A REEVALUATION OF THE FREMONT UINTA GRAY POTTERY FROM DINOSAUR NATIONAL MONUMENT, UTAH/COLORADO

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For over 50 years, Fremont ceramics in the Uintah Basin were thought to have been tempered using calcite. During this time, calcite was identified under a binocular microscope and thought to have been derived from rare geodes found in the Mancos Shale formation. Between 1988 and 1992, the Dinosaur Nature Association, located in Vernal, Utah, funded petrographic analyses of ceramic sherds from seven radiocarbondated Uinta Fremont sites in Dinosaur National Monument. The results show that rather than calcite, Uinta Gray Ware is tempered with a fossiliferous limestone or a sediment derived from limestone. The widespread occurrence of limestone temper in well-dated Fremont contexts indicates that the use of limestone may be fairly common in the Uinta Basin and perhaps specific to the Cub Creek Phase. Archaeologists consider ceramics to be a diagnostic tool in predicting a site's possible ethnic and/or cultural affinities (e.g., Fremont, Shoshone, Ute, and various Middle Missouri groups). If ceramics are to be used in such a fashion, as a ethnic/cultural "diagnostic" tool, then they can no longer be analyzed simply by using a 10x hand lens. It is apparent from this study that a petrographic analysis data base for ceramics in the Intermountain West needs to be developed. The development of such a data base can be used in the identification of locally produced ceramics and for creating replicable ceramic type descriptions.

BACKGROUND

Within the Fremont area, regions of ceramic variation correspond generally to Ambler's (1966) and Marwitt's (1970) definitions of five Fremont cultural variants. To a great extent the definition of these Fremont variants is based upon differences in pottery (Madsen 1986:207).

Uinta Gray (Breternitz 1970; Gunnerson 1969; Lister 1951; Lister et al. 1960; Madsen 1970, 1986: Wormington 1955) is characteristic of the Uinta Fremont variant of northeastern Utah (Figure 1). This ceramic type is a plain gray utilitarian ware. A typical vessel is globular in shape, has one handle with a rounded bottom and a straight to slightly flaring rim. However, other vessels (jars) exhibit a restricted orifice with straight neck and rim. The exterior surface is smoothed and sometimes exhibits the appearance of being washed and decorations are rare.

Lister and Shepard (Lister 1951:31-34) conducted the first technological study of plain gray pottery that dominates the Dinosaur National Monument archaeological collections. Shepard (1956) utilized a binocular and a petrographic microscope using powdered specimens and refractive liquids. The ceramic sherds studied were found to contain "calcite grains."

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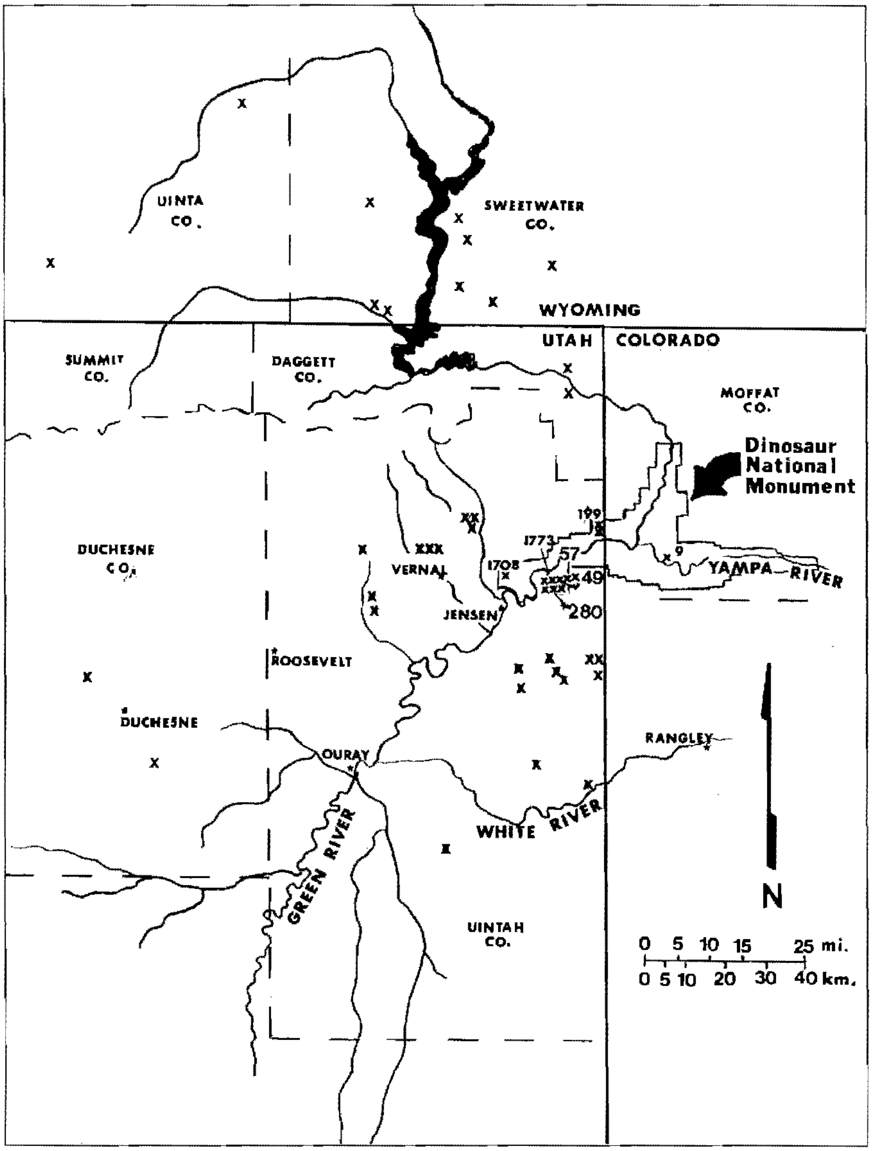

