

Analysis of Archaeological Ceramics



The design and creation of pottery by people of the American Southwest continues today. The archaeological record of the production, use and trade of ceramics provides us with rich information about ancient Southwestern lifeways and cultural traditions. While the decorations and surface treatments of this woman's vessels are contemporary (and expensive!) a similar range of vessel shapes and sizes is found in prehistoric Puebloan ceramics, including the ones you will study in this lab. Have fun as you learn about the description and analysis of potsherds!

Introduction

At this point you have gained knowledge about lithic artifacts, and how archaeologists use them to study many dimensions of the prehistoric cultures that made and used them. In this lab we'll turn our attention to a completely different class of artifacts: **ceramics**. You know what ceramics are, because we use them virtually every day of our lives, principally in conjunction with food, but also as floor tiles, insulators, drawer pulls, and delightful artistic pieces made by students in our College of Art.

Art students know things about ceramics that are also necessary and useful for archaeologists, who want to use prehistoric ceramics as a means to learn about the people who made and used them. We'll be asking questions about archaeological ceramics that concern the raw materials, the manufacturing technology, the form and function of the products. Also we'll ask questions about the contexts and associations of ceramics, as means to reconstruct the daily lives of the site's occupants.

Ceramic analysis often is an important tool in the identification of culture groups, the documentation of trade relations and also studying patterns of culture change. For example, in your study of the Neolithic through Dynastic periods in Mesopotamia and Egypt, you learned about periods of culture change accompanied by territorial expansion. Ceramics from those periods are extremely important evidence for the cultural traditions that produced them – in other words, they provide us with a cultural “signature” that we can follow in time and space. But how do we actually read those signatures in the data we collect from prehistoric ceramics? An art student could probably read those signatures quite well, although when they speak of ceramics, they have a strong art accent. This lab is designed to help them (and you) learn how to see and use ceramics as archaeologists do as they seek answers to their questions.

ABOUT CERAMICS

To study archaeological ceramics, you need to have a basic introduction to the topic, because you need to know how and why we make certain observations on **sherds** (broken fragments of pottery). The following discussions will provide you with basic information on ceramic raw materials, manufacturing technology, vessel forms, surface treatments and decorative techniques. Our discussion will focus on the observations you need for your sample – globally, there are many, many other possibilities (just consider clay figurines for example). However, the approaches used here are typically included in most ceramic analyses.

Raw Materials

The principal component of ceramics, as you know, is clay. This forms what we call the ceramic **paste**. Not all clays are the same (there are hundreds of specific clay minerals) and potters always sought out the best materials that were available.

Most, but not all, prehistoric pottery has larger particles added to the paste. These materials are called **temper** (or aplastics), and their function is to prevent cracking of the clay as it dries and breakage during firing. The size of the temper can vary significantly, but as a general rule, pieces of temper will be in the range of 1-3 mm, so they can be seen with the naked eye, but 10X magnification is advised. Common materials used as temper include:

1. Sand - usually rounded grains
2. Grit (crushed, angular pieces of rock)
3. Grog (crushed and sometimes somewhat ground pieces of broken pottery; can be confused with grit without close inspection)
4. Bone (usually crushed – rare in SW ceramics)
5. Ash (you may have difficulty seeing this and will call/group sherds with ash temper as “untempered”). This is common in Southwestern ceramics; it was used to produce fine pieces with thin but strong walls, especially for the painted varieties. Even though ash particles are small, they are usually in the silt size range, which is much larger than clay. Thus they truly are a tempering agent. Ash was extensively traded from the highland volcanic regions of Mesoamerica to the Maya Lowlands.

Ceramic Technology

1. First, the potter must select and acquire the raw materials for the paste (clay) and usually temper as well. In many cases clay was sought at some distance from the site of manufacture. Usually detailed chemical analysis of clay minerals is necessary to define the source, assuming that it is very distinctive. Both ancient (Pot Creek) and modern (contemporary Taos and Picuris Indians) potters sometimes chose clays that contain a lot of **mica** (a mineral that is flaky, extremely shiny, with colors ranging from white to gold and sometimes black). Selection of tempering materials can also be used to define the source of the materials, including sand grains or rock fragments (grit), if those materials are found in geologically distinct locations.
2. The clay must be dried and then ground into an extremely fine powder.
3. Water is mixed with the clay, and temper is added as needed (some clays have “natural temper”).
4. The vessel is begun usually by making a base which is pressed from a ball or coiled from a fat rope. Next small ropes of the clay are added by coiling building up the walls of the vessel, with the coils being initially bonded by squeezing them together with the fingers.
5. The initial vessel is finished when the rim of the orifice is finished and shaped. As the walls are built up the coils must be bonded together. After adding a given section of the vessel wall, the exterior of the vessel still shows the coils (like the wall of a log cabin), which must be firmly bonded together. This can be done in several ways, but all methods of bonding coils also allow the potter to make the walls of the vessel evenly thick; this helps reduce weight, increase strength, and ensure uniform heat penetration during firing.

One way to bond the coils and finish the walls is to pinch the vessel wall from the outside with one hand, while the other hand (or a pebble) is used as an “anvil” on the inside. Often, a smooth pebble is used for the outside, so that the exterior surface is also smoothed during this process. Thus, as the vessel is constructed, the coils are successively added and bonded.

Another way to bond the coils, very popular in the Southwestern US, resulted in an exterior surface (and actually a class of pottery) that is called **corrugated**. This was usually done with a bone or wooden tool and sometimes with the fingers. In our sample two main kinds of corrugation are present. **Simple corrugation** involves pushing one coil down on the one below, such that they form overlapping ridges that circle the vessel. **Indented corrugation** is done with a blunt tool which was used to create regularly spaced impressions, giving the surface a somewhat basket-weave appearance. Note that both forms of corrugation were commonly used on different parts of the same vessel.



