Some Seasonal Elements in Uinta Fremont Rock Art

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ABSTRACT

For rock art panels of interactive design, sun and shadow emphasis on element types and on specific parts of rock art figures varies by season. Some seasonal patterning is obvious; some may only be recognized through analysis of annual key day observational data from many panels. Some initial results from Northeastern Utah data are presented.

INTRODUCTION

Interactive rock art is rock art that has been designed to interact with physical systems of the site environment. In Utah, this typically takes the form of using shadows as templates for the shape and placement of rock art elements on specific days of the year (key days). Thus, on the key day of design, the shadow templates emphasize the elements of a rock art panel that were originally designed to match those shadows. Uinta Fremont rock art designed with this technology shows some conventions as to use of shadow shapes, and in association of particular elements with certain key days. This paper initiates the exploration of selective emphasis by key day, using data for the Uinta Fremont zoomorphs sheep and snake. The key days as used herein are Winter Solstice (WS), February Crossquarter (FWC), Vernal Equinox (VE), May Summer Crossquarter (MSC), Summer Solstice (SS), August Summer Crossquarter (ASC), Autumnal Equinox (AE), and November Winter Crossquarter (NWC). At a motif level, rock art alignments with shadow templates are essentially the same on FWC and NWC, on VE and AE, and on MSC and ASC.

DATA

My research in northeastern Utah pursues a split strategy. Fieldwork is divided between identifying and mapping sites to determine if they are interactive, and documenting all interactions for panels for all key days at each site. This paper is not offered as a statistically rigorous study. Data used range from completely studied sites through individual panels for which some key days (or some active events) are not yet documented. The data presented are from thirty-eight panels at ten sites in and around Dinosaur National Monument. These panels have both the requisite zoomorphic motifs, and acceptable levels of documentation at all key days.

I built a database for interactive rock art using Microsoft Access™ for Windows 95 to record interactive emphasis by key day on elements found in sheep and snake rock art motifs. The database form as designed allowed input of only four element emphases per interactive event. Since many interactions display more than four interactive alignments, some bias has been introduced through my selection of only four emphases from a larger set occurring during many interactions. In general, selection was biased in favor of repeated emphases on one element during an interactive event, and in favor of type A alignments (Johnson

1992.14). This may have obscured some minor seasonal patterning, especially of type C (simple linear) alignments. Microsoft Excel™ was then used to organize and tabulate the data.

SHEEP

On the thirty-one panels with sheep representations chosen, there is complete data for only about 64% (range 65% at WS to 51% at SS) of the active events on any given key day, or one hundred out of one hundred and sixty-eight active events. Sheep representations were organized for each key day by these motifs, sheep with trail, dead sheep, sheep group, single sheep, group of females with young, ewe with lamb, and female with fetus and pregnant sheep (combined below as "pregnant sheep"). Within each motif, each instance of element emphasis by shadow template was tabulated as plus one (+1) for the following elements of sheep representations, head, horns, eyes, mouth or nose, neck, all legs, front legs, back legs, all feet, front feet, back feet, trail, weapon, body, chest, belly, tail, cervix area, fetus, lamb, umbilicus, and mammary area. Instances of no key day interaction on a given panel may also be designer choices and reflect emphasis (or more precisely, negative emphasis) of a motif (Johnson 1990.39).

The rationale is that choice of panel surface, as well as which shadows are or are not used as templates, is a designer choice. Thus, I treated each instance of a motif being dark, lit, or non-interactive during an active event or on a key day as negative emphasis of that motif, tabulated as minus one (-1). This resulted in a spreadsheet matrix for sheep of eight by twenty-five, or two hundred cells.

I used the data matrix to approach seasonal variability of interactive rock art emphasis from three different directions. Figure 1 graphs the number of active events of positive or negative emphasis by season. The upper graph shows the active event emphasis on all motifs in the data set. I then graphed the same data as two sets of motif clusters a cluster including all motifs intuited to pertain to birth and young (group of females with young, ewe with lamb, and pregnant sheep), and a cluster composed of all other motifs (sheep with trail, dead sheep, sheep group, and single sheep). The overall patterning for all sheep motifs (the upper graph in Figure 1) suggests no (or negative) interest in sheep at WS, with most interest in sheep occurring during the summer half of the year, peaking during the May-August period. There is less overall emphasis at SS than at SC. The lower graph in Figure 1 shows there are some differences in panel activity by motif, the most pronounced being the lessened activity on the equinoxes for birth/young motifs.

As a second approach, I graphed the total number of individual emphases documented (to a maximum of four per interactive event for each motif on a panel) by season for each of the eight motifs separately (Figures 2-3). In Figure 2, the patterning for all the birth/young motifs is similar, although the females/young group motif shows stronger negative emphasis for the winter quarter of the year and at SS. The motifs not visually involving females and young (Figure 3) show different patterns, both from the birth/young motifs and each from the other. Note especially the dramatic difference between the single sheep motif in Figure 3 and the birth/young motifs on Figure 2.

