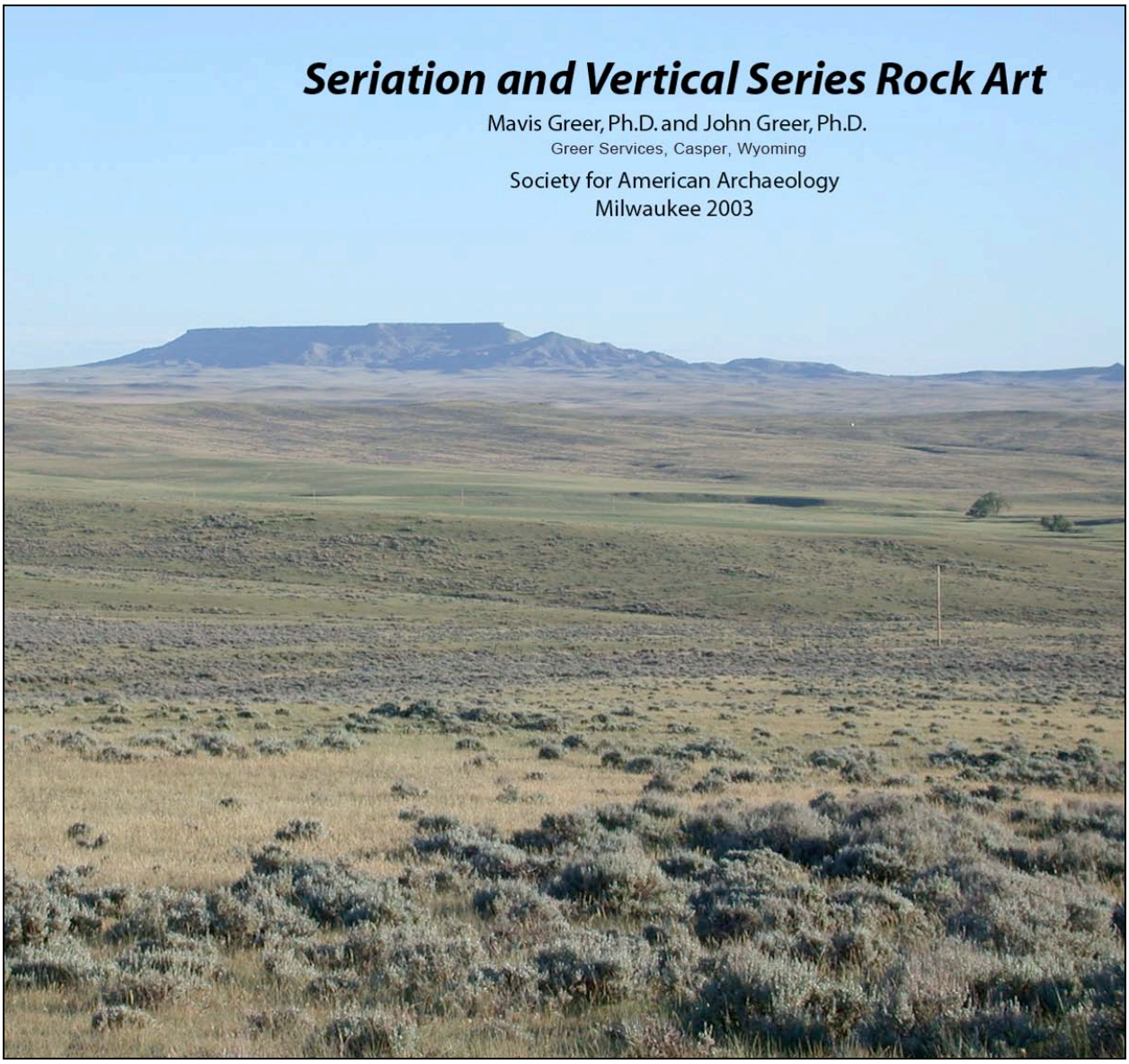
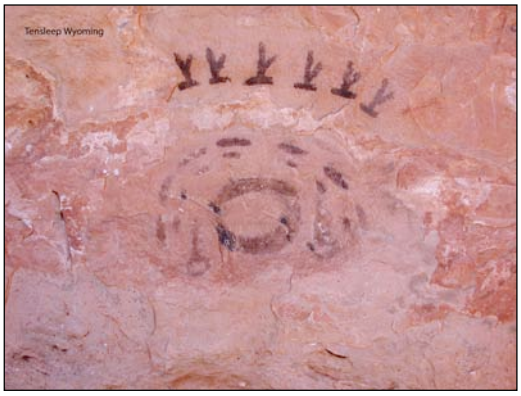