Corrugated Pottery from Pot Creek Pueblo.

Corrugation was a commonly used as a means of both finishing and decorating Puebloan ceramic vessels, especially large jars that were used for cooking and food storage. Corrugation was done in several ways, including simple bonding and smoothing of coils (upper right), or with various indented patterns (upper and lower left). As you can see in the sherd on the lower right, both techniques were often used on the same vessel. Corrugation was usually done to the upper parts of vessels (shoulders and necks), leaving the rest of the vessel simply smoothed.

6. After smoothing or corrugation, additional vessel parts may be added by firmly bonding clay loops or lugs to the moist clay vessel. Handles or loops may be added for carrying or for hanging vessels from the ceiling to protect their contents from vermin and save space in small rooms. Lug-like applications may have been added to facilitate carrying, or sometimes small nodes were added as decorations.
7. Now the vessel may finished, or the potter may chose to proceed with a further surface treatment.

Surface Treatments and Decorative Techniques

Here are the kinds of surface treatments you will encounter in the Pot Creek ceramics:

1. Plain – These are vessels that have smoothed surfaces, but no slips or decorations. These can be fragments of vessels whose upper portions were decorated or corrugated, but the paste and temper would be the same for sherds from different parts of such vessels.

2. Slipping - A slip is essentially a thick paint or slurry of clay in water having a consistency of thick cream, that is applied to the surface of the vessel. The type of clay used for slips is usually chosen for specific properties, especially the color that will result upon firing. Slips make the surface of the vessel very smooth. The slipped vessel can be fired as is, but commonly the slipped surface was then painted, using a pigment that produced a contrasting color on firing. For tall and necked jars, only the exterior surface was slipped. But for bowls, it was common to slip (and sometimes paint) both the interior and exterior surfaces of the vessels. Look for this by comparing the interior surfaces and exterior surfaces of your sherds.

3. Polished - Polishing is done after smoothing. The potter produces a very smooth to shiny surface by rubbing a smooth pebble quickly over the vessel surface. For unslipped pottery, this brings the flake-shaped clay crystals into parallel so the surface reflects light. Polishing of slips produces the smoothest surface, but the whole vessel must be polished in one step before any of the slip dries. You should consider any very

smooth to shiny surface as “polished”, even though different degrees of polishing can be recognized.

4. Painted – designs were painted with numerous attractive patterns, including straight and curved lines, circling lines and patterns, geometric spaces filled in with lines, hatching, solid color, and so on. Selection of slips and pigments produced color schemes that are denoted by the base color and added design. **Black-on-White (B/W)** painted ceramics are a hallmark of the Southwest. **Black-on-Red (B/R)** is also common, especially in the later part of the Pueblo culture sequence. There are a few **polychrome** (more than two colors) sherds in the sample. These are B/R on one surface and W/R on the other. At Pot Creek the B/R and polychrome pottery is all assumed to have been acquired by trade with other groups. The chosen paint colors and design motifs on Southwestern ceramics are probably the most important attributes used in the classification of those ceramics into types.



Black-on-white Sherds from Pot Creek Pueblo.

These designs, done with mineral and carbon paints, were applied to jars, bowls and mugs that were used daily by inhabitants at the site between 1100-1350 AD. Your analysis of sherds like these will help you answer questions about the different kinds of vessels and their contexts in the activities at the pueblo.



Black-on-Red Sherds from Pot Creek Pueblo.

B/R and also polychrome wares were acquired by the Pot Creek Indians by trade with other Puebloan communities. Study of trade wares is an important means of reconstructing prehistoric patterns economic and social ties.

Vessel Forms

Several vessel forms are represented in your sample, but the majority of your sherds are from the vessel body, and small sherds can always be difficult to relate to the shape of the vessel.



Black-on-White vessels from Chaco Canyon, New Mexico.

This jug and small bowl are some of the many vessel forms made by ancient Puebloans. Note that the painted decorations on the interior of the bowl will be preserved on the concave surfaces of sherds.

Ideally, we would have sherds that represent all parts of the vessel- the base, the body, the rim, and in some cases a neck (which has a much smaller diameter than the body). For your analysis, you will have to rely on a few clues as to vessel form, but also be prepared to say “indeterminate” in some cases.

In all cases, we use the convexity of the sherd to define the interior and exterior surfaces. Here are some of the clues:

Conical Jars. These generally were used for cooking, and the mouth of the vessel is quite wide to make it easy to get food in and out., Only the exterior surfaces were decorated, if at all, and many of these are undecorated. If the sherd is large enough, the curvature will indicate it came from a vessel with a tapering or conical shape, but not a rounded body.

Globular Jars. These vessels have a rounded body, usually a shoulder and sometimes with a neck (see the contemporary large jars in the first photo in this lab). Flaring rims are common. Jars were slipped and/or decorated on the exterior surface only. These were used mainly for food or water storage, and sometimes for carrying food or water. Many of these are slipped and painted, but corrugated and plain jars are also quite common.

Bowls. Bowls were used principally for serving food, and are usually slipped and/or decorated on both surfaces. They tend to have less pronounced curvature than globular jars, but are readily distinguished by slipping/painting of their interior surface.

Jugs or mugs. You can guess that these were used for drinking, as well as moving water from one vessel to another during food preparation. These usually have handles and vertical necks with distinctively tight curvature. (see example above).

Indeterminate. We use this category for sherds that are too small or otherwise lacks diagnostic features to allow vessel identification.

With this brief introduction to ceramics, you are ready to enjoy your analysis of ceramics from Pot Creek Pueblo.