



THE UPAC NEWS

Published by the Utah Professional Archeological Council

Volume 5, No. 1

May 1987

Alan R. Schroedl, President

Betsy L. Tipps, Editor

UPDATE ON FOREST HIGHWAY 10

It is not normal procedure for federal agencies to air internal squabbles, but most of the professional archeological community in the state has already become involved to some extent in the continuing saga of Forest Highway 10. In that light, an updated account of "the proceedings" may be of some interest.

The Federal Highway Administration (FHWA) is proposing to pave Forest Highway 10 (formerly Utah State Route 72) between the town of Fremont and Fremont Junction on Interstate 70 in central Utah. Last year, the National Park Service (NPS), acting on behalf of the FHWA, let a contract to mitigate the significant sites. Quite a ruckus subsequently broke out between the Forest Service and Bureau of Land Management (BLM) on one hand, and the NPS and FHWA on the other, over what constitutes appropriate mitigation strategies for the archeological sites that will be affected by the proposed project.

With full backing of the NPS, the FHWA proposed to mitigate only those *portions* of the significant sites that fell within their proposed "affected area." The Forest Service and BLM who administer the lands where the sites are located were rather insistent that mitigation consider the entire site, not just the "affected area." A blizzard of paperwork ensued concerning this issue, that has, to date, accomplished essentially nothing. So far, almost everyone who could possibly be construed to have some say in this matter has been involved to some extent.

It appears now that the FHWA's proposal will prevail on Forest Service land. Apparently, a decision has been made that a paved road outweighs other considerations. This is indeed unfortunate, but in no way reflects on the efforts of Bob Leonard, Forest Archeologist, Fishlake National Forest, who did his best to insure the preservation of significant archeological values. A different situation prevails regarding the three sites on BLM land.

In September of 1982, an Interagency Agreement went into effect between the BLM and FHWA. This agreement provided procedures by which the FHWA may appropriate BLM lands for highway rights-of-way. Of particular significance to the archeological mitigation issue is the requirement that the FHWA formally request, in writing, appropriation of the lands from the BLM. The BLM may agree or disagree with the FHWA request and is to inform them of the decision in writing. By terms of the Agreement, any such appropriation is subject to the conditions the BLM may deem necessary for adequate resource protection.

As part of the Interagency Agreement, both agencies agreed that the BLM will protect resource values outside of the immediate impact zone through the use of stipulations that are made a condition of the letter of consent. The BLM's role in working with the FHWA on these appropriations is to assure proper environmental protection *and mitigation of damage to the values on public lands adjacent to the lands that are being appropriated.* The FHWA's "affected area" argument is a moot point in light of this agreement because the BLM has the responsibility to protect those portions of archeological sites outside of the "affected area."

As of this date, the BLM has not received the written request for appropriation of lands from the FHWA. Until this request is received, reviewed and approved, the proposed highway alignment is not final and there is no reason to mitigate anything. Nor will mitigation of any kind be authorized on the sites on BLM land. Once the request for appropriation of lands is received, the BLM will grant consent on the condition that mitigation consider the entire site or sites rather than the "affected area" which represents pieces and slopewash.

-Craig B. Harmon

UPAC TO HOLD SUMMER MEETINGS

The summer meetings of the Utah Professional Archeological Council will be held on June 26 and 27, 1987, in the Fishlake National Forest northeast of Loa, Utah. The meetings have been scheduled to coincide with excavations being conducted by Metcalf Archeological Consultants (MAC), Inc., along Forest Highway 10, and will include a tour of the sites and the work conducted to date.

The symposium and business meeting will be held in the Elkhorn Campground, a Forest Service facility with approximately 50 campsites. This campground lies at about 10,000 ft and has picnic tables, water and out-houses. The Forest Service does not take advance reservations for this campground, but a nearby primitive alternative is available in the unlikely event that the campground becomes full. For those who do not wish to camp, the nearest motels are located in Loa, about 25 minutes south of the campground. A map of the area, showing the location of the campground, is attached. MAC's field camp is located in the vicinity of Paradise Lake and is visible from Highway 10. They have informed UPAC that early birds to the meetings or other visitors who happen by are welcome anytime. Look for two camp trailers and a cluster of tents.

To compliment the location of the meetings, this year's symposium will focus on High Altitude Archeology. A definition of "above 7000 ft" has been set for this program. The following speakers are tentatively scheduled to present papers:

Larry Agenbroad, Northern Arizona University - Bryce Canyon Project;

Kevin Black, Metcalf Archeological Consultants - Highway 10 Project;

Donald Keller, Museum of Northern Arizona - Alton Coal Field Project;

Bruce Louthan, Bureau of Land Management and Steve Simms, Weber State College - Allen Canyon Project.

