basket contains a single coil that is continuous from center to rim, but can be used to designate a single circuit around a basket.

- Coiling technique is used almost exclusively for containers and hats.

- There are three types of wall construction in the coiling technique: close coiling, open coiling, and open and close coiling. In *close coiling* the foundation is bound tightly together by the stitches. In *open coiling* the foundation is not bound closely together. *Open and close coiling* incorporates both techniques, usually as a decorative element.
• Foundations can be single, horizontal, or stacked. Of the many foundation elements possible, the Fremont preferred the following: close coiling half rod and bundle stacked, close coiling half rod and welt stacked, close coiling whole rod, and close coiling three rod bunch. Combined, these make up 95.74 percent of the samples studied. However, the preferred method among the Fremont was the close coiling half rod and bundle stacked. (Adavasio et al. 2002:6)

• **Rod**: a rigid or semi-rigid foundation element used alone or in conjunction with other rods, bundles, or welts.

• **Bundle**: A flexible foundation element of plant material used alone or in combination with rods.

• **Welt**: A foundation element used in conjunction with one or more rods.

• Stitches are the active elements in coiled basketry. They may consist of a strip of wood, bark, leaf, or plant fiber. In coiled basketry stitches are described as simple, intricate or wrapping. Intricate stitching is only used with open coiling. The simple stitch can be interlocking, non-interlocking, or split. The slant of the stitch indicates the work direction. Slants that move down to the left (/) indicate a right to left work direction. Stitches that slant down to the right (\) indicate a left to right work direction.

**Plaiting** (Adavasio 1977)

• **Plaiting** is a subclass of basket weaves in which all elements are active. Strips pass over and under each other at a more or less fixed angle (about 90 degrees).

• This technique can be used to make a large number of objects including containers, bags, and mats.

• It is incredibly flexible and the least complex of the weaving structures.

• There are two types of plaiting: simple and twill. In simple plaiting the weaving elements pass over each other in single intervals forming a checkerboard pattern. In twill plaiting, the weaving elements in one set pass over two or more elements in the other set forming a herringbone pattern.

**Weaving Technology** (Kent 1983)

• The term **textiles** is often used to describe flexible or pliable fabrics constructed from spun plant or animal fibers by various weaving, looping, netting, plaiting, or braiding techniques.

• Various leaf and bast fibers, and human and animal hair, were twisted into yarns from which were fashioned clothing, blankets, flexible bags and, after the advent of the tourist industry, rugs.
Textile remains of the Anasazi Basketmaker people are sufficiently plentiful in the archaeological record to allow identification of their clothing with a fair degree of accuracy.

Clothing types include fringed hip aprons for women, cotton shirts (with and without sleeves), fur and feather robes, and possibly breechcloths for men.

Clothing from the Fremont and the earlier Archaic people of the eastern Great Basin has not been well preserved in the archaeological record. Pieces of leather, suggesting hide clothing, and fur robes are all that have survived.

Fremont rock art panels suggest that kilts were worn by men; whether these were woven textiles or hide is unknown at this time.

Potsherds

A potsherd is a piece of ceramic pottery often found on an archaeological site.

Fremont pottery is thin-walled gray ware made by the coil and scrape method.

The pottery is often highly burnished, and a fugitive red hematite wash is common.

Tempering material varies (see the table below), but igneous rock temper was most common.

The pottery is usually smoothed and undecorated, though corrugation and painting is common in the south and incising and appliqué decorations are found in the north.

Several forms have been identified; however, the jar, pitcher, and bowl are by far the most common.

The painted pottery vessels are usually bowls in a banded layout. Design elements are most similar to Red Mesa pottery (specifically Cortez Black-on-white) (Thompson and Allison 1988).