Finally, I graphed (Figures 4-7) seasonal emphasis patterning for each individual element found in representations of sheep. These graphs show only the seasonal occurrence of each element emphasis; there is no score for negative emphasis on the elements, as negative emphasis can only be assessed for a motif as a whole. If there is no data for an element on a key day, the score is 0 (zero). Figure 4 covers the head and neck area Emphasis on head elements tends to peak on SC, while emphasis on the neck peaks at equinoxes and to a lesser extent at SS. Figure 5 covers the sheep body and two additional elements the trail and the weapon. Figure 6 graphs emphasis on sheep legs and feet. One instance of emphasis on all feet was combined into scores for front and back feet (even though the same shadow template seldom serves both legs and feet). The pattern for the back legs and feet differs from that of front legs and feet. Figure 7 graphs emphasis on sheep reproductive parts. One instance of fetus emphasis was combined with belly emphasis, as was one instance of umbilicus with new birth. Unlike the strictly birth-related elements, the mammary area is emphasized on SS as well as SC.

I have discussed above three relatively simple ways to view patterned variability of emphasis on sheep representations. They are:

- overall seasonal emphasis as reflected by the number and nature of active events
- seasonal motif emphasis calculated by tabulating the number of emphases (in this instance, to a maximum of four) a motif is subject to on each key day
- seasonal element emphasis calculated by tabulating the number of emphases (to a maximum of four) an element is subject to on each key day.

Even this level of analysis suggests several ideas:

- Uinta Fremont interest in sheep as expressed through rock art was nonexistent at WS and highest in summer, peaking at SC.
- Although interactive emphasis does vary somewhat by motif, panel designers often used a motif for multiple purposes (of seventeen cervical emphases, eight occurred on birth/young motifs and nine, including one equinox cervical alignment, occurred on animal with trail, group, or single sheep motifs).
- There appear to be clusters of elements, sometimes not intuitively related, with similar seasonal patterning Although this is immediately obvious for the top three graphs in Figure 7, look at the similarity between the graphs for weapon and neck elements, or for back legs and feet (even though the shadows that emphasize the back legs are not the same shadows that emphasize the back feet).

More sophisticated analyses based on interrelationships between panel elements, interactive patterning, and the patterning of natural cycles of climate, flora and fauna are beyond the scope of this paper. I will only suggest here the kind of information available through careful analysis. Any given motif depicts pictorially the general appearance of a seasonal concern or behavior. The interactions emphasize, with a variety of patterns, different elements of the picture at different seasons. Patterns of shadow template emphasis appear the same for MSC and ASC, for VE and AE, or for NWC and FWC, cycling twice annually. It is obvi-

ous that patterns of meteorological, flora and fauna behavior cycle only once annually. A given sheep representation, then, may have at summer crossquarters shadow emphases predicting seasonal aspects of sheep behavior some of which are applicable in May, some in August, and some (nursing of lambs) applicable to the entire period between MSC and AE. As an illustration of how careful analysis can solve this problem, examine the data and graph on Figure 8. The graph peaks at MSC, much of that data composed of cervix and other birth/young/nursing elements. The curve falls somewhat at SS. Much of the data, then, comprised of mammary and legs/feet, emphasizing ASC patterning is the same as MSC. The curve falls again at AE, with most emphasis on front legs/feet, horns, and neck. At WC the main emphasis is on the ewe's body—other emphasis is scattered. By WS, there is only one alignment on any of the selected panels that emphasizes the tail. To correct the curve for an annual pattern of bighorn sheep behavior as depicted by the Uinta Fremont, subtract at ASC the emphases of cervix, belly, fetus and umbilicus directly related to birth at MSC. The rather elegant result shown in Figure 8 predicts the onset of events in the annual pattern of lambing, infant care and weaning in mountain sheep, as described below.

A brief summary of the natural history of bighorn sheep applicable to northern Utah condensed from Zeveloff (1988 349-351) is as follows: Mountain sheep breed in November and December (between WC and WS), the only time rams and ewes are together. A single lamb is born 180 days after breeding takes place (between MSC and SS). Ewes and lambs form groups for the summer (between MSC and AE), and the lambs play with each other in nursery groups. Sheep avoid predation and protect lambs mostly by striking with their legs and feet, or by climbing. In the summer, they sometimes migrate to higher elevations for food. Lambs are weaned beginning around 6 months of age (about NWC).

One panel depicting a person holding a dead, headless sheep is a clue to a number of element-emphasis connections. The sheep's neck ends raggedly at a crack or small ledge on the panel surface. The interactive patterning documented at equinox both reinforces the idea of a hunting scene, and dramatically emphasizes (during both of two active events) the area where the ragged neck ends. Thus shadow emphasis on sheep necks, especially when the emphasis suggests cutting off the head, might by convention relate to hunting. The compiled data support the idea through emphasis on the dead animal motif at equinox, and through similar curve shapes for weapon and neck elements (Figures 3-5). Tail emphasis also seems to follow this pattern.