Anyone else interested in making a presentation is encouraged to contact Bruce D. Louthan, UPAC Vice-

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The UPAC News is a quarterly publication of the Utah Professional Archeological Council, 2212 South West Temple #21, Salt Lake City, Utah, 84115. Alan R. Schroedl, President (P-III Associates, Inc.), Betsy L. Tipps, Editor (P-III Associates, Inc.).

The UPAC News is distributed free to all members of the Utah Professional Archeological Council and other interested parties. UPAC accepts contributions towards the publication of the newsletter at any time. Correspondence relating to subscriptions, membership or address change as well as information for publication in the newsletter should be addressed to: Betsy L. Tipps, Editor, UPAC News, c/o P-III Associates, 2212 South West Temple, #21, Salt Lake City, Utah, 84115. Materials for the next issue should be submitted by July 2, 1987.

President for Research, who is organizing the symposium, as soon as possible. Analytical and theoretical papers are welcome, as are substantive field reports. Bruce can be reached at (801) 259-6111 or by writing the Bureau of Land Management, Moab District Office, P.O. Box 970, Moab, Utah 84532. A slide projector and screen will be available for use during the symposium.

The symposium is scheduled to begin at 2 p.m. on Friday, June 26, and continue through the afternoon. A communal dinner will be held at the campground between 5 and 8 p.m. Charcoal and beverages will be provided by UPAC. Informal presentations on current research will begin after dinner at 8 p.m. The business meeting will commence at the campground at 8:30 a.m. on Saturday, June 27. A tour of the Forest 10 sites will begin after the business meeting at 1 p.m.

UTAH STATEWIDE ARCHEOLOGICAL SOCIETY ANNUAL MEETINGS

The Castle Valley Chapter of the Utah Statewide Archeological Society will host the annual society meetings on June 19, 20 and 21 in Price, Utah. UPAC members and all other interested parties are invited to attend. The tentative schedule is as follows:

June 19

1-1:45 p.m.; Price City Park, Main Shelter; Activity: Registration.

2-4 p.m.; CEU Campus, Alumni Room; Activity: 1) Don Burge, a staff member at the College of Eastern Utah, will show replicas of atlatls, bows and arrows, and demonstrate their use and 2) Layne Miller will discuss rock art.

5-6 p.m.; Prehistoric Museum; Activity: Tour of the museum.

7-7:30 p.m.; Price City Park, Main Shelter; Activity: Late registration and social hour.

7:30-8:30 p.m.; Price City Park, Main Shelter; Activity: Greek Lamb BBQ with belly dancer entertainment.

8:30 p.m.-?; Price City Park, Main Shelter; Activity: Speakers, 1) Dave Madsen, "An Overview of Archeology in the State" and "Danger Cave", 2) Keith Montgomery, "Huntington Canyon", 3) Pat Stout, "SR-4", and 4) Mark Stuart, "Orbit Inn". Max Evans will also speak on membership opportunities in the Utah State Historical Society.

June 20

7:30 a.m.; Price City Park, Main Parking Area; Activity: Field trips will depart for 1) Rochester Creek petroglyphs and Snake Rock, 2) San Rafael Swell, and 3) the Utah Power and Light facility.

6-7 p.m.; Radisson Hotel, Poolside; Activity: Social Hour, Auction and Raffle, BYOB in plastic containers.

7-7:45 p.m.; Radisson Hotel; Activity: Roast Beef and Ham buffet.

7:45 p.m.; Radisson Hotel; Activity: Business meeting and speakers, 1) Jim Wilde on the Accreditation Program and 2) La Mar Lindsay on the proposed relationship between UPAC and USAS.

June 21

7:30-9 a.m.; Price City Park, Main Shelter; Activity: All you can eat breakfast.

9 a.m.; Price City Park, Main Parking Lot; Activity: Field trip departs for Nine-Mile Canyon.

Total cost of the meetings is \$18.00 including \$5.00 for the Greek BBQ, \$10.50 for the buffet at the Radisson and \$2.50 for the "all you can eat" breakfast. Attendees are responsible for their own lodging, and for transportation, food and water on any field trips. Box lunches can be purchased for \$2.50. Reservations for any of the meals should be made by June 1, 1987. Contact Mary Ann Zimmerman at (801) 261-5361 for further information or to make reservations.

CURRENT RESEARCH

METCALF ARCHAEOLOGICAL CONSULTANTS, INC.

In August, 1986, Metcalf Archaeological Consultants (MAC) began mitigative excavations along Forest Highway 10 (State Highway 72) in central Utah. Excavations at the three highest elevation sites were completed and preliminary testing begun at a fourth before snow and cold weather ended the field season. Excavations will resume this month.