In the northwestern Plains, a kind of vertical arrangement of repetitive rock art figures has been termed Vertical Series. This vertical arrangement forms a single element, or *analysis unit*, that can be compared or contrasted with other similar units to determine attributes sensitive in time, space, function, or ethnic affiliation. Attributes themselves (such as headdresses on rock art figures) may be analyzed, or attention may be more on attribute clusters (such as total form of shield-bearing warriors). Depending on the kind and level of analysis, attributes may be considered relative to artifact types or series, or relative to such rock art concepts as styles or traditions.

Although Vertical Series has been part of rock art literature for 30 years, there are still questions regarding use of the term and concept. Vertical arrangement of repetitive elements has been included in style considerations based on observed attributes, which were then

compared with ethnographic data to arrive at suggested age, function, and ethnic affiliation. The series has been variously treated as an *element*, a *style*, and a *tradition*. Researchers agree that the concept represents something more than a simple arrangement of figures, but the distinction is not clear, and a final answer or full analysis of the expanded concept and its cultural implications are far beyond the purpose of this paper. What we want to do is test only one aspect – age – which seems to be a stumbling block in current understanding of the term. Thus, we examine the age of painted Vertical Series figures in Montana. We limit our area to Montana because that was where the series was originally defined, where we have the most complete site information, and where general analyses have resulted in questionable ages. We conducted a seriation analysis of these figures to order them within an established sequence for the state.



Vertical Series was originally defined in 1971 by Stu Conner, who discussed the series as a limited, well defined configuration of painted or incised, identical or nearly identical designs arranged in columns that sometimes bend to the right toward the top (Conner and Conner 1971). Conner's components were all geometric, which was important to his overall definition. He referred to Vertical Series as an *element*, a composite configuration of repetitive figures, but his treatment was as a *style* based on a set of traits with limited distribution in time and space. His concept was interpreted and applied as a *style* by subsequent researchers.

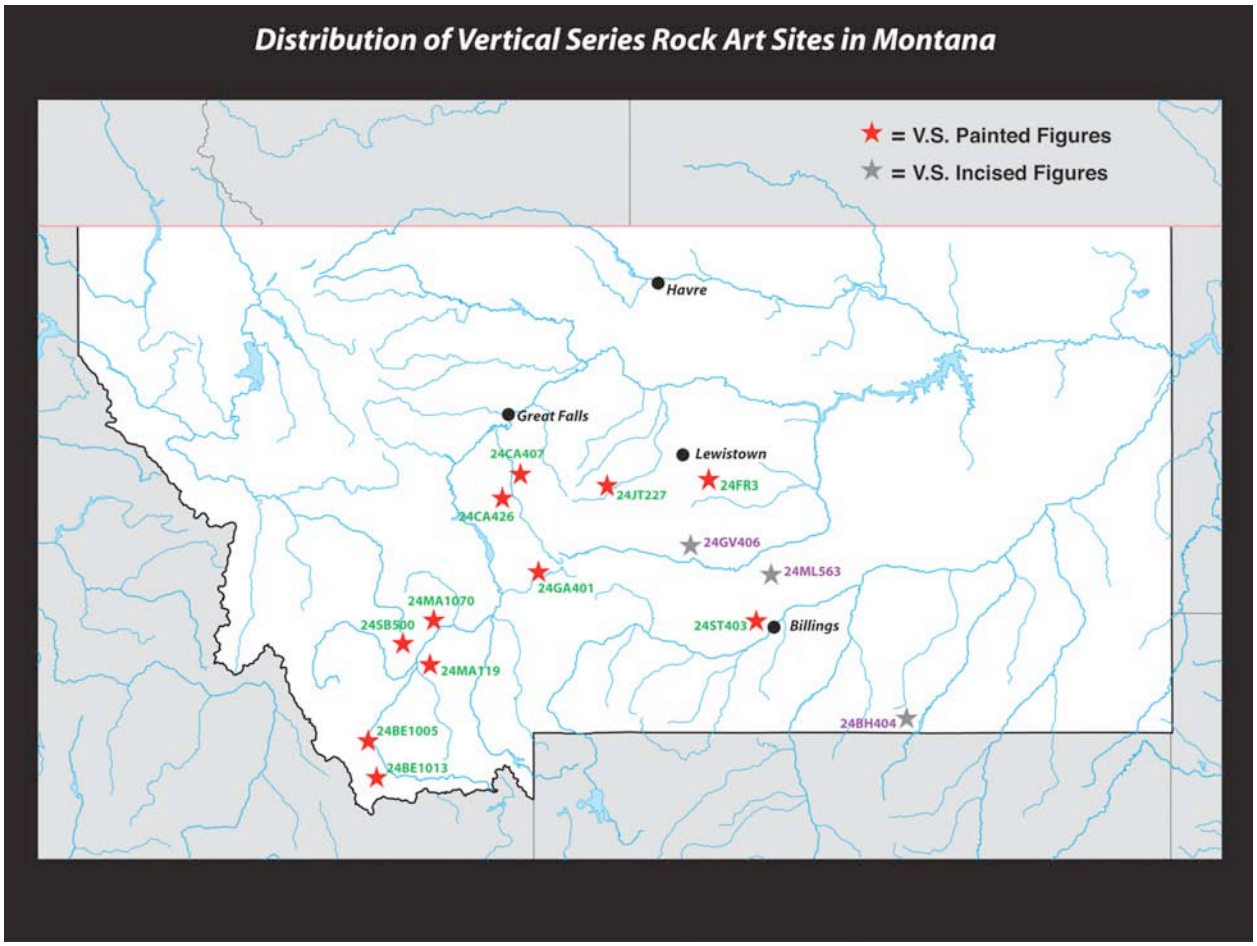
In the 1980s Linea Sundstrom examined Vertical Series at sites in Montana, Wyoming, and South Dakota (Sundstrom 1987). She expanded the definition to include not only single columns but also whole compositions of any arrangement, or any order, of the kinds of geometric designs originally found in Vertical Series sites. She referred to Vertical Series as a *style* and equated its age and distribution on the Northwestern Plains with the Teton-Dakota, who entered the area about A.D. 1700, during the

