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SITE STRUCTURE OF TWO BURIED STONE CIRCLE SITES, SOUTHERN WYOMING

Craig S. Smith, Lance M. McNees, and Thomas P. Reust

ABSTRACT

Archaeological block excavations at sites 48SW7107 and 48SW270 have provided an opportunity to examine the use of space within and adjacent to two buried stone circles dating to the early Late Prehistoric period and located at the northern and western edges of the Great Divide Basin in southern Wyoming. Examination of the spatial patterning of the archaeological remains at those sites reveals clues about site activities and function. The excavation blocks at both sites contained a buried stone circle associated with a household activity area consisting of interior and exterior domestic use areas. Site 48SW270 also had a specialized activity area where extensive animal processing took place. The remains from site 48SW7107 represent a single short-term occupation during which only a few episodes of cooking meals, maintaining tools, and sleeping occurred, while the remains at site 48SW270 are from multiple, but closely related, occupations which were probably longer-term than those at site 48SW7107 and probably involved more intensive processing activities. The excavated portions of both sites appear to be residential camps of prehistoric groups using a residential mobility strategy, but representing different types of mobility in terms of frequency and stability.

Keywords: Wyoming; stone circles; tipis; site structure; Late Prehistoric period.

INTRODUCTION

Stone circles are a common archaeological feature in Wyoming and the Northwestern Plains (Frison 1991). They are usually encountered partly exposed on the surface in sites containing from one to hundreds of rings, often with only sparse associated remains. Since the advent of cultural resource management studies, numerous stone circles have been investigated, and much has been learned concerning their use and place within prehistoric settlement and subsistence systems (e.g., Davis 1983).

One avenue of research that can provide a tremendous amount of information concerning the use and function of stone circle sites is the examination of site structure, including overall site patterning and more specific activity area structure (Reher 1983). One particularly fruitful approach to the study of site structure is the examination of the spatial distribution of artifacts, features, and animal remains within a site. The patterning of such remains can reveal important information concerning the use of space by the site inhabitants, which in turn can provide clues about site activities and function which can lead to an understanding of different site types in a regional settlement system (Binford 1983).

This approach relies on comparisons with the results of ethnoarchaeological studies of the use of space by modern hunters and gatherers and analogies based on ethnohistorical and ethnographical sources. This research has shown that the relationship between the actual prehistoric activities and the resulting archaeological record is complex and that many processes influence the relationship

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(Binford 1979; O'Connell 1987; Simms 1988; Yellen 1977). Cultural processes that affect the archaeological record include the removal of refuse from the primary activity location, the degree of spatial segregation of activities at a given site, the curation and reuse of tools at different locations before they are worn out and discarded, and the removal of tools from use locations. Natural processes are also a major influence on the resulting archaeological record (Schiffer 1976).

Though most information concerning stone circle sites has come from stone circles exposed on the surface, a few completely buried stone circles have been excavated (e.g., Mulloy 1965; Quigg 1979, 1981; Van Dyke and Head 1983). Wilson (1983) notes that buried stone circles have a great potential for the recovery of intact occupation debris and that an effort should be made to locate them. They are often well preserved and intact, and are ideal for studying the spatial relationships of remains both within and outside of domestic habitation structures (Quigg 1979).

Archaeological block excavations at sites 48SW7107 and 48SW270 provide an opportunity to examine the use of space within and adjacent to two completely buried stone circles dating to the early Late Prehistoric period in southern Wyoming (Fig. 1). The two sites are located in similar settings on the northern and western edges of the Great Divide Basin in southern Wyoming. The Great Divide Basin is part of the Wyoming Basin, which consists of a series of high, sagebrush-covered basins separating the Southern and Middle Rocky Mountain physiographic provinces. It forms part of a natural corridor between the Northwestern Plains to the northeast and the Great Basin and northern Colorado Plateau to the southwest. Both sites are located in the Upper Sonoran life zone in areas with easy access to several ecological zones, which would have provided a diversity of resources. They are also situated in close proximity to dependable perennial water sources.