FIGURE 1. General location of apparent Fremont ceramics recorded in the study area.

Shepard (1956) questioned the source of the pottery in this area and the origin of the custom of tempering with calcite. No example of calcite temper from the Pueblo southwest had yet come to Shepard's attention, although calcite is sometimes found associated with other tempering materials. Shepard (1956) also noted it was unlikely that potters would choose calcite unless resources were limited. Calcite has the serious disadvantage of limiting firing temperature, which more than offsets the ease of processing.

TABLE 1. Additional Uintah Basin archaeological sites recorded with ceramics.

Site Number	Location	Cultural Affiliation	Ceramic Description
DUCHESNE COUNTY			
42DC443	T3S, R5W, Sec. 29	Shoshonean	- 6 body sherds - crude gray ware with incised mark
42DC554	T5S, R4W, Sec. 29	Ute Fremont(?)	- <10 body sherds - plain gray ware, grit sand temper, slightly burnished exteriors, rough scraped interiors, globular-coiled vessel
UINTAH COUNTY			
42UN95 (Caldwell Village [Ambler 1966])	T5S, R2E, Sec. 18	Fremont	90% are typed Turner Gray: Cisco Variety
42UN44	T4S, R24E, Sec. 36	Fremont	Uinta Gray Ware
42UN63 (Boundary Village [Leach 1966:122-123])	T4S, R24E, Sec. 3	Fremont	Turner Gray: Cisco Variety
42UN66 (Arrowhead Campsite [Breternitz 1970:118-123])	T5S, R24E, Sec. 2	Fremont	Turner Gray: Cisco Variety
42UN118 (Burnt House Village [Breternitz 1970:55-73])	T5S, R24E, Sec. 3	Fremont	Turner Gray: Emery Variety
42UN121 (Macleod Site [Breternitz 1970:47-54])	T4S, R24E, Sec. 34	Fremont	Turner Gray: Cisco Variety
42UN776	T7S, R23E, Sec. 54	Unknown	1 corrugated sherd
42UN790	T2S, R23E, Sec. 31	Fremont	3 Uinta Gray sherds
42UN793	T12S, R22E, Sec. 27	Fremont	7 Emery Gray sherds
42UN798	T7S, R23E, Sec. 33	Fremont	2 Emery Gray sherds with incisions on exterior
42UN806	T7S, R24E, Sec. 1	Fremont	28 Uinta Gray sherds
42UN807	T7S, R24E, Sec. 1	Fremont	7 Uinta Gray sherds
42UN818	T7S, R22E, Sec. 30	Fremont	5 Uinta Gray sherds
42UN820	T7S, R24E, Sec. 27	Fremont	15 Ivie Creek Black & White sherds
42UN931	T10S, R24E, Sec. 3	Fremont	12 Uinta Gray sherds
42UN954	T7S, R25E, Sec. 22	Fremont	15 Emery Gray and plain gray ware
42UN955	T7S, R24E, Sec. 12	Fremont	12 Uinta Gray sherds
42UN1254	T2S, R1E, Sec. 31	Fremont	35 Uinta Gray sherds from three separate scatters
42UN1255	T2S, R1E, Sec. 32	Fremont	Uinta Gray
42UN1420	T7S, R25E, Sec. 4	Fremont	- Great Salt Lake Gray - carbonized interior - corrugated with vertical thumbnail indentations
42UN2035	Uintah-Ouray Ute Reservation	Ute	20 plain gray sherds

