

ARCHAIC THROUGH FORMATIVE TRAJECTORIES NORTH OF THE ANASAZI

by

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The Formative period in northeastern Utah and northwestern Colorado remains enigmatic. Fremont cultural manifestations are known in the region, but, at the same time, hunter and gatherer groups were also present. Debate currently focuses on whether two distinct cultural manifestations were present or if the seemingly disparate groups represent a single cultural entity. Archaeological data recovery for the Rocky Mountain Expansion Loop pipeline project (Horn et al. 2003) examined a number of Archaic and Formative-period sites in the region. Data from these sites show patterns of subsistence and technology that enable a model to be devised that incorporates climatic fluctuations, environmental population carrying capacity, and population movements and density. The model illustrates a trajectory of human behavior and response that originates in the Archaic and terminates at the end of the Formative.

The Rocky Mountain Loop project area in northeastern Utah and northwestern Colorado traverses what is presently, and has probably been since the Archaic, a marginal environmental setting in terms of available resources. This is reflected in the site database, as few of the sites we investigated were highly complex. The setting, however, seems to have made the data sets that we used quite sensitive to changes and trends that may be masked in areas of greater occupational intensity.

We conducted excavations at 23 Archaic components at 12 sites and 19 Formative components at 15 sites (Table 1). The age ranges quoted in Table 1 are based on radiocarbon dates obtained during project excavations and accepted date ranges for particular projectile point types. Ten of the Archaic sites were in Utah and two were in Colorado. Matson's (1991) phase sequence for the greater Colorado Plateau was used to segregate the Archaic site components into chronological periods (Early: 7,800-4,000 B.C.; Middle: 4,000-2,000 B.C.; Late: 2,000-1,000 B.C.; Terminal: 1,000 B.C.-A.D. 1). These were six Early Archaic components at three sites, two Middle Archaic components at one site, four Late Archaic components at four sites, and 11 Terminal Archaic components at seven sites. Using Binford's (1980) residential mobility model, we classified 10 components as residential bases, three as field camps, four components as short-term camps, and the function of six components remained unknown because of a dearth of information.

The 15 Formative sites were 13 in Utah and two in Colorado. Putting the 19 components in regional cultural classifications, we were able to identify two Anasazi, one Anasazi or Fremont, one Gateway, one Aspen tradition, one Formative-era Forager, and eight unknown Formative. These cultural distinctions were not found to be particularly informative in our synthesis, as the data trends we noted cross-cut cultural affiliation designations. More helpful was placing the components into three chronological periods of Early, Middle, and Late: Early being A.D. 1-500, Middle being A.D. 500-1000, and Late being A.D. 1000-1300. As such, we examined six Early, nine Middle, and four Late Formative components. Again, using Binford's site typology, components were identified as being three short-term camps, three field camps, three short-term base camps, eight residential bases, and two unknown because of insufficient data.

Table 1. Components Investigated by Alpine During the Rocky Mountain Expansion Loop Data Recovery Project, Colorado River Basin Section.