Both sites were excavated in the summer of 1990 using similar archaeological field and laboratory methods. The blocks at both sites were excavated in 1×1 m units in arbitrary 10 cm levels. All excavated deposits except feature fill were screened through 1/8 inch hardware cloth. Feature fill not taken as samples was screened through

1/16 inch cloth (window screen). Artifacts, faunal remains, and other collected remains from both sites were catalogued and analyzed using similar procedures. The bifacially flaked stone artifacts were classified as stages within a biface reduction continuum that consisted of, from earliest (least reduced) to latest (most reduced) stage: preblanks, blanks, preforms, and final bifaces, including projectile points and drills. Flake tools were classified as retouched flakes, including end scrapers, side scrapers, denticulates, gravers and spokeshaves, and as utilized flakes. Debitage categories included primary, secondary and tertiary flakes, microflakes, and shatter. Bone unidentifiable to specific taxa was classified when possible as large mammal (larger than deer), medium mammal (deer to larger than coyote), small mammal (coyote to larger than cottontail), and very small mammal (cottontail and smaller). The radiocarbon age estimates provided in this paper are uncalibrated and uncorrected estimates expressed as radiocarbon years BP.

This paper first summarizes the results of excavations at sites 48SW7107 and 48SW270 and discusses the use of space within and adjacent to the stone circles at each site. Comparisons between the two sites are then made. Similarities between the two sites provide clues to the general use of space in and around stone circles which may be applicable to other stone circle sites. Contrasts between the two sites suggest differences in season of use, and their role in their respective local settlement systems. The final section of this paper briefly presents some general implications regarding the settlement patterns and organization of the early Late Prehistoric period inhabitants of southern Wyoming.

SITE 48SW7107

Site 48SW7107 is at 2091 m elevation on an alluvial terrace immediately north of Lost Soldier Creek, a perennial stream (Reust et al. 1993). High ridges occur at the base of Green Mountain, located north of the site. Vegetation at the site is dominated by sagebrush and rabbitbrush with an understory of prickly pear, short-grasses, and forbs. Several vegetation communities occur within a short distance from the site, including forested areas on Green Mountain.



Figure 1. Location of sites 48SW7107 and 48SW270 in the Wyoming Basin of southern Wyoming.

Three blocks containing three distinct cultural components were excavated at site 48SW7107 (Reust et al. 1993). A total of 46 m^2 was excavated in the block containing the stone circle and associated remains. The stone circle component vielded radiocarbon age estimates of 1110±70 (Beta-41537) and 1460±70 (Beta-41538) years BP from wood charcoal. The cultural remains occurred in shallow aeolian sheet deposits about 30 cm below surface and consisted of one stone circle, nine small basin features, 11 flaked stone tools, 181 pieces of debitage, 10 groundstone artifacts, 149 bone fragments, 24 tooth fragments, and one mussel shell fragment. Flotation samples from eight of the basin features yielded only three charred goosefoot seeds from one of the features (Feature 8.2).

The stone circle was defined by a circular

alignment of approximately 12 large, unmodified granite rocks with an interior dimension of about 5 x 5 m (Fig. 2). Three of the basin features (Features 3, 5A, and 5B) associated with the stone circle were partially filled with rocks. Fill of these features included large pieces of charcoal, charcoal stained sediment, and heat-altered quartzite, sandstone, and/or granite rocks. Two of the features (Features 5A and 5B) were superimposed. Feature 5A contained 19 pieces of debitage, a metate fragment, and four burned medium to small mammal bone fragments. Feature 5B contained one piece of debitage, two metate fragments, and 17 burned and 15 unburned small or very small mammal bone fragments. The remaining six features (Features 4, 6A, 6B, 7, 8.1, and 8.2) were small basins. The small basins were filled with moderately to darkly stained sediment and con-



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Figure 2. Spatial distribution of stone circle and associated remains, 48SW7107.

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Figure 3. Selected artifacts, 48SW7107.

tained varying amounts of wood charcoal.

The flaked stone tools associated with the stone circle include a projectile point (Fig. 3a), a hafted drill (Fig. 3b), one preform (Fig. 3c), four retouched flakes (Fig. 3d-e), and four utilized flakes. The single projectile point is a complete corner notched or basally notched arrow point with an expanding stem manufactured of brown, semitranslucent chert. The hafted drill is of oolitic chert and has corner notches and a straight to slightly concave base with an expanding stem. The entire blade has been steeply retouched along both lateral margins and tapers to a narrow, thick distal end. The debitage assemblage consists of 181 pieces of debitage, about 75% of which are tertiary flakes and microflakes, indicating that flaked

stone reduction activities were oriented toward the final stages of tool manufacture and tool maintenance tasks. This interpretation is also suggested by the composition of the flaked stone tool assemblage, which includes neither cores nor early production stage bifaces (blanks, preblanks). Three manos, five metate fragments, and two small groundstone fragments were also recovered from the component.