Shepard concluded that the use of calcite where there is a choice of more suitable materials may indicate a firmly-established custom which originated in a locality of limited resources.

Gray pottery with calcite temper was later described and named Turner Gray-Variety I by Wormington (1955:68-69). In addition, it was thought that the crushed calcite crystal temper was derived from concretions in the Mancos Shale. Subsequently, Gunnerson (1956, 1957:7-13) added to the description and more closely delimited the distribution of the type. An attempt was made to discover a source of calcite that might have been used to temper Uinta Gray vessels (Wormington 1966:68). The only source of calcite located were geodes found in the Morrison formation. These geodes produced relatively little calcite.

Lister (Lister et al. 1960:218,233) suggested changing the name to Turner Gray: Cisco Variety. The original type description of Turner Gray from the Turner-Look site is described as being tempered using crushed calcite crystals. As a term chosen to convey geographical significance, Turner Gray: Cisco Variety is perhaps somewhat unfortunate because the Turner-Look site near Cisco appears to be on the southern edge of the distribution of calcite-tempered pottery.

Over 100 miles north of Cisco, Utah, in the Uintah Basin, most of the ceramic assemblage from Caldwell Village (Ambler 1966) and the Cub Creek sites (Breternitz 1970) are of the Turner Gray: Cisco Variety.

In 1951, Shepard suggested that as more pottery from this general area is found, it may be desirable to prepare thin sections and make detailed analyses (Lister 1951:32). However, no effort was made to follow up on these initial observations and recommendations by Shepard.

More recently, three sherds of Uinta Gray were analyzed through x-ray diffraction (Hendricks et al. 1990). X-ray diffraction is an analytical technique used to identify materials with crystalline structures such as minerals. Each mineral has had a unique lattice distance that is part of its crystalline structure. When X-rays are directed at a sample containing minerals or other crystalline structures, they are diffracted at distinct angles. Also, the intensity of the diffraction at a particular angle varies according to the composition of the material as well as the lattice distance. This means that all cyrystaline materials, including minerals, have a unique X-ray diffraction pattern. The sherds analyzed by Hendricks et al. (1990) came from Caldwell Village (42UN95), White River (42UN170), and an unknown provenience. All of these sherds contained predominately calcite, with some minor occurrences of dolomite and feldspar in their matrix.

These studies of Uinta grayware have focused on the identification of the mineralogical composition of the tempering material and paste rather than on the type of temper used in making the vessels. The analysis by Shepard and Stubbs has been incorporated into ceramic type descriptions with the identification of the temper of Uinta Gray as crushed calcite (Lister 1960; Madsen 1977).

FILES SEARCH

The Utah State Historic Preservation archaeological site files for Duchesne and Uintah Counties was searched for prehistoric sites with ceramics in the Uintah basin. Thirty-five sites were reported to have ceramics (Figure 1). Figure 1 also shows some of the general locations for apparent Fremont ceramic sites in Wyoming. Of the 35 Utah sites, only 29 had any additional information on the ceramic assemblages description and possible cultural affiliation. Data on 23 of these 29 sites may be found in Table 1. The remaining six sites are part of the study sample, three of which are reported through personal communication by a local amateur and two are reported in McKibben et al (1992).

METHODS

Ten ceramic sherds from six sites in Dinosaur National Monument were submitted to David V. Hill for petrographic analysis (Figure 1). Provenience information (site number and name, and associated context) for each of the sherds is described below. Each of the sherds can be considered to be in good context and associated with Fremont occupations in Dinosaur National Monument. The radiocarbon dates from these sites range between 1790 to 1200 years BP (AD 160-660).

Each sherd was thin sectioned. The sample was then mounted so that the sherd could be examined in profile. While a cross section of the sherd presents less total area for temper analysis than does a plan view, an "edge on" view allows for the observation of the orientation of temper particles and voids that can be used to infer the method of forming the vessel.

