UTE AND NAVAJO CERAMIC TECHNOLOGY:

DISTINGUISHING PROTOHISTORIC ETHNIC TRADITIONS

By

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Distinguishing ethnic traditions in archaeological contexts is notoriously difficult, especially if different ethnic groups used outwardly similar material culture. Most scholars of ethnic identity now recognize that attention to aspects of technology, and the decisions involved in technological choice, can elucidate categories of ethnic membership. Often, artifact technology offers more insight into ethnic traditions than outward expressions of style. Only a few scholars working in the protohistoric northern Southwest have approached ethnic affiliation from a technological perspective; this perspective is especially useful in light of the highly mobile hunter-gatherer groups that dominated the northern Southwest during this period. This study of Ute and Navajo ceramic construction and finishing techniques provides strong support for the consideration of 'technological style' in identifying ethnic traditions in the archaeological record. A distinctive method of construction is explained for Ute finger-impressed and Navajo Dinetah Gray ceramics; this construction can be macroscopically identified, which will aid in the future field identification of Ute and Navajo archaeological traditions.

FOR JOHN AND DIANNE WILSON:

Thanks for all the love and support

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CHAPTER I: INTRODUCTION

The period between the Puebloan abandonment of the Four Corners area in A.D. 1300 and the arrival of the first Euro-American settlers in the early 19th century is surely the most under researched time period in the history of the northern American Southwest. This 500-year period was characterized by a complex mix of shifting allegiances between Ute, Navajo, Apache, ancestral Puebloan and Comanche groups. Subsequent Spanish colonization of New Mexico in the 16th century precipitated a new wave of dramatic upheaval characterized by Native participation (either voluntarily or forcefully) into capitalist driven economies — aborted missionary work, tenuous military allegiances, adoption of the horse and widespread slave raiding constitute developments that accompanied Spanish rule.

The fluidity of cultural movements across the Southwest in the Protohistoric period has resulted in a considerable challenge to archaeologists interested in deciphering this complex time period. Central to such concerns is the identification of ethnic groups in the archaeological record. Presently, archaeologists are bound to ethnohistoric and ethnographic records to aid in the interpretation of the Protohistoric, and rapid group movements, ethnic influxes into alien populations, and the influence of Spanish contact complicate its interpretation.

Furthermore, the *self-ascribed* nature of ethnic identification muddies both individual and group identities in situations of intense culture contact and ensuing culture change. Although the ethnohistoric literature is a useful tool to interpret some elements of protohistoric interaction. it cannot be used to make ethnic-based judgments about cultural groups in the absence of archaeological data.

In this thesis, I attempt to find ways to better define material remains that reveal Ute cultural affiliation in relation to what is known of Navajo material culture. Although unequivocal ethnic determination of material culture elements will prove difficult to produce, analysis of technological style focusing on ceramic construction and finishing techniques can identify Numic and Athapaskan ceramic traditions. This project employs experimental ceramic construction as well as archaeological, ethnographic and ethnohistorical information in order to identify elements of technological style that reflect ethnic membership. This analysis identifies construction correlates for both Numic and Athapaskan ceramic traditions, and provides archaeologists with new information by which to 'field identify' such traditions.

In this chapter, I begin with discussions of the available archaeological and ethnohistorical evidence for Ute and Navajo occupation in the American Southwest. Chapter 2 provides information on ethnic identity-based research, detailing the problems, promise and challenge in conducting these studies. Chapter 3 describes the background of Ute and Navajo ceramic research, while Chapter 4 presents and interprets data resulting from analyses of Ute and Navajo ceramic construction and finishing techniques. Chapter 5 will summarize my findings, and will propose avenues for future research seeking to identify Ute and Navajo ethnic indicators.

The Problem

The protohistoric and early historic Ute and Navajo occupations of the American Southwest are poorly understood — in part, because past (and current) research in the American Southwest focuses primarily on the Ancestral Puebloan occupation of the Four Corners region. Protohistoric and Historic Ute and Navajo occupations have received much less attention from the southwestern archaeological community. This stems from difficulty in identifying ethnic groups from archaeological remains, and from a lack of archaeological interest in these periods. However, recent projects using archaeological, ethnohistorical and ethnographic data have begun to clarify aspects of protohistoric interaction and ethnic identification in this culturally fluid time period (Brown 1996; Kearns 1996; SanFillipo 1998; Reed 1988; Reed and Reed 1996; Torres 1998; Towner 1996). Such studies enable archaeologists to investigate shifting settlement patterns, exchange partnerships and population migrations that characterized the interactions of protohistoric cultural groups.

Despite recent studies (e.g. Towner 1996; SanFillipo 1998; Reed 1988), we currently are not able to distinguish the archaeological manifestations of Ute and Navajo sites in this culturally rich region. Both groups were highly mobile, which complicates the interpretation of Protohistoric era hunter-gatherer sites. Indeed, post-Puebloan occupation in the northern Southwest is evidenced in the archaeological record by 'ephemeral' sites composed primarily of lithic scatters, occasional ceramics and remnants of architectural material. Often, the material culture used by protohistoric groups is so similar in these categories that cultural affiliation is difficult to ascertain. "Another disconcerting aspect of research on the nonpuebloan protohistoric groups is their scanty and elusive material remains preserved in the archaeological record. Unfortunately, prior to about 1974 archaeologists simply walked over sites that today are the focus of intense interest" (Schaafsma 1996: 21). This disparity must be addressed if archaeologists want to investigate cultural boundaries and culture change.

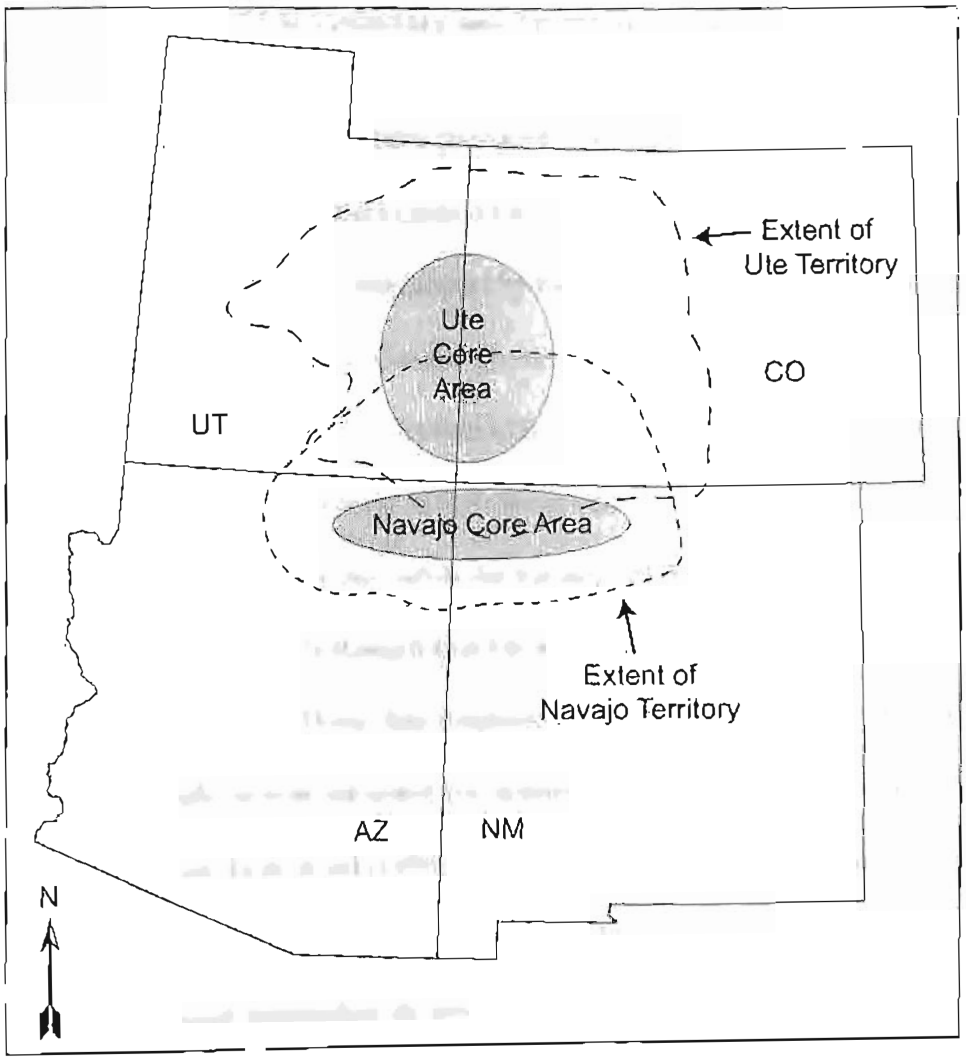
Archaeological approaches must employ multiple lines of evidence to decipher this period of Southwestern history. Fortunately, for archaeologists studying protohistoric cultural interactions, many lines of evidence are available; tree ring dating, ethnohistorical, archaeological and ethnographic data all can be brought to bear on the interpretation of the Protohistoric era. Although archaeological evidence is scanty for both the Ute and Navajo in relation to ancestral Puebloan data, there is still the potential to address complex questions relating to social networks, ethnogenesis and population movements. Additionally, an emerging database that includes an increasing amount of data recovered from archaeological mitigation projects provides material with which to test hypotheses generated primarily through ethnohistorical and ethnographic information. These analytical tools will contribute to an enhanced understanding of the Southwest in this tumultuous time.

The relative inability of archaeologists to distinguish between Ute and Navajo archaeological sites has contributed to Ute invisibility in both academic and public archaeological settings. Steven Baker (1995: 4) states, "The archaeological profession's oversight and/or reluctance to deal effectively with Ute archaeology has been a major cause of the Colorado Ute archaeological disenfranchisement." The many questions inherent in generating ethnic-based arguments from archaeological and ethnohistorical data cause some researchers to renounce ethnic identity-based studies completely (e.g. Stiger 1998).

Archaeologists continue to be stymied by an over reliance on ethnohistorical information in the interpretation of the Protohistoric period. Perhaps the abundance of ethnohistorical information available has discouraged *archaeological* approaches to determining the probable cultural affiliation of protohistoric archaeological sites.

This chapter will describe the cultural history of Ute and Navajo groups in the northern San Juan region of the American Southwest from A.D. 1500 to 1750. Using archaeological and ethnohistorical evidence, I will focus specifically on Ute groups inhabiting west-central and southwest Colorado, while I limit my focus to eastern Navajo populations in northern and northwestern New Mexico (after Hester 1962). Although both groups dominated respective 'core' areas, the Ute and Navajo both engaged in mobility patterns that resulted in substantial overlap in territory (see Figure 1). The information provided in this chapter will provide the reader with a background concerning what is currently known about Ute and Navajo settlement patterns and population movement in the northern American Southwest.

Figure 1: Map Showing Ute and Navajo Territory in the Protohistoric Period



First, Ute cultural background is discussed, with an emphasis on what is currently known about Ute cultural chronology and archaeological and ethnohistorical indicators of probable Ute affiliation. Second, Navajo cultural chronology and culture history is reviewed in an attempt to show the geographic placement, cultural development and known archaeological indicators of protohistoric Navajo occupation in the southwest.

Reconstruction of Ute Prehistory and Protohistory Based on Archaeological Evidence

Reed and Metcalf (1999) have proposed two stages detailing Ute cultural chronology; the Canalla phase (A.D. 1300-1650) and the Antero phase (A.D. 1650-1881). These phases are distinguished by the widespread adoption of the horse c. 1650. I will first discuss the Canalla phase and the early part of the Antero phase in an effort to summarize what is known of late prehistoric, protohistoric and early historic Ute existence in the American Southwest.

Although much debate surrounds the entrance of Numic-speaking peoples into the Southwest, it is generally thought that the ancestral Ute entered west-central Colorado by 1100 (Reed 1994). These data originated from early archaeological work in west-central Colorado, which subjected Ute ceramic samples recovered from radiocarbon-datable contexts. Both Reed (1994) and Buckles (1971) have documented probable Ute sites dating to the 1100's in west-central Colorado.

Although most archaeologists studying the Ute generally concur with Reed's proposed entry date for Numic groups in west-central Colorado (although see Baker 1995 for a dissenting view), researchers debate the origin of Numic groups. Some researchers have postulated a southeastern California homeland for Numic speakers (Bettinger and Baumhoff 1982) while others have proposed an origin in the central Great Basin (Aikens 1994). In either case, most researchers agree that Numic speakers arrived in the northern Southwest between A.D. 1100- 1300. Ute people, however, would argue that they have been present in their current homeland throughout antiquity (Naranjo 2000).

Bettinger and Baumhoff (1982) offer an explanation of the 'Numic Spread' across the Great Basin based on Optimal Foraging Model. They argue that Numic groups originating from southeastern California engaged in a 'processor' subsistence strategy that privileged lower ranked resources at the expense of large game. Because processing tasks are generally the responsibility of women in hunter/gatherer societies (Bettinger 1991), a 'processor' subsistence strategy places more value on women's labor, resulting in a 'female rich' society (Bettinger and Baumhoff 1982: 493). Eventually, with balanced male/female ratios, the Numic processors would enjoy higher fertility rates than pre-Numic groups inhabiting the Great Basin—it is this population increase that resulted in the Numic expansion.

Although this model has sustained some criticism (e.g. Simms 1983), it represents the first real attempt to explain the present distribution of Numic groups without relying solely on glottochronological evidence. Interestingly, their model seems to directly contradict data generated from recent archaeological work, which has identified remains that suggest exploitation of high-ranked faunal resources (e.g. Reed 2001). This early observation is supported by recent archaeological work in west-central Colorado, which notes the paucity of ground stone and an excess of expedient tools related to animal butchering (Reed 2001). Antelope, and Mule deer are the most common faunal remains recovered from Ute sites, and in later periods, buffalo remains become more apparent. This highly mobile, hunter-gatherer lifeway resulted in few material remains; therefore. Ute archaeology has been labeled 'ephemeral' and the material manifestations of Ute occupation are not always clear.

Despite the difficulty in identifying Ute sites, researchers agree on some elements of material culture that denote Ute presence. Ute ethnic affiliation is inferred by the presence of Desert-side notched and Cottonwood Triangular projectile points and Uncompahgre Brownware, a utilitarian ceramic exhibiting distinct design and vessel shape attributes similar to other Numic ceramic styles. Wickiup architecture, conical log structures that served as habitations, has been dated to post-1700s in Colorado and is considered a Ute architectural type (SanFillipo 1998). However, the insubstantial nature of these structures hinders their detection in archaeological surveys. Therefore, archaeologists must rely largely on ceramics and projectile points to infer Ute occupation.

In recent years. Uncompahgre Brownware, in association with Desert Side-Notched and Cottonwood Triangular period projectile points, has emerged as the most reliable ethnic indicator diagnostic of Ute presence in Colorado. Reed (1994: 195) states, "Of all the traits commonly regarded as Numic diagnostics, brown ware ceramics appear to be the single best indicator of Numic affiliation." The current materials thought to reveal Ute cultural affiliation have come to light as the result of numerous projects, both CRM and academically driven: of all projects initiated, Buckles' (1971) study focusing on the Uncompahgre Plateau area forms the basis of what we know about Ute archaeology in Colorado. Buckles (1971) excavated, tested or collected 10 sites that contained ceramics in this area of west-central Colorado;

ceramic collections from five of these sites are re-analyzed in this study (see Appendix A).

Buckles (1971) used the direct historic approach to trace early historic Ute material culture into prehistory. He detected little change in Ute historic and prehistoric archaeological materials, and noted the continued use of Desert-side notched, Cottonwood Triangular projectile points and Shoshonean knives, a distinctly Numic lithic technology (Reed 1994). He also was the first to define two types of Uncompahgre Brownware, plain and fingernail impressed. Buckles also noted continuity in ceramics from the plainwares of the earlier 'Mountain Tradition' (after Black 1991) to Uncompahgre Brownware. Although Buckles thought initially that Uncompahgre Brownware represented a distinctly Ute ceramic type, he has since suggested that the ethnic affiliation of Uncompahgre Brownware may be more complex, as it appears similar to Intermountain ware traditions (Buckles 1988).

Some recently excavated and re-analyzed southwestern archaeological sites have revealed early Ute components. Talus Village, a Basketmaker III site outside of Durango Colorado, contains a possible Ute Wickiup dated to c A.D. 1441 (Dean 1969). Other Ute sites in west-central Colorado date to the mid to late A.D.1300s, based on thermoluminescence dating of Uncompahgre Brownware ceramics (Reed 1994).

In a controversial argument, Schaafsma (1996:19) argues that the La Plata Mine sites located in northwest New Mexico are Ute, rather than Navajo in origin. The Dolores Archeological Project, resulting from a large water diversion undertaking on the Dolores River, documented post-Puebloan archaeological sites in southwestern

Colorado. Although some of these sites may be Ute, none were excavated because they were not directly impacted. By far, the most recent comprehensive work focusing on Ute archaeology results from the TransColorado Pipeline Project (see Reed 2001). Data generated from this work have revealed well-dated Ute (and Navajo) components.

Reconstruction of Ute Prehistory and Protohistory Based on Ethnographic and Ethnohistorical Evidence

According to ethnographic data, the Ute existed in a band-level social organization, with band members consisting of both immediate and extended family (Steward 1938; Smith 1974). A typical Ute group consisted of between 20-40 individuals occupying between 6-8 Wickiups (SanFillipo 1998). These individual band units composed larger bands that inhabited roughly the same territory. Band members shared food and camp tasks, but division of labor roles structured hunting and gathering activities. Men were primarily responsible for large game hunting and women were responsible for hide-processing and plant food gathering, while both sexes may have shared responsibility for small-game hunting (Opler 1940; Smith 1974).

Each small band unit of approximately 20-40 people was headed by a male 'chief,' chosen primarily for his organizational ability and wisdom (Smith 1974). The ability of these leaders to maintain power was primarily a function of how well the group perceived their leadership. This position was not hereditary, and the individual's position could be terminated if other group members found fault in his leadership. In describing the lack of trans-band leadership, Opler states, ". . . the band of this period in Ute history had no political cohesiveness and no centralized authority" (1940: 127). Wealth accumulation was discouraged, as inter-band redistributive networks based on loose kinship relations were firmly in place.

Further examination of both archaeological and ethnohistorical information permits some reconstruction of Ute arrival and the placement of Ute groups in the American Southwest. In addition to drought conditions in the 1200s, Puebloan oral tradition suggests that hostile nomadic groups from the northwest were also responsible for the Four Corners abandonment through persistent raiding and warfare (Kuckelman 2000; Lipe 1995). This implies that these nomadic (probably Numic) groups were in the Southwest in the A.D. 1200s. Most researchers place the Ute in west-central Colorado sometime before A.D. 1500, but after A.D. 1350. However, according to Wilshusen and Towner, (1999: 354) " . . .the alternative of a pre-A.D. 1300 Numic presence must remain an interesting and provocative alternative hypothesis in all research in this area."

The earliest known references to the southern Ute come from Jemez informants in 1626, and their account places the Ute just north of the San Juan River.

> A group of these Indians who also were said to talk like Mexican Indians, visited Jemez a few years prior to Spanish settlement in 1598. On Departing they traveled northwest by way of the Chama River in order to return to their homes beyond the Navajo Indians. According to the Jemez, there was a great river (San Juan) north of Navajo country, and in that region were the thatch-covered huts of these Guaputus (Lummis 1900: 182-83 cited in Schroeder 1965: 64)

Tyler (1951: 155) recounts a Hopi informant's story as told to Dr. F.W. Hodge: "the Ute, not the Navaho, were the traditional enemies of the Hopi, clearly implying that the Navaho came later." Attacks from the Utes, according to Hopi informants, precipitated major changes in Puebloan settlement patterns. " . . .the aggressors from the north (northeast) were (Capote) Utes, the more powerful and mobile group that might have caused the Hopis to move into the tops of their mesas" (Schroeder 1965: 57). Contemporary tribal members point to 'pecked out' rock art in southeastern Utah as representing post-abandonment Ute occupation (Ambler and Sutton 1989).

Even though raiding is notoriously difficult to 'see' archaeologically, the defensible 13th century cliff dwellings of the Mesa Verde region may reflect an attempt to thwart Ute aggression. Archaeological evidence from this tumultuous period reveals a decrease in intercommunity trade among ancestral Puebloan groups, which could indicate increased raiding/warfare activity (Lightfoot and Kuckelman 1994).

Although recent studies have emphasized intercommunity warfare (e.g. Lightfoot and Kuckelman 1994), the alternative explanation of Ute expansion and increased raiding remains an intriguing possibility (e.g. Kuckelman 2000: 1). The Ute intensified raiding activities following the adoption of the horse (c. 1650), and ethnohistorical evidence for this period reveals increased raiding on Spanish traders, and Navajo and Apache settlements for corn, slaves, horses and other types of wealth (Hyslop 2002; Marsh 1982).

In addition to increased capacity for raiding, this shift to an equestrian lifestyle allowed the Ute to dramatically expand their range. Early Spanish accounts, although perhaps not wholly accurate, provide some idea of just how vast Ute territory became:

> The Spanish documents indicate that these Yuta Indians occupied a territory stretching from the area west of the Colorado River in southeastern California and northwestern Arizona, north of the Colorado and San Juan rivers in southern Utah, and on the headwaters of the Rio Grande in south and central Colorado. This was their homeland in the sixteenth, seventeenth and eighteenth century. Bands engaged in hunting, trading, or raiding regularly went beyond these limits in every direction . . . Northeastern New Mexico, the panhandle of Texas, and western Oklahoma. all were familiar territory to the Yuta Indians (Tyler 1951: 344-345).

The Spanish were certainly not discriminating in their accounts of particular ethnic groups: thus, it is certain that they included Shoshonean-speakers such as the Paiute. and Yavapai together in their geographical descriptions of "Yuta" territory. This practice was common in the Spanish documentation, and further confounds researcher's attempts to reconstruct Ute territory.

Identification of early Ute components is central to later protohistoric and historic cultural interaction, where contact increased among indigenous groups and Spanish colonial outposts. Extensive contact between Ute, Navajo and Spanish groups undoubtedly took place throughout the 17th and 18th centuries (Naranjo 2000). This contact involved shifting alliances in both trading and warfare. Thomas' translation (1941: 105) of Teodoro de Croix's 18th century account testifies to the political volatility of these fledgling allegiances;

> . . .I shall content myself if the Comanche make less frequent visits to the territories of New Mexico, if the Ute remain faithful to our friendship, and if

the Navaho do not take sides openly in the interests of the Apache. In this way the hostilities of the latter can be withstood and punished, and the province will breathe.

Many ethnohistorical accounts of this interaction emphasize the shrewdness of the Ute in establishing and maintaining exchange networks, as they shifted allegiance with Navajo and Apache groups in order to maximize their trade relationships with the Spaniards (Marsh 1982).

The use of the horse also precipitated greater aggregation among individual bands and members of different larger bands. It is thought that Ute settlement size in the late 17th century included as many as 200 individuals living in seasonally occupied villages (Steward 1938). The horse also allowed for greater interregional mobility, and the southern Utes came into increasing contact with surrounding neighbors. "As the Utes became more mobile, their range increased, and some (Moaches) ventured onto the plains of eastern Colorado to join the great army of buffalo hunters, which included their linguistic relatives, the Comanches" (Schroeder 1965: 54). This quote further testifies to the great expanse in range that the Ute experienced after the widespread adoption of the horse.

The establishment of the Colorado fur trade in the early 1800s precipitated even greater changes in Ute settlement and subsistence, and cross-cultural contact became more frequent and conflict-driven. Intensive Euro-American fur trade activity followed early French and Spanish forays into Ute territory (Noel, Mahoney and Stevens 1993). The French contacted northern Ute and eastern Shoshone groups in the late 18th and early 19th centuries, while the Spanish in northern New Mexico contacted southern Ute and Navajo groups more than a century earlier (Noel, Mahoney and Stevens 1993). The extension of the fur trade into eastern Colorado via the upper Arkansas and Platte rivers further connected the Ute (and other Native American groups) into more entrenched capitalist economies, and evidence for this contact becomes more evident in the archaeological record.

However, in spite of the increased understanding of pre and post contact Ute archaeology over the last decade, archaeologists are still largely unable to identify Ute sites with any confidence. Wilshusen and Towner (1999: 368) point to the frustrating state of Ute archaeology . " . . .the central focus for coming years is to continue with increasing archaeological recognition of the surface signatures that may betray Ute affiliation and begin to build an understanding of what excavated Ute sites might look like." Fortunately, recent archaeological projects have focused on Navajo occupations in the Southwest. These efforts have encouraged much-needed comparative studies of both Ute and Navajo archaeological remains (e.g. Hill and Kane 1988; SanFillipo 1998).

Reconstruction of Navajo Prehistory and Protohistory Based on Archaeological Evidence

Studies of Navajo history in the American Southwest have significantly benefited from cultural resource management undertakings; The Navajo Reservoir Project (Eddy 1966), La Plata Mine Project (Brown 1991), the Frances Mesa Alternative Treatment Project (Sesler, Hovezak and Wilshusen 2000) and the Cedar Hill Special Treatment Project (Wilshusen 1995) have all contributed much-needed information to the Navajo archaeological database. This work has greatly clarified Navajo cultural chronology, and has resolved (at least in part) some long-standing questions in

Navajo archaeology. The archaeological data recovered from these projects shed new light on the Athapaskan entry into the Southwest -- when combined with ethnohistorical and ethnographic data, a comprehensive data set emerges with which to examine Navajo chronology, external trade relations and population movements.

Before the archaeological data are discussed, it is necessary to describe the nature of debates in Navajo archaeology — namely, the controversy over the Navajo entry into the American Southwest, and the validity of the dates associated with early Navajo sites. Currently, the Navajo cultural chronology is divided into three phases: The Dinetah phase (A.D. 1500-1650), the Gobernador phase (A.D. 1650-1780) and the Cabezon phase (A.D. 1780-1860)[1]. For the purposes of this thesis, only the developments of the Dinetah and Gobernador phase will be discussed in detail.

The validity of the Dinetah phase has received the most vehement debate in recent years, but now most scholars accept an early 16th century Navajo occupation in the Southwest (but see Schaafsma 1996 for a dissenting view). The debate surrounding this phase has been clarified, at least in part, by recent CRM investigations.

The Navajo Reservoir Project, initiated in the 1950s, located four sites that contained lithics and grayware utility sherds, but lacked the polychrome ceramics and tradewares that were common on better known 18th century Navajo sites (Hogan 1989: 53, Winter and Hogan 1992: 299). Dittert (1958) attributed these sites to the 'Dinetah phase,' which, based largely on the utilitarian ceramics (Dinetah Gray) and absence of polychromes attributable to later periods, he believed preceded the

[1] The Dinetah phase dates have been revised considerably in the last two decades. The dates presented here follow Wilshusen, Hovezak and Sesler (2000: 179) and Brown (1996: 52). Reed and Horn (1990) place the Dinetah phase as beginning c. A.D. 1350, but most archaeologists do not yet accept this as it is based on limited data.

Gobernador phase. He tentatively assigned dates ranging from A.D.1550-1700 to account for the material remains recovered from these four 'early' sites. Subsequent excavations in the La Plata Valley (Brown and Gish 1991), the Cedar Hill Special Treatment Project (e.g. Wilshusen 1995) and the Frances Mesa Alternative Treatment Project (e.g. Wilshusen, Hovezak and Sesler. 2000) appear to substantiate Dittert's early proposal, and radiocarbon thermoluminescence dating techniques provided convincing support for a 16th century Navajo occupation in northwestern New Mexico (Winter and Hogan 1992: 303-309). Later dates resulting from examination of Kin' Atsa north of Farmington, New Mexico provide some evidence for a pre-A.D. 1400 Navajo presence in the Southwest (e.g. Reed and Horn 1990), although most researchers have attributed these early dates to the 'old wood problem' (e.g. Brown 1996: 52).

Recent controversy has focused on the ethnic affiliation of protohistoric sites in the northern Southwest. For example, Schaafsma (1979; 1992) proposed a Navajo ethnic affiliation for protohistoric sites located in the Chama Valley of northwestern New Mexico, based primarily on historical documents that placed the 17th century Navajo in the vicinity of the Chama River. Data from these sites, collectively attributed to the Piedra Lumbre phase (e.g. Schaafsma 1979), include semi-circular masonry structures, a large quantity of Tewa ceramics, features associated with livestock husbandry such as fences and corrals, and low numbers of Dinetah Gray sherds.

Based primarily on the presence of Dinetah Gray ceramics and historical documents, Schaafsma asserted that these sites represent the earliest presence of the

Navajo and their shift to pastoralism in the Southwest. Subsequent research has identified these sites as probably either Tewa or Hispanic shepharding locales (e.g. Carillo 1992). Such evidence again points to the ambiguity in using primarily ethnohistoric documents to assign ethnic affiliation in the absence of corroborating archaeological data.

In another argument, Schaafsma (1996) proposes that historical documentation supports a Ute occupation in the vicinity of the La Plata Mine sites, located just north of the San Juan River in northwestern New Mexico. He argues that most of the material culture evidenced at these sites is ethnically ambiguous, but suggests the use of fingernail impressions on many of the sherds is a Ute characteristic. Schaafsma (1996: 40) states, "I am inclined, therefore, to identify the protohistoric pottery in the La Plata Valley as a heretofore unrecognized variant of Eastern Ute pottery or Uncompahgre Brownware." Although this assumption is provocative, the majority of the archaeological community in northwest New Mexico disagrees with Schaafsma's assertions, as fingernail impressed Dinetah Gray sherds are sometimes found in Navajo archaeological contexts. In any case, Schaafsma's arguments question both the ethnic affiliation and the validity of current Dinetah phase dates by relying primarily on ethnohistorical evidence.

Despite the spate of recent research seeking to better define Navajo cultural chronology, the date of Navajo migration into the American Southwest is still contested. Torres (1998) argues for an early Navajo arrival based on temporal continuity of Athapaskan lithic technology. Using lithic data, he argues for an intermountain Navajo migration from central Canada around A.D. 1300.

Interestingly, Navajo oral history supports an intermountain migration route, as the Navajo consider the San Juan Mountains of southwestern Colorado their ancestral homeland (Wilshusen and Towner 1999). For example, the Navajo origin myth focuses on the San Juan Mountains as the place of Navajo 'emergence'. This account, coupled with the traditional recounting of the 'gathering of the clans' documented by Zolbrod (1984), correlates in some ways with ethnohistorical and archaeological evidence (Wilshusen and Towner 1999: 356).

In addition, some researchers postulate greater Navajo antiquity in the region based on the high level of adaptation to arid environments evidenced at some early Navajo sites (Brown 1996). Although significant debate surrounds the timing and nature of Athapaskan entry into the Southwest, most linguistic and archaeological evidence suggests an earlier Ute entry into this region (e.g. Schaafsma 1996; Reed 2001).

Archaeological evidence documenting the Navajo arrival in the Southwest has added greatly to regional understanding of early Navajo Dinetah phase components. Archaeological assemblages dating to this period include a diverse mix of lithic scatters, Dinetah Gray ceramics and forked-stick hogans. Although past debate has focused on whether or not Dinetah Gray ceramics are indigenous to the Navajo, it is now widely accepted that this utilitarian pottery is indeed Navajo in origin (Reed and Reed 1996). "Dinetah Gray pottery appears to have been brought to the Southwest by the first Navajo groups, and limited manufacture of indented varieties seems to have begun before the Navajo came into close contact with the Rio Grande pueblos" (Hogan 1989: 65).

Dinetah phase sites have been documented in the Navajo Reservoir District and through excavations associated with the Frances Mesa Alternative Treatment Project. Some scholars (e.g. Brown 1996) have suggested that the diversity present in Dinetah phase assemblages may result from generalized Athapaskan occupations rather than distinctly Navajo occupations. Brown (1996: 51) states, " . . .various places and sites with purported early Navajo occupations reveal enormous variability, both within and between project areas, as well as through time."

