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Pictograph Sites on the Judith River of Central Montana

The archaeologist who thinks he has achieved a final classification of anything is a rare and probably untrustworthy individual.... However, we shall not let our attempted reconstruction be stopped by the lack of local information.

—Phillips, Ford, and Griffin (1951:426, 429)

This paper exemplifies some of the kinds of sites and art in a small area of mountain canyon country in the central part of Montana. We offer some generalizations and overall impressions of the sites and the art, but no details on the individual sites themselves. All information is based on preliminary field observations.

The Montana Rock Art Project

We are currently in the initial stages of a study of the rock art in Montana and presently are concentrating mainly on painted art in the central and western parts of the state. Of the nearly 600 rock art sites currently noted in the State records, about half are pictographs, and relatively few have been recorded in detail. Our initial attentions are toward visiting as many of the known sites as possible, armed with the existing records, in an attempt to straighten out conflicting or incomplete information on site location, general description, content, and evaluation of significance (always important subjects to federal and state land managers). At the same time, we are visiting as many new sites as possible, either as re-

ported to us by various people, as we happen on new sites while visiting known site areas, or while exploring areas which just look good. In the last couple of years we have added information on about 120 sites (Greer and Greer 1993c).

Previous researchers have attempted to recognize patterns within Montana rock art (e.g., Conner and Conner 1971; Keyser 1979, 1990; Malouf 1961). Keyser (1979, 1990) has discussed the *Central Montana Abstract Style* as being represented by pictographs in the central part of the state. We now classify this as the *Central Montana Abstract Tradition* (more than a geographic style) which occupies the transitional zone between the *Northwestern Plains Tradition* of the eastern plains and the *Columbia Plateau Tradition* of the western mountains (Greer and Greer 1993b). This central area tradition, like the others, appears to contain a variety of styles which are definable by technological characteristics and artistic details related to content and manner (Greer and Greer 1992a, 1992b, 1993a, 1993b). This variability is clearly recognizable in the small sample from the Judith River.

Recently some of the art (and thereby the art styles) in Montana and northern Wyoming has been dated by AMS radiocarbon and cat-

ion-ratio techniques. Currently published AMS dates are on petroglyphs (Loendorf 1992; Francis, Loendorf, and Dorn 1993; Weller 1993). In north-eastern Wyoming, petroglyphs studied by Alice Tratebas were found to date as early as Clovis at 11,500 years ago (Weller 1993). Those along the border between southern Montana and northwestern Wyoming dated from 6000 years ago to historic times (Francis, Loendorf, and Dorn 1993). These dates indicate the long history of rock art in Montana and Wyoming.

Judith Study Area

Of interest here are sites in the South Fork Judith River canyon, and its tributary canyons, where Stu Conner, Larry Loendorf, and Forest Service archaeologists had previously noted three sites. During the summer of 1993 we visited these sites and added six new sites to the inventory. We also visited another nearby site just outside the mouth of the canyon, bringing the total to ten visited sites. We have only begun initial recording, but this introduction provides some ideas on what to expect during future work.

Setting

This part of central Montana (Figure 1) can be considered an extended basin and range topography, with extensive plains and rolling prairie interspersed with prominent mountain ranges. Plains and rolling prairie are dissected by gentle ephemeral drainages and slow-moving rivers and are interspersed with prominent mountain ranges and relatively rare localized areas of stone outcroppings. Discontinuous mountain ranges often (as with the Judith area) are composed of an igneous or metamorphic core bordered by a ring-like zone