That the scene described above is about AE, rather than VE hunting activity is supported both by clues in rock art and by subsistence studies. A nearby hunting scene portraying both sheep and deer, interactive at equinox, has a hunter shooting an antlered deer. Local deer populations have their antlers at AE, but have lost them by VE. For subsistence, Speth (1983) points out that the food value of meat and marrow from large hoofed mammals varies throughout the year, with populations balanced near the edge of death from starvation during from mid winter through spring. Efficient subsistence strategies then must

involve either planning the times and targets for hunting efforts, or in the case of mass or non-selective kills, utilization of the meat only from selected specimens. To apply this to mountain bighorns, males are in very poor condition from after rut until at least June. Females decline after rut as they devote body mass and energy to gestation, calving, then lactation. Females thus begin to recover somewhat later in the summer than males. Males are probably in best condition from SS to NWC, females from AE through NWC. The most efficient annual hunting strategy for mountain sheep would be to hunt rams (or yearlings) beginning in late June, ewes that had lost lambs (and meat for winter storage) beginning in late September, with no hunting effort expended on sheep from late December through June. The lower peak in the weapon and neck curves at SS might then portray selective hunting of rams beginning in late June.

There is yet another type of variability present on some interactive panels. In some cases, a shadow template will simultaneously emphasize elements of several different panel figures or motifs. In other words, a continuous shadow supplies an association between apparently separate panel figures or motifs. This occurred for twenty of the sixty-five sheep interactions studied here. These associations are listed in Figure 9. It intrigues me that these associations offer additional support for postulated relationships between sheep and humans (and for some observed annual patterning of emphasis in anthropomorphs).

SNAKES

I have included a brief discussion of snake motifs to make a point about using interactive data for rock art interpretation and hypothesis testing. Snake motifs were: animal-with-hole and single-snake. Elements subject to emphasis were head, eye, body, tail, and hole, with negative emphasis tabs for dark, lit, and non-interactive events. Data used for snake patterning comes from fifty active events on eight panels at three sites. Two of those panels (panels 1 and 2 at McKee Spring) are roughly elliptical blobs on two sides of a low, protruding rock that looks to me like the head of a rattlesnake, the blobs representing its eyes. To classify these two panels as a snake representation is thus an act of interpretation in itself. Does the seasonal curve for snakes support the interpretation that these two panels represent a snake? The patterning of positive and negative event emphasis for all data (including McKee Spring panels 1 and 2) by season is shown as the top graph on Figure 10. In the lower graph on Figure 10, the curve for McKee Spring panels 1 and 2 is compared with the curve for all other snake data. As can be seen, the patterns are nearly opposite. The bulk of the snake data fits very well with reptile behavior in this area: snakes emerge as early as late March, and are almost never sighted after late September (perhaps the peaking emphasis at SS represents some symbolic connection between snakes and human concerns). This exercise argues strongly against the interpretation of McKee Spring panels 1 and 2 as a snake representation.

SUMMARY AND CONCLUSIONS

Variability in seasonal patterning of both quantitative and qualitative emphasis for

interactive rock art, especially when studied in conjunction with interactive associations and with cycles of flora, fauna and climate, has great potential for both interpretation of rock art itself, and for other archaeological endeavor. The asymmetry between the shadow template cycle (repeating twice annually) and annual cycles in flora, fauna, and seasonal change, coupled with the relationships found within and between panel pictorial elements, motifs, element emphases and interactive associations offers a potentially vast source of sound, repeatable empirical data for analysis, hypothesis building and testing, and application to a broad range of archaeological questions.

For the Uinta Fremont panels discussed here, it appears that although there is some variation in seasonal emphasis (and inferred "message" or purpose) by motif, the Fremont sometimes also used any sheep motif to convey seasonal information about sheep behavior in general. Emphasis to *elements* of sheep motifs, however, is more consistently patterned. Analysis of seasonal element emphasis suggests seasonal or behavioral connections between elements not intuitively related. The strongest seasonal patterning apparent is that of birth and lamb care, beginning in early May and continuing through November. Additionally, patterning seems to portray other seasonal aspects of mountain sheep (and Uinta Fremont) behavior. Sheep seem not to have been a concern of rock artists at Winter Solstice. Emphasis on snakes in Uinta Fremont rock art agrees well with their annual behavioral cycle, although a peak at Summer Solstice may have a symbolic explanation.

What is now needed is additional data for the Uinta Fremont (Johnson, work in progress), seasonal interactive data from rock art from other places or of other "styles", analysis of other rock art figures, motifs, and elements, and some statistically rigorous analyses of the data.

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