In light of the vague and sometimes contradictory nature of the ethnohistorical literature, archaeology has provided empirical data with which to examine Navajo chronology. The earliest, well-dated Dinetah phase site is site LA55979 in the Navajo Reservoir area, was tree-ring dated to A.D. 1541. This date corresponds with early Spanish documents that place the Navajo and Apache in the eastern Plains of New Mexico in the mid- 16th century (Wilshusen and Towner 1999: 356). Some scholars have argued for an intermountain migration route as the means for ethnic differentiation between the Navajo and Apache on the basis that Navajo technology reflects a mountain adaptation while Apache traditions are more reminiscent of a Plains lifeway. However, most scholars now see ethnic differentiation occurring *after* the Athapaskan arrival in the Southwest (Wilshusen and Towner 1999).

The Gobernador phase, dating from A.D.1650-1780, is arguably the most dynamic phase of Navajo history, and involved sustained interaction among Ute, Navajo, Apache, Comanche and Spanish groups. Gobernador Polychrome pottery, a high-fired, thin-walled ceramic, is the hallmark of this chronological period and bears marked similarity to contemporaneous Puebloan ceramic types. Early researchers believed that these similarities resulted from an incursion of Pueblo Revolt refugees' c. A.D. 1696.

However, recent research supports an earlier, mid-17th century date for the first appearance of Gobernador Polychrome. Reed and Reed (1996: 107) state, ". . . our examination of design styles and technological aspects of Gobernador Polychrome suggests that it was made by Navajo potters who drew on the designs and motifs present on a number of Puebloan types." Increased interregional interaction is evidenced by trade wares in Navajo contexts from both eastern and western Pueblos (Reed and Reed 1996: 87).

Architecture associated with the Gobernador period differs significantly from the earlier forked-stick hogans of the Dinetah phase, and is much more variable. Although hogans still characterize residential sites, Pueblito architecture became common in the Gobernador phase. Pueblitos are substantial stone structures that were built on prominent points on the landscape; their locations often suggest a pre-occupation with defense. These masonry structures were usually fortified, and exhibit evidence for storage capacity and multiple room occupation (Sesler, Hovezak and Wilshusen 2000). Interestingly, the construction of the Pueblitos documented in archaeological surveys of northwest New Mexico corresponded to both increased Spanish and Ute contact. Towner (1996:153) points to the defensive nature of these structures: "This position [Pueblitos as defensively oriented] has recently been supported through line-of-sight analysis that suggests a defensive network of sites and not simply individual defensively oriented sites."

Interestingly, recent research documenting Pueblito construction episodes suggests that most Pueblitos were built in times of relative peace between the Navajo and Spaniards (Towner 1996: 163). Concurrently, ethnohistorical evidence indicates increased Ute raiding of Navajo settlements throughout the Gobernador period; raiding that may be visible archaeologically through Pueblito construction. Sesler, Hovezak and Wilshusen (2000: 168) suggest that

> The magnitude and tactics of historically noted raiding are difficult to determine archaeologically, but if this raiding was persistent, it might be archaeologically evident as changes in Navajo settlement and social organization. Such changes might include the evidence that Navajo territory to the north of the San Juan River was abandoned during the late 17th or early 18th century A.D. It also might be evident as "boom" [sic] in pueblito construction that immediately follows.

Scholars have further proposed that Pueblitos served an integrative function in Navajo communities increasingly concerned with defense (e.g. Wilshusen and Towner 1999).

Pueblitos represent a radically different form of architecture, both physically and symbolically. Recent research identifies different abandonment patterns for both Pueblitos and residential Hogans. Sesler, Hovezak and Wilshusen (2000: 250-251) found that Pueblitos were rarely disassembled for secondary use; rather, they were left intact as specific features on the landscape. "This suggests that they either had been abandoned by their owners, or that they, in a sense, were not owned, but instead functioned as public facilities". This interpretation corresponds with Navajo cultural taboos that prohibit any disassembling of abandoned habitation structures (Hester

1962). In addition to the proliferation of Pueblito-style architecture, the Gobernador phase is also associated with substantial population aggregation in the Dinetah region.

Sesler, Hovezak and Wilshusen (2000) examine Frances Canyon Pueblito and argue for an increase in population at this site throughout the early to mid 18th century. Tree ring cutting dates at Frances Canyon reflect periods of population aggregation interspersed with abandonment throughout approximately 50 years of site occupation. "The data further suggest that most of the site's population growth, as mirrored in the architectural record, occurred during or after A.D. 1736" (Sesler, Hovezak and Wilshusen 2000: 191). This aggregation corresponds with ethnohistorical evidence that suggests an intensification of Ute raiding of Navajo settlements in the 18th century (Tyler 1951; Schroeder 1965).

Gobernador phase Navajo occupation is further characterized by dramatic shifts in area settlement patterns. For example, Dinetah phase sites are more frequently located north of the San Juan River; however, after the mid 17th century Navajo settlements are more common south of this river (Wilshusen and Towner 1999: 359). Navajo oral history testifies to the completeness of this shift. "The actual name of the river changes over time from *Tooh* (The River) or *Tooh Bika'i* (Male River) or *Sa'Bitooh* (Old Age River) to *Nooda'I Bitooh* (River of the Utes)" (Wilshusen and Towner 1999: 359). This change alludes to increasing encroachment by the Utes on the northwestern edge of traditional Navajo territory. It is clear that such territorial conflict characterizes cultural interaction in the Protohistoric and early Historic periods.

The Navajo begin to abandon Dinetah in the early 18th century, and migrate to the south, east and west of the traditional Navajo homeland. This exodus culminates in the occupation of Chacra Mesa in Chaco Canyon, where the earliest hogan dates to A.D. 1720 (Brugge 1981). Interestingly, this southward shift in settlement and subsistence may also have been due to Ute hostility. "This seems an unlikely direction of expansion if the Pueblitos were constructed for protection against the Spaniards. It is exactly the direction of expansion one would expect, however, if the threat was from the north" (Towner 1996: 166).

Reconstruction of Navajo Prehistory and Protohistory Based on Ethnographic and Ethnohistorical Evidence

Ethnographic and ethnohistorical references to the Dinetah phase suggest that Navajo social organization was partilineal, with Navajo men practicing polygyny (Hester 1962: 28). Researchers suggest that early Navajo encampments consisted of one extended family group, camped in two or three hogans. Early Navajo groups were highly mobile, as indicated by early Spanish references describing Navajo subsistence patterns in the 16th century. The first reference to probable Navajo (or proto-Navajo) people is evident in chronicles relating to the Coronado Expedition in A.D. 1541, which explored portions of the Rio Grande Valley and northeast New Mexico. The 'Querechos'[nomadic groups thought to be Athapaskan] the Spanish encountered were described as nomadic people who subsisted by hunting buffalo and transported their gear via dog travois (Habicht-Mauche 1992).

Later Gobernador phase (A.D. 1650-1780) social organization changed with the incorporation of Puebloan refugees into Navajo communities. Early researchers suggested a profound Puebloan influence in Navajo culture as reflected by Pueblo-like architecture, and a distinctive ceramic type (Gobernador Polychrome), which incorporated design elements reminiscent of Puebloan styles. Recently, however, scholars have questioned the "Puebloan" origins of Navajo material culture in this period, and have favored indigenous construction of both Pueblito architecture and Gobernador Polychrome (e.g. Towner 1996; Reed and Reed 1996). However, it is undisputed that Puebloan influence profoundly affected Navajo culture, as reflected by a change from probable partilocal to matrilocal residence patterns (Hester 1962: 28). Spanish accounts further testify to the change resulting from this cultural melding; "the Christian Indians [Puebloans] are so intermingled with the many heathen that they are almost indistinguishable" (Hackett 1937: 474, cited in Hester 1962:28).

The first Spanish reference to anything that resembles the word 'Navajo' occurs in 1626, with Fray Zarate Salmeron's early account (e.g. Milich 1966). Salmeron's account locates the 'Apaches de Nabaju' in the vicinity of the Chama River in northwest New Mexico. However, 'Nabaju' is a place name, and given the fluidity and movement of mobile groups in the Southwest, this designation cannot be used to identify ethnic identity with any certainty. Scholars have long noted the use of place names by Spanish chroniclers, and suggest that these names have erroneously been equated to ethnic groups. Wozniak (1992: 329) clarifies this argument in relation to Salmeron's account,

> The problem comes with interpreting that [Salmeron's] data with regard to the Apaches de Nabaju. First, the term "Nabaju" is a place name as it would remain throughout the rest of the seventeenth century and not the designation of an ethnic entity. Second, these Apache who lived in the area known as Nabaju were to be found somewhere in the region of the Chama and San Juan rivers . . .Salmeron does not give us sufficient data to reach anymore specific conclusions on the location of the Apaches de Nabaju in the early 1620s.

Brugge (1996: 258) agrees with the ambiguity inherent in the interpretation of historic documents and states, "For the Athapaskan and Numic peoples, unfortunately, few sites are located with precision in the early documents. Generalizations, estimates, and imprecision characterize the historical accounts, allowing widely varying views to be derived from the same materials." Hester (1962: 20) recognized this early problem, and noted the biases of the Spanish in the recordation of Native activities. It is clear that, although historical documents are invaluable tools to decipher protohistoric phenomena, they must be used as a *supplement* to archaeological data.

Post A.D.1750 Navajo occupation is characterized by a shift to a pastoral economy supplemented by trade with surrounding indigenous groups — this shift to pastoralism correlates with the Navajo abandonment of the Dinetah (Wilshusen and Towner 1999: 365). At this time, relationships with the Spaniards were largely peaceful partly due to the fact that the Navajos needed the Spanish as allies to thwart Ute raiding (Wozniak 1992).

Navajo cultural development through A.D. 1500-1750 represents an opportunity to use a range of evidence in deciphering this complex time period. The combination of archaeological, ethnohistorical and ethnographic information enables researchers to examine data relating to ethnic affiliation and ethnogenesis; two extremely difficult topics to examine in any time period. Studies of the Southwestern Protohistoric and early Historic periods must consider the complex intercultural dynamics in any analysis of societal change. Wilshusen, Hovezak and Sesler (2000: 253) summarize the significance of Navajo cultural development in the Southwest; "In a sense, the Dinetah phase is focused on the emergence of a Navajo identity. For the Gobernador phase, . . . the central issue is how big and complicated Navajo social structure became." Thus, the authors emphasize the importance of cultural dynamics in the forging of distinctly 'Navajo' ethnic identity.

The reconstruction of Ute and Navajo occupations and interaction in the Southwest is essential to our understanding of protohistoric and early historic cultural dynamics. Although I have only focused on what is known of Ute and Navajo dynamics, Spanish, Apache and Comanche studies are equally necessary to enhance understanding of this period. The mobility afforded by the horse in the mid 17th century contributed dramatically to the scale of cultural interaction in the American Southwest, but also obscured traditional subsistence and settlement patterns. These traditional settlement patterns could enable easier ethnic identification of archaeological sites (Reed 2001). Thus, extreme mobility, coupled with the increasing expansion of Spanish and later Euroamerican interests has created problems in defining original Native homelands.

This brief review of Ute and Navajo cultural chronology demonstrates the increased movements of both groups in the Protohistoric period. Although ethnohistorical documents offer a unique opportunity to gain insight into some of these changes, they are characterized by bias and do not effectively identify ethnic groups with any certainty. To begin to address questions of ethnic identity and differing social networks, we must continue to develop reliable archaeological approaches that identify cultural affiliation. Only then can ethnohistorical information be evaluated with any accuracy.

CHAPTER II:
ENTHICITY AND ARCHAEOLOGY

Ethnicity as a concept has generated considerable debate in anthropology. Some perspectives see limited utility in pursuing the question of ethnic identity (e.g. Stiger 2001), while others see ethnic determination as a valid research focus (Jones 1997; Schaafsma 1996). Furthermore, the controversy inherent in addressing questions of identity is complicated by ambiguity in defining exactly what ethnic identity entails and how it is defined.

In this thesis, I will follow the definitions put forth by Jones (1997) for ethnic identity. According to Jones (1997 no page number) ethnic identity is, "that aspect of a person's self-conceptualization which results from identification with a broader group in opposition to others on the basis of perceived cultural differentiation and/or common descent." This definition addresses the *self-ascribed* aspect of ethnic identity that is so important in modern ethnography, but is less useful to the archaeologist who lacks direct access to how prehistoric people viewed themselves: However, ethnic *traditions* can be observed archaeologically in differences in both artifact style and the activities employed in the production and use of material culture—through this type of inquiry, archaeologists can examine how ethnic and cultural values are exteriorized in everyday practice.

Traditionally, approaches to ethnic identification in the archaeological record have focused on equating distinctive material culture with specific ethnic groups. For example, pre-1960s archaeology viewed ethnic groups as largely monolithic entities that had specific material correlates. "The basic premise was that artifact types could be used to identify cultures and that clearly distinguishable cultural provinces reflect the settlement areas of past tribes or ethnic groups" (Jones 1997: 2). This perspective facilitated the archaeologist's job by enabling easy identification of regional stylistic differences in material culture. It followed that these material differences correlated with different geographic areas, again, strengthening the notion that ethnic borders could be reliably identified according to geography and a corresponding similarity in material culture. Culture-historical inquiry was then replaced by the New Archaeology of the 1960s. This perspective shifted the research focus away from ethnic identity by conceptualizing culture as a functioning system responding to internal and external stimuli (Willey and Sabloff 1993: 224-226).

More recent conceptions of ethnic identity utilize innovative approaches to examine social and cultural difference. Many of these approaches involve closer inspection of *choices* embedded in artifact production sequences (e.g. Lemmonier 1986). For example, the choices a person makes during the artifact production sequence can reveal ethnic preferences; thus, archaeologists now recognize that these choices can be as informative of cultural membership as external expressions of style (e.g. Sackett 1991).

Recent attempts to differentiate Ute and Navajo material culture have not sufficiently examined possible ethnic markers inherent in choices that manifest in artifact production, use and disposal. These choices, and the material patterns that result, often persist even in the face of great cultural upheaval (Hensler and Goff 2001: 45). Such a perspective is especially useful in deciphering the mobility, trade and shifting settlement patterns of the Protohistoric period. By examining the material results of choices, archaeologists can better distinguish ethnic traditions in the archaeological record, and can therefore potentially identify group and individual cultural membership.

In this chapter, I first discuss traditional and more current approaches to ethnic identity in the archaeological record. I then present studies that argue for examination of individual and group style, and how style can manifest in technological choice. Finally, recent approaches to distinguishing Ute and Navajo material culture are presented. I argue that an analysis of Ute and Navajo ceramic construction and surface finishing techniques, used in conjunction with other lines of evidence, can help to identify technological traditions that are probably ethnically based.

Approaches to Ethnic Identity in Archaeology

As discussed above, traditional views see ethnic identity as a largely passive, 'fixed' identity. Early researchers attempting to define social groups depended primarily on seriation and artifact typology to identify discrete cultural boundary areas (Willey and Sabloff 1993: 127). Implicit in this conception was the view that ethnic identity was immutable; this, in turn, encouraged a simplified view of material culture where culture change occurred gradually, and that different suites of material culture equaled different social groups. Archaeologists have recently criticized this monolithic view of culture; these groupings ". . . imbue the groups with a cultural reality that may not be inherent in the archaeological data. The idea that shared material culture means shared cultural identity has recently come under question" (Cameron 1998: 185). Although a marked difference in material culture often indicates different cultural groups, this perspective simply does not capture the multifaceted nature of ethnic identity and its manifestation in material culture.

The early conceptions of 'archaeological cultures' met with increasing criticism after ethnographic studies demonstrated the fluidity of ethnic membership in the 1960s and 1970s (e.g. Barth 1969; Cohen 1978). This fluidity was shown to depend on self-ascription of individual identity, changing historical circumstance and varying levels of interaction with surrounding groups. This view is becoming more common in the ethnic identity literature, following Barth's (1969) influential work. ". . .a conceptualization of ethnic groups as self-defining systems, and an emphasis on the fluid and situational nature of both group boundaries and individual identification, has prevailed in the last two or three decades" (Jones 1997: 64). Although the self-ascribed component of ethnic identity complicates its determination considerably, it is still possible from an archaeological standpoint to detect social boundary areas as reflected by differences in material culture.

Cultural boundary areas represent an especially interesting realm in which to study ethnic groups, as these areas are often regions characterized by frequent and intense information exchange (after Wobst 1977). Most archaeologists would agree with this perspective if considering only traditional trade and exchange relations; however, in the context of the protohistoric Southwest, trade relations were often supplanted by extensive raiding activity which could obscure what archaeologists would otherwise conceptualize as 'bounded' social units. For example, raiding for slaves is well documented throughout the Protohistoric period. Considering the sparse material culture evident at many hunter-gatherer protohistoric sites, discovery of a foreign artifact tradition could result in the mis-identification of archaeological sites: when in fact, this foreign tradition represents the material production of a 'captured' individual. In this way, trade relations and raiding activity could result in different archaeological signatures.

Lightfoot and Martinez (1995) present an innovative perspective on social boundaries based on an archaeological work conducted at the 19th century multiethnic community of Fort Ross, California. They argue that traditional notions of boundary areas are rooted in a core/periphery framework (after Wallerstein 1974), and that this conception of ethnic groups as 'monolithic' entities is fundamentally flawed—largely because of the assumed presence of 'bounded' cultural units. This perspective has been considerably amended by archaeologists working within a 'practice' theoretical framework, which emphasizes the production and reproduction of social relationships, and strategic shifts in ethnic membership. This conceptualization effectively denies the existence of stasis in cultural groups as implied by the view of cultures as monolithic entities tied to discrete territories.

Lightfoot and Martinez (1995: 473) note the dynamism inherent in cultural boundary regions. "Some archaeologists are beginning to consider frontiers, not as cultural borders that largely inhibit and constrain intercultural relationships, but as interaction zones where encounters take place between peoples from diverse homelands". In such an 'interaction zone', the importance of finding ethnic indicators using archaeological means takes on a new importance, and becomes more challenging. This new challenge results from acculturation processes, which can obscure identities that were archaeologically distinguishable prior to this interaction.

In these situations, archaeologists must examine traditions least susceptible to rapid change.

Ethnic identity, like other 'social categories' has been shown in present contexts to be subject to rapid change according to the shifting agendas of individuals and groups. Therefore, views on ethnic identity became more multifaceted and mutable; ethnic groups were no longer seen as unchanging social units that humans were 'born into', but were rather conceptualized as subject to rapid transformation according to historical process and changing individual identity.

Gosselain (2000: 188) similarly suggests that current studies bring a fresh perspective to the ethnic identity question, "By approaching identity as a process rather than an entity, these and other studies explore crucial concepts such as gender, class divisions, ethnic enclaves, domination and resistance, culture contact and migration." Scholars note that individuals can have multiple 'identities' that are affected by distinctions such as class, gender and age.

In addition to the consideration of ethnic identity as a 'multilayered' concept, these later approaches place more importance on less visible emblems of cultural membership. ". . .less salient and more mundane aspects of material culture are as pertinent for approaching social boundaries as their more visible supposedly consciously invested counterparts" (Gosselain 2000:188). After an examination of the distribution of modern African pottery making techniques, Gosselain finds that certain aspects of ceramic production correspond closely to individual and group identity. ". . . the contexts in which technological behaviors are constructed and reproduced correspond to the same networks of social interaction upon which identities are themselves constructed and reproduced" (2000: 209). Thus, ethnic identity may be reflected in material culture production, a perspective most extensively explored by scholars investigating the *activities* behind artifact production, use and discard.

For example, Cordell and Yannie (1991) in their case study of *Ĝenizaro* (captive Indian populations) in the protohistoric Southwest demonstrate the utility of identifying ethnic groups in the archaeological record when looking at ethnic 'exclaves' within larger cultural groups. They argue that these groups can be identified not only by different pottery and stone tools, but also by different food production techniques.

> . . .the cases of Belen and Abiquiu suggest that where the Genizaro population was drawn largely from Pueblo Indian communities and where there was residential segregation of the Genizaros, they might be identified through specific crafts, such as pottery, perhaps manufacture of stone tools and possible through continued practice of Indian techniques of food preparation (Cordell and Yannie 1991: 106).

In this example, the juxtaposition of different ethnic groups in a bounded area does facilitate the identification of divergent traditions in artifact production, use and disposal — patterns that can signify ethnic differences that may not be outwardly expressed in artifact style. For the archaeologist, the pursuit of ethnic identity requires an attention to not only formal variation, but also the processes that produce that variation. ". . . style results most immediately from techniques; and it is only by studying techniques . . . that we can arrive at an understanding of the social forces and relations that condition material culture" (Dietler and Herbich 1998: 236). Arguably, the most fruitful lines of inquiry into ethnic identity in archaeological contexts have involved examination of finer stylistic choices involved in the identification of social boundaries:

'Technology of Style' and its Application to Ethnic Identity

Scholars often approach the question of ethnic identity through investigation into social boundaries as reflected by differences (extreme or subtle) in material culture. "A primary goal in studying formal variation across space is to identify social groups, whose boundaries are marked by distinctive patterns in the archaeological record" (Stark 1998: 1). The spate of 'Technology of Style' literature in recent years (Cameron 1998; Childs 1991; Lechtman 1977; Lemonnier 1986) testifies to this research focus, but views aspects of technology as reflecting stylistic choices that may be tied to ethnic identity. Proponents of this approach to style argue that technological traditions may better reveal social identity than visible artifact style (Chilton 1998: 133).

The 'Technology of Style' literature draws heavily on ethnographic studies documenting variation in artifact production that challenge traditional definitions of 'style' as purely decorative. Instead, these studies focus strongly on the technological choices involved in artifact production — in this view, the manufacturing process can be stylistically expressive. The types of production employed are largely determined by the social and cultural background of the maker, as the choices linked to artifact production likely stem from teaching by another member of the same social group.

Lechtman (1977) argues that *activities* themselves have style, and that the maintenance of these activities in the face of external cultural contact can be a powerful indicator of a cultural group. Lemonnier (1986) directed greater attention to the identification of social groups through an analysis of production sequences that he termed 'chaines operatoires.' "Among the principal advantages of this approach is that it allows one to view the production of material style as a temporally extended series of interrelated choices rather than an instantaneous act of creation" (Dietler and Herbich 1998: 238). By examining the artifact production sequence, Lemonnier argued that researchers could gain insight into cognition processes that reflect deep cultural traditions; traditions that may be patterned by an individual's ethnic identity.

Persuasive arguments proposed by Wobst (1977) and Weissner (1983) conceptualize style as an active means of communication that can consciously be used to indicate group membership. According to this perspective, style could be selectively used to convey information in particular circumstances; therefore, the decision to publicize one's membership in a social unit depended on the fluctuating agendas of both individuals and their broader social groups. These early studies of style conceptualized both activities and artifacts as signaling group membership; thus, style was now seen as a form of communication, which could be active as well as passive.

Successful ethnic identity studies demonstrate the utility of identifying social groups through both activities, and through choices that pattern these activities. Lechtman's perspective is shared by Lightfoot, Martinez and Schiff (1998) who examine Native Alaskan and California Pomo cohabitation patterns at Fort Ross, a 19th century Russian outpost in northern California. In this study, the authors examine acculturation in households inhabited by native Alaskan men and California Pomo women. They discovered that the ethnic identity of household members could be identified quite reliably by an examination of household structure and refuse disposal patterns (Lightfoot Martinez and Schiff 1998: 169). Their ethnic determinations were based on a clear link between material culture patterning and ethnic identity.

These patterns can be conceptualized as actions governed primarily by an individual's 'habitus'. 'Habitus' (after Bourdieu 1977) refers to an individual's "disposition", or interiorization of societal structure, and has been extensively employed in recent literature emphasizing a practice theoretical perspective. Habitus is most explicitly influenced by the social structure/system in which an individual operates. The incorporation of habitus into current archaeological approaches strengthens the importance of local context as a major force in determining social action. For example, race, class, gender, age, sex and social position partly determine the nature of an individual's habitus.

The material manifestations of an individual's 'habitus' can be seen through refuse disposal patterns. For example, Pomo women were probably not consciously asserting their identity by continuing native trash disposal patterns in a new, multi-ethnic context; rather, this action reflects the externalization of unconscious social and/or ethnic dispositions and demonstrates the resiliency of habitus — even though Pomo womens' existence had changed dramatically from earlier decades, some structural 'rules' relating to ethnic practice and tradition clearly continued to pattern social practice in new, hierarchically structured living conditions.

Sackett (1990) proposes that individuals or groups express identity through the act of *choosing* between expressive alternative styles, and relates these aspects of style closely to ethnic identity. This 'isochrestic' style is conveyed through the seemingly mundane processes of constructing cordage and disposing of trash; such patterns can be regulated by an individual's 'habitus'. Sackett (1990: 34) believes that these elements "can be just as stylistically diagnostic of ethnic identity as alternative design elements on the bodies of ceramic vessels". Most importantly, the investigation of habitus as reflected in material culture can potentially explain the processes that actively *create* style (Dietler and Herbich 1998), such as shifting relations of power within a particular community. Sackett effectively shows that through isochrestic style variation, *choices themselves* are both visible and can convey ethnic information.

In a seminal study that focused on the identification of prehistoric cultural traditions, Croes' (1987: 281) examined artifact assemblages of Wakashan and Salishan groups on the Northwest Coast, which were initially thought to represent distinct ethnic groups. Croes, however, identified widespread similarity in stone and bone tool material culture between both Wakashan and Salishan traditions, and argued that this similarity reflected shared responses to population pressure and ensuing environmental circumscription.

However, Croes' (1987) examination of the less archaeologically visible cordage and basketry from the study sites revealed distinct differences in construction techniques between the two cultural groups. He suggests that group and individual ethnic identity are best reflected in artifacts that may be more 'stylistically sensitive'. "...basketry and cordage patterns can be considered sturdy "warps" that are passed on more specifically along ethnic lines through the training process and do not commonly exhibit abrupt shifts" (Croes 1987: 281).

Croes' study represents an important one in that it demonstrates that ethnic identity does not necessarily conform to bounded territorial areas. Rather, broad-scale stylistic similarities may represent shared adaptations to shifting environmental, economic or socio-political situations. Therefore, different material classes are reflective of different *social networks* that may or may not be explicitly tied to ethnic identity. Interestingly, the artifacts that Croes identified as promising ethnic indicators were most representative of Sackett's (1990) 'isochrestic variation', which is partly guided by Bourdieu's concept of Habitus. Thus, if archaeologists are interested in identifying social groups in the archaeological record, examination of activities directed by habitus is a productive line of inquiry.

Childs' (1991) study of iron smelting furnaces of the Mashona tribe in present-day Zimbabwe examines the choices made in the construction of furnaces and shows how they can be culturally specific. She defines technological style as, " . . .the formal integration of the behaviors performed during the manufacture and use of material culture which, in its entirety, expresses social information" (Childs 1991:332). Childs (1991: 335) looks specifically at processes of information transmittal and notes that traditions taught by members of the same social group in a specific cultural context constrain stylistic choices; however, both the process of production and the resulting finished product can convey social information. Thus, the choices employed in this expression were culturally contingent, and therefore just as expressive of social information as outward appearance. Thus, the style evidenced in furnace production was both active *and* passive.

Chilton (1998) examines technological choices in the production of late Woodland (A.D. 1300-1600) Iroquois and Algonquian ceramics. She finds significant differences in technological attributes in the ceramics of each cultural group, in spite of evidence of close trade relationships between Iroquoian and Algonquian communities (Chilton 1998: 142-143). The Iroquoian site assemblage in general evidenced more uniform ceramic technology than sherds recovered from the two Algonquian sites analyzed. Chilton surmises that this difference can be largely explained by Iroquois sedentary living as opposed to the more mobile Algonquians who may not have invested as much effort in ceramic production. She argues that Algonquians *consciously* chose not to emulate the superior technology of the Iroquois:

> If Algonquian and Iroquoian people were interacting and sharing information, then the Connecticut Valley Algonquians had access to the knowledge and technology necessary to: (1) become sedentary farmers; and (2) make large, thin-walled, globular, smooth-bodied pots. However, they did not do either of these two things . . .they were capable of implementing these changes, had they chosen to do so (Chilton 1998: 159).

Based on her findings, Chilton argues that social boundaries can be identified, and further, that these boundaries can be maintained through the conscious choice of social actors influenced by long-standing cultural traditions associated with specific activities. Her argument demonstrates the value in examining the full range of production techniques in the identification of different cultural groups.

Examination of external style has been less fruitful in studies seeking to identify possible ethnic membership; rather, 'technological style' is more reflective of deep traditions that are probably learned and passed down through generations. Therefore, these aspects of technological style reflect two central components of Jones' (1997 no page number) definitions of ethnic identity — namely, identification with a broader group *and* common descent. I argue that these two components of ethnic identity are manifest in aspects of technological style present in Ute and Navajo ceramic production.

Distinguishing Ute and Navajo Ethnic Identity

The above studies have added significant knowledge to our current understanding of both the concept of ethnic identity and its identification in archaeological contexts. Particularly, the 'Technology of Style' arguments hold great promise in identifying ethnic traditions in situations of intense culture contact. These studies can be usefully applied to the problem of distinguishing Ute and Navajo material culture, but have not been to date. As discussed in this section, most attempts to determine the ethnic identity of protohistoric archaeological sites use formal artifact variation. As shown by previous researchers (e.g. Gosselain 2000), formal variation alone cannot be used to generate reliable arguments about a group's ethnic identity. It is the activities that underlie this variation that archaeologists must examine in order to gain further insight into processes that may be governed by ethnic factors.

In the protohistoric cultural milieu, both Ute and Navajo groups engaged in widespread raiding for slaves, food products and Spanish trade goods. Furthermore, the use of the horse enabled Ute and Navajo bands to range over wide areas of the

American Southwest. This extensive movement and trade in people obscured social group boundaries considerably in the Protohistoric period. Although researchers identify a core group area for both Ute and Navajo cultural groups, Navajo sites have been identified as far north as Gunnison, Colorado (Wade Broadhead, personal communication 2003) and Ute people have been documented as far southeast as the Texas panhandle. This extensive travel further shows the need for archaeological methods to shed light on the cultural affiliation of protohistoric sites.

Previous research has sought to differentiate Ute and Navajo archaeological manifestations with varying success. SanFillipo (1998) examines Ute and Navajo conical log architecture as a means of determining site ethnic affiliation; through this study, she identifies attributes specific to Ute wickiups and Navajo forked stick hogans. SanFillipo mitigates ambiguity in ascribing cultural affiliation by analyzing wickiups on the Uncompahgre Plateau in Colorado and forked stick hogans in Black Mesa, Arizona; her study areas are thus located in historic Ute and Navajo territory. Her study represents a useful pilot analysis that can be used to differentiate historic period architectural differences. These differences can be used to identify Ute and Navajo traditions and use of space at historic sites with architectural integrity: however, few protohistoric sites evidence such good preservation. Therefore, ethnic identity reflected in Ute and Navajo architecture is promising, but is hindered by a deteriorating database.

Brown (1996) presents a summary detailing current knowledge about the protohistoric transition in the northern San Juan region, and again reiterates the difficulty in distinguishing Ute and Navajo archaeological sites. "Archaeological evidence of Ute occupation during the seventeenth century should be present in parts of Southwestern Colorado, but problems recognizing these kinds of sites limits their incorporation into current models" (Brown 1996: 65). Kearns (1996) shares this conclusion, but identifies a type of biface commonly associated with Navajo sites. This 'unshouldered blade' differs from the 'Shoshonean knife'- a bifacial type common on Ute sites but absent from Navajo components.