Most of the 149 bone fragments and 24 tooth fragments are very small, with a total weight of only 13.5 g. None of the fragments was identifiable to species. One phalange is from a bison-size animal, one carpal or tarsal is from a deer/prong-horn-size animal, and one maxilla is from a ground squirrel-size animal. The remaining fragments are

from large to medium mammals through small to very small mammals. A total of 111 fragments (63.8% of total) is burned or calcined. One mussel shell fragment was also recovered.

The excavation block contained a stone circle and two generalized outside work areas (Fig. 2) representing a classic example of a household activity area (Yellen 1977; O'Connell 1987). The stone circle probably reflected the presence of a structure that was covered with hides or brush. The alignment of the rocks indicates that the opening of the structure faced northeast, away from the prevailing southwesterly winds. Ethnohistorically, doorways of tipis among the northern Plains groups also almost always faced east (Hassrick 1964; Nabokov and Easton 1989).

Two pit features were present near the back of the structure interior-a rock-filled basin (Feature 3) and a small basin (Feature 6A), both of which were probably used as hearths. Associated remains recovered from the back of the structure are limited to a projectile point, a preform, a utilized flake, and two mano fragments. Other refitted portions of the mano were recovered from the central outside activity area. The back portion of the structure was probably used for sleeping, as well as for other activities. Individuals could have slept in the areas immediately around the hearths in the back of the structure (Hayden 1979). The ethnohistoric Plains groups also used the back and perimeters of their tipis for sleeping (Hassrick 1964; Wallace and Hoebel 1952). Ethnoarchaeological studies have also shown that sleeping areas and associated hearths are often used for other activities as well (Binford 1983; Hayden 1979; O'Connell 1987). Such activities range from eating meals to manufacturing and repairing tools. The presence of the few flaked stone tools and mano fragments within the stone circle at site 48SW7107 could possibly represent food preparation, tool maintenance, and other activities conducted in the sleeping area. Tools used within a confined space are often lost along the edges (Binford 1983), which might have been the case with the tools recovered near the back of the stone circle at site 48SW7107.

An apparent central domestic work area was situated in front of the structure opening. It was centered around three pit features (Features 5A, 5B, and 6B) with associated concentrations of

debitage and small to very small mammal bone. Ethnoarchaeological studies of modern hunters and gatherers have shown that many of the day-today endeavors take place in areas just outside of structures in central domestic work areas centered on a hearth (Binford 1983; O'Connell 1987; Yellen 1977). Remains from several activities such as cooking, eating, and the manufacture and maintenance of tools and equipment often are not segregated in generalized, domestic activity areas (Yellen 1977). The remains associated with the central domestic work area at site 48SW7107 suggest that activities such as cooking and maintenance of tools occurred in that portion of the site during the occupation associated with the stone circle. The meals cooked in the area probably consisted primarily of small mammals. The unmodified rock located just north of the features might have served as an anvil for processing the small mammals. The presence of ground stone suggests that some type of plant processing was also an activity in the area. The plant processing probably focused on plant parts other than seeds, because the three features lacked charred seeds. Plant parts such as roots and tubers generally would not be preserved in the archaeological record. The presence of mostly tertiary flakes and microflakes indicates that some tool maintenance activities probably occurred in that area, and the absence of bifaces in the early stages of reduction indicates that tool manufacturing was not an important task.

A second outdoor hearth-centered activity area was apparently represented by two hearths, a debitage concentration, and a concentration of medium to large mammal bone located along the eastern side of the stone circle. This area might have been a work area as described by Binford (1983) for the Nunamiut Eskimo. In this area, away from the central domestic and sleeping areas, individuals might have sat while repairing flaked stone tools, and possibly processing portions of a large mammal. As with the central domestic work area, the remains of distinct activities were not spatially segregated.

SITE 48SW270

The investigated portion of site 48SW270 is at 2133 m elevation within a small, interdunal

basin entirely ringed by a series of sand dunes located on the face of a broad, open, gently undulating dip slope west of Bitter Creek, a major perennial drainage (McNees et al. 1992). The general area is characterized by parallel dissected cuesta ridges. Black Buttes, the dominant feature in the area, is to the west. Vegetation at the site is dominated by sagebrush and rabbitbrush with an understory of grasses and forbs. As with site 48SW7107, several ecological zones are located near the site, including juniper and occasional pine on the higher ridges to the west and southwest.