Fremont pottery is poorly dated, and the only real demonstrated temporal difference is the late occurrence of corrugated wares (ca. A.D. 1100-1300).
Fremont Vessel Forms (From Madsen 1986)

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<thead>
<tr>
<th>Vessel Type</th>
<th>Fremont Pottery Types</th>
<th>Vessel Form</th>
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<tbody>
<tr>
<td>BOWLS</td>
<td>Snake Valley Gray</td>
<td>Snake Valley Black-on-Gray</td>
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<td>OPEN MOUTH JARS</td>
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<td>MUGS AND CUPS</td>
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<th>Vessel Form</th>
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<td></td>
<td>Great Salt Lake Gray</td>
<td>Picuris Grey</td>
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<td>Emory Grey</td>
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<td>Hot Creek Black-on-White</td>
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<th>Vessel Form</th>
<th>Palate-Siouxshone</th>
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Examples of Fremont Impressed and Appliquéd Pottery

Figure 6.2. Great Salt Lake Gray punctate/impressed sherds from South Temple.

Figure 6.3. Great Salt Lake Gray appliqué sherds from South Temple.
Fremont Painted Pottery with Cortez B/W

Cortez Black-on-White
Promontory Moccasins

- The Promontory Caves were excavated by Julian Steward in 1930 and 1931.

- A highly distinctive type of ceramics was found that was vastly different than that of the Great Salt Lake Fremont. Stewart also found no similarities with regional Shoshonean (Ute, Shoshone, Goshute, Paiute) ceramics. In fact, there was little in the material culture of the caves that could be linked with the Fremont (with the exception of the basketry construction) or the Numic people.

- Steward named this “new” cultural group “Promontory” and suggested that they came from the Plains, lived in the Great Salt Lake area after AD 1000 and were contemporaneous with the Fremont until they pushed out the latter around AD 1300.

- He also theorized that the Promontory people were then later replaced by the northeastern expansion of the Shoshonean peoples. (Steward 1937)

- For many years after there was controversy about who the Promontory people were, where they came from, and when they arrived. To answer the latter a series of direct dates were needed. Promontory Cave 1 yielded a staggering 248 moccasins and a large number of other organic objects.

- In order to determine a more accurate and direct date for the Promontory culture, samples from three of the moccasins and several other artifacts from the site were sent to a
radiocarbon laboratory.

- The results indicate a range of calibrated midpoint dates from AD 1246 to 1281, just before the end of the Fremont Period in northwestern Utah, as Steward had surmised.

**Leather**

- Indian leather tanning dates back to 3,000 B.C. and was achieved through using vegetable or animal oil on the hide.

- Skins were obtained through hunting, tanned and then hung to dry. Tanned hides were smoothed and transformed into soft leather such as chamois or buckskin.

- Because of the nature and decomposition of leather, very few leather Fremont artifacts have been uncovered.

**Bone Tools**

- Animal bones were used to craft tools by the Indians, a process dating back to the Late Prehistoric Era.

- Animal bones were strong and pliable, and often came from captured bison, elk or deer.

- The Fremont used antlers, horns, teeth, hoofs, beaks and claws of many creatures. The shoulder blades of bison and elk were used to make hoes. The forelegs of deer were worked in awls, and fishhooks were made from the animal's toe bones.

**Clovis Projectile Points**

- **Clovis points** are the characteristically-fluted projectile points associated with the North American Clovis culture. They date to the Paleoindian period around 13,500 years ago. Clovis fluted points are named after the city of Clovis, New Mexico, where examples were first found in 1929.

- A typical Clovis is a medium to large lanceolate point.
  - Sides are parallel to convex, and exhibit careful pressure flaking along the blade edge.
  - The broadest area is near the midsection or toward the base.
  - The base is distinctly concave with a characteristic flute or channel flake removed from one or, more commonly, both surfaces of the blade.
  - The lower edges of the blade and base are ground to dull edges for hafting.
  - Clovis points also tend to be thicker than the typically thin latter stage Folsom points. Length: 4–20 cm/1.5–8 in. Width: 2.5–5 cm/1–2 inches.
Clovis points are thin, fluted projectile points created using biface percussion flaking (that is, each face is flaked on both edges alternatively with a precursor). To finish shaping and sharpening the points they are sometimes pressure flaked along the outer edges.

Clovis points are characterized by concave longitudinal shallow grooves called “flutes” on both faces one third or more up from the base to the pointed tip. The grooves may have permitted the points to be fastened hafted) to wooden spears, dart shafts or foreshafts (of wood, bone, etc.) that would have been socketed onto the tip end of a spear or dart.

