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UPPER SAN JUAN REGION POTTERY TYPOLOGY

by

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ARCHAEOLOGY NOTES 80

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INTRODUCTION

The Upper San Juan or Gobernador region straddles the Colorado-New Mexico border in the area of the upper reaches of the San Juan River and its tributaries (Fig. 1). Archaeological research in this area began in the early decades of this century, with the greatest amount of work in the 1950s and 1960s as part of the Navajo Reservoir Project. The region contains elements of two distinct ceramic traditions, one associated with an Anasazi occupation dating from about A.D. 300 to at least A.D. 1050, and a later Navajo tradition that dates from about A.D. 1500 to A.D. 1775. The consistent recognition of ceramics belonging to these traditions can be a tricky and elusive task. Traits and styles distinctive to the Upper San Juan region are not well documented, and the nature and distributions of boundaries are poorly known. However, it is clear that at least some of the pottery recovered from this region is distinct from that produced in other adjacent regions during the same periods, and that a long-lived continuous Anasazi ceramic tradition is represented in this region.

Although there has been relatively little archaeological research in the Upper San Juan region during the past two decades, considerable work will be carried out in the 1990s as part of extensive development of oil and gas resources in the area (Hogan et al. 1991). In preparation for this effort, the Bureau of Land Management and the Museum of New Mexico sponsored a workshop in the spring of 1991 on Upper San Juan ceramics. This workshop brought archaeologists currently working in the Upper San Juan region together with Al Dittert, Frank Eddy, and David Brugge--archaeologists involved in many of the original descriptions of Upper San Juan ceramics. Pottery type definitions, along with associated problems and issues concerning their distinction and importance, were discussed and reviewed. These discussions were grouped according to phases defined during the Navajo Reservoir Project: the Los Pinos phase (A.D. 300 to 400), Sambrito phase (A.D. 400 to 750), Rosa phase (A.D. 750 to 850), Piedra phase (A.D. 750 to 950), and Arboles phase (A.D. 950 to 1050) for the Anasazi occupation; and the Dinetah phase (A.D. 1500 to 1700) and Gobernador phase (A.D. 1700 to 1775) for the Navajo occupation.

This document summarizes the taped discussions at the workshop and supplements them with observations made during subsequent laboratory examination of sherd collections from the Upper San Juan area (primarily from the Navajo Reservoir excavations). Additional revisions have been prompted by the experience of ceramicists who have tried to apply these conventions in the year between the appearance of a draft version of this report and the preparation of this volume. The result is a partial reformulation and redescription of the Anasazi and Navajo pottery typologies for the region. The goals of the Anasazi revisions have been to define the types within the context of contemporary pottery of adjacent regions and to create definitions that can be consistently implemented. Given the limited amount of archaeological work within the region to date, revisions of this typology are expected as new collections add greater temporal depth and geographic coverage to our understanding. All of the descriptions are based on the analysis of provenienced sherd and vessel collections that are reposit

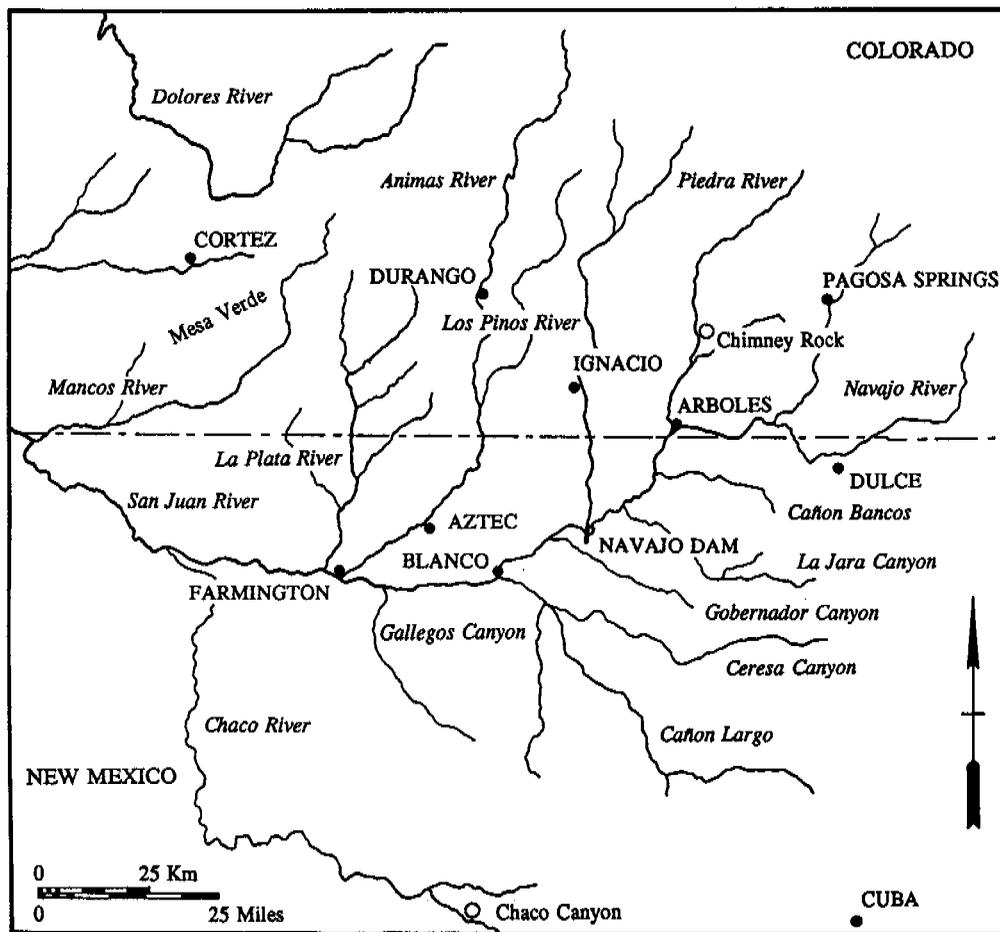
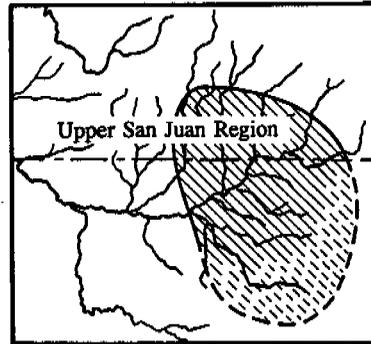
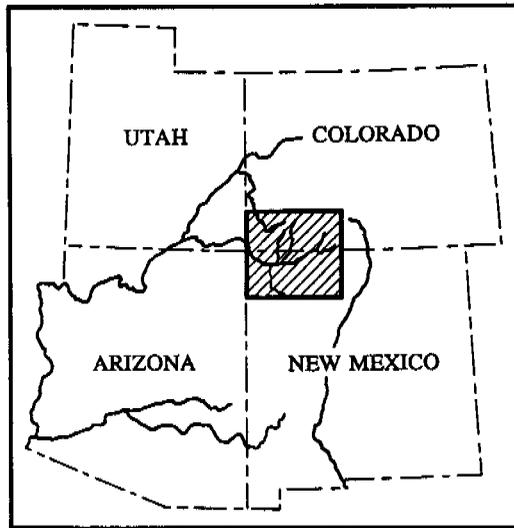


Figure 1. Location and geographic features of the Upper San Juan region.

with the Museum of Indian Arts and Culture, Laboratory of Anthropology in Santa Fe. Vessels used to illustrate the types include materials that have no site provenience but that were collected from the north-central New Mexico area. Catalog numbers are provided in figure captions.

Although the scope of this document is limited to Anasazi and Navajo ceramics of the region, additional ceramic traditions are present in small quantities. Most of these are nonlocal wares that have been traded into the area, but some also reflect long-distance movements of peoples. Foremost in this latter category is the pottery carried by nonsedentary Numic (Ute), Apachean, and protohistoric Pueblo groups. Many of these ceramics are obviously nonlocal due to micaceous pastes or distinctive tempers or technologies (Errickson and Wilson 1988), but the possibility remains of local ceramic manufacture by these peoples. The potential contributions of these other ceramic traditions must be considered while analyzing Upper San Juan region pottery collections, rather than assuming that the Anasazi and Navajo ceramics represent the universe of possible types.

BACKGROUND

Our knowledge of Upper San Juan pottery is derived from investigations of the Navajo Reservoir Project (Dittert 1961; Eddy 1966), the Piedra drainage (Adams 1975; Roberts 1930), the Gobernador Canyon area to the south (Hall 1944; Marshall 1985; Peckham 1963), and along the Animas drainage near the town of Durango to the east (Carlson 1963; Ellwood 1980; Lucius 1982; Shields and Cater 1991; Wilson 1988). While a number of ceramic types have been defined and used during these studies, there are very few formal descriptions, particularly for those types belonging to the Anasazi tradition.

Among the first discussions of Anasazi ceramics from sites along the upper reaches of the San Juan drainage was that by Roberts (1930). He described vessels and sherds recovered during excavations of Pueblo I period sites along the Piedra drainage. While no types were formally defined, these descriptions form much of the basis for the recognition of Piedra Black-on-white as a Pueblo I type within both the Upper San Juan (Dittert 1961; Eddy 1966) and Northern San Juan (or Mesa Verde) regions (Abel 1955; Breternitz et al. 1974; Reed 1958). About the same time, Mera (1935) defined Rosa Black-on-white, Rosa Gray, and Rosa Smoothed as distinctive early types occurring in the north-central part of New Mexico. These types were adopted by Hall (1944) to describe material recovered during excavations in the Gobernador area, and he also defined and described Rosa Brown and Transitional Rosa/Gallina Black-on-white. These types were associated with a distinctive Rosa phase in the Gobernador area, thought by Hall to date sometime between A.D. 700 and 900. Peckham (1963) noted and described similar ceramics during the later excavation of another Rosa phase site in the Gobernador country, and he defined Rosa Neckbanded as another type associated with the Rosa Phase.

Additional Anasazi pottery types and phases were described or defined during the Navajo Reservoir Project in the late 1950s and early 1960s. They range from some of the earliest recorded Anasazi ceramics to an occupation dating as late as A.D. 1050. The Navajo Reservoir project also recovered abundant trade wares from other regions of the Southwest, particularly types belonging to the Northern San Juan ceramic tradition. Anasazi pottery types that were formally defined and described during this project include Arboles Black-on-white (Dittert 1961:147) and Payan Corrugated (Sciscenti et al. 1963:97). Other types that were defined but only informally described by the Navajo Reservoir Project included Los Pinos Brown, Sambrito Brown, Piedra Gray, Piedra Neckbanded, Arboles Gray, Arboles Neckbanded, and Bancos Black-on-white. Since the end of the Navajo Reservoir Project, only a few discussions or descriptions of Anasazi pottery types from sites in this region have been reported (Marshall 1985; Shields and Cater 1991; Wilson 1989), and no new types have been proposed.

Navajo pottery types have long been known to occur within Gobernador Canyon and the Upper San Juan drainage. Gobernador Polychrome was defined by Kidder (1936:373) based on observations in Gobernador Canyon. Kidder suggested that this

type resulted from the introduction of painted pottery manufacture by Puebloan Refugee potters who joined Navajo groups following the Pueblo Revolt. Farmer (1942) noted and described Gobernador Polychrome and an associated utility ware that he defined as Dinetah Scored. Excavations conducted by Earl Morris and later reported by Carlson (1965) also resulted in the recovery and description of both decorated and utility ceramic types, as well as a wide range of historic Puebloan types. Additional Navajo types defined during the Navajo Reservoir Project include Gobernador Indented (Dittert 1958:20) and Frances Polychrome (Eddy 1966:406). Brugge (1963) synthesized Navajo ceramic typology based on collections made during an archaeological survey for the Navajo Land Claims, and he included types associated with sites within the Upper San Juan region. Brugge's synthesis still serves as a useful reference for Navajo types found in this region. More recent syntheses and discussions of Navajo ceramics in the Upper San Juan region have been presented by Marshall (1985) and Hill (1991).

THE POTTERY TRADITIONS

Examination of pottery type collections made during the Navajo Reservoir project indicates that most of the Upper San Juan types are distinctive and temporally sensitive. However, distinctions between some types are ambiguous, and discussions at the workshop revealed that very different conventions were being used for type assignments by different archaeologists. Both problems appear to be a result of variability in the clay resources available to, and selected by, potters in the region, particularly variability in iron content that influences the color of the fired sherds (see sidebar). In this synthesis, emphasis has been placed on paste characteristics other than color, and this change in emphasis appears to clarify distinctions and solve some of the problems in classification raised at the workshop. In the following descriptions, types are grouped by tradition (Anasazi and Navajo), and they are presented in temporal order within the context of their phase associations.

Anasazi Ceramics

Anasazi ceramics within the Upper San Juan region are characterized by variation in resource use, and it is necessary to understand the effects of these variations on pottery characteristics and typology. Potential pottery clays are widely distributed within this region both in Quaternary alluvial deposits and geologic outcrops. Alluvial clays are relatively high in iron content, and most are self-tempered with inclusions of sands and silts. Geologic clays include sources with both high and low iron content, and these clays tend to require addition of temper by the potter. Pottery manufactured from the alluvial clays will tend to be brown after firing, whereas pottery manufactured from geologic clays can range from brown to gray, depending on the iron content of the source. This color variation is further affected by the control of the firing atmosphere--even high iron clays can yield gray surface colors when exposed to reduction firing atmospheres.

Anasazi ceramics of all regions have traditionally been classified by color (gray, white, and red wares), but the extension of this practice to the distinction between brown and gray wares within Upper San Juan ceramics is not appropriate. For example, sherds exhibiting similar surface manipulations have been assigned to Piedra Gray or Piedra Brown, depending on paste color, only to find that the pastes are identical after refiring. Instead of reliance on color, initial recognition of paste differences between alluvial and geologic sources is critical to the process of distinguishing Upper San Juan ceramics from those of adjacent Anasazi regions. Changes in paste use within the Upper San Juan region occurred through time, and these distinctions are a good first step in the sorting and classification of Upper San Juan ceramics. In the classification system we are proposing here, Anasazi ceramics are first separated into an early (Sambrito) group based on the use of self-tempered alluvial clay and a late (Rosa-Piedra-Arboles) group based on geologic clays with added tempers. Manufacturing techniques and decorative styles

FIRING ATMOSPHERE AND VESSEL COLOR

The color of fired pottery reflects the combined effects of clay composition and firing atmosphere. The two principal colorants in clay are organic material and iron compounds. Firing atmosphere effects are described in terms of the free oxygen available during firing. If more oxygen is present than is required to combust fuel gasses, the surplus oxygen creates an oxidizing atmosphere. If the oxygen present is used up by fuel combustion with no significant surplus or deficit, the atmosphere is described as neutral. If too little oxygen is present to combust the fuel gasses (resulting in the production of carbon monoxide), the atmosphere is described as reducing.

Organic material, if present in a clay, is usually black (carbonaceous). Depending on concentration, the unfired clay can range from gray to black. If sufficient oxygen is present surrounding a vessel during firing, the organic material will oxidize to water and either carbon dioxide or carbon monoxide leave the clay as gasses. Oxidation proceeds from the surface of the vessel into the vessel wall, progressively clearing carbonaceous material from the paste. If the firing is stopped before this clearing is complete, a gray or black carbon core remains within the vessel wall.

Iron can be present in clay deposits as any one of several chemical compounds. In a reduced or *ferrous* state, iron compounds are gray and impart gray to black colors to the clay, depending on concentration. During firing with abundant oxygen, organic matter would be oxidized first due to its greater reactivity, then iron compounds would be progressively oxidized, changing color from gray to red (orange). Oxidation proceeds from the vessel surface into the vessel wall. If the firing is stopped before oxidation is complete, a gray core will result, analogous to the carbon core.

If iron is present in a clay in its oxidized or *ferric* state, the clay will be yellow, orange, red, or even green in color, depending on the degree of oxidation and the iron concentration. Clays with ferric iron compounds are usually not associated with concentrations of organic material. During firing with abundant oxygen, any partially oxidized iron compounds would be completely oxidized, resulting in the same or redder colors. During firing in a neutral atmosphere, the color of the iron compounds would remain unchanged from the original clay deposit. During firing in a strongly reducing atmosphere, ferric iron compounds would be reduced to ferrous compounds, resulting in gray or black colors.