Through his lithic analysis, Kearns (1996) found limited utility in using ground stone to differentiate Ute and Navajo cultural components, as both groups frequently recycled ground stone from earlier Anasazi and Fremont sites (Kearns 1996; Wilshusen and Towner 1999). This practice also obscures ethnic identification through analysis of Ute and Navajo lithic signatures, even though Kearns observed slight differences in some aspects of Ute and Navajo blade technology. Such attempts to determine Ute and Navajo ethnic identity through archaeological material have been instrumental in the development of settlement and subsistence models for Protohistoric hunter/gatherer groups, but have made limited headway in the identification of Ute and Navajo archaeological traditions. This 'recycling' of Anasazi groundstone has been documented at both Ute and Navajo sites, and thus limits the potential of ground stone as an ethnic indicator.

Torres (1998) conducted a comprehensive examination of Athapaskan chipped stone tool technology, and found distinctive patterns characteristic of lithic traditions. He documented the existence of 'microcore' technology and identified distinct lithic reduction strategies. He then compared Navajo chipped stone technologies to prehistoric artifacts produced by Californian Athapaskan groups and detected similarities between the two assemblages. Through this approach, Torres identified a lithic technology that was distinctly Athapaskan — one that remained virtually unchanged until the introduction of metal tools. This study demonstrates the perseverance of Navajo lithic traditions in spite of intense and frequent interaction with surrounding groups throughout the Protohistoric period. This artifact class seems to represent conservative Navajo tradition, and holds promise for identifying Navajo ethnic traditions in archaeological contexts.

Schaafsma (1996) discusses differences between Navajo 'Dinetah Gray' ceramics and Ute 'Uncompahgre Brownware.' Although these two types are similar, Schaafsma points out stylistic differences in surface treatment, construction techniques and vessel form between the Ute and Navajo pottery types. He criticizes archaeologists' tendency to ascribe cultural affiliation to sites based on the historic distribution of particular cultural groups. This assumption simply does not hold true in the fluid protohistoric Southwest where ". . . no ethnic group can be considered in isolation . . . Groups interacted with each other in complex ways, and some groups became virtual 'melting pots' for displaced people . . ." (Schaafsma 1996: 21).

Schaasfma, basing his arguments primarily on ethnohistorical evidence, argued that the 'Navajo' sites identified by Reed and Horn (1988) are Ute in origin, based largely on fingernail impressions on some ceramic specimens. However, the Navajo also constructed vessels where finger-tip impressions are present on the exterior surface (Hensler *et al.* 2001), so a consideration of either fingernail or fingertip impression is not alone sufficient to make an ethnic determination — especially, when Buckles noted that fingernail and fingertip impressions were variations of the same construction/decorative technique (Buckles 1971: 527).

Analysis of external stylistic elements in Ute and Navajo architecture, ceramics and lithic signatures has therefore been problematic. However, recent research has identified promising differences in Numic and Athapaskan archaeological signatures through the examination of technological style (e.g. Torres 1998; Reed and Hensler 2000). Focusing on pinpointing archaeological signatures of these broader cultural groups may mitigate ambiguity in identifying material culture remains deriving from these traditions. Although different ethnic groups are certainly represented within Numic and Athapaskan traditions (i.e. Shoshone, Paiute, Apache), broad consideration of technological style can provide a 'starting point' by which to examine finer stylistic variation within these two cultural groups that shed light on ethnic membership.

In light of this discussion, and considering the relatively scant material remains associated with Ute and Navajo groups, the analysis of *isochrestic* variation, (after Sackett 1990) and attention to activities likely governed by an individual's 'habitus' will be the most fruitful in identifying distinguishing characteristics between Ute (Numic) and Navajo (Athapaskan) groups that may reveal social identity and/or ethnic affiliation. In the following chapter, I examine construction techniques of Ute Uncompahgre Brownware ceramics and compare this information to a database compiled on Navajo construction techniques. Through this analysis, I pinpoint attributes in vessel construction that probably convey ethnic information.

CHAPTER III:
UTE AND NAVAJO CERAMICS

Database Integrity

At present, the ceramic database for Ute and Navajo groups is generally small. Navajo sites dating to after the Pueblo Revolt of A.D. 1680 generally have more ceramics than protohistoric and early historic Ute sites. This could be attributed to Navajo adoption of a more sedentary lifestyle after intense contact with Puebloan groups, or it may represent decreased Navajo mobility due to elevated threats from mounted Ute raiders (Wilshusen Hovezak and Sesler, and 2000: 252).

In contrast, Ute populations of the Protohistoric and early Historic period were highly mobile, and therefore appear to have not used ceramics as extensively. At many Ute sites, only a few vessels are represented in any given ceramic assemblage (Eric Blinman, personal communication 2003). Further complicating the database is a lack of chronological control at protohistoric sites — as with many surface archaeological manifestations, it is difficult to distinguish multiple site components with any certainty. Therefore, effective dating of ceramic components is often difficult without subjecting ceramics to thermoluminescence dating techniques. Thus, Ute and Navajo ceramic studies are plagued by small samples, ineffective or costly dating procedures and limited site integrity. Until recently, these factors, in combination with a relatively low archaeological interest, have stymied real progress in identifying reliable ethnic indicators for each cultural group. This chapter will describe what is known about Ute and Navajo ceramics based on ethnographic and archaeological research.

Ute and Navajo cultural affiliation is often ascribed based on historic distributions of these two cultural groups; however, this aspect of the 'Direct Historical Approach' has limited utility when investigating protohistoric groups whose lifeways were dramatically altered by the adoption of the horse. An equestrian lifeway greatly expanded the range of the Ute and Navajo; at the same time, however, this mobility extended original homelands and modified traditional boundary areas.

This chapter describes archaeological and ethnographic approaches to identifying construction and finishing techniques specific to Uncompahgre Brownware and Dinetah Gray ceramics. Central to this discussion are ethnographic descriptions of Navajo pottery-making describes by Tschopik (1941) and Reed and Hensler's (2000) archaeological study documenting Navajo ceramic construction techniques.

The Complexities of Using Ceramics for Ethnic Identification

Archaeologists have long criticized the tendency to ascribe cultural affiliation to ambiguous material remains. Ethnic identification continues to be an important research goal for archaeologists, but ethnic affiliation of protohistoric archaeological sites is difficult due primarily to heightened mobility and an overuse of ethnohistorical records in defining cultural territory. Schaasfma (1996:39) states, ". . . a tautology has developed where the ceramics are Navajo because they are found on Navajo sites and the sites are Navajo because they contain Navajo ceramics". This circuitous logic does not stand in a region where newly defined Protohistoric 'boundary areas' were in a constant state of flux, and have yet to be explored archaeologically.

Distinguishing Ute Uncompahgre Brownware and Navajo Dinetah Gray ceramics has been challenging in the absence of rigorous laboratory analysis, as both groups employed similar firing techniques and, in some cases, surface treatment. There is even some disagreement about whether these wares can be used to infer ethnic identity (Buckles 1971; Stiger 1998). However, based on the previous research of Reed (1994, 2001), Schaafsma (1996) and Reed and Hensler (2000), Uncompahgre Brownware and Dinetah Gray can, in most cases, be reliably distinguished based on differences in vessel construction techniques and surface finishing treatment. If archaeologists are able to identify ethnic *traditions* in the material culture of specific sites, this information, used with other lines of evidence can aid in identifying Ute or Navajo site signatures. The remainder of this section will explore what past researchers have identified as characteristic of the two ceramic types based on existing typological sequences.

General Navajo Dinetah Gray Descriptions

Navajo ceramics have received much archaeological attention in recent decades as a result of heightened oil and gas exploration in areas of historic and protohistoric Navajo occupation in northwestern New Mexico and along the Colorado/New Mexico border. These projects continue to yield increasing quantities of ceramics attributed to Navajo manufacture. Coupled with ethnographic descriptions of ceramic construction and finishing techniques, both areas of data are beginning to provide some answers in better defining Navajo ceramic types.

General consensus has been reached by scholars seeking to define specific attributes of the Dinetah Gray vessel type. Athapaskan ceramics in the protohistoric period clearly differ from neighboring traditions in many respects. For example, there are differences in paste and temper. Wilson's (1996:1) description of Apache protohistoric ceramics from Datil, New Mexico, remarks on the thin walls and dark, almost black paste of this utility ware. Brugge (1981:3) defines Dinetah Gray as slightly micaceous, having predominantly a quartz sand temper. Brown (1991: 473) adds crushed igneous rock to Brugge's definition.

Dinetah Gray was most often fired in a reducing atmosphere, and mean wall thickness ranges between 3.0-5.0mm. Hensler *et al.* (2003) and Brugge (1981) define Dinetah Gray as extremely friable, probably due to firing in a poorly controlled environment, with mean wall thicknesses less than 5.0mm. The vessel types associated with the Dinetah ceramic type are virtually all jars with conical bases.

Certain sub-varieties of Dinetah Gray have been identified such as Dinetah Gray Gobernador indented (Brugge 1981; Dittert 1958), which is distinguished by finger impressions on the vessel exterior. Recent researchers suggest, however, that Gobernador indented does not constitute a separate variety, as it overlaps both temporally and technologically with the plain type of Dinetah Gray. Therefore, both 'types' can be classified more generally as different variants of Dinetah Gray (Reed 1995; Hensler and Goff 2001).

Current perspectives on Navajo ceramic typology consider Dinetah Gray an indigenous Athapaskan ceramic type, independent of Puebloan influence (Brugge 1981:18; Marshall, 1985; Reed and Horn 1990; Reed 1995). Hogan (1989:65) states, "Dinetah Gray pottery appears to have been brought to the Southwest by the first Navajo groups, and limited manufacture of indented varieties seems to have begun before the Navajo came into close contact with the Rio Grande pueblos" (Hogan 1989: 65).

Navajo Dinetah Gray Descriptions: Vessel Construction and Finishing Techniques

The most comprehensive ethnographic description of Navajo ceramic construction techniques was produced by Tschopik (1941). His ethnographic study documented the technology of ceramic manufacture employed by Navajo potters in the Ramah area of northern New Mexico. His observations of informants' pottery construction provide the basis for subsequent studies that attempt to replicate Navajo construction and finishing techniques (e.g. Red and Hensler 2000).

I will focus mainly on Tschopik's descriptions of cooking and utility ware. These types of vessels are increasingly well represented archaeologically and are known as the 'Dinetah Gray' type. The manufacture of this utility ware continued through early historic times, and as evidenced by the construction techniques employed, has changed very little through time. I will focus exclusively on Tschopik's descriptions of vessel construction and finishing techniques. Three aspects are especially relevant to this thesis; 1) his ethnographic descriptions of coil width, 2) coil obliteration methods and, 3) finishing techniques.

Two Navajo informants constructed relatively thick coils in the formation of utility ceramics. "The diameter of the filet [coil], is relatively uniform (approximately 3 cm)" (Tschopik 1941:26). According to the descriptions, it seems that the informants preferred specific lengths to their coils, as indicated by techniques employed by informants 32 and 15. "While the circumference of the vessel under construction was never actually measured, fillets of sufficient length were consistently produced so as to encircle completely the rim of the growing vessel" (Tschopik 1941:26). Both informants preferred coils that were between 8 and 12 inches long (Tschopik

1941:26).

The second important point of relevance concerns the means of coil obliteration. Most potters joined coils using a downward, rather than pinching, motion. Tschopik (1941:27) describes this process in detail;

> The obliteration was begun on the interior surface of the far rim, pressure being exerted by the thumbs inside and the fingers, pointing downward, outside. . Next, the suture on the exterior surface was obliterated, although the first step in this direction was made by the fingers, while the thumb bonded the fillet to the base inside. This was affected by means of a sliding movement of the fingers on the exterior surface of the vessel as they opposed the thumbs within. [2]

This construction process is visible in many utilitarian ceramics of the Dinetah and Gobernador phases, and differs significantly from Puebloan construction techniques. For example, in the Puebloan tradition, coils used are much thinner and are joined in a pinching, rather than sliding, motion (Lori Reed, personal communication 2003). This construction technique serves both to join the coils and to initially thin the walls (Lori Reed and Kathy Hensler, personal communication 2003). In the Puebloan tradition, further wall thinning is accomplished through vessel finishing processes, such as scraping and wiping.

After the coils were effectively joined, the Navajo potters finished the interior and exterior surfaces of the vessel by using a burnt corn cob, pebble, or piece of a gourd to smooth the surface and further thin vessel walls. ". . . sets of fine parallel striae are probably due to scraping with a corn cob. The second, which usually overlays the first, is seen as a series of short, shallow indentations which are most certainly due to

[2] Reed and Hensler (2000) identified this 'downward sliding finger' [DSF] technique in archaeological examples of Dinetah Gray ceramics.

polishing with a pebble or piece of gourd" (Tschopik 1941: 28). Carlson's (1965: 64) descriptions of Navajo utility ceramics also describe wiping with a corn cob on both the interiors and exteriors of the vessels as a form of finishing treatment.

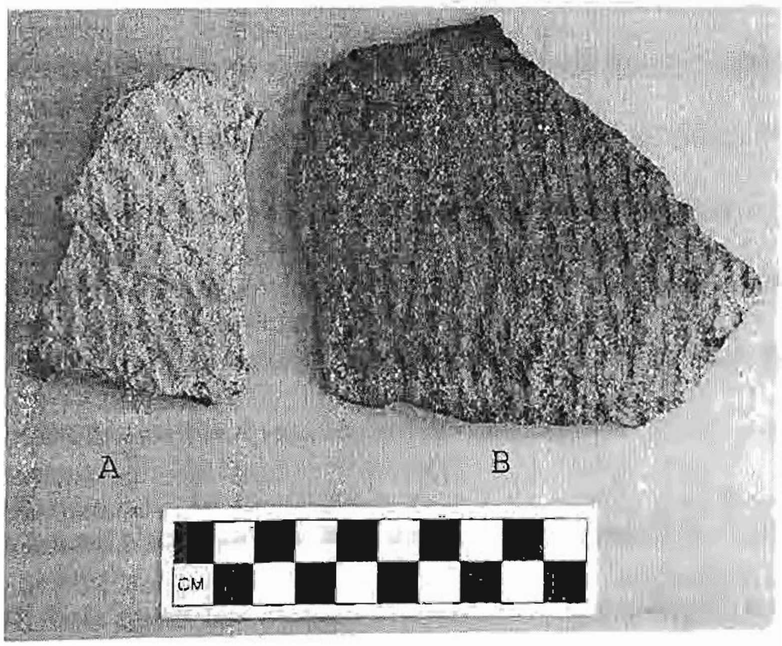
Other typological descriptions of Dinetah Gray pottery also identify coil and scrape technology with exteriors predominantly scraped with corn husks, juniper bark or simply with a wet hand (Brugge 1981). Many researchers initially postulated that Navajo ceramic technology resulted from an incursion of Puebloan refugees in the late 17th century. Although early researchers still equated Dinetah Gray with Athapaskan, if not Navajo, manufacture, Brugge (1981:13) states, "Dinetah Gray was made over a much wider area than Gobernador Polychrome and appears to have been basically a product of the Athapaskan portion of the tribe." Reed and Hensler (2000) have recently completed an analysis of Navajo construction and finishing techniques. They identified a construction technique specific to Navajo ceramics; this archaeologically-observed technique is virtually identical to the techniques and finishing described by Tschopik (1941).

Reed and Hensler's Study

In a recent analysis, Reed and Hensler (2000:6) replicated both coil-joining and vessel finishing methods in an attempt to identify Navajo construction and finishing techniques. Their study represents an attempt to better document Navajo Dinetah Gray ceramic construction techniques, and identify if changes occur through time in both methods of ceramic manufacture and vessel finishing treatment. They found that the downward sliding motion most observable on the exteriors of vessels typed as

'Dinetah Gray' was distinctive to Navajo pottery-making technology. This 'downward sliding finger' (DSF) technique is present in the utilitarian ceramics of many Navajo sites dating to the Dinetah and Gobernador phases. Figure 2 shows the visibility of this construction technique;

Figure 2: Reclassified Navajo Sherd from Buckles Collection (A=sample#65) Compared to Navajo Sherd from LA55979 (B). Note 'undulating' surface on both sherds as a result of the DSF technique.



As pictured, the DSF technique results in an 'undulating' surface that is clearly visible in many Navajo ceramic assemblages. Sherd A was collected from an area outside Montrose, Colorado and was originally classified as Ute by Buckles (1971). However, its similarity to Navajo sherd B from site LA55979 (A.D. 1541) convinced Lori Reed that the sherd represents the Navajo ceramic tradition. The fact that the DSF construction technique has persisted from the 16th century to the 20th century among Navajo potters is significant, and probably represents the tenacity of learned traditions. "Motor habits once learned and reinforced by practice, such as that expressed by this form of vessel manufacture are difficult to abandon and are probably culturally bound" (Reed and Hensler 2000: 6). This construction technology differs clearly from Puebloan and Ute vessel construction techniques (Reed and Hensler 2000: 7).

Reed and Hensler (2000) also found that the use of organic tools (i.e. corncobs and cornhusks) were largely absent in the finishing treatment observed on the earlier Dinetah Gray Navajo assemblages. Rather, this surface treatment seems to correspond in date to after the Pueblo revolt in A.D. 1680. "Thus, the heavily wiped and striated Dinetah Gray of the late seventeenth and early eighteenth centuries cannot be said to represent a purely Navajo form" (Reed and Hensler 2000:10). I will now recount researchers' descriptions of Ute Uncompahgre Brownware, a ceramic type often confused with Navajo Dinetah Gray.

General Uncompahgre Brownware Descriptions

Most researchers consider Uncompahgre Brownware to be of Ute manufacture (but see Stiger 1998). This ceramic type occurs most frequently in west central Colorado, in what is historically and protohistorically the core of Ute occupation. Brownware ceramics throughout the intermountain west are often attributed to Numic groups, and southern Paiute and Ute ceramics are difficult, if not impossible, to distinguish (Reed 1994; Buckles 1971). Other researchers have noted similarities to Dinetah Gray ware, and on surficial examination, the two wares appear similar (Stiger 1998:13).

Buckles' (1971) Ute Prehistory Project utilized the direct historical approach to identify Ute origins, and remains the seminal piece of work documenting Ute material culture. Although he was unable to resolve the question of Ute origins, he was the first to define and comprehensively describe ceramics found on archaeological sites attributed to the Ute. Even though his analysis resulted in excellent descriptions of different types of Uncompahgre Brownware, Buckles still noted similarities to neighboring ceramic types. "The ceramics made by the indigenous Ute Indians are not defined here terminologically as Ute Indian Ware because evidence exists that the ceramics of the Ute may be indistinguishable from those of their Numic relatives, the Southern Paiute, and distinguishable by degrees from ceramics made by Navajo, Apache and perhaps Yavapai potters" (Buckles 1971: 505).

However, Buckles emphasized the regional occurrence of the Uncompahgre Brownware ceramic types, and surmised that this ceramic was produced by historic Ute groups inhabiting west-Central Colorado. "Uncompahgre Brown Ware refers to brown ware pottery found in the Uncompahgre Plateau and River Valley area which can be identified with sites used by the historic Ute occupants of the area" (Buckles 1971: 505). In this regard, Buckles ascribed ethnic affiliation to this ceramic type.

In general, Uncompahgre Brownware is classified as having relatively thick walls, a fingertip or fingernail-impressed, plain, or wiped exterior, varying amounts of mica in the paste, and course, angular granitic or gneissic temper. Paste colors vary considerably but range from reddish brown, to grayish brown to black. Firing atmospheres are poorly controlled, resulting in a friable texture that is susceptible to breakage. Vessel types are overwhelmingly jars with mostly conical bases and slightly flaring rims (Buckles 1971: 517). Most Uncompahgre Brownware vessels are between 20 and 30cm tall.

Ethnographic and archaeological descriptions of Ute pottery-making describe some aspects of Ute ceramics that may be ethnically distinctive. For example, Smith's (1974) ethnographic description of Ute pottery notes the use of vegetable temper, even though this treatment has not been observed archaeologically. Additionally, many researchers have noted the relative crudeness of some Ute pottery; Buckles noted that one rim sherd analyzed from the Ute prehistory project sustained repair before firing that resulted in a large, protuberance of clay at the breakage point. This type of repair is described ethnographically by Smith (1974:86) "It [the pot] was placed in the sun to dry thoroughly. If it developed any cracks during the drying it was mended with wet clay and put to dry again." This type of repair is very rarely seen in Navajo Dinetah Gray vessels (Kathy Hensler, personal communication 2003).

The dating of brownwares in the Great Basin and adjacent eastern areas has been clarified by recent projects investigating the Numic expansion, but is still not as developed as the Navajo Dinetah Gray chronology. Rhode (1994: 129) conducted an analysis of brownware ceramics from the eastern Great Basin and found that the earliest examples dated (via thermoluminescence) to the A.D. 800s. Interestingly, Reed's (1994) analysis of radiocarbon dates found that most samples of Uncompahgre Brownware from eastern Utah and western Colorado dated after A.D. 1000. These dates seem to correlate well with an eastern-based Numic-expansion (e.g. Bettinger and Baumhoff 1982). Reed (1994: 194) states, "It is, therefore, likely that the components and associated brownware sherds postdate A.D. 1100, though it is possible that they date as early as approximately A.D. 1000."

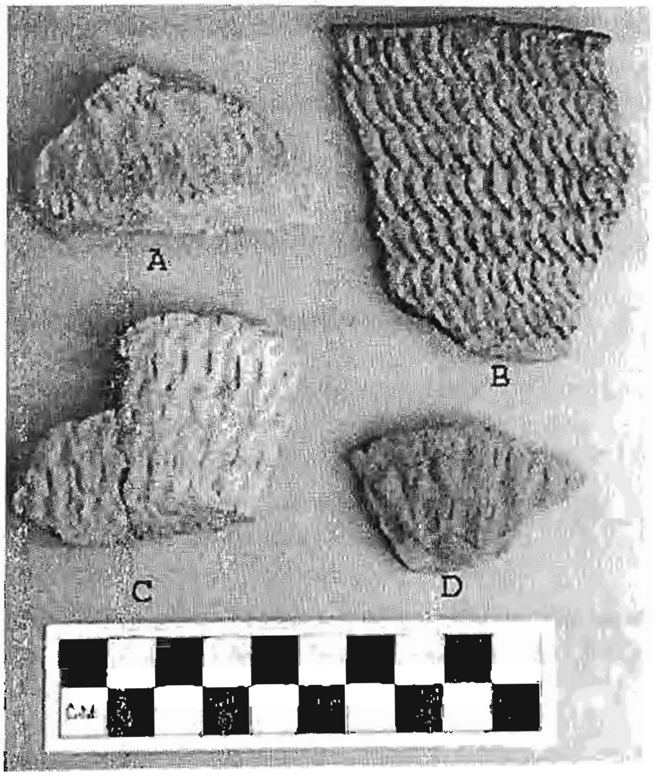
Although there is some dissent regarding the ethnic affiliation of Uncompahgre Brownware (see Stiger 1998; Buckles 1988), most scholars working in western Colorado, eastern Utah and northwestern New Mexico recognize Uncompahgre Brownware as a Ute ceramic type, especially when associated with Cottonwood Triangular projectile points and wickiup architecture (Reed and Hensler 2000; Schaafsma 1996; Reed 1994). "That very few Navajo and Apache ceramics have been found in western Colorado and eastern Utah supports the premise of a distinct Numic ceramic tradition" (Reed 1994:195).

Descriptions of Uncompahgre Brownware: Construction and Finishing Techniques

Buckles (1971) identified two types of coiled ceramic types associated with the Uncompahgre area of west central Colorado; plainware and fingertip-impressed. Plainware included pottery that was smoothed by scraping and wiping, and is often characterized by horizontal or diagonal striae resulting from scraping with a tool.

In contrast, the fingertip-impressed variety is characterized by fingertip and/or fingernail indentations on the exterior of the vessel. Buckles (1971: 523) observed that this treatment may have been responsible for uniting vessel coils, and thought that both fingertip and fingernail impressions were products of the same coil-joining technique. "It is possible that both [fingertip and fingernail impressions] are the same technique but carried out with slightly different manipulations of the hands and fingers on the surfaces of the vessels . . ." (Buckles 1971: 527). Other researchers have noted a corrugated variety of Uncompahgre Brownware, but this occurrence is extremely rare (Reed 2001).

Figure 3: Examples of interior-coiled Ute sherds. Note breakage slope on bottom of each sherd. A=sample#70; B=sample#414; C=sample#477; D=sample#108.



Buckles (1971: 507-508) also noted the tendency of pottery to break along coil junctures, and his analysis of interior vessel walls showed that the coils were initially joined on the interior of the vessel (see Figure 4). This is termed 'interior coiling.'

Hensler and Blinman (2002: 375) note this construction method in their analysis of Puebloan pottery from prehistoric contexts on the Colorado Plateau and the Rio Grande region; "Although the Colorado Plateau utility wares are almost uniformly constructed by applying coils to the jar exteriors [exterior coil-joining], the plurality of Rio Grande utility wares is constructed by applying coils to the interior [interior coil-joining] of the growing vessel." These differences in coil-joining can be seen on sherd interiors, exteriors, or in the sherd profiles. Figure 4 shows the observable differences between Exterior and Interior coiling techniques. This observation in construction method will be described in further detail in Chapter 4.

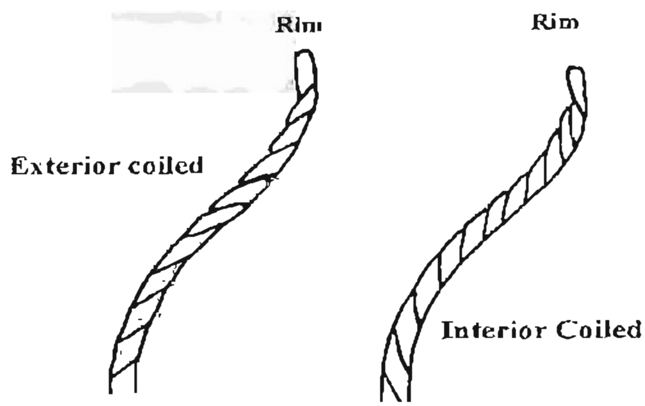


Figure 4: Depiction of exterior-coiled vs. interior-coiled vessel wall profiles. Modified from Hensler and Blinman (2002:376).

Wall thickness means for Uncompahgre Brownware have been compiled by Buckles (1971) and Benedict (1985) for both the finger-impressed and plain variety. Buckles identified different mean thicknesses for both the plain and fingertip-impressed type, 5.0mm and 6.5mm respectively. However, " . . .the range in variation in sherds of a single vessel can be several millimeters" (527). Benedict (1985) found that wall thicknesses of the Ute pottery from site 5GA22 ranged from 4-8mm (1985:136).

The 'paddle and anvil' thinning technique has been conclusively demonstrated in both ethnographic and archaeological examples of Ute ceramic production. Buckles (1971) tentatively noted evidence of the paddle and anvil technique on some

Uncompahgre Brownware sherds, an observation shared by early Ute researchers (e.g. Schroeder 1953). However, he admits that "Depressions on both the interior and exterior walls may be related to a variety of processes in addition to the paddle and anvil technique" (Buckles 1971: 508).

Ethnographic descriptions of Ute pottery making technology note significant variability in both vessel construction and finishing techniques. Barber (1876: 452) describes what is clearly a paddle and anvil thinning technique;

> . . . the tools for smoothing and joining the layers [coils] together are a paddle, made out of wood and perfectly smooth, and an oval-shaped polished stone. Both of these tools are dipped in the water (salt water is preferred), the stone is held in the left hand and on the inside of the vessel and the paddle applied vigorously until the surfaces are smooth. (Barber 1876 cited in Smith 1974: 84).

Hill and Kane (1988) argue that petrographic analysis of six Uncompahgre Brownware sherds recovered from the Dolores Archaeological Project (DAP) excavations revealed particle alignment in the thin sections that betrayed paddle and anvil construction. For example, they state that in the Uncompahgre Brownware sherds, the temper particles were aligned " . . .paralleling the walls of the vessel" (Hill and Kane 1988: 72). They argue that it is the compression of the coils with a paddle and anvil that produces this preferred alignment. Some researchers, however, emphasize that paddle and anvil construction is a wall-thinning technique, rather than an actual vessel construction method, and note that simple compression can produce the same particle alignment (Lori Reed, personal communication 2003).

Other ethnographic descriptions give clues to other elements of Ute pottery-making technology. For example, Smith's ethnographic descriptions note the width of the coils used to construct vessels: "The coil was one-half inch thick and almost two inches high. Each coil went around the pot once; any remaining coil was pinched off." (1974:86). Finishing treatment varied considerably, and ranged from wiping with a wet hand to obliterating the coils on the exterior with a wooden paddle. Smith also notes the use of organic tools, such as the prickly pear cactus, in finishing interior and exterior vessel surfaces. "When the pot was finished, the thorns were removed from the leaves of a prickly pear cactus; then the leaves were split and used to rub both the inside and outside of the pot" (Smith 1974; 86).

Other researcher's descriptions of vessel finishing techniques document much diversity in Ute ceramics. Buckles (1971:510) noted the use of flexible, organic tools and wet hands in the finishing of vessel interiors. This finishing technique is evidenced by the undulating surfaces of the interior, and by the particles of temper observed on wiped vessel interiors. "Uses of flexible tools are further indicated by presences of particles of temper which commonly intrude through the walls and are coated with paste" He argues that a rigid scraping tool would have dislodged these temper pieces.

Based both on an A.D. c. 1645 thermoluminescence date and similarity to Uncompahgre Brownware, Benedict (1985) argued that ceramics recovered from the Caribou Lake site (5GA22) are Ute in origin. He argued that both the Punctate pottery from excavation area C, and plainware pottery recovered from excavation area A were of Ute manufacture (Benedict 1985:143). Benedict's interpretation of ceramics recovered from 5GA22 is revealing, as he shares Buckles (1971) opinion that punctuations were used to join the coils. He also noted the presence of anvil marks on the interior surfaces of excavation area C ceramics. Benedict (1985: 136) made the distinction between vessel *construction* and vessel *finishing* techniques when he stated, " . .. .the laminar structure of the paste suggests realignment of particles due to shaping with paddle and anvil." The interior surface of the punctuate ware was smoothed with a wet hand.

The plainware that Benedict (1985:131) identified was wiped on the exterior surface with some sort of tool when the clay was leather hard. The interior surface was smoothed and burnished, but Benedict does not specify the use of a specific tool; he does note, however, that one sherd was evidently repaired prior to firing, resulting in an observable addition to the sherd. This treatment is similar to the treatment observed by Buckles (1971) for a Ute sherd identified in the Ute Prehistory Project.

Reed's (1994) description of Uncompahgre Brownware also notes considerable variability in the construction of this ceramic type. He described the fingernail and fingertip impressed exterior surfaces observed by other researchers, and considers both the plain and fingertip impressed variety to be representative of Numic presence. " . . .Of all the traits commonly regarded as Numic diagnostics, brownware ceramics appear to be the single best indicator of Numic affiliation." (Reed 1994:195). Reed believes that both Uncompahgre Brownware and Southern Paiute Utility ware to be different enough to distinguish from ceramics produced by the Navajo, Apache and other protohistoric groups.

Clearly, there is much variation in both ethnographic and archaeological descriptions of Uncompahgre Brownware. Part of this confusion results from the small sample size of this ceramic type, and ethnographic and archaeological descriptions imply that pottery making generally was not that important to the Ute; a typical historic Ute site will contain the remains of only a few vessels at most (Dean Wilson, personal communication 2003).

Much more research is needed to clarify the chronology and variation characteristic of Uncompahgre Brownware. Thermoluminescence dating has offered some help in this category, but in general, more frequent and controlled excavations are needed of Ute sites. Even analyses of within group variation of Uncompahgre Brownware are needed; Reed and Metcalf (1999:156) assert, ". . . variation in vessel surface treatment may also reflect the preferences of discrete Protohistoric-era social groups . . . It is perhaps, more plausible that different bands may have manufactured different types of Uncompahgre Brownware". This is an intriguing point if one considers the extent and contact that Ute bands sustained with surrounding cultural groups.