Work began last August at 42SV1845, a chipped stone scatter located on a saddle, at 2725 m elevation, south of Hogan Pass. The site contains two main artifact scatters, one on a rocky hillside overlooking Soloman Basin and the other in deeper soils on the saddle bisected by the road. The former includes a preponderance of chalcedony flakes and a large stemmed/corner-notched projectile point; the latter is characterized by the highest percentage of obsidian yet seen in the project area, along with a Rose Spring point and large corner-notched knives. A total of 50 m² was excavated here, but unfortunately no features were located and no radiocarbon dates are available. Lithic densities in the excavated areas were quite low, with subsurface remains scattered throughout the upper 35 cm of soil on the saddle. Recovered materials are almost entirely limited to chipped stone artifacts, with only a few bone fragments and no ground stone or ceramic artifacts recovered. Chipped stone tools (n=40) are dominated by bifacial blanks, preforms and projectile points, as well as expedient flake tools mostly used in scraping tasks. A few knives, a drill and a

graver round out the collection assemblage, which very much appears to express an emphasis on hunting and the preparation for such pursuits.

Closer to Hogan Pass and Pine Spring is site 42SV1844, an extensive camp site located on a variety of gently to moderately sloping landforms at an average elevation of 2713 m. Several chipped and ground stone artifact concentrations are present, including one exposed along the cut of a buried water line that guided the placement of the largest grid block excavated here. A total of 45 m² were dug at the site, with cultural material recovered as much as 95 cm below the surface, but averaging a total depth of 50 to 60 cm. Although artifact densities at and below the surface are relatively high on this site, as at 42SV1845, no features were discovered intact. On the other hand, charcoal was frequently encountered in the fill and the presence of scattered fire-cracked rock suggests hearths or hearth-like features once were present and have since been eroded.

Two radiocarbon dates are available on charcoal from cultural fill: 3740 ± 80 B.P. (Beta 18659) applies to a zone of increased artifact density with Gypsum and Elko-type projectile points buried 50 to 60 cm below surface, and 6980 ± 270 B.P. (Beta 19054) dates a buried ground stone concentration in a different area of the site at a depth of 55 to 65 cm. Pollen washes from ground stone artifacts at the site have not yet been analyzed. Similar to site 42SV1845, ceramics are absent and faunal remains are minimal. Lithic tools recovered, other than ground stone, number 75; in decreasing frequency these include bifacial blanks and preforms, expedient flake tools (especially scraping implements), projectile points in a wide variety of styles, bifacial knives, spokeshaves, graters and bifacial scrapers. This site was occupied as a camp numerous times over a period of several thousand years, with a diversity of activities suggested including floral and faunal resource processing, woodworking, hide preparation, and tool manufacture and repair.

The most intensive excavations to date were undertaken at the Birch Spring site, 42SV1478. This site is an extensive camp located at and below the spring with abundant chipped and ground stone artifacts found at the surface; elevation is about 2515 m. Numic ceramics have reportedly been found on this site in the past, but no pottery of any kind was recovered during our investigations. A total of 78 m² was excavated, with a number of site occupations identified in deep colluvial soils buried up to 1.35 m below the present ground surface. Artifact densities at and below the surface are very high at this site and, although intact features are rare in the excavated areas, they are present. A small boulder arc at about 20 to 25 cm below surface may represent support rocks for temporary structure such as a windbreak. Associated charcoal is dated to 2490 ± 90 B.P. (Beta 18662), and two large bifacial scraper-planes in the feature area suggest tasks such as woodworking may have taken place here. A partially eroded hearth marked by

fire-cracked rock, a bit of stained soil and scattered charcoal is radiocarbon dated at 2040 ± 60 B.P. (Beta 18666), and is associated with a small amount of butchered small mammal bones.

Four other radiocarbon dates from level charcoal have been received on buried cultural zones: 910 ± 130 B.P. (Beta 19055), 1800 ± 90 B.P. (Beta 18665), 2830 ± 80 B.P. (Beta 18660) and 3410 ± 190 B.P. (Beta 18657). These dates apply to various activity areas buried in the upper half of the colluvial soil sequence, but much undated material more deeply buried (unfortunately without diagnostic artifacts) documents earlier Archaic activity at Birch Spring. Chipped stone tools collected from the site total 172 items including a strong dominance of expedient flake tools (80), followed in frequency by bifacial blanks and preforms, bifacial scrapers and scraper-planes, projectile points, bifacial knives, graters, spokeshaves, drills and core tools. Along with the presence of ground stone artifacts and a wide variety of (mainly Archaic) projectile point styles, the diversity of tools seen at Birch Spring is quite similar to the evidence from the Pine Spring area (42SV1844). That is, the Birch Spring site functioned as a repeatedly occupied short-term camp where a range of different activities were carried out over a period spanning thousands of years.