Clays utilized for Upper San Juan ceramics were derived from both alluvial and geologic sources. Iron compounds in alluvial clays tend to be partially or fully oxidized. Except for the case of reduction firing, vessels made from these clays would tend to be brown in color; localized reduction would turn surfaces black. Geologic clays tend to be carbonaceous, and any iron compounds, if present, tend to be reduced. If fired in a neutral or reducing atmosphere, vessel color would remain gray or black. Any vessel portions affected by oxidation could turn brown to red, but only to the degree allowed by the concentration of iron compounds in the clay.

Given a neutral to slightly reducing atmosphere, vessels manufactured of alluvial clays would appear to be "brown" wares. Geologic clays subjected to the same atmosphere would result in "gray" vessels. Accidental oxidation firing would not change the appearance of the alluvial clay vessels, but high-iron examples of the geological clays would turn reddish brown, appearing to be "brown" wares if color were used as the primary classification criterion.

contribute to these distinction, but paste qualities are primary.

After ceramics are placed within these initial groups, they are assigned to wares based on decorative techniques. Two wares were identified for Upper San Juan tradition ceramics: gray wares and white wares. Gray wares refer to unpainted and unslipped vessels fired in a neutral atmosphere. While often unpolished, some Upper San Juan gray ware forms are recognized by the presence of polished surfaces. Gray ware decoration, if present, consists of variation in surface texture--polishing, neckbanding, or corrugation. White ware refers to vessels that are often polished, usually painted, may be slipped, and are fired in a neutral atmosphere. Ceramics assigned to various ware groupings are then assigned to various Upper San Juan tradition types based on temporally sensitive design styles or surface manipulations.

Sambrito Utility

During excavations of the Navajo Reservoir Project, small numbers of sherds and vessels were encountered that were clearly distinct from later types. These ceramics were recovered from sites dating as early as A.D. 300 and as late as A.D. 700 (Eddy 1961, 1966; Dittert and Plog 1980). Two types were defined: Los Pinos Brown, generally assigned to ceramics from sites thought to date prior to A.D. 400 (Los Pinos phase); and Sambrito Brown, assigned to similar sherds from sites dating from A.D. 400 to A.D. 700 (Sambrito phase). The distinction between Los Pinos Brown and Sambrito Brown was based on the probable date of the site (Dittert et al. 1963; Eddy 1966). While some paste and vessel form differences may exist between the ceramics of these two phases, such distinctions cannot be made consistently during the routine analysis of sherd collections. Thus, it is recommended that these ceramics be placed into a single type, Sambrito Utility, pending the discovery of consistently identifiable differences between early and late collections.

Sambrito Utility, as described here (Fig. 2), is a valid type both within and outside of the Upper San Juan region, and the type is similar to the earliest ceramics occurring over much of the Northern San Juan Basin and elsewhere in the Southwest (Wilson and Blinman 1991b). The description provided here is based on material recovered during excavations of the Navajo Reservoir Project (Eddy 1961, 1966; Dittert et al. 1963); ceramics recovered during the re-excavation of the Oven site (Hammack 1992; Wilson 1989), a site originally assigned to the Sambrito phase during the Navajo Reservoir Project; as well as ceramics recovered from recent excavations by the La Plata Highway Project (Toll 1991).

Sambrito Utility represents a coherent pottery tradition, rather than representing an experimental technology. The paste is soft and silty, sherds tend to break and crumble easily, sherd surfaces often spall, and sherd size is often small as a result of these weaknesses. Paste cores are usually dark gray with occasional dark brown or reddish streaks. Paste color is almost always red when refired in an oxidizing atmosphere. Ferric sesquioxide pellets observed in the paste also indicate that the clays have been enriched in iron by soil formation processes (Hill 1988). Pastes are often

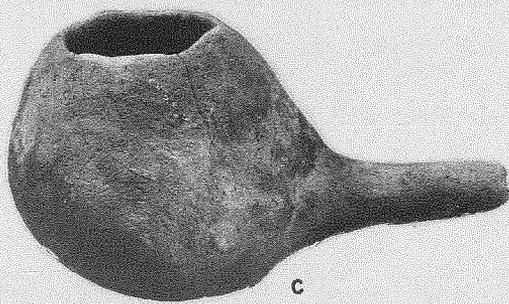
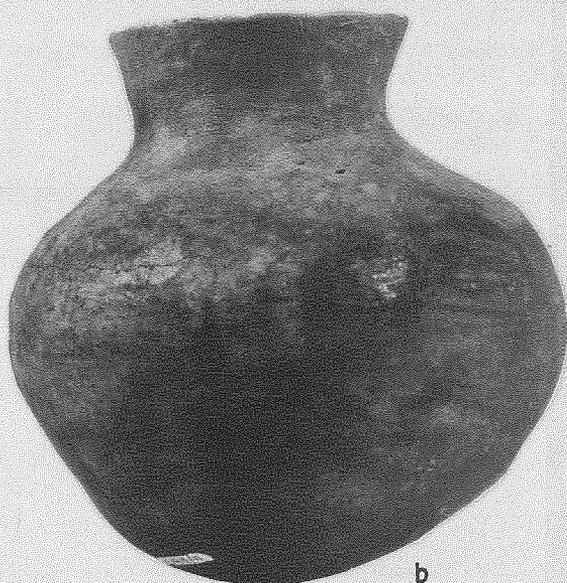


Figure 2. *Sambrito Utility vessels from LA 4195, Navajo Reservoir Project; (a) 42195/11, height 9 cm; (b) 42194/11, height 15 cm; (c) 42193/11, height 7 cm; (d) 44345/11, height 10 cm.*

glassy in appearance, and vitrification appears to have occurred at low temperatures. All of these features point to the use quality alluvial clays. Sherd and vessel surface colors can be gray, dark gray, brown, or reddish. Color variation is usually present on larger sherds and vessels, consisting of gray, brown, or red patches.

Microscopic examination of temper indicates the presence of numerous uniformly sized rounded quartz sand grains. These grains range from clear to dark gray in color. Very small angular particles were also often present. Petrographic analysis indicates this material derived from a fine-grained sandstone (Hill 1988). In addition, some of the samples examined also contained crushed andesites. It is likely that most of the sand and rock inclusions occur naturally in the clay sources, and temper was probably not added as a routine step in ceramic manufacture. Clay sources with similar characteristics and inclusions have been located along the Upper San Juan and La Plata River drainages (Hill 1988; Wilson 1990).

Sambrito Utility vessels were produced by coiling, but coil junctures are completely obliterated. Painted designs and surface manipulations are absent. Surfaces are normally well-smoothed and are often polished, but the degree of polish or smoothness may vary significantly in different portions of an individual vessel or sherd. Sambrito Utility sherds or vessels from earlier sites tend to exhibit a higher degree of polish than those from later components. Vertically oriented smoothing or polishing streaks are sometimes present. While both the interior and exterior surfaces of jars may be polished, exteriors usually exhibit a greater degree of polishing. Likewise, bowl interiors exhibit a higher degree of polish. In examples exhibiting a lower degree of polishing, the surface is often rough and pitted, with temper sometimes protruding through the surface.

Many Sambrito Utility vessels are somewhat irregular and poorly shaped when compared to later forms. Vessel size is often relatively small, and sherds are thick relative to vessel size. The majority of Sambrito Utility vessels are necked jars, although seed jars, bowls, spouted dippers, and pipes have been recognized in low frequencies. Although jar size is variable, most jars are small when compared to later forms. Jars often have flat bases, exhibit fairly short and distinctive necks, and rim diameter is relatively narrow. Necks may flare outward toward the rim, are occasionally straight, or may flare inward. Although many of these vessels resemble ollas in overall shape, their small size and the relatively weak and porous paste quality would have made them unsuitable for long-term water storage. Evidence of sooting is common and indicates some use for cooking.

Sambrito Utility sherds have been recovered from very few independently dated contexts, and disagreement exists concerning the temporal duration of this type. The Navajo Reservoir Project attributed a very long temporal span to the Los Pinos Brown and Sambrito Brown types. These were the only pottery types occurring in the Los Pinos phase and in the early portion of the Sambrito phase, but they were associated with early Northern San Juan types during the later part of the Sambrito phase. Dating of both phases was based on a small number of radiocarbon samples, and the dating conclusions have been questioned. Berry (1982:55) believes that the Los Pinos and Sambrito phases

are actually two names for the same archaeological entity. He suggests that sites previously assigned to the Sambrito phase should be grouped into the Los Pinos phase and the Sambrito phase name should be dropped. However, more recent investigations indicate that sites originally assigned to the Sambrito phase are, in fact, later than those associated with the Los Pinos phase (Hammack 1992; Wilson 1989). This supports the original impression that Sambrito Utility is an extremely long-lived type occurring as the sole pottery at late Basketmaker II sites and with other pottery types at Basketmaker III sites within the Upper San Juan region.

Sites yielding Sambrito Utility sherds and vessels do not appear to be particularly common anywhere, but are scattered throughout much of the Northern San Juan Basin. The number of sherds at Los Pinos or Sambrito phase sites is very low, usually limited to a few vessels, and some sites dating to these phases lack ceramics. Although most information about this type comes from sites within the Navajo Reservoir District, Sambrito Utility is also present at Basketmaker III sites in Mesa Verde National Park (see description of Twin Trees Gray in O'Bryan 1950; Wilson and Blinman 1991b) and along the La Plata River (Toll 1991). While the presence of pottery was not reported from excavations of Basketmaker II structures at Talus Village, there are anecdotal reports of its discovery (Alfred Dittert, pers. comm., 1992). If present, the sherds would add support to an early date for the introduction of pottery into this region.

Sambrito Utility is also similar to contemporaneous pottery found in other regions of the Southwest. It is similar to Obelisk Gray described from Prayer Rock Cave in northeast Arizona (Colton 1955; Morris 1980), brown ware from sites on the Zuni Reservation (Varien 1990; Fowler 1988), and Adamana Brown from sites in the Petrified Forest National Park in the very southern part of the Anasazi region (Burton 1991; Wendorf 1953). Sambrito Utility also shares characteristics with early Mogollon Brown Ware types such as Alma Plain (Haury 1936; Martin and Rinaldo 1943; Wheat 1955).

The similarity between Mogollon Brown Wares and early Anasazi types such as Sambrito Utility poses several interesting questions: one being the implication of the cultural significance associated with brown and gray wares. Much of the pottery produced in the Mogollon area was manufactured with clays high in already oxidized iron fired in neutral or partially oxidizing atmospheres, resulting in brown- or red-colored pottery (Colton 1953; Shepard 1953; Wheat 1955). Anasazi potters usually utilized clays with a lower iron content resulting in white or gray surface colors when fired in a neutral or slightly oxidizing atmosphere. Early types defined during investigations of Navajo Reservoir were classified as brown wares based on paste color and surface characteristics, and to a lesser extent by the degree of polishing and vessel forms (Dittert et al. 1963). The early occurrence of Sambrito Utility, during the same time that brown wares were being manufactured in the Mogollon region, has been interpreted as indicating immigration and continual influence by Mogollon groups from west-central New Mexico or east-central Arizona (Dittert et al. 1963).

While the superficial similarities between Sambrito Utility and early Mogollon brown wares are strong, there are subtle differences in the ranges of vessel form, color, and the execution of surface finishes. Apart from direct Mogollon affinities, another

interpretation of the presence of early brown wares is that the characteristics noted are due to the use of alluvial clays, which generally have a very high oxidized iron content rather than a distinct technology (Wilson 1989). Given an amount of already oxidized iron impurities within these clays, the dark gray to gray-brown colors common in Sambrito ceramics may actually have resulted from firing technologies not that different from those utilized in the production of Anasazi types.

Rosa Phase Types

The Rosa phase is the best described of the Anasazi phases in the Upper San Juan region. It dates from A.D. 700 to 850 and represents the period of highest population density of any of the Anasazi occupations (Eddy 1966, 1972; Hall 1944). Ceramics produced in the Upper San Juan region during this phase contrast with the decorated pottery of surrounding regions more than during any other period. The Rosa style area extends northeast to the uppermost drainages of the San Juan River, northwest to the Animas drainage near Durango, west to Blanco along the San Juan River, south to Angel Peak and to the Continental Divide near Cuba, and the eastern boundary appears to be the Pagosa Springs area. Rosa phase ceramics are fairly well described based on collections from the Upper San Juan River (Dittert 1961; Eddy 1966), Gobernador Canyon (Hall 1944; Peckham 1963), and from the Animas River near Durango (Carlson 1963; Lucius 1982; Wilson 1988; Winter 1986). Ceramic types associated with Rosa phase sites include Rosa Black-on-white, Rosa Gray, Rosa Neckbanded, and Rosa Brown.

Rosa phase ceramics are distinguished from contemporary Anasazi pottery by temper and by paint type and decorative style for Rosa Black-on-white. The distinctive temper that is associated with most of these Upper San Juan ceramics has been described as sand by some (Carlson 1963; Eddy 1966; Hall 1944) and as crushed quartzite by others (Lucius 1982; Wilson 1988). More recent sherd analyses and experiments with raw materials from the region suggest that this temper may be derived from varieties of igneous rock that differ from the igneous rock varieties associated with the Northern San Juan or Mesa Verde region and other areas of the San Juan Basin. The dominant Rosa phase temper consists of angular clear to translucent white minerals (quartz and feldspars), with few or no dark (ferromagnesian) minerals either enclosed by or associated with the lighter minerals. These temper particles tend to fracture with the sherd but may be rounded by erosion on sherd edges that are not fresh. Some Rosa phase sherds exhibit subrounded to rounded versions of this temper, dominated by clear to translucent white minerals and lacking dark minerals. This may be either sand or well-weathered examples of the parent rock. Although dominated by quartz-feldspar (by definition), this temper exhibits a range of dark mineral abundance, sometimes approaching the norm for Northern San Juan tradition pottery.

The geographic homogeneity of this temper was documented by early analyses of ceramics from the Durango, Navajo Reservoir, and Gobernador areas. This early work also suggested that there was a temporal component to the pottery tradition, with a change in temper from the Rosa phase to the following Piedra phase. Recent analyses of pottery collected as part of the Fruitland Project indicate that the temper change did

not occur in all localities in the Upper San Juan region. The quartz-feldspar temper of the Rosa phase dominates some Piedra phase assemblages, and there are as yet no clear geographic correlates of its persistence. At this time, the Rosa phase temper can not automatically be used to distinguish earlier from later sites within the Upper San Juan region. The distinctive paint and design style of Rosa Black-on-white appears to be a more consistent basis for identifying Rosa phase collections.

A minor exception to the use of quartz-feldspar temper in Rosa phase assemblages is Rosa Brown. Whereas the quartz-feldspar temper reflects conscious selection and preparation of a raw material, Rosa Brown appears to represent the use of a self-tempered alluvial clay. In this type, the nonplastic particles are sands that grade into the silty clay of the paste.

Gray Wares. Sherds exhibiting these paste characteristics, but without polished, slipped, or painted surfaces, are assigned to one of several gray ware types that are differentiated on the basis of surface texture. These surface treatments are similar to those of gray wares from adjacent regions. Most coil junctures are completely obliterated creating a scraped but unpolished surface. Temper often protrudes through the surface, and surfaces are often rough and pitted. Vessel thickness is variable. Fugitive red pigment application is rare, but it may occur on the exteriors of bowls and ollas.

Paste color is usually gray, dark gray, brown, or red. Paste color is usually even throughout the cross section, and carbon cores are rare. Surface color is quite variable and includes gray, dark gray, buff, and white. As part of the present description, samples from 50 Rosa phase gray ware sherds were oxidized at 950 degrees centigrade, and almost all (90 percent) oxidized to bright red or yellow-red colors. Rosa phase gray wares from the Durango area also fire to similar colors (Lucius 1982). A few sherds fire to buff, indicating variation in clay sources. The results of refiring were unexpected, given the common light surface and paste colors noted in the great majority of the sherds tested. This contrast indicates the use of clays with unoxidized iron impurities that are fired in a relatively well-controlled neutral atmosphere.