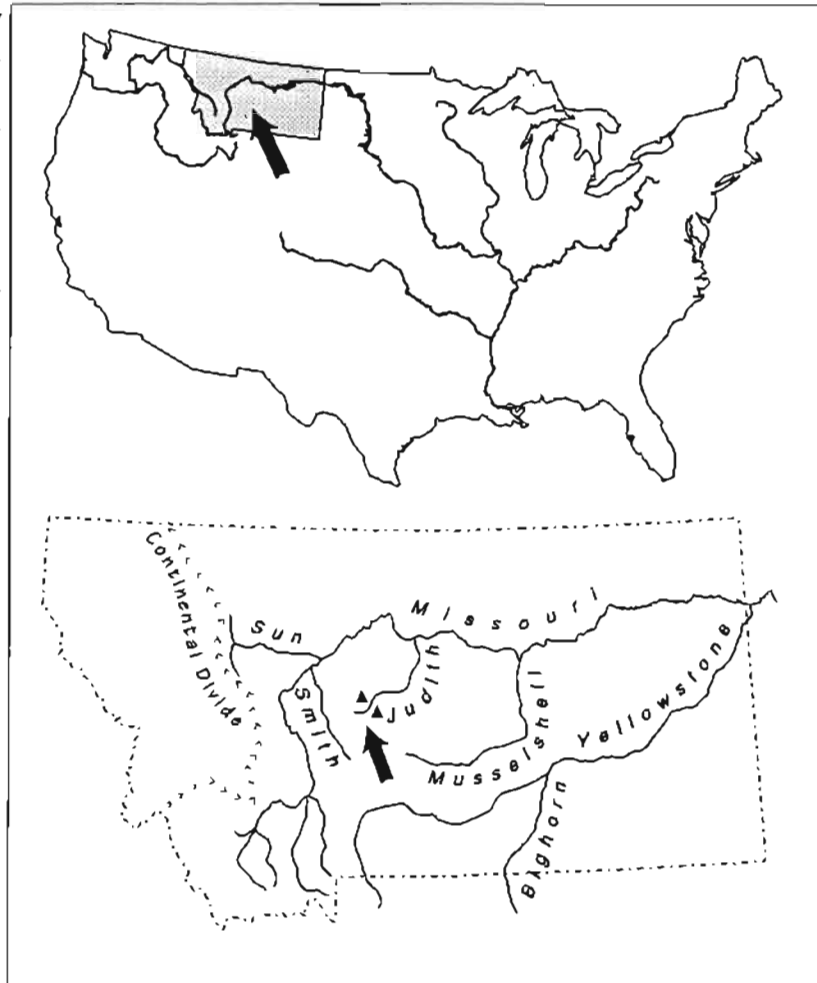


Figure 1. Judith River project area in west-central Montana.

of limestone or dolomite in which the caves and rockshelters occur (Alt and Hyndman 1986). The sudden high steep hillsides of the uplift are surrounded by a fairly limited ring of foothills which gradually blend into the prairie. Stream channels may exit the escarpment as short steep canyons, or they may be long deeply entrenched drainage systems reaching far back into the range, as with the Judith.

The sites of interest here are in the canyons of the South and Middle Forks of the Judith River and their tributaries. The Judith exits the northeast side of the Little Belt Mountains in an area characterized by long deep limestone canyons filled with numerous rockshelters and caves. Today much of the area is part of the Lewis & Clark National Forest and is used mainly for cattle grazing and recreation (camping, fishing, and hunting).

Field Work

Previous limited recording in the area has been done mainly by Stu Conner and friends and by Forest Service employees. Prior to our visit, three sites had been recorded in the South Fork Judith River drainage and another just to the north on Yogo Creek. Conner also had recorded six sites to the north on the Middle Fork Judith River (Conner 1962a, 1962b; Conner and Conner 1971:28, Figure 23). There had been no intensive recording at any site and no intensive searching for new sites. The only published information for the area is on sites along the Middle Fork Judith River (Conner, see above). Previous work indicates only that there is good research potential and considerable variability in the art.

In 1993, we conducted initial recording at 10 rockshelters and small caves—six along the South Fork of the Judith River, three in tributary canyons, and one on nearby Yogo Creek (Table 1). With access limited by constant rain and unusually high water, we did not visit six other known sites at the mouth of Yogo Creek on the Middle Fork.

South Fork drainage:	
Blasted Rock Cave	24JT79
Bower Canyon Shelters A-D	24JT179
Judith Bluff Site	24JT223
Pinecone Shelter	24JT224
Family Shelter	24JT225
Chokecherry Shelters A-C	24JT226
Finger Dot Shelter	24JT227
Dome Cave	24JT228
Hazlett Rockshelter	24JT1001
Yogo Creek:	
Yogo Crossing Pictographs	24JT71

Table 1. Sites in the South Fork Judith River area.

Observations

We have noted some patterns in Judith area rock art, and these are discussed below relative to examples at recorded sites, with names usually abbreviated in parenthesis. The cultural implications and geographical and tem-

poral extent of these generalizations presently are not known. Unless otherwise designated, most observations pertain to figures done in liquid red paint.

One of our main interests is variability in the art, especially variation in technology and manner of application. Thus, the following comments—such as on kinds of finger lines, smears, and handprints—rely heavily on the recognition of variation of temporally, functionally, or ethnically significant attributes. Already we are able to recognize regionally recurring patterns in some attributes, such as length or thickness of finger lines, whether handprints are stamped or retouched, whether spatter is fine and patterned or simply thrown at the wall, or whether smears are circular, rotational, or horizontal. Eventually we hope to be able to treat selected rock art attributes the same as lithic attributes in material studies and begin interpretive comparisons between sites and regions. In the meantime, we distinguish between different characteristics of manner as finely as the meaningfulness of the distinctions are supported.

Finger Lines

Plain red finger lines are perhaps the best indicator of the painted art of central Montana and should not be confused with the short hash mark alignments (tally marks) of the Columbia Plateau to the west. Lines are usually vertical (or nearly so) and commonly appear in groups of recurring numbers, such as multiple groups of three lines each (Figure 2). There is considerable variability in manner of application—normal width lines were done with the finger pad, and slightly narrower lines

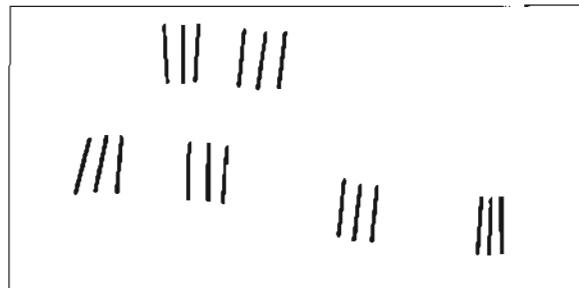


Figure 2. Grouping of red finger lines at Chokecherry Shelter C.

with the finger edge. Most lines are somewhat smeared and not continuous; that is, most were made by simply pulling the finger down the rock in a single motion. Other lines were carefully painted and retouched with multiple passes. Most lines are moderately short, 10-20 cm, and occur in repetitive groupings of two or three lines. Alignments of short vertical "tally marks," so common in western Montana, are rare and may instead be shorter variants of normal Central Montana finger lines.