Only test excavations in the amount of 14 m^2 have been completed at the Water Hollow site, 42SV1474, on the southwest edge of Paradise Valley. One deep test in alluvial sites near the drainage encountered a cultural level at a depth of 85 to 90 cm, and scattered artifacts were found as deep as 1.65 m in that test. Another shallower test uncovered a level with small mammal bone and two large bifacial preforms. Surface remains include chipped and ground stone tools, Fremont ceramics and at least two small rock alignments. Already, 39 chipped stone tools have been collected at the site—mostly expedient flake tools, projectile points, and bifacial blanks and preforms. The point styles again represent a variety of Archaic and Fremont types; multiple components have been the rule at all the Highway 10 sites investigated thus far.

Finally, hearths at two other sites in the project area were in danger of destruction through erosion and vandalism, and were salvaged. At Wide Hollow, 42SV1425, a partially vandalized hearth exposed next to a small wash returned a radiocarbon date of 260 ± 60 B.P. (Beta 18653) in support of ceramic and projectile point evidence for a Numic component at that location. At Sage Hole, 42SV1850, a deeply buried hearth exposed in an arroyo wall 3.1 m below surface has been dated to 2130 ± 80 B.P. (Beta 18654), demonstrating relatively rapid alluviation near the head of a small side drainage. Many of the ancillary analyses on samples from completed sites—bone, pollen, flotation for macrofloral remains, soils and geomorphology, obsidian studies, etc.—have yet to be finalized, nor has the debitage analysis gone beyond encoding and entering the data for computer manipulations. Fieldwork during

the upcoming season will largely concentrate on post-Archaic period components and should provide a wealth of interesting data for comparison with Numic, Fremont and the older hunter-gatherer remains already excavated in the project area and surrounding region.

-Kevin D. Black and Michael D. Metcalf

MUSEUM OF NORTHERN ARIZONA

An intensive survey of 4700 hectares (11,725 acres) in the Alton Coal Field, Kane County, Utah, was completed in the fall of 1986, under the direction of Don Keller, Museum of Northern Arizona. The coal field lies between 1930 and 2250 m (6300 to 7400 ft) in elevation, and is largely in pinyon-juniper woodland in the Skutumpah Terrace/Gray Cliffs area between Bryce Canyon and the town of Kanab. The sometimes dense woodland is established on mesas and benches of Cretaceous period Dakota and Tropic Shale formations in a broad area south and west of the Pink Cliffs. Drainage is largely into Kanab and Johnson canyons which cut southward through the White and Vermillion cliffs towards the Arizona Strip country and the Grand Canyon.

The survey recorded 103 archeological sites including 87 prehistoric sites and 36 historic sites or site components. Prehistorically, the area appears to have been a hunting and gathering resource zone of major importance. The prehistoric sites reflect Desert Archaic, Virgin or Western Anasazi and Southern Paiute regional occupations. Both early and especially late Archaic phases appear to be represented. A Basketmaker II Anasazi phase may be indicated, but is not yet demonstrated in the absence of independent dating control. The main Anasazi use of the area appears to have been during the Pueblo II period. Subsequent Southern Paiute occupation extended to the early historic period.

Sites are typically surface lithic scatters emphasizing biface thinning technology and projectile point use, and also generally having grinding slabs, manos and large unifacial chopping tools present. Evidence of domestic structural features is very rare, although many sites have one or more hearth or roasting pit features present. Ceramic sherds are present in generally small amounts at a number of sites. Seasonal exploitation in the survey area appears to have been carried out largely by groups based much of the year at lower elevations in the White and Vermillion cliffs areas, at least for the Anasazi and ethnographically documented Kaibab Paiute groups. The regional orientations of the earlier Desert Archaic groups are unknown, although potentially related occupations are known in the Grand Canyon, Navajo Mountain, San Rafael Desert and southern Wasatch Plateaus areas, and in the eastern Great Basin.

There is a considerable degree of congruence in exploitation patterns between cultural phases throughout the prehistoric period, apparently being focused primarily on deer hunting and, probably, pinyon seed gathering. Changes in resource exploitation foci,

strategies and schedules during the prehistoric period constitute an interesting area of research to which the Alton coal field sites should contribute. It is hoped that the numerous hearth and roasting pit features found throughout the survey area will provide subsistence and environmental information as well as independent dating control for the tentative cultural phase sequence so far developed.

Historical sites recorded in the coal field include several homesteads, roads and small coal mines, and a number of camps, and goat and sheep raising pens. These reflect both Mormon and Gentile homesteading, stock raising, transportation, woodcutting and coal mining activities. Euroamerican occupation here dates from the 1870s to the present, although most of the sites recorded are from the first half of the twentieth century. The northwest part of the survey area is immediately adjacent to the present community of Alton, established in 1909 by settlers of the surrounding valleys, and a number of recorded sites relate directly to the history of this community. Some Navajo occupation associated with woodcutting and ranching from the late 1940s to the 1960s is also evidenced, primarily in the southeastern portion of the coal project area near Skutumpah and the head of Johnson Canyon.