Although the oxidized colors of Rosa phase sherds are similar to Sambrito Utility sherds, the Rosa phase clays are harder and less silty. Because of the high iron content, gray ware sherds from misfired vessels or sherds exposed to oxidizing conditions may fire to brown or reddish colors, which may lead to their classification as brown wares. These sherds are very distinct from Rosa Brown and should not be classified as brown wares.

Exchange of gray ware vessels occurred during the Rosa phase, and it is not possible to distinguish local from nonlocal gray ware types without first examining temper. Sherds tempered with local sandstone or crushed quartz temper previously described are assigned to local gray ware types, while those containing crushed igneous temper may either be classified as trade wares from the Northern San Juan area (such as Chapin Gray and Moccasin Gray) or local types produced later during the Piedra or Arboles phases, depending on surface characteristics.



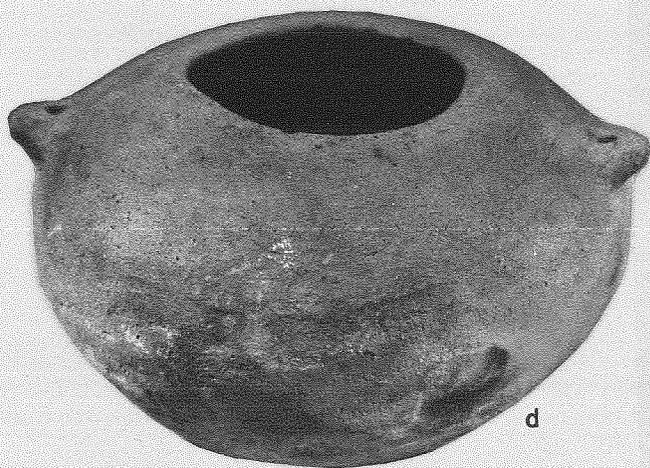
a



b



c



d

Figure 3. Rosa Gray vessels from north-central New Mexico; (a) 37833/11, height 20 cm; (b) 16771/11, height 11 cm; (c) 37842/11, height 13 cm; (d) 37882/11, height 9 cm.

Rosa Gray. Rosa Gray (Fig. 3) is contemporaneous with Lino Gray from the Cibola and Kayenta regions, and Chapin Gray from the Northern San Juan region; only temper distinguishes these types. Rosa Gray refers to vessels with coil junctures that are obliterated over the entire vessel, creating a smooth or plain exterior surface that was not polished. Only rim sherds are assigned to Rosa Gray, since the absence of visible neck coils or corrugations is required for the identification of this type. Rosa Gray occurs in a wide variety of vessel forms, including wide-mouth (cooking-storage) jars, seed jars, ollas, bowls, gourd jars, effigies, dippers, and pitchers. Most forms exhibit a wide range of sizes, and the variability in size and form indicates that Rosa Gray vessels were manufactured and utilized for a wide range of functions. Fugitive red coatings are sometimes present on Rosa Gray jars, but their use is normally limited to bowls and ollas.

Rosa Neckbanded. Rosa Neckbanded (Fig. 4) exhibits paste and surface characteristics identical to those noted for Rosa Gray and is only distinguished by the presence of wide unobliterated coils near the rim. Rosa Neckbanded is similar to Moccasin Gray and Kana'a Gray and can only be distinguished from these types on the basis of temper. Rosa Neckbanded is commonly present in low frequencies with Rosa Gray, except perhaps during the earliest part of the Rosa phase, when it may be absent. Neckbands are generally wider than on the later Arboles Banded. Rosa Neckbanded may have as few as two or three rows of unobliterated coils near the rim, or bands may cover the entire neck. Rosa Neckbanded vessel forms are generally limited to wide-mouth (cooking-storage) jars.

Rosa Neckbanded may be confused with neckbanded sherds produced during the subsequent Piedra or Arboles phases, but Rosa Neckbanded contains distinctive temper and is never polished. The coils of Rosa Neckbanded vessels are generally wider than later neckbanded types, and coil junctures are usually not elaborated. Rosa Neckbanded fillets tend to be flatter than those present in later neckbanded types.

Rosa Body. In order to distinguish sherds from Rosa Gray and Rosa Neckbanded vessels (which commonly occur together), enough of the rim or neck must be present to infer whether neck coils were completely obliterated. All gray body sherds with Rosa phase gray ware paste characteristics that do not display neck coil treatment should be placed into the Rosa group but simply classified as Rosa Body sherds, indicating they could have originated from either Rosa Gray or Rosa Neckbanded vessels.

Rosa Brown. Some confusion exists over differences between Rosa Brown and other types, such as Rosa phase gray wares and Sambrito Utility. As described here, Rosa Brown does not refer to unpolished examples of Sambrito Utility or misfired Rosa Gray. Instead, it indicates the occasional use of distinct low-quality alluvial clays to produce miniatures and figurines. This type is long-lived and is associated with most phases. While Rosa Brown is always fairly rare, it is most common during the Rosa phase. This type is extremely similar, if not identical, to examples described elsewhere as Dolores Brown (Lucius and Wilson 1981) or Mud Ware (Carlson 1963; Bond 1985). Rosa Brown paste is very distinct from other Rosa phase types, as it contains naturally occurring silt and sand inclusions. This indicates that Rosa Brown vessels were produced

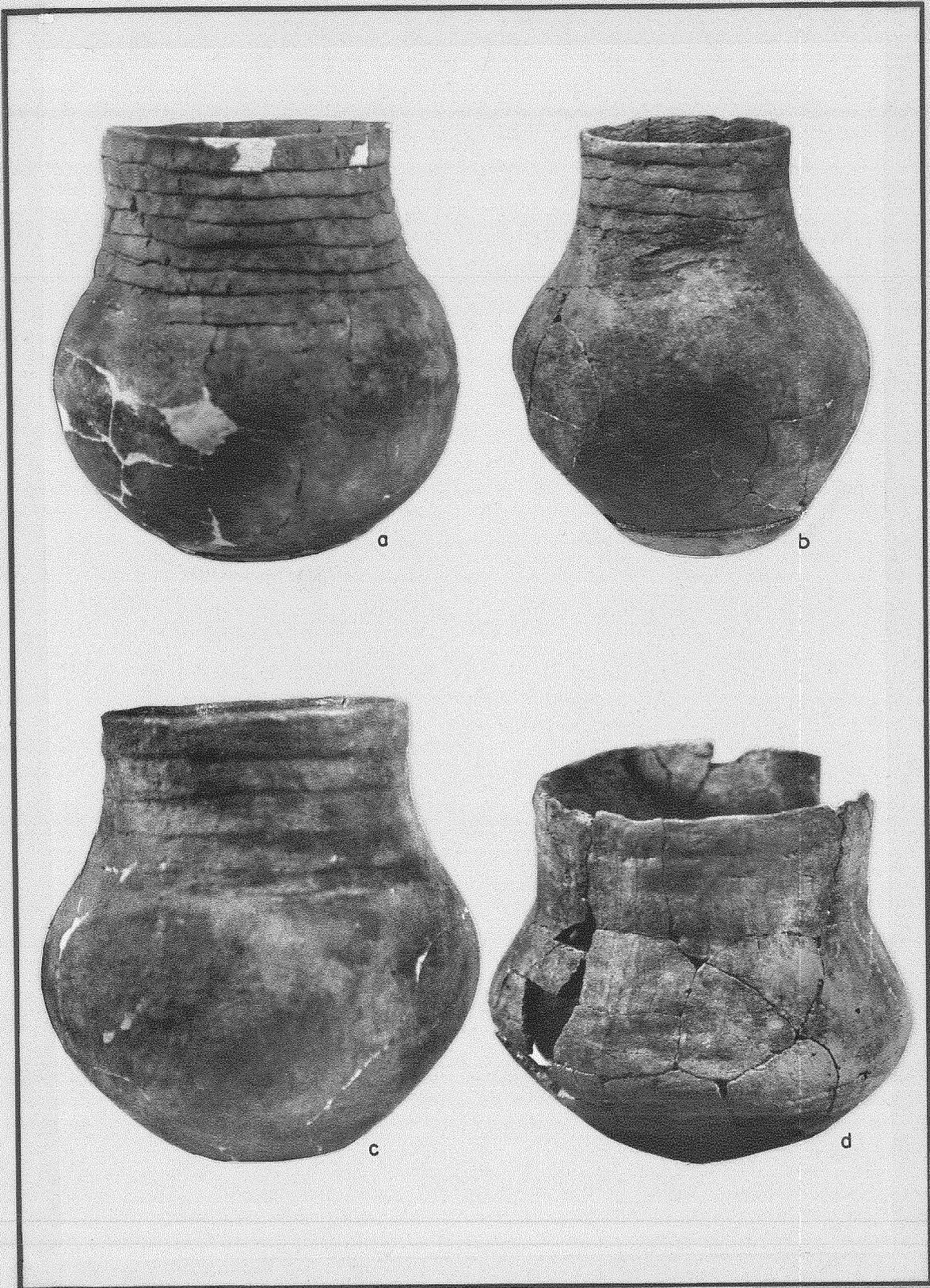


Figure 4. Rosa Neckbanded vessels from north-central New Mexico; (a) 37952/11, height 16.5 cm; (b) 37902/11, height 16 cm; (c) 8153/11, height 16 cm; (d) 10749/11, height 11 cm.

using alluvial clays similar to the clay sources used in the manufacture of Sambrito Utility. Surfaces commonly exhibit striations and streaking and are usually uneven and poorly smoothed. Pastes are very soft and often heavily eroded. Sherds break and crumble very easily and are often very small. Pastes are usually reddish to brown, with a dark gray core or streaks. Sherds consistently fire to dark red colors when exposed to an oxidation atmosphere. Surface color may be brown, pink, red, gray, or dark gray, varying considerably within a given sherd or vessel. Vessels or figures appear to have been fired at very low temperatures in poorly controlled atmospheres.

Vessel form is usually limited to miniature pinch pots or figurines. Thickness is highly variable but is usually great relative to vessel size. Most miniature vessels are jars, although bowls are sometimes found. The use of low quality clays in the manufacture of miniatures and figurines may indicate they represent practice pieces, toys, or expedient vessels. Considerations of strength, large size, and appearance were secondary.

White Wares. Paint type and design style of Rosa phase white wares contrast strongly with contemporary Anasazi white wares of surrounding regions. Organic or glaze paint was used to execute often simple design elements and arrangements with relatively coarse brush strokes. These contrasts resulted in the definition of a single type, Rosa Black-on-white. However, this emphasis on paint type and design coarseness appears to mask stylistic variation that may prove useful. As currently defined, Rosa Black-on-white incorporates both Basketmaker III and Pueblo I designs. As more analyses are carried out, this considerable variation may need to be subdivided into one or more additional types in order to better document and exploit stylistic change within the Upper San Juan region.

Rosa Black-on-white. Rosa Black-on-white (Figs. 5, 6, and 7) is the dominant white ware type associated with Rosa phase sites. It resembles Chapin Black-on-white and Piedra Black-on-white but displays distinctive temper, paint, and some design styles. Rosa Black-on-white as described here is present in ceramic collections from the Navajo Reservoir, Gobernador, and Durango areas. Sherds from the Durango area exhibiting characteristics described for Rosa Black-on-white have been assigned to Northern San Juan tradition types such as Chapin Black-on-white and Piedra Black-on-white (Carlson 1963; Ellwood 1980; Lucius 1982; Wilson 1988; Winter 1986). However, differences between these ceramics and other Northern San Juan tradition types have been noted and used to place them into a Durango Variety (Carlson 1963; Wilson 1988), or Animas Tract (Lucius 1982), of this tradition.

Most surfaces are slightly polished or smoothed, but as many as one-quarter of the white ware sherds in some assemblages have been unpolished. The abundance of smoothed but not lustrous surfaces may result from manufacturing or firing procedures. If polishing is completed before the drying process is complete, some clays can lose their luster as drying progresses. Similarly, some firing regimes render lustrous surfaces matte. Vessels are always unslipped. Surface color tends to be whitish to light gray. Paste color is similar to that observed in contemporary gray wares, although the range tends to be lighter, usually white to light gray in color. Rosa Black-on-white sherds are

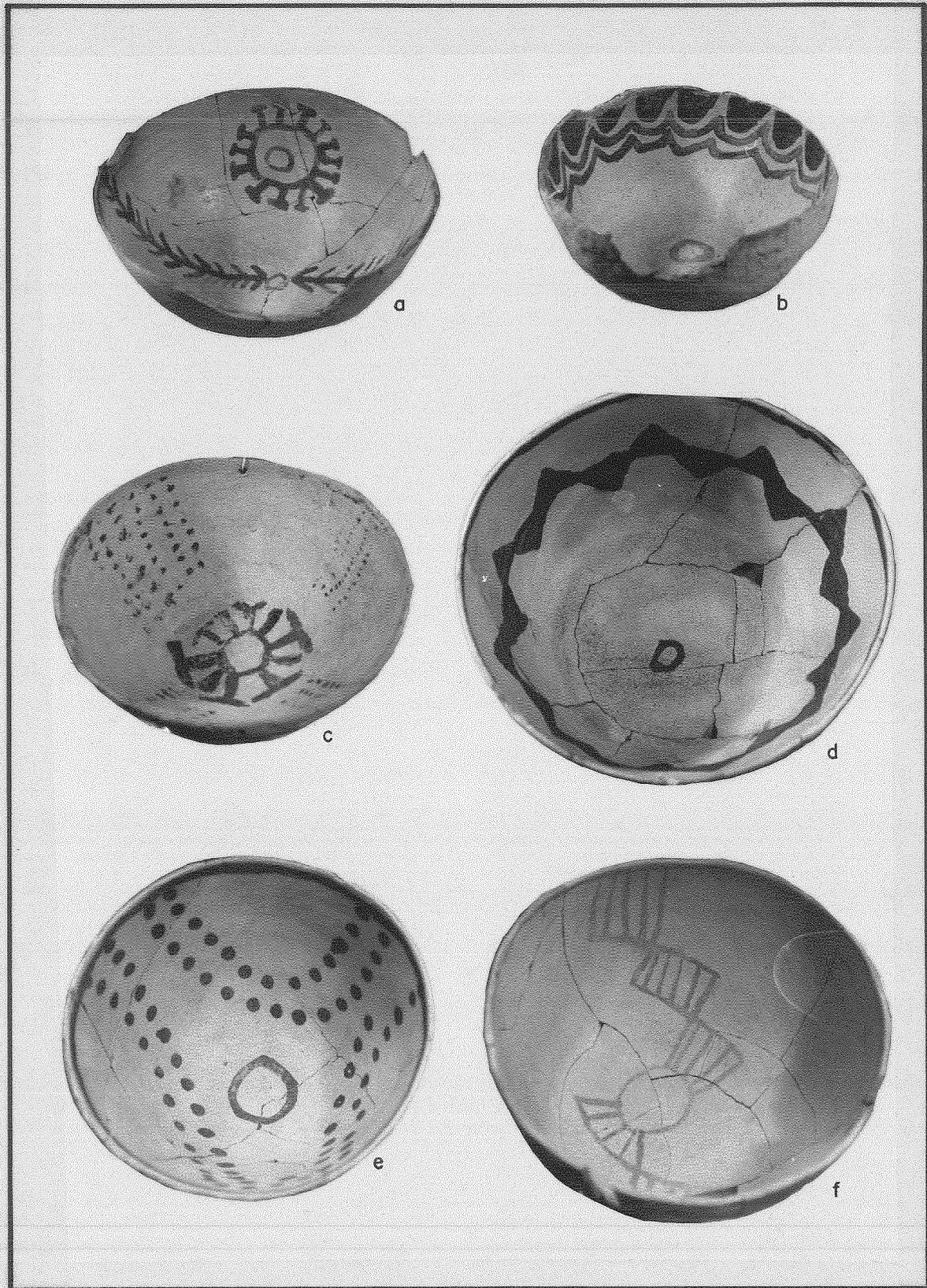


Figure 5. Rosa Black-on-white bowls; (a) 16146/11, diameter 16 cm; (b) 17657/11, diameter 14.5 cm; (c) 44414/11, diameter 13 cm; (d) 1938/11, diameter 19 cm; (e) 43660/11, diameter 18 cm; (f) 8682/11, diameter 21 cm.