Almost all red painted figures (such as animals, humans, and geometrics) in this area were made with the finger, not with a brush, and show considerable variety of application. A few are done in a very fine and well mixed liquid paint very carefully applied, such that lines are solid and edges distinct. *Fine line figures* made with a fine brush or frayed stick are rare.

Smears

Nondescript smears apparently are not so common here as in other parts of central Montana. Most smears in the Judith area seem to be prior figures which have been smeared, either intentionally or by natural water on the rock surface. The numerous intentional circular smears—as distinguished from hand-cleaning smears—are usually small areas about 10-25 cm across in which paint was applied with all the fingers at one time in a circular pattern, or with the whole hand in either a circular or rotational pattern. These mostly amorphous areas could have been produced simply as smears of separately applied paint or as intentional smearing of existing finger painted figures. Smears occur at most sites but are especially noteworthy at Judith Bluff, Yogo Crossing, and Hazlett.

Spatter Areas

Spatter areas of various kinds occur in several sites across Central Montana, but at only one site on the Judith. At the Judith Bluff site, a medium red to orange thick liquid paint was thrown upward at the nearly vertical cliff face, spattering paint over an area of about 6 to 15 feet above the ground and covering an area about 4 feet wide. This was a single inten-

tional action not related to the production of other figures; nothing is nearby. This is unrelated to any kind of stencil technique, and no stenciled figures (such as negative handprints) are present in any of these sites.

Stylized Humans

Humans are shown in many forms—in schematic or detailed views of anatomically correct figures and in more stylized representations. Simple stick figures may have various body parts (e.g., arms, hands, fingers, legs, feet) and various attachments of clothing, decorations, and weapons (Figure 3b). What stands out, however, are examples of people clearly distinct from the more usual ways of drawing humans.

At the Blasted Rock site a large shaman-like figure with upraised arms and exaggerated hands is missing the lower half of his body (Figure 3a). Only the upper half of the torso is represented, and then only as a narrow, pointed taper. Sticking into either side of the base of the neck are arrows or spears, a

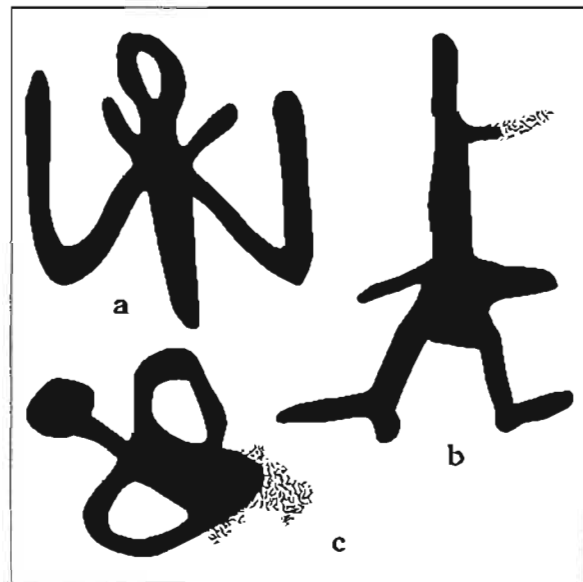


Figure 3. Red anthropomorphs: a) Blasted Rock Cave, main shaman with arrows sticking into neck, b) Blasted Rock Cave, stylized human with skirt, belt or waist attachments, and detailed feet, but nothing in the upper torso, c) Hazlett Rockshelter, human with looped arms (or perhaps a butterfly), and smearing at lower right (incomplete?).

distinctive trait which appears to be associated with intensive shamanism throughout much of North America. We have observed this portrayal in several other areas at least as far away as southwestern Texas (Greer 1968) and central Baja California (Cueva Pintada, Cueva Flechas, and Cueva Soledad in the Sierra de San Francisco, north of San Ignacio, Baja California Sur). Crosby (1984:100) pictures one such figure (and discusses others) from the San Borjitas site of the Sierra de Guadalupe, just northwest of Mulegé, Baja California Sur.

A very small panel with three persons was found at Family Shelter (Figure 4), so named because the group at first was thought to represent a nuclear family. The situation is much more complex, however. The central figure—the largest, most complex, and presumably a man—is shown clearly in three-quarter-view, with slightly bent natural legs and clear buttocks. His feet and hands are missing, and the smeared head area appears to represent more of a transformation than a headdress. The figure to the right at first was believed to be a female, with breasts to either side of the torso (as with the northeastern Australia Laura style, or the central Baja California Great Mural style). Closer inspection, however, suggests that the squared and stubby protuberances may instead be chopped off arms, and her feet are missing. Her head is pointed (slightly recurved) at the top and is more the shape of the head of a snake or water turtle or a human penis,