Protohistoric. This affiliation was based on similarities with rock art elements in areas to the east previously occupied by Siouan speakers and with motifs in ethnographically recorded Teton-Dakota art. She proposed that the designs functionally represent a system of symbolic communication based on their recurrence at widely separated sites and stated that the designs are visual codes for specific ideas.

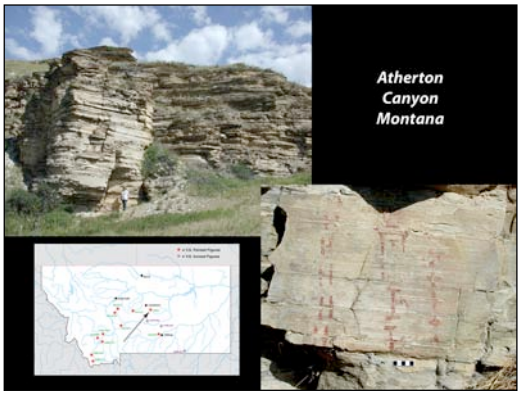
During the 1990s we published on Montana Vertical Series sites, including some not used in previous analyses (Greer 1995; Greer and Greer 1997, 1999). Our new figures are light to medium red liquid paint, which has been shown to be early in the rock art sequence of the area. Additionally, several designs are partially covered with calcium carbonate, and some are overlaid by later drawings, indicating some antiquity. We saw no Vertical Series at Protohistoric or Historic sites, such as panels with horses or guns. Therefore to us, Vertical Series appeared to predate the horse and led us to reject a late date of manufacture, as well as a Siouan affiliation.

In 2001, Keyser and Klassen discuss Vertical Series in Montana, Wyoming, South Dakota, and Alberta (Keyser and Klassen 2001). They label the series as a *tradition* rather than a *style*, and they reject the idea that it is associated only with Teton-Dakota or other Siouan groups. Otherwise they generally follow Sundstrom's ideas that it is a very late development as a communication device. They suggest it may be at least partially an ideographic system that developed from the pictography of Biographic art, which would place Vertical Series at the end of the rock art time line and make it contemporary with Historic Period robe and ledger art.

