

7

Interpretation of Features

FIREPITS—METHODS AND REASONS

We have discovered a variety of firepits in the Upper Gunnison Basin. Rock-lined firepits, unlined firepits, and fire-cracked-rock-filled firepits are found with wide ranges of diameters and depths. This morphological diversity is temporally patterned, with some firepit types restricted to time periods. Also, we have found that some debitage, stone tool, and bone spatial distributions are patterned around certain firepit types. I suspect that the differences in firepit construction reflect conscious efforts to create differing burning conditions. We have approached the variability in firepit construction with two methods of study.

First, we have searched the ethnographic record to see how people used firepits and fuels (Appendix I). Second, we have constructed firepits that are similar to some of the prehistoric features. We have burned measured quantities of fuel and measured the heat produced (Appendix J). Although neither of these methods yields unquestionable interpretations, they do point out patterns and suggest a direction for additional study.

SUMMARY OF ETHNOGRAPHIC FUEL AND FIRE USE

It is not unusual to read a report in which an archaeologist's interpretations are based on efficiency or maximizing strategies. We assume that "our" prehistoric people used the closest stone sources or hunted the largest available species. We may see it as logical that concern over heating would have resulted in use of the highest BTU fuel. Yet, the record indicates that to ethnographic peoples, heating a house, even in arctic conditions, seems to be of relatively small concern. It seems logical to us to cook inside to conserve the heat; however, cooking is in fact often done outside—regardless of the latitude. In the most extreme arctic conditions fuels are chosen not because they burn hot but because they are controllable and burn slowly with a low heat output.

Appendix I demonstrates high variability in firepit construction and fuel use that may be environmentally conditioned. There seems to be relatively little concern with building firepits to heat structures, even in very cold regions. Many examples were given of separate cooking areas or structures away from the main domicile. The temperate zones seem to evidence rock lining of hearths in relatively permanent or reused places. This perhaps indicates a curation or maintenance of space. The long-log hearth in which a log is slowly fed into the fire was described for both the subarctic and tropical areas. In all regions, there seems to be less concern for large high-temperature fires, with more effort directed at producing a low-temperature fire that is controlled and fuel efficient.

SUMMARY OF EXPERIMENTAL FIREPIT CONSTRUCTION

The observations reported in Appendix J show that firepit morphology influenced the fuel consumption rate, the heat retention, and the charcoal and ash production. Rock-lined hearths were more fuel efficient and produced a more constant, low-temperature fire than unlined firepits.

We will conduct more firepit experiments that will allow us to isolate the specific factors (for example, depth and rock thickness) that influence combustion. This will allow us to test our ideas about the association between site activities and feature morphology. Testing our ideas about these associations will not only add to our knowledge of this area but will further contribute to the development of method.

Feature types are related to many variable components of the archaeological record with which they may be associated, such as quantities of debitage, source areas for lithic raw material, and stone tool assemblages. For example, in the Upper Gunnison Basin, slab-lined firepits are associated with prodigious quantities of small debitage compared to quantities found near unlined hearths; sometimes Jemez obsidian is associated, as are cherts from the Cochetopa region. We hope to relate feature morphology to associated assemblages for a better understanding of past conditions.

REGIONAL PATTERNING OF FEATURES

Archaeologists have been excavating sites in the Upper Gunnison Basin for twenty years. Over 200 features have been found, and most have been radiocarbon dated. I have devised a simple morphological descriptive classification system (Table 7.1) so that intersite comparisons of features across the entire Gunnison Basin can be made. This classification system is described here.

CLASSIFICATION OF FEATURES IN THE UPPER GUNNISON BASIN

It is assumed that features with differing constructions, shapes, or sizes represent differing functional loci integrated into prehistoric activities in different ways. For example, a rock-lined hearth would have contained a fire used for cooking and heating, just as an unlined hearth would have. The rocks lining the hearth might have been placed there to shore up the hearth's sides during periods of intensive use by many people, or they might have been placed there to help

Table 7.1—Feature typology for the Upper Gunnison Basin.

Feature Type	Age Range	Comments
Fire-cracked rock (FCR)		
Big-deep	3010-5810 B.P.	Several rocks deep
Small-shallow	840-2690 B.P.	One rock deep
FCR outside	2660-3140 B.P.	Rocks removed from pit and stacked or piled
Rock-lined firepits	2920-7550 B.P.	Rocks and slabs used to line firepit
Unlined firepits	460-9800 B.P.	Simple pit hearth
Boiling pits	5690-8550 B.P.	Paired feature for stone boiling
Structures	3300-8030 B.P.	Houses, postholes, middens, storage pits, daub
Amorphous stains	1071-2650 B.P.	Shallow—probable windbreaks or sunshades
Game drives	350-1370 B.P.	On the rim of the Basin

conserve fuel during longer occupations. The unlined hearth and the rock-lined hearth both functioned as cooking hearths, but the variation in types indicates differing ways of integrating this function into other activities on the site. In this example, the different features indicate different social or task group size or different intensity of activities on a site.