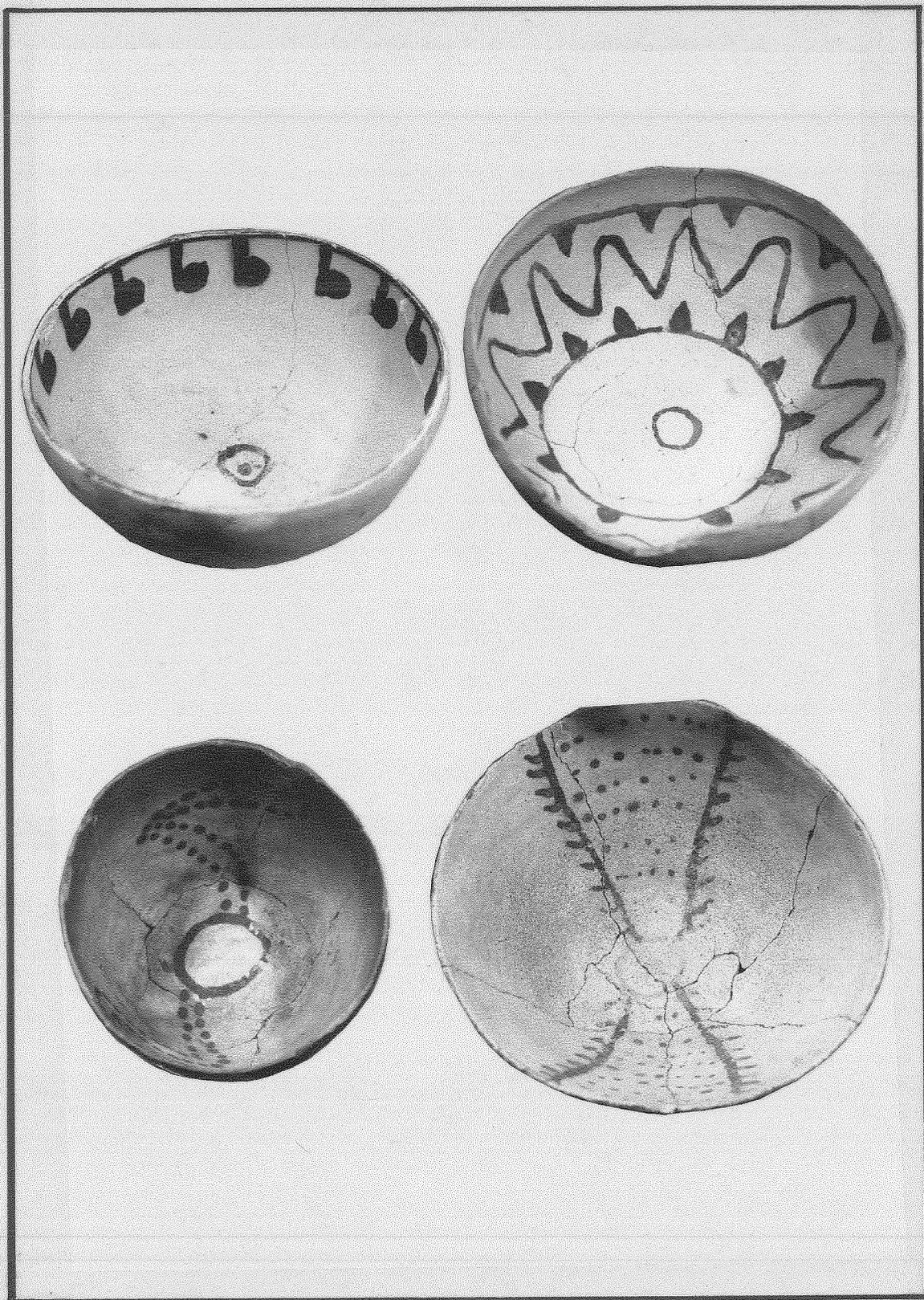


Figure 6. Rosa Black-on-white bowls; (a) 47012/11, diameter 19 cm; (b) 42914/11, diameter 19.5 cm; (c) 42920/11, diameter 14 cm; (d) 44348/11, diameter 19.5.

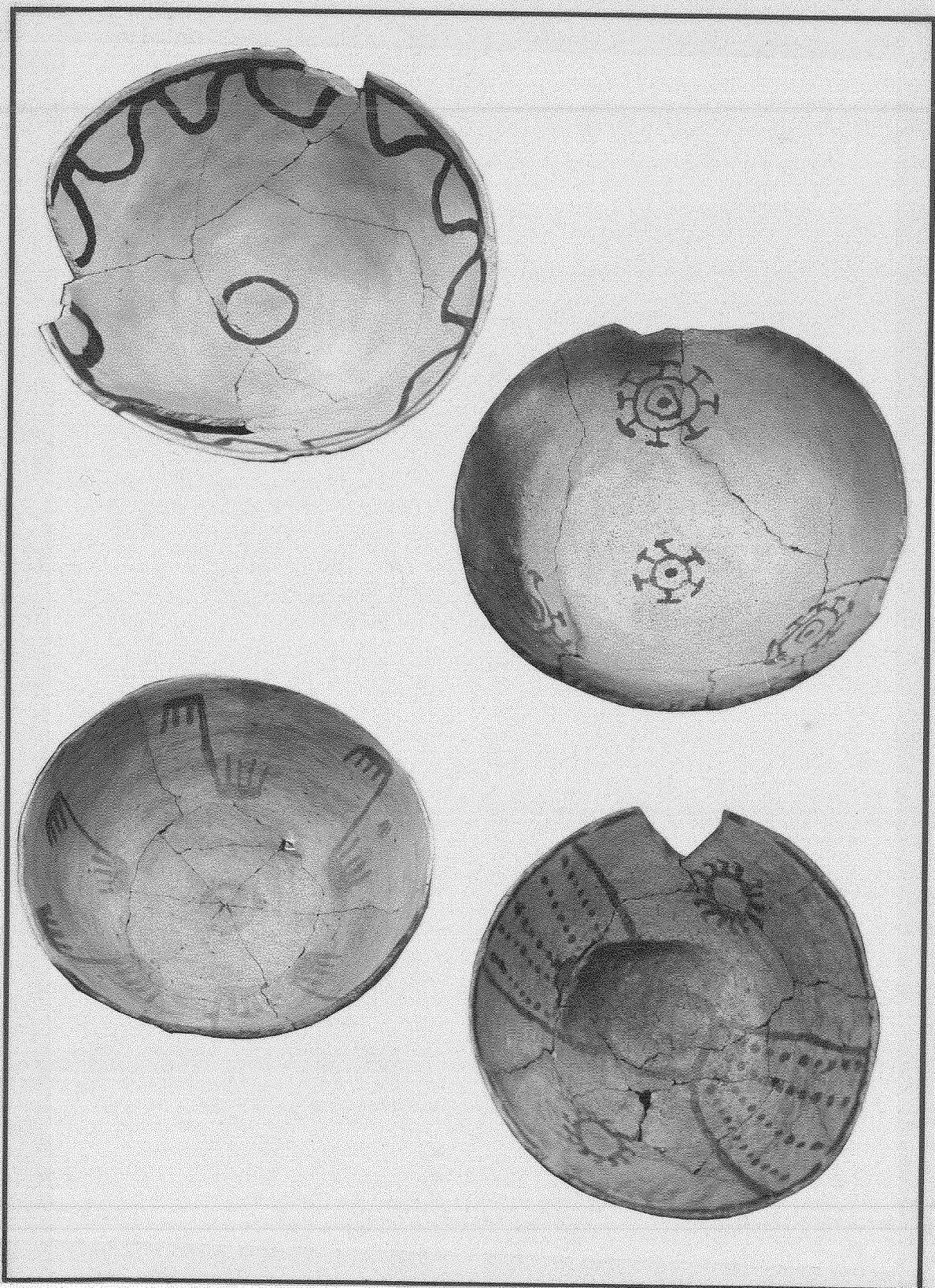


Figure 7. Rosa Black-on-white bowls; (a) 37879/11, diameter 19 cm; (b) 44413/11, diameter 20 cm; (c) 42971/11, diameter 28 cm; (d) 44281/11, diameter 18 cm.

less likely to fire to reddish colors in an oxidation atmosphere than are Rosa phase gray wares. Some vessels exhibit basket impressions on base exteriors. A fairly high proportion (about 25 percent) of Rosa Black-on-white sherds exhibit a fugitive red coating.

The most distinctive characteristic of this type is the presence of either a glaze or washy organic paint. Glaze paint may be green, greenish-black, black, red, or yellow, and it is characterized by a thick, glossy sheen. Both paint color and degree of sheen may vary significantly on a given vessel or sherd. The glaze paint is presumed to have resulted from the use of a ground lead ore (galena), examples of which have been recovered from several Rosa phase contexts. The organic paint recorded for some Rosa Black-on-white sherds may actually be the remnants of an organic binder where a glaze paint has failed to fuse, leaving the design executed in the binder. This is evident on a number of vessels where portions of the design are executed in well-preserved glaze pigment and other portions are executed in a washy organic paint. Some vessels show no evidence of glaze and may have been executed in pure organic pigment.

Rims are usually painted but may be unpainted. Designs are simple, bold, and often sloppily executed. Lines are usually uneven, probably as a result of the limitations of the pigments employed. Rosa Black-on-white design styles are often intermediate between Basketmaker III and Pueblo I types from other regions. For example, Rosa Black-on-white vessels often contain a combination of characteristics noted in Chapin Black-on-white and Piedra Black-on-white of the Northern San Juan tradition. As is the case for Basketmaker III types from other regions, the painted design is often divided into two or three unconnected units oriented toward the rim. Each unit is usually composed of a combination of several simple elements. Design elements include triangles, circles, curved lines, crossed lines, and bent lines, often ticked or flagged. Some Rosa Black-on-white vessels display a more complex orientation, with the designs organized in a single band or an all-over pattern that is more common in later forms. In addition to the elements found near the rim, circles (which may or may not contain additional embellishment) are often present in the center of bowls. Elements derived from basket stitches, common on Basketmaker III types such as Chapin Black-on-white, were extremely rare in the collections from which Rosa Black-on-white was originally defined. However, sherds exhibiting Rosa pastes with earlier Lino Black-on-white or Chapin Black-on-white design styles were the dominant white wares in a few assemblages from the Upper San Juan region and may ultimately support the definition of an additional San Juan tradition type contemporaneous with Chapin Black-on-white dating just prior to Rosa Black-on-white.

Bowls are by far the dominant vessel form for Rosa Black-on-white, and jars are present in extremely low frequencies. A very wide range of bowl sizes is present in most assemblages. Unpainted sherds from Rosa Black-on-white vessels will be classified as Rosa Gray if they are unpolished and should be classified as Rosa White if polished.

Piedra and Arboles Phase Types

Pottery in much of the Upper San Juan region changed character again after A.D. 850. In many areas, the distinctive paste of the Rosa phase was replaced by generally lighter clays and angular rock tempers. White ware pigment shifted from glaze mineral to matte mineral and organic paints. Local geographic variation in both resource use and decorative style occurs for the first time, creating both discernable manufacturing tracts within the Upper San Juan region and geographically limited types. However, the technological changes reduced the contrast between Upper San Juan pottery and the pottery of adjacent regions, particularly the Northern San Juan region.

Two broad classes of igneous rock tempers have been noted to date within the region. The dominant temper in most late Anasazi collections is derived from porphyries such as andesites and diorites. This temper is characterized by angular white, gray, and clear quartz and feldspar particles. Smaller, dark, ferromagnesian minerals (such as hornblende and pyroxene) are also present and may occur either within lighter particles or by themselves. As noted previously, some sites dating to the Piedra phase contain gray ware pottery dominated by the quartz-feldspar temper identical to that of the Rosa phase types. Although these sherds are classified as Rosa phase types, their presence is not inconsistent with Piedra phase occupations. In the Navajo Reservoir collections, there is a slight tendency toward fewer dark minerals than in the igneous rock of the Northern San Juan region, but that is a collective observation and cannot be used to identify the origin of individual sherds.

The second igneous rock temper is a basalt that is similar to the trachybasalt of the Chuska region when viewed with the binocular microscope. Basalt dikes occur within the Upper San Juan area, and some basalt cobbles are present in local gravel deposits. This temper use represents one or more distinctive manufacturing tracts within the Upper San Juan region, and it complicates the detection of Chuskan imports. Imported Chuskan pottery with trachybasalt temper is expected for the Pueblo II time period (Windes 1977), and petrographic analysis may be required to determine the extent to whether the presence of basalt temper reflects trade or local production in Upper San Juan collections.

Similarities in resources, technology, and style are so great in the Piedra and Arboles phases that the primary basis for differentiating many Upper San Juan from Northern San Juan tradition types is site location. This raises the issue of whether the local typology should be abandoned in favor of extending the existing typologies of adjacent regions to the Upper San Juan region. Piedra Black-on-white, a formally defined type within both the Northern San Juan and Upper San Juan traditions, is a case where the similarities have been codified in the typology. Arguments against borrowing an external typology are based on some apparently unique features within Upper San Juan ceramics, and the incompleteness of the existing temporal and spatial sample from the region. We have structured the current typology to anticipate changes that are well documented elsewhere in the Anasazi world, but we believe that the understanding of variation within late Upper San Juan ceramics is insufficient to warrant extension or replacement of its unique typology at this time.

Piedra and Arboles Phase Gray Wares. While there appears to have been a strong continuity in the technology and resources employed in gray ware production throughout the Piedra and Arboles phases, differences noted in surface characteristics were used to subdivide the gray wares associated with these phases. During the Navajo Reservoir Project, gray wares occurring within Piedra phase and Arboles phase contexts were divided into Piedra (Gray, Brown, and Neckbanded) and Arboles (Gray, Brown, and Neckbanded) groups based on surface polish and hardness (Eddy 1966). While there may be some relationship between polish and hardness in gray wares produced during these phases, distinctions based on hardness are difficult to implement during routine sherd analysis. Because of this problem, we feel that the distinction between Piedra and Arboles gray wares should be based solely on the presence of a polished surface on the former.

The polishing of gray utility wares reappears in the Upper San Juan region sometime during the Piedra phase, and polishing appears to continue as a minority surface treatment long after polishing is no longer found in Cibola and Northern San Juan gray wares. The presence of polishing and paste hardness were partially codified in the initial Navajo Reservoir types (Eddy 1966), and the distribution of polish may prove to be useful in either spatial or temporal interpretation as more data are gathered. Polishing was given such a major role in the initial structure of the typology that other aspects of gray ware surface manipulation were minimized. Since these other aspects have demonstrated utility for dating inferences elsewhere in the Anasazi world, they have been used here to elaborate the original type definitions. If the intensive archaeological work planned for the 1990s does not validate the utility of distinguishing polished and unpolished versions of the types, we recommend that the typology be simplified by dropping the Piedra series types while retaining the Arboles series types.

Paste characteristics of the Piedra and Arboles gray ware series are nearly identical. Temper in the Navajo Reservoir collections demonstrates the same range of variation within the two groups. Organic material and reduced iron compounds appear to be characteristic of the clay resources used, and surface colors are dominated by dark gray, with some gray, light gray, brown, and reddish hues. Distinct cores may be present in paste cross sections but are rare. Refired sherd samples consistently fall within yellow-red colors for both polished and unpolished groups. Although Piedra phase pastes were originally characterized as harder than later pastes, that difference is inconsistently expressed and is probably not useful for the analysis of sherd collections.

Because of the general similarities in technology, resources, and style, most Upper San Juan gray wares (especially Arboles series types) cannot be reliably distinguished from Northern San Juan region imports. This confusion is unfortunate from the standpoint of exchange studies, and it also creates some uncertainty in the justification of the typology as a whole. Petrographic and binocular microscope studies may eventually clear up the former problem, and we accept the latter problem as an unavoidable conjunction of Anasazi behavior with the historical trajectory of archaeological research. Until these problems are resolved with additional data, analysts must explicitly state the particular classification conventions for a given project, so that interanalyst differences in conventions are not confused with variability in the pottery assemblages.