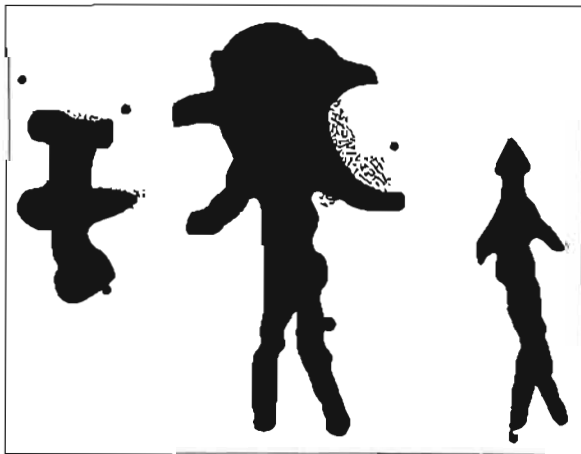


Figure 4. Small panel of anthropomorphs at Family Shelter (see text for discussion).

all of which take similar form in art and all of which probably represented “maleness” (along with other similarly portrayed things, like mushrooms and tadpoles). The left-hand figure, originally believed to be a small upside-down human—probably representing a dead child—has unusual features. If this is a child, then the arms and legs are essentially missing. The literature is full of unborn children portrayed in exactly this way. Thus, all three of these figures clearly deviate from common ways to picture humans (at least in this area) and undoubtedly portray something different and distinct from other humans.

Handprints

Handprints are done in a number of ways. Some are plain prints in which the hand was covered with liquid paint and then simply pressed on the wall (as at Pinecone Shelter). More commonly, the resulting handprint was retouched in an effort to clarify the attributes (as at Chokecherry and Bower). In a few cases the print is so retouched that it is not certain that the final figure began as a print at all (e.g., Hazlett Shelter, Figure 5a-b). In the Judith area, so far, there are no drawings of hands made as tracings of shadows, as there appear to be in other areas where prints at first appear to have deformed or missing fingers.

Of special interest are two handprints with six fingers each (or five fingers and a thumb). Both are at Hazlett; one is on the back wall, and the other is about 20 feet high on the cliff above the cave’s mouth (Figure 5a-b). Both appear to be retouched prints. This is a recognized biological abnormality, and it is possible that these prints, or drawings, (at least originally) represented actual hands. We have observed similar prints in other sites in central Montana (cf. Shumate 1960: Figure 25).

One drawing of a handprint at Hazlett has unusually long fingers (Figure 5b), again a form which recurs at other sites in central Montana. As at the other sites, the hand is in an upright position with the unnaturally long and extended parallel fingers intentionally painted. A similar position occurs in ceremonial art in other parts of the country, where the hand

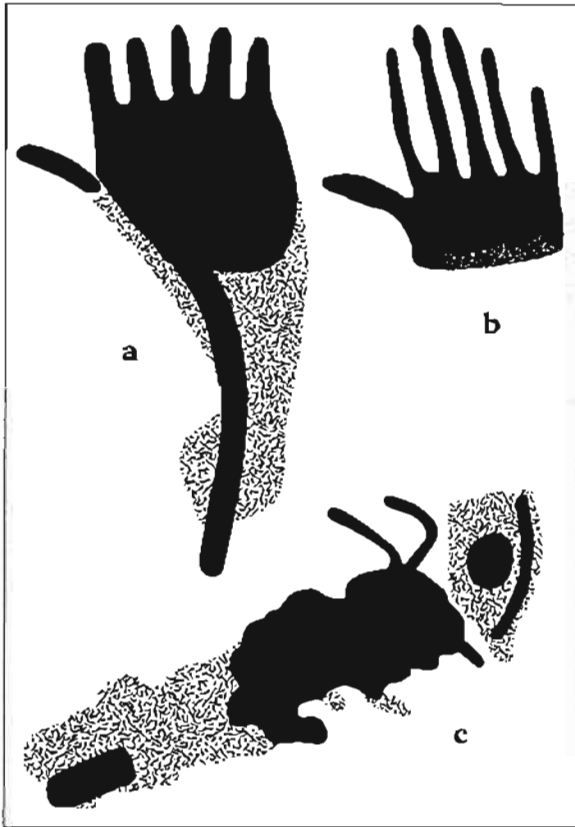


Figure 5. Hazlett Rockshelter red figures: a-b) unusual handprints, c) bison (?); a and c are high above cave mouth; b is in cave interior.

sign in this general position, with or without attached elements or symbols, such as an enclosed eye, has special religious significance in such areas as Mesoamerica or southeastern North America (Phillips and Brown 1978:152). Its meaning in central Montana is unknown, although it is distinctive enough and recurs over a broad enough area to suggest a special and widely recognized meaning.

Removal of Paint

Some animal figures, especially bears and mountain sheep, have multiple scratches or very fine incisions across the bodies (especially at Judith Bluff, Finger Dot, and Family; Figure 6). It appears that either 1) the scratches, for their own sake, were integrated into the figure, or 2) the scratches are the result of actions of objects which interacted with or against the figure, such as a knife being used to cut the force of the figure. This treatment

has been recognized throughout central Montana and is believed to be the result of ritual activity associated with the use of the painting (e.g., Lewis 1986).