Goals of the survey project include analysis of field data and diagnostic ceramic and projectile point collections and integration of this and previous area studies, primarily Halbirt's 1980 survey, to examine and outline the specific research potential of the total 7690 hectare (19,000 acre) or larger area proposed for strip coal mine development.

-Donald R. Keller

NAVAJO NATION DIVISION OF COMMUNITY DEVELOPMENT

As part of its responsibility to provide Navajo people living in rural environments with power and water facilities, the Navajo Nation Division of Community Development has completed an archeological inspection of approximately 27 km of a proposed power line right-of-way on tribal lands just southwest of Hovenweep National Monument. The survey took place on and southeast of Cajon Mesa (south-southwest of Wickiup Canyon), in Navajo Canyon, and along Montezuma Creek south of the Hatch Trading Post. Using an inspection corridor 20 m wide, a total of about 54 ha of land was visually inspected using a Class III pedestrian survey. Thirty-three prehistoric and historic sites were documented during the project. Eleven of these sites are located outside of the project corridor. An average of one site per kilometer (range 0-4) was found within the project right-of-way. The sites include Archaic and undated lithic scatters, Basketmaker III/Anasazi Pueblo II-III residential and special activity sites, and miscellaneous abandoned twentieth century Navajo residential homesites and special activity areas. Three of the sites represent dual prehistoric and historic components.

The one dated lithic site is located on the western end of Cajon Mesa and possesses two Pinto-like projectile point fragments suggesting an Early Archaic age. The other lithic sites are aceramic and lack additional chronological control. The potential would seem good that some of these, especially a large, partially buried site in Navajo Canyon, are Archaic in age. The single Basketmaker III site includes a pithouse and surface rooms comprised of upright slabs; it is located on the first alluvial terrace in Navajo Canyon.

The Anasazi Pueblo II-III sites include small 1-2 room structures that are probably special activity units associated with agricultural field maintenance. Other sites include sherd and lithic scatters and larger multi-room structures with single (and in one case multiple) kiva depressions and well-formed midden deposits. The majority of these structural sites were located southeast of Cajon Mesa, between Wickiup Canyon and the Ismay Oil Field. These sites would appear to constitute part of an Anasazi community. One of the sites possesses two kiva depressions, and another has a free-standing tower or round room feature. These two sites may represent the core of the community.

The report for this project is still in preparation. Inquiries to the Navajo Nation Archaeology Department about these sites should reference report NNCRMP-86-434.

-James M. Copeland

BUREAU OF LAND MANAGEMENT

A literature review, reconnaissance and intensive inventory of selected areas in the upper Escalante River drainage is being conducted as part of an ongoing inventory effort by the Bureau of Land Management, Cedar City District. These inventories are aimed at identification of high density/high value areas and the development of research goals and opportunities. Specific problem areas include:

- Defining the geographic distribution and formal variation of site types lumped under the working terminology "Escalante Ground Stone Complex."

- Determining the geographic range and time depths of the local Anasazi occupation. To date, the occupation seems restricted to Late Pueblo II times in upland locales.

- Determining the distribution of Fremont "habitation sites" which seem to occur along the perennial streams but may also occur in a variety of environments.

After 60+ years of sporadic effort to develop a tree-ring sequence for the Virgin Anasazi area, success seems to be at hand. Professor William Robinson of the Laboratory of Tree-ring Research recently reported dates for sites ranging from the Kaiparowits Plateau to the St. George Basin.

During the fall of 1986, site 42KA2667, an early Pueblo II Virgin Anasazi habitation site was excavated under the direction of Richard Thompson, Principal Investigator, and Barbara Walling, Field Supervisor, prior

to upgrading Kane County Route 136 in Johnson Canyon. The excavation revealed a roomblock spanning the road, two well-preserved pithouses and a number of courtyard features. The report is in preparation.

-Douglas B. McFadden

COMMENTS

Reply to Gary M. Brown

Michael D. Metcalf and Kevin D. Metcalf
Midwest Archeological Consultants, Inc.

Brown's (1987) review of our Castle Valley report (Black and Metcalf 1986) serves to point out some weaknesses in our report and, more particularly, in the discriminant analysis-based predictive modelling approach we used, but the review is wide of its aim in several respects. First, we are embarrassed to note that it is indeed not explicit that variables used in the model are measured in feet. All distances measured in Chapter 5 are in feet, while the distances referenced in Table 28, Chapter 6, are in meters or kilometers.