Each of the sherds were cut and mounted in cross section in order to examine the form and orientation of interstitial voids and the orientation of temper particles. The thin sections were counted for 100 points except for the sherds from Sites 42UN1773 and 42UN199, and one sherd from Site 42UN49. These sherds are small and were only counted for 85 and 30 points, respectively. Point counts were made at one millimeter intervals.

Sample #1

Site number–42UN1708

Provenience–Surface, 8 meters at 230 degrees from Datum

Site 42UN1708 is a campsite containing a low density scatter of chipped stone tools and debitage, groundstone tools, and six firepits. In addition, the site contains a rock shelter with two rock art panels. The ceramic sherd was recovered on the surface of the talus slope, which exhibits chipped stone tools, debitage, fragments of ground stone tools, charcoal, and charcoal-stained sediments. These artifacts were eroding from the talus slope below the rock art panels. Charcoal collected from a buried cultural level produced a radiocarbon date of 1790±80 years BP (Beta-33005) (Truesdale 1993:112-113). Also discovered in association with the radiocarbon date was a projectile point with morphological characteristics (hafting width vs. hafting length, and hafting width vs. thickness) that fall statistically between the Elko series (Archaic) atlatl points and the Rosegate series (Late Prehistoric) bow and arrow points. In addition, the salvage of a shallow basin firepit (Feature 1) in area across the drainage from the rock art panels produced a radiocarbon age of 1290±130 years BP (Beta-50426) (Truesdale 1993:112-113).

Sample #2

Site number–42UN1773
Provenience–Test Unit (997-998 North, 1000-1001 East)
Level 2 (elevation 99.80 to 99.75)
Screen artifact SE 1/4
Collected 6/10/90

Site 42UN1773 is a small, low-density scatter of chipped stone tools and debitage, ground stone tools, and ceramics associated with an amorphous charcoal stain. The charcoal stain covers an areas of approximately 30 sq. m. Test excavations discovered a buried Fremont pithouse structure with several sub-floor features. In addition, the pithouse exhibited a prepared white clay floor. A charcoal sample from the pithouse floor and one from a sub-floor feature during the text excavation yielded radiocarbon ages of 1530±50 years BP (Beta-38589) and 1550±60 years BP (Beta-38588), respectively (Truesdale 1993:112-113). The ceramic sherd was recovered from the interior fill of a pithouse structure during test excavations.

Sample #3

Site number–42UN280, The Dam Site (Breternitz 1970:74-76)

Excavations were conducted in an unknown specialized activity area with an adobe-rimmed firepit and several sandstone slab-lined storage facilities. Five ceramic sherds were recovered from the fill of Feature 1 and were identified as Turner Gray: Cisco Variety (Breternitz 1970:76). A charcoal sample from the adobe-rimmed firepit was collected by the University of Colorado. The charcoal sample was recently radiocarbon dated and returned an age of 1510±90 years BP (Beta-33908) (Truesdale 1990, 1993: 112-113).

Sample #'s 4, 5, 6, and 7

Site number–42UN49, Wagon Run (Breternitz 1970:31-40)
Provenience–Floor and fill from Pithouse Structure No. 4

Ceramic sherds representing seven vessels were recovered during the excavation of Structure 4 at Wagon Run. Structure 4 is a pithouse that measures approximately 7 meters in diameter. Sherds from four of these vessels were sent for petrographic analysis. A charcoal sample was collected by the University of Colorado from the centrally located adobe-rimmed firepit in Structure 4. This sample was recently radiocarbon dated and returned an age of 1340±50 years BP (Beta-30450) (Truesdale 1993:112-113).

Sample #8

Site number–42UN57, Wholeplace Village (Breternitz 1970:11-29)
Provenience–Fill from Pithouse Structure No. 2

The sherd was recovered from the fill of Structure 2. Structure 2 is a pithouse that measures approximately 5.5 meters in diameter (Breternitz

1970:14). A charcoal sample collected by the University of Colorado was recently radiocarbon dated and returned a radiocarbon age of 1310±50 years BP (Beta-30451) (Truesdale 1993:112-113).