Several animal and human figures are intensively scratched (Figures 6 and 7). In several cases it appears that during aboriginal times old paint was intentionally and fairly carefully scratched off (and possibly collected), especially from wide bodied figures such as animals. Aboriginal removal of paint perhaps could have functioned to discredit existing (or older) paintings or to nullify spiritual or supernatural forces associated with the figure. The condition of these figures does not appear to be the result of modern visitors attempting to partially deface the paintings or to remove portions of the paint.

Some of these human and animal figures have a significant portion of the paint removed from solid body areas (the best examples are at Finger Dot; Figures 6a and 7b). In nearly all cases the outer margins are very little affected, and paint removal is concentrated over most of the interior body area. Paint removal appears to have been fairly carefully done and was effected by very fine scratches concentrated in blocks. Paint removal appears to have been for the purpose of removing paint, not to destroy the figure. The practice is widespread in Central Montana, with numerous figures in the Judith area and excellent examples at other sites.

Several years ago we noticed this in some Archaic paintings in southwestern Texas, where early paintings were almost completely removed by very fine scratches. These early scratched surfaces were then repainted with elaborate figures probably dating 2000-3500 years ago. It now appears that evidence of a similar practice is much more widespread throughout central Montana than we had originally realized, and it is likely that previous identification of finely scratched areas across animal bodies as modern impact was, at least in part, in error for other parts of the state as well. Some of the best examples of this practice are on the Smith River to the west, on panels apparently representing intensive shamanistic activity.

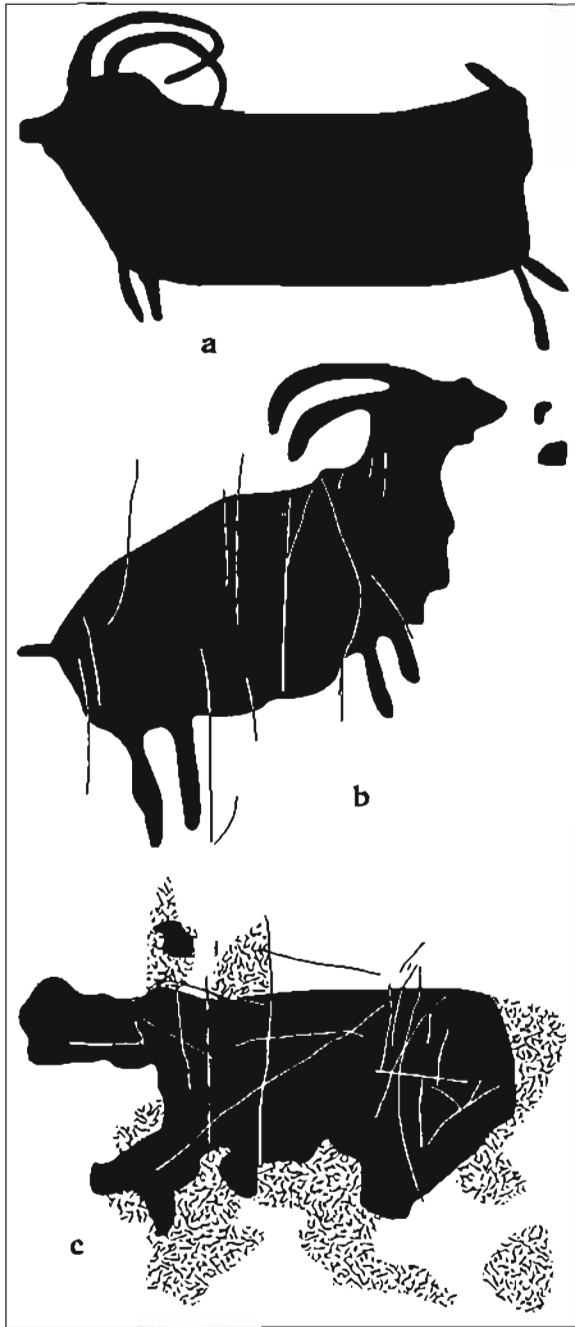


Figure 6. Scratched red animals: a) Finger Dot Shelter, sheep or goat, perhaps originally black and then overpainted in red; most of head and body have been scratched to remove the paint, b) Family Shelter, sheep, c) Judith Bluff Site, possible bear.

Site Selection

How the people selected sites to be painted is not known. No pattern is presently obvious,