Our proposed revisions of Fremont chronology are based on an exhaustive literature review as well as the results of our survey, and we do not feel it inappropriate to have included it. If the ideas presented have merit, they will withstand the test of new data; if not, they will be discarded without regret. The purpose of the presentation was to generate new ideas for discussion and testing. The fact that a solution to a problem has evaded the experts has no relevance whatever. Brown's contention that we are blinded by a High Plains/hunter-gather theoretical bias seems to stem from statements made in several separate sections of our report. We are accused of equating point styles with cultures and of assuming the Plains influence is indicated by the presence of point types that are common on the High Plains. A careful reading of what we actually say should temper these statements. We do, at one point, state that there is a "culture area" overlap on the Northern Colorado Plateau that has been underemphasized (p. 143), but we do not contend that Plains point types or types first defined in the Plains literature are equivalent to Plains cultures.

Holmer (1986:101, 104-105) recognizes similarities between Plains-defined types and Northern Colorado Plateau specimens, specifically mentioning Hawken, Mallory and McKean Lanceolate. It also should be pointed out that the date range for San Rafael/Mallory of about 2550 to 1850 B.C. at Sudden Shelter (Holmer 1980:Table 13) is essentially identical to the range of dates on the Northwestern Plains for the same point type (Frison 1978; Miller 1985). We make no statements about origins, mechanisms of influence or direction of stylistic flow. As an aside, we see a general "stylistic flow" in point types from the Great Basin-Northern Colorado Plateau to the Wyoming Basin and

High Plains during much of prehistory, including Late Paleoindian, Early Archaic and Late Prehistoric, if not more. Schroedl (1976) also makes note of Plains influences during the late Green River Phase of the eastern Plateau. Finally, in a proposed phase sequence for the Wyoming Basin, Metcalf (1983) stresses the importance of influences from the west during several periods, most notably during the early Late Prehistoric Uinta Phase.

We also contend that our reliance on hunter-gatherer theory is quite general in nature and has not biased our approach to modelling. We point out (p. 119) that the modelling approach operates in a correlative fashion. These correlations are between site-suitable locations and certain environmental variables. The modelling approach itself does not depend on any particular theoretical base. Explanation of observed patterns in the data and, to a lesser extent, selection of variables for measurement should depend on some theoretical base.

Brown has correctly identified a flaw in our model, one we discuss at some length in the report (pp. 137-138). The main failing of the Emery Tract model was its inability to correctly classify Fremont habitations, pediment sources of lithic raw materials and other sites in the lowest elevations of the project area. Model variables which should measure Fremont habitations include horizontal distance to defined water source, vertical distance to defined water source and elevation. Elevation should also reflect the presence of the low elevation lithic procurement sites. The fact that these site types do not show up in the model relates to the overwhelming preponderance of sites in the higher elevation pinyon-juniper zones of the project area. As we stated (p. 137), the models are effective for the pinyon-juniper zone. We suggest that a sample stratified either by elevation or by separation of the pinyon-juniper from desert scrub zones would eliminate some of the inherent problems (this would necessitate a separate set of variables, in effect making two separate models). It is not a theoretical bias against Formative stage cultures in general or the Fremont in particular which renders this model ineffective. Most of the study area is in the pinyon-juniper zone; most of the sites are in the pinyon-juniper zone, including a number of Fremont short-term camps and procurement/processing sites. In the face of this, all low elevation sites, regardless of ethnicity, time period or site function—are mispredicted. In an ideal world, we would have proceeded to generate this second set of models for low elevation sites. The reality is that the project had expended its budget and fulfilled the terms of the contract, and this second step was not done.

Brown is correct in noting that caution should be exercised in using the model. We did, indeed, negate the simple random sample by dividing the 80-acre survey quadrats into 40-acre analytical units. We felt that the gain in numbers of observations would offset the loss in sampling rigor, but this is something that can

only be judged by actual performance figures from the model.

Our philosophy regarding the discriminant analysis approach to predictive modelling has evolved over the last several years. We feel that the approach has reached about its maximum utility without major revision. A model simple and economical enough to be practical is simply not very powerful. The many inherent flaws are discussed in various sources (Berry 1984; Bettinger 1980; Black and Metcalf 1986; among others). Brown is quite correct in being critical of the Castle Valley model, but he has misidentified the source of its weaknesses.

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Predicting Archeological Resources Without Archeological Theory?

Gary M. Brown
P-III Associates, Inc.

I should be flattered that my critique of Black and Metcalf's (1986) Castle Valley report stimulated a reply even longer than my rather lengthy review. In this regard, I fail to see how "the review is wide of its aim", since my goals were simply to identify certain strengths and weaknesses in what I found to be a generally exemplary report and to raise a few issues that might profit from general discussion or clarification. Black and Metcalf assert that I found fault with the Castle Valley predictive model for the wrong reasons, implying that the approach itself is flawed and impractical. Again, my goal was simply to review *their* application of discriminant analysis-based predictive models, not to reiterate the basic problems discussed cogently by Berry (1984).