Piedra Gray. Piedra Gray (Fig. 8) describes rim sherds where enough of the neck is present to confirm that the neck surface was polished and all coil junctures were obliterated. Technological and paste characteristics distinguish this type from earlier plain-surfaced and polished utility types, such as Sambrito Utility. Piedra Gray tends to be harder, thinner, lighter in color, better finished, and thicknesses are more even than in the earlier types. Pastes are usually gray to light gray, surface colors may be a bluish white, and firing appears to have been well-controlled and to have reached high temperatures. A minority of plain polished sherds may be brown (Piedra Brown as used by Eddy [1966]), but the brown color is the result of accidental oxidation of high-iron clays. We do not recommend that these sherds be distinguished from Piedra Gray.

A point of confusion is that Piedra Gray overlaps significantly with contemporary white wares when analysts are classifying sherds as opposed to vessels. Sherds from Piedra Gray vessels are indistinguishable from many sherds from unpainted and unslipped portions of early white ware vessels. The only differentiating criterion is the presence of a better polish on many, but not all, white ware sherds. Vessel form suites are also closer to those of white wares than gray wares, including seed jars and pitchers, but only rarely including other jar forms.

Piedra Gray is analogous to some (but not all) material that has been called Twin Trees Gray and some material that has been called Obelisk Gray. Piedra Gray co-occurs with Chapin Gray, but generally in post-Rosa phase contexts. Piedra Gray is consistently present in collections from Piedra phase sites of the Navajo Reservoir area and persists in smaller quantities in Arboles phase collections. We expect it to follow the temporal pattern of Chapin Gray in the Northern San Juan region, occurring commonly in pre-A.D. 800 collections, declining as neckbanded gray wares become popular in the ninth century, and persisting primarily as forms other than cooking jars after last half of the ninth century.

This type obscures the distinction between gray and white wares as implemented in most Anasazi pottery traditions. In paste and surface characteristics, it represents the persistence of the early utility ware tradition, where surfaces were polished but were not intended as background for painted designs. Although executed on what appears to be a utility ware paste, there is a tendency for vessel forms to converge with those of white wares, and implementation of this type in sherd classifications is difficult if associated white wares are not well finished.

Piedra Body. Polished body sherds that exhibit Piedra or Arboles series gray ware pastes and that lack attributes necessary for assignment to other more specific types should be classified as Piedra Body. Although most of these will be from Piedra Gray vessels, some will be generated from coarsely finished white ware vessels, and others will be from rare polished examples of Arboles neckbanded types. This type is distinguished from Arboles Body by the presence of polish. It is comparable to, but not analogous to (due to the presence of polish), grouped types such as Plain Gray, Early Pueblo Gray, or Gray Body Sherds in other Anasazi typologies.

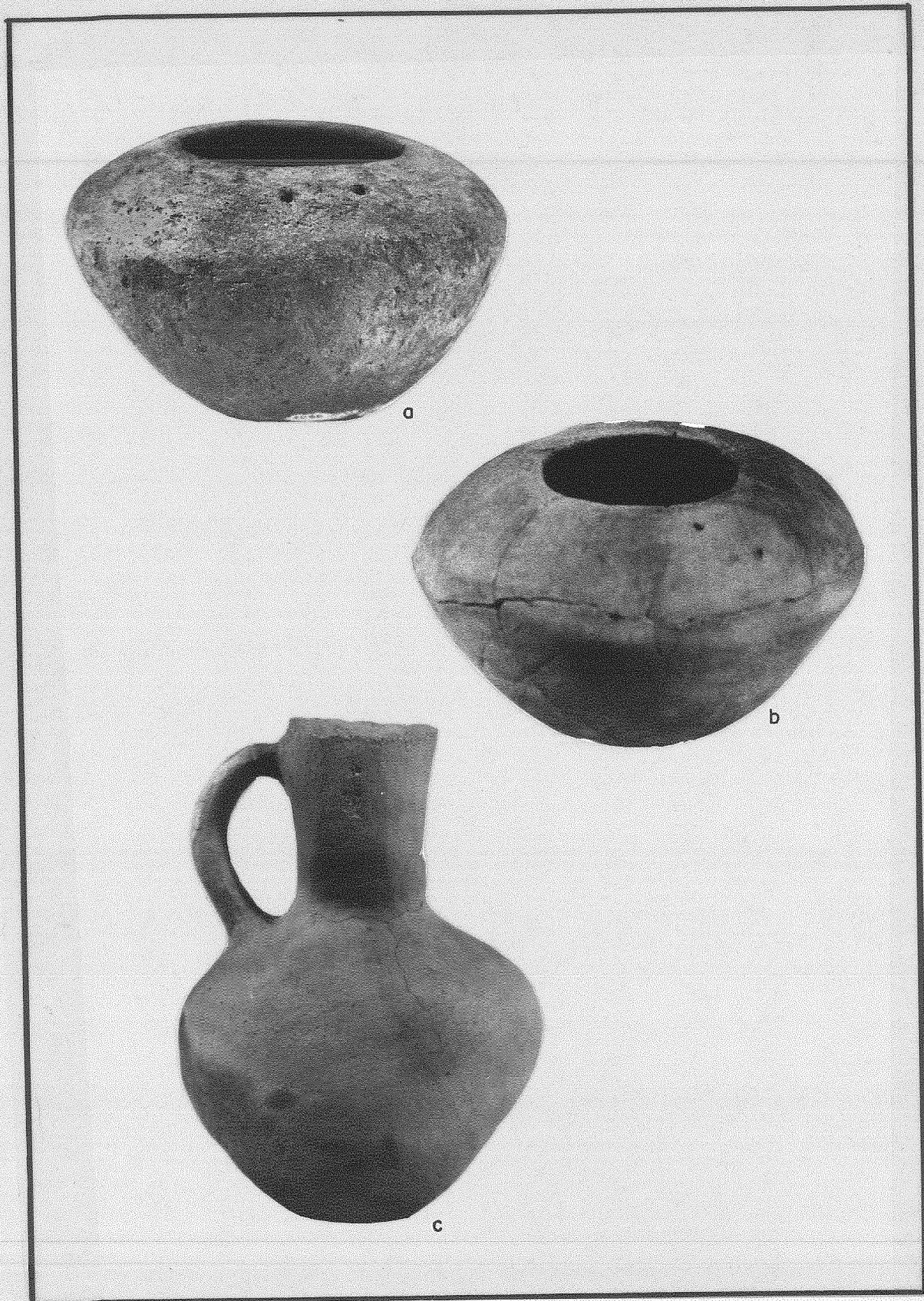


Figure 8. Piedra Gray seed jars and pitcher; (a) 44299/11, diameter 12 cm; (b) 44342/11, diameter 8 cm; (c) 42973/11, height 19 cm.

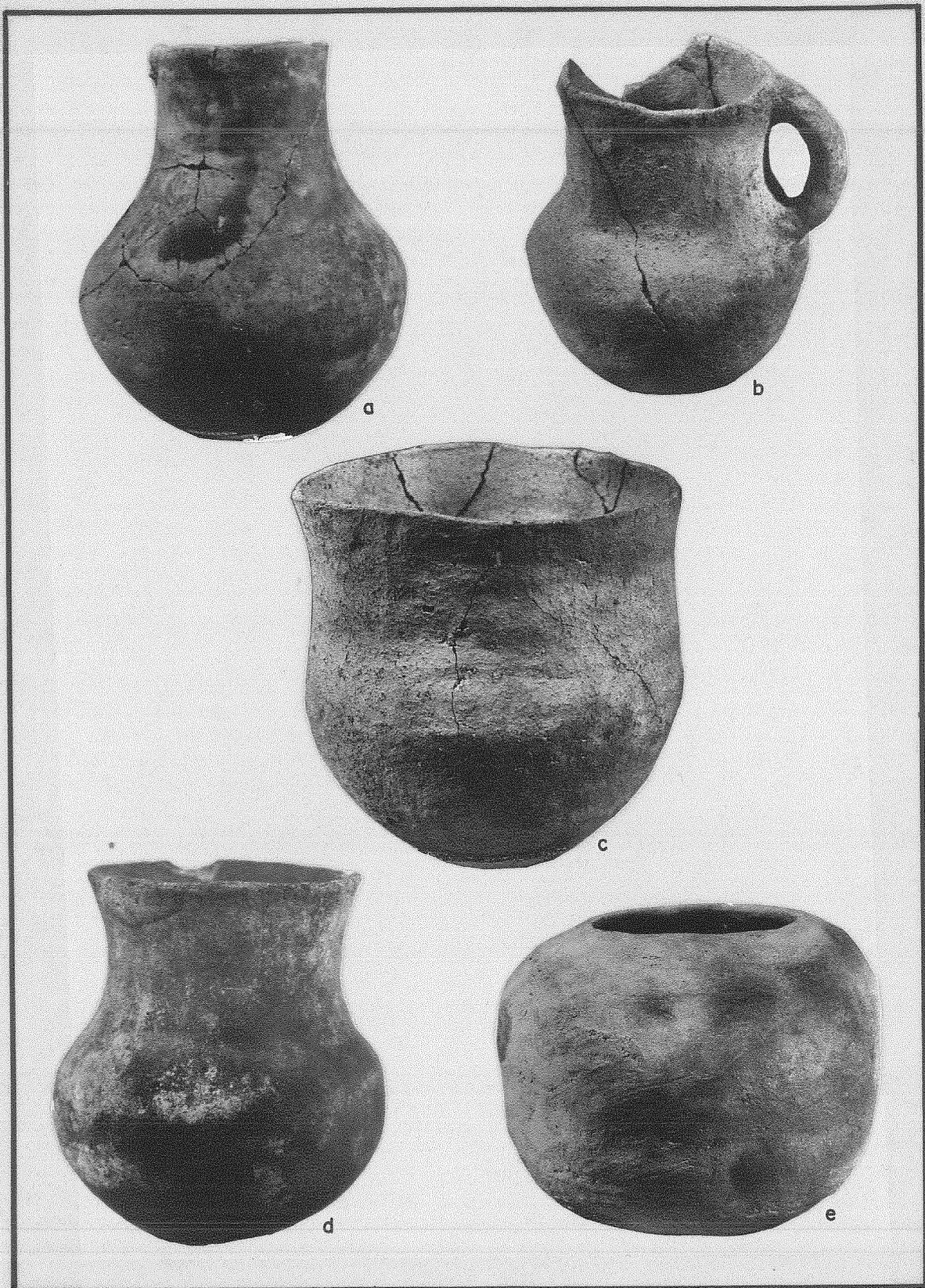


Figure 9. Arboles Gray cooking-storage jars, pitchers, and seed jar; (a) 44316/11, height 18 cm; (b) 44322/11, height 7 cm; (c) 44324/11, height 12.5 cm; (d) 44329/11, height 11 cm; (e) 44306/11, height 11 cm.

Arboles Gray. Arboles Gray (Fig. 9) describes rim sherds where enough of the neck is present to confirm that all coil junctures on the neck surface were obliterated. It is distinguished from Sambrito Utility by lack of polish, paste composition, and firing characteristics. Arboles Gray is similar to Piedra Gray in all paste characteristics, and is distinguished from Piedra Gray only by the lack of polish. Body sherds from Arboles Gray are indistinguishable from those from Arboles Banded, Arboles Clapboarded, and Arboles Coiled vessels. These sherds (from vessel necks and bodies) should be classified as Arboles Body. The vessel forms associated with Arboles Gray include cooking-storage jars, seed jars, ollas, effigies, pitchers, submarine vessels, and bilobe or double bowls.

Arboles Gray is analogous to Chapin Gray and Lino Gray, but it is contemporary with only the later occurrences of these types. Arboles Gray is consistently present in Piedra phase sites of the Navajo Reservoir area and persists in smaller quantities in Arboles phase collections. Whereas Rosa Gray commonly occurs on Piedra phase sites, we do not know of any cases where Arboles Gray is common on Rosa phase sites. We expect Arboles Gray to follow the temporal pattern of Chapin Gray in the Northern San Juan region, occurring commonly in pre-A.D. 800 collections, declining as neckbanded gray wares become popular in the ninth century, and persisting primarily as forms other than cooking jars after last half of the ninth century.

Arboles Banded. Arboles Banded (Fig. 10) is identical to Arboles Gray in paste and polish, but it is decorated with bands on the vessel neck. One or more coil junctures immediately below the rim are left unobliterated on the vessel exterior. The coils are flattened into fillets, and the junctures are not elaborated. Only a few neckbands are present on early vessels of the type, with the banding eventually extending to the vessel shoulder. Paste differentiates this type from Rosa Neckbanded, and style of neckbanding differentiates this type from Arboles Clapboarded and Arboles Coiled. Polish may be present on the bodies of some Arboles Banded, but polish appears to be too rare to warrant the use of a "Piedra Banded" type. Because this type is defined by the nature of coil junctures, variation within portions of a neckbanded vessel can result in sherds of more than one type upon breakage of the vessel. Sherds from the bodies of Arboles Banded vessels will lack banding and cannot be distinguished from those of the other Arboles gray ware series. These sherds should be classified as Arboles Body. Some polished body sherds may be classified as Piedra Body. Cooking jars are the dominant vessel form, pitchers and ollas are rare, and there are almost no other forms.

Arboles Banded is contemporary with and analogous to Moccasin Gray and Kana'a Gray. Arboles Banded is consistently present in Piedra phase sites of the Navajo Reservoir area and persists in Arboles phase collections. We expect it to follow the temporal pattern of Moccasin Gray in the Northern San Juan region, occurring rarely and only sporadically in pre-A.D. 800 collections, increasing through the mid-ninth century, and decreasing as other neckbanded styles become popular in the late ninth and early tenth centuries. Arboles Banded appears to persist longer in the Upper San Juan region than in the Northern San Juan region, dominating late ninth-century collections where Mancos Gray is the dominant gray ware type in contemporary collections to the northwest.



Figure 10. Arboles Neckbanded types; Arboles Banded: (a) 44318/11, height 7.5 cm; (b) 43059/11, height 21 cm; (c) 44315/11, height 11 cm; (d) 42962/11, height 11 cm; Arboles Coiled: (e) 16797/11, height 15. No vessels with the characteristics of Arboles Neckbanded were available for photography.

Arboles Clapboarded. Arboles Clapboarded is identical to Arboles Gray and Arboles Banded in paste, but it has a distinctive surface manipulation. Multiple coil junctures at and below the rim on the exterior are left unobliterated and are emphasized by lapping upper coils over lower coils to create a clapboard effect. The junctures may or may not be elaborated by wiping, incising, or tooling. Style of neckbanding differentiates this type from Arboles Banded and Arboles Coiled. Polish may be present on the bodies of some examples, but its occurrence warrants observation as an attribute rather than supporting a typological distinction. Because this type is defined by the nature of coil junctures, variation within portions of a neckbanded vessel can result in sherds of more than one type upon breakage. Sherds from the bodies of Arboles Clapboarded vessels will lack banding and cannot be distinguished from those of the other Arboles gray ware series. These sherds should be classified as Arboles Body. Any polished body sherds will be classified as Piedra Body. Cooking jars are the dominant vessel form, pitchers and ollas are rare, and there are almost no other forms.

Arboles Clapboarded is contemporary with Mancos Gray and other neckbanded types of adjacent regions, but it is analogous to only the clapboarded subset of Mancos Gray. Although the range of these neckbanded types appears to be similar, the Arboles Clapboarded does not appear to become dominant in Upper San Juan assemblages until somewhat later than Mancos Gray begins to dominate Northern San Juan assemblages. Arboles Clapboarded is consistently present in Piedra phase sites of the Navajo Reservoir area and persists in Arboles phase collections. We expect it to follow the temporal pattern of Mancos Gray in the Northern San Juan region, occurring in mid-ninth century through tenth-century collections.