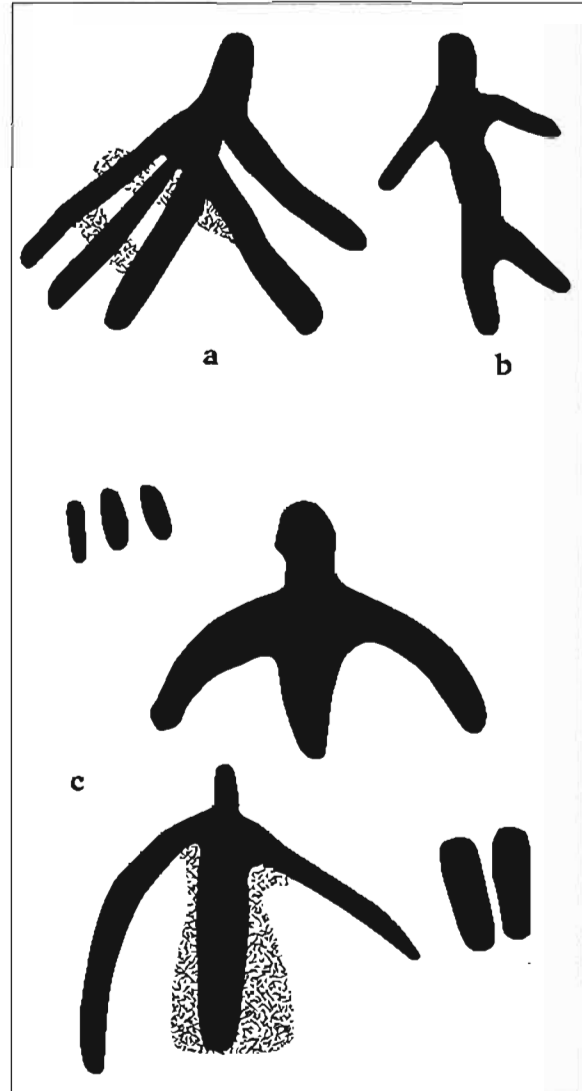


Figure 7. Scratched red anthropomorphs, Finger Dot Shelter: a) torso and parts of the neck and arms are heavily scratched and pitted, b) entire figure heavily scratched, c) small group of humans or birds with other short finger lines; lower figure is heavily scratched.

and shelters and rooms of every imaginable kind and in all possible topographic settings both were and were not painted (Figure 8). At least in some cases, what appear to be ideal surfaces, shelters, and cave rooms were not painted at all. For the most part, painted sites are at the bottom of the hillsides and just above stream-side terraces, while caves and rockshelters high up on hillsides generally were not used. This is only a generalization, however, since numerous ideal low shelters and



Figure 8. Chokecherry Shelters, general view.



Figure 9. Blasted Rock Cave, general view.

cave-like rooms were not painted, and a couple of high caves were used.

Painting in Dark Areas

Most sites are open rockshelters or cave-like rooms with adequate natural light. In only one site (Blasted Rock; Figure 9) is the fairly dark room of sufficient depth and restricted ceiling height to necessitate the use of artificial light in the drawing and viewing of the paintings on the low ceiling. Paintings were drawn in two areas near the rear of the cave by painters lying on their backs. A small hearth possibly used for lighting up the ceiling is in the darkest area, beside the drawing of a stylized human presumed to be a shaman (Figure 3a). No painted figures have been found in cave-like rooms or passageways at other sites, some of which have areas of total darkness. So far we have found no dark zone art anywhere in Central Montana, although we have been looking for it.

Painting in Domes

Three very small rooms, mostly suitable for occupancy by only a single individual, have high recessed domes with a clean, smooth white surface visible only from inside the cave. The ceilings of these domes have been fairly elaborately painted with presently uninterpretable geometric figures or symbols in medium to dark red finger paint (in Bower Canyon A, Chokecherry A, and Dome). Small crosses in one dome (Figure 10) are reminiscent of star representations in the Southwest. Concentrated or elaborate geometric symbols

at other sites also usually occur on low ceilings of lateral alcoves (such as at Finger Dot). The reason for this selection for isolation, or how it relates to geometric art, is unknown.

Lack of Exterior Orientation in the Art

“Exterior” oriented public art may work in two directions, and both kinds seem to be mostly absent in this area. In other parts of central Montana, public art is much more common or even dominant. The two orientations are based on whether one is looking outward from inside the site, or is looking at the site from a distance:

a) Outward. The orientation may be from inside the site, looking outward and away from the site toward the surrounding country or toward a specific geographic or cultural location or feature, such as looking out toward a mountain peak or a village. We find no obvious evidence for this on the Judith (although we have examples in other areas). It appears that sites with *views toward* what would be considered extensive vistas or overlooking recognizably specific features or locations generally do not contain paintings of any kind.

b) Inward. Art may be viewable from a distance, that is, from a nearby outside area looking back toward the site and the paintings. Paintable walls and the painted figures on those walls are easily *viewed from* some distance in front of the site, or from an outside location looking back toward the site. Obvious examples in other areas are trail markers and site markers or panels which seem to sanctify or provide protection to a route, or to indicate who may have passed by a location along a route.

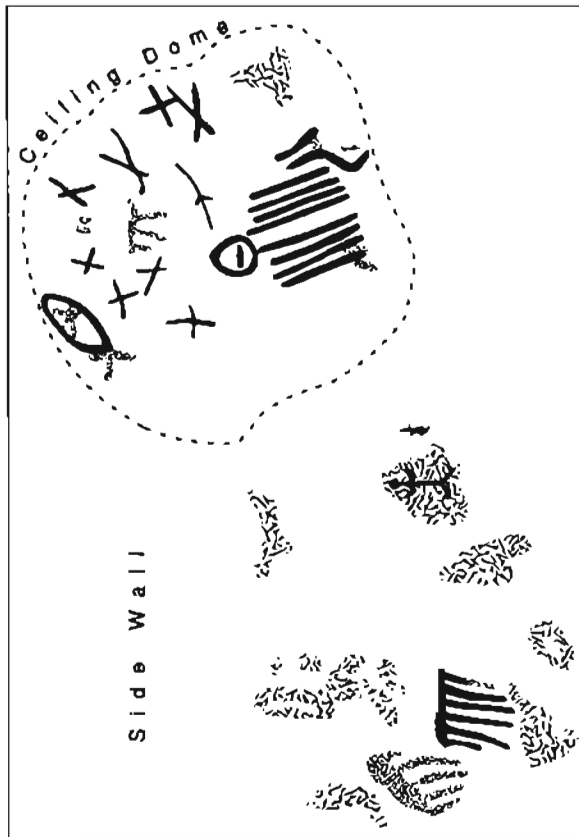


Figure 10. Bower Canyon Shelter A, red figures on ceiling and wall of dome.