Features can be symptomatic of various ways activities were organized within a site. Different kinds of features may also be diagnostic of other prehistoric organizational characteristics, such as curated or maintained space. Curated or maintained space, in turn, may be most often associated with longer-term occupations in which space is used for a variety of activities. Additionally, maintained space is expected in occupations in which anticipated activities occur, such as near a rock-lined firepit or habitation structure. This maintained space may be recognized in the archaeological record as space that has been cleaned of larger items that have been discarded.

Table 7.1 summarizes the following typology of features. The 160 radiocarbon-dated features found in the Upper Gunnison Basin are listed in Table 7.2. The following feature typology describes some but not all of the features found in the Basin. The temporal distribution of feature types is given in Figure 7.1.

FEATURE TYPES

The range of variability in feature morphology is very high in the region. Cultural features exhibit a range of sizes, contents, and construction methods. However, several kinds of features that share some formal characteristics can be recognized.

FIRE-CRACKED-ROCK (FCR) FEATURES. Fire-cracked rock is characterized by its spall shape and often by discoloration from carbonization or heating. The rock from which the spalls are derived varies from tabular sandstone and quartzites to cobbles of river rock. I have divided fire-cracked-rock features into three types as follows: big-deep, small-shallow, and FCR-outside.

BIG-DEEP FIRE-CRACKED-ROCK FEATURES. Big-deep fire-cracked-rock features are over sixty centimeters in diameter and at least thirty centimeters deep; there may

Table 7.2—Radiocarbon-dated features from the Upper Gunnison Basin.

Age B.P.*	Std Dev	Site Number and Name (Feature Number)	Lab Number	Reference	Feature Type
350	60	5CF499 Monarch Pass	Beta-24183	Hutchinson 1990	Game drive
460	70	5GN41 Pioneer Point-1	Beta-3277	Jones 1986a, Dial 1989	Unlined firepit
470	80	5GN41 Pioneer Point-10	Beta-5563	Jones 1986b; Dial 1989	Unlined firepit
720	60	5CF 373 Monarch Pass	Beta-24184	Hutchinson 1990	Game drive
830	60	5GN2478 Elk Creek Village-4	Beta-85136	Rood 1998	Unlined firepit
840	80	5GN1668 Dillon Trail-2	Beta-3276	Jones 1986a	Small-shallow FCR
1020	70	5GN1664 Marion 21c	Beta-8117	Rossillon 1984	Small-shallow FCR
1020	50	5GN212 Iola-21	Beta-3296	Jones 1986a	Small-shallow FCR
1060	60	5CF373 Monarch Pass	Beta-24185	Hutchinson 1990	Game drive
1071	45	5GN318	Gx-7112	Black et al. 1981	Stain
1090	60	5GN1664 Marion 21b	Beta-8118	Rossillon 1984	Small-shallow FCR
1150	70	5GN212 Iola-21	Beta-3297	Jones 1986a	Small-shallow FCR
1370	70	5GN2478 Elk Creek Village—House 6	Beta-85139	Rood 1998	Stain
1370	70	5GN396	Beta-97298	Notes on file WSC†	Stain
1370	60	5SH49 Old Agency Fortified Site	Beta-12198	Lyons and Johnson 1993	Game drive
1390	90	5GN2367-1	Beta-56254	Conner and Hutchins 1993	Small-shallow FCR
1460	70	5GN810-5	Beta-65286	Conner 1994	Small-shallow FCR
1530	90	5GN1835 Tenderfoot-37	Beta-66833	Stiger 1993	Small-shallow FCR
1530	70	5GN810-4	Beta-58007	Conner and Hutchins 1993	Small-shallow FCR
1530	110	Indian Creek		J. Fike, pc 1996	Unlined firepit
1560	50	5GN1835 Tenderfoot-85	Beta-108811	Notes on file WSC†	Unlined firepit
1580	70	5GN42 Soap Creek F8	Beta-8121	Jones 1995	Stain
1680	80	5GN810-2	Beta-58006	Conner and Hutchins 1993	Small-shallow FCR
1750	70	5GN1835 Tenderfoot-57	Beta-85702	Notes on file WSC†	Unlined firepit
1770	50	5GN42 Soap Creek-1	Beta-3279	Jones 1986a	Stain
1780	80	5GN1835 Tenderfoot-77	Beta-97569	Notes on file WSC†	Unlined firepit
1820	40	5GN1835 Tenderfoot-51	Beta-77626	Notes on file WSC†	Small-shallow FCR
1870	60	5GN1835 Tenderfoot-26	Beta-66834	Stiger 1993	Small-shallow FCR
1950	90	5GN1835 Tenderfoot-35	Beta-66829	Stiger 1993	Small-shallow FCR
2000	60	5GN1664 Marion 13a	Beta-8116	Rossillon 1984	Small-shallow FCR
2050	60	5GN2478 Elk Creek Village—House 7	Beta-85140	Rood 1998	Stain
2130	80	5GN1664 Marion 13b	Beta-8115	Rossillon 1984	Small-shallow FCR
2140	60	5GN42 Soap Creek F9	Beta-8122	B.A. Jones, pc 1998	Small-shallow FCR
2200	210	5GN207 Willow Creek-69	Beta-2102	Jones 1982	Small-shallow FCR
2200	100	5GN207 Willow Creek-107	Beta-2103	Jones 1982	Small-shallow FCR
2350	120	5GN289-1 Taylor Park	Beta-11187	Black 1986	Small-shallow FCR
2520	80	5GN1835 Tenderfoot-68	Beta-85708	Notes on file WSC†	Unlined firepit
2650	180	5GN289-2 Taylor Park	Beta-14919	Black 1986	Stain
2660	80	5GN210 Stevens Creek-28	Beta-2106	Jones 1982	FCR outside
2690	80	5GN247 Fishing Access-23	Beta-3286	Jones 1986a	Small-shallow FCR