Arboles Coiled. Arboles Coiled (see Fig. 10) is identical to other Arboles and Piedra series gray wares in paste characteristics. It is similar to the other Arboles neckbanded types in surface manipulation, but banding is achieved with a distinctive technique. Coils used to form the neck of the vessel were applied undeformed, and junctures were left unobliterated on the vessel exterior. The resultant bands are half-circles in cross section rather than fillets or clapboards. The hand motions that produce this type of neckbanding are qualitatively different from the hand motions used to produce the fillets of Arboles Banded and the clapboards of Arboles Clapboarded. Polish may be present on the bodies of some examples, but polish should be observed as an attribute rather than supporting a typological distinction. Sherds from the bodies of Arboles Coiled vessels will lack neckbanding and cannot be distinguished from those of the other Arboles gray ware series; these sherds should be classified as Arboles Body. Any polished body sherds will be classified as Piedra Body. Cooking jars are the dominant vessel form, pitchers and ollas are rare, and there are almost no other forms.

Arboles Coiled is contemporary with Mancos Gray and other late neckbanded types of adjacent regions, but it is analogous to only the coiled subset of Mancos Gray. Arboles Coiled is the rarest of the neckbanded types. It is sporadically present in Piedra phase sites of the Navajo Reservoir area and is present in Arboles phase collections. We expect it to follow the temporal pattern of the coiled subset of Mancos Gray in the Northern San Juan region, occurring in late ninth-century through tenth-century collections.

Arboles Body. Unpolished body sherds that exhibit Piedra or Arboles series gray ware pastes and that lack attributes necessary for assignment to other more specific types should be classified as Arboles Body. Although some of these will be from Arboles Gray vessels, many will be generated from the bases of Arboles neckbanded types. This type is distinguished from Piedra Plain by the lack of polish. It is analogous to grouped types such as Plain Gray or Early Pueblo Gray or Gray Body sherds in other Anasazi regions.

Arboles Corrugated. Corrugated vessels in the Upper San Juan region (Fig. 11) continue to conform with the paste characteristics of the Piedra and Arboles gray ware series. Corrugated surface manipulation consists of narrow clapboarded or coiled bands that are usually, but not always, rhythmically indented. Band width is generally at the narrow end of the range of the neckbanded types and, with few exceptions, the entire vessel surface is corrugated as opposed to just the neck region. Indentations are usually strong. Patterned indentations are present but rare, although a very distinctive type of pattern has been codified in the typology as Payan Corrugated (described below). Apart from Payan Corrugated, the corrugated ceramics of the Upper San Juan region are similar in appearance to corrugated vessels of the Northern San Juan region. Corrugated vessel forms are dominated by cooking-storage jars, with occasional pitchers. Other forms are rare to absent. Corrugated jar forms are more cylindrical with a more weakly defined neck constriction than the corrugated jars of adjacent regions.

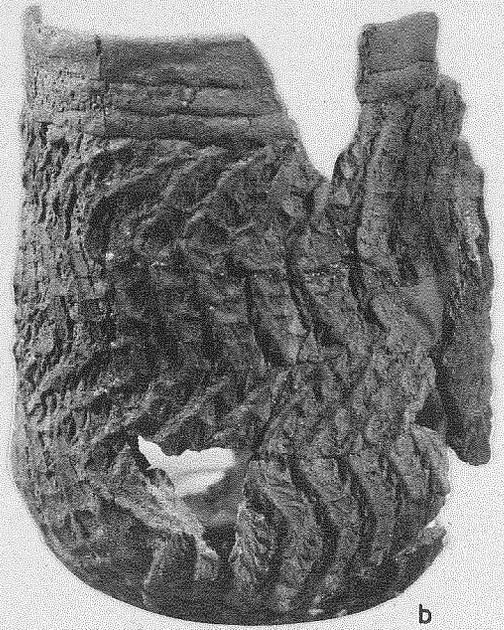
Observation of rim eversion angle has proved useful in distinguishing temporal subdivisions of the Northern San Juan corrugated sequence (Mancos Corrugated, Dolores Corrugated, and Mesa Verde Corrugated). The vast majority of corrugated rim sherds in Navajo Reservoir collections are erect (not everted), conforming to the Mancos Corrugated pattern. This may be explained by the incompleteness of time span of the Navajo Reservoir collections, or rim eversion does not vary as much in the Upper San Juan as in the other Anasazi regions. Since it is unclear whether increasing rim eversion should be codified in the Upper San Juan typology, we recommend that rim eversion angles be observed as an attribute during analysis. If a temporal pattern emerges, the definition of Arboles Corrugated should be revised. If subdivision of the type is warranted, Arboles Corrugated should be reserved for sherds with relatively upright rims (the equivalent of Mancos Corrugated), and one or two additional types should be defined to encompass rim sherds with greater rim eversions. Sherds from bodies of Arboles Corrugated vessels and sherds where rim eversion cannot be evaluated should be classified as Corrugated Body.

Corrugated Body. Corrugated Body describes all body sherds and unmeasurable rim sherds from Arboles Corrugated and other potential corrugated gray ware types. If temporal variation in rim eversion cannot be demonstrated for the Upper San Juan region, this group type can be abandoned, and both body and rim sherds can be classified as Arboles Corrugated.

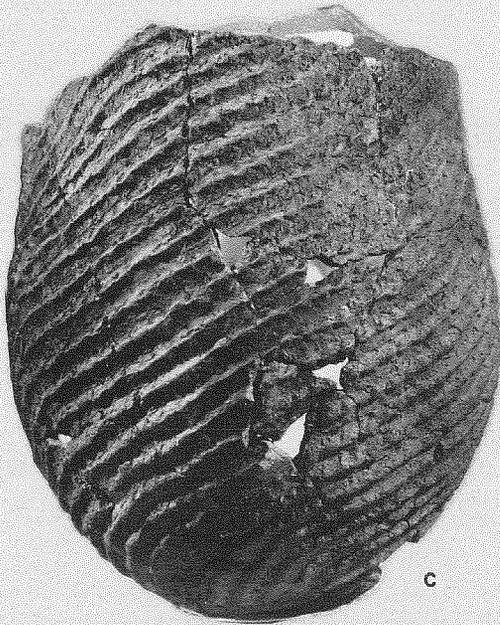
Payan Corrugated. Payan Corrugated (see Fig. 11) is a distinctive variety of indented corrugation whose manufacture appears to be geographically and temporally restricted within the Upper San Juan region. Indentations on Payan Corrugated are



a



b



c

Figure 11. Arboles Corrugated and Payan Corrugated cooking-storage jars; Arboles Corrugated: (a) 44193/11, height 32 cm; Payan Corrugated: (b) 44101/11, height 14 cm; (c) 44105/11, height 25 cm.

widely spaced and are stacked to create pronounced spiral, angular, or vertical ribs (Sciscenti et al. 1963). Rims tend to be vertical, and vessel forms are cooking or storage jars with cylindrical shapes. Although corrugated sherds with similar patterns have been observed in other Anasazi regions, they are extremely rare. In contrast, Payan Corrugated sherds have comprised up to one-third of the gray wares in some Navajo Reservoir sites.

Piedra and Arboles Phase White Wares. Paste characteristics of the late Upper San Juan white wares are similar to contemporary gray wares, but they exhibit a narrower range of features, and slipping is common. Surface colors of white wares consist of the lighter subset evident in the gray wares, and tempers, though similar in type, are often more finely crushed. Upper San Juan white ware pastes differ from those of the adjacent regions in that sherd temper is rarely if ever used in the Upper San Juan region. Some unpainted sherds from Piedra and Arboles phase white ware vessels may be confused with Piedra Gray, but in general, Piedra Gray surfaces are less well polished, are never slipped, and vessel forms are usually limited to jars.

White wares produced during the Piedra and Arboles phases were originally placed into a limited number of formal types based on design style and paint type. These types lump distinctive design styles that have proved useful temporal markers in other regions, and we recommend that the white ware types be augmented to record and exploit this dating potential. Initially, we recommend that stylistic varieties be defined within the types. If the temporal validity of the varieties is demonstrated, new formal types should be defined to improve the resolution of the typology.

Piedra Black-on-white. Some confusion may result from Piedra Black-on-white representing a type defined for both the Upper San Juan and Northern San Juan ceramic traditions. However, these types are well established in the literature of both traditions, so that the definition of a new type would create more problems than it would solve. The Piedra Black-on-white style appears to have developed in the Northern San Juan region during the late eighth century and is not present in the Navajo Reservoir region until the mid-ninth century. This type may have been partially derived out of Rosa Black-on-white, but characteristics such as the use of crushed igneous rock temper, slip, and mineral (nonglaze) paint suggest influence from the Northern San Juan area.

Piedra Black-on-white from the Upper San Juan (USJ) region (Figs. 12 and 13) generally exhibits a limited range of design characteristics, representing a subset of those present in Piedra Black-on-white as defined for the Northern San Juan ceramic tradition (Wilson and Blinman 1991a). Sherds from Piedra Black-on-white (USJ) type collections (predominantly from Navajo Reservoir sites) contain several tempers, dominated by finely crushed igneous rock but with a minority of the quartz-feldspar temper previously described for Rosa phase types. No basalt was noted in the collection, but we expect it to have been used. Vessels are moderately polished and usually unslipped, although some examples have a distinctive white slip. Pastes and surfaces are light gray to white. Rims are usually tapered and rounded, and they may be solidly painted or unpainted. Fugitive red coatings are sometimes present on vessel exteriors. Vessel forms are dominated by bowls, but a wider variety of forms is present than in earlier painted types.

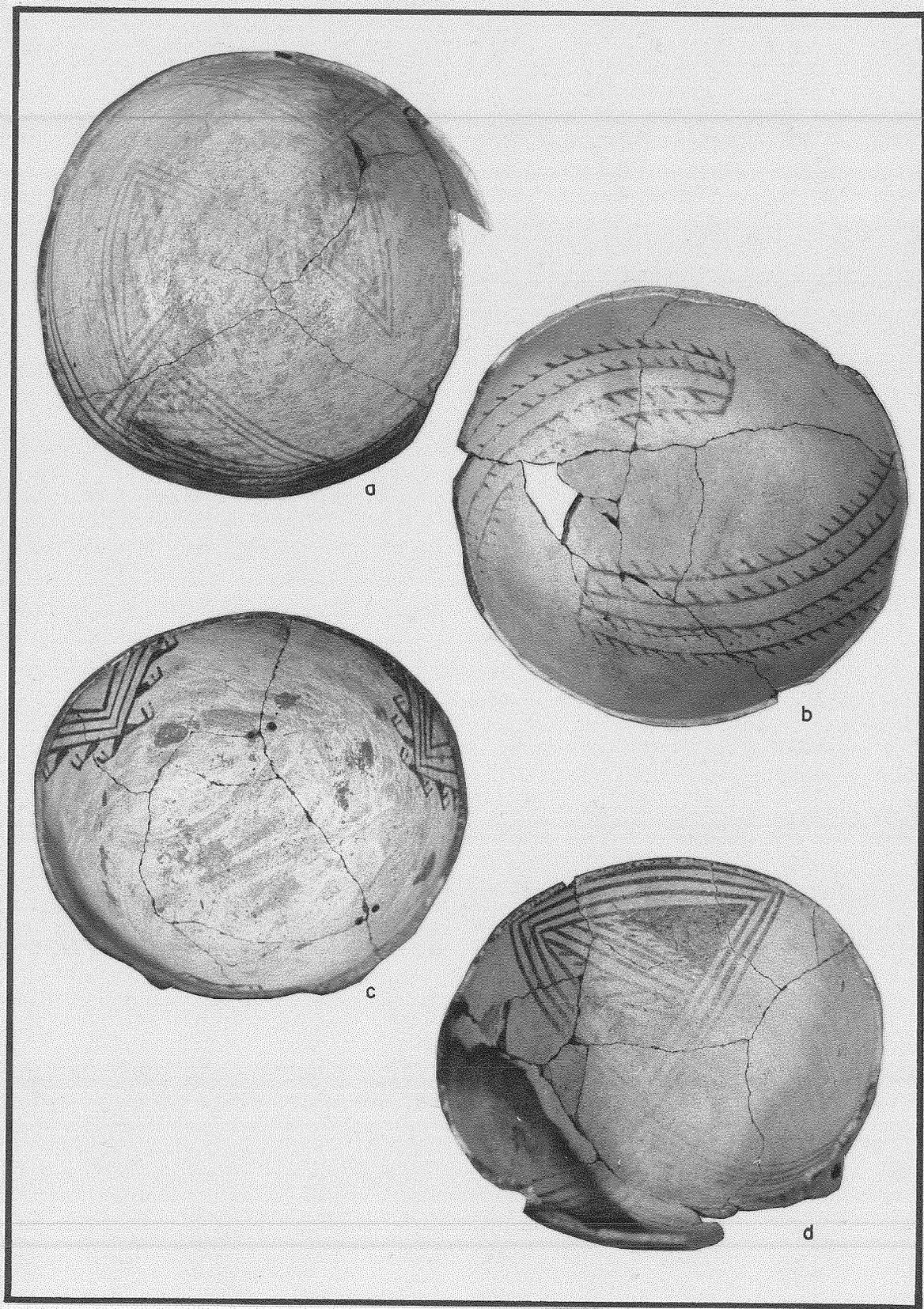


Figure 12. Piedra Black-on-white bowls; (a) 42911/11, diameter 18.5 cm; (b) 42906/11, diameter 19 cm; (c) 42913/11, diameter 16 cm; (d) 47011/11, diameter 16 cm.

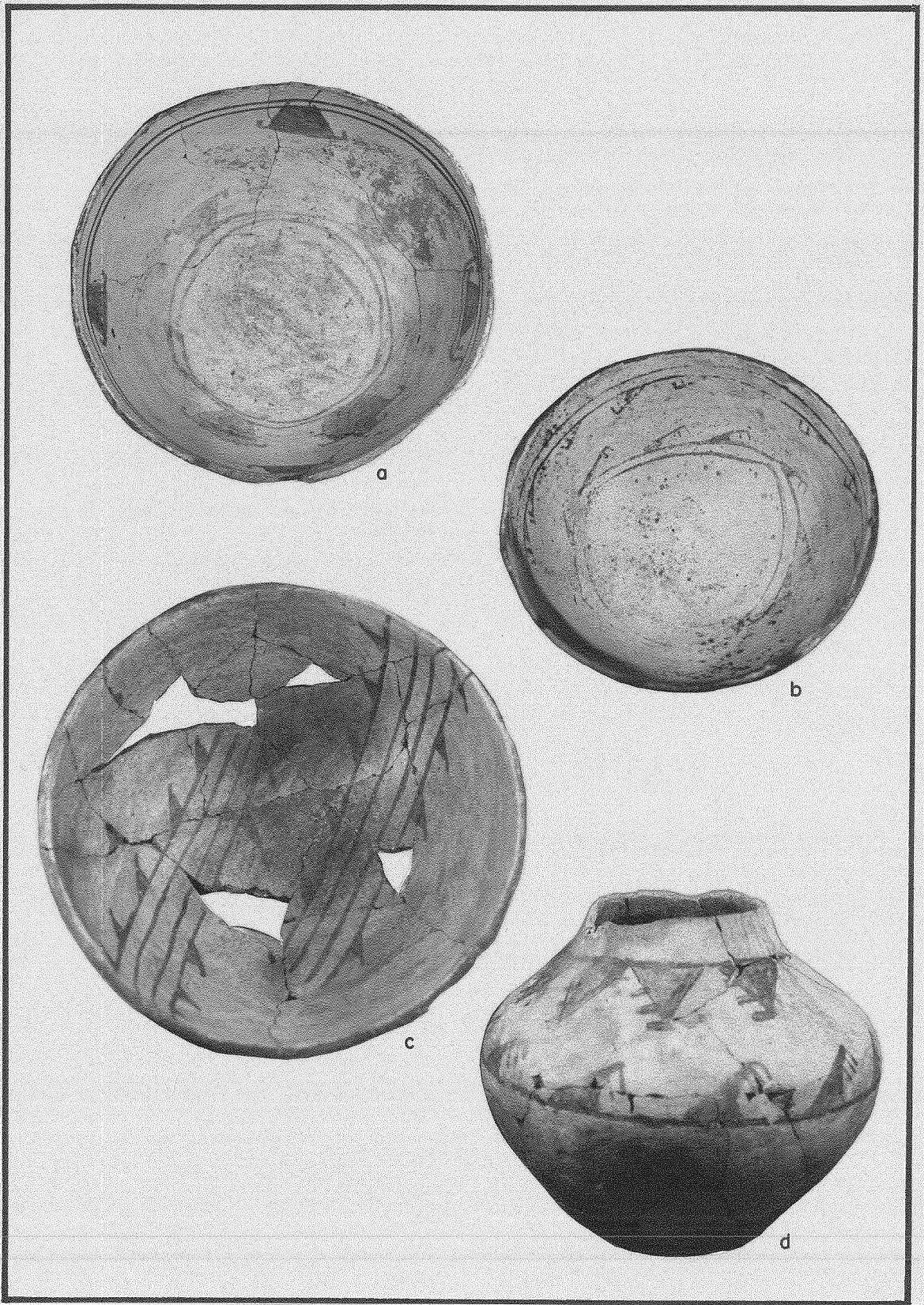


Figure 13. Piedra Black-on-white bowls and jar; (a) 47010/11, diameter 20 cm; (b) 47009/11, diameter 17 cm; (c) 44291/11, diameter 23 cm; (d) 42972/11, height 16 cm.