Predictive models have been generated for a variety of places, and I am well aware of the notion that "sites" (generally limited to prehistoric loci) anywhere in the world can be *correlated* with modern environmental factors without regard to theoretical considerations about human locational strategies. Only further research will make it possible to evaluate this argument. At any rate, Black and Metcalf's (1987) claim that their model is purely correlative and lacks theoretical underpinnings appears to contradict their rather equivocal discussion of their methodology (Black and Metcalf 1986:115-119).

While Black and Metcalf (1987) acknowledge that their sampling procedures undermined their statistical methods, they seem to imply that this effect can be gauged on the basis of "performance figures." I hope this is not taken to mean figures published in their report, since the 82% correct classification rate advertised in their abstract and elsewhere is also invalidated by the sampling problem and additional matters discussed in my review (Brown 1987). Only additional survey work can produce data for a valid test of the model.

As Black and Metcalf claim, theirs' is not the only predictive model plagued by such problems. As an aside, the fact that indeed the Castle Valley model

regret that it was not possible to complete their scholarly obligations within this report.

The central concerns of the Quail Creek excavations were culture-historical. Goals of the data recovery program focused on continuity and change in architecture, ceramic and lithic artifacts, and sampling for floral information on subsistence and environment. Recovery of chronological information is high on the order of importance in the Virgin Anasazi area, for an independent, local and regional chronology is fundamental to our endeavors. There are data that were neglected in the excavations: most notably outdoor areas in habitation sites and small finds. Given that those decisions were made, a formal, critical discussion of community patterns, architectural and ceramic variability, and chronology will be the most useful contributions the authors can make. Particularly if the Pecos Classification and Kayenta styles of design can be pushed back toward the eastern horizon and they give us a fresh, direct look at what we have in the Virgin area, on a chronometric scale, they will have brought to completion a most important contribution.

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Pottery of the Great Basin and Adjacent Areas, edited by Suzanne Griset. Anthropological Papers 111. University of Utah, Salt Lake City. 1986. xvii + 170 pp., figures, tables, references, index. \$17.50.

Reviewed by Pamela Endzweig, Department of Anthropology, University of Oregon

This volume is the result of the 1983 Bishop Pottery workshop, an informal meeting organized by Suzanne Griset to encourage exchange of information and opinions on the subject of Great Basin pottery variously defined as Intermountain ware, Shoshonean ware, Brown ware, Gray ware, Utility ware or Plain ware. It constitutes a status report on the subject, featuring a dozen papers contributed in large part by the workshop participants, as well as a valuable 45-page indexed and annotated bibliography.

A major theme that pervades this volume is the degree of variability that is becoming evident in Great Basin pottery, especially within such "established" wares as Owens Valley Brown Ware, Shoshone Ware and Southern Paiute Ware. That this should not be

surprising is evident from Prince's paper, written in 1959 and now finally published as part of the present volume. Prince presents descriptions of pottery from six Nevada counties. Comparisons based on thin section analysis "give the impression that mutually exclusive traits are uncommon", with differences in materials reflecting local geology, rather than a choice on the part of the potters. While Prince feels that vessel shape may be most useful, he notes that this avenue is limited by the small sample of entire pots available for comparison.

Pippin's assessment echoes Prince's recommendation that plain pottery of the Great Basin be treated as one ware until the significance of the variability demonstrated in both the ethnographic and the archeological records is known. His detailed and enlightening literature review reveals numerous inconsistencies and contradictions with regard to typology and description, dating, origins and distribution. One cannot help but feel that some of these problems will have to be worked out before the behavioral questions that Pippin sees as a "starting point in formulating future directions for research" can be successfully addressed.

The six "Areal Reports" go far in improving the published data base, the inadequacy of which all authors agree upon. They include regions from which pottery has been previously unknown and/or undocumented. Tuohy presents descriptions of complete ethnographic specimens collected in Utah, Nevada and Idaho, along with historical documentation and photographs of the pieces. As throughout this volume, catalog numbers are provided to facilitate access by future researchers. This is followed by discussions of pottery from eastern Idaho by Butler, descriptions of three sherds from Honey Lake Valley by F. and H. Riddell, Siskiyou Utility Ware and fired clay from south-central Oregon by Mack, and pottery from Mesquite Flat, Death Valley, by Wallace.

Butler illustrates problems of identification and classification with an example of a broken pot in which body and bottom sherds differ in mineral composition, leading to identification of part of the vessel as "typical" Sevier Ware, and the rest as Great Salt Lake Gray. In light of the overlap, Butler notes between gray wares, and the difficulty of distinguishing between some Fremont and Shoshonean pottery, one must view his type descriptions as working hypotheses, as advocated by Bettinger in this volume.

Weaver's article on pottery production, use and distribution in east-central California, while included with the preceding "Areal Reports", is as appropriately considered with the following group of "Analytical Approaches." Each of these papers explores a different dimension of plain ware pottery, including mineral composition, intraregional distribution, surface treatment and function.