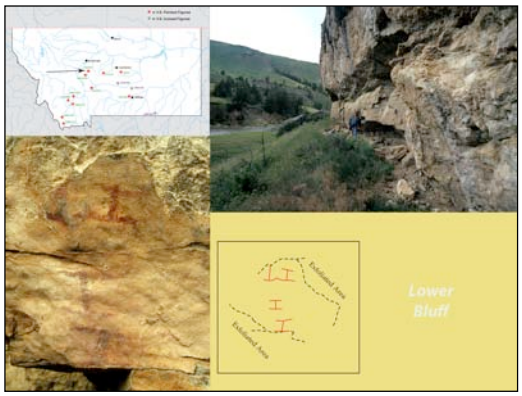
This perpetuation of Vertical Series as a late development, despite indicators to the contrary at painted sites, was the impetus for us to apply a seriation approach to the Montana figures to test our hypothesis that the series occurs as early as the Archaic period in central and southwestern Montana and does not extend into the Protohistoric or Historic periods in those areas. We began by identifying all recorded sites in the state with vertical arrangements that might be considered within the concept of Vertical Series. We chose to use Conner's original definition, limited to columns of geometric motifs as this seems to be a key distinction from simply using any or all vertical or horizontal arrangements of any repetitive figures as later researchers have done. We identified fourteen sites with figures that fit the definition. Eleven are painted (shown on the following map as red stars), and three are petroglyphs (the gray stars on the following map). Petroglyph sites were not included in our analysis sample because our present seriation procedure applies only to painted figures. Thus, our Montana sample is eleven sites.

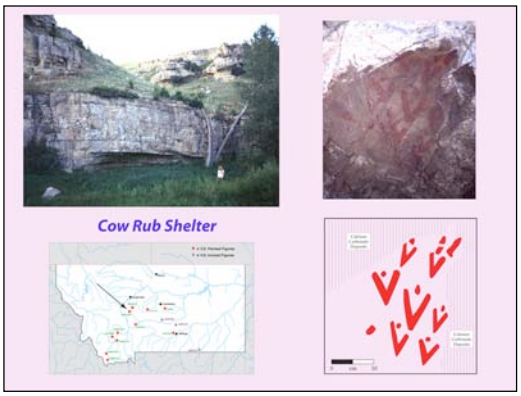


Six sites with painted vertical series elements are in central Montana. The first, Atherton Canyon has been included in all previous Vertical Series studies and is one of the best examples. Three columns of designs (**H** forms, a column of *lines-with-bars,* and *pluses*) are in dark red liquid paint. Down the canyon are short columns of small open circles in light red liquid paint.

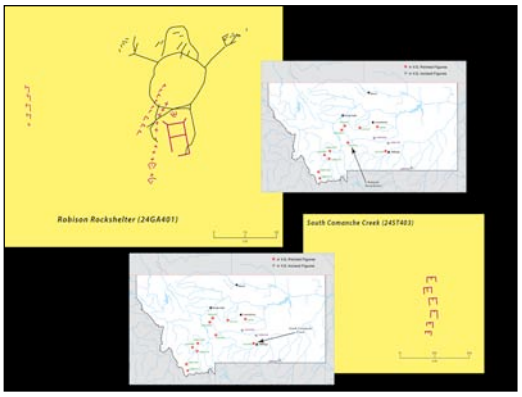


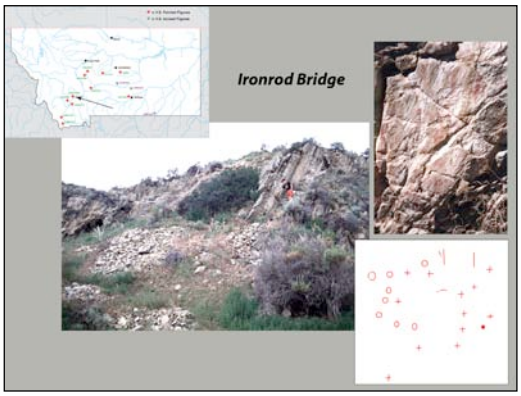
At Finger Dot Shelter (shown on page 4) the heavily painted wall contains two columns of red finger dots. These are partially covered with calcium carbonate and are some of the older paintings in the shelter based on superpositioning of paint styles here.