With one exception, no art seems outwardly to mark or signal an individual site. At Hazlett Shelter, several figures are painted high above the mouth of the cave in some special significance of public display (Figure 11).

Private Orientation of the Art

Most of the art on the Judith appears to be privately oriented, as opposed to publicly. It seems to be the result of an individual's actions, perhaps related to personal beliefs or events. Since the markings mostly were left on vertical faces open to the front, obviously there was no attempt at restricted use although there could have been social regulations controlling who was allowed to look at the figures, or even who had access to the site.

Private use or restricted display is suggested by isolated locations for some figures, such as small domes or low ceiling areas, and by the usually small size of the figures themselves. Most figures are very small, suggesting they were meant more for their existence on the

rock than for viewing. On open panels, paintings mostly are in rear areas not easily viewed from a distance, and in some cases most easily viewed from immediately in front of the art. Paintings occur in small dome rooms best monopolized by a single individual (Dome, Bower, Chokecherry), or on very low ceilings of laterally restricted areas best occupied by a single person (Blasted Rock, Finger Dot) or able to be viewed by one person at a time (Judith Bluff, Hazlett, Family). This situation of low ceiling painting is common throughout Central Montana and helps indicate multiple purposes for the art within any one area and across the region.

Not inconsistent with the private orientation is the possibility that most of the art—at least the older red finger line figures—is related to shamanistic activities. Almost everything could function as symbols and references to the supernatural, other religious concepts, social or spiritual conventions, ancestor beings and actions, and creation time. It is our impression that shamanistic activities probably dominated the earlier use of liquid red fingerpaint (Figures 12-13), while later use of black crayon may have been more commonly done by persons other than ritual specialists (Figure 14).

Chronology

The situation is not a simple matter of single-time use of the area, and at least two periods are represented. From direct superpositioning of figures it is obvious that the use of liquid red paint is early and black crayon is later.

Within the early materials, we believe that carefully painted figures in a thick, very dark red to rust-colored paint may be earlier than lighter colored red figures, which seem to be more haphazardly painted with finger paints. It is unknown how bichrome red-black paintings (as at Finger Dot Shelter) fit into the temporal ordering. Very small fine-line figures in a thick black liquid paint are also unplaceable at this time, although they somewhat intuitively seem to be late, perhaps more or less contemporaneous with the small black crayon figures.

Thus, we are tentatively proposing a provisional sequence, with dark red liquid paint earliest, lighter red liquid paint later, probably



Figure 11. Hazlett Rockshelter, with red figures (Figure 5, a and c) on rock face high above mouth of cave.

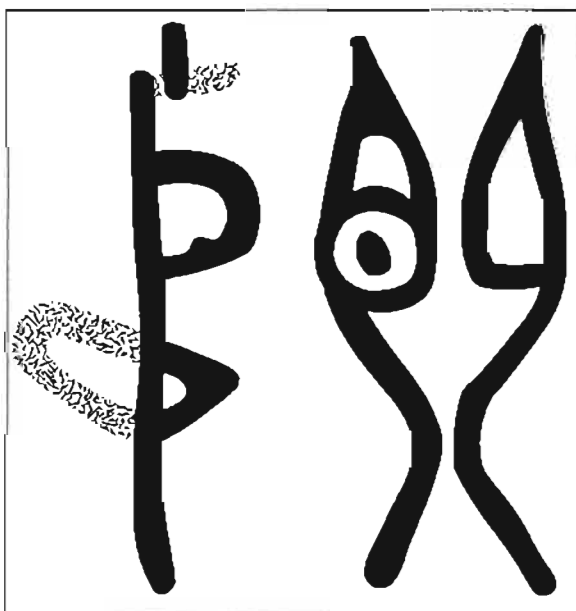


Figure 12. Red figures, Finger Dot Shelter: a) possible loop line. b) mask or fish-like figure.

followed and overlapped by bichrome red-black, and with the sequence coming to a close with small black figures (possibly with liquid

paint early and crayon latest). Absolute dates will have to await sampling and an AMS dating program, which should be accompanied by detailed pigment analysis.

Technical Studies

Technical methods need to be developed for the recognition and conservation of figures which have been covered by various materials and now are not discernible or optically visible. In the following cases it is assumed that the original painted figures are still at least partially present and their forms still discernible by special means. The need to remove or "look through" coatings to detect and observe underlying paintings is of world-wide interest and certainly is not restricted to the Judith area.

