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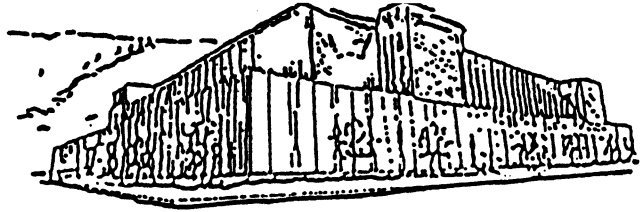
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**EXAMINING VARIATION IN SHIELD
BEARING WARRIOR ROCK ART**

by

David Moyer

B.A., Anthropology, State University of New York at Binghamton

Presented in partial fulfillment of the requirements

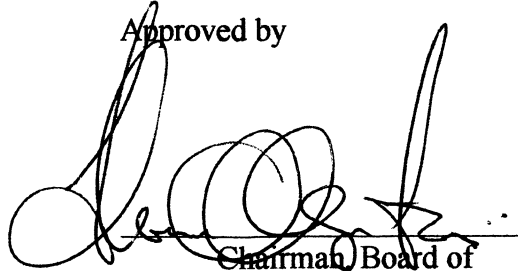
for the degree of

Master of Arts in Anthropology

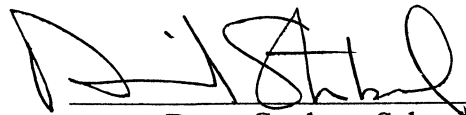
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Testing Variation in Shield Bearing Warrior Rock Art

Chair: Thomas Foor 

Archaeologists have debated the meaning and cultural affiliation of the shield bearing warrior rock art motif for over 100 years. Discussions have traditionally sought to explain the origination and diffusion of the motif as the work of a single cultural group. However, the wide spatial and temporal distribution of the motif as well as the content of some of the panels, suggest that shield bearing warrior figures were likely made by several past and present tribal entities throughout its long period of usage.

While assessing the cultural affiliation of rock art is difficult, local and regional variation within the shield bearing warrior motif may provide clues toward the identity of their makers, as different groups might have depicted shield bearing figures in different ways and contexts. Chi-square independence tests are used to test hypotheses about the nature of this variation through the creation of a data set encompassing 171 figures from four regions of western North America. Each test is designed to objectively and quantitatively measure variation in head shape, shield design, headdresses, the occurrence of historic material culture, objects protruding from behind shields, and the number of anthropomorphs in association with these figures.

Results suggest a remarkable degree of similarity between the four regions regarding the ratio of vertically to horizontally divided shields, the use of simple shield designs associated with historic material culture, and the number of head extensions. The geographic variation which does exist appears to be between the Uinta Fremont area and the other regions. Further examination suggests that figures from the western portion of the Uinta area have high frequencies of geometrically shaped heads and no shield extensions while those along the eastern boundary of the region appear to conform with frequency values of the other regions. While these overall similarities could be interpreted as the work of a single cultural group, the evidence strongly refutes this, suggesting instead that shield bearing warriors were a common Plains phenomena which held similar meaning to several cultural groups.

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Chapter I. Introduction

Archaeologists have debated the meaning and cultural affiliation of the shield bearing warrior rock art motif for over 100 years. Throughout this long period, numerous theories have developed regarding the identity of their makers and the functions they might have served. Discussions have traditionally sought to explain the origination and diffusion of the motif as the work of a single cultural group. However, the wide spatial and temporal distribution of the motif as well as the content of some of the panels, suggest that shield bearing warrior figures were likely made by several past and present tribal entities throughout its long period of usage.

While assessing the cultural affiliation of rock art is difficult, local and regional variation within the shield bearing warrior motif may provide clues toward the identity of their makers. It is suspected that different groups might have depicted shield bearing figures in different ways and contexts. Chi-square independence tests are used to test hypotheses about the nature of this variation through the creation of a data set encompassing 171 figures from four regions of western North America. Each test is designed to objectively and quantitatively measure variation in head shape, shield design, headdresses, the occurrence of historic material culture, objects protruding from behind shields, and the number of anthropomorphs in association with these figures.