Site	Component	Archaeological Unit	Age Range	Reference
42SA11540	1	Early Archaic	6200-5490 B.C.	Davis 2003b
42SA11540	2	Early Archaic	5500-5300 B.C.	Davis 2003b
42SA11540	3	Early Archaic	5470-4370 B.C.	Davis 2003b
42SA11540	4	Early Archaic	4490-3780 B.C.	Davis 2003b
42DA392	N/A	Early Archaic	4440-4000 B.C.	Eckman et al. 2003
42GR1547	2	Early Archaic	4415-4180 B.C.	Firor 2003
42SA11544	1*	Middle Archaic	pre-3000 B.C.	Eckman et al. 2003
42SA11544	2	Middle Archaic	3345-2460 B.C.	Eckman et al. 2003
42SA11586	1	Late Archaic	2035-1650 B.C.	Greubel et al. 2003
42GR1548	1†	Late Archaic	1600-1130 B.C.	Backer 2003
42SA11540	5	Late Archaic	1390-1020 B.C.	Davis 2003b
5ME422	1	Late Archaic	1218-814 B.C.	Smith and Davis 2003
42GR1548	2‡	Terminal Archaic	1055-385 B.C.	Backer 2003
5ME422	2	Terminal Archaic	831-407 B.C.	Smith and Davis 2003
42GR1548	3§	Terminal Archaic	905-410 B.C.	Backer 2003
5GF620	1	Terminal Archaic	790-410 B.C.	Davis 2003c
42SA24052	1	Terminal Archaic	790-370 B.C.	Eckman et al. 2003
42UN1476	1	Terminal Archaic	600 B.C.-A.D. 260	Cater 2003b
42GR1548	4**	Terminal Archaic	400-200 B.C.	Backer 2003
42SA24291	N/A	Terminal Archaic	396 B.C.-A.D. 212	Eckman et al. 2003
42SA24052	2	Terminal Archaic	355 B.C.-A.D. 30	Eckman et al. 2003
42GR814	1	Terminal Archaic	350 B.C.-A.D. 55	Backer et al. 2003
42SA11540	6	Terminal Archaic	350 B.C.-A.D. 120	Davis 2003b
42UN1477	1	Early Formative	100 B.C.-A.D. 350	Cater 2003c
42UN1476	2	Early Formative	10 B.C.-A.D. 670	Cater 2003b
42SA9052	N/A	Early Formative	A.D. 77-734	Eckman et al. 2003
5RB950	N/A	Early Formative	50 B.C.-A.D. 950	Davis 2003d
42SA11586	2	Early Formative	A.D. 360-610	Greubel et al. 2003
42DA196	N/A	Early Formative	A.D. 370-605	Eckman et al. 2003
5GF620	2	Middle Formative	A.D. 390-630	Davis 2003c
42UN1474	1	Middle Formative	A.D. 380-850	Cater 2003a
42GR814	2	Middle Formative	A.D. 390-925	Backer et al. 2003
42UN1477	2	Middle Formative	A.D. 470-850	Cater 2003c
42UN1480	N/A	Middle Formative	A.D. 660-935	Eckman et al. 2003
42SA11581	4	Middle Formative	A.D. 617-974	Firor et al. 2003
42SA11633	N/A	Middle Formative	A.D. 670-1109	Eckman et al. 2003
42SA11581	2	Middle Formative	A.D. 850-995	Firor et al. 2003
42SA11581	3	Middle Formative	A.D. 754-1231	Firor et al. 2003
42UN1474	2	Late Formative	A.D. 810-1210	Cater 2003a
42GR2866	N/A	Late Formative	A.D. 775-980	Davis 2003a
42SA11542	1	Late Formative	A.D. 980-1195	Eckman and Horn 2003

* This component was dated by to its position relative to an overlying radiocarbon-dated component.

† Operation Unit J.

‡ Occupation Zone 1.

§ Occupation Zone 2.

** Operation Unit I.

In synthesizing Archaic and Formative data from the project, beneficial information was drawn from the Northern Colorado River Basin Prehistoric Context (Reed and Metcalf 1999); data from the TransColorado Pipeline project (Reed 2001); which was a data set from a parallel pipeline

about 50 miles to the east in Colorado; a recent synthesis of data for the Uintah Basin by Spangler (1995); and consideration of the Formative in northeastern Utah by Madsen and Simms (1998) and others (Barlow 2002; Berry and Berry 2001; Bright and Ugan 1999; Madsen 1979; 1982, 1989; Simms 1986, 1990). The following summarizes our findings from the project:

Short-term base camps of small nuclear families that foraged locally for plants and animals characterized the Early Archaic. These were evidently highly mobile people that took advantage of the most abundant and nutrient rich resources on a large landscape level. Firehearths were small and lacked slab lining or fire-cracked rock. Ground stone was present and chipped stone technology was variable, including both core reduction and biface manufacture.