Some figures are covered with a thin layer of calcium carbonate (e.g., travertine or calcite) or dolomite which has been naturally deposited across the painted surface by slow water deposition. The coating is crystalline in nature and therefore should be susceptible to optical manipulation without affecting the coating. Otherwise, con-

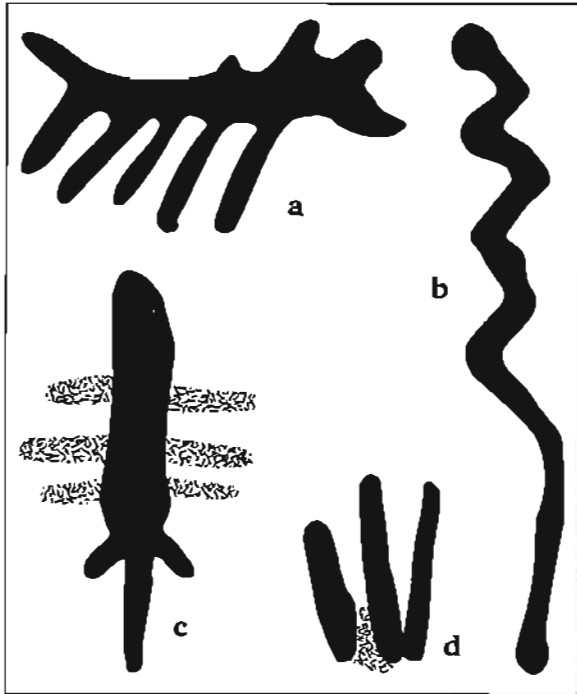


Figure 13. Red Animals: a) Judith Bluff Site, possible dog with five legs, b) Pinecone Shelter, snake, c) Pinecone Shelter, otter with fingerline smears on either side, d) Pinecone Shelter, bird track.

trolled removal of the crystalline coating may be possible through special laser applications.

In numerous instances, paint has been smeared over a figure, either as separate paint applied to an existing figure or by rubbing a wet hand over an existing figure to smear the paint. As with crystalline coatings, it may be possible to use optical means to "see through" the paint coating and detect areas of thicker paint of the original figure. Otherwise, it may be necessary again to use controlled laser removal of the overlying paint; in such a case, a method should be developed to trap the removed pigment presumably as a gas for later dating and pigment analysis.

Lichen coating is another devastator of painted figures. Again, controlled laser removal of the lichens may be the best way to expose the paint and discern the original figure. It is doubtful that anything could "see through" lichens without physical removal.

A related problem to coatings is the eroding away or fading over time of painted figures. Again, it should be possible to develop the means



Figure 14. Small black figures, Finger Dot Shelter: a) man with lance (or staff) and shield, b) horizontal lines on staff, c) grizzly bear or bison.

to discern their original form. Optical means presumably should be available to discern and visually amplify the existing pigment, even if only microscopic portions still remain. Likewise, if the parent stone has been negligibly altered by differential exposure to light or by any other kind of chemical reaction, optical means may be available to discern the original figure form, even if most or even all of the paint is no longer present.

Summary and Evaluation

Observations presented here are mostly regionally or locally specific, and they attempt to recognize details of the art and its past use. That is, an attempt is being made to recognize or define local patterns or uniquenesses in the art. These suggestions can be compared with other similarly recognized local characteristics in an effort to define more meaningful patterns across time and space.

Early attempts at organizing the vast data represented in the rock art of Montana roughly defined three broad categories in the art rep-

resented mostly by subject content and its means of portrayal relative to statewide geography. The result was three divisions roughly corresponding to East, Central, and West, which were then loosely described as styles, and which we now equally loosely recognize as traditions.

We continue to build on that early foundation by looking at local areas and evaluating their places within the larger scheme of geographic units. Our observations on the Judith are locally specific, but they do attempt to recognize and compare local patterns in an effort to define larger regional patterns across time and space. And equally important is the definition and isolation of anomalies or outliers to these patterns since they will carry different kinds of information from the main patterns. Thus, information from the Judith can be compared with other areas, as well as known temporal and cultural contexts. It is only in this way that we can hope to achieve a broader classificatory and explanatory framework, even with the ever-present complicating effects of time and multi-ethnic use.

Technical Notes on Drawings. Line art figures for this paper were prepared on computer (Macintosh Quadra). Color slides (ASA 100) were scanned at high resolution (250-4000 dpi) onto high capacity magneto-optical removable hard disks (average initial scan about 15-25 Mb). Initial scans were then color manipulated on a high resolution 20-in color monitor in Adobe Photoshop to enhance paint and smear colors (including increased contrast, saturation, sharpness, and hue manipulation) and reduce background or noncultural wall features. This manipulation often resulted in figure and technology details (such as intentional smearing, superpositioning order of overlapping lines, or the differentiation of intentional individual lines from blanket fill zones) not noticed in the field and not at all obvious when viewing the projected slide or the initial enlarged scan. Different manipulations, or different levels and mixtures of color enhancement, often yielded different information. These images were then precisely traced (at exceedingly high scale enlargement to assure

accuracy) in Adobe Illustrator (PostScript drawing program), using the various color versions and available field notes as comparisons. Solid areas represent definite lines and fill areas. Pattern fill represents smeared areas believed to be part of the original figure or indicative of indistinct edges. Gradient shading indicates edge areas in which the paint simply fades away, presumably due to flaking off of the paint or degradation of the natural surface. All figures presented here are monochrome.

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