Sample #9
Site Number–42UN199, Walton's Cyst
Provenience–Surface

The site is a small alcove with a standing wattle-and-daub storage facility surrounded by a small, low-density scatter of chipped stone debitage and ceramics. The sherd was collected from in front of the storage facility (granary). In addition, a fishhook was recovered from within the storage facility. The fishhook consists of a wooden shaft and a bone barb, and was hafted with fiber cordage secured by resin. The wood shaft was made from saltbush or shadscale (*Atriplex*) and the fiber cordage was made from flax (*Linum*). A stick taken from the wall of the storage facility was radiocarbon dated at 1290±50 years BP (Beta-33004) (Truesdale 1993:112-113).

Sample #10
Site Number–5MF9, Marigold's Cave (Burgh and Scoggin 1948; Lister 1951)
Provenience–Surface

The sherd was located on the surface where an intact cultural level is located on the floor of an alcove, which is situated 500 feet up on a sandstone cliff face. The site has little evidence of disturbance either by erosion and/or vandalism. The site has several storage facilities and an activity area with a central firepit and several post remnants. A charcoal sample from the Burgh and Scoggin collections provided a radiocarbon date of 1200±60 years BP (Truesdale 1993).

RESULTS

The first sherd analyzed came from Marigold Cave. The sherd (Figure 2) has a dark brown to blackish silty paste with few natural mineral inclusions. Orientation of the temper particles and voids appeared to be random, which is indicative of the coil and scrape method of pottery manufacture. This technique is probably the most common method of pottery making in the Puebloan southwest. The sample was tempered using sediments derived from a limestone, classified as a *foraminiferal bioclastic micrite.* Foraminifera, brachiopods, and oolites make up the bulk of the rock matrix, with occasional grains of authigenic calcite and chert/chalcedony, along with grains of detrital quartz and altered plagioclase. The grains fall into the size range of 350-500 microns. The rounded appearance of the temper particles may suggest the use of a sediment derived from limestone as the tempering agent rather than an outcrop source.

Subsequent to the findings of the petrographic analysis of the sherd from Marigold Cave, nine additional ceramic sherds (Samples 1 through 9) were examined to substantiate these results. Sherds 1 through 9 are similar to the sherd from Marigold Cave with the same fossiliferous and clay matrix.

The paste of all of the sherds is a dark brownish color with the cores ranging from a dark gray to black. The paste has a silty appearance and con-

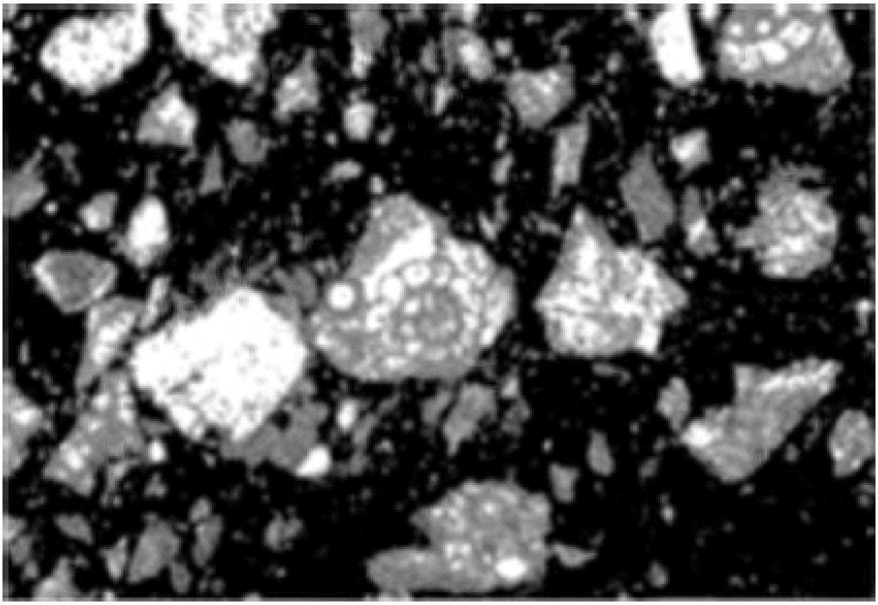

FIGURE 2. Angular fragments of limestone showing foraminifera (70x magnification).

tains sparse, natural, sub-rounded quartz grains. The voids and temper particles within the paste have a random orientation that is caused by the mixing and coiling of clay and subsequent shrinkage of the paste during firing. Random orientation of temper particles and voids is characteristic of coil-constructed ceramics (Rye 1981).