Clovis points could also have been hafted as knives whose handles also served as removable foreshafts of a spear or dart. There are numerous examples of post-Clovis era points that were technological system.

Specimens are known to have been made of flint, chert, jasper, chalcedony and other stone of chnchodial fracture.

The idea of Clovis foreshafts is commonly repeated in the technical literature despite the paucity of archaeological evidence. The assembled multiple piece spear or dart could have been thrown by hand or with the aid of an atlatl (spear thrower).

**Hand Drills**

*Also see “Clovis Projectile Points” above.*

The first drill was a development of the primitive awl, a sharp-pointed instrument of bone, stone, or copper which was held in one hand, pressed against the object, and turned back and forth until a hole was bored.

The point was set in a socket of bone or wood. By setting it in a transverse handle increased pressure and leverage were obtained, with increased penetrating power.

Artificially perforated objects of bone, fish bones, ivory, pottery, stone, and wood, common to all periods of the world's history, are found in mounds, caves, shell-heaps, and burial places of the Indians.

- The holes vary from an eighth to a half inch in diameter, and from a fourth of an inch to 6 in. or more in depth.

Shell, bone, and stone were drilled to make beads. Stone pipes with bowl and stem openings of different sizes were common, and whistles were made of stone and bone. Tubes in stone, several inches long, with walls scarcely an eighth of an inch thick, were accurately drilled.

The simplest form of drill was a straight shaft, varying from a fourth to three-fourths of an inch in diameter and from 10 in. to 2 ft. in length. This shaft was revolved in alternating directions between the hands, or, when the shaft was held horizontally, it was rolled up and down the thigh with the right hand, the point of the drill being pressed against the object held in the left hand; or at times the object was held between the naked feet while the drill was revolved between the hands.
The pump drill, still employed in the arts, is said to have been known to the Iroquois and was also used by the Pueblo Indians.

This drill consists of a shaft which passes through a disc of stone, pottery, or wood, and a cross piece through which the shaft also runs; to each end of the cross-piece is attached a string or buckskin thong having sufficient play to allow it to cross the top of the shaft and to permit the cross-piece to reach close to the disc.

This disc is turned to wind the string about the shaft; this raises the crosspiece. By pressing down the crosspiece after a few turns have been taken, the shaft is made to revolve and the disc receives sufficient impetus to rewind the string, which by successive pressure and release, continues the reciprocal movement necessary to cutting.

The speed attained by the pump drill is much greater than with the bow drill or the strap drill, and the right hand is left free to hold the object that is being drilled. The pump drill, although long in common use among the Pueblo Indians, is probably of foreign origin.

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**Fremont Rock Art - Example: Upper Pictograph Cave**

- In the shelter of Upper Pictograph Cave is a window to the past. Painted on the wall of the cave are pictographs, a type of rock art, resembling people, animals, and abstract images.

- **The Process:** The Fremont created rock art images by cutting into rock surfaces (petroglyphs), and by painting images, usually onto rock (pictographs). Rock was probably chosen as a medium because of its durability, and because of the protection rock shelters provide from the weather. The paint the Fremont used had to be durable. Like paint made today, it had three main ingredients that made it long-lasting.
  - First, a pigment, usually inorganic, gave the paint color. One common pigment was the mineral hematite which creates a red color. Next, a binder was added to hold the pigment particles together and to hold the paint onto the rock surface. Some examples of binder ingredients include blood, egg, seed oils, plants resins and juices, milk and honey. The third ingredient of the paint was a medium, or a fluid, that made the paint liquid and suitable for application. Examples include plant juices, water, animal oils, and urine.

- **The Subject:** Some of the shapes and patterns that are represented on these cliff faces have been named by people who study rock art. Figures resembling human form are called anthropomorphs. More specifically, those that are trapezoidal in shape are called Fremont-style anthropomorphs. Those resembling animal forms are called zoomorphs.
While many of the pictographs clearly represent living things, some of the art is more abstract - dots and lines drawn on the rock surface with paint or charcoal.

But what do these pictographs mean? No one can say absolutely what the painter had in mind while creating these images. To attach meaning would be to possibly make wrong inferences or conclusions about the images and about the people who made them. We are left, then, to guess for ourselves. Therefore, realize that any meaning we give these paintings is merely speculation, and what they actually represent, if they do, in fact, represent anything, may never be known.