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Table 7.2—continued

Age B.P.*	Std Dev	Site Number and Name (Feature Number)	Lab Number	Reference	Feature Type
2870	80	5GN212 Iola-32	Beta-3288	Jones 1986a	Unlined firepit
2920	70	5GN2460 Checkers-19	Beta-74317	Jones 1995	Rock-lined firepit
2950	90	5GN247 Fishing Access-1	Beta-3281	Jones 1986a	FCR outside
3010	70	5GN247 Fishing Access F1	Beta-5562	Jones 1986b	Big-deep FCR
3130	190	5GN247 Fishing Access-22	Beta-3285	Jones 1986a	FCR outside
3140	80	5GN212 Iola-310	Beta-2098	Jones 1982	FCR outside
3240	60	5GN2478 Elk Creek Village4, AMS	Beta-97301	Rood 1998	Midden (structure)
3200	60	5GN2460 Checkers-17	Beta-74316	Jones 1995	Rock-lined firepit
3210	80	5GN1835 Tenderfoot-48	Beta-76619	Notes on file WSC†	FCR outside
3300	90	5GN247 Fishing Access-19	Beta-3282	Jones 1986a	Burned daub
3360	80	VanTuyl Village level 2	Beta-97302	Notes on file WSC†	Midden (structure)
3384	80	5GN2478 Elk Creek Village—House 1 (average of 3 dates)	Beta-85133, Beta-85134, Beta-85135	Rood 1998	Structure
3470	80	5GN1668 Dillon Trail-6	Beta-3274	Jones 1986a	Unlined firepit
3530	80	5GN1835 Tenderfoot-58	Beta-85703	Notes on file WSC†	Unlined firepit
3545	50	5GN2478 Elk Creek Village—House 5 (average of 2 dates)	Beta-85138, Beta-85137	Rood 1998	Structure
3570	60	5GN1835 Tenderfoot-45	Beta-76618	Notes on file WSC†	Rock-lined firepit
3590	60	5GN247 Fishing Access-9	Beta-3278	Jones 1986a	Structure
3740	80	5GN1835 Tenderfoot-32	Beta-66840	Stiger 1993	Unlined firepit
3750	70	VanTuyl Village level 3	Beta-87717	Notes on file WSC†	Midden
3760	210	5GN222 Dry Creek F1	Beta-5564	Jones 1986b	Rock-lined firepit
3806	130	5GN10 Willow Creek-8	Tx-3629	Stiger 1981	Structure
3895	80	Bike Trail Midden average of two dates		J. Fike, pc 1996	Midden (structure)
3936	260	5GN10 Willow Creek-13	Tx-3631	Stiger 1981	Daub (structure)
3943	380	5GN344	Gx-7115	Black et al. 1981; Black 1983	Unlined firepit
4030	90	5GN2140-5	Beta-58008	Conner and Hutchins 1993	Big-deep FCR
4070	70	5GN1835 Tenderfoot-49	Beta-76620	Notes on file WSC†	FCR outside
4116	90	5GN10 Willow Creek-8	Tx-3630	Stiger 1981	Structure
4130	70	5GN2460 Checkers-9	Beta-74135	Jones 1995	Daub (structure)
4150	150	5GN1835 Tenderfoot-36	Beta-66830	Stiger 1993	Unlined firepit
4190	150	5GN169 F1	Beta-49244	Jones 1996	Unlined firepit
4286	290	5GN10 Willow Creek-5	Tx-3618	Stiger 1981	Rock-lined firepit
4300	70	5GN1835 Tenderfoot-42	Beta-76616	Notes on file WSC†	Big-deep FCR
4432	59	5GN205 Elk Creek G1 (average of 3 dates)	Tx-3150, Tx-3157, Tx-3151	Euler and Stiger 1978	Structure
4440	70	5GN1835 Tenderfoot-66	Beta-85707	Notes on file WSC†	Unlined firepit
4520	120	5GN200 Phone Booth	Tx-3153	Euler and Stiger 1978	Unlined firepit
4710	60	5GN2478 Elk Creek Village F8	Beta-85141	Rood 1996	Post
4830	60	5GN210-1	Beta-73203	Harrison 1993	Rock-lined firepit
4950	220	5GN222 Dry Creek F1	Beta-5565	Jones 1986b	Rock-lined firepit
5060	170	5GN210-2	Beta-73204	Harrison 1993	Unlined firepit