An 88 m² block was excavated around the area containing the stone circle at site 48SW270 as part of data recovery excavations within the Black Butte Coal Mine permit area (McNees et al. 1992). Radiocarbon ages for the remains associated with the stone circle are 1210±90 (Beta-38306), 1400±80 (Beta-41851), and 1460±90 (Beta-41850) years BP, from wood charcoal. The cultural remains occurred in dunal deposits at about 25-30 cm below surface and consisted of one stone circle, eight additional cultural features, 3236 pieces of heat-altered rock, 60 flaked stone tools, one core, 6483 pieces of debitage, one hammerstone, three pieces of ground stone, two bone tools, 12 pieces of bone tube manufacture debris, and 8988 bone specimens. Flotation samples from three basin features yielded three charred goosefoot seeds from one feature (Feature 1) and one charred goosefoot seed from another feature (Feature 9).

The stone circle consisted of approximately 28 sandstone slabs arranged in a horseshoe-shaped pattern (Fig. 4). Its interior dimensions were approximately 1.9 x 2.2 m. The alignment was open to the southeast. A medium basin (Feature 12) occurred just in front of the opening of the stone circle. A group of basin features was located north of the stone circle (Fig. 5). One of the features was a large oxidized cylindrical basin (Feature 9) which was associated with three medium basins (Features 1, 7, and 8). The cylindrical basin (Feature 9) was 73 cm in diameter and 45 cm deep, and its sides were heavily and continuously oxidized. The basin was stratified and contained charcoal, 25 heat-altered rocks, 19 pieces of debitage, and 49 bone fragments. Generally, the other three associated basin features contained darkly stained

fill, some heat-altered rock, debitage, and bone fragments. These basin features were probably roasting pits and hearths that were used simultaneously in the processing of bone and possibly seeds. A bone processing area and/or bone processing midden (Feature 4) was also present southeast of the cylindrical basin (Feature 9). It was defined by a discrete but irregularly shaped patch of mottled stained sediment and charcoal fragments containing a jumbled mix of 91 pieces of heat-altered rock, a preform fragment, 12 pieces of debitage, and 431 bone fragments. Two additional isolated basins (Features 2 and 6) that were probably hearths containing charcoal-stained sediment were located west of the feature group (Fig. 5).

The 60 flaked stone tools from the component include 35 bifaces, 17 flake tools, and eight modified cobbles. The biface assemblage consists of 10 final bifaces or fragments, 10 preform fragments, nine blanks, and six preblanks. Five of the final bifaces are proximal fragments of corner-notched arrow points (Fig. 6a-e). They resemble the Rose Spring Corner-notched point type common in the area. Most of the preforms (Fig. 6f-j), blanks, and preblanks appear to be biface manufacture discards and failures. The 17 flake tools include a formal sidescraper fragment, 10 expediently retouched flakes, and five utilized flakes. Most (95.9%) of the 6483 pieces of debitage are tertiary flakes and microflakes, most (91%) of which are of locally available Black Buttes quartzite. The high percentage of Black Buttes quartzite debitage contrasts with the flaked stone tool assemblage which consists mostly of chert. The analysis of the recovered tools and debitage suggests that the relatively intensive manufacture of tools-particularly thin, medium to large biface blanksfrom Black Buttes quartzite and the manufacture of arrow points from chert were the predominant lithic reduction activities conducted at the site.

A single hammerstone, a mano, and two metate fragments were recovered. Two bone tool fragments were also recovered. One specimen is a medium to large mammal long bone shaft fragment with one end ground and shaped. The other specimen is a bison-size rib blade fragment that has several ground facets on one end. Intentionally modified bone from the component also includes 10 specimens produced during bone tube bead



Figure 4. View of stone circle, 48SW270.

manufacture activities using the groove-and-snap technique. Most of the latter specimens are from cottontail metatarsals and humeri. Two specimens are from ground squirrel-size long bone shaft segments.

Of the 8988 bone and tooth specimens recovered during the excavations, 3649 specimens (41% of the total) were identified as medium and large mammal. All of the medium and large mammal specimens probably represent bison and pronghorn, which were the only medium and large mammal species identified. The 173 specimens identified as bison or bison-size and the 431 specimens classified as large mammal represent all major skeletal units, including those portions with high transport costs. Except for foot bones and teeth, all elements are fragmented. At least two, and probably three, bison are represented in the assemblage. Two individuals are indicated by the presence of both a thoracic vertebra of a fetal or newborn individual and a mandibular second molar of a 2-2.2 year-old animal. A third individual is probably represented by seven fragmentary

bone elements from a mature bison. The 158 specimens classified as pronghorn, pronghorn-size, or medium mammal include cranial fragments, portions of the axial skeleton, and portions of the forelimbs. All specimens are fragmented except for a caudal vertebra. At least two individuals are represented. A fetal or newborn individual is represented by a lumbar vertebra and a rib. A second individual is indicated by a thoracic vertebra of an individual 4-7 months of age at death and by a tibia and a metatarsal of an individual 6-7 months old. The remainder of the 2882 medium and large mammal bone specimens are highly fragmented.