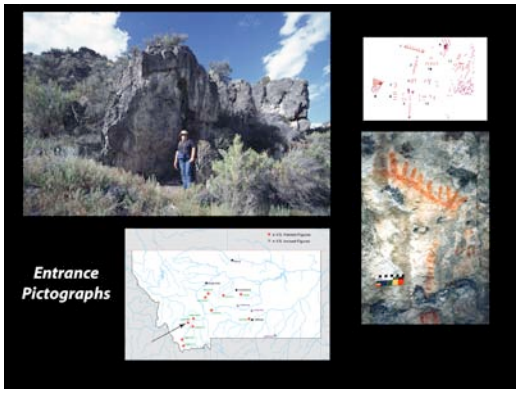
At Lower Bluff Pictographs elements in the form of the letter **I** (or a "lazy **H**") are arranged in a column. Likewise, at Cow Rub Shelter two parallel lines of **V** designs bend slightly to the right. The **V** columns are partially covered with calcium carbonate and partially overlaid by later black crayon marks, indicating relative antiquity for the figures. Robison Rockshelter and South Comanche Creek are about 100 miles apart and long considered Vertical Series sites. Both contain similar maroon colored geometric designs. At Robison some Vertical Series figures are superimposed by a black figure. This superpositioning, combined with other kinds of figures at the site and their conditions, suggests the element is prehistoric in age and not Protohistoric or Historic. Maroon figures at South Comanche Creek appear to be the same kind and color of paint as at Robison. The only design here is the stylized **E**.



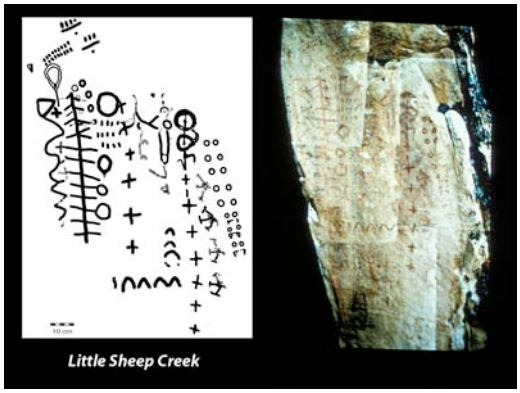


At Ironrod Bridge a small panel contains open circles and plus signs that now are somewhat faded, exfoliating, and partially covered with calcium carbonate, suggesting considerable age. There is at least one column of open circles and one column of plus figures that lean slightly to the right. This panel could represent a constellation but also represents Vertical Series. Entrance Pictographs has a heavily painted small panel with

columns of short horizontal lines. At Silver Star Pictographs, another heavily painted panel also has a column of short horizontal lines, and there are columns of finger dots and short vertical lines.



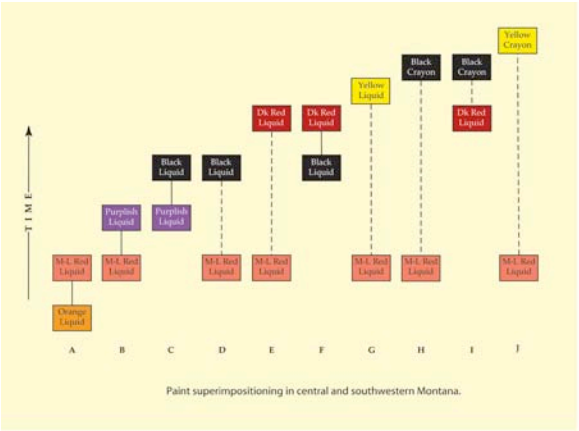
Rattlesnake Cliff has a column of small open paired circles parallel to a column of lines with bars. The open circles are similar to columns of open circles at Little Sheep Creek , where columns of plus symbols and short vertical lines are on a large complex panel dominated by Vertical Series figures.