These other vessel forms include wide mouth jars, pitchers, dippers, effigies, and submarine forms.

Piedra Black-on-white (USJ) is decorated with iron-based pigments. Design motifs resemble those described for earlier types like Rosa Black-on-white and Chapin Black-on-white, but overall arrangement and organization differ. Piedra Black-on-white designs are oriented around the rim or circumference of the vessel rather than the center. In contrast to earlier types, many Piedra Black-on-white designs are arranged as a single unit composed of a series of thin parallel or intersecting lines covering a large portion of the vessel surface. These lines are frequently embellished with triangles, flagged triangles, and ticked lines. The earliest examples of Piedra Black-on-white are still fairly simple in style and technology, but later forms are more complex and may resemble later Pueblo II types. Similarly, early examples tend to be unslipped, while slips may be present on later examples.

Many sherds from Piedra Black-on-white vessels may lack sufficient design elements to reliably distinguish them from other Upper San Juan white ware types. These sherds should not be forced into the Piedra Black-on-white category, and our proposed conventions for classifying untypable white ware sherds are discussed below.

Bancos Black-on-white. The temporal span of Bancos Black-on-white (Fig. 14) is very long and overlaps that of both Piedra Black-on-white and Arboles Black-on-white. Bancos Black-on-white is very similar to Rosa-Gallina Transitional, as described by Hall (1944). Bancos Black-on-white appears to have been produced in the southern part of the Navajo Reservoir District and in areas further south, resulting from the use of distinctive local clays and organic paint. The type appears to have developed from Rosa Black-on-white and may be transitional between that type and Gallina Black-on-white. Gallina Black-on-white is found in the Largo-Gallina region during the Pueblo III period (Mera 1935; Hibben 1949; Knight 1990). Rosa Black-on-white, Bancos Black-on-white, and Gallina Black-on-white may constitute a conservative ceramic tradition that developed in the southern part of the Upper San Juan region and later shifted to the Largo-Gallina region.

Bancos Black-on-white displays variable polishing and is usually unslipped. Temper includes a variety of materials including sandstone, sand, and crushed igneous rock very similar to that observed in Rosa phase types. Paste is generally light-colored--white, light gray, or gray. Rims may be tapered or rounded and are unpainted or solidly painted.

The main characteristic distinguishing Bancos Black-on-white from contemporary Upper San Juan white ware types is the presence of true organic paint. Paint is usually darker and designs are more controlled than on Rosa Black-on-white. A wide range of design styles is present, probably due to the long temporal span of the type as originally defined. Early designs include thin lines, triangles, and other elements and layouts that are very similar to those observed in Piedra Black-on-white. Checkerboard designs, scrolls, step triangles, and squiggle hatchure appear to be common later on, and overall designs and layouts are similar to those observed in Arboles Black-on-white. Given the

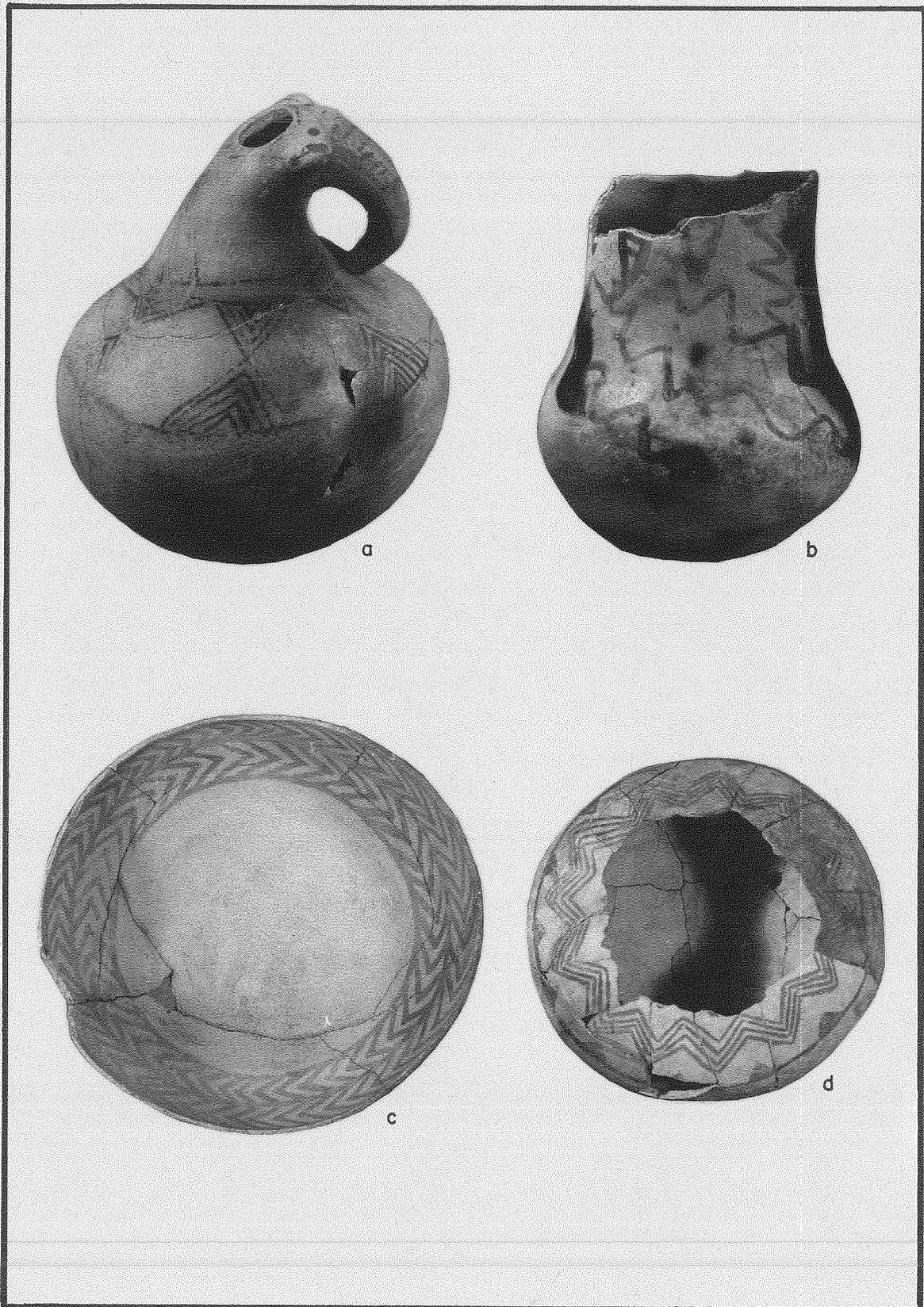


Figure 14. Bancos Black-on-white vessels; Early style: (a) 16770/11, height 18 cm; (b) 19802/11, height 13 cm; Late style: (c) 44343/11, diameter 22 cm; (d) 42910/11, diameter 17 cm.

wide temporal span and design variability, we recommend that Bancos Black-on-white be initially separated into varieties based on style. *Bancos Black-on-white (early)* would encompass design styles described for Piedra Black-on-white. *Bancos Black-on-white (late)* would encompass the design styles described for Arboles Black-on-white. Ambiguity within the stylistic trajectory of Bancos Black-on-white and the Gallina white wares precludes us from suggesting a third (Pueblo III) variety at this time.

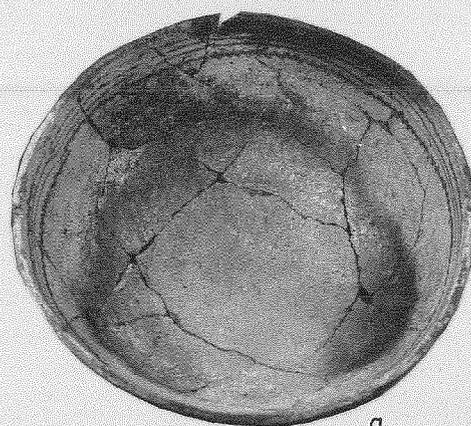
Many sherds from Bancos Black-on-white vessels will lack paint or will lack sufficient design elements for confident assignment to the early or late variety. Where paint is not present, conventions for untypable sherds (described below) should be used. Where organic paint is present but designs are ambiguous as to variety within Bancos Black-on-white, we recommend that *Bancos Black-on-white (undiff.)* be used. If organic paint is present but it is not clear whether the originating type is Rosa Black-on-white, Bancos Black-on-white, or Largo-Gallina tradition types, the untypable sherd conventions described below should be used.

Arboles Black-on-white. Arboles Black-on-white (Figs. 15 and 16) was defined during surveys by the Navajo Reservoir project and represents the most common Anasazi decorated type defined for the Arboles phase (Dittert 1961). This type has a limited geographic distribution since Arboles phase sites are absent in the downstream areas in the Navajo Reservoir District. Arboles Black-on-white appears to be fairly common in the Chimney Rock area, where use of mineral paint continued to be used during the Pueblo II and Pueblo III periods (Eddy 1977). Arboles Black-on-white may represent a stage in an eastward moving mineral paint tradition that ultimately resulted in the development of Taos Black-on-white in north-central New Mexico.

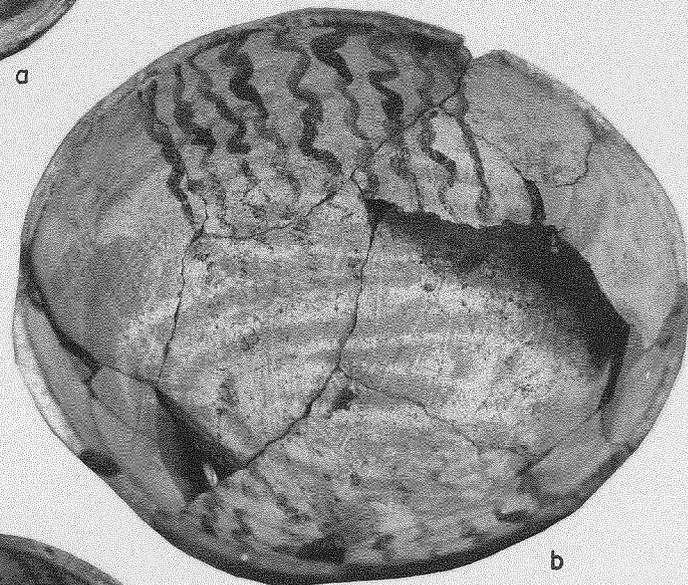
Arboles Black-on-white is analogous to Cortez Black-on-white and Mancos Black-on-white of the Northern San Juan region and differs from these types mainly in surface characteristics. Paste color is usually gray to dark gray. Surfaces are usually slightly polished to unpolished, and they are usually covered with a white to buff slip or wash. The slip is often uneven, and unslipped patches may be visible. Arboles Black-on-white is almost always tempered with crushed igneous rock, sometimes occurring with sand, and sherd temper is absent.

Designs are almost always executed in mineral (nonglaze) paint. Designs are similar to those observed on Cortez Black-on-white and Mancos Black-on-white, but they tend to be simple and sloppy. Painted decorations commonly consist of thin widely spaced straight or wavy lines often embellished with ticked lines, triangles, or flagged triangles. Other elements include checkered squares, triangles, and scrolls. A wide variety of forms are represented and include bowls, jars, dippers, ollas, effigies, and cylinder forms.

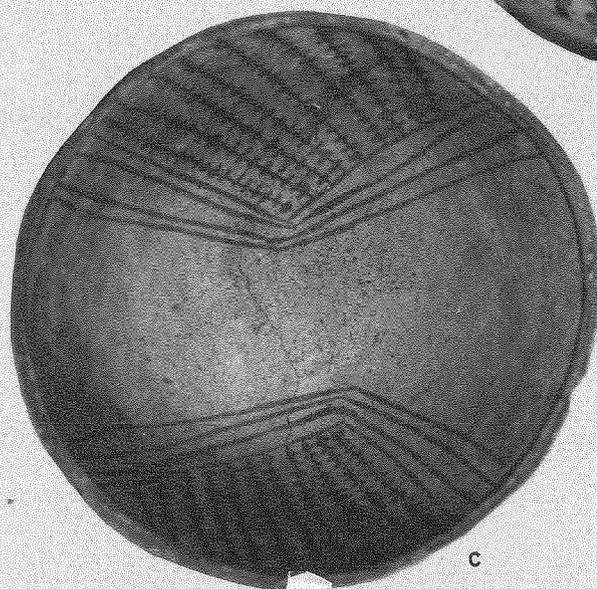
Because Arboles Black-on-white encompasses both a wide temporal and stylistic range, we recommend that the type be subdivided into two and perhaps three varieties. Sherds with Red Mesa style or Cortez Black-on-white designs should be classified as an early variety (*Arboles Black-on-white [early]*). Sherds with Dogoszhi-style hatchure or solid elements that are characteristic of Mancos Black-on-white in the Northern San Juan



a



b



c

Figure 15. Arboles Black-on-white vessels with early Red Mesa design styles; (a) 42917/11, diameter 18 cm; (b) 42995/11, diameter 20 cm; (c) 44286/11, diameter 18 cm.