A wide range of smaller animal species was used at the site in addition to the large game species. Of the 231 small and very small mammal and bird remains, three specimens were classified as jackrabbit or jackrabbit-size, 60 specimens as cottontail, 98 specimens as rabbit-size, three specimens as ground squirrel or ground squirrel-size, one specimen as vole, 16 specimens as rodent-size, two specimens as large bird, and one as small bird. Three cottontail, 30 rabbit and rabbit-size, one



Figure 5. Spatial distribution of stone circle and associated remains, 48SW270.

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Figure 6. Selected artifacts, 48SW270.

ground squirrel-size, one rodent-size, and a bird specimen are burned.

The excavation block contained two distinct localities of cultural activity defined by overlapping concentrations of different classes of remains associated with cultural features (Fig. 5). One of the distinct localities encompassed the stone circle (Feature 5) and adjacent work areas, and the other locality was adjacent to a group of basin-shaped features (Features 1, 7, 8, and 9) and included associated concentrations of bone, heat-altered rock, and debitage located within an area of charcoal stained sediment.

The locality containing the stone circle appears to have been the remains of a family unit's nuclear use area or household area such as the one at site 48SW7107 (Yellen 1977; O'Connell et al. 1991). This household area contained a sheltered sleeping area and a generalized, central domestic work area. The stone circle was undoubtedly the remains of a small hide- or brush-covered habita-

tion shelter located on the lee side of the dune. The alignment of the rocks indicates that the opening of the structure faced southeast away from the prevailing winds. A basin feature (Feature 12), probably the remains of the central, domestic hearth, occurred just in front of the structure opening.

As is evident in Figure 5, two general concentrations of debris were associated with the stone circle locality. One concentration occurred within the stone circle, and the other concentration was just in front of the opening of the structure. The remains from both of these concentrations overlapped at the mouth of the structure.

Various flaked stone tools, a concentration of debitage, and a concentration of small bone fragments were present within the sheltered area. Generally, the tools were scattered around the perimeter against the interior edge of the shelter, indicating that the tools were lost or discarded along the edge of the structure (Binford 1983). The

structure contained over 250 pieces of debitage per square meter, with most of the debitage being small tertiary flakes and microflakes. The bone within the structure consisted of a moderately dense concentration of bone fragments, most of which are less than 2 cm in length. The predominance of small remains within the structure indicates that the area was probably a primary activity area that was cleaned by the removal of larger debris. Often when an area is cleaned, the larger pieces of refuse are removed, and the smaller pieces are left behind (O'Connell 1987; Simms 1988). The larger pieces of refuse within the structure at site 48SW270 were probably removed and dumped outside, perhaps south of the structure. This would have provided relatively clean areas for sleeping. The presence of flaked stone tools, biface manufacture failures and discards, debitage, and bone fragments suggests that the manufacture and maintenance of tools and equipment, and the processing and cooking of animal parts occurred within the confined spaces of the structure. The cooking might have involved bone juice or bone grease production (Binford 1978; Vehik 1977). According to ethnoarchaeological studies, bone remains from the consumption of meals are often left in the back of the shelter, which appears to be the case at site 48SW270 (Bartram et al. 1991). The performance of these activities-which often occur in generalized, domestic work areas in front of the structures-within the sheltered area suggests that the shelter was occupied during the cold months.

In addition to the generalized activity area within the structure, a generalized, exterior domestic work area occurred in front of the shelter in association with a hearth, an arrangement similar to that at site 48SW7107. The outside work area contained a dense concentration of all sizes of debitage, a slight concentration of heat-altered rock, and several retouched flakes. Activities suggested by these remains include the production of flaked stone tools; the heating of rock for cooking or some other activity; and some activity involving the use of the retouched flakes. The heat-altered rocks might have resulted from the heating of water for bone grease and juice production. Smaller bone fragments from the associated bone reduction apparently accumulated within the shelter, while the heat-altered rocks appear to have been dumped outside north of the hearth. The activities associated with the nuclear use area were not spatially segregated but integrated as overlapping areas.

The other distinct locality within the excavation block was associated with the group of basinshaped features north of the household activity area. It appears to have been a specialized activity area (Yellen 1977; O'Connell 1987). Specialized activity areas include areas used for activities such as the butchering and processing of animals that require more space and are messy. The specialized activity area at site 48SW270 appears to have been a locus of multiple intensive processing and manufacturing activities. Those activities apparently included intensive bone processing, preparation and consumption of small animals, arrow point manufacture, and bone bead manufacture. A variety of other activities probably occurred in the area as well.