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Table 7.2—continued

Age B.P.*	Std Dev	Site Number and Name (Feature Number)	Lab Number	Reference	Feature Type
5070	80	5GN1835 Tenderfoot-71	Beta-97299	Notes on file WSC†	Unlined firepit or storage?
5330	70	5GN1835 Tenderfoot-6	Beta-46616	Stiger 1993	Rock-lined firepit
5410	130	5GN196 Stevens Creek East-226	Beta-2101	Jones 1982	Big-deep FCR
5415	160	5GN206 Island-2	Tx-3622	Stiger 1981	Rock-lined firepit
5430	90	5GN191 Kezar-27	Beta-3287	Jones 1986a	Rock-lined firepit
5440	80	5GN1835 Tenderfoot-80	Beta-108807	Notes on file WSC†	Rock-lined firepit
5460	70	5GN810-1	Beta-54052	Conner 1994	Rock-lined firepit
5550	120	5GN1835 Tenderfoot-28	Beta-66841	Stiger 1993	Storage pit
5600	120	5GN191 Kezar-36	Beta-3289	Jones 1986a	Unlined firepit
5604	560	5GN10 Willow Creek-10	Tx-3628	Stiger 1981	Rock-lined firepit
5670	100	5GN1835 Tenderfoot	Beta-120096	Notes of WSC†	Structure
5690	70	5GN191 Kezar-6	Tx-3155	Euler and Stiger 1978	Boiling pit
5690	100	5GN810-7	Beta-65287	Conner 1994	Rock-lined firepit
5730	140	5GN210 Stevens Creek-365	Beta-2105	Jones 1982	Rock-lined firepit
5770	50	5GN1835 Tenderfoot-11	Beta-46619	Stiger 1993	Rock-lined firepit
5770	80	5GN191 Kezar-89	Beta-3290	Jones 1986a	Rock-lined firepit
5790	90	5GN191 Kezar-144	Beta-3294	Jones 1986a	Unlined firepit
5810	120	5GN191 Kezar-3	Tx-3152	Euler and Stiger 1978	Boiling pit
5810	60	5GN1835 Tenderfoot-7	Beta-46618	Stiger 1993	Big-deep FCR
5810	100	5GN222 Dry Creek-2	Beta-3284	Jones 1986a	Rock-lined firepit
5820	60	5GN191 Kezar F32A	Beta-49242	Jones 1996	Rock-lined firepit
5854	600	5GN10 Willow Creek-1	Tx-3625	Stiger 1981	Unlined firepit
5860	90	5GN191 Kezar-127	Beta-3293	Jones 1986a	Unlined firepit
5860	90	5GN222 Dry Creek-1	Beta-3280	Jones 1986a	Rock-lined firepit
5874	160	5GN10 Willow Creek-7	Tx-3619	Stiger 1981	Rock-lined firepit
5894	950	5GN191 Kezar-7	Tx-3646	Stiger 1981	Boiling pit
5920	120	5GN191 Kezar-122	Beta-3292	Jones 1986a	Rock-lined firepit
5921	120	5GN320	UGa-3167	Black et al. 1981	Daub (structure)
5940	80	5GN1835 Tenderfoot-12	Beta-46617	Stiger 1993	Rock-lined firepit
5960	80	5GN1835 Tenderfoot-1	Beta-45837	Stiger 1993	Rock-lined firepit
5980	80	5GN1835 Tenderfoot-8	Beta-46615	Stiger 1993	Rock-lined firepit
5990	200	5GN1870 F11	Beta-49236	Jones 1996	Rock-lined firepit
6040	200	5GN212 Iola-251	Beta-2099	Jones 1982	Rock-lined firepit
6050	140	5GN2193 F3	Beta-49239	Jones 1996	Unlined firepit
6094	250	5GN212 Iola-1	Tx-3623	Stiger 1981	Rock-lined firepit
6100	80	5GN1835 Tenderfoot-3	Beta-46614	Stiger 1993	Rock-lined firepit
6160	70	5GN1835 Tenderfoot-40	Beta-76614	Notes on file WSC†	Rock-lined firepit
6164	210	5GN10 Willow Creek-12	Tx-3621	Stiger 1981	Daub (structure)
6180	70	5GN1835 Tenderfoot-81	Beta-108808	Notes on file WSC†	Rock-lined firepit
6210	110	5GN212 Iola-358	Beta-2104	Jones 1982	Big-deep FCR
6210	120	5GN191 Kezar-33	Beta-49243	Jones 1996	Rock-lined firepit
6240	130	5GN191 Kezar-20	Beta-3283	Jones 1986a	Unlined firepit
6260	80	5GN1835-84	Beta-108810	Notes on file WSC†	Unlined firepit
6270	140	5GN191 Kezar-121	Beta-3291	Jones 1986a	Rock-lined FCR
6304	340	5GN10 Willow Creek-11	Tx-3627	Stiger 1981	Unlined firepit
6350	210	5GN2192 F14	Beta-49240	Jones 1996	Rock-lined firepit