The chronological variability of Uncompahgre Brownware is much more poorly documented than that of Dinetah Gray. Some researchers suggest that the impressed variety is more reminiscent of traditional Ute ceramics (Buckles 1971; Benedict 1985), and therefore dates earlier than the plainware types. However, more refined chronological investigations are needed to confirm or deny this statement.

In the following section, I will present data collected from the analysis of 506 sherds derived from collections housed at the Anasazi Heritage Center in Dolores, Colorado and the CU-Museum in Boulder, Colorado. These collections consist of sherds classified as 'Shoshonean' from sites throughout west-central and southwest Colorado. Site investigators (e.g. Benedict 1985; Buckles 1971; Errickson and Wilson

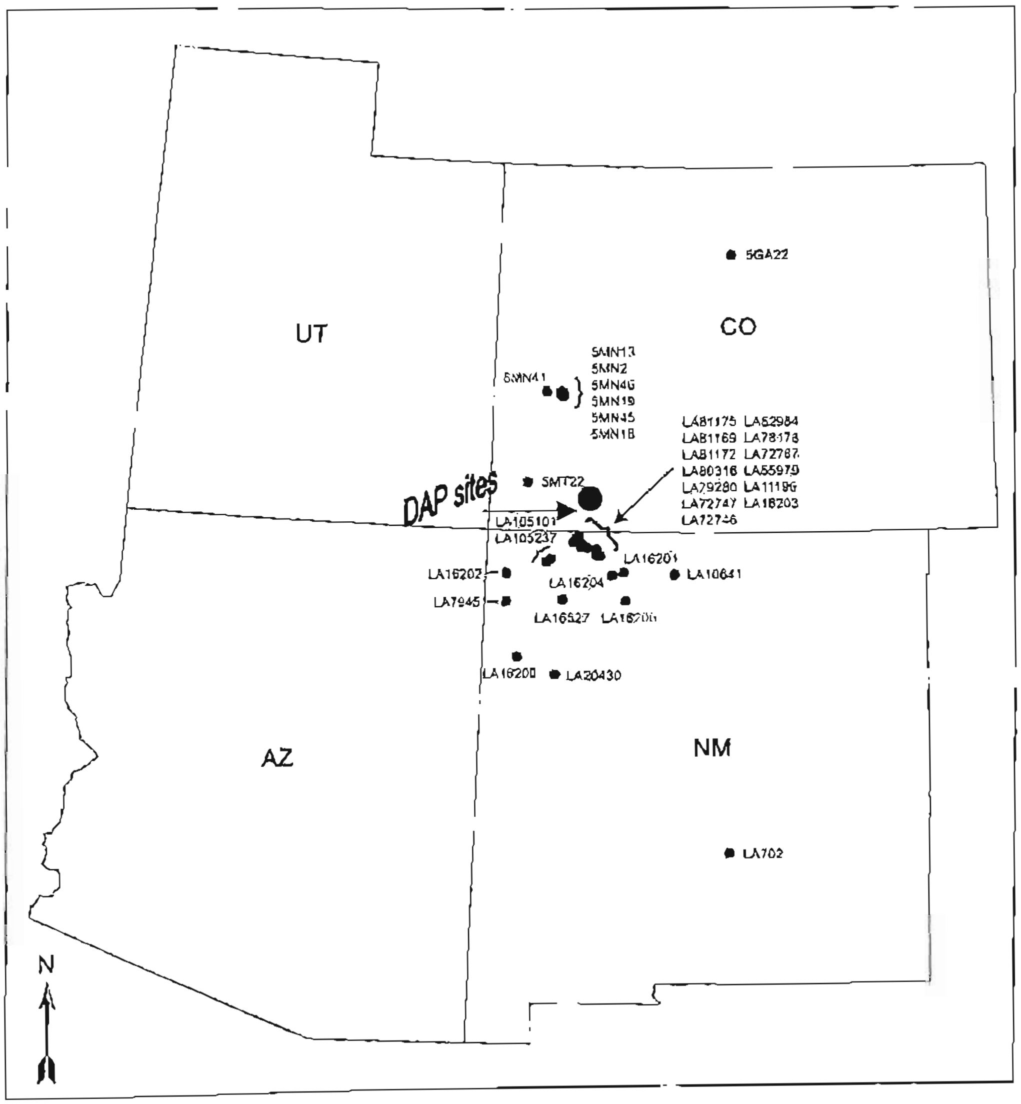
1988) have classified these ceramics as Ute. This data will then be compared with a database complied by Lori Reed and Kathy Hensler (2000) that examined Navajo Dinetah Gray construction and vessel finishing techniques from both Dinetah and Gobernador phase sites (see Figure 5 for map of sites). This consideration will both document the variability in Ute ceramics and will identify distinguishing attributes characteristic of both Uncompahgre Brownware and Dinetah Gray. It is hoped that this comparison will aid in the identification of possible ethnic indicators for both Ute and Navajo ceramic traditions.

CHAPTER IV: METHODOLOGY

A total of 506 sherds was examined in an effort to better document characteristics of Ute ceramics (see Appendix B). Thirty one sherds were analyzed from collections classified as Ute in the CU-Museum in Boulder, Colorado, and 475 sherds were analyzed from collections housed at the Anasazi Heritage Center in Dolores, Colorado. These sherds were classified as 'Shoshonean' and most were from collected contexts in west-central and southwest Colorado; previous researchers classified these ceramics as Ute. Aspects of Ute ceramics were then compared to Navajo ceramics from sites in northwestern New Mexico (Figure 5). In order to facilitate this study, I assumed that all plainware and finger-impressed sherds were of Ute manufacture, unless they obviously departed from published descriptions of Uncompahgre Brownware.

These analysis results will be compared to a database compiled by Reed and Hensler (2000), which recorded attributes of Navajo Dinetah gray construction and finishing techniques. Through this analysis focusing primarily on attributes related to technological style, it will be possible to determine if two different traditions exist by examining Ute and Navajo ceramic construction and finishing techniques.

Figure 5: Map of Sites Used in This Study



Experiments conducted on clay tiles documented probable surface treatment and construction techniques that may have been employed by Ute and Navajo potters. To examine surface treatment, tiles were wiped with ethnographically-documented organic materials. This treatment was then compared to the patterns observed on ceramics recovered from Ute and Navajo archaeological contexts.

Investigating construction techniques involved experiments replicating both coil application and paddle and anvil thinning. For example, both interior and exterior coiling methods were explored in an effort to better understand Ute 'finger-impressed' coiling strategies. Similarly, because 'paddle and anvil' use has been noted by previous researchers (e.g. Hill and Kane; Smith 1974), a small pinch pot was constructed and thinned by the paddle and anvil technique; the observable patterns were then compared to paddle and anvil-thinned Hohokam partial vessels.

The purpose of this study is first and foremost an attempt to identify specific construction and finishing techniques employed in the production of Ute pottery, and to compare these findings to Reed and Hensler's (2000) database that documents Navajo construction and finishing techniques. I hypothesize that technological choice, as seen through these methods of construction, can demonstrate ethnic affiliation. Secondly, aspects of surface treatment were recorded to better document tool types used to finish vessel walls, as this characteristic may also convey ethnic information.

These data were then compared to an 'in process' database compiled by Reed and Hensler (2000) that documented variability in Navajo Dinetah Gray ceramics, focusing primarily on construction and finishing techniques. The Ute and Navajo raw data will be presented first, and the comparative database containing both Ute and Navajo statistical information will be presented at the conclusion of the data section.

Each sherd was examined as an individual analytical unit regardless of affiliation to vessels, primarily because I wanted to examine aspects of the coils used to construct the vessel. This method provided the most comprehensive access to characteristics of vessel coils and other indications of vessel construction techniques. All sherds smaller than 'thumbnail' size were disregarded and not included in the analysis. Furthermore, sherds that clearly departed from the Uncompahgre Brownware tradition were excluded from the analysis, and if possible, were reclassified.

Attributes Recorded

The following attributes were recorded for the Ute sherds; 1) vessel part, 2) vessel form, 3) presence of mica, 4) weight (g), 5) mean wall thickness (mm), 6) number of coils visible, 7) cumulative coil height (mm), 8) interior or exterior coiling, 9) interior surface treatment, 10) exterior surface treatment, 11) evidence for paddle and anvil construction, and 12) probable cultural affiliation.

In addition to these attributes, the following additional information was recorded; provenience, FS/Lot #, sample #, count in collection, and curation location of each collection analyzed. A 'comments' section was included to expand on any characteristics that needed further clarification. The following describes the methods employed to record each attribute. All statistical testing was undertaken using SPSS software, and significance was noted at the $p<.05$, $p<.01$ and $p<.001$ levels.

1) Vessel Part: I designated each sherd to be either a rim, base or body, based on a simple visual examination. More specific designations were not deemed necessary as

I was interested in the broader information pertaining to vessel formation techniques and finishing treatment.

2) Vessel Form: I determined each sherd to be part of a jar, based both on a visual examination and ethnographically and archaeologically documented descriptions of Ute pottery that describe an overwhelming occurrence of jars and the fact that each interior was undecorated (Buckles 1971; Reed 1994; Lori Reed, personal communication 2003). There are some ethnographically documented examples of both bowl and figurines (e.g. Smith 1974) but these examples have not been documented archaeologically. This attribute was not formally used in the comparative analysis of Ute and Navajo construction and finishing techniques. Because no 'bowls' were analyzed, it is possible that construction and finishing techniques may differ according to function. Further examination of Protohistoric ceramics could answer this question.

3) Presence of Mica: This attribute was determined by a simple visual examination conducted with the aid of a magnifying lamp. Effort was not made to determine if the mica was predominantly a characteristic of the paste or a discrete addition to the temper. This attribute also was not used in the comparative database due to difference in Ute and Navajo data collection.

4) Weight (g): This attribute was calculated using a digital scale (grams) calibrated to 0.1g. Reconstructed vessel parts were also weighed individually, as I wanted to remain consistent in keeping analytical units to individual sherds.

5) Mean Wall Thickness (mm): Four points on each sherd were measured with digital calipers calibrated to 0.1mm. The points were chosen subjectively according to areas that represented the most uniform thickness across the sherds. On rim sherds, two out of the four thickness measurements were taken on the rim. No attempt was made to separate rim and body measurements in the overall Mean. These four separate measurements were automatically averaged in the Microsoft Excel database and recorded to 0.1mm. This method was followed regardless of what vessel part was being measured. On rims and bases, and on some sherds that I thought may have sustained repair, I noted more specific characteristics that accounted for variation in wall thickness in the 'comments' section.

6) Number of Coils Visible: This attribute was visible predominantly on fingertip-impressed pieces, and was recorded for 16 plainware sherds where coil height was visible due to inadequate smoothing. The number of coils was determined based on a visual examination (aided by a magnifying lamp) of the sherd exterior, interior and/or sherd profile. Because the fingertip-impressed sherds were generally unsmoothed on the exterior surface, the coil juncture line was often apparent. I noted how I determined the number of coils (in sherd profile, sherd exterior, or broke along coil junctures) in the 'comments' section.

7) Mean Coil Height (mm): This characteristic was only recorded if coils were clearly visible. On sherds where both one and more coils were visible, the combined height was measured from the bottom of the first coil to the top of the last visible coil. This height was then divided by the number of coils visible. The result produced a 'mean coil height' measurement. This attribute was determined based on all lines of evidence available including indications on sherd profiles, interiors and exteriors. Sometimes coil boundaries could be felt on the interior surfaces of some sherds, if the interior had been only slightly smoothed. Often this information was used to confirm or deny evidence for coil height observable on the exterior surface and sherd profile. These measurements were taken with digital calipers calibrated in millimeters, and were recorded to 0.1g.

8) Interior or Exterior Coiling: This attribute was recorded based on a visual examination and was aided by a magnifying lamp. To reliably determine this attribute, each sherd had to be oriented properly. Some sherds were part of 'reconstructible vessels' where rim and base sherds were also available to compare with impressions on body sherds. For these pieces, I first examined the rim sherd to observe the orientation of the nail/tip impressions, and I assumed that this same orientation held true for the body sherds. Whether sherds were part of reconstructible vessels or not is marked in the 'comments' section.

On finger-impressed body sherds that were not part of a reconstructible vessel where the rim was available, the orientation was determined by the direction of the convex part of the nail impression, according to that assumed to be for a right-handed potter (see Figure 6). Clearly, reconstructible finger-impressed vessels with rims provided the strongest cases for proper sherd orientation. It was also possible to discern coil-application on a small sample of plainware sherds, where the coil juncture was visible in the sherd profile.

Ceramicists Lori Reed and Kathy Hensler aided in sherd orientation when they could identify if a sherd was closer to the base, shoulder or rim of the vessel. For example, sherds near the base of a vessel often vary considerably in thickness. The thicker part of the sherd usually is located closer to the base, where the thinner part is located higher on the body. Vessel necks and shoulders evidence similar differences in thickness that can aid in sherd orientation.

Figure 6: Ute nail-impressed rim sherd (A:sample# 95) pictured with interior-coiled, nail-impressed replica rim sherd (B). The replica was made by Kathy Hensler.

After each sherd was properly oriented, the sherd profile and/or the coil junctures were examined for evidence of interior or exterior coiling. To determine this attribute, each sherd was compared to Hensler and Blinman's (2002:376) diagram depicting interior and exterior coiling (refer to Figure 4). Interior coil application is achieved when a potter joins the coils predominantly on the interior wall of the vessel, by aggressively smoothing the coil downward on the interior surface. This results in a slanted coil — the direction of which can be observed in the sherd profile. Conversely, exterior coil application results when a potter applies coils predominantly to the exterior surface of the previous coil. Coil-joining is then achieved by aggressively smoothing on the exterior surface of the vessel. This joining technique results in the opposite slant to that created by interior application techniques. In many cases, the fingertip-impressed sherds broke along the coil junctures, which allowed me to see the observable coil slant in the sherd profile and also served as a 'double check' to confirm proper sherd orientation.

9 &10 Interior and Exterior Surface Treatment: These attributes were determined based on a visual examination aided by a magnifying lamp. Determinations regarding surface treatment were made based on both the results of replication experiments and ethnographic descriptions.

General Description of Replication Experiments

Sand temper was added to red clay recovered from a river-bed in the vicinity of Farmington, New Mexico. The clay was then rolled out in slabs, which measured a quarter-inch in thickness, and were cut into pieces approximately four inches square. These 'tiles' were then wiped with different organic materials, and/or were hand wiped to best imitate what may have been used to smooth the interior and exterior surface of the sherds examined for the Ute database. Coiled replicas were made from the same clay, but individual coils were rolled out and joined according to what was observed on the archaeological examples. No attempt was made to exactly replicate actual coil height observed on archaeological ceramic examples, because coil-joining technology was the primary interest in these replicative experiments.

Experiment #1: Tile wiped with Corn Cob

The tile pictured below was wiped with a dried corn cob. The tile was given no time to dry, and thus moisture content was high. This replication produced straight, relatively evenly-spaced grooves that resulted in some temper 'drag.' Finishing with a corn cob has been described in Navajo ethnographic contexts (Carlson 1965: 64; Reed and Hensler 2000), but is much less common in Ute ethnographic descriptions. It is possible that such texturing was employed to help grip the finished vessel (Lori Reed, personal communication 2003).

Figure 7: Replicated clay tile wiped with corn cob (A) pictured with Ute examples. (B=sample #255; C=sample#255; D=sample#6: E=sample#7; F=sample#19). Note parallel striae.

Experiment #2: Tile wiped with Juniper bark

The tile pictured below was wiped with a piece of wet juniper bark against clay with a relatively high moisture content; again, this tile was given no time to dry before wiping. This replication produced slightly curved striae that resulted in minimal temper 'drag'. The curved striae patterns resulted from the juniper bark being wrapped around the hand, and wiping with a wrist, rather than forearm motion. This pattern has been observed archaeologically on both Ute and Navajo sherds (Kathy Hensler, personal communication 2003).

Figure 8: Example of Ute plainware partial vessel (A=sample#252) pictured with replicated clay tile (B) wiped with wet juniper bark. Note irregular, curved striae on both pieces. Also note irregular groove spacing.

Experiment #3: Tile wiped with wet hand

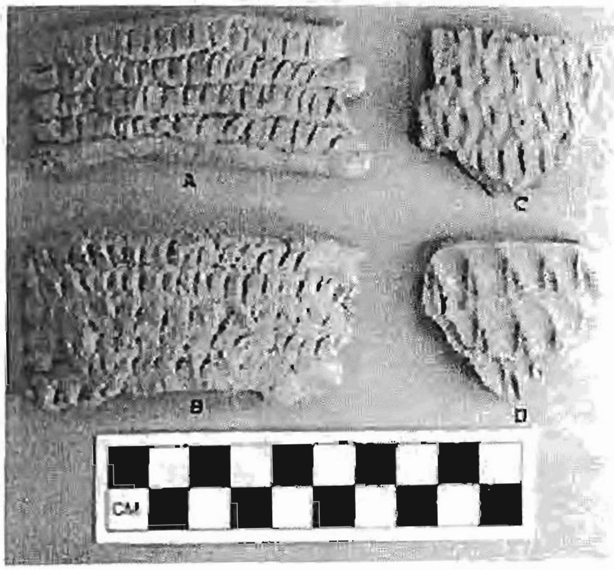
The tile pictured below was wiped with a wet hand on a clay surface with a high moisture content. Wiping with a wet hand produced tiny irregular striae that are difficult to see, and produced almost no temper drag. This type of finishing treatment was noted on many Ute sherds in the analysis, and is commonly described in ethnographic descriptions of both Ute and Navajo pottery making (e.g. Smith 1974; Kathy Hensler, personal communication 2003).

Figure 9: Replicated clay tile (A) wiped with a wet hand compared to Ute examples. B=sample#107; C=sample#150; D=sample#101.

Experiment #4: Interior and Exterior Coil-Joining Techniques

This experiment was conducting after observing joining techniques on finger-impressed Ute sherds. In many pieces, the nail impression bisected an observable coil juncture; thus, an attempt was made to replicate this joining technique by using an exaggerated nail impression to seal the coil juncture on the exterior surface of both replicas. This experiment found that the nail impression was a moderately effective joining method only on interior-coiled pieces joined when the clay was very wet; in contrast, nail impressions on the exterior-coiled pieces were insufficient to seal the coil juncture on the exterior surface.

Figure 10: Exterior-coiled replica (A) and interior-coiled replica (B) pictured with interior-coiled Ute samples 484 (C) and 101 (D). Note visibility of coil junctures on exterior-coiled piece. Note visible coil juncture in replica A. Both replicas made by Kathy Hensler.



Experiment #5: Finger-Impression

This experiment attempted to replicate finger-impressions observed on Ute sherds. It was concluded that finger-impressions that produced an exaggerated 'print' and impressions where the nail produced the dominant impressions were different manifestations of the same coil-joining technique. Based on the finger-impressed replicas, it is likely that nail impressions were sufficient to join coils only when the clay was very wet, whereas vessels where the finger-tip impression was dominant were probably constructed when the clay was drier.

Figure 11: Finger-impressed Ute sherds (A=sample#107; B=sample#82; C=sample#70; D=sample#72) pictured with finger-impressed replica (E). Replica (E) made by Kathy Hensler.

These experiments provided the basis by which to identify the different construction techniques and surface finishing treatments employed by Ute potters. Although use of a specific tool was impossible to determine, it was possible to distinguish the use of 'stiff organic'(i.e. dried corncob), 'flexible organic' (i.e. juniper bark) and 'wet hand' finishing techniques. When a specific surface treatment was ethnographically documented, and closely matched the treatment evidenced on the replicated clay tile, I suggested that it was wiped with a specific tool (i.e. juniper bark, corn cob) in the 'comments' section.

Throughout the analysis, estimations were made using the replicated pieces to see at what point in the construction process the clay was wiped. For example, if the grooves were fairly deep, I inferred that the piece was wiped when wet. In contrast if the grooves were shallow, or the finish appeared slightly polished, I assumed that the surface was wiped when it was leather hard. These determinations were applicable in all cases of treatment; whether wiped with an organic tool or hand-wiped. This information was included in the appropriate section in the Excel database.

11) Evidence for Paddle and Anvil Use: Because paddle and anvil use has been documented for Ute ceramics by previous researchers, this attribute was recorded. I examined comparative examples of Hohokam partial and whole vessels, prehistoric examples that were clearly thinned using a paddle and anvil. I also constructed a pinch pot where I used the paddle and anvil technique to thin the vessel walls. Both this replicated piece and the observational knowledge I acquired by examining the Hohokam ceramics provided the comparative basis by which I determined paddle and anvil use on the Ute ceramics.

Both the interior and exterior sherd surfaces were examined for smoothness and the characteristic light 'pitting' that is common in vessels that are finished with a paddle and anvil. In most examples, both the smaller sherds and the larger, partially reconstructed sherds were too small, or treatment was too indeterminate to reliably determine this attribute.

12) Cultural Affiliation: This was recorded based on designations that previous scholars made regarding cultural affiliation. In order to record this information, I made the assumption that all sherds in the collections at the AHC that were classified as 'Shoshonean', and all sherds analyzed at the CU-Museum classified as 'Ute' were recovered from Ute archaeological contexts. Because many of these sherds came

from collected and excavated contexts in west and Southwest Colorado, and all had already been classified as Ute by previous researchers (e.g. Benedict 1985; Buckles 1971; Errickson and Wilson 1988), I felt justified in this assumption. All sherds were assumed to be Ute unless they obviously deviated from established descriptions of the finger-impressed Uncompahgre Brownware and Ute plainware ceramic types.

The following descriptions refer to information recorded in the original Microsoft Excel database included to clarify provenience information and facilitate statistical coding processes.

Provenience: This refers to where the sherds were found. Most proveniences recorded were from either amateurs' private collections, surface collected archaeological sites or excavated archaeological sites

FS/Lot #: This information refers to each Museum's recordation provenience information. For example, both the Anasazi Heritage Center and CU-Museum collections included site provenience information and an accession number, which were recorded in this section.

Sample #: I assigned each sherd an arbitrary sample number in ascending order. This information will be useful to future researchers who are interested in locating a specific sherd recorded in this analysis. I did not record a number on any of the sherds, but it would be possible to reproduce this analysis using the weight to identify particular analytical units.

Comments: This section allowed further description of sherd characteristics, such as rim and base shape, I also recorded whether a sherd was partially reconstructed, or was part of a lot that contained numerous sherds from the same vessel.

Attribute information was recorded in an excel spreadsheet, and then was transferred to SPSS software for all statistical work. Frequency descriptions and comparison of attribute means of Ute sherds were first compiled on an 'attribute by attribute' basis to identify patterns in the data. After data patterns were established, more complex, multivariate statistics were undertaken to see if these patterns remained when considering multiple attributes.

Differences in Ute and Navajo Data Collection

The Navajo database compiled by Reed and Hensler (2000) identified important components of Navajo Dinetah Gray surface treatment and construction techniques. Before a presentation of the Navajo data can be accomplished, differences in methods of data collection between these two databases must be described. In general, methods were the same except Reed and Hensler did not distinguish between interior and exterior surface treatment when evaluating ceramic assemblages. In their database, they described primary tool use, and any additional tools use observed on either surface. Secondly, the researchers did not record the presence/absence of mica in their analysis.

Thirdly, Reed and Hensler analyzed sherds on a vessel basis; for example, if they could identify if a group of sherds composed a single vessel, they would only analyze one sherd from that particular 'lot'. This methodology contrasts markedly with that employed for the Ute database. In the Ute ceramic analysis, sherds were examined as individual analytical units, because it was difficult to discern if single vessels were unequivocally represented by a group of sherds. I realize that this method of using sherds as individual analytical units regardless of their vessel affiliation may be problematic, as this methodology may have duplicated data[3]. However, this technique enabled me the best access to vessel construction technology.

Due to the better understood chronology of the Navajo data, Reed and Hensler were able to assign each analyzed sherd to either the Dinetah or Gobernador phase based on both a subjective evaluation of ceramic traits and reliable dating information detailed in site reports[4]. Conversely, I was unable to reliably determine the dates of most ceramics analyzed, as most were recovered from surface contexts and therefore were not reliably dated. This bias could obscure temporal differences in construction and finishing techniques employed by Ute potters. All measurement equipment and methods employed to conduct the analysis are identical to that described in the methodology chapter.

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[3] Attempted reconstruction of each sherd 'lot' was not possible due to time constraints.
[4] Other information for the ceramics from the Navajo sites analyzed is on file at Animas Ceramic Consulting in Farmington, New Mexico.

CHAPTER V:
COMPARING UTE AND NAVAJO CERAMICS

Evaluation of the Ute Database

The 506 sherds analyzed came from sites mostly located in west-central and Southwest Colorado[5]. An overwhelming majority came from surface collections from sites with poor chronological control. The following table details the site number, reference and number of sherds analyzed from each collection:

Table 1: Ute Site Provenience Information

Site Number	Number of Sherds Analyzed	Reference
5MN47	21	Buckles 1971
5MN46	2	Buckles 1971
Violet Haskill Collection	211	Buckles 1971
5MN45	22	Buckles 1971
5MN41	61	Buckles 1971
Ada Childers Collection	53	Buckles 1971
Vicinity of Montrose, CO	1	Buckles 1971
5MN2	1	Buckles 1971
2 miles above 5MN2	7	No reference
5GA22	26	Benedict 1985
5MN13	11	Buckles 1971
5MN1962	17	Chandler and Eininger, 1981
5MT2223	4	Dolores Archaeological Project, 1988
5MT2237	3	Dolores Archaeological Project, 1988
5MT4665	7	Dolores Archaeological Project, 1988
5MT2247	6	Dolores Archaeological Project, 1988
5MT6693	16	Dolores Archaeological Project, 1988
5MT7501	1	Dolores Archaeological Project, 1988
No provenience	28	No reference
5MN18	8	Buckles 1971
Total sherds analyzed	506	

[5] See Appendix A for additional information about characteristics of these sites.

All sherds from the Buckles collection were excavated, surface, or near surface finds. The three historic Ute sites investigated (5MN41, 5MN13 and 5MN47) contained pottery on the surface. However, only sherds from 5MN41 could be associated with a more refined provenience; they were found within collapsed wickiup structures on the Lee Ranch Wickiup site, on the Uncompahgre Plateau area of west-Central Colorado. Based on this information, Buckles determined that Uncompahgre Brownware is a relatively late addition to archaeological complexes in the region based largely on negative evidence. "Other contexts where sherds have been found in the Uncompahgre area are undeterminate [sic] as to ages except on negative evidence of the lack of ceramics in stratified sites" (Buckles 1971: 543).

The Dolores Archaeological Project excavations identified 67 sherds associated with the protohistoric occupation of the area. Of these sherds, all were recovered from either surface contexts or disturbed fill resulting from excavations at Puebloan sites. Of the six sites surveyed by the DAP included in this thesis, only one (5MT6693) was single-component protohistoric.

Ceramics recovered from the other five sites were found in association with earlier Anasazi PI or PII artifact assemblages. Some archaeologists have used this co-occurrence to argue for contemporaenity of the two wares, thus implying that brownware ceramics and the people that produced them entered the Southwest earlier, perhaps as early as the 12th century. However, Errickson and Wilson (1988: 406) argue for a much later date for these wares in southwest Colorado. "This later date range [A.D. 1500-1850] seems to be more reasonable for the micaceous brownware sherds recovered from DAP sites, considering their association with Jeddito and

Awatovi Yellow Wares know to date to this period." In both the Buckles and DAP investigations, the study of Numic-produced brownware has suffered from a lack of data from well-dated and excavated sites.

Benedict's (1985) excavation of the Caribou Lake site (5GA22) yielded protohistoric Ute ceramics; both punctate and plain types were recovered from excavated contexts extending not farther than 10cm below the modern ground surface. Because of the unreliable association of the ceramics with radiocarbon-datable hearths, Benedict submitted sherds to be dated via thermoluminescence. The Ute pottery dated to the mid-17th century, and was found in association with small projectile point tips that resemble those used in the Protohistoric and early Historic periods by area hunter/gatherer groups (Benedict 1985:132).

The lack of chronological control in many excavations and surface collections of Ute sites is problematic Much more research needs to be conducted on the regional variations of Ute pottery and their relation to regional chronology. Benedict suggests, that the fingertip impressed type of Ute wares, in general, are more representative of traditional pre-17th century Ute pottery based on its similarity to southern Paiute utility ware in well-dated pre 17th century contexts. He states, "It can be argued that the punctate pottery . . . is representative of traditional Ute ceramics, used prior to acquisition of the horse" (Benedict 1985: 143).

The 28 'no provenience' sherds were donated to the Anasazi Heritage Center as a private collection, and were designated 'Shoshonean' by Anasazi Heritage Center staff. Site 5MN1962 was collected through the Colorado-Ute Electric Association

Rifle to San Juan Transmission Line Project (Chandler and Eininger 1981). and included no associated architecture or features.

Presentation of Ute Data

Both finger-impressed and plainware sherds were analyzed in an attempt to identify aspects of surface treatment and construction techniques that may convey ethnic information. Finger-impressed and plainware sherds varied significantly in thickness and exterior surface treatment, but the two types exhibit similar treatment on the interior surface. These data are presented in the tables below.

Of the 471 Ute sherds analyzed, 56 plainware sherds were non-micaceous (21%), while 210 plainware sherds were micaceous (79%). Of the finger-impressed sherds, 162 were non-micaceous (78%) while 43 had some mica present (22%). This discrepancy probably reflects material availability rather than cultural preference, and is thus not deemed useful as a cultural indicator for Ute or Navajo groups (Buckles 1971; Wilson, personal communication 2003), although some researchers have noted that sherds associated with Ute sites are often micaceous while Navajo Dinetah Gray ceramics are often non-micaceous. However, it is often unclear whether mica is present in the temper, or is part of the paste use to construct the vessel (Kathy Hensler, personal communication 2003). This ambiguity complicates the interpretation of mica in Ute and Navajo ceramics.

Table 2: Frequency of Tool Use on Interior Sherd Surface

	Plainware	Finger-impressed
Indeterminate[6]	43 16.1%	8 3.9%
Wet hand	181 68.3%	174 84.8%
Flexible organic	18 6.7%	23 11.2%
Stiff organic	2 0.8%	0 0%
Polished	22 8.3%	0 0%
Total	266 100%	205 100%

More than more than 65% of plainware sherds were finished on the interior surface with a wet hand, while almost 85% of finger-impressed sherds were finished in this way. The use of a flexible organic material such as cedar bark or a corn husk was used on the interior surface on less than 10% of analyzed plainware sherds, while slightly more than 10% of finger-impressed were finished on the interior surface with a flexible organic tool. Twenty-two plainware sherds exhibited interior polishing, while none of the finger-impressed sherds showed evidence of this type of finishing treatment.

Table 3: Frequency of Tool use on Exterior Sherd Surface[7]

	Plainware	Finger-impressed
Indeterminate	65 24.4%	1 0.5%
Wet band	74 27.8%	0 0%
Flexible organic	39 14.6%	3 1.4%
Stiff organic	63 23.6%	0 0%
Polished	1 0.4%	0 0%
Finger-impressions	4 1.5%	200 97.5%
Stick-impressions	20 7.5%	1 0.5%
Total	266 100%	205 100%

Approximately 40% of the total 471 Ute sherds analyzed were finished on the exterior surface with finger-impressions. Clay pieces were made to attempt to replicate this technique, and it appears that the finishing technique actually primarily serves to join the coils, and then perhaps was intended as a decorative technique as a secondary goal. Buckles (1971) first identified fingertip impression as a means of coil-joining, regardless of the extent of the nail impression evidenced in the sherds. "The objective of such impressions appears to have been to press the adjacent coils of

[7] In this table, four sherds classified as plainware had some evidence of finger impressions and 20 had evidence of stick impressions. In following tables examining construction techniques, these sherds are classified as 'plainware', rather than 'finger-impressed' pottery because the punctuations seemed decorative and/or were only observed on part of the sherd.

clay together and at the same time to decorate the vessels . . .It is possible that both [fingertip and nail] are the same technique but carried out with slightly different manipulations of the hands and fingers on the surfaces of the vessels and to differing degrees of shaping" (Buckles 1971:527).