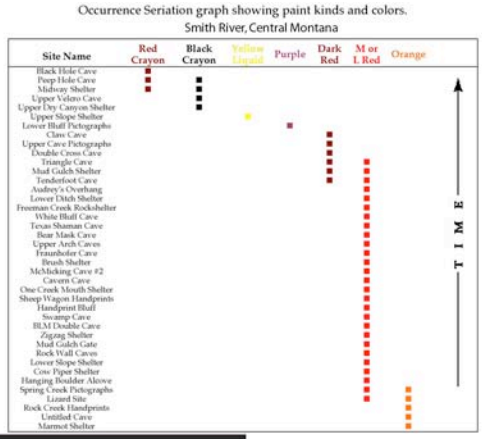


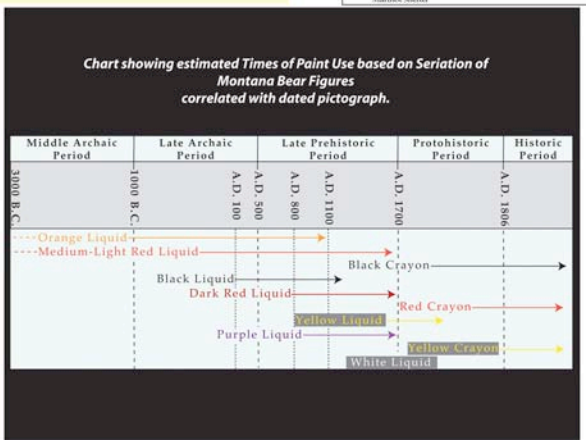
We previously pointed out the benefits of a simple seriation method that can be applied to any geographical area to produce an inferred rock art chronology when direct or absolute dating is not possible (Greer 1995). In this use of *Occurrence Seriation,* type frequency is irrelevant, and types are considered only in terms of presence or absence, based on the assumption that they are distributed continuously through time. *Frequency Seriation*, as another approach, will not work in this case because a large sample is needed to establish a unimodel distribution, and there presently are too few Vertical Series sites known in this area.

Accurate results from seriation analysis necessitate compliance with five basic assumptions. Briefly, the first is that populations producing these cultural remains are relatively stable geographically, and all Vertical Series paintings appear to have been made by pre-horse hunters

and gatherers who were not widely nomadic. The second assumption is that the analysis elements have short duration relative to overall temporal use of the area. The small compact Vertical Series panels appear to be single painting episodes, even when they occur at sites where paintings were done at other times. The third assumption is that analytical types (in this case Vertical Series figures) gradually change through time. The fourth assumption is that each type (again, Vertical Series figures) reflects and can be used to measure cultural change through time and distribution across space. The fifth assumption is that the sample is representative. For this study, the sample includes all known painted Vertical Series sites in the region.

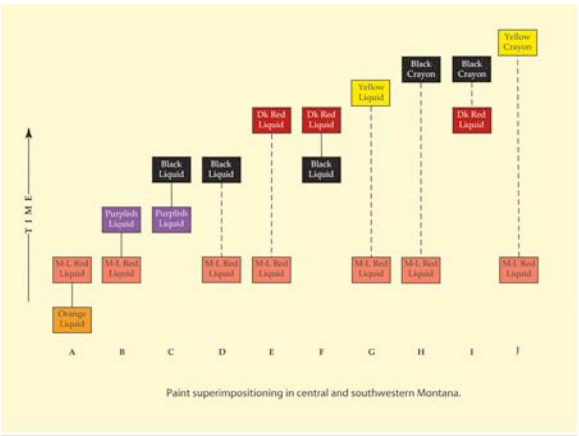




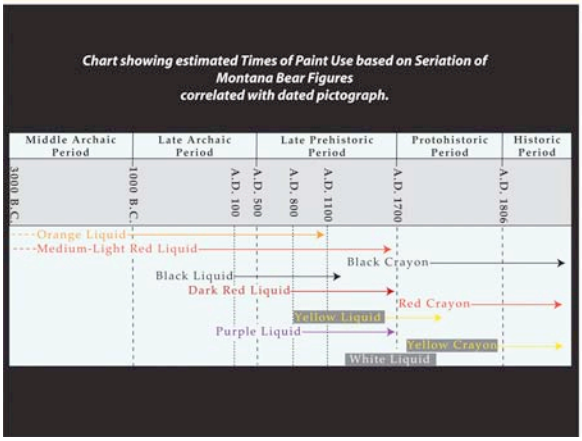


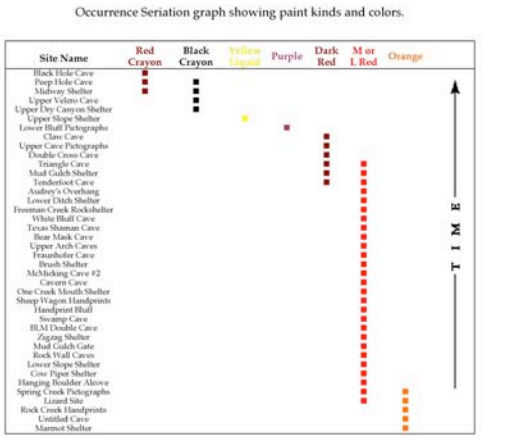
Two seriation orderings were addressed to determine the sequence of paint use and the sequence of figure types. Superpositioning in the region (as shown in the upper left) indicates that paint kinds and colors changed through time, and previous seriation of paint in Montana has produced a temporal ordering of those changes. Graphs for sites in the Smith River area of central Montana (shown in the upper right above) demonstrate that orange liquid paint is early, followed by several color changes before liquid paints eventually are replaced almost entirely