The tempering material in all of the sherds is a fossiliferous limestone. The limestone is best classified as a sparry biomicrite (Folk 1962). All of the specimens contained complete or fragments of oolites and foraminifera in the limestone grains. A possible highly fragmented bryozoan was observed in the sherd from 42UN280. Sparse chalcedony, probably a natural constituent of the limestone, was found in the sherd from 42UN280 and one from 42UN49. All of the temper grains are sub-angular to angular in shape. A plot of the temper particle sizes measured during point counting (Figure 3) suggests that some selective agent affected the size of the temper particles. Either the crushed limestone temper was thoroughly processed or well-sorted sediments derived from limestone were used in tempering the vessel.

While suggestions can be made regarding the potential sources of the limestone used as ceramic temper, these comments will remain somewhat speculative without the examination of comparative materials from outcrop sources. Numerous limestone beds of Mississippian and Pennsylvanian are exposed throughout Dinosaur National Monument (Driese 1983:1-18; Unterman and Unterman 1954). The source of the limestone has been isolated to two Pennsylvanian-age limestone formations that outcrop in several localities in Dinosaur National Monument and the Uinta Mountains. These formations are Round Valley and Morgan.

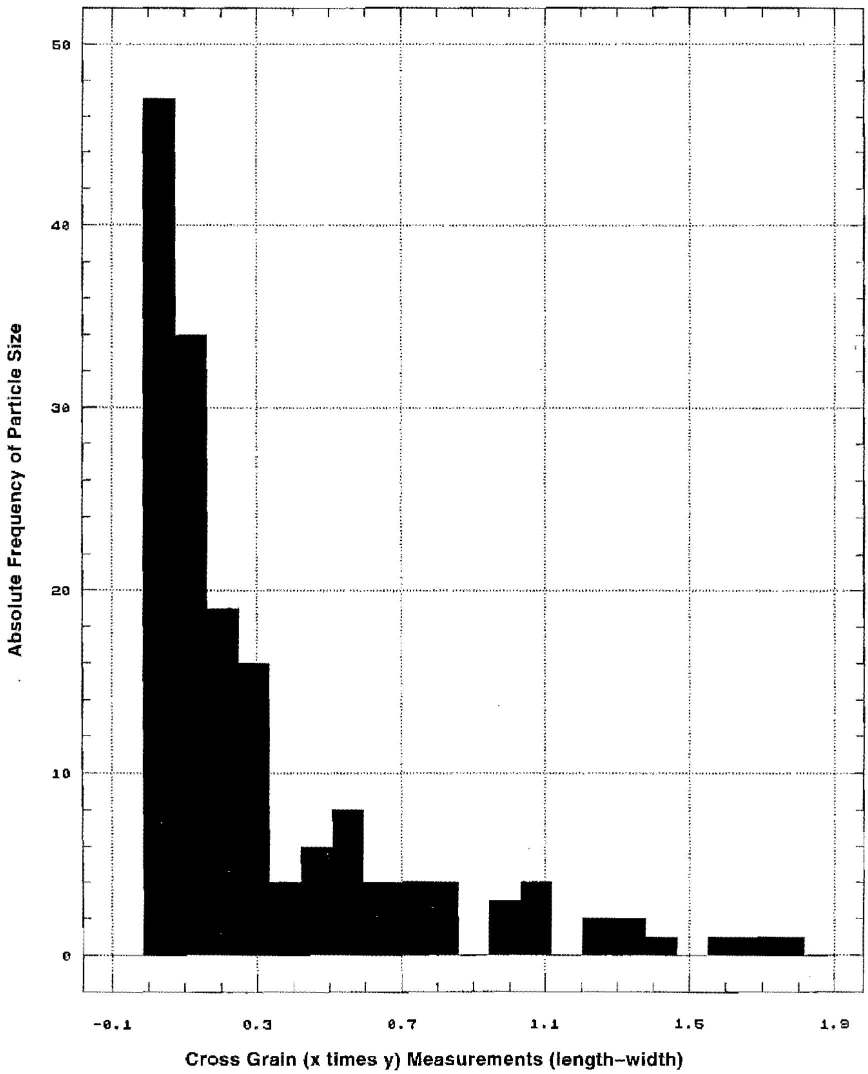

FIGURE 3. Plot of temper particle sizes measured during point counting.