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Table 7.2—continued

Age B.P.*	Std Dev	Site Number and Name (Feature Number)	Lab Number	Reference	Feature Type
6480	150	5GN1835 Tenderfoot-55	Beta-85701	Notes on file	WSC† Unlined firepit
6520	80	5GN1835 Tenderfoot-2	Beta-46613	Stiger 1993	Rock-lined firepit
6544	160	5GN191 Kezar-1	Tx-3647	Stiger 1981	Rock-lined firepit
6690	70	5GN1835 Tenderfoot-24	Beta-61922	Stiger 1993	Unlined firepit
6700	120	5GN1870 F12	Beta-49237	Jones 1996	Rock-lined firepit
6750	100	5GN212 Iola-7	Beta-3275	Jones 1986a	Unlined firepit
6810	70	5GN1835 Tenderfoot-41	Beta-76615	Notes on file	WSC† Unlined firepit
6820	130	5GN53 Dry Gulch West-4	Beta-3273	Jones 1986a	Rock-lined firepit
6830	110	5GN1835 Tenderfoot-30	Beta-66835	Stiger 1993	Unlined firepit
6830	70	5GN1835 Tenderfoot-20	Beta-61919	Stiger 1993	Unlined firepit
6860	190	5GN212 Iola-410	Beta-2097	Jones 1982	Rock-lined firepit
6970	160	5GN1835 Tenderfoot-86	Beta-120095	Notes on file	WSC† Structure
6970	60	5GN1835 Tenderfoot-62	Beta-85705	Notes on file	WSC† Unlined firepit
6990	80	5GN1835 Tenderfoot-18	Beta-66832	Stiger 1993	Unlined firepit
6990	110	5GN1835 Tenderfoot-10	Beta-46620	Stiger 1993	Rock-lined firepit
7000	70	5GN1835 Tenderfoot-23	Beta-61921	Stiger 1993	Unlined firepit
7010	80	5GN1835 Tenderfoot-54	Beta-85700	Notes on file	WSC† Unlined firepit
7040	110	5GN1835 Tenderfoot-27	Beta-66837	Stiger 1993	Unlined firepit
7060	110	5GN205 Elk Creek G2	Tx-3156	Euler and Stiger 1978	Post/stain
7080	90	5GN1835 Tenderfoot-79	Beta-108806	Notes on file	WSC† Unlined firepit
7100	80	5GN1835 Tenderfoot-31	Beta-66838	Stiger 1993	Unlined firepit
7100	80	5GN1835 Tenderfoot-83	Beta-108809	Notes on file	WSC† Unlined firepit
7110	90	5GN1835 Tenderfoot-13	Beta-66831	Stiger 1993	Rock-lined firepit
7160	90	5GN1835 Tenderfoot-44	Beta-76617	Notes on file	WSC† Rock-lined firepit
7180	100	5GN1835 Tenderfoot-60	Beta-85704	Notes on file	WSC† Unlined firepit
7220	80	5GN1835 Tenderfoot-29	Beta-66836	Stiger 1993	Unlined firepit
7240	100	5GN1835 Tenderfoot-75	Beta-97300	Notes on file	WSC† Posthole
7280	90	5GN1835 Tenderfoot-50	Beta-85699	Notes on file	WSC† Unlined firepit
7350	120	5GN2192 F22	Beta-49241	Jones 1996	Unlined firepit
7350	100	5GN1835 Tenderfoot-63	Beta-85706	Notes on file	WSC† Unlined firepit
7400	100	5GN57 Dry Gulch East-1	Beta-3272	Jones 1986a	Unlined firepit
7450	100	5GN1835 Tenderfoot-39	Beta-76613	Notes on file	WSC† Storage pit
7450	330	5GN42 Soap Creek F1	Beta-8119	Dial 1989	Structure
7460	110	5GN191 Kezar-166	Beta-3295	Jones 1986a	Boiling pit
7550	90	5GN1835 Tenderfoot-17	Beta-61920	Stiger 1993	Rock-lined firepit
7653	240	5GN191 Kezar-4	Tx-3624	Stiger 1981	Unlined firepit
7740	80	5GN1835 Tenderfoot-14	Beta-113903	Notes on file	WSC† Structure
7820	80	5GN1835 Tenderfoot-14	Beta-46621	Stiger 1993	Structure
8030	210	5GN42 Soap Creek F4	Beta-8120	B.A. Jones, pc 1998	Daub
8540	140	5GN42 Soap Creek F23	Beta-8123	B.A. Jones, pc	Unlined firepit
8550	100	5GN191 Kezar-11	Tx-3149	Euler and Stiger 1978	Boiling pit
9800	830	5GN205 Elk Creek D1	Tx-3154	Euler and Stiger 1978	Unlined firepit

*All dates have been converted to 5,568 years half-life standard.