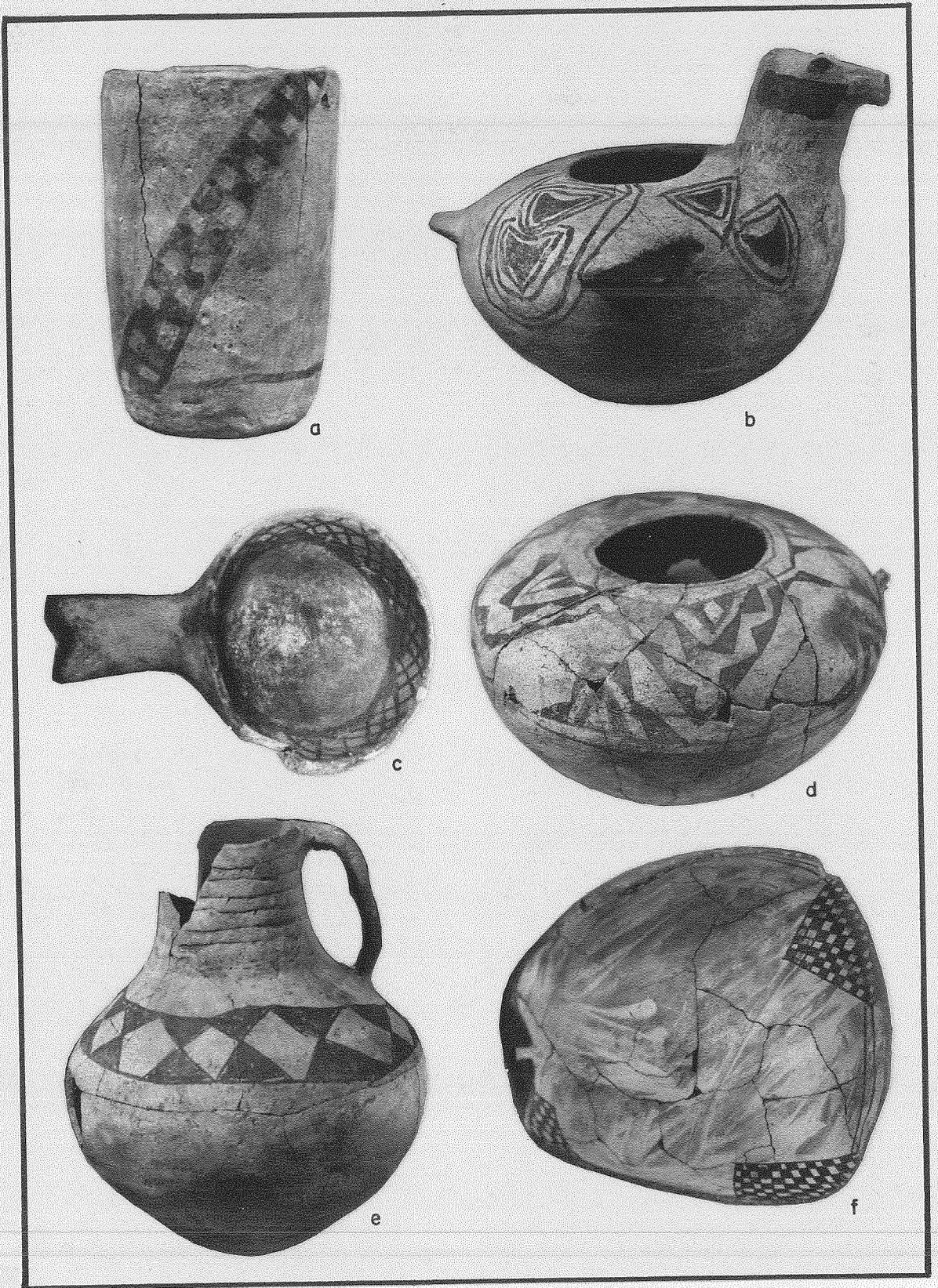


Figure 16. Arboles Black-on-white vessels with late Mancos Black-on-white design styles; (a) 44335/11, height 10 cm; (b) 44333/11, diameter 21 cm; (c) 44336/11, height 14 cm; (d) 44304/11, diameter 22 cm; (e) 44323/11, height 31 cm; (f) 44287/11, diameter 21 cm.

region should be classified as a late variety (*Arboles Black-on-white [late]*). Given the persistence of occupation in the Upper San Juan region into the late Pueblo II and Pueblo III periods, a third variety (*Arboles Black-on-white [Pueblo III]*) may be necessary to record the sherds with designs similar to McElmo Black-on-white or Chaco-McElmo Black-on-white. If these variety distinctions prove consistently useful for both description and interpretation, we recommend that they be codified in new formal types for the early and Pueblo III varieties.

Arboles Black-on-white vessels will produce mineral painted and unpainted sherds that cannot be classified by these conventions. If the sherd is unpainted or is painted but cannot be assigned to either Piedra Black-on-white or Arboles Black-on-white types, we recommend that it be classified according to the conventions outlined below. If it is clearly not Piedra Black-on-white but it cannot be assigned to one of the temporal varieties of Arboles Black-on-white, it should be classified as *Arboles Black-on-white (undiff.)*.

Untypable White Ware Sherds. A large proportion of white ware sherds will lack characteristics necessary for confident assignment to any one of the formally defined types or varieties. However, these sherds may retain information that is useful for description or dating inferences. To maximize the technological and temporal information potential of these untypable sherds, we recommend the following conventions.

Unpainted white ware sherds should be classified as *Slipped White* or *Unslipped White*. If the sherds exhibit mineral paint they may be from either Piedra Black-on-white or Arboles Black-on-white (but not Bancos Black-on-white). To exploit the general temporal pattern of slipping, unslipped mineral painted sherds should be classified as *Piedra White*, and slipped mineral painted sherds should be classified as *Arboles White*. These latter categories will be in close, but not perfect, agreement with the formal types. For the few cases where organic paint is combined with pastes that cannot be attributed to either Rosa Black-on-white, Bancos Black-on-white, or later Largo-Gallina tradition types, the sherds can be classified as *Organic White*.

Navajo Ceramics

The Upper San Juan region was reoccupied by the ancestors of the modern Navajo some time after the Anasazi abandonment. The earliest ceramic-bearing Navajo occupation proposed for this region is the Dinetah phase and was recognized during initial work by the Navajo Reservoir Project. Its dates are subject to debate, but it is generally believed to fall within the A.D. 1500-1700 period (Dittert 1961; Hester and Shiner 1963). The existence of this phase was initially questioned based on follow-up investigations by the Navajo Reservoir Project (Eddy 1966) and by others who found no evidence of a ceramic phase preceding the later Gobernador phase (Baugh and Eddy 1987; Brugge 1982, 1983). However, data from recent projects support the existence of a distinctive Dinetah phase containing locally produced utility wares dating prior to

A.D. 1700 (Brown 1990; Hancock 1988; Hill 1991; Reed and Horn 1990).

The Dinetah phase was followed by the Gobernador phase, which dates from about A.D. 1700 to about A.D. 1775, after which the Upper San Juan and Gobernador drainages were abandoned by the Navajo. The Gobernador phase is often characterized as representing the period during which Athapaskan and Puebloan traits (including pottery manufacture and agricultural techniques) were combined to form the distinctive Navajo cultural pattern. Both utility (Dinetah Gray) and decorated (Gobernador Polychrome) wares were produced during this period. The hallmarks of the Gobernador phase were assumed to reflect changes occurring when some Puebloan groups were forced to seek refuge with the Navajo along the Gobernador and Upper San Juan drainages (Carlson 1965; Eddy 1966; Hester 1962). More recent research suggests that the role of Puebloan refugees has been exaggerated (Hogan 1991; Reed and Reed 1992) and that the Navajo and Pueblo peoples were involved in significant exchange and interaction as early as A.D. 1500 during the Dinetah phase (Reed and Reed 1992). Gobernador Polychrome may have been locally produced as early as the mid-seventeenth century (Brown 1992; Reed and Reed 1992), clouding both the definition and dating of the Gobernador Phase.

Historic Navajo pottery types that were produced following the abandonment of the Upper San Juan region include Navajo Utility, Navajo Painted, and several local varieties of these types (Brugge 1963). These historic types are not included in these descriptions.

Dinetah Gray

Dinetah Gray (Fig. 17) is the only local type at Dinetah phase sites and occurs with Gobernador Polychrome at Gobernador phase sites. Vessels were constructed by coiling and finished by smearing or scraping, and surface texture may be a useful attribute for subdivision of the type. The smeared surfaces are similar to Rio Grande utility wares; the surface gives the impression of regular indentation when viewed at a distance, but individual coils and indents are obscured on close examination due to the effects of scraping or smearing while the clay was still somewhat tacky. Only rarely are coil junctures visible on either the interior or exterior. Unlike Anasazi pottery where scraping was primarily a shaping and smoothing technique, Navajo scraping efforts were focused on coil juncture obliteration and surface texturing. Scraped Dinetah Gray vessel surfaces are very rough, bumpy, and pitted. Distinct striations or scorings, often vertically or obliquely oriented, commonly occur on surfaces (see Fig. 17). This texture appears to be the result of the use of juniper bark or corn cobs or husks as scraping tools (Brugge 1963). Temper is often visible on the surface and, on the whole, Dinetah Gray vessels are thinner walled than Anasazi pottery. Surfaces are almost always unpolished. Decorations are extremely rare, and rims are tapered.

Paste texture often appears silty, but not to the extent that is characteristic of the alluvial clays associated with Sambrito Utility. Sherds are usually soft, crumbling and spalling very easily, and resulting in fairly small sherd size. Surface and interior color



Figure 17. Dinetah Gray vessels and a close-up of the scored texture that is a common surface treatment; (a-b) 16200/11, height 47 cm; (c) 37846/11, height 18 cm; (d) 37859/11, height 22 cm. The closeup is reproduced at approximately 1.5 times life size.

is usually dark gray or black but may occasionally be brown or reddish. Pastes can be vitrified and glassy in appearance, but are more commonly matte. The paste cross section is usually dark gray to black, and sometimes dark brown, red, or gray. Distinct cores are rare. Although some clays may be derived from alluvial sources and are dark red when exposed to oxidation atmospheres, most are clearly geologic in origin. The geologic paste characteristics are similar to those noted in Gobernador Polychrome: abundant carbonaceous material and high iron content. The dark paste colors indicate that firing took place in a predominantly reduction atmosphere, in sharp contrast with Anasazi firing techniques.

Tempering material varies among different portions of the Upper San Juan region. Sand temper is dominant in the Navajo Reservoir area, while a crushed detrital material containing sand and igneous porphyries was used along the La Plata Valley (Hill 1991). A crushed quartz-feldspar temper identical to that of Rosa phase Anasazi pottery is also common. The consistency of some distinctive tempers in the early Navajo pottery has been used to define local varieties of Dinetah Gray (Hancock 1988; Wilson 1991), and further codifying geographic variation in temper may prove useful.

It is important to note that Anasazi and Navajo utility ware types were produced utilizing many of the same clay and temper resources for functionally similar vessel forms. Differences in finishing and firing techniques are easily detected and documented on an assemblage basis, but there is enough variation in both technologies that affiliations of individual sherds can be ambiguous. The result will be occasional occurrences of "Dinetah Gray" sherds in Anasazi collections and "Anasazi" sherds in Navajo collections. Such unexpected traditional affiliations of small numbers of sherds may reflect multiple componentry or mixing of site collections, but they may also be an unavoidable consequence of the overlap between the traditions and typologies.

Vessel thickness variability suggests that construction methods may have improved from the Dinetah to Gobernador phase. Forms are almost always cooking-storage jars, although a few bowl sherds are present. Jar bases are more conical than in Anasazi tradition jars, and coiled basket impressions are not uncommon. Vessel size is also highly variable, although forms associated with later periods are often very large. Dark or black surfaces are common, both as a consequence of firing and cooking. Organic adhesions were observed on some sherds and vessels, probably a residue of pitch applications.

Gobernador Indented

Gobernador Indented is similar to Dinetah Gray except for the presence of unobliterated indented coils near the rim (Dittert 1958). It occurs almost exclusively at Gobernador phase sites. The rim coils resemble the smeared indented surface manipulation found on contemporary Puebloan utility types. Like the corrugated ceramics produced during much of the Anasazi occupation, indentations are created during vessel construction and are left unobliterated on the vessel exterior. Neck coil variations include a single coil with high relief, incised coils, smoothed coils creating a low rounded contour on the

vessel wall, multiple parallel bands, and linear or zig-zag rows of indentations or incisions. Body sherds are indistinguishable from those of Dinetah Gray. The overall smeared surface treatment of some Dinetah Gray vessels and the rim or neck embellishment of some Gobernador Indented vessels can create an overlap in sherd characteristics.

Gobernador Polychrome

Gobernador Polychrome (Fig. 18) refers to the major decorated Navajo type produced in the Upper San Juan region, and it is thought to be exclusively associated with the Gobernador phase. Gobernador Polychrome is stylistically and technologically similar to contemporary Puebloan types and occurs along with a variety of intrusive Puebloan vessels originating from both the western and eastern Pueblo areas. Care should be taken not to misclassify imported Puebloan pottery as Gobernador Polychrome. It is assumed that Gobernador Polychrome technology was adopted from Puebloan potters, but that adoption predates the Puebloan refugee period (Reed and Reed 1992).

Coil junctures are completely obliterated, but surfaces are frequently bumpy and irregular. Wall thickness is quite variable. Bowl interiors and jar exteriors are usually lightly and unevenly polished. Vessels and sherds are dense and hard, and vessel walls are strong. Pastes are vitrified and occasionally bloated and brittle. The outer portion of the paste is usually red, orange, or buff, and a distinctive gray to dark gray core is often present. Surface color is usually orange to buff but may be red, yellow, brown, or gray. These characteristics indicate that the vessels were fired to very high temperatures and finished in an oxidizing atmosphere.

Temper often consists of extremely small angular white to gray fragments. These include siltstone, sandstone, crushed sherd, and occasional sand particles (Wilson and Warren 1974). A detrital source may be indicated in some cases (Hill 1991). The paste may also include gray, yellow, and white clay pellets (oblate shale). Vessel forms are similar to those noted in eighteenth-century Puebloan ceramics and are dominated by bowls and jars (Carlson 1965; Marshall 1985). Most bowls are carinated, with a prominent rounded shoulder encircling the bowl exterior. Jar necks are wide and rims curve outward. Bases are relatively flat and then ascend abruptly to the body.

Decoration is carried out with a combination of slips and red and black pigments. Often the unpainted areas of the vessel are slipped, while painted portions of the vessel are unslipped. The unslipped areas are covered with red and black painted designs to produce polychrome decorations. Painted designs usually consist of solid red motifs framed by thin black lines. Motifs include series of parallel bars, diamonds, stepped triangles, triangles, and occasional naturalistic elements, including feather motifs. Jar decoration is often divided into three distinct fields: a red slip in the upper neck area; one or more unslipped decorated bands, often encircling the widest part of the jar; and a slipped and unpainted field on the lower body. The upper part of jar neck interiors may be slipped and sometimes painted.

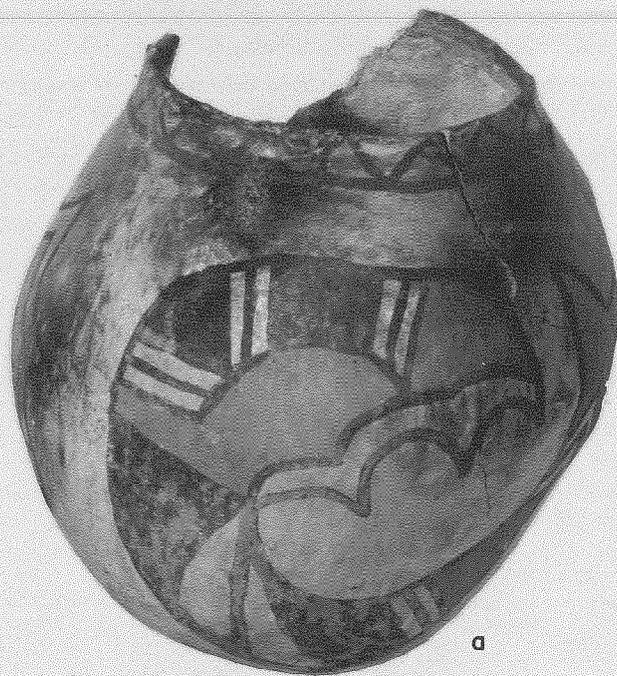


Figure 18. Gobernador Polychrome jars; (a) 37718/12, height 13 cm; (b) 49703/12, height 10 cm.

Both bowl interiors and exteriors are usually decorated. The area below the exterior rim is usually unslipped, with red and black painted decorations. Bowl interior treatments are variable, but decoration appears to be divided into an upper yellow zone and lower red zone, both of which may be decorated with designs executed in thin black lines. A very small number of vessels may exhibit only one pigment type resulting in their classification *Gobernador Red-on-yellow* or *Gobernador Black-on-yellow* (Carlson 1965), but these should be considered varieties of Gobernador Polychrome.

Frances Polychrome

Frances Polychrome was first used to describe pottery that was thought to exhibit characteristics intermediate between Gobernador Polychrome and Navajo Painted (Eddy 1966). It has been ascribed to the transition of polychrome production from Refugee Pueblo potters to Navajo potters (Hester and Shiner 1963), or to an early experimental stage in the development of Gobernador Polychrome by Pueblo potters (Brugge 1982; Carlson 1965). Given the present ambiguity, we believe that it is best considered a variety of Gobernador Polychrome rather than a distinctive type. Frances Polychrome designs are executed with broad lines as opposed to broad or thin line work of Gobernador Polychrome (Marshall 1985). Frances Polychrome pastes are also characterized as being thicker and softer than Gobernador Polychrome. They are less likely to be vitrified and appear to have been fired at lower temperatures. Frances Polychrome is more likely to have sherd temper.

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