Ceramic analyses have been conducted on ceramic assemblages from Sites 42DA485 and 42DA488 located in the Brown's Park area of northeastern Utah (Hill 1992; McKibben et al. 1992). These two sites have radiocarbon dates and associated artifacts that can be considered to be diagnostic attributes of a Uinta Fremont occupation. The method of manufacture used was coil and scrape and the paste was tempered with limestone. However, the limestone temper used is quite different from that of the samples from Dinosaur National Monument in that they do not contain fragments of foraminifera, oolites, and brachiopods.

In addition, ceramic petrographic analyses have been conducted on surface finds at Site 42DA545 located in the Ashley National Forest and

Sites 42UN2018 and 42UN56 in the Uintah Basin interior. All of these sherds studied contained sparry limestone temper and were manufactured by the coil and scrape technique. These sherds also did not contain fossiliforous materials.

Just north of the Utah-Wyoming state line is Site 48SW6191, which contained Uinta Gray limestone-tempered ceramics in association with the remnants of a juniper branch lodge and radiocarbon dated to 1290±70 years BP (Truesdale and Eckerle 1986).

CONCLUSIONS

A recent study of folk potters indicates that potters seldom travel more than a few miles, or expend large amounts of time, in order to obtain raw materials for paste and temper (Arnold 1985:49). Thus, we suggest that the ceramics from the current sample reviewed in this paper were manufactured using locally available limestones or calcareous sands and local clays. The use of limestone as a ceramic-tempering material may indicate a firmly-established custom that originated in a locality of limited resources. The limestone converts to an unstable calcium oxide between 600-900°C. Therefore, the vessels represented in this study must have been fired at a lower temperature (Shepard 1956).

The data presented indicate that the ceramic sites in the Dinosaur National Monument area dating between AD 160 and 660 were manufactured using the coil and scrape method and were tempered with a fossiliferous limestone. This appears to be a very localized phenomena and may not have expanded beyond the immediate area. Therefore, there is a need for additional petrographic analysis to be conducted on future ceramic assemblages collected from good Fremont contexts in the Uintah Basin. Additional data bases need to be built from such analyses to offer the chance for ceramics to be a viable diagnostic tool for determining such cultural affiliation as the Cub Creek Phase Fremont.

Three of the sherds represented in the study sample range between 6 and 16 miles away from the Cub Creek area where the remainder of the sample sherds were collected. The occurrence of fossiliferous limestone tempered Uinta gray ware in Dinosaur National Monument ceramic assemblages and its paucity throughout the remainder of the Uintah Basin, suggest several interesting questions. The data suggest that there is a regional variability in the temper used in the Uinta Fremont ceramics and some of the variability may be locally specific, such as those identified in this study, in Dinosaur National Monument. In addition, this regional diversity and the local specific ceramics can be placed within a 1,000-year time frame of the Uinta Fremont occupation in the Uintah Basin and may have possibly spread to adjacent areas (i.e., southwest Wyoming and northwestern Colorado).

Petrographic analysis has been demonstrated to be a useful tool for understanding patterns of Fremont land use in northwestern Colorado and northeastern Utah through the recognition of the exploitation of a specific type of resource, in this case limestone, for ceramic temper. Future research regarding Uinta graywares and ceramics from other plainware traditions in the Intermountain West would also benefit from such analysis because petrography allows for a more precise identification of inclusions observed in ceramics.

REFERENCES CITED

Ambler, J. Richard

1966 *Caldwell Village and Fremont Prehistory.* Unpublished Ph.D. dissertation, Department of Anthropology, University of Colorado, Boulder.

Arnold, Dean E.

1985 *Ceramic Theory and Cultural Process.* Cambridge University Press, New York.

Breternitz, David A.

1970 *Archaeological Excavations in Dinosaur National Monument, Colorado-Utah, 1964-1965.* University of Colorado Studies, Series in Anthropology No. 17. University of Colorado Press, Boulder.

Burgh, Robert F. and Charles R. Scoggin

1948 *The Archaeology of Castle Park, Dinosaur National Monument.* University of Colorado Studies, Series in Anthropology No. 2. Boulder, Colorado.

Folk, Robert L.

1962 Spectoral Subdivisions of Limestone Types. In *Classification of Carbonate Rocks,* edited by W.E. Ham. *American Association of Petroleum Biologists Memoir* No. 1, pp. 108-121.

Gunnerson, James H.

1956 Fremont Ceramics. In *Papers of the Third Great Basin Archaeological Conference* by Fay Cooper-Cole et al., pp. 54-62. University of Utah Anthropological Papers No. 26. Salt Lake City.