†Field notes on file with Department of Anthropology, Western State College, Gunnison, Colorado.
pc: personal communication

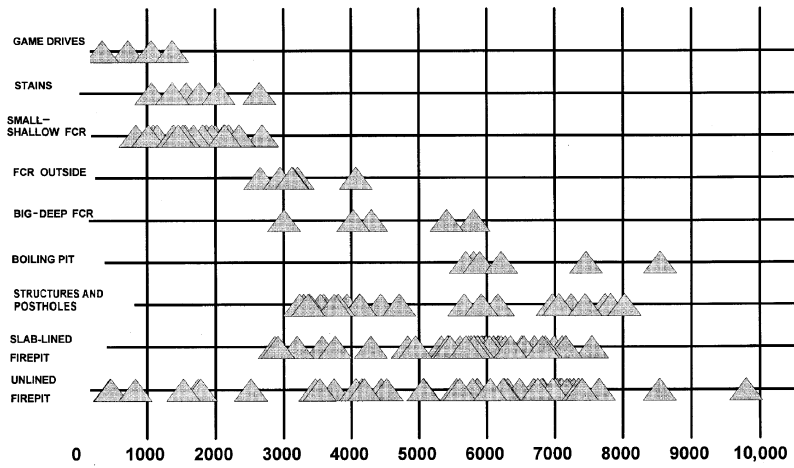


Fig. 7.1. Temporal distribution of feature types in the Upper Gunnison Basin in radiocarbon years B.P.



Fig. 7.2. A big-deep fire-cracked-rock feature. All rocks but those on the rim have been removed.



Fig. 7.3. A small-shallow fire-cracked-rock feature. Note the Brunton compass for scale.

be a tendency for diameter to decrease through time. All of these features are deep enough to hold several rocks stacked within them (Figure 7.2) and appear to have been used for roasting something, perhaps in quantity.

The big-deep fire-cracked-rock features may represent activities of people in groups and processing of considerable amounts of some resources. Not all of these features may have been used for the same resources.

SMALL-SHALLOW FIRE-CRACKED-ROCK FEATURES. Small-shallow fire-cracked-rock features (Figure 7.3) are variable in diameter, ranging from under fifty centimeters to over one meter. Generally, all the shallow fire-cracked-rock features contain a single layer of rock, and they tend to be smaller in diameter than the deep fire-cracked-rock features.

These features are sometimes located on the peripheries of large lithic-scatter sites. The sites contain many occupations of differing time periods. Small-



Fig. 7.4. A rock-lined firepit.

shallow fire-cracked-rock features are on the outermost edges of observable surface material. The artifact assemblages commonly found in association with these features are (with one major exception, 5GN207) almost nonexistent. These features appear to have been used for a very short time, and most were fueled with sagebrush or juniper wood. The one sizable artifact assemblage found with a small-shallow fire-cracked-rock feature is unusual for several reasons, including its relatively high frequency of artifacts of nonlocal raw material. In sum, these features appear to have been used for a brief time in activities that generate little debris, perhaps by people who came from outside the Basin.

FCR-OUTSIDE FEATURES. FCR-outside features are small firepits that have collections of fire-cracked rock located either on their edges or on the ground surface next to them. It appears that FCR-outside features have been emptied of the fire-cracked rock, perhaps in the process of removal of something that had been roasted or in the course of distributing heated rocks outside the pits.

These features are restricted in their distribution in time and space. They may represent specialized resource processing that did not require much space, because they are relatively small features.

ROCK-LINED FIREPITS. Rock-lined firepits are firepits (Figure 7.4) that have been lined with rocks. The forms of these features vary considerably. A possible trend of early, broad, shallow pits and late, narrower, deeper pits may be present. There might also be a trend from earlier use of smaller rocks to line firepits to later use of larger slabs.

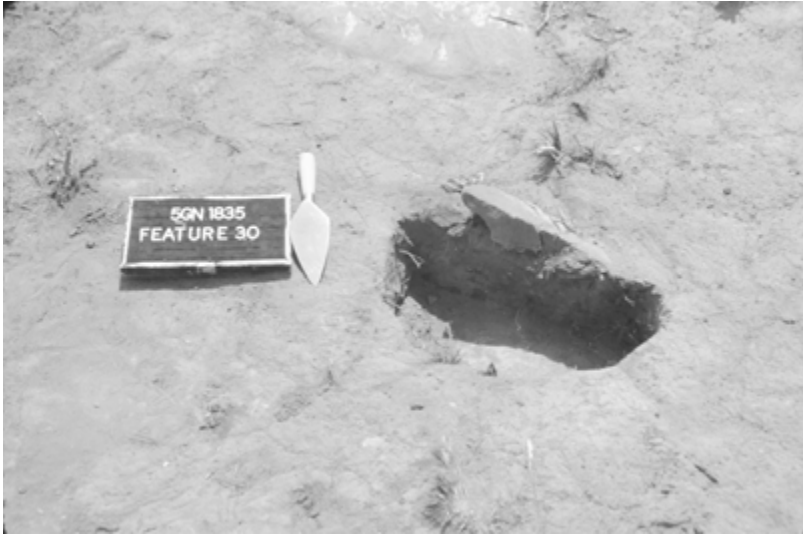


Fig. 7.5. An unlined firepit.