The Middle Archaic corresponds to a period of dry and warm climatic shift, generally referred to as the Altithermal (Jennings 1986; Matson 1991). At this time, our project area seems to have been largely abandoned. Regional data from elsewhere in Utah and Colorado suggest movement into upland areas – above 6,000 feet – into places like the Uncompahgre, Roan, and Tavaputs plateau, the Gunnison Basin, and the La Sal and Abajo mountains.

The only project site from the Middle Archaic (42SA11544) was situated at the base of a large, prominent sandstone geologic feature surrounded by dune deposits. This would have concentrated runoff and may have resulted in a rather isolated density of floral and faunal resources in an otherwise very bleak and unproductive landscape. Geologic features of this sort may have provided the only places during this period where resources were sufficient to sustain human use, and then only on a short-term basis. To survive in such a difficult environment, the subsistence base broadened and lower-ranked resources were incorporated. Lower ranked plant resources are considered to be seeds or other plant foods that required more or specialized preparation techniques to render them edible (Francis 2000; Pugh and Johnson 2000; Reed and Metcalf 1999; Smith and Martin 1999; Smith and McNeas 1999; Wandsnider 1997).

As the climate moderated, the project area was reoccupied during the Late Archaic with subsistence and material culture closely resembling the Early Archaic, though utilization of lower-ranked resources was still necessary, perhaps because of the area's lower productivity in general. Corresponding with this may have been population and resource stress in upland areas where utilization of lower-ranked resources took place earlier.

The emergence of basin houses in the Middle and Late Archaic in the uplands of Colorado (Shields 1998; Metcalf and Black 1991; Wheeler and Martin 1984) and in Utah (Janetski et al. 1991; Louthan 1990; Talbot and Richens 1993) may reflect shortened foraging ranges, increased sedentism or at least anticipated reoccupation sufficient to warrant the investment of time and effort in construction, and, perhaps, territory formalization. We suspect that this may reflect carrying capacity stress in the uplands. The lowlands, consequently, may have served as a safety valve for the uplands. It is during this period that slab-lined fire features appeared in our project area, suggesting anticipated reoccupation of sites, perhaps seasonally, suggesting the initial stages of territorial formation. They may also reflect shortened foraging ranges and the inclusion of less palatable lower-ranked resources in the diet.

During the Terminal Archaic, a substantial increase in the intensity of use was evident in the project area and throughout the region, probably reflecting increased populations. More ground stone, variable fire features, and more diverse seed use in the project components suggest an emphasis on floral resources, a broader subsistence base compared to the preceding period, and the intensification of food processing due to the use of lower-ranked resources that required more preparation prior to consumption.

These factors — a larger human population and a shift toward a more diverse array of lower-rate-of-return plant resources — imply constricted foraging ranges, more intensive use of the landscape, and reduced residential mobility. Population pressure may have provided the impetus for more intensive use of lower elevation terrains, a settlement adjustment made possible by the change in subsistence.

That residential mobility decreased during the Terminal Archaic is best demonstrated by the discovery of a basin house in the Cisco Desert (42GR1548) that was evidently reoccupied and remodeled through time. As has been proposed for upland areas where basin houses appeared considerably earlier in time, the basin house in the Cisco Desert indicates that populations in the area had increased to the point where foraging on a large scale was no longer economically viable and local resources were utilized more intensively. At the same time, lithic technology evidence shows that logistical mobility probably increased. Because of contracted foraging territories, hunters were forced to engage in long-distance, long-duration forays in order to access more productive big game ranges. The increase in logistical mobility and the continued prominence of hunting is evidenced by an increased emphasis on biface manufacture and a relatively high shaped tool to core ratio (see Parry and Kelly 1987; Kelly 1988; Torrence 1983). The presence of faunal subsistence remains in components lacking projectile points is evidence that game was taken, but probably not near the campsites. The apparent importance of hunting, despite the seemingly increased reliance on lower-ranked plant resources, may be linked to a dietary need for high-quality protein or the social advantages that accrue to males as a result of hunting success (Hildebrandt and McGuire 2002:232). It is possible that the actual contribution to the diet from large mammals, though welcome and socially significant, was of minor importance in a nutritional sense.

The most salient characteristics of Terminal Archaic settlement and subsistence were increased population pressure, reduced residential ranges, greater logistical organization in big game hunting, and more intensive use of the land. Individual resource patches probably increased in importance because there was a greater risk of food stress or starvation if a particular wild crop failed. Consequently, primitive plant husbandry in the form of burning or otherwise disturbing the habitat in order to encourage the growth of ruderal or weedy species, such as goosefoot and amaranth, probably became quite common. With their knowledge of manipulating and exploiting plant communities and making do with a smaller piece of the landscape, it is reasonable to assume that Terminal Archaic groups immediately perceived the potential advantages of growing maize when true horticulture first made its appearance in the region.

The stage seems to have been well set for the adoption of a horticultural lifeway that would become widespread, if not all-inclusive, during the ensuing Formative period. It is possible that the carrying capacity of the environment in the project area, and possibly regionally, had reached a critical point. Without agriculture, the level of population likely could not be sustained. Regional incorporation of corn agriculture seems to have reset the clock.

The relaxation of stress in the Early Formative is evidenced by less of a focus on lower ranked resources and an increase in residential mobility more in line with what was seen in pre-Terminal Archaic times. However, this moderation was not permanent.

Single instances of maize occurred in only three components spaced throughout the Formative. This minimal but persistent presence of corn could reflect trade or limited horticulture by our site occupants. Subsistence was primarily based on foraging and collecting, with an increase in focus on lower-ranked resources through time. Through time, the variety of utilized floral species increased. The ground stone further substantiates this. Although not a particularly common item, nearly all of the ground stone had grinding patterns typical of wild plant processing, none could clearly be show to have been used on corn. Slab metates emerged in the Late Formative. These

have been correlated with broad-based plant utilization and are seen as evidence for intensification of lower-ranked plant resources.

Along these same lines, a trend of fire features becoming larger through time was noticeable, with a substantial jump in size in the Late Formative. Larger fire features suggest a need to process greater quantities of plant resources. A comparable jump in the volume of fire-cracked rock in the late Formative further suggests intensification of plant food processing, probably reflecting the need to process considerably larger quantities of lower-ranked plants to satisfy dietary needs.

In the Early to Middle Formative, site types in the project area were mainly short-term camps, field camps, and short-term base camps. In the Middle to Late Formative, site types shifted to residential base camps. This is indicative of less residential mobility through time. As in the Late and Terminal Archaic, shortened foraging ranges is also suggested by an increase in slab-lining of fire features, suggesting that there was an expectation that sites would be reoccupied and features reused.

Also noted was an increase in faunal resources beginning in the Middle Formative, perhaps indicating increased logistical mobility in obtaining meat, as was seen in the Terminal Archaic. The lithic assemblage further demonstrates this logistical mobility. Lithic technology in the Early and Middle Formative, showed a return to a mixed core reduction and biface manufacture strategy, similar to Early to Late Archaic assemblages. In the Late Formative, a focus on biface manufacture emerged with few finished tools being found. This suggests bifaces were being prepared at the project sites for use in logistical forays, just as was seen in the Terminal Archaic.

In summary, as the Formative proceeded, there appears to have been a repeat of what happened in the Archaic with population increases, shortened foraging ranges, reduced residential mobility, and increased logistical mobility indicating an overtaxing of the environment's carrying capacity and probable degradation of the environment from overuse. However, at the end of the Formative, no innovation emerged to prevent final population collapse, which corn had been at the end of the Archaic.

Two important conclusions can be drawn from the Rocky Mountain Loop data concerning the Formative period in the project area. First, Formative-period people in the project area lived a hunting and gathering lifeway similar to the preceding Archaic period, but were truly Formative people. That is, the advent of corn agriculture enabled them to continue to reside in the region, whether they participated as farmers themselves, were the recipient of agricultural produce in some manner, or benefited from a reduction of competition for native plants and animals from others relying on agriculture. Madsen and Sims (1998) have suggested a switching behavior among Formative people where sometimes they farmed and sometimes they foraged. Clearly, the people that occupied our project sites benefited from the introduction of agriculture, but there is no evidence that they were agriculturists themselves.

Second, the relief of stress provided by agriculture or access to agricultural products was short-lived, and by the Late Formative, conditions comparable to the Late Archaic returned. This time, there was no innovation to provide a solution to the population/carrying capacity problem. As a result, abandonment of the region seems to have occurred beginning in the 1100s, with no evidence of a Formative presence after the early 1200s. By the time the Ute arrived on the scene, the environment had sufficient time to recover so that higher-ranked resources could again be relied upon for subsistence.

With this in mind, a general concept of the Formative period on a regional scale can be proposed. When agriculture was introduced, certain areas in western Colorado and eastern Utah were suitable environments for successful agriculture. In places like southwestern Colorado and

southeastern Utah, a substantial portion of the area was suitable for agriculture and populations were able to grow as rather cohesive groups recognizable as the distinctive culture we call the Anasazi. Cultural continuity was possible there, even with climatic fluctuations, because sufficient suitable agricultural lands were available, at least until the mid-1200s.

To the north of the Anasazi, the quantity of available land for agriculture was not as widespread as farther south and environmentally restricted to lowland areas with sufficient precipitation or high water tables. Agriculture was initially successful in the Early Formative to provide relief to the deteriorating subsistence situation of the Terminal Archaic. Because the majority of the landscape was probably never suited to agriculture, most regional occupants may never have been actual agriculturists. In times when the climate allowed, substantial agriculture may have been possible over relatively long periods of time allowing florescences of cultural development to take place and become distinctive enough for us to recognize and name as "Fremont" or "Gateway." Agriculture and the cultural development made possible by it clearly influenced everyone in the region.

Unreliability of agriculture in the Late Formative resulted in a cessation of the cultural florescences, with the participants probably switching back to foraging. The florescences are attention getting and important to study, but they were likely not the primary lifeway in the region throughout the Formative, whereas foraging was.

The ability of populations to increase in the Early and Middle Formative was possible because of direct or indirect exposure to agriculture. This population increase alone probably resulted in dietary stress due to the limitations of the carrying capacity of the environment. With the demise of agriculture in the Late Formative, this carrying capacity stress must have increased substantially, resulting in population collapse or exodus.

One of the difficulties in conducting research in the region is our use of terminology and our understanding of the terminology in use. For instance, the concept of the Fremont culture is problematic because it has been applied regionally and should be applied specifically until we have a fuller comprehension of regional dynamics. The Fremont, like other cultural units, is defined by a combination of diagnostic characteristics. At this time, we should be careful not to ascribe Formative period sites as Fremont simply because they fall within what we might consider the Fremont area when they do not show attributes that clearly define them as Fremont. For this reason, concepts like the Uinta Basin Forager are useful constructs because they allow us the flexibility of looking at human processes rather than attempting to fit sites into ascribed cultural realms on the basis of temporal period alone. In the future, we might find that a regional Fremont culture concept can be adequately defined to encompass sites on a regional basis and the Uinta Basin Forager concept can be discarded. In the meantime, the Uinta Basin Forager construct is helpful in conceptualizing processes at work. The debate over what we call things is contentious and at times confusing, but is a natural course of events in archaeology. It is a process that is necessary so that we can come to a consensus about what has taken place. It is not so important what we call things as it is to understand the patterns and processes involved.

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