**More Than Pictures**

Besides the rock art, artifacts have been found in this cave. During the 1930's, E.P. Harrington recovered stone artifacts, animal bones, ashes, charcoal, and fire-cracked rocks buried in the floor sediment. These artifacts indicate that the cave was used for more than just a place to paint figures.

Upper Pictograph Cave has been used by animals as well as people. Pack rats used this shelter to build their nests or middens, and Townsend's big-eared bats have been known to use this cave from time to time. These bats are very sensitive to the slightest disruption, so it is essential to not go inside. Instead, enjoy this cave and its special features from the outside, and leave with a better understanding and appreciation of this natural and cultural resource.

**Getting There:** From the Lehman Caves Visitor Center, drive .25 miles then turn right on Baker Creek Road. Travel 2 miles up the road, then turn left at the Grey Cliffs sign. Here there is a fork in the road - follow the left fork. The cave is on the left side of the road. If you continue down this road, you will come to the Pole Canyon picnic area and trailhead.

**Baker Village**

The westernmost known Fremont site, Baker Village, is located only a few miles from Great Basin National Park.

Believed to be occupied from 1220 to 1295 A.D., the site had been known to archeologists for many years because of a visible raised mound covered with a scattering of potsherds and chipped stone.

From 1991 to 1994 the Brigham Young University, in cooperation with the Bureau of Land Management who owns the site, conducted summer excavations at the Baker Archeological Site.

The excavations revealed a settlement of surprising complexity. Instead of a scatter of pit homes and mud-walled food storage structures, Baker Village consists of an organized cluster of over 15 buildings built according to a specific plan and aligned to a single compass direction. In the center, a larger mud-walled structure shows intriguing alignments with sunrise on the winter and summer solstices.
Midden

- A midden is the archaeological term for trash or garbage heap.

- Archaeologists love middens, because they contain the broken remains from all kinds of cultural behaviors, including food stuff and broken crockery; exhausted stone and metal tools; organic matter and sometimes burials. In some cases, midden environments have excellent preservation of organic materials like wood, basketry, and plant food.

- Middens are found everywhere humans live or have lived: sometimes in thin sheets extending out from the back of a dwelling (known as sheet midden); sometimes placed into empty storage facilities, such as a storage pit or abandoned building); and sometimes simply in great piles.

- The first middens that were extensively investigated were enormous heaps of shells, or shell middens, called "kitchen middens" in the 19th century, probably because they were so easily identified. Shell middens can be enormous, since mollusks produce so little edible meat compared to the size of their shells.

- Modern middens are known as "landfills".

End of the Fremont People

The reason for the disappearance of the Fremont culture is debated in archaeological circles. There definitely was a drought associated with the "Medieval Little Ice Age" (1300-1800), when the climate in the Great Basin became significantly colder and drier, severely impacting the feasibility of farming. Rainfall became less predictable, and most annual moisture came in storms over the winter, rather than during the growing seasons.

At the same time, there is an indication that the Fremont population had grown, leading some researchers to point to a population pressure/climate change scenario as a factor. Competition for the Great Basin region was created by the in-migration of Numic speakers (Shoshones, Utes, Paiutes), who practiced a broad-based hunting and gathering strategy better adapted to the newly arid conditions.

Fremont Culture Sites

Utah: Danger Cave, Cowboy Cave, Big Village, Median Village, Evans Mound, Nawthis Village, Icicle Bench, Lott's Farm, Snake Rock, Huntington Canyon, Caldwell Village, Range Creek

Nevada: Pahranagat Valley, O'Malley Shelter, Scorpion Ridge, Steptoe Valley, Amy's Shelter

Colorado: Mantle's Cave, Texas Overlook, Sky Aerie, Tamarron
**Suggested Readings**

- **UUAP 95**: Median Village and Fremont Culture Regional Variation, *University of Utah Anthropological Paper 95*

- **Three Fremont sites in Emery County, Utah (Antiquities Section selected papers)** by David B Madsen (1975)

- **Exploring the Fremont**, David B. Madsen