These firepits appear to be associated with intensive occupations of numerous people or of longer periods. Some of the rock-lined firepits have animal remains in them. Some of these features' linings contain broken parts of grinding slabs: evidence of artifact recycling. Some rock-lined firepits are spatially associated with dense artifact concentrations.

UNLINED FIREPITS. Unlined firepits are simple pits (Figure 7.5) dug into the ground that appear to have held a fire because of the presence of charcoal and ash. No rock was introduced into the pit to line it, although the bottoms of some unlined hearths are bedrock. The diameters and depths of unlined firepits are variable.

Unlined firepits are found in all time periods in the Upper Gunnison Basin. They were probably used for a wide variety of purposes and in a variety of settlements. Some seem to be associated with numerous artifacts; some have few associated artifacts.

BOILING PITS. A boiling pit feature consists of two pits that abut each other (Figure 7.6). In one case, radiocarbon samples were taken from both pits in a pair to confirm that they were contemporaneous; the ages of the samples overlapped. These boiling pits appear to have been used for stone boiling. In the Upper Gunnison Basin, it is common for pairs of firepits to occur in spatial proximity. It is not known whether other paired features have any significance.

One site in the Basin, on which hundreds of boiling pits were found, may have been a special location where some resource was available in bulk for large-quantity processing. Some animal remains (elk and antelope) were found on this



Fig. 7.6. A paired boiling pit.

site, and they may have been acquired during a drive or communal hunt. However, the animal remains were not as plentiful as might be expected for bulk processing. The boiling may have been used to process some plant food, such as tubers or roots, but the only identifiable plant remains from the features were an unidentified rose family seed, perhaps serviceberry.

STRUCTURES. Features considered structures are highly variable in configuration. Some are chunks or piles of daub or adobe with associated charcoal; some are posts; and some (Figure 7.7) are well-preserved, substantial cribbed-log houses. I also include storage pits in this category; these structures may have varied in function, and some represent residential use of the Basin. Substantial trash deposits (1.5 m deep), storage facilities, and pithouses at some residential sites probably indicate winter villages.

AMORPHOUS STAINS. Several large-diameter (two to three meters) shallow stains have been discovered in the Upper Gunnison Basin. These stains lack interior



Fig. 7.7. A cribbed-log house during excavation. Rock slabs at center of stain are the remains of the central firepit. Large daub fragments with impressions were found around the perimeter of the structure.

features and are probably the remains of temporary huts similar to those pictured in 1800s photographs (Fowler and Fowler 1971:58). These temporary structures are more screens against sun and wind than they are shelters from low temperature or precipitation.

GAME DRIVES. Two game-drive systems have been discovered and dated in the high-elevation perimeter of the Upper Gunnison Basin. These game drives consist of walls, cairn alignments, and pits. The location of these drives on the rim of the Basin makes them as accessible to people outside the Basin as to those inside the Basin.

Game-drive systems indicate bulk-resource procurement. Such procurement usually serves one of at least two purposes. First, bulk resources may be acquired for storage to extend the time period over which they can be used. For example, animals may be taken in large numbers, then dried, stored, and used during the winter when game is less available. Second, bulk resources may be acquired to feed a large group of people for a short time. For example, a corroboree may be funded through temporary access to bulk resources. Such a temporary aggregation of people may be very important for information sharing.

INTERPRETATION OF FEATURE VARIABILITY

Features in the Basin vary in important ways. One way is that numbers and types of features vary through time. Also, a pattern of type sequences appears.

NUMBERS OF FEATURES THROUGH TIME. Researchers in other areas of the West have used frequencies of radiocarbon dates through time as a measure of the size

of the human population (Wills 1988; Berry 1982; Matson 1991). However, the equation of radiocarbon date frequency per unit of time with human population numbers, although easy to comprehend, does not seem to be completely useful for explaining the Gunnison date distribution. Explanation of the temporal distribution of dates must also account for the types of features from which the datable material is derived.

Within the Upper Gunnison Basin there is high variability in features during the period when piñon pine was present, between 8000 B.P. and 3000 B.P. These diverse features include houses, rock-lined and unlined pits, and storage features, as well as trash middens that appear to be very similar to those found during the later San Pedro and Basketmaker II stages. These features indicate that for about 5,000 years in the Gunnison Basin, the hunter-gatherer adaptation was much more varied than what is usually described for the Archaic period. Part of this variation may be because the Upper Gunnison Basin sequence is derived from many sites in a variety of locations, although no cave sites have contributed to our understanding of the sequence. At the same time the environment changed, there was a dramatic reduction in the diversity of feature types.

A similar but inverse change (expansion of piñon pine and increased feature diversity and numbers) is found farther south, indicating an adaptation to a piñon-juniper ecosystem (Wills 1988:64–65). We do not know if these inverse patterns indicate a population movement from one area to another or not.