Weaver's paper discusses the results of a survey of public and private site records for Inyo and Mono counties, covering a total of 4363 sites. The low incidence of

pottery-bearing sites in Mono County (1.9%) is suggested to indicate that pottery is incidental to procurement activities associated with Jeffrey pine dominated forests, since a large proportion of the recorded Mono County sites are in this setting. Inyo County reveals an unexpectedly high percentage of pottery-bearing sites in the Panamint-Death Valley area (31.1%) in contrast to Owens Valley (14.0%), an apparently inverse relationship between population density/sedentism and proportion of pottery-bearing sites. Weaver attributes this to differences in settlement patterns. While alternative explanations, including different cultural groups, and variations in vessel function and size come to mind, these are certainly testable propositions and one hopes that more studies of this sort will follow.

Tuohy and Strawn present a petrographic analysis of 36 thin sections from the Nevada and California deserts as well as 17 thin sections published by Coale in 1963. Once again, mineral constituents are found to cross-cut familiar pottery types. The authors suggest that mineral characteristics other than merely composition may prove to be culturally diagnostic, including grain size, roundness and relative percentages, particularly when considered relative to geographic distribution of morphological types. Published ceramic characterizations of this sort will aid in reducing the subjectivity of intuitive groupings and serve to establish a basis for larger scale comparisons.

Bettinger's study utilizes the ubiquitous body sherds that are so much more numerous than "diagnostic" rim and bottom sherds. He identifies five modes of surface treatment and uses Robinson's Index of Agreement to compare their occurrence statistically within and between three assemblages of Central Owens Valley Brown Ware. The results show consistent exterior surface treatment both between vessels and between sites. Interior and joint exterior-interior surface treatment are suggested to vary between individual vessels, but occur in constant proportions between assemblages. In addition, Bettinger finds wall thickness to be more variable between than within individual vessels. A final decision on the validity of presently defined wares may be too much to expect from these patterns by themselves, but Bettinger's method opens a new avenue of analysis and it is refreshing to see the kinds of quantitative treatments that are routine in lithic studies finally make their way into those of plain ware pottery as well. Additional insights of the relationships of vessel size, wall thickness, function, shape and surface treatment should come from comparative studies of complete vessels.

James' paper explores the nature of Fremont presence on the Western Periphery. He hypothesizes, based on ethnographic analogy and archeological evidence, that vessel shape and surface treatment should indicate vessel function, and, indirectly, site use and degree of permanence. This, in turn, would suggest to him either seasonal (Hypothesis 1) or permanent (Hypothesis 2) occupation of the area, or, alternatively,

trade connections with Pre-Numic/Numic peoples of the region (Hypothesis 3). Unfortunately, the distinction between the former two alternatives hinges on the presence of major habitation sites. Ceramic data identify only one such site, the Garrison Site, with certainty. The others are interpreted as temporary camps. James' rejection of seasonal hunting and gathering forays alone because of distance from eastern villages is rather unsatisfying, and would suggest that the method, given the present sample (vessel shape is known for only 15 of the 94 sites), is not strong enough to answer the question at hand. The presence of Snake Valley Black-on-Gray Ware near the western edge of the Fremont pottery boundary is taken to represent either permanent occupation of the area or trade.

James recognizes the limitations of the method and rightly suggests that it be used in conjunction with other cultural indicators and techniques such as sourcing, and residue and pollen analysis. In spite of its limitations with regard to the Fremont question at this point in time, there would seem to be considerable utility in the use of pottery function to identify site function.

Griset's *Notes on Ceramic Analysis* provides a proper conclusion to this volume, and includes enough ideas to convince even the most skeptical reader of the potential of plain wares in contributing to our knowledge of the history and lifeways of Great Basin peoples and the behavior of desert hunter-gatherers. Griset is to be applauded for her efforts in organizing the workshop and stimulating interaction and exchange on this much neglected subject. The volume expands tremendously the range of questions traditionally asked of Great Basin pottery and one can only look forward to future follow-through on the ideas presented.

ANNOUNCEMENTS

NEWSLETTER SUBMISSIONS

The deadline for submission of current research reports, announcements, news items and letters to the editor for the next issue of the *UPAC News* is July 2, 1987, shortly after the summer meetings. Submissions should be titled, typed and follow the current *American Antiquity* style guide. Thanks to all who contributed information and written reports for this issue and to Gary M. Brown for help with proofreading.

IMACS COMMITTEE MEETS

The IMACS committee met earlier this year to discuss revisions and additions to the IMACS site form and handbook. Changes and new codes added to the existing list should be available by May 1, 1987. The IMACS editorial committee initially endorsed adoption of two new forms, "Prehistoric Architecture Attachment" and "Prehistoric Stabilization Attachment." Inclusion of these optional forms into the IMACS system was postponed because the editing committee felt that they were "verbose, incomplete, and poorly organized",