Much more variability is present in the exterior finishing of Ute plainware. Finishing with a wet hand was the most common kind of technique among the plainware type (27.8%). This technique is well documented ethnographically for Ute potters (e.g. Smith 1974), and is arguably the simplest and most expedient type of finishing technique. The 'wet hand' finishing technique is followed closely by wiping with a stiff organic tool (23.6%). The third most common finishing technique utilized a flexible organic tool (14.6%). Finishing with a flexible organic tool was identified by slightly irregular striae caused when the material conforms to a human hand, while finishing with a stiff organic tool was identified by straight, deeply grooved striae on the sherd surface. Replicated clay tiles demonstrate the observable difference between finishing with a flexible and stiff organic material (see Figures 7&8).

Ute Construction Techniques

In the following table, Ute finger-impressed and Ute plainware sherds are separated. This separation was undertaken to illustrate the different properties of both Ute ceramic types in the areas of mean sherd thickness, interior vs. exterior coiling and mean coil height.

The data resulting from this analysis were the most interesting when considering construction techniques visible on Ute sherds. In most finger-impressed sherds, it was possible to see coil junctures either on the sherd surface or sherd profile (see methodology section). Secondly, it was possible to see whether the coils were joined primarily on the interior or exterior surface. Coils showing an interior-joining technique are first smoothed vertically on the interior surface, while exterior-joined coils are first smoothed vertically on the exterior of the vessel. This treatment creates distinctive coil sloping, which can be discerned macroscopically. This determination was made by consulting Hensler and Blinman (2002). These determinations hold great promise for distinguishing differences in Uncompahgre Brownware and Dinetah Gray construction methods.

Table 4: Characteristics of Ute Ceramic Construction Techniques

	Mean Sherd Thickness (mean)	Interior Coiled (%)	Exterior Coiled (%)	Mean Coil Height (mean)
Finger-impressed n=205	6.13mm (n=205)	89.9% (n=182)	10.1% (n=18)	9.19mm (n=205)
Plainware n=266	5.81mm (n=266)	100% (n=16)	0% (n=0)	9.16mm (n=16)

The finger-impressed sherds were slightly thicker than the plainware sherds. It was possible to discern coil height of 16 plainware sherds, because the exterior or interior surface had not been sufficiently smoothed. Interestingly, the coil height observed on these few plainware sherds was almost identical to the mean of the fingernail-impressed sherds. A statistical test was not conducted to determine significance of this data, because of the possible bias inherent in the small sample size. However, this result is intriguing, and may imply a similarity of construction techniques used by manufacturers of both plain and finger-impressed pottery types.

One of the most interesting aspects of this analysis concerns the frequency of interior vs. exterior coil application. Almost 90% of the finger-impressed sherds analyzed were interior-coiled, while close to 10% evidenced exterior coil application. Both interior and exterior coil application, like other aspects of ceramic construction are learned, and could be a reliable ethnic indicator. Also notable is the interior-coil application visible on 16 plainware sherds. The interior-coil application and the coil height visible in the plainware sherds are almost identical to that identified in the finger-impressed samples.

Evaluation of the Navajo Database

Lori Reed and Kathy Hensler of Animas Ceramic Consulting in Farmington, New Mexico, analyzed Dinetah Gray sherds from both Dinetah and Gobernador phase sites in northwest New Mexico[8]. Their initial results were presented at the 12th Navajo Studies Conference held in Farmington, New Mexico in Spring of 2000. Reed and Hensler's (2000) database consists of ceramic assemblages from 26 sites identified through projects associated with Fruitland Coal Gas Gathering Systems. Additionally, whole Dinetah Gray vessels housed in the Museum of New Mexico were also examined. Reed and Hensler recorded all the information described for the

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[8] Further information about sites analyzed in Reed and Hensler's (2000) study is on file at Animas Ceramic Consulting in Farmington, New Mexico.

Ute database, except for the presence of mica. Based on their ceramic expertise and access to chronological information, Reed and Hensler were able to identify many Dinetah Gray types associated with both the Dinetah and Gobernador phases.

Also included in this database are 31 "Ute" sherds included in the Buckles collection. These sherds have an 'undulating' exterior surface, which is the hallmark of a traditionally Navajo [DSF] construction technique (Reed and Hensler 2000). Although these sherds were collected in the vicinity of Montrose, Colorado, their construction technique is distinctly Navajo, and could be an example of early Navajo occupation in west-central Colorado (Lori Reed, personal communication 2003).

Presentation of Navajo Data

Out of 233[9] Navajo Dinetah Gray sherds analyzed, 177 were attributed to the Dinetah phase, and 25 were attributed to the Gobernador phase, while 31 could not be attributed to any phase. First, data on Navajo finishing techniques will be presented, followed by data documenting Dinetah Gray construction techniques.

Table 5: Navajo Tool Use Summary: Identifiable Tool use by Phase.

Phase	Indeterminate	Wet Hand	Flexible Organic	Stiff Organic	DSF
Dinetah N=177	34 19.0%	126 71.0%	22 12.4%	0 0%	132 74%
Gobernador N=25	9 36.0%	10 40.0%	4 16.0%	3 1.2%	8 32%
No Phase attributed N=31	2 .06%	29 93.5%	0 0%	0 0%	31 100%

[9] This number includes the 31 re-classified Navajo sherds from the Buckles Collection.

Although interior and exterior surface treatment were not distinguished in the Navajo database, in a later study Hensler *et al.* (2003:23) note the frequency of both a wet hand and flexible organic tool in Dinetah Gray finishing techniques. "More typical is the use of a wet hand and a flexible organic tool, corn husk or juniper bark in smoothing the jar interior . . .". Hensler *et al.* (2003:43) also note a temporal change in use of both flexible organic and stiff organic tools through time. Their analysis of Dinetah Gray ceramics from LA55979 (A.D. 1541), LA16257 (A.D. 1590-1655), and LA78178 (A.D. 1602-1720) identified an increasing frequency of the use of both flexible and stiff organic tools at each site.

However, according to the sherds analyzed in Reed and Hensler's (2000) database, there is no marked temporal difference in surface treatment of Dinetah Gray sherds. This finding contradicts the later observations described by Hensler *et al.* (2003). However, statistics investigating this temporal difference were not performed on this data due to the discrepancy in sample sizes between phases.

Table 6: Characteristics of Navajo Ceramic Construction Techniques by Phase

Phase	Mean Sherd Thickness	Interior Coiled (%)	Exterior Coiled (%)	Mean Coil Height
Dinetah n=177	5.09 mm (n=59)	0% n=0	100 % (n=177)	16.31mm (n=55)
Gobernador n=25	4.60 mm (n=15)	0% n=0	100 % (n=25)	18.96mm (n=11)
No Phase attributed (n=31)	7.5mm (n=31)	16% (n=5)	3.2% (n=1)	14.41mm (n=10)

As will be demonstrated through descriptive statistics, variables relating to the properties of coiling (mean thickness, mean coil height, interior vs. exterior) provide extremely reliable differentiators between ceramics that have been labeled Navajo and Ute.

Independent sample t-tests were run on mean sherd thickness and mean coil height to determine if the differences between the phases were significant at the $p<.05$, $p<.01$ and $p<.001$ confidence levels. As shown below, the differences in mean thickness between Dinetah and Gobernador phase sites is not significant. The sample size is small, but these data seem to contradict other research that documents a general increase in Navajo vessel wall thickness through time (Kathy Hensler, personal communication 2003). Again, the validity of these statistics is likely affected by the small sample size

Table 7a: Group Statistics Showing Analytic Variables Used in Independent Sample T-Test

	Phases	N	Mean	Std. Deviation	Std. Error Mean
Mean Coil Height	Dinetah	55	16.3055	4.68139	.63124
	Gobernador	11	18.9636	2.91626	.87928
Mean Thick	Dinetah	59	5.087	.7510	.0978
	Gobernador	15	4.598	.7320	.1890

Table 7b: Results of T-Test Comparing Mean Coil Height and Mean Thickness of Dinetah and Gobernador Phase Dinetah Gray Ceramics

Dinetah vs. Gobernador phase		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Mean Coil Height	Equal variances assumed	1.145	.289	-1.808	64	.075
	Equal variances not assumed			-2.456	21.887	.022
Mean Thick	Equal variances assumed	.176	.676	2.265	72	.027
	Equal variances not assumed			2.300	22.113	.031

One of the most striking features of these data is the direction of coil junctures observed on the Navajo sherds; of the 233 sherds analyzed, mean coil height was visible on 66 sherds, while coil application technique (i.e. interior vs. exterior coiling) was visible on 202. Of this sample, *all* Gobernador and Dinetah phase ceramics evidenced exterior coiling. Interestingly, 5 of the sherds that were re-classified from the Buckles collection were interior-coiled, while only 1 exhibited exterior-coiling. This result demonstrates that it may be necessary to examine the cultural affiliation of these sherds more closely.

However, the exterior-joining techniques identified on the majority of these sherds resemble those described by Tschopik (1941) for Navajo potters in a modern ethnographic context. ". . .vessel construction techniques observed at this early 16th century site [LA55979] are those still shown by early 20th century Navajo potters — reflecting a cultural conservatism that is at odds with the supposition that the Navajo only learned how to create pottery after their southwestern advent" (Hensler *et al.* 2003: 45).

Comparing Ute and Navajo Ceramic Attributes: Mean Coil Height, Mean Thickness, Frequency of Interior and Exterior Coiling and Joining Technique

Out of the 471 plain and fingertip impressed Ute sherds and 233 Navajo Dinetah Gray sherds analyzed, coil application was visible on 221 Ute sherds and 202 Navajo sherds[10]. Eighty-nine percent of the 221 Ute sherds exhibited interior coil-joining techniques. Most of these sherds were finger-impressed, as coiling direction was difficult to detect on the Ute plainware. On most Ute plainware sherds (n=266), I was unable to detect interior or exterior coiling due to obliteration of construction techniques. However, on 16 plainware sherds it was possible to detect coil direction by looking at coil junctures visible in the sherd profile. All of these plainware sherds exhibited interior coil-joining techniques.

The joining techniques for Ute finger-impressed and Navajo Dinetah Gray ceramics are markedly different. For example, in addition to being interior coil joined, Ute potters were primarily using the nail to join the coils on the exterior surface. On many sherds analyzed, it was just a matter of how wet the clay was (and alternatively, how long the nail was) that determined the extent of the nail impression. The nail impression would most often bisect the coil juncture thus effectively (albeit weakly) connecting two coils. Furthermore, Ute coil-joining was conducted laterally, much like the technique of Puebloan potters who worked across, rather than down the pot. Interestingly, experimental finger-tip coil-joining resulting in coil obliteration was *impossible* when tried on exterior-joined clay replicas. Thus, finger-impression

[10] This number includes the 31sherds from the Buckles collection re-classified as probable Navajo. This designation was made based on the appearance of the DSF technique, and an evaluation by ceramicist Lori Reed.

as a coil-joining method is only viable on *interior* joined ceramic vessels (refer to Figure 10).

This technique contrasts dramatically with that described both ethnographically and archaeologically for Navajo coil-joining methods The Navajo, as Tschopik (1941) noted, join coils by first applying the clay coil to the vessel exterior, and then smoothing and further joining the coils by sliding their fingers (or thumb) down the exterior of the vessel surface. This technique produced coils that slant to the exterior, rather than interior, of the vessel. Reed and Hensler identified this technique first in their study of Navajo vessel formation at LA55979 (Reed and Hensler 2000). It is this coil-joining technique (DSF) that some researchers have been calling finger-impressed, and has hence been a major hindrance in the distinguishing between Ute and Navajo pottery. However, when viewing this difference as one of construction rather than finishing, it is possible to identify a major difference in pottery technology that is probably ethnically based.

Similar differences related to vessel construction techniques were identified when documenting mean coil height and mean thickness of Ute (finger-impressed and plainware) and Navajo sherds. The mean coil height of Navajo sherds was almost twice that of Ute sherds based on an independent sample t-test that was run comparing the mean thickness and mean coil height of Ute and Navajo sherds. A significance level of $p<.001$ was detected in both tests.

Table 8a: Group Statistics Showing Analytic Variables for Independent Sample T- Test[11]

	Culture	N	Mean	Std. Deviation	Std. Error Mean
Mean Thickness	Ute	471	5.947	1.2565	.0579
	Navajo	112	5.731	1.3067	.1235
Mean Coil Height	Ute	122	9.1246	1.94122	.17575
	Navajo	78	16.3910	4.70786	.53306

Table 8b: Independent Sample T-Test Comparing Mean Thickness and Mean Coil Height of Ute and Navajo Sherds.

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Mean Thickness	Equal variances assumed	2.686	.102	1.620	581	.106
	Equal variances not assumed			1.581	163.318	.116
Mean Coil Height	Equal variances assumed	40.740	.000	-15.166	198	.000
	Equal variances not assumed			-12.946	93.943	.000

Even though a comparison of mean thickness between Ute and Navajo ceramic sherds was not significant, Ute sherds were generally thicker than Navajo sherds.

10 All Navajo sherds are not included in this test because of differences in data collection; Reed and Hensler (2000) measured sherd thickness on a vessel basis, while I used sherds as individual analytical units (see Methodology chapter)

The box plot shown below depicts the mean thickness for Ute and Navajo sherds. It is interesting to note the significantly thicker 'outliers' shown above the Ute sherd mean. In spite of this difference, however, the means between the two wares are markedly similar.

Figure 12: Box plot Showing Mean Thickness of Ute and Navajo Sherds. Note 'outliers' in Ute distribution.

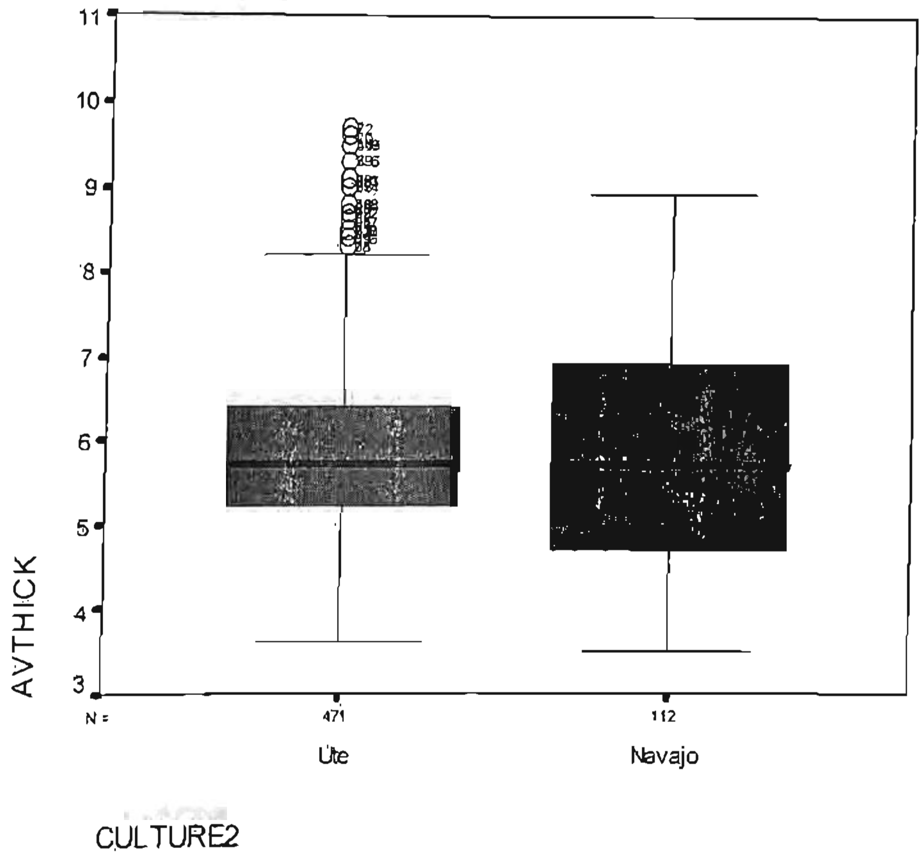


Table 9a: Group Statistics Showing Analytic Variables for Ute Finger-impressed and Navajo Dinetah Gray Sherds

	Culture	N	Mean	Std. Deviation	Std. Error Mean
Mean Thickness	Ute Finger-impressed	205	6.129	1.1640	.0813
	Dinetah Gray	112	5.731	1.3067	.1235
Mean Coil Height	Ute Finger-impressed	106	9.1189	1.90878	.18540
	Dinetah Gray	78	16.3910	4.70786	.53306

Table 9b: Results of Independent T-Test Comparing Mean Thickness and Mean Coil Height of Ute Finger-impressed and Navajo Dinetah Gray Sherds

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Mean Thickness	Equal variances assumed	7.089	.008	2.785	315	.006
	Equal variances not assumed			2.692	206.947	.008
Mean Coil Height	Equal variances assumed	37.192	.000	-14.388	182	.000
	Equal variances not assumed			-12.885	95.728	.000

Even though a significant t-value was not detected when the thicknesses of all Ute and Navajo sherds were compared, when comparing just Ute finger-impressed and Navajo Dinetah Gray thickness, significance is detected at the $P<.008$ level. Similarly, comparisons of mean coil height demonstrated even higher significance at the $p<.001$ level. This comparison shows that both mean thickness and mean coil height can be useful attributes in distinguishing Ute and Navajo ceramics.

This difference in wall thickness between the two ceramic types has been noted by numerous researchers (e.g. Eric Blinman and Lori Reed, personal communication 2003), and tests seem to confirm these observations. However, when comparing Ute plainware to Navajo plainware, there is a similarity in wall thickness.

Table 10a: Group Statistics Showing Analytic Variables for Ute Plainware and Navajo Dinetah Gray Sherds

	Culture	N	Mean	Std. Deviation	Std. Error Mean
Mean Thickness	Ute Plainware	266	5.806	1.3083	.0802
	Dinetah Gray	112	5.731	1.3067	.1235
Mean Coil Height	Ute Plainware	16	9.1625	2.21175	.55294
	Dinetah Gray	78	16.3910	4.70786	.53306

Table 10b: Results of T-Test Showing Mean Thickness and Mean Coil Height Comparison Between Ute Plainware and Navajo Dinetah Gray Sherds

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Mean Thickness	Equal variances assumed	.425	.515	.510	376	.610
	Equal variances not assumed			.510	208.898	.610
Mean Coil Height	Equal variances assumed	5.492	.021	-5.988	92	.000
	Equal variances not assumed			-9.412	47.796	.000

This t-test identified virtually the same thickness means for Ute plainware and Navajo Dinetah Gray. Visual observations also corroborate a similarity between the two wares. For example, Benedict (1985) argued that the Ute plainware identified at site 5GA22 was more representative of later pottery found on Ute sites. The finger-impressed Ute pottery has long been thought to represent traditional Ute ceramics from a Numic ceramic tradition, but more precise dating must be conducted before this statement can be reliably evaluated.

The difference in mean coil height between Ute plainware and Navajo Dinetah Gray was found to be significant at the $p<.05$ level. However, considering the small sample size involved, the usefulness of this determination should be viewed with caution.

Discriminant Analysis Results: Ute and Navajo Ceramic Attributes

Multivariate analysis was undertaken to see if Ute and Navajo construction methods were significantly different. 'Stepwise' statistics determined that coil-joining technique, interior vs. exterior coiling, mean sherd thickness and mean coil height provide the strongest differentiation between the two ceramic types.

The comparative database used for discriminant analytical techniques employed in this study consisted of 200 Ute and Navajo sherds only. This database is considerably smaller, because only the examples that contained the above listed attributes were used. Of the 200 sherd sample, 10 were plainware recovered from Ute archaeological sites, 109 were finger-impressed sherds recovered from contexts assumed to be Ute, and 81 were Navajo Dinetah Gray sherds.

Table 11: Stepwise Statistics Showing Most Effective Attributes for Differentiating Ute and Navajo Ceramics (Variables Entered/Removed(a,b,c,d)

		Wilks' Lambda							
Step	Entered	Stats	df 1	df 2	df3	Exact F			
						Statistic	df1	df2	Sig.
1	Joining Technique	.142	1	2	197.000	595.376	2	197.000	.000
2	Int/Ext Coiling	.092	2	2	197.000	224.309	4	392.000	.000
3	Mean Coil Height	.063	3	2	197.000	193.005	6	390.000	.000
4	Mean Thickness	.059	4	2	197.000	150.819	8	388.000	.000

At each step, the variable that minimizes the overall Wilks' Lambda is entered.
a Maximum number of steps is 8.
b Minimum partial F to enter is 3.84.
c Maximum partial F to remove is 2.71.
d F level, tolerance, or VIN insufficient for further computation.

The most effective way to differentiate the two is through examination of coil-joining technique. Navajo Dinetah Gray ceramics are distinctive through the presence of the DSF technique, while many Ute ceramics are clearly joined by simple fingertip-impression. Use of interior and exterior coil application strategies is the next best indicator of group type difference, with Navajo Dinetah Gray ceramics most often evidencing exterior coil application, while Ute ceramics most often show evidence for interior coil application.

Mean coil height provides the 3rd most reliable technique for distinguishing the two ceramic types. Through this analysis, coil height identified for Navajo sherds was almost twice that for Ute sherds. Often, ceramics broke along coil junctures, which served as both a double check for coil height as well as interior and exterior coiling. Finally, mean sherd thickness represented the 4th most reliable differentiating attribute. This is only true when comparing Ute finger-impressed to Navajo Dinetah Gray ceramics. Thus, these four attributes are extremely reliable factors to employ when attempting to distinguish Ute finger-impressed and Navajo Dinetah Gray ceramics. The following data cross-tabulation show the predicted group membership for all 200 sherds analyzed in this comparative database.

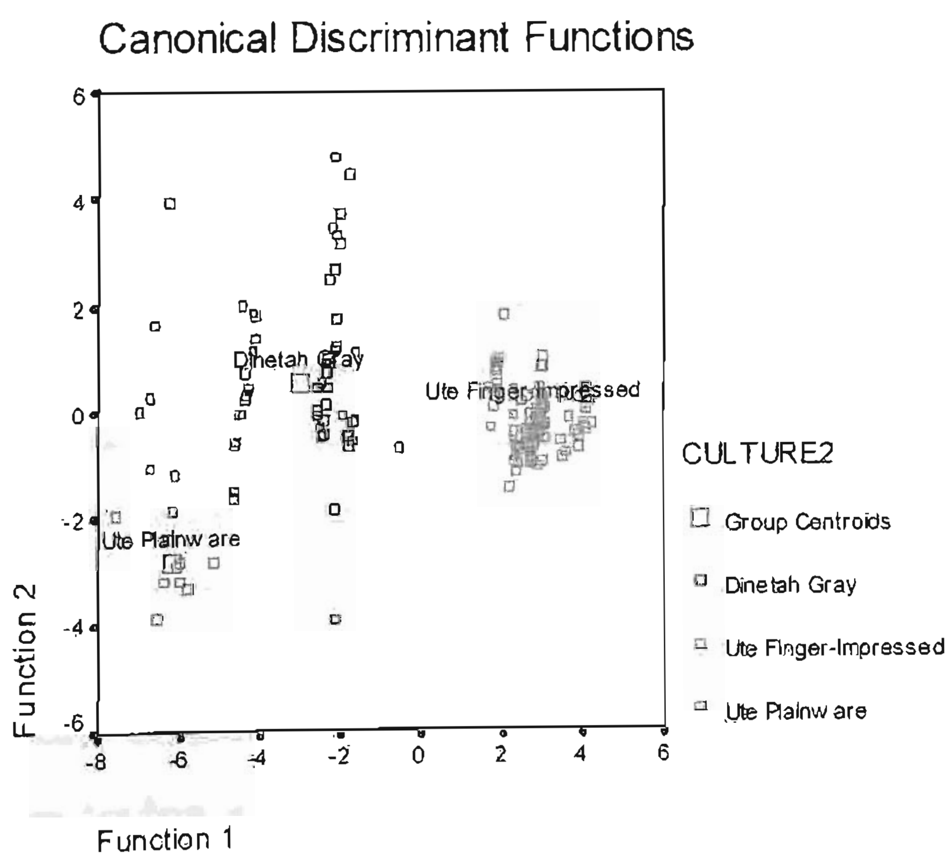
Table 12: Cross tabulation Showing Predicted Group Membership of Discriminant Analytical Data.

			Predicted Group for Analysis 1			Total
			Ute Plainware	Ute Finger-impressed	Dinetah Gray	
Culture	Ute Plainware	Count	10			10
		% within Culture	100.0%			100.0%
	Ute Finger-impressed	Count		109		109
		% within Culture		100.0%		100.0%
	Dinetah Gray	Count	7		74	81
		% within Culture	8.6%		91.4%	100.0%
Total		Count	17	109	74	200
		% within Culture	8.5%	54.5%	37.0%	100.0%

These data offer very strong support for archaeologists wishing to distinguish Ute and Navajo ceramics; 100% of the time, the statistics placed Ute plainware in the appropriate descriptive category. Similar (100%) placement was accomplished with Ute finger-impressed sherds. Correct placement of Dinetah Gray sherds was accomplished 91.4% of the time; this lower (but still reliable) percentage is probably due to greater variability in ceramics between the Dinetah and Gobernador phases.

The separation of data observed here (and in the Scatterplot below) suggests that researchers seeking to replicate this analysis will be able to effectively distinguish between the two wares when considering the variables of mean coil height, mean sherd thickness, coil-joining technique and frequency of interior and exterior coiling.

Figure 13: Scatterplot Results of Discriminant Analysis



The results of this discriminant analysis identify a distinct separation between Ute finger-impressed, Navajo Dinetah Gray and Ute plainware ceramics sherds. Importantly, this study confirms that the two wares can be macroscopically identified if one considers the four variables noted in the data cross tabulation (see Table 12).

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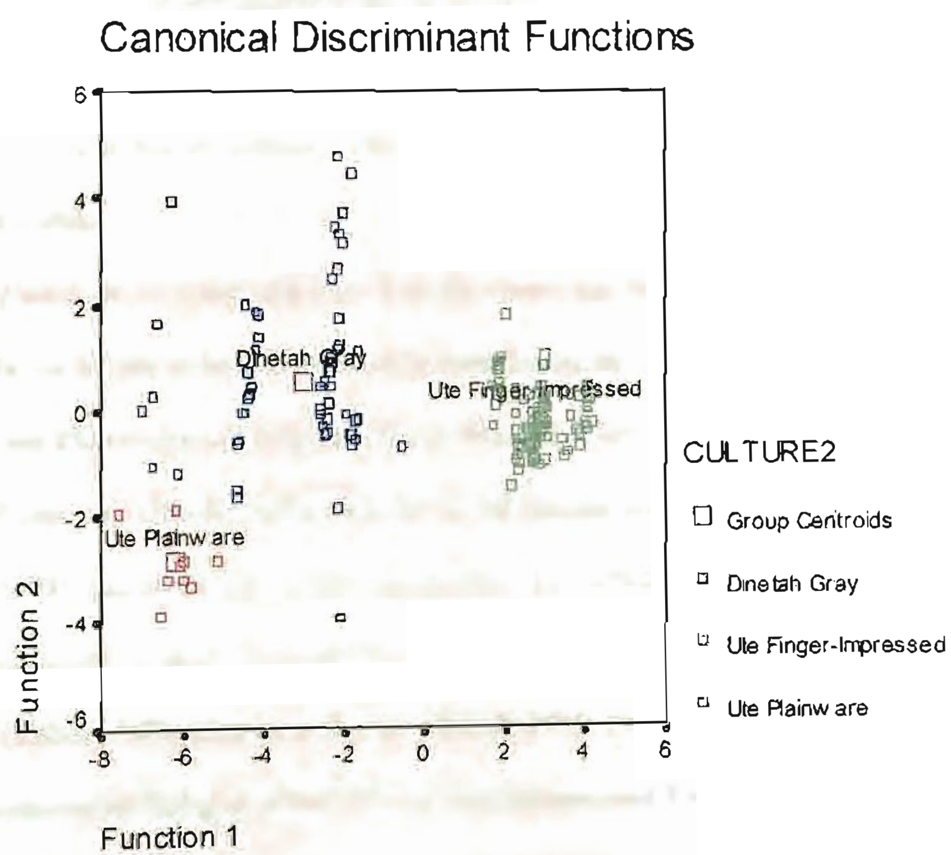

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This finding offers great promise for the future field identification of Ute and Navajo ceramic traditions.

Interestingly, the two Ute samples evidence very different clustering, probably based on the difference in surface treatment and vessel wall thickness. Navajo Dinetah Gray and Ute finger-impressed sherds show significant difference in all attributes, and cluster separately. This different clustering between Ute plainware and Navajo Dinetah Gray is due mostly to the differences in coil height and presence of interior and exterior coiling strategies. If coil height and interior and exterior coiling were not a factor in this examination, the two groups would be virtually indistinguishable.

If Ute plainware is consistently shown to date later than Ute finger-impressed pottery, the use of this technique could stem from increased contact with Navajo, Puebloan and Plains potters throughout the protohistoric period, as ceramics from these traditions are characterized by heavily wiped exterior surfaces. However, Greubel (1989) dated plain pottery recovered from site 5MN2629 to c A.D. 1025-1386, which corresponds to the available dates for finger-impressed pottery from site 5GF1336 (Rhodes 1986, cited in Reed and Metcalf 1999: 156). More thermoluminescence dating of plainware and finger-impressed Ute ceramics is needed to establish this chronology.

Other researchers have suggested that the use of plainware and finger-impressed pottery reflects different cultural or ethnic traditions among Ute groups. Reed and Metcalf (1999:156) state, "Although the sample of excavated sites with brownware ceramics is small, it appears that the plain type is prevalent in the eastern and southern portions of the study area, and that Fingertip-impressed type is dominant in the northwestern portion of the study area [western Colorado]." Obsidian sourcing data also corroborates this evidence; obsidian from Ute sites in northwest Colorado is traced to Utah sources, while obsidian from Ute sites in west-central and southwest Colorado is more often traced to New Mexico sources (Reed and Metcalf 1999: 156). According to ethnohistoric documents, the southern Ute bands had significantly more contact with Navajo and Pueblo groups than did northern Ute groups. This proximity afforded southern Ute groups' greater access to both foreign pottery technology *and* foreign slaves.

The Navajo sample, although clearly separated from both Ute finger-impressed and plainware types, does not cluster as tightly as both Ute samples. This could be due to the differences that exist in Dinetah and Gobernador phase ceramics. Navajo ceramics from earlier sites more often display the 'undulating' surface characteristic of the DSF coil-joining technique, while later Dinetah Gray ceramics are more often finished with flexible or stiff organic materials. It is well documented that Navajo vessel characteristics changed as a result of increasing contact with Pueblo groups after the Revolt of A.D. 1680. These changes may account for the 'loose' clustering of Navajo attributes in relation to both Ute samples.

This comparison shows that significant differences exist between Ute and Navajo ceramics, and many of these differences (coil height, interior vs. exterior coiling, mean sherd thickness and surface treatment) can be identified through a visual examination. The ability to macroscopically identify ceramics from protohistoric hunter/gatherer contexts, together with other lines of evidence, holds great promise to further decipher trade (and raiding) networks and settlement distribution of Ute and Navajo archaeological sites.