This locality contained the feature cluster consisting of the large oxidized cylindrical basin (Feature 9) and the three associated medium basins that were probably roasting pits and hearths; a variety of tools and manufacturing debris including arrow points, preforms, blanks, preblanks, retouched flakes, utilized flakes, modified cobble chopper/pulverizers, a mano, a metate fragment, bone tube bead manufacture debris, and bone tools; the densest concentrations of heat-altered rock and bone within the excavation block; a concentration of debitage greater than 2 cm in length; and a bone processing/midden area (Feature 4). These remains occurred in an area of general charcoal staining measuring approximately 35 m^2 . The charcoal staining was probably the result of trampling charcoal into the ground during intensive processing activities.

Most of the remains within the specialized activity area were concentrated east and southeast of the feature cluster, indicating that the features were used in some of the processing activities. One of the major activities was clearly the butchering and/or processing of animals brought back to the site from a nearby kill location. The presence of elements representing most major skeletal units suggests that processing of entire animals occurred at the site, which in turn suggests that the kill location was nearby. At least five large mammals, including bison and pronghorn, were intensively processed in the area. The processing included the splitting of bone to extract marrow, and the pulverizing of bone to facilitate production of bone grease and juice. The larger bone fragments were probably dumped in the southeastern portion of the activity area out of the way of the central work area adjacent to the features. The concentration of small bone fragments just south of the feature cluster in the bone processing/midden area (Feature 4) suggests that bone reduction or bone disposal occurred in the area. Several kinds of small animals including cottontail, jackrabbit, and ground squirrel were apparently processed and consumed in the area as well.

COMPARISONS BETWEEN SITES 48SW7107 AND 48SW270

As can be seen from the above discussion, sites 48SW7107 and 48SW270, with similar radiocarbon age estimates, had similar remains associated with a household activity area (Yellen 1977; O'Connell et al. 1991). They both contained a stone circle representing a sheltered area with the door facing away from the prevailing wind, and an outside, central domestic work area in front of the door of the sheltered area, both of which appear to be basic components of a domestic unit's use area. Evidence of household activity areas at the two sites confirms the generally held belief that stone circles represent domestic habitation remains as argued by Kehoe (1960) from his ethnographic studies.

As evidenced by the spatial distribution of remains at sites 48SW7107 and 48SW270, household activity areas with interior sheltered sleeping and work areas and outside domestic work areas appear to leave a fairly distinct pattern in the archaeological record, at least at some sites, and may prove to be a distinguishing characteristic of certain functional site types. Ethnoarchaeological studies of modern hunters and gatherers have shown that these household activity areas are a major attribute of residential camps (Bartram et al. 1991; O'Connell 1987; O'Connell et al. 1991; Yellen 1977). Binford (1987) suggests that because residential camps are the base of operations for the domestic unit, the site structure of a residential camp should reflect domestic activities and should have sleeping and kitchen or household activity areas.

Sites 48SW7107 and 48SW270 are also similar in that the remains from several activities such as cooking, eating, and the manufacture and maintenance of tools and equipment were not spatially segregated but instead overlapped in the household activity area. No clear concentrations of remains from a single type of activity were present within the household activity areas at either site; instead, remains from several kinds of activities were mixed. This situation is consistent with Yellen's (1977) observation from his ethnoarchaeological studies of the !Kung Bushmen that generalized work areas typically contain overlapping remains from several kinds of activities. The evidence from sites 48SW7107 and 48SW270 suggests that the focus of site structure and site functional studies should not be the attempt to delineate discrete single activity areas such as plant or animal processing or to define functional site types based on a single kind of activity, but rather to examine the overall patterning of remains and attempt to define such entities as household activity areas which could provide clues as to site function.

Though major similarities exist between the two sites, some obvious differences are also apparent. One notable difference is the inside dimensions of the stone circles at the two sites, despite the fact that they date to the same age during the early Late Prehistoric period. The stone circle at site 48SW7107 is above average in size, at approximately 5 m in diameter, but still is within the size range of surface stone circles of various ages from selected sites in the region (Table 1). Its dimensions also are typical of tipi rings on the Northwestern Plains. Kehoe (1960) characterizes the size range of tipi rings as being between 2.1 and 9.1 m, and Frison (1991) notes that they generally range between 3 and 7 m in diameter. It appears likely that the buried stone circle at site 48SW7107 represents the remains of a tipi, the common interpretation of stone circle sites at most sites on the Northwestern Plains.