SEQUENCE OF BOILING PITS AND FIRE-CRACKED-ROCK FEATURES. The following sequence—boiling pit; big-deep fire-cracked-rock feature; FCR-outside feature; small-shallow fire-cracked-rock feature—may be indicative of human social organization within the Upper Gunnison Basin. We do not know what resources were being processed in the features, but we can surmise that all these features were not used for the same resources. However, the use of rock to transfer heat during processing shows some similarity in the processing method.

The numerous boiling-pit features built over 2,500 years on one site (Kezar Basin Site) indicates that its location was important to the procurement of what was being processed. The topography of the site may have been conducive for game drives of medium- to large-sized animals. Antelope and elk remains have been found on the site and bison remains have been found several hundred meters away in an arroyo. Probably, each boiling pit was used by a small group of people, such as a nuclear family, or perhaps by an individual. The area adjacent to a boiling pit is not large. Boiling pits dating after 5670 B.P. have not been found in the Upper Gunnison Basin.

Present evidence indicates that big-deep fire-cracked-rock features were in use by 5810 B.P.; this type of feature is found on a number of sites in the Basin. These features may be indicative of large amounts of some resource being processed or of large groups of people participating in procurement and processing. The areas adjacent to these pits can provide more workspace for more people than can the areas surrounding the earlier, smaller, boiling-pit features or the

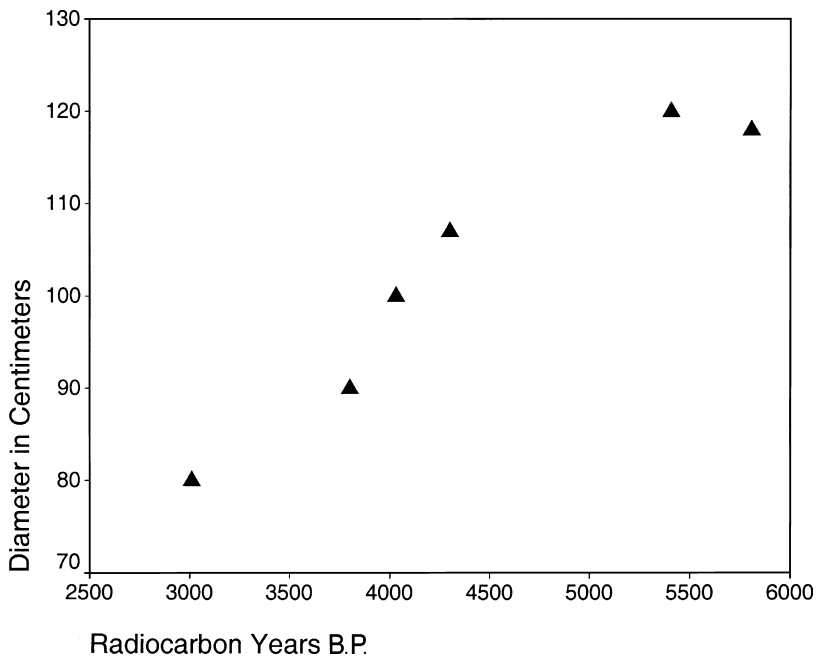


Fig. 7.8. Diameters of big-deep fire-cracked-rock features.

later, smaller, fire-cracked-rock features. These larger areas may have allowed multiple families or extended families to work near the features. Although the number of known big-deep fire-cracked-rock features is small, there is a detectable trend of decreasing sizes through time (Figure 7.8). This decrease may be related to either a decrease in the amount of resource processed, in the size of the work party processing the resource, or both.

The Upper Gunnison Basin sequence is composed of features as indicators of activities and organization. Preliminary analysis suggests that there are technological differences in the artifact assemblages corresponding to pre-3000 B.P. and post-3000 B.P. For instance, the lithic artifact assemblages after 3000 B.P. are distinguished by relatively high percentages of nonlocal raw material. I believe this to be an indication that post-3000 B.P. populations are based outside the Upper Gunnison Basin; the features dated to this time period indicate an ephemeral use of the Basin. I infer that after the local extinction of piñon, human populations used winter residential sites outside the Upper Gunnison Basin but continued to exploit game seasonally inside the Basin, with temporary occupations marked by temporary sunshades or windbreaks and small-shallow fire-cracked-rock features fueled with sagebrush. This inference is supported by the presence of game drives, dated to this last 3,000 years, in the high country around the rim of the Basin. These game drives, located near the headwaters of several major river drainages,

may have been the mechanism for supporting temporary groups gathered to exchange information about a large territory.

The archaeological material from the Upper Gunnison Basin illustrates the value of small surface lithic-scatter sites. The Upper Gunnison Basin sequence is not derived from stratified sites, deeply buried sites, or cave sites. This sequence is distilled from many differing surface sites across the Basin and shows coincident changes in environment and cultural adaptations. The sequence is a more complete picture of long-term land use patterns than would be a sequence obtained from a single location, such as a stratified cave site.

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