CHAPTER VI: CONCLUDING THOUGHTS AND DIRECTIONS FOR FUTURE RESEARCH

Previous studies of Ute and Navajo ceramics have suffered from small sample sizes, and lack of temporal control over the data. The results of this analysis of sites that have been called Ute and Navajo, establishes that significant differences do exist between the Numic and Athapaskan ceramic traditions — differences that could aid in the field identification of Ute and Navajo sites. This should challenge archaeologists who have been dubious about differences between Navajo Dinetah Gray and Ute Uncompahgre Brownware ceramics. The most significant result of this analysis, however, concerns the construction techniques as an ethnic differentiator between Ute and Navajo ceramics.

Ute potters utilized thin coils, and connected the coils laterally across the pot. This technique often left the finger-print visible on the exterior surface, as there was no sliding motion to compress the coils, but was rather a pressing motion using the fingertip and/or fingernail. This technique differs markedly from that used on many Navajo Dinetah Gray vessels. Navajo potters used extremely thick coils, and used a downward sliding finger (DSF) technique to join the coils vertically. With this technique, it is unlikely that any distinct fingerprints would be evident on the exterior surface; rather, this surface treatment often creates an 'undulating' exterior surface that has sometimes been mistaken for finger-impression. Ethnographic descriptions documented by Tschopik (1941) provide additional evidence of the longevity of this technique, which has been identified at Navajo sites dating to the 16th century (Hensler and Goff 2001).

Also revealing was the frequency and association of interior and exterior coiling strategies with Ute and Navajo pottery. The interior coiling technique observed on Ute sherds was likely the result of a lateral pinching and smoothing method, whereas the exterior coil-joining pattern observed on Navajo Dinetah Gray types was produced by the DSF technique, which smoothed the coils downward on the exterior surface. In Ute finger-impressed vessels, the fingernail or tip was the primary means to join the coils after initial interior-joining. Therefore, it is predicted that Ute ceramics will have a higher breakage rate along coil junctures than Navajo Dinetah Gray ceramics.

Interestingly, the construction techniques associated with Ute finger-impressed vessels are markedly different when compared to ethnographic descriptions of Ute pottery-making, which document the use of vegetal temper, very thick coils and both paddle and anvil and coil and scrape finishing techniques (e.g. Smith 1974). These differences could be the result of dramatic territorial shifts made possible by the introduction of the horse. Because the protohistoric Navajo were much more sedentary than their Ute neighbors, it may be likely that southern Ute groups sustained heightened contact with Navajo, ancestral Pueblo and surrounding hunter-gatherer groups due to increased trading and raiding activities.

This increased level of contact and well documented raiding activity may account for the variability in modern descriptions of Ute pottery making, but may also help to explain the reasons behind the extreme differences associated with Ute plainware and finger-impressed pottery types. Researchers have noted a higher frequency of plainware in the southwest, where finger-impressed specimens are more common in the west-central and northwest part of Colorado (Reed and Metcalf 1999). Again, this could be the result of heightened contact with Navajo groups to the south.

The Ute plainware is virtually identical to wiped Dinetah Gray vessels of the Gobernador phase, and may be a later addition to the Ute artifact assemblage. Benedict (1987:143) suggests that "There is no reason to suppose that the micaceous plainware vessels recovered from post-contact Ute wickiups are representative of traditional Ute ceramics". An even more intriguing suggestion would be that the wiped plainware recovered from Ute sites could be the product of kidnapped Navajo women potters. Ute raiding for slaves in both Navajo and Apache communities is well-documented throughout the Protohistoric, so it should not be a surprise if Navajo ceramics are found on Ute sites, or if Ute ceramics are found in Navajo contexts.

Although the coil height and direction of coiling observed on the Ute plainware implied Ute manufacture, the sample size (n=16) is too small to make any conclusions. It is an analysis of these very different construction methods, rather than outward emblems of style that will enable archaeologists to better differentiate Ute and Navajo ceramic traditions. For example, construction methods are less likely to change than outward emblems of style.

These techniques can show distinctive ceramic traditions that derive from different social networks. Ceramic construction and finishing techniques are probably passed down from mother to child, and can be virtually immutable even in situations of intense cultural exchange — this tenacity has been demonstrated in the Navajo case by the persistence of the DSF technique. It can be argued that this type of family-group learning is more likely to demonstrate group membership (at least to the archaeologist) than outward emblems of style. According to Jones' (1997) definition, attention to technological style can demonstrate both inclusion in a broader social group, and networks of common descent — two central components of ethnic identity. Because of the tenacity of learned traditions shown especially in the Navajo case with the use of the DSF technique, it is possible to identify both Ute and Navajo ethnic traditions through the analysis of ceramic construction and finishing techniques.

Another significant result of this study concerns the need to re-examine archaeological indicators of ethnic identity. By examining attributes related to technology of style and activities governed by habitus (after Bourdieu 1977) archaeologists can gain a much more nuanced understanding of learned behaviors and how they relate to ethnic identity. For example, construction techniques, often obscured or obliterated by smoothing and/or polishing, are often not visible macroscopically on ceramic surfaces. However, with wares that are not sufficiently smoothed or polished, these patterns can be discerned often with a simple visual examination.

When finger-impressions and 'undulations' on vessel exterior surfaces are viewed within a context of construction techniques and not simple decoration, it can be argued that ethnic traditions can be much more readily identified. However, ethnic affiliation of both Ute and Navajo plainware is more problematic. For example, further research involving the examination of a larger sample of wiped plainware from the Southwest, coupled with more refined thermonluminescence dating methods could provide the information to answer this question. X-ray studies are needed of plainware recovered from Ute and Navajo sites to detect joining and coil application strategies that could shed light on cultural affiliation.

An examination of construction techniques and their information transmittal is especially promising in ethnic-based research. Washburn (2001), in her analysis of processes of information transmittal, reported cultural knowledge as the determining factor in accurate reproductions of artifacts. "Individuals with appropriate knowledge will not only reproduce the details, but will reproduce them in the appropriate compositional configuration" (Washburn 2001: 96). Although her analysis focused primarily on the reproduction of artwork, her study has implications for archaeological research; namely, extreme variation in an established artifact tradition may mean that someone unfamiliar with that culture is reproducing the artifact.

Another avenue of identifying traditions that may be tied to ethnic identity is the examination of use-wear. An artifact's use life can differ according to cultural preference (Lightfoot, Martinez and Schiff 1998), and differences in use wear between Ute and Navajo vessels were noted after the analysis. For example, Ute vessels appeared to have sustained much less cooking alteration than Navajo Dinetah Gray vessels. In fact, none of the Ute sherds analyzed had clear cooking modification (Kathy Hensler, personal communication 2003), while Navajo Dinetah Gray vessels often sustained extreme cooking-related use-wear.

This observation may fit with established Ute and Navajo settlement patterns. For example, the Ute were more mobile than the Navajo, especially in the 18th and 19th centuries. As a result, Ute vessels could have been used primarily for storage or 'caching', rather than cooking. This interpretation is further supported by the lack of any serving-related wares documented in Ute archaeological contexts. In contrast, bowls and 'ollas' in addition to jars have been found at Navajo sites dating to both the Dinetah and Gobernador phases (Hensler and Goff 2001). It is possible that construction and finishing techniques may vary according to vessel form — to answer this question, more studies specifically targeting vessel form and associated construction methods are needed. Therefore, further analyses examining both use wear and vessel form hold promise for identifying cultural uses of Ute and Navajo ceramics, and determining if construction techniques are as culturally-bound as they seem.

Hensler and Goff (2001) note the persistence of Navajo vessel construction technology throughout the Protohistoric and into modern times. This Athapaskan ceramic tradition persevered even through the time of interaction with the Pueblos after A.D. 1680. This implies an adherence to tradition and learned behavior that is tenacious, even in the face of intense culture contact. Thus, the examination of activities governed by *habitus*, and cultural conservatism holds great promise for the identification of ethnic traditions in the Protohistoric period.

Judging from ethnographic descriptions of Ute pottery-making, it appears that Ute ceramic traditions sustained more change, in both construction techniques and surface treatment than did Navajo ceramic technology. This difference could be the result of increased trade and/or intermarriage with surrounding groups. Further research into Ute ethnographic and ethnohistorical sources, and changing Ute settlement patterns could substantiate this observation.

It is clear from this study that ethnic affiliation and location of cultural groups cannot be based primarily on Spanish ethnohistoric documentation. Although Spanish records can shed light on archaeological interpretations, they alone cannot be used to pinpoint geographical locations of specific communities, especially in light of the frequent trading, shifting allegiances and raiding for slaves that characterized the Protohistoric Period. Therefore, archaeological approaches become increasingly important for the interpretation of the protohistoric Southwest, especially considering the 'ephemeral' database in relation to comparatively robust ancestral Puebloan archaeological record.

This study has identified important aspects of Numic and Athapaskan ceramic construction techniques. Sherds recovered from protohistoric sites evidencing exterior coiling, the use of large coils compared to surrounding traditions, and an 'undulating' exterior surface created by the DSF technique can be identified as distinctly Athapaskan, while sherds recovered from protohistoric sites that evidence finger-impressions, use small coils, interior-coil application and lateral pinching techniques can be identified as deriving from a Numic ceramic tradition. Therefore, these data can be used in conjunction with other archaeological indicators of Ute and Navajo occupation to better identify Ute and Navajo signatures.

Attention to 'technology of style' and ceramic construction techniques has been lacking in studies of Protohistoric pottery; however, the strength of the data presented here suggests that such considerations can distinguish ceramic traditions that probably indicate ethnic identity. This approach thus represents a new way to address ceramic identification in the Protohistoric American Southwest. Perhaps most significantly, this study challenges the shift to expensive microscopic, chemical means of ceramic identification common in archaeology today. Instead, archaeologists can train themselves in the macroscopic identification techniques described in the methodology section, and save their respective organizations time and money.

BIBLIOGRAPHY

Aikens, M. C.

1994 Adaptive Strategies and Environmental Change in the Great Basin and its Peripheries as Determinants in the Migrations of Numic Speaking Peoples. *Across the West: Human Population Movement and Expansion of the Numa*, edited by D.B. Madsen and D. Rhode,.pp. 35-43. Utah: University of Utah Press.

Ambler, R.J. and M.Q. Sutton.

1989 The Anasazi Abandonment of the San Juan Drainage and the Numic Expansion. *North American Archaeologist* 10 (1): 39-53.

Baker, S. G.

1988 Historic Ute Culture in West-Central Colorado. In *Archaeology of the Eastern Ute: A Symposium* edited by P. Nickens, pp.157-190. CCPA Occasional Papers No. 1. Colorado Council of Professional Archaeologists, Denver.

1995 Archaeological Disenfranchisement of the Colorado Utes. *Southwestern Lore* 61 (3): 1-9.

Barber, E.A.

1876 Language and Utensils of the Modern Utes. *Bulletin of the U.S. Geological and Geographical Surveys of the Territories* 2: 71-76.

Barth, F.

1969 (ed). *Ethnic Groups and Boundaries*. Boston: Little Brown.

Benedict, J.B.

1985 *Arapaho Pass, Glacial Geology and Archaeology at the Crest of the Colorado Front Range*. Research Report no. 3. Center for Mountain Archaeology. Ward, Colorado.

Bettinger, R. L.

1994 How, When, and Why Numic Spread. In *Across the West: Human Population Movement and Expansion of the Numa*, edited by D.B. Madsen and D. Rhode, pp. 44-55. Utah: University of Utah Press.

1991 *Hunter-Gatherers: Archaeological and Evolutionary Theory*. New York, Plenum.

Bettinger, R. L. and M. A. Baumhoff.

1982 The Numic Spread: Great Basin Cultures in Competition. *American Antiquity*, 47 (3): 485-503.

Binford, L. R.

1980. Willow Smoke and Dogs Tails: Hunter-Gatherer Settlement Systems and Archaeological Site Formation. *American Antiquity* 45 (1): 4-21.

Black, K.D.

1991 Archaic Continuity in the Colorado Rockies: The Mountain Tradition. *Plains Anthropologist* 36 (133): 1-29.

Bourdieu, P.

1977 *Outline of a Theory of Practice.* Cambridge: Cambridge University Press.

Brown, G.M.

1991 *Archaeological Data Recovery at San Juan Coal Company's La Plata Mine, San Juan County, New Mexico.* Technical Report no. 355. Mariah Associates, Albuquerque.

1996 The Protohistoric Transition in the Northern San Juan Region. In *The Archaeology of Navajo Origins*, edited by R.H. Towner, pp. 47-70. University of Utah Press, Salt Lake City.

Brown, G.M. and J.W. Gish.

1991 Archaeological Summary and Conclusions. In *Archaeological Data Recovery at San Juan Coal Company's La Plata Mine, San Juan County, New Mexico,* edited by G.M. Brown, pp. 705-732. Technical Report no. 355. Mariah Associates, Albuquerque.

Brown, G. M. and P.M. Hancock.

1992 The Dinetah phase in the La Plata Valley. In *Cultural Diversity and Adaptation: The Archaic, Anasazi, and Navajo Occupation of the Upper San Juan Basin,* edited by L.S. Reed and P. F. Reed, pp. 66-90. Cultural Resources Series no. 9. BLM, Santa Fe.

Brugge, D.M.

1981 *Navajo Pottery and Ethnohistory.* Navajo Nation Papers in Anthropology no. 4. Navajo Nation Cultural Resource Management Program. Window Rock, Arizona.

1996 Navajo Archaeology: A Promising Past. In *The Archaeology of Navajo Origins* edited by R.H. Towner, pp. 255-271. University of Utah Press, Salt Lake City.

Buckles, W.G.

1971 *The Uncompahgre Complex: Historic Ute Archaeology and Prehistoric Archaeology on the Uncompahgre Plateau in West-Central Colorado.* PhD.

Dissertation, Department of Anthropology. University of Colorado-Boulder. University Microfilms, Ann Arbor, Michigan.

1988 Discussion. In *Archaeology of the Eastern Utes: A Symposium,* edited by P.R. Nickens, pp. 218-232. CCPA Occasional Papers no. 1, Colorado Council of Professional Archaeologists, Denver, Colorado.

Carillo, C.M.

1992 Where Were the Sheep: the Piedra Lumbre Phase Revisited. In *Current Research on the Late Prehistory and Early History of New Mexico.* edited by B.J. Vierra, pp. 323-26. New Mexico Council Special Publication no. 1. Albuquerque.

Cameron, C.M.

1998 Coursed Adobe Architecture, Style and Social Boundaries in the American Southwest. In *The Archaeology of Social Boundaries,* edited by M.T. Stark, pp. 183-207. Smithsonian Press, Washington D.C.

Carlson, R.L.

1965 *Eighteenth Century Navajo Fortresses of the Gobernador District.* University of Colorado Studies, Series in Anthropology no. 10. University of Colorado Press, Boulder.

Chandler, S. M. and S. Eininger.

1981 Report of the 1981 field Season Cultural Resources Inventory for the Colorado-Ute Electric Association Rifle to San Juan Transmission Line Project. Nickens and Associates. Manuscript on file at the Office of Archaeology and Historic Preservation, Colorado Historical Society, Denver, Colorado.

Childs, S.T.

1991 Style, Technology and Iron Smelting Furnaces in Bantu-Speaking Africa. *Journal of Anthropological Archaeology* 10: 332-339.

Chilton, E.S.

1998. The Cultural Origins of Technical Choice: Unraveling Algonquian and Iroquoian Ceramic Traditions in the Northeast. In *The Archaeology of Social Boundaries*, edited by M.T. Stark, pp. 132-160. Smithsonian Press, Washington D.C.

Cohen, R.

1978. Ethnic Identity: Problem and Focus in Anthropology. *Annual Review of Anthropology* 7: 379-403.

Cordell, L.S. and V.J. Yannie.

1991 Ethnic identity, Ethnogenesis and the Individual: A Processual Approach Towards Dialogue. In *Processual and Postprocessual Archaeologies: Multiple Ways of Knowing the Past*, edited by R.W. Pruecel, pp. 96-107. Center for Archaeological Investigations Occasional Paper no.10. Southern Illinois University, Carbondale.

Croes, D.R.

1987 Locarno Beach at Hoko River, Olympic Peninsula, Washington: Wakashan, Salishan, Chimakuan or Who?, *Ethnic Identity and Culture, Proceeding of the Eighteenth Annual Conference of the Archaeological Association of the University of Calgary*, pp. 259-283.

Dean, J.

1969 Dendrochronology and Archaeological Analysis: A Possible Ute example from Southwestern Colorado. *Southwestern Lore* 35: 29-41.

Dietler, M. and I. Herbich.

1998 *Habitus* Techniques, Style: An Integrated Approach to the Social Understanding of Material Culture and Boundaries. In *The Archaeology of Social Boundaries*, edited by M.T. Stark, pp. 232-263. Smithsonian Press, Washington D.C.

Dittert, A.E. Jr.

1958 *Preliminary Archaeological Investigations in the Navajo Project Area of Northwestern New Mexico.* Museum of New Mexico Papers in Anthropology No. 1, Navajo Studies Project Studies no. 1. Museum of New Mexico and School of American Research, Santa Fe.

Eddy, F. W.

1966 *Prehistory of the Navajo Reservior District, Northwestern New Mexico.* Pts1 and 2. Museum of New Mexico Papers in Anthropology, no. 15. Sante Fe.

Errickson, M.P. and C.D. Wilson.

1988 Ceramic Evidence of Post-Anasazi Occupation in the Dolores Project Area. In *Dolores Archaeological Program: Aceramic and Late Occupations at Dolores*, compiled by G.T. Gross and A.E. Kane, pp. 403-411. U.S. Department of the Interior, Bureau of Reclamation, Engineering and Research Center, Denver, Colorado.

Greubel, R.A.

2001 The Simpson Wickiup Site. In *The TransColorado Natural Gas Pipeline Archaeological Data Recovery Project Western Colorado and Northwest New Mexico*, edited by A. Reed. Alpine Archaeological Consultants, Montrose, Colorado. Manuscript on file at the Office of

Archaeology and Historic Preservation, Colorado Historical Society, Denver, Colorado.

Gosselain, O.P.
2000 Materializing Identities: An African Perspective. *Journal of Archaeological Method and Theory* 7 (3): 187-217.

Habicht-Mauche, J.
1992 Coronado's Querechos and Teyas in the Archaeological Record of the Texas Panhandle. *Plains Anthropologist* 37(140): 247-59.

1993 The Pottery from Arroyo Hondo Pueblo, New Mexico: Tribalization and Trade in the Northern Rio Grande. *Arroyo Hondo Archaeological Series*, vol. 8. School of American Research Press, Santa Fe.

Hackett, C.W.
1937 *Historical Developments Relating to New Mexico, Nueva Vizcaya, and Approaches Thereto, to 1773, Collected by Adolph F.A. Bandelier and Fanny R. Bandelier*, 3 vols., Carnegie Institution, Washington D.C.

Hensler, K.N. and E. Blinman.
2002 Experimental Ceramic Technology. In *Transitions, Traditions and Technologies: Themes in Southwestern Archaeology* edited by S.H. Schlanger, pp. 367-385. University of Colorado Press, Boulder.

Hensler, K.N., L.S. Reed, J. Goff and A. Carpenter.
2003 LA55979 Ceramic Artifacts (in press).

Hensler, K.N. and J. Goff.
2001 Analysis of Ceramics. In *Eight Thousand Years on Sisnathyel Mesa* edited by K.N. Hensler, and P.F. Reed, pp. 73-117. Navajo Nation Papers in Anthropology no. 36, Navajo Nation Archaeology Department, Window Rock, AZ.

Hester, J. J.
1962 *Early Navajo Migrations and Acculturation in the Southwest.* Papers in Anthropology No. 6. Museum of New Mexico, Santa Fe.

Hill, D.V. and A.E. Kane.
1988 Characterizations of Ute Occupations and Ceramics from Southwestern Colorado. In *Archaeology of the Eastern Ute: A Symposium*, edited by P.R. Nickens. CCPA Occasional Paper no. 1. Colorado Council of Professional Archaeologists. Denver, Colorado.

Hogan, P.
1989 Dinetah: A Reevaluation of Pre-Revolt Navajo Occupation in Northwestern New Mexico. *Journal of Anthropological Research* 45(1): 53-56.

Hyslop, S.G.
2002 *The Road to Santa Fe.* University of Oklahoma Press, Tulsa.

Jefferson, J., R.W. Delaney and G. C. Thompson.
1972. *A Southern Ute Tribal History.* University of Utah Press, Salt Lake City.

Jones, S.
1997. *The Archaeology of Ethnicity.* Routledge, London.

Kearns, T. M.
1996 Protohistoric and Early Historic Navajo Lithic Technology in Northwest New Mexico. In *The Archaeology of Navajo Origins* edited by R.H. Towner, pp. 109-148. University of Utah Press, Salt Lake City.

Kuckelman, K.A.
2000 The Archaeology of Castle Rock Pueblo. Electronic document, www.crowcanyon.org/ResearchReports/CastleRock/Text/crpw_oralhistory.html, accessed March 20, 2004.

Lechtman, H.
1977 Style in Technology: Some Early Thoughts. In *Material Culture: Style, Organization and Dynamics of Technology*, edited by H. Lechtman and R.H. Merril, pp. 3-20. West Publishing, New York.

Lemmonier, P.
1986 The Study of Material Culture Today: Towards an Anthropology of Technical Systems. *Journal of Anthropological Archaeology* 5: 147-186.

Lightfoot, R. R. and K. Kuckelman.
1994 *Warfare and the Pueblo Abandonment of the Mesa Verde Region.* Paper presented at the 59th Annual Meeting for the Society of American Archaeology, Anaheim, California.

Lightfoot, K.G., Martinez, A., and A.M. Schiff.
1998 Daily Practice and Material Culture in Pluralistic Social Settings: An Archaeological Study of Change and Persistence From Fort Ross, California. *American Antiquity* 63: 199-222.

Lightfoot, K.G. and A. Martinez.
1995 Frontiers and Boundaries in Archaeological Perspective. *Annual Review of Anthropology* 24: 471-492.

Lipe, W.D.
1995 The Depopulation of the Northern San Juan: Conditions in the Turbulent 1200s. *Journal of Anthropological Archaeology* 14(2): 143-169.

Lummis, C.
1900. Fray Zarate Salmeron's Relacion. *Land of Sunshine* 12: 39-48, 104-13. 180-87.

Marsh, C.G. 1982. *The Ute Indians of Colorado.* Pruett Press, Boulder.

Marshall, M.P.
1985 *The Excavation of the Cortez CO2 Pipeline Project Sites, 1982-1983.* Project no. 185-161A, C,D,M. Office of Contract Archaeology, University of New Mexico, Albuquerque.

Milich, A. R.
1966 *Relaciones by Zarate Salmeron.* Horn and Wallace, Albuquerque.

Noel, J T., P.F. Mahoney and R.E. Stevens.
1994 *Historical Atlas of Colorado.* University of Oklahoma Press, Tulsa.

Naranjo, A.B.
2000 Traditions and History of the Caputa and Muache Bands and the Southern Ute People Today. In *Ute Indian Arts and Culture,* edited by W.Wroth, pp. 9-19. Colorado Springs Fine Arts Center, Colorado Springs.

Opler, M.K.
1940 The Southern Ute of Colorado. In Linton, R. (ed). *Acculturation.* Appleton-Century, New York.

Reed, A.D.
1988 Ute Cultural Chronology. In *Archaeology of the Eastern Ute: A Symposium,* edited by P.R. Nickens, pp. 79-101. CCPA Occasional Paper no.1. Colorado Council of Professional Archaeologists, Denver, Colorado.

1994 The Numic Occupation of Western Colorado and Eastern Utah during the Prehistoric and Protohistoric Periods. In *Across the West: Human Population Movement and Expansion of the Numa* edited by D.B. Madsen and D.S. Rhode pp. 188-199. University of Utah Press, Salt Lake City.

2001 *The TransColorado Natural Gas Pipeline Archaeological Data Recovery Project Western Colorado and Northwest New Mexico.* Alpine

Archaeological Consultants, Montrose. Manuscript on file at the Office of Archaeology and Historic Preservation, Colorado Historical Society, Denver. Colorado.

Reed, A.D. and M. Metcalf.
1999 *Colorado Prehistory: A Context for the Northern Colorado River Basin.* Prepared for the Colorado Council of Professional Archaeologists, Denver. Colorado.

Reed, A.D. and J.C. Horn.
1990 Early Navajo Occupation of the American Southwest: Reexamination of the Dinetah Phase. *Kiva,* 55(4): 283-300.

Reed, L.S.
1995 *Exploring Variability within Early Navajo Ceramic Assemblages.* Paper Presented at the Third Annual Fruitland Conference, San Juan College, Farmington, New Mexico.

Reed, L.S. and K.N. Hensler.
2000 *Navajo Pottery Origins.* Paper Presented at the 12th Navajo Studies Conference, San Juan College, Farmington, New Mexico.

Reed, L.S. and P.F. Reed.
1996 Reexamining Gobernador Polychrome: Toward a New Understanding of the Early Navajo Chronological Sequence in Northwestern New Mexico. In *The Archaeology of Navajo Origins,* edited by R.H. Towner, pp.83-108 University of Utah Press, Salt Lake City.

Rhode, D.
1994 Direct Dating of Brown Ware Ceramics Using Thermo luminescence and its Relation to the Numic Spread. In *Across the West: Human Population Movement and Expansion of the Numa* edited by D.B. Madsen and D.S. Rhode, pp. 124-130. University of Utah Press, Salt Lake City.

Rhodes, L.
1986 *Archaeological Survey along State Highway 139: Loma to Douglas Pass.* Highway Salvage Report 58. Colorado Department of Transportation, Denver. Manuscript on file at the Office of Archaeology and Historic Preservation, Colorado Historical Society, Denver, Colorado.

Sackett, J. R.
1991 Style and Ethnic identity in Archaeology: the Case for Isochrestism. In *The Uses of Style in Archaeology,* edited by M. Conkey and C. Hastorf, pp.31-43 Cambridge University Press, Cambridge.

Sanfillipo, J.

1998 *Ute Wickiups or Navajo Forked Stick Hogans? Determining Ethnic Identity Through the Archaeological Record.* Unpublished Master's Thesis, Northern Arizona University.

Schaafsma, Curtis F.

1979 *The Cerrito Site (AR-4): A Piedra Lumbre Phase Settlement at Abiquiu Reservoir.* Santa Fe: School of American Research.

1992 A Review of the Documentary Evidence for a Seventeenth-Century Navajo Occupation in the Chama Valley. In *Current Research on the Late Prehistory and Early History of New Mexico,* edited by B.J. Vierra, 313-321. New Mexico Archaeological Council Special Publication no. 1. Albuquerque.

1996 Ethnic Identity and Protohistoric Archaeological Sites in Northwestern New Mexico: Implications for Reconstructions of Ute and Navajo History. In *The Archaeology of Navajo Origins*, edited by R.H. Towner, pp. 19-46. University of Utah Press, Salt Lake City.

Schroeder, A.H.

1953 Statement on the Early History and Archaeology of the Gunnison River Basin. *Southwestern Lore:* 19: 3-11.

1965 A Brief History of the Southern Utes. *Southwestern Lore* 30 (4): 55-78.

Sesler, L.M., T.D. Hovezak and R.H. Wilshusen.

2000 *The Frances Mesa Special Treatment Project: New Interpretations of Ancestral Pueblo and Navajo Occupations in the Navajo Reservoir Area,* pp. 159-253. compiled by R.H. Wilshusen, T.D. Hovezak and L.M. Sesler, Research Paper No. 3. La Plata Archaeological Consultants, Dolores, CO.

Simms, S. R.

1983 Comments on Bettinger and Baumhoff's Explanation of the "Numic Spread" in the Great Basin. *American Antiquity* 48 (4): 825-34.

1994 Unpacking the Numic Spread. In *Across the West: Human Population Movement and Expansion of the Numa,* edited by D.B. Madsen and D. Rhode, pp. 76-83. University of Utah Press, Salt Lake City.

Smith, A.M.

1974 *Ethnography of the Northern Utes.* Papers in Anthropology no. 17. University of New Mexico Press, Albuquerque.

Stark, M.T.
1998 Technical Choices and Social Boundaries in Material Culture Patterning: An Introduction. In *The Archaeology of Social Boundaries*, edited by M.T. Stark pp. 1-11. Smithsonian Press, Washington D.C.

Steward, J.H.
1938 Linguistic Distribution and Political Groups of the Great Basin Shoshoneans. *American Anthropologist*. 39 (1).

Stiger, M.
1998 Distinguishing Ute and Navajo Archaeological Remains. *Southwestern Lore* 64 (2): 1-20.

2001 *Hunter-Gatherer Archaeology of the Colorado High Country*. University Press of Colorado, Boulder.

Stone, T.
2003 Social Identity and Ethnic Interaction in the Western Pueblos of the American Southwest. *Journal of Archaeological Method and Theory* 10 (1): 31-67.

Thomas, A.B.
1941 *Teodoro de Croix and the Northern Frontier of New Spain, 1776-1783*. University of Oklahoma Press, Norman.

Torres, J.A.
1998 *The Athapaskan Migration and Apachean Lithic Technology*. Paper Presented at the 63rd annual Society for American Archaeology Conference, New Orleans, Louisiana.

Towner, R.H.
1996 The Pueblito Phenomenon: A New Perspective on Post-Revolt Navajo Culture. In *The Archaeology of Navajo Origins*, edited by R.H. Towner, pp. 149-170. University of Utah Press, Salt Lake City.

Towner, R.H. and J. S. Dean.
1996 Questions and Problems in Pre-Fort Sumner Archaeology. In *The Archaeology of Navajo Origins*, edited by R.H. Towner, pp. 3-18. University of Utah Press, Salt Lake City.

Tschopik, H. Jr.
1941 Navaho Pottery Manufacture: An Inquiry into the Affinities of Navaho Painted Pottery. *Papers of the Peabody Museum of American Archaeology and Ethnology* vol. XVII, no. 1. Harvard University, Cambridge.

Tyler, S.L.
1951 The Yuta Indians Before 1680. *The Western Humanities Review* 5(2): 153-63.

Wallerstein, I.
1974 *The Modern World System.* Academic Press, New York.

Washburn, D.K.
2001 Remembering Things Seen: Experimental Approaches to the Process of Information Transmittal. *Journal of Archaeological Method and Theory* 8 (1): 67-99.

Wiessner, P.
1983 Style and Social Information in Kalahari San Projectile Points. *American Antiquity* 48: 253-276.

Willey, G.R. and J.A. Sabloff.
1993 *A History of American Archaeology* (3rd edition) W.H. Freeman, New York.

Wilshusen, R. H. and R. Towner
1999 Post-Puebloan Occupation of Southwestern Colorado. In *Colorado Prehistory: A Context for the Southern Colorado River Basin* edited by D. Lipe, M.D. Varien and R.H. Wilshusen, pp. 353-368. Colorado Council of Professional Archaeologists, Cortez, Colorado.

Wilshusen, R.H.
1995 The Cedar Hill Special Treatment Project: Late Pueblo I, Early Navajo, and Historic Occupations in Northwestern New Mexico, compiled by R.H. Wilshusen. Research Papers, no 1. La Plata Archaeological Consultants, Dolores, Colorado.

Wilson, C.D.
1996 Protohistoric Ceramics from Sites Near Datil, New Mexico. *Pottery Southwest.* 23 (1): 1-5.

Winter, J.C. and P. Hogan.
1992 The Dinetah phase of Northwestern New Mexico: Settlement and Subsistence. In *Current Research on the Late Prehistory and Early History of New Mexico,* edited by B.J. Vierra, 299-312. New Mexico Archaeological Council Special Publication no. 1, Albuquerque.