1957 *Archaeological Survey of the Fremont Area.* University of Utah Anthropological Papers No.28. Salt Lake City.

1969 *The Fremont Culture: A Study In Culture Dynamics On The Northern Anasazi Frontier.* Papers of the Peabody Museum of Archaeology and Ethnology, Vol. 59, No. 2. Harvard University, Cambridge, Massachusetts.

Hendricks, Joseph, Donald W. Forsyth and Chun Jung

1990 X-ray Diffraction Analysis of Some Formative and Late Prehistoric Pottery from Utah. In *Hunter-Gatherer Pottery from the Far West,* edited by Joanne M. Mack, pp. 29-52. Nevada State Museum Anthropological Papers No. 10. Carson City, Nevada.

Hill, David V.

1992 Petrographic Analysis of Selected Ceramics from 42DA485 and 42DA488. Ms. on file, Metcalf Archaeological Consultants, Inc. Eagle, Colorado.

Leach, Larry L.

1966 *The Archaeology of Boundary Village.* University of Utah Anthropological Papers No. 83, Miscellaneous Papers No. 13:85-129. Salt Lake City.

Lister, Robert H.

1951 *Excavation At Hells Midden, Dinosaur National Monument.* University of Colorado Studies, Series in Anthropology No. 3. Boulder, Colorado.

Lister, Robert H., Florence C. Lister and Richard Ambler

1960 *The Combs Site.* University of Utah Anthropological Papers No. 41, Part II. Glen Canyon Series No. 8. Salt Lake City.

Madsen, David B.

1970 Ceramics. In *Median Village and Fremont Culture Regional Variation,* by John P. Marwitt, pp. 54-75. University of Utah Anthropological Papers No. 95. Salt Lake City.

1986 Prehistoric Ceramics. In *Great Basin*, edited by Warren L. D'Azevedo, pp. 206-214. *Handbook of North American Indians* vol. 11, W. C. Sturtevant, general editor. Smithsonian Institution, Washington, D. C.

Madsen, Rex

1977 *Prehistoric Ceramics of the Fremont.* Museum of Northern Arizona Ceramic Series No. 6. Flagstaff, Arizona.

Marwitt, John P.

1970 *Median Village and Fremont Culture Regional Variation.* University of Utah Anthropological Papers No. 95. Salt Lake City.

McKibben, Anne (editor)

1992 *The Questar North-South Pipeline: Final Report on Archaeological Investigations.* Submitted to Questar Pipeline Co., Salt Lake City.

Rhy, Owen S.

1981 *Pottery Technology: Principles and Reconstruction.* Tarazdcum, Washington, D.C.

Shepard, Anne O.

1956 *Ceramics For The Archaeologist.* Publication No. 609. Carnegie Institute of Washington, Washington, D.C.

Truesdale, James A.

1989 *Archaeological Investigations Along the Echo Park Road, Dinosaur National Monument, Moffat County, Colorado.* Cultural Resource Series No. 1. Dinosaur National Monument, Dinosaur, Colorado.

1990 Archaeological Investigations of the "Uinta Basin" Fremont in Dinosaur National Monument (1988-1990), Utah-Colorado. Paper presented at the 48th Plains Anthropological Conference, Oklahoma City, Oklahoma.

1991 *Results of Data Recovery From Juniper Ledge Shelter (42UN1724).* Cultural Resource Series No. 2. Dinosaur National Monument, Dinosaur, Colorado.

1993 *Archaeological Investigations at Two Sites in Dinosaur National Monument: 42UN1724 and 5MF2645.* Selections from the Division of Cultural Resources, Rocky Mountain Region, National Park Service No.4. Denver.

Truesdale, James A. and William P. Eckerle

1986 *Continued Archaeological Investigation at 48SW6191; Test Excavations, Recommendations, and Data Recovery Program for Area B, Highway Project SSP-TO-017-1(12).* Submitted to Wyoming Highway Department, Office of the Wyoming State Archaeologist, Laramie.

Untermann, Rex E. and B.R. Untermann

1954 *Geology of Dinosaur National Monument and Vicinity Utah-Colorado.* Utah Geological and Mineralogical Survey Bulletin No. 42. Salt Lake City.

Wormington, H. Marie

1955 *A Reappraisal of the Fremont Culture, With a Summary of the Archaeology of the Northern Periphery.* Proceedings of the Denver Museum of Natural History No. 1. Denver.