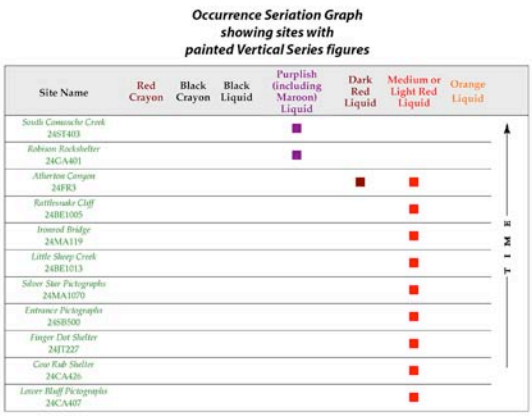
by solid dry paint, or aboriginal crayons. A subsequent seriation of paints associated with bear figures in the state resulted in a preliminary time frame (shown on the bottom graph on Page 7).



Paint superimpositioning in central and southwestern Montana.

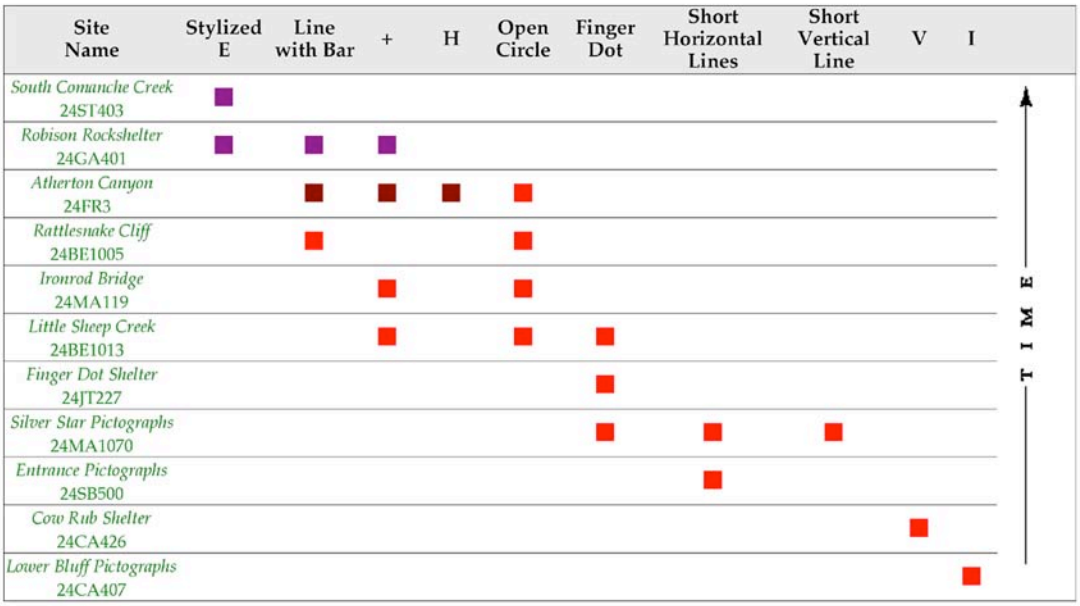






Kinds and colors of Vertical Series paint were plugged into these established paint seriation chronologies and, as the graph on the lower right above shows, paints used for Vertical Series figures in Montana are those most common at earlier, rather than later, rock art sites in the region. No Vertical Series figures in this area were made of the latest solid dry crayon paints.