Wobst, M. H.
1977 Stylistic Behavior and Information Exchange. *Research Essays in Honor of James B. Griffin*, pp. 317-342. Anthropological Papers no. 61., Museum of Anthropology, University of Michigan.

Wozinak, F.E.

1992 The Location of the Navajo Homeland in the Seventeenth Century: An Appraisal of the Spanish Colonial Records. In *Current Research on the Late Prehistory and Early History of New Mexico.* edited by B.J. Vierra. 323-26. New Mexico Council Special Publication no. 1. Albuquerque.

Wroth, W.

2000 Ute Culture in the Spanish Colonial Period. In *Ute Indian Arts and Culture.* edited by W.Wroth. Colorado Springs Fine Arts Center, Colorado Springs.

Zolbrod, P.G.

1984 *Dine Bahane': The Navajo Creation Story.* University of New Mexico Press, Albuquerque.

APPENDIX A

Site	Other Features	Tested	Collected	Excavated	Site Type	Ref.
5MN41	wickiup, hearth			X	open arch	Buckles (1971)
5MN13	hearth	X			open camp	Buckles (1971)
5MN2	Petroglyph, Ash concentration, hearth			X	sheltered camp, rock art	Buckles (1971)
5MN46			X		isolated find	Buckles (1971)
5MN45	hearth		X		sheltered camp	Buckles (1971)
5MN18	hearth		X		sheltered camp	Buckles (1971)
5MN 1962			X		open camp	Chandler and Eininger (1981)
5GA22	hearth			X	open camp	Benedict (1985)
5MT 2223	rubble mound, artifact scatter		X		open camp	Wilson and Errickson (1988)
5MT 2237	artifact scatter		X		open camp	Wilson and Errickson (1988)
5MT 4665	artifact scatter		X		open camp	Wilson and Errickson (1988)
5MT 2247	artifact scatter		X		open camp	Wilson and Errickson (1988)
5MT 6693	artifact scatter		X		open camp	Wilson and Errickson (1988)
5MT 7501	artifact scatter		X		open camp	Wilson and Errickson (1988)

Appendix B: Ute Data

FS/Lot	Sample #	Vessel Part	Vessel Form	Mica	Weight	Ave. thick	# of coils	Cum. Coil Height	Ave. Coil height	Int/ext. Coiling	Int. Surface	Ext. Surface	Cultural Affil	paddle anv.	Comments
FS-102	1	body	jar	Y	6.3	4.7	0	0.0		N/A	wet hand	vegetal/wet surface	Ute	Not visible	
FS-102	2	body	jar	Y	5.1	4.3	0	0.0		N/A	wet hand	vegetal/wet surface	Ute	Not visible	
FS-102	3	body	jar	Y	3.2	3.9	0	0.0		N/A	wet hand	vegetal/leather hard	Ute	Not visible	
FS-102	4	body	jar	Y	6.0	5.4	0	0.0		N/A	wet hand	vegetal/leather hard	Ute	Not visible	
FS-102	5	body	jar	Y	6.3	4.7	0	0.0		N/A	wet hand	vegetal/leather hard	Ute	Not visible	
FS-102	6	body	jar	Y	3.4	4.6	0	0.0		N/A	wet hand	indet.	Ute	Not visible	
FS-102	7	body	jar	Y	2.2	4.7	0	0.0		N/A	wet hand	corn cob/wet surface	Ute	Not visible	
FS-102	8	neck	jar	Y	2.5	3.8	0	0.0		N/A	vegetal/wet surface	corn cob/wet surface	Ute	Not visible	
FS-102	9	neck	jar	Y	3.1	4.3	0	0.0		N/A	wet hand	corn cob/leather hard	Ute	Not visible	
FS-102	10	body	jar	Y	5.1	5.2	0	0.0		N/A	wet hand	indet.	Ute	Not visible	
FS-102	11	body	jar	Y	11.6	4.8	0	0.0		N/A	indet.	indet.	Ute	Not visible	
FS-102	12	body	jar	Y	3.3	5.1	0	0.0		N/A	indet.	vegetal/leather hard	Ute	Not visible	
FS-102	13	body	jar	Y	3.3	4.3	0	0.0		N/A	wet hand	indet	Ute	Not visible	
FS-102	14	body	jar	Y	6.2	4.1	0	0.0		N/A	vegetal/wet surface	indet.	Ute	Not visible	

FS-102	15	body	jar	Y	2.9	4.3	0	0.0		N/A	indet.	indet.	Ute	Not visible	
FS-102	16	body	jar	y	3.9	4.2	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-102	17	body	jar	Y	4.0	5.7	0	0.0		N/A	vegetal/wet surface	indet.	Ute	Not visible	
FS-102	18	neck	jar	Y	2.3	4.3	0	0.0		N/A	indet.	indet.	Ute	Not visible	
FS-102	19	body	jar	Y	6.9	4.2	0	0.0		N/A	vegetal/leather hard	vegetal/leather hard	Ute	Not visible	
FS-102	20	neck	jar	Y	9.8	4.3	0	0.0		N/A.	indet.	vegetal/leather hard	Ute	Not visible	
FS-521-a	21	neck	jar	Y	13.1	6.1	0	0.0		N/A	vegetal/wet surface	wet hand/wet vegetal	Ute	Not visible	
FS-521-a	22	neck	jar	Y	91.2	7.2	0	0.0		N/A	indet.	indet.	Ute	Not visible	
FS-468-site#1	23	body	jar	Y	10.8	7.5	2	25.1	12.6	int.	indet.	indet.	Navajo	Not visible	Montrose
FS-468-site#1	24	body	jar	Y	5.9	7.3	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	25	body	jar	Y	10.3	7.7	3	40.1	13.4	int.	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	26	neck	jar	Y	9.8	6.7	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	27	body	jar	Y	11.3	7.3	2	28.0	14.0	int.	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	28	body	jar	Y	8.4	7.7	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	29	neck	jar	Y	8.0	6.7	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	30	body	jar	Y	9.0	8.0	0	0.0		N/A	indet.	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	31	body	jar	Y	8.7	7.2	1	15.0	15.0	int.	wet hand	probable DST	Navajo	Not visible	ext. surface eroded

FS-468-site#1	32	body	jar	Y	12.3	9.1	2	19.4	9.7	int.	wet hand	stick impressed?	Navajo	Not visible	Montrose
FS-468-site#1	33	body	jar	Y	10.0	7.5	1	1.5	1.5	int.	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	34	neck	jar	Y	6.8	6.9	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	35	neck	jar	Y	8.0	7.1	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	36	body	jar	Y	6.8	7.4	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	37	neck	jar	Y	4.7	7.5	0	0.0		N/A	wet hand	probable DST		Not visible	Montrose
FS-468-site#1	38	body	jar	Y	7.3	8.0	1	13.6	13.6	int.	indet.	indet.	Navajo	Not visible	Montrose
FS-468-site#1	39	body	jar	Y	6.1	6.9	2	24.8	12.4	int.	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	40	body	jar	Y	5.9	7.6	0	0.0		N/A	wet hand	probable DST		Not visible	Montrose
FS-468-site#1	41	body	jar	Y	2.9	7.2	0	0.0		N/A	wet hand	indet.		Not visible	Montrose
FS-468-site#1	42	neck	jar	Y	5.4	7.1	0	0.0		N/A	indet.	indet.	Navajo	Not visible	Montrose
FS-468-site#1	43	body	jar	Y	5.7	8.6	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	44	body	jar	Y	4.9	8.3	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	45	body	jar	Y	5.0	6.8	1	13.7	13.7	int.	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	46	neck	jar	Y	5.8	7.3	1	13.9	13.9	int.	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	47	body	jar	Y	4.4	7.4	0	0.0		N/A	wet hand	probable DST		Not visible	Montrose
FS-468-site#1	48	neck	jar	Y	4.6	7.5	0	0.0		N/A	wet hand	indet.		Not visible	Montrose

FS-468-site#1	49	body	jar	Y	2.9	7.0	0	0.0		N/A	indet.	indet.	Navajo	Not visible	Montrose
FS-468-site#1	50	neck	jar	Y	4.4	7.4	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	51	body	jar	Y	4.6	7.6	0	0.0		N/A	wet hand	probable DST	Ute	Not visible	Montrose
FS-468-site#1	52	body	jar	Y	4.3	6.9	0	0.0		N/A	indet.	fingernail-impressed	Navajo	Not visible	Montrose
FS-468-site#1	53	body	jar	Y	4.1	7.5	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	54	body	jar	Y	4.9	7.7	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	55	neck	jar	Y	3.8	6.3	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	56	body	jar	Y	4.0	7.4	0	0.0		N/A	indet.	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	57	body	jar	Y	4.5	6.7	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	58	body	jar	Y	3.9	7.0	1	12.4	12.4	N/A	indet.	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	59	body	jar	Y	3.0	7.0	0	0.0		N/A	indet.	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	60	body	jar	Y	3.2	6.5	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	61	body	jar	Y	2.9	7.7	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	62	body	jar	Y	2.8	7.1	0	0.0		N/A	wet hand	probable DST	Ute	Not visible	Montrose
FS-468-site#1	63	neck	jar	Y	40.7	7.7	2	37.3	18.7	int./flat	wet hand	fingernail-impressed	Navajo	Not visible	Montrose
FS-468-site#1	64	body	jar	Y	79.5	8.9	2	31.1	15.6	int.	wet hand	probable DST	Navajo	Not visible	Montrose
FS-468-site#1	65	body	jar	Y	20.4	7.9	0	0.0		N/A	wet hand	probable DST	Navajo	Not visible	Montrose

FS-468-site#1	66	rim	jar	Y	19.3	8.2	2	24.1	12.1	indet.	wet hand	probable DST	Ute	Not visible	Montrose
FS-468 site#1	67	rim	jar	Y	5.7	6.8	2	17.7	8.9	indet.	wet hand	fingernail impressed rim	Ute	Not visible	sherd badly eroded-tapered, outflaring rim
FS-469 col.#2	68	neck	jar	N	42.5	8.2	5	57.4	11.5	int.	wet hand	fingernail impressed rim	Ute	Y	
FS-469 col.#2	69	body	jar	N	25.4	8.8	0	0.0		N/A	vegetal/wet surface- cedar bark?	fingertip-impressed-print visible	Ute	Not visible	
FS-469 col.#2	70	neck	jar	N	20.8	9.6	2	25.8	12.9	int.	wet hand	fingertip-impressed-print visible	Ute	Not visible	broke along coil juncs.
FS-469 col.#2	71	neck	jar	N	17.3	8.5	0	0.0		N/A	wet hand	fingertip-impressed-print visible	Ute	Not visible	
FS-469 col.#2	72	body	jar	N	29.8	9.7	2	26.7	13.4	int.	wet hand	fingertip-impressed, print visible	Ute	Not visible	broke along coil juncs.
FS-469 col,#2	73	body	jar	N	9.7	9.3	2	22.8	11.4	int.	vegetal/wet surface-cedar bark?	fingernail impressed	Ute	Not visible	broke along coil juncs.
FS-469 col.#2	74	body	jar	N	12.7	8.0	3	25.0	8.3	N/A	wet hand	fingernail impressed	Ute	Not visible	broke along coil juncs.

FS-469 col.#2		75	body	jar	N	13.8	9.0	2	19.5	9.8	N/A	wet hand	fingertip-impressed-print visible	Ute	Not visible	broke along coil juncs.
FS-469 col.#2		76	body	jar	N	16.5	9.1	3	31.0	10.3	int.	wet hand	fingertip-impressed-print visible	Ute	Not visible	broke along coil juncs.
FS-469 col.#2		77	body	jar	N	11.4	6.9	4	30.6	7.7	int.	vegetal-leather hard	fingernail impressed	Ute	Not visible	coils visible in sherd profile
FS-469 col.#2		78	body	jar	N	8.5	8.3	0	0.0		N/A	wet hand	fingertip-impressed	Ute	Not visible	
FS-469 col.#2		79	body	jar	N	15.8	8.7	3	27.0	9.0	int.	wet hand	fingertip-impressed	Ute	Not visible	broke along coil juncs.
FS-469 col.#2		80	body	jar	N	9.5	7.6	0	0.0		N/A	wet hand	fingertip-impressed-print visible	Ute	Not visible	
FS-469 col.#2		81	body	jar	N	10.3	8.5	4	28.6	7.2	int.	indet.	fingertip-impressed-print visible	Ute	Not visible	broke along coil juncs.
FS-469 col.#2		82	body	jar	N	16.3	9.1	4	26.6	6.7	int.	wet hand	fingernail impressed	Ute	Not visible	broke along coil juncs
FS-469 col.#2		83	body	jar	N	11.5	7.9	2	20.9	10.5	indet.	indet.	fingertip-impressed-print visible	Ute	Not visible	broke along coil juncs.
FS-469 col.#2		84	body	jar	N	14.4	8.6	4	35.2	8.8	int.	wet hand	fingertip-impressed-print visible	Ute	Not visible	broke along coil juncs.

FS-469 col.#2	85	body	jar	N	5.2	8.8	0	0.0		N/A	wet hand	fingertip-impressed-print visible	Ute	Not visible	
FS-469 col.#2	86	body	jar	N	12.1	8.8	4	32.2	8.1	int.	wet hand	fingertip-impressed-print visible	Ute	Not visible	broke along coil juncs.
FS-469 col.#2	87	body	jar	N	10.7	9.0	3	28.9	9.6	int.	wet hand/vegetal	fingertip-impressed-print visible	Ute	Not visible	broke along coil juncs.
FS-469 col.#2	88	body	jar	N	6.8	7.7	2	18.8	9.4	int.	wet hand	fingertip-impressed-print visible	Ute	Not visible	broke along coil juncs.
FS-469 col.#2	89	body	jar	N	9.3	8.4	0	0.0		N/A	wet hand	fingertip-impressed-print visible	Ute	Not visible	
FS-469 col.#2	90	body	jar	N	7.0	7.7	2	22.8	11.4	int.	wet hand	fingernail impressed	Ute	Not visible	broke along coil juncs.
FS-469 col.#2	91	body	jar	N	7.5	8.5	1	13.2	13.2	ext.	wet hand	fingertip-impressed-print visible	Indet.	Not visible	
FS-469 col.#2	92	body	jar	N	6.5	8.6	2	17.0	8.5	N/A	indet.	N/A-eroded surface	Ute	Not visible	broke along coil juncs
FS-469 col.#2	93	body	jar	N	7.2	8.7	2	17.0	8.5	int.	wet hand	fingernail impressed	Ute	Not visible	broke along coil juncs.

FS-469 col.#2	94	rim	jar	N	31.6	8.0	5	41.7	8.3	int.	vegetal/leather hard	fingernail impressed	Ute	Not visible	broke along coil juncs. These rim sherds from same vessel as body sherds from FS-469-rim is tapered and outflaring
FS-469 col.#2	95	rim	jar	N	78.8	8.3	4	30.4	7.6	int.	vegetal/leather hard	fingertip impressed print visible	Ute	Not visible	broke along coil juncs. Rim is tapered and outflaring-evidence of mending before firing
FS-470 col. #3	96	rim	jar	N	10.3	5.5	3	25.3	8.4	int.	vegetal/leather hard	fingertip impressed print visible	Ute	Not visible	outflaring rim
FS-470 col#3	97	body	jar	N	14.7	6.4	4	32.8	8.2	int.	wet hand	fingertip-impressed. print visible	Ute	indet.	*all sherds from this provenience are probably from the same vessel/broke along coil juncs.

FS-470 col#3	98	body	jar	N	2.4	5.4	2	18.6	9.3	int.	wet hand	fingertip impressed print visible	Ute	Not visible	broke along coil juncs.
FS-470 col#3	99	body	jar	N	6.4	5.8	3	25.5	8.5	int.	wet hand	fingertip impressed print visible	Ute	Not visible	broke along coil juncs.
FS-470 col#3	100	body	jar	N	8.1	5.6	2	20.2	10.1	int.	vegetal/wet surface	fingertip impressed print visible	Ute	Not visible	broke along coil juncs.
FS-470 col#3	101	body	jar	N	11.6	5.7	1	12.5	12.5	int.	vegetal/wet surface	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.
FS-470 col#3	102	body	jar	N	7.0	5.7	2	21.3	10.7	indet.	vegetal/wet surface	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.
FS-470 col#3	103	body	jar	N	2.1	4.6	0	0.0		indet.	vegetal/wet surface	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	104	body	jar	N	8.2	5.6	2	23.7	11.9	int.	vegetal/wet surface	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.
FS-470 col#3	105	body	jar	N	6.0	5.4	4	40.1	10.0	ext.	vegetal/wet surface	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.
FS-470 col#3	106	neck	jar	N	7.8	5.8	1	9.9	9.9	indet.	wet hand	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.

FS-470 col#3	107	body	jar	N	15.5	5.2	3	28.4	9.5	int.	wet hand	fingertip impressed print visible	Ute	Not visible	broke along coil juncs.
FS-470 col#3	108	body	jar	N	9.7	7.1	3	25.6	8.5	int.	wet hand	fingertip impressed. print visible	Ute	Not visible	broke along coil juncs. - thumb indents Visible
FS-470 col#3	109	body	jar	N	8.0	5.6	2	19.1	9.6	ext.	indet.	fingertip impressed print visible	Ute	Not visible	broke along coil juncs.
FS-470 col#3	110	body	jar	N	1.9	5.6	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	111	body	jar	N	3.6	6.1	1	10.5	10.5	int.	wet hand	fingertip impressed print visible	Ute	Not visible	coils visible in sherd profile
FS-470 col#3	112	body	jar	N	3.1	5.8	1	9.2	9.2	ext.	wet hand	fingertip impressed print visible	Ute	Not visible	coils visible in sherd profile
FS-470 col#3	113	body	jar	N	7.3	5.9	1	12.1	12.1	ext.	wet hand	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.
FS-470 col#3	114	body	jar	N	7.8	5.7	3	32.7	10.9	N/A	wet hand	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.

FS-470 col#3	115	body	jar	N	2.4	5.5	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	116	body	jar	N	8.0	5.4	2	29.6	14.8	ext.	vegetal/wet surface	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.
FS-470 col#3	117	body	jar	N	6.8	5.5	0	0.0		N/A	vegetal/wet surface-cedar bark?	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	118	body	jar	N	3.6	5.6	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	119	body	jar	N	8.9	5.6	2	23.6	11.8	ext.	wet hand	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.
FS-470 col#3	120	body	jar	N	7.2	5.4	1	10.2	10.2	ext.	wet hand	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.
FS-470 col#3	121	body	jar	N	8.0	5.4	2	23.7	11.9	ext.	wet hand	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.
FS-470 col#3	122	body	jar	N	8.0	5.5	1	11.2	11.2	ext.	vegetal/wet surface-cedar bark?	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext

FS-470 col#3	123	body	jar	N	2.5	5.9	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	124	body	jar	N	6.5	6.2	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	125	body	jar	N	4.3	5.5	1	11.5	11.5	ext.	wet hand	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.
FS-470 col#3	126	body	jar	N	3.3	5.8	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	127	body	jar	N	5.7	5.1	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.
FS-470 col#3	128	body	jar	N	6.0	5.8	2	19.5	9.8	ext	vegetal/wet surface	fingertip impressed print visible	Ute	Not visible	broke along coil juncs.
FS-470 col#3	129	body	jar	N	4.0	5.7	0	0.0		N/A	vegetal/wet surface	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	130	body	jar	N	4.6	5.9	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	131	body	jar	N	5.3	5.7	0	0.0		N/A	vegetal/wet surface	fingertip impressed print visible	Ute	Not visible	

FS-470 col#3	132	body	jar	N	3.0	5.5	0	0.0		N/A	vegetal/wet surface	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	133	body	jar	N	4.1	6.1	0	0.0		N/A	vegetal/wet surface	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	134	body	jar	N	2.7	5.5	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	135	body	jar	N	6.2	5.5	1	11.3	11.3	ext.	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	136	body	jar	N	3.6	5.9	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	137	body	jar	N	2.4	5.6	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	138	body	jar	N	2.9	5.4	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	139	body	jar	N	2.4	6.2	0	0.0		N/A	Indet.	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	140	body	jar	N	5.3	6.7	2	22.1	11.1	ext	wet hand	fingertip impressed print visible	Ute	Not visible	

FS-470 col#3	141	body	jar	N	3.0	6.0	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	142	body	jar	N	1.9	4.7	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	143	body	jar	N	8.0	5.8	3	34.4	11.5	ext.	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	144	neck	jar	N	7.3	5.8	2	24.1	12.1	int.	vegetal/wet surface-cedar bark?	fingertip impressed print visible	Ute	Not visible	coils visible in sherd profile
FS-470 col#3	145	body	jar	N	6.4	5.9	1	10.8	10.8	int.	wet hand	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.
FS-470 col#3	146	body	jar	N	6.4	5.7	1	9.5	9.5	N/A	wet hand	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.
FS-470 col#3	147	body	jar	N	5.3	6.1	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	
FS-470 col#3	148	body	jar	N	6.5	5.4	0	0.0		N/A	wet hand	fingertip impressed print visible	Ute	Not visible	

FS-470 col#3	149	body	jar	N	5.2	6.1	2	24.6	12.3	ext.	wet hand	fingertip impressed print visible	Ute	Not visible	broke along coils juncs.
FS-470 col#3	150	body	jar	N	5.5	5.8	2	20.1	10.1	ext.	vegetal/wet surface-cedar bark?	fingertip impressed print visible	Ute	Not visible	coils visible on sherd ext.
FS-471-col#4	151	body	jar	N	6.8	5.4	2	19.1	9.6	int.	vegetal/wet surface-cedar bark?	fingertip impressed print visible	Ute	Y	broke along coil juncs.
FS-471 col#4	152	body	jar	N	5.4	5.7	1	8.6	8.6	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	broke along coil juncs.
FS-471 col#4	153	body	jar	N	3.1	4.4	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	surface badly eroded
FS-471 col#4	154	body	jar	N	3.1	5.5	2	14.3	7.2	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	broke along coil juncs

FS-471 col#4	155	body	jar	N	3.6	6.1	3	18.7	6.2	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	surface badly eroded/broke along coil juncs.
FS-471 col#4	156	body	jar	N	4.2	7.3	1	8.3	8.3	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	surface badly eroded/broke along coil juncs.
FS-471 col#4	157	body	jar	N	2.2	5.0	0	0.0		N/A	vegetal/wet surface	indet	Ute	Not visible	surface badly eroded
FS-471 col#4	158	body	jar	N	4.3	7.9	3	19.3	6.4	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	surface badly eroded/broke along coil juncs.
FS-471 col#4	159	body	jar	N	3.2	6.0	1	7.6	7.6	int.	vegetal/wet surface	indet.	Ute	Not visible	broke along coil juncs.
FS-471 col#4	160	body	jar	N	2.8	6.0	2	14.5	7.3	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	broke along coil juncs.

FS-471 col#4	161	body	jar	N	2.4	4.9	3	19.9	6.6	int.	Indet.	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	surface badly eroded/broke along coil juncs.
FS-471 col#4	162	neck	jar	N	3.0	5.7	0	0.0		N/A	vegetal/leather hard	indet.	Ute	Not visible	
FS-471 col#4	163	body	jar	N	3.0	4.9	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	surface badly eroded
FS-471 col#4	164	body	jar	N	2.4	5.5	2	14.4	7.2	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	broke along coil juncs.
FS-471 col#4	165	body	jar	N	3.4	6.8	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	surface badly eroded

FS-471 col#4	166	body	jar	N	3.1	7.3	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	surface badly eroded
FS-471 col#4	167	body	jar	N	2.8	5.1	2	18.0	9.0	int.	vegetal/leather hard	indet.	Ute	Not visible	broke along coil juncs.
FS-471 col#4	168	body	jar	N	3.8	5.8	2	17.0	8.5	N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	coils visible in sherd profile/
FS-471 col#4	169	body	jar	N	1.5	5.4	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	surface badly eroded
FS-471 col#4	170	body	jar	N	2.9	5.4	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	surface badly eroded
FS-471 col#4	171	body	jar	N	3.5	6.1	2	17.1	8.6	int.	wet hand	indet.	Ute	Not visible	broke along coil juncs.

FS-471 col#4	172	body	jar	N	2.9	5.7	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	surface badly eroded
FS-471 col#4	173	neck	jar	N	2.4	5.7	1	8.0	8.0	int.	wet hand	indet.	Ute	Not visible	surface badly eroded-coil visible in sherd profile
FS-471 col#4	174	body	jar	N	2.1	5.5	0	0.0		N/A	vegetal/leather hard	indet.	Ute	Not visible	
FS-471 col#4	175	body	jar	N	1.2	5.5	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	
FS-471 col#4	176	body	jar	N	2.2	6.1	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	surface badly eroded
FS-471 col#4	177	body	jar	N	2.4	5.3	0	0.0		N/A	wet hand	indet.	Ute	Not visible	

FS-471 col#4	178	body	jar	N	6.6	6.0	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	
FS-471 col#4	179	body	jar	N	8.7	6.2	4	25.8	6.5	int.	vegetal/leather hard	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	coils visible in sherd profile
FS-471 col#4	180	body	jar	N	3.8	5.2	2	17.2	8.6	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	broke along coil juncs
FS-471 col#4	181	body	jar	N	2.2	6.2	1	7.0	7.0	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	broke along coil juncs/
FS-471 col#4	182	body	jar	N	1.9	5.6	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	

FS-471 col#4	183	body	jar	N	3.0	6.0	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	
FS-471 col#4	184	body	jar	N	2.1	6.4	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	
FS-471 col#4	185	body	jar	N	2.0	6.5	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	surface badly eroded
FS-471 col#4	186	body	jar	N	1.5	5.7	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	surface badly eroded
FS-471 col#4	187	body	jar	N	3.1	5.4	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	sherd badly eroded

FS-471 col#4	188	body	jar	N	5.1	6.3	2	19.2	9.6	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	broke at coil juncs.
FS-471 col#4	189	body	jar	N'	1.5	5.5	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	sherd badly eroded
FS-471 col#4	190	neck	jar	N	3.7	5.5	2	18.2	9.1	int.	indet.	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	broke along coil juncs.
FS-471 col#4	191	body	jar	N	4.3	6.1	2	17.3	8.7	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	broke along coil juncs.
FS-471 col#4	192	body	jar	N	6.2	6.1	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	sherd badly eroded

FS-471 col#4	193	body	jar	N	2.5	5.5	1	8.1	8.1	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	broke alomg coil juncs.
FS-471 col#4	194	body	jar	N	3.0	6.1	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	sherd badly eroded
FS-471 col#4	195	body	jar	N	5.2	5.2	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	sherd badly eroded
FS-471 col#4	196	body	jar	N	4.7	5.5	2	15.9	8.0	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	broke along coil juncs.
FS-471 col#4	197	body	jar	N	6.6	6.2	4	26.0	6.5	int	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	broke along coil juncs.

FS-471 col#4	198	body	jar	N	3.4	5.8	3	23.5	7.8	ext.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible.	broke along coil juncs.
FS-471 col#4	199	neck	jar	N	1.2	5.5	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	
FS-471 col#4	200	body	jar	N	3.5	5.4	3	15.8	5.3	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	broke along coil juncs.
FS-471 col#4	201	body	jar	N	4.4	5.7	0	0.0		N/A	Wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	sherd badly eroded
FS-471 col#4	202	body	jar	N	3.0	6.1	2	11.8	5.9	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	sherd badly eroded/broke along coil juncs.