In contrast, the stone circle at site 48SW270 is only approximately 2 m in diameter and is at the extreme small end of the size range of surface

Site No.	Location	Age (yrs BP) ¹	No. of Circles	Average Size (m)	Size Range (m)	Reference
48SW190	Rock Springs Uplift near 48SW270	930±60 780±60	23	3.77	2.55- 4.65	McNees et al. 1992
48SW6545/ 6547	Rock Springs Uplift near 48SW270	_	46	4.23	3.00-6.75	McNees et al. 1992
48SW2613	Great Divide Basin near 48SW7107	2 30±60	14	3.70	1.90- 4.80	Jess and Berrigan 1982; Reust et al. 1993
48SW2369	Great Divide Basin near 48SW7107	2410±120 2250±100	182	3.60	1.80- 5.60	Jess and Berrigan 1982
Total	_		265	3.73	1.80-6.75	_

Table 1. Average interior stone circle diameters for selected surface stone circle sites near 48SW7107 and 48SW270.

¹ All stone circles at these sites may not date to the same age.

stone circles in the area (Table 1). It is smaller than typical surface tipi rings on the Northwestern Plains (Kehoe 1960; Frison 1991). However, it is similar in size to the other early Late Prehistoric period habitation features consisting of saucershaped stains at the Taliaferro site, the Buffalo Hump site, and site 48SW5655 in southwest Wyoming (Table 2). These saucer-shaped stains have been interpreted as the remains of habitation structures or windbreaks made of sagebrush as described by early explorers in the Intermountain West (Simpson 1876; Irving 1854). The stone circle at site 48SW270 may represent a similar type of structure. The associated shelter might also have been a more substantial shelter covered with brush, animal skins, or a variety of other materials of a sort that was common among Great Basin groups, especially as winter houses (Thomas et al. 1986). Thomas et al. mention that shelters of this sort in the Great Basin were sometimes anchored with a course of stones, and "the only vestiges of such structures are often the stone circles," stone circles which, they also note, are "sometimes erroneously considered tepee rings."

Much discussion has occurred over Kehoe's (1960) suggestion that some relationship exists between the size of stone circles and their age (e.g., Roll 1981; Quigg 1981; Larson 1981; Wilson 1983). Kehoe's (1960) native informants noted that prior to the acquisition of the horse, tipis were smaller than during later times. According to Kehoe (1960), prehistoric tipi rings should be smaller

than 4 m in diameter, which would incorporate a tipi with 10 skins. This size-age model is not supported by the size of the buried Late Prehistoric period stone circle at site 48SW7107. Most likely, the size of the stone circle is more a function of the kind of structure represented, the seasonality of occupation and place in the seasonal round, and perhaps of ethnic affiliation, than of time depth.

Another major difference between sites 48SW7107 and 48SW270 is the quantity of associated remains. The excavation block surrounding the stone circle at site 48SW7107 contained only a limited quantity of remains, most of which were located in discrete concentrations centered around the two outside hearth areas. These two hearthcentered areas appear to be primary areas of activity, and no evidence of refuse disposal with dense concentrations of remains was noted in the excavation block. This suggests that the prehistoric inhabitants of the excavated portion of site 48SW7107 did not undertake refuse cleaning from the work areas. Generally, if the inhabitants of a site plan to spend some time at a location, the area will be maintained to some degree (Binford 1987). Therefore, the absence of refuse cleaning and the small number of remains indicate that the site was occupied once and only for a short time (Brooks and Yellen 1987). Only a few episodes of cooking meals, maintaining tools, and sleeping apparently took place during that occupation.

In contrast, site 48SW270 contained a wide diversity of cultural remains distributed as a mod-

Site No.	Component	Feature No.	Length (m)	Width (m)	Area (m ²)	Age Estimates (yrs BP)	Reference
48SW 5655	—	11	2.25	2.00	3.90	1240±60, 1180±80	McKibbin et al. 1989
Buffalo Hump	3	8	2.10	2.00	3.30	1290±60	Harrell 1989
	2	16 27	2.28 1.96	2.15 1.56(?)	3.85 2.40	1480±60 1300±100 to 1250±60	Harrell 1989 Harrell 1989
	3	48	2.20	2.20(?)	3.80	1300±100 to 1250±60	Harrell 1989
Taliaferro	VI	6	2.15	1.95	3.30	1170±60	Smith and Creasman 1988

Table 2. Late Prehistoric period habitation features consisting of saucer-shaped stains at sites in southwest Wyoming.