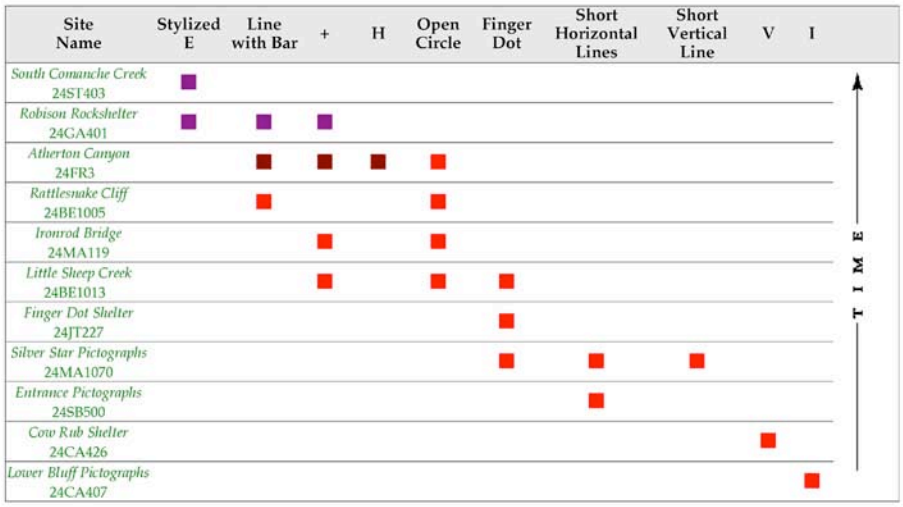
Occurrence Seriation Graph
Vertical Series Figures
(colored squares indicate paint colors of figures)



The second seriation problem examined the different figures found on Vertical Series panels. Ten different kinds of figures were recognized in our sample. The stylized **E** is in any orientation. The *line-and-bar* element includes any kind of bar coming off a line unless it forms an **H** or **I**. Other elements include the *plus* symbol, small open circle, finger dot (essentially a closed circle), short horizontal lines, short vertical lines, and figures that look like a **V**, **H**, or **I**.

The different kinds of figures were then ordered by seriation based on the already defined paint graph, which is considered a reliable time indicator. The **V** and **I** figures could not be sorted in a meaningful order because they do not occur at sites with other Vertical Series figures that can be used to overlap in the seriation graph, so their place within the series time frame cannot be determined beyond that provided by their paint. Other figure types can be graphed, however, with short horizontal and short vertical lines in the oldest positions. Color and paint kinds indicate these figures could date at least as early as the Middle Archaic, which generally agrees with their conditions and panel contexts. The stylized **E** is the latest element but could still date as early as the Late Archaic because purplish-liquid paint appears to extend back at least that far with painted bears. As mentioned above, there are no Vertical Series figures in dry crayon in Montana even though that is the paint of choice for Protohistoric and Historic pictographs in the state.

Occurrence Seriation Graph
Vertical Series Figures
(colored squares indicate paint colors of figures)



Occurrence Seriation Graph
showing sites with
painted Vertical Series figures

In conclusion, seriation of central and southwestern Montana painted Vertical Series elements supports the hypothesis that these figures began much earlier than the Protohistoric or Historic period. As such, painted Vertical Series could not have developed out of Biographic rock art in these regions. Of course, this does not preclude other vertical arrangements from doing so elsewhere. This earlier date does not tell us anything about the function of Vertical Series in these areas, and it neither supports nor refutes the idea that it was a system of

symbolic communication. Although it does not provide a cultural identity for the paintings, it does support a non-Siouan origin, since the Sioux were much later visitors. As to whether or not Vertical Series should be considered a *Style* or a *Tradition*, or instead enduring and changing *elements* within more inclusive styles, this review only indicates the overall series has a long duration and a wide geographical distribution. In central and southwestern Montana the series appears to have begun much earlier than elsewhere and certainly dates within the Archaic. How the series changed through time and varied across space is not known, but obviously more attention is justified in considering these and other kinds of variation, as well as the definition itself of the series.

References Cited

Conner, Stuart. W. and Betty Lou Conner
1971 *Rock Art of the Montana High Plains*. Santa Barbara, The Art Galleries, University of California.

Sundstrom, Linea
1987 Vertical Series Rock Art and Its Relation to Protohistoric Plains Indian Symbolism. *Archaeology in Montana* **28**(2): 3-17.

Greer, Mavis
1995 *Archaeological Analysis of Rock Art Sites in the Smith River Drainage of Central Montana.* Ph.D. Dissertation, University of Missouri, Columbia. University Microfilms, Ann Arbor.

Greer, Mavis and John Greer
1997 Bear Imagery in Central Montana Rock Art. In *American Indian Rock Art*, Vol. 23, edited by S. M. Freers. pp. 85-94. American Rock Art Research Association, San Miguel.

1999 Handprints in Montana Rock Art. *Plains Anthropologist* 44(167):59-71.

Keyser, James D. and Michael A. Klassen
2001 *Plains Indian Rock Art*. University of Washington Press, Seattle.