FS-471 col#4	203	body	jar	N	2.5	6.0	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	sherd badly eroded
FS-471 col#4	204	body	jar	N	4.6	6.4	0	0.0		N/A	Wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	
FS-471 col#4	205	body	jar	N	2.4	6.4	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	
FS-471 col#4	206	body	jar	N	3.2	6.0	3	18.1	6.0	int.	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	broke along coil juncs.
FS-471 col#4	207	body	jar	N	4.6	6.0	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	

FS-471 col#4	208	body	jar	N	4.2	5.7	3	24.9	8.3	N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	coil juncs visible on sherd ext.
FS-471 col#4	209	body	jar	N	2.7	6.0	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	sherd badly eroded
FS-471 col#4	210	base	jar	N	8.0	8.5	0	0.0		N/A	wet hand	fingernail impressed-wet surface/wet hand leather hard	Ute	Not visible	conical base
FS-471 col#4	211	rim	jar	N	3.5	5.3	1	9.0	9.0	im.	indet.	indet.	Ute	Not visible	outflaring rim

FS-472, col.#5	212	rim	jar	Y	99.1	7.1	0	0.0		Int.	wet hand/vegetal	fingernail impressed	Ute	Not visible	all these sherds are from same vessel- the sherd is partially reconstructed and broke along coil juncs, but coil height not visible-rim is tapered and outflaring
FS-472, col.#5	213	body	jar	Y	54.4	7.7	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	possible finger indentations visible on sherd interior and exterior
FS-472, col.#5	214	neck	jar	Y	32.4	8.0	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?/wet hand	Ute	Not visible	
FS-472, col.#5	215	body	jar	Y	16.7	7.6	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?/wet hand	Ute	Not visible	

FS-472, col.#5	216	body	jar	Y	28.7	7.9	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-472, col.#5	217	body	jar	Y	22.8	8.5	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?/wet hand	Ute	Not visible	exterior pitted/eroded
FS-472, col.#5	218	body	jar	Y	6.2	7.3	0	0.0		N/A	wet hand	indet.	Ute	Not visible	
FS-472, col.#5	219	body	jar	Y	9.6	7.8	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-472, col.#5	220	body	jar	Y	14.7	7.7	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-472, col #5	221	body	jar	Y	8.0	7.3	0	0.0		N/A	wet hand	vegetal/wet surface	Ute	Not visible	

FS-472, col.#5	222	body	jar	Y	5.9	8.7	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-472, col.#5	223	body	jar	Y	8.4	8.2	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-472, col.#5	224	body	jar	Y	10.0	8.0	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	exterior pitted/eroded
FS-472, col.#5	225	body	jar	Y	5.3	7.4	0	0.0		N/A	wet hand	indet.	Ute	Not visible	exterior pitted/eroded
FS-472, col.#5	226	body	jar	Y	9.4	8.5	0	0.0		N/A	wet hand	indet.	Ute	Not visible	

FS-472, col.#5	227	body	jar	Y	2.8	7.2	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-472, col.#5	228	rim	jar	Y	14.8	7.1	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	rim tapered and outflaring
FS-472, col.#5	229	rim	jar	Y	12.6	7.0	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	rim tapered and outflaring- possible finger indentations are visible on sherd exterior
FS-472, col.#5	230	base	jar	Y	197.6	8.5	0	0.0		N/A	vegetal/wet surface	wet hand	Ute	Not visible	exterior pitted/eroded- base formed by pinch pot, base is pointed
FS-472, col.#5	231	rim	jar	Y	220.2	9.1	0	0.0		N/A	wet hand/vegetal/wet surface	indet.	Ute	Not visible	vegetal striations irregular- mend hole visible near rim- rim is tapered

FS-520	232	body	jar	Y	25.0	5.0	0	0.0		N/A	wet hand	vegetal wet surface/wet hand	Ute	Not visible	all sherds from this provenience are marked with white out on int. surface
FS-520	233	body	jar	Y	4.1	3.8	0	0.0		N/A	vegetal/wet surface	vegetal/wet surface	Ute	Not visible	
FS-520	234	body	jar	Y	3.9	5.3	0	0.0		N/A	vegetal/wet surface-cedar bark?	vegetal/wet surface-cedar bark?	Ute	Not visible	
FS-520	235	body	jar	Y	5.1	4.6	0	0.0		N/A	indet.	indet.	Ute	Not visible	
FS-520	236	body	jar	Y	3.8	3.9	2	10.8	5.4	int.	indet.	wet hand	Ute	Not visible	
FS-520	237	body	jar	Y	3.7	3.8	0	0.0		N/A	indet.	vegetal/leather hard	Ute	Not visible	
FS-520	238	neck	jar	Y	1.9	3.8	0	0.0		N/A	indet.	indet.	Ute	Not visible	
FS-520	239	body	jar	Y	3.2	4.3	0	0.0		N/A	indet.	vegetal/wet surface-cedar bark?	Ute	Not visible	
FS-520	240	body	jar	Y	3.5	4.4	0	0.0		N/A	indet.	indet.	Ute	Not visible	
FS-520	241	neck	jar	Y	1.9	4.1	0	0.0		N/A	indet.	vegetal/leather hard	Ute	Not visible	
FS-520	242	body	jar	Y	3.9	4.6	0	0.0		int.	indet.	vegetal/leather hard	Ute	Not visible	
FS-520	243	body	jar	Y	2.8	4.7	0	0.0		N/A	indet.	wet hand	Ute	Not visible	
FS-520	244	body	jar	Y	2.6	4.5	0	0.0		N/A	wet hand	vegetal/leather hard	Ute	Not visible	
FS-520	245	body	jar	Y	2.1	4.1	0	0.0		N/A	indet.	vegetal/leather hard	Ute	Not visible	

FS-520	246	body	jar	Y	2.0	4.6	0	0.0		N/A	indet	vegetal/leather hard	Ute	Not visible	
FS-520	247	body	jar	Y	2.0	4.1	0	0.0		N/A	wet hand	indet.	Ute	Not visible	
FS-520	248	body	jar	Y	1.4	3.8	0	0.0		N/A	wet hand	vegetal/leather hard	Ute	Not visible	
FS-520	249	body	jar	Y	2.0	3.9	0	0.0		N/A	vegetal/wet surface	indet.	Ute	Not visible	
FS-520	250	body	jar	Y	2.1	4.2	0	0.0		N/A	indet.	indet.	Ute	Not visible	
FS-520	251	body	jar	Y	1.6	4.2	0	0.0		N/A	indet.	vegetal/leather hard	Ute	Not visible	
FS-520	252	rim	jar	Y	174.9	4.8	0	0.0		N/A	wet hand	vegetal/leather hard	Ute	Not visible	rim is untapered, but is very outflaring
FS-520	253	rim	jar	Y	68.4	4.2	0	0.0		N/A	vegetal/wet surface	vegetal/wet surface	Ute	Not visible	rim is untapered, but is very outflaring
FS-462	254	rim	jar	N	0.9	3.6	0	0.0		N/A	vegetal/wet surface	vegetal/wet surface	Ute	Not visible	tapered rim, not outflaring
FS-463	255	body	jar	N	2.0	4.5	0	0.0		N/A	indet.	indet.	Ute	Not visible	
FS-455	256	body	jar	Y	2.6	5.8	0	0.0		N/A	indet.	vegetal/leather hard	Ute	Not visible	
FS-461, 480, 481	257	rim	jar	Y	16.6	5.7	0	0.0		N/A	vegetal/wet surface	indet.	Ute	Not visible	rim tapered and outflaring

FS-461, 480, 481	258	neck	jar	Y	3.4	5.5	0	0.0		N/A	wet hand/vegetal, wet surface	vegetal/wet surface	Ute	Not visible	all sherds from this provenience are probably from the same vesel
FS-461, 480, 481	259	body	jar	Y	3.1	5.5	0	0.0		N/A	indet.	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	260	body	jar	Y	2.8	5.4	0	0.0		N/A	indet.	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480. 481	261	body	jar	Y	3.7	4.9	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	262	body	jar	Y	3.4	5.3	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	263	body	jar	Y	3.5	5.4	0	0.0		N/A	wet vegetal/wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	264	body	jar	Y	4.0	5.5	0	0.0		N/A	indet.	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	265	body	jar	Y	2.5	8.0	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	

FS-461, 480, 481	266	body	jar	Y	3.9	4.8	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	267	body	jar	Y	3.8	6.0	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	268	neck	jar	Y	2.7	5.0	2	15.5	7.8	int.	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	269	body	jar	Y	3.3	5.5	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	270	body	jar	Y	2.3	5.9	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	271	body	jar	Y	2.4	4.8	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	272	body	jar	Y	2.3	5.2	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	273	body	jar	Y	2.9	5.2	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	274	body	jar	Y	3.1	5.6	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	

FS-461, 480, 481	275	body	jar	Y	1.8	5.2	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	276	body	jar	Y	3.7	5.8	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	277	body	jar	Y	2.1	5.3	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	278	body	jar	Y	2.5	4.7	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	279	body	jar	Y	2.2	5.5	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	280	body	jar	Y	2.4	5.0	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	281	neck	jar	Y	3.5	5.5	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	282	body	jar	Y	2.0	5.6	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	283	body	jar	Y	2.4	5.3	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	

FS-461, 480, 481	284	body	jar	Y	1.5	5.4	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	285	body	jar	Y	1.9	5.4	0	0.0		N/A	wet hand	indet.	Ute	Not visible	
FS-461, 480, 481	286	body	jar	Y	1.4	5.2	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	287	neck	jar	Y	4.0	5.6	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	288	body	jar	Y	2.6	5.7	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	289	body	jar	Y	3.6	5.0	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	290	body	jar	Y	3.1	5.1	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	291	body	jar	Y	2.6	5.0	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	292	body	jar	Y	1.8	5.7	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	

FS-461, 480, 481	293	body	jar	Y	3.1	5.5	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	294	body	jar	Y	1.5	5.9	0	0.0		N/A	vegetal/wet surface	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	295	body	jar	Y	1.2	5.4	0	0.0		N/A	indet.	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	296	body	jar	Y	2.1	5.5	0	0.0		N/A	wet hand	indet.	Ute	Not visible	
FS-461, 480, 481	297	body	jar	Y	2.7	5.8	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	298	body	jar	Y	1.3	5.8	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	299	body	jar	Y	1.4	5.2	0	0.0		N/A	wet hand	wet hand/vegetal wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	300	body	jar	Y	2.5	5.5	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	

FS-461, 480, 481	301	body	jar	Y	1.4	4.9	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	302	body	jar	Y	1.5	5.0	0	0.0		N/A	indet.	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	303	body	jar	Y	1.1	4.8	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	304	body	jar	Y	2.0	5.7	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-461, 480, 481	305	body	jar	Y	1.9	5.5	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-461, 480, 481	306	body	jar	Y	2.0	5.6	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	307	neck	jar	Y	1.5	5.6	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	308	body	jar	Y	1.7	4.8	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	309	rim	jar	Y	6.1	5.9	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	rim outflaring, not tapered

FS-461, 480, 481	310	body	jar	Y	6.5	6.0	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	311	body	jar	Y	4.9	5.7	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	312	body	jar	Y	2.8	6.1	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	
FS-461, 480, 481	313	body	jar	Y	3.6	5.8	0	0.0		N/A	indet.	vegetal/wet surface-corn cob?	Ute	Not visible	
5708	314	rim	jar	N	12.3	5.3	0	0.0		N/A	wet hand	vegetal/wet surface-corn cob?	Ute	Not visible	rim not tapered, but outflaring
no FS#-99.33.RC2 (obj. ID)	315	body	jar	Y	34.7	6.9	2	19.0	9.5	N/A	polished	polished	Ute	Not visible	coils visible on shard interior-all sherds from this provenience are from the same pot
no FS#-99.33.RC2 (obj. ID)	316	rim	jar	Y	11.8	7.8	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	rim not tapered, is slightly outflaring

no FS#-99.33.RC2 (obj. ID)	317	body	jar	Y	23.1	6.9	3	37.6	12.5	int.	wet hand	wet hand	Ute	Not visible	broke along coil juncs.
no FS#-99.33.RC2 (obj. ID)	318	rim	jar	Y	93.0	7.5	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	rim not tapered. is slightly outflaring
no FS#-99.33.RC2 (obj. ID)	319	neck	jar	Y	7.3	6.2	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	320	neck	jar	Y	19.2	7.3	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	321	body	jar	Y	7.6	6.3	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33 RC2 (obj. ID)	322	body	jar	Y	10.5	7.1	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	323	neck	jar	Y	8.4	7.4	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	

no FS#-99.33.RC2 (obj. ID)	324	body	jar	Y	5.8	6.5	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	325	body	jar	Y	7.9	6.4	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	326	body	jar	Y	5.0	6.4	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	327	body	jar	Y	5.9	6.7	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	328	body	jar	Y	7.6	6.7	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	329	body	jar	Y	6.7	5.7	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	

no FS#-99.33.RC2 (obj. ID)	330	neck	jar	Y	8.7	6.4	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	331	body	jar	Y	5.3	6.8	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	332	body	jar	Y	9.5	6.7	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	333	body	jar	Y	5.3	5.6	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	334	body	jar	Y	6.2	6.0	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	335	body	jar	Y	12.6	6.4	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	

no FS#-99.33.RC2 (obj. ID)	336	body	jar	Y	8.0	6.6	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	337	body	jar	Y	11.1	6.2	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	338	body	jar	Y	5.3	5.9	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	339	body	jar	Y	5.0	6.4	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	340	body	jar	Y	4.8	6.3	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	341	body	jar	Y	4.6	6.2	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	342	body	jar	Y	8.3	6.6	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	

no FS#-99.33.RC2 (obj. ID)	343	body	jar	Y	5.7	6.2	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	344	body	jar	Y	7.9	6.4	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	345	neck	jar	Y	8.9	6.4	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	346	body	jar	Y	5.6	5.8	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	347	body	jar	Y	5.5	6.2	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-99.33.RC2 (obj. ID)	348	body	jar	Y	6.4	6.2	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	

FS-579a	349	neck	jar	Y	18.6	9.5	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-579a	350	body	jar	Y	9.2	5.5	0	0.0		N/A	wet hand	vegetal/wet surface	Ute	Not visible	
FS-579a	351	body	jar	Y	7.0	5.4	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	surface eroded
FS-579a	352	body	jar	Y	7.0	6.4	0	0.0		N/A	wet hand	indet.	Ute	Not visible	int. surface eroded
FS-579a	353	body	jar	Y	4.0	5.5	0	0.0		N/A	indet.	wet hand	Ute	Not visible	ext. surface eroded

FS-579a	354	body	jar	Y	6.5	8.0	0	0.0		N/A	wet hand	indet.	Ute	Not visible	
FS-579a	355	body	jar	Y	3.8	5.6	0	0.0		N/A	wet hand	wet hand	Ute	Not visible.	ext. surface eroded
FS-579a	356	body	jar	Y	6.1	8.4	0	0.0		N/A	wet hand	indet.	Ute	Not visible	
FS-579a	357	body	jar	Y	3.8	8.6	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-579a	358	body	jar	Y	3.5	8.8	0	0.0		N/A	wet hand	wet hand	Ute	Not visible.	

FS-579a	359	body	jar	Y	3.3	5.1	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-579a	360	body	jar	Y	4.0	5.0	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	ext surface eroded
FS-579a	361	body	jar	Y	3.2	7.7	0	0.0		N/A	wet hand	indet.	Ute	Not visible	ext. surface eroded
FS-579a	362	neck	jar	Y	2.4	7.3	0	0.0		N/A	wet hand	indet.	Ute	Not visible	
FS-579a	363	body	jar	Y	2.0	4.6	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	

FS-579a	364	body	jar	Y	1.8	6.1	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-579a	365	rim	jar	Y	1.7	5.7	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	rim tapered, not outflaring
FS-579a	366	rim	jar	Y	2.5	6.5	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	rim tapered, not outflaring
FS-579a	367	rim	jar	Y	19.7	6.7	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	rim tapered, slightly outflaring
FS-577a	368	neck	jar	Y	1.4	4.1	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-578-a	369	neck	jar	N	75.2	5.3	0	0.0		N/A	vegetal/wet surface	vegetal/wet surface	Ute	Not visible	outflaring rim

FS-522	370	body	jar	N	1.6	3.6	0	0.0		N/A	wet hand	vegetal/wet surface-cedar bark?	Ute	Not visible	int. surface eroded
FS-522	371	body	jar	N	1.8	4.4	0	0.0		N/A	Indet.	vegetal/wet surface	Ute	Not visible	
FS-522	372	body	jar	N	1.5	4.1	0	0.0		N/A	wet hand	vegetal/wet surface	Ute	Not visible	
FS-522	373	body	jar	N	1.9	4.2	0	0.0		N/A	wet hand	vegetal/wet surface	Ute	Not visible	
FS-522	374	body	jar	N	1.7	4.1	0	0.0		N/A	wet hand	vegetal/wet surface	Ute	Not visible	
FS-522	375	body	jar	N	5.0	4.6	0	0.0		N/A	wet hand	vegetal/wet surface	Ute	Not visible	
no FS#-78.68 (obj. ID)	376	body	jar	Y	14.8	7.2	3	27.1	9.0	int.	wet hand	vegetal/wet surface	Ute	Not visible	broke along coil juncs.
no FS#-78.68 (obj. ID)	377	body	jar	Y	17.5	6.8	3	32.7	10.9		wet hand	fingertip impressed print visible	Ute	Not visible	broke along coil juncs.
no FS#-78.68 (obj. ID)	378	body	jar	Y	11.5	7.1	3	24.4	8.1	int.	wet hand	fingertip impressed print visible	Ute	Not visible	broke along coils juncs.-prints not visible, but surface treatment looks like impressions

no FS#-78.68 (obj. ID)	379	body	jar	Y		3.5	5.8	0	0.0		N/A	wet hand	fingertip impressed	Ute	Not visible	int and ext surfaces eroded
no FS#-78.68 (obj. ID)	380	body	jar	Y		3.4	5.9	0	0.0		N/A	indet.	indet.	Ute	Not visible	prints not visible, but surface treatment looks impressed
no FS#-78.68 (obj. ID)	381	body	jar	Y		5.0	5.9	2	14.8	7.4	int.	wet hand	fingertip impressed	Ute	Not visible	prints not visible, but surface treatment looks impressed
no FS#-78.68 (obj. ID)	382	body	jar	Y		3.3	6.6	0	0.0		N/A	wet hand	fingertip impressed	Ute	Not visible	surface eroded
no FS#-78.68 (obj. ID)	383	body	jar	Y		3.5	6.2	0	0.0		N/A	indet.	indet.	Ute	Not visible	ext surface eroded
no FS#-78.68 (obj. ID)	384	body	jar	Y		4.4	5.6	0	0.0		N/A	wet hand	indet.	Ute	Not visible	prints not visible, but surface treatment looks impressed

no FS#-78.68 (obj. ID)	385	rim	jar	Y	2.6	5.5	0	0.0		N/A	wet hand	fingertip impressed	Ute	Not visible	prints not visible, but surface treatment looks impressed-rim tapered, slightly outflaring
no FS#-78.68 (obj. ID)	386	rim	jar	Y	6.2	6.2	2	14.8	7.4	N/A	wet hand	fingertip impressed	Ute	Not visible	prints not visible, but surface treatment looks impressed-rim tapered, slightly outflaring-coils visible on sherd ext.
no FS#-78.68 (obj. ID)	387	rim	jar	Y	9.6	5.8	1	8.6	8.6	N/A	wet hand	fingertip impressed	Ute	Not visible	prints not visible, but surface treatment looks impressed-rim tapered, slightly outflaring-coils visible on sherd ext

no FS#-78.68 (obj. ID)	388	neck	jar	Y	11.2	6.6	0	0.0		N/A	wet hand	fingertip impressed	Ute	Not visible	prints not visible, but surface treatment looks impressed
no FS#-78.68 (obj. ID)	389	neck	jar	Y	22.1	6.6	2	17.8	8.9	Int.	wet hand	fingertip impresed	Ute	Not visible	prints not visible, but surface treatment looks impressed-coils visible in sherd profile
no FS#-78.68 (obj. ID)	390	rim	jar	Y	10.6	6.4	0	0.0		N/A	wet hand	fingertip impressed	Ute	Not visible	ext. surface eroded
no FS#-78.68 (obj. ID)	391	neck	jar	Y	6.7	5.9	0	0.0		N/A	wet hand	indet	Ute	Not visible	ext surface eroded
no FS#-78.68 (obj. ID)	392	neck	jar	Y	13.4	6.9	0	0.0		N/A	wet hand	indet.	Ute	Not visible	
no FS#-78.15 (obj. ID)	393	body	jar	Y	6.7	9.1	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	

no FS#-78.15 (obj. ID)	394	body	jar	Y	2.1	9.0	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-78.15 (obj. ID)	395	body	jar	Y	5.1	8.1	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-78.15 (obj. ID)	396	body	jar	Y	7.1	9.3	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#	397	body	jar	Y	2.7	4.0	0	0.0		N/A	wet hand	wet hand .	Ute	Not visible	
no FS#	398	body	jar	Y	2.1	4.3	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#	399	body	jar	Y	1.4	4.0	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
FS-90001	400	neck	jar	Y	2.8	5.5	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	ext. surface eroded
FS-90001	401	body	jar	Y	3.6	5.7	0	0.0		N/A	wet hand	indet.	Ute	Not visible	ext. surface eroded
FS-90001	402	body	jar	Y	3.6	6.5	0	0.0		N/A	wet hand	indet.	Ute	Not visible	ext. surface eroded
FS-90001	403	rim	jar	Y	2.4	6.1	0	0.0		N/A	wet hand	indet.	Ute	Not visible	rim tapered and slightly outflaring
FS-90001	404	rim	jar	Y	2.8	7.0	0	0.0		N/A	indet.	indet.	Ute	Not visible	prints not visible, but surface treatment looks impressed
FS-90001	405	body	jar	Y	3.3	5.2	0	0.0		N/A	wet hand	fingertip impressed	Ute	Not visible	ext surface eroded
FS-90001	406	body	jar	Y	3.2	7.1	0	0.0		N/A	wet hand	indet.	Ute	Not visible	ext. surface eroded

no FS#	407	body	jar	Y	3.1	5.5	1	7.2	7.2	int.	wet hand	indet.	Ute	Not visible	prints not visible, but surface treatment looks impressed
no FS#	408	body	jar	Y	3.6	4.6	0	0.0		N/A	wet hand	fingertip impressed	Ute	Not visible	ext. surface eroded
no FS#	409	body	jar	Y	2.9	4.3	0	0.0		N/A	wet hand	indet.	Ute	Not visible	ext. surface eroded
no FS#	410	body	jar	Y	3.5	4.5	0	0.0		N/A	wet hand	indet.	Ute	Not visible	
no FS#	411	body	jar	Y	2.5	4.2	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#	412	body	jar	Y	2.4	4.4	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	
no FS#-78.1.5 (obj. ID)	413	body	jar	Y	6.2	5.2	0	0.0		N/A	wet hand	wet hand	Ute	Not visible	sherd fairly eroded
no FS#-78 1.5 (obj. ID)	414	rim	jar	Y	2.1	6.2	2	15.6	7.8	N/A	wet hand	fingernail impressed	Ute	Not visible	rim tapered, slightly outflaring
FS#90004	415	rim	jar	Y	27.2	5.4	7	52.0	7.4	int.	indet.	fingernail impressed	Ute	Not visible	rim tapered, slightly outflaring-broke along coil juncs.
FS#90004	416	neck	jar	N	2.7	5.0	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
FS#90004	417	body	jar	N	1.7	4.8	0	0.0		N/A	wet hand	indet.	Ute	Not visible	
FS#90004	418	body	jar	N	1.8	3.8	0	0.0		N/A	wet hand	indet.	Ute	Not visible	
FS#90004	419	neck	jar	N	1.2	4.2	0	0.0		N/A	wet hand	vegetal/leather hard	Ute	Not visible	

FS#90004	420	body	jar	N	1.4	4.6	0	0.0		N/A	wet hand	indet.	Ute	Not visible	
FS#90005	421	body	jar	Y	1.6	4.8	1	7.4	7.4	int.	wet hand	vegetal/leather hard	Ute	Not visible	
FS#90005	422	body	jar	Y	1.6	5.0	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
FS#90005	423	body	jar	Y	2.4	4.4	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
FS#90005	424	rim	jar	Y	4.1	4.4	2	14.6	7.3	int.	wet hand	fingernail impressed	Ute	Not visible	broke along coil juncs.
FS#90005	425	neck	jar	Y	16.0	5.2	5	39.4	7.9	int.	wet hand	fingernail impressed	Ute	Not visible	
FS#90005	426	neck	jar	Y	2.7	4.6	1	7.7	7.7	N/A	wet hand	fingernail impressed	Ute	Not visible	coil visible on sherd ext.
FS#90005	427	neck	jar	Y	2.4	5.0	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
FS#90005	428	neck	jar	Y	8.1	5.1	2	18.4	9.2	int.	wet hand	fingernail impressed.	Ute	Not visible	coils visible on sherd ext
FS#90001	429	body	jar	Y	4.6	4.9	2	18.7	9.4	N/A	wet hand	fingernail impressed	Ute	Not visible	coils visible on sherd ext.
FS#90001	430	body	jar	Y	1.5	5.1	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
FS#90001	431	body	jar	Y	1.9	5.0	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
FS#90001	432	body	jar	Y	2.2	6.7	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
excavation area C	433	neck	jar	N	5.0	6.0	0	0.0		N/A	indet.	indet.	Ute	Not visible	sherd smoothed after impressions

excavation area C	434	neck	jar	N	5.8	4.5	0	0.0		N/A	polished	stick (?) impressed	Ute	Not visible	sherd smoothed after impressions
excavation area C	435	neck	jar	N	10.1	7.2	2	21.8	10.9	int.	polished	stick (?) impressed	Ute	Not visible	sherd smoothed after impressions-coil juncs visible on sherd profile
excavation area C	436	neck	jar	N	4.1	6.4	0	0.0		N/A	polished	stick (?) impressed	Ute	Not visible	sherd smoothed after indentations
excavation area C	437	body	jar	N	5.3	4.7	0	0.0		N/A	indet	stick (?) impressed	Ute	Not visible	sherd smoothed after indentations
excavation area C	438	body	jar	N	5.9	5.4	0	0.0		N/A	polished	stick (?) impressed	Ute	Not visible	
excavation area C	439	body	jar	N	2.9	5.2	0	0.0		N/A	polished	wet hand	Ute	Not visible	sherd ext. badly eroded
excavation area C	440	body	jar	N	3.3	4.4	0	0.0		N/A	polished	indet	Ute	Not visible	sherd smoothed after indentations
excavation area C	441	body	jar	N	2.5	5.3	0	0.0		N/A	polished	indet	Ute	Not visible	sherd smoothed after indentations

excavation area C	442	body	jar	N	3.8	5.1	0	0.0		N/A	polished	stick (?) impressed	Ute	Not visible	sherd smoothed after indentations
excavation area C	443	body	jar	N	3.8	5.3	0	0.0		N/A	polished	stick (?) impressed	Ute	Not visible	sherd smoothed after indentations
excavation area C	444	body	jar	N	3.7	6.4	0	0.0		N/A	polished	stick (?) impressed	Ute	Not visible	sherd smoothed after indentations
excavation area C	445	body	jar	N	4.1	5.9	0	0.0		N/A	indet.	stick (?) impressed	Ute	Not visible	sherd smoothed after indentations
excavation area C	446	body	jar	N	3.1	5.6	0	0.0		N/A	polished	stick (?) impressed	Ute	Not visible	sherd smoothed after indentations
excavation area C	447	body	jar	N	3.6	7.5	0	0.0		N/A	polished	stick (?) impressed	Ute	Not visible	sherd int. badly eroded/sherd smoothed after impressions
excavation area C	448	body	jar	N	3.1	5.2	0	0.0		N/A	indet.	stick (?) impressed	Ute	Not visible	sherd smoothed after indentations
excavation area C	449	body	jar	N	4.5	8.0	0	0.0		N/A	polished	stick (?) impressed	Ute	Not visible	sherd smoothed after indentations

excavation area C	450	body	jar	N	3.0	6.0	0	0.0		N/A	polished	stick (?) impressed	Ute	Not visible	sherd smoothed after indentations
excavation area C	451	body	jar	N	3.5	6.5	0	0.0		N/A	indet.	stick (?) impressed	Ute	Not visible	sherd smoothed after indentations
excavation area C	452	body	jar	N	4.1	6.8	0	0.0		N/A	polished	stick (?) impressed	Ute	Not visible	sherd smoothed after indentations
excavation area C	453	neck	jar	N	4.0	6.6	0	0.0		N/A	polished	stick (?) impressed	Ute	Not visible	sherd smoothed after indentations
excavation area C	454	body	jar	N	2.6	5.5	0	0.0		N/A	polished	stick (?) impressed	Ute	Not visible	sherd smoothed after indentations
excavation area C	455	body	jar	N	2.6	5.5	0	0.0		N/A	polished	stick (?), impressed	Ute	Not visible	sherd smoothed after indentations
excavation area A	456	rim	jar	Y	36.2	9.5	0	0.0		N/A	polished	stick (?) impressed	Ute	Not visible	rim is tapered, outflaring
excavation area A	457	body	jar	Y	5.4	5.9	0	0.0		N/A	polished	vegetal/leather hard	Ute	Not visible	
excavation area A	458	rim	jar	Y	5.3	8.8	0	0.0		N/A	polished	vegetal/leather hard	Ute	Not visible	rim is tapered, slightly outflaring ext badly eroded

excavation area A	459	rim	jar	Y	6.5	8.0	0	0.0		N/A	indet.	indet.	Ute	Not visible	rim is tapered, slightly outflaring, ext. badly eroded
FS-12907	460	rim	jar	Y	59.1	5.5	0	0.0		N/A	wet hand	indet.	Ute	Not visible	rim not tapered, but outflaring all sherds from this provenience are probably from the same vessel
FS-12907	461	body	jar	Y	7.5	4.5	4	26.0	6.5	int.	wet hand	fingernail impressed	Ute	Not visible	
FS-12907	462	body	jar	Y	4.3	5.3	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
FS-12907	463	neck	jar	Y	2.9	4.35	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
FS-12907	464	body	jar	Y	2.8	4.725	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
FS-12907	465	body	jar	Y	3.0	4.675	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
FS-12907	466	body	jar	Y	2.5	4.5	3	15.0	5.0	int.	wet hand	fingernail impressed	Ute	Not visible	
FS-12907	467	body	jar	Y	1.8	4.925	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
FS-12907	468	body	jar	Y	1.0	4.575	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
FS-12907	469	body	jar	Y	2.0	4.4	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
FS-12907	470	body	jar	Y	1.7	4.625	1	8.4	8.4	int.	wet hand	fingernail impressed	Ute	Not visible	

99.33.RC4 (obj. ID)	471	rim	jar	N	241.3	6.825	7	64.4	9.2	int.	wet hand	fingernail impressed	Ute	Not visible	rim is untape ed, but slig tly outflaring- all sherds from this provenience are from the same vessel- sherd broke along coils juncs. Coils visible on sherd surface
99.33.RC4 (obj. ID)	472	body	jar	N	114.0	5.95	5	34.9	7.0	int.	wet hand	fingernail impressed	Ute	Not visible	sherd broke along coil juncs, coils visible on vessel surface
99.33.RC4 (obj. ID)	473	body	jar	N	26.3	6	1	7.6	7.6	int.	wet hand	fingernail impressed	Ute	Not visible	sherd broke along coil juncs, coils visible on vessel surface
99.33.RC4 (obj. ID)	474	body	jar	N	18.1	5.325	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
99.33.RC4 (obj. ID)	475	body	jar	N	29.9	6.05	4	32.3	8.1	int.	wet hand	fingernail impressed	Ute	Not visible	sherd broke along coil juncs.

99.33.RC4 (obj. ID)	476	body	jar	N	19.1	5.925	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
99.33.RC4 (obj. ID)	477	neck	jar	N	10.4	5.975	1	7.7	7.7	int.	wet hand	fingernail impressed	Ute	Not visible	coil visible on sherd ext.
99.33.RC4 (obj. ID)	478	body	jar	N	18.5	5.525	3	25.4	8.5	int.	wet hand	fingernail impressed	Ute	Not visible	sherds broke along coil juncs. Coils visible on sherd ext.
99.33.RC4 (obj. ID)	479	body	jar	N	8.2	6.325	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
99.33.RC4 (obj. ID)	480	base	jar	N	13.4	5.2	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	pointed base -take photo
99.33.RC4 (obj. ID)	481	neck	jar	N	10.6	5.975	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
99.33.RC4 (obj. ID)	482	body	jar	N	9.1	6.275	3	27.0	9.0	int.	wet hand	fingernail impressed	Ute	Not visible	sherd broke along coil junc. Coils visible on sherd ext.
99.33.RC4 (obj. ID)	483	body	jar	N	9.7	5.6	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	

99.33.RC4 (obj. ID)	484	body	jar	N	7.5	5.575	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
99.33.RC4 (obj. ID)	485	body	jar	N	13.6	5.725	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
99.33.RC4 (obj. ID)	486	body	jar	N	8.0	6.075	2	17.7	8.9	int.	wet hand	fingernail impressed	Ute	Not visible	sherd broke along coil juncs., coils visible on sherd ext.
99,33.RC4 (obj. ID)	487	neck	jar	N	7.1	6.125	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
99.33.RC4 (obj. ID)	488	body	jar	N	9.1	5.925	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
99.33.RC4 (obj. ID)	489	body	jar	N	7.3	5.675	1	9.3	9.3	N/A	wet hand	fingernail impressed	Ute	Not visible	coils visible on sherd ext.
99.33.RC4 (obj. ID)	490	body	jar	N	7.4	6.15	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
99.33 RC4 (obj. ID)	491	body	jar	N	9.8	5.7	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	

99.33.RC4 (obj. ID)	492	neck	jar	N	6.8	6.525	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
99.33.RC4 (obj. ID)	493	neck	jar	N	8.2	5.9	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
99.33.RC4 (obj. ID)	494	body	jar	N	7.8	5.825	0	0.0		N/A.	wet hand	fingernail impressed	Ute	Not visible	
99.33.RC4 (obj. ID)	495	body	jar	N	5.1	5.05	0	0.0		int.	wet hand	fingernail impressed	Ute	Not visible	sherd broke long coil juncs, coil height not discernable
99.33.RC4 (obj. ID)	496	neck	jar	N	7.1	6.275	1	8.1	8.1	N/A	wet hand	fingernail impressed	Ute	Not visible	coils visible on sherd ext.
99.33.RC4 (obj. ID)	497	body	jar	N	7.6	6.05	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
99.33.RC4 (obj. ID)	498	body	jar	N	5.9	5.75	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	
FS-12965	499	body	jar	N	3.2	4.45	0	0.0		N/A	wet hand	fingernail impressed	Ute	Not visible	all sherds from this provenience are probably from the same vesel

FS-12965	500	body	jar	N	5.6	4.975	0	0.0		N/A	wet hand/leather hard?	indet.	Ute	Not visible	
FS-12965	501	body	jar	N	4.5	4.9	0	0.0		N/A	wet hand/leather hard?	stiff vegetal-leather hard?	Ute	Not visible	sherd ext. badly eroded
FS-12965	502	body	jar	N	4.8	5.075	0	0.0		N/A	wet hand/leather hard?	indet.	Ute	Not visible	sherd eroded
FS-12965	503	neck	jar	N	3.4	5.175	0	0.0		N/A	indet.	indet.	Ute	Not visible	
FS-12965	504	rim	jar	N	143.6	5.025	0	0.0		N/A	wet hand/leather hard?	indet.	Ute	Not visible	ext. striations are vertical, rim is tapered and very outflaring
FS-12965	505	neck	jar	N	58.9	5.225	0	0.0		N/A	wet hand/leather hard?	stiff vegetal-leather hard?	Ute	Not visible	ext. striations are vertical, rim is tapered and very outflaring
FS-12965	506	neck	jar	N	5.7	5.55	0	0.0		N/A	wet hand/leather hard?	stiff vegetal-leather hard?	Ute	Not visible	ext. striations are vertical, rim is tapered and very outflaring