erately dense scatter throughout the excavation block. Within that overall scatter, two distinct localities of cultural activity represented by overlapping dense concentrations of different kinds of debris were evident. One was the household activity area associated with the stone circle, and the other was a specialized activity area centered around several basin features where animals were butchered and processed. The density and distribution of remains in these two activity areas suggest that prolonged activities occurred during the occupation at site 48SW270, including possible processing of resources for later use or storage. This contrasts with the pattern of activities at site 48SW7107, where activities apparently focused only on more immediate preparation of resources for consumption and use. Evidence of refuse cleaning at site 48SW270, especially within the stone circle interior, indicates that the site was occupied for a longer term than site 48SW7107 (Brooks and Yellen 1987). The stone circle and associated work areas at site 48SW270 probably represent multiple, but closely related, occupations.

The limited evidence of season of occupation suggests that the two sites were occupied during different times of the year. Direct evidence of season of occupation is lacking at site 48SW7107. The presence of a mussel shell suggests an occupation sometime between the spring and fall when mussels are most readily available. The recovery of only three charred goosefoot seeds suggests that the seeds were incorporated into the feature due to the natural seed rain present in the soil at the time of site occupation and not necessarily the processing of the seeds by the prehistoric inhabitants. The site was apparently not occupied for the intensive processing of seeds during the late summer and fall. Most likely, the stone circle at site 48SW7107 was used during a single visit in the summer. If the structure at site 48SW7107 was a hide covered lodge, the sparse number of stones may also indicate a warm weather season. During such seasons, only a limited number of stones were used, because the flaps were often rolled up to promote breezes.

The results of the analysis of the animal remains from site 48SW270, on the other hand, indicate that it was occupied during at least the late fall (November-December) and the late spring (late April-early June). The recovery of newborn/fetal, immature, and mature bison specimens and newborn/fetal pronghorn bone indicates the late spring occupation, and the recovery of bone specimens from a 6-7 month-old pronghorn suggests a late fall occupation. Evidence of intensive activities within the sheltered area also suggests a cold weather or winter occupation. The patterns suggest that site 48SW270 was revisited on a relatively regular basis from the late fall through the late spring, possibly to take advantage of the habitation structure and other facilities and/or stored resources.

IMPLICATIONS FOR SETTLEMENT PATTERNS AND ORGANIZATION

Understanding to some degree the function of the stone circles at sites 48SW7107 and 48SW270 provides an opportunity to explore their place within the settlement organization of the early Late Prehistoric period inhabitants of southern Wyoming. The excavated portions of sites 48SW7107 and 48SW270 both appear to be the remains of residential camps of prehistoric groups using a residential mobility strategy. However, the sites represent different types of mobility in terms of frequency and stability. Site 48SW7107 was apparently a single occupation, short-term residential camp of a prehistoric group following a mobility strategy where the residential camp was moved frequently. In contrast, site 48SW270 contains evidence of multiple, closely related, longerterm occupations where intensive processing activities took place. The prehistoric group using this site appears to have had a mobility strategy with a lower frequency of moves and a more stable and structured pattern of movement that involved frequent reuse of the same locality.

The inhabitants of both sites were probably employing an encounter hunting strategy which involved a generalized search for animals which were then taken opportunistically, as indicated by the wide variety of animals from bison to ground squirrel recovered from each site. However, the collecting and processing of food resources at site 48SW7107 were probably only for immediate use, while resources were apparently intensively processed at site 48SW270, probably for later use and storage.

Though the two sites probably represent parts of settlement systems of different groups, the differences in the settlement organization represented at the two sites may be partly attributable to the season of site use. Short-term early Late Prehistoric period residential camps similar to site 48SW7107 are also present near site 48SW270 (McNees et al. 1989), indicating that the group using site 48SW270 might also have followed a mobility strategy similar to the one noted for site 48SW7107 during certain times of the year. Conversely, additional early Late Prehistoric period residential camps similar to site 48SW270 that appear to have been repeatedly used in the late summer and fall to intensively collect and process animals and seeds are also found throughout southern Wyoming (Smith and Creasman 1988; Harrell 1989; Schroedl 1985). At some of these repeatedly used sites, the hunters and gatherers might have broadcast and encouraged the growth of weedy species such as goosefoot so that a predictable annual supply of seeds would be available at those locations (Smith 1988).

Based on these considerations, it appears that the settlement system of the early Late Prehistoric period peoples of southern Wyoming fluctuated from a residential mobility strategy with frequent moves to obtain resources for immediate consumption during the late spring and summer to a strategy of longer-term occupations and reuse of locations during the late summer through early spring, probably with associated visits during the winter to take advantage of stored resources processed in the late summer and fall.

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