Over the years, many rock art researchers have used the category “shield bearing warrior” or “shield bearers” to classify circular anthropomorphic figures found throughout the Western United States. It is not surprising that numerous definitions of this category

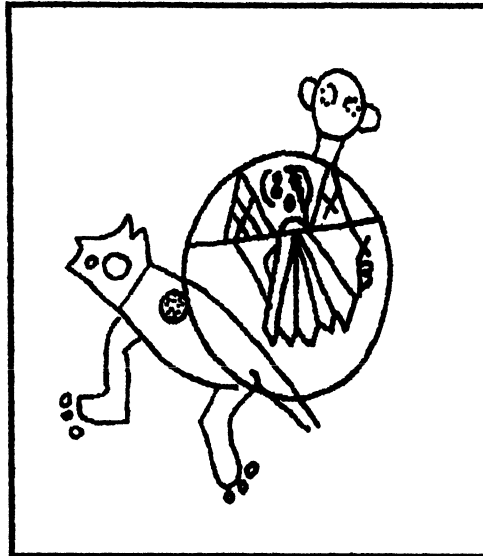


Figure 1

The first recorded shield bearing figure found near Walpi, Arizona. After Fewkes (1900).

exist. At the heart of all of these definitions is a general assumption that the figures depict an individual carrying a large shield which obscures the majority of their body. Often the head and feet are exposed and weapons are also occasionally depicted. In many cases the figures wear headdresses of feathers or bison horns. Jesse Fewkes was the first researcher to apply the term “shield bearing figure” in his description of a figure found near Walpi, Arizona (Figure 1). Keyser (1975) defined the motif as depicting a pedestrian warrior whose body is obscured by a large circular shield (Keyser 1975:207). Lee and Brown have developed a more formal definition. They define the shield bearing warrior motif as having two elements: 1) legs or appendages and 2) a design on the shield (Lee and Bock 1982:28). Under such a definition, circular figures with heads but no feet and solid or blank shielded figures would be excluded from the category of shield bearing warrior. For

purposes of these discussions, shield bearers are defined as consisting of a circular form possessing a head and/or feet. This definition includes both examples lacking a head or feet as well as examples with both complex and simple shield designs.

There are two motifs which show some similarity to the shield bearer motif. The first is a shield bearing figure mounted on a horse. Many researchers classify these figures as a sub-category of shield bearing warrior, and several have been able to distinguish transitional forms that show the difficulty of depicting a mounted rider with such a large shield (Keyser 1977:14; Conner and Conner 1971:14). Shields became smaller with the arrival of Europeans, partially because it is hard to ride a horse with such a large shield and because shields were less useful with the arrival of the gun (Secoy 1953:17). It has been argued that it was at this point that shields lost much of their functional utility, and gained much of the spiritual significance that came to be known ethnographically (Keyser 1979:45). For purposes of these discussions, the term “shield figure” or shield bearing warrior” will be used to describe both mounted and pedestrian figures unless otherwise noted.

Another possibly related rock art motif includes circular designs thought to represent shields but which do not show an individual behind it. Similar design elements occur both within these figures and the shields on shield bearing warriors, lending to their common interpretation as shields as opposed to other circular designs. Occasionally, these shields are later retouched and a figure is depicted behind the shield to make the design into a shield bearing warrior (Sundstrom 1990:252). On the Northern Plains, these circular forms are best known from the Castle Gardens Site in Central Wyoming (Sowers 1954),

and are thought to be more common in Wyoming than in Alberta or Montana (Conner and Conner 1971:15). A recent study by Sundstrom and Keyser (1998) has examined shield designs from the Black Hills and suggested that their makers included the Crow and Cheyenne. The shield motif appears to be considerably more widespread than the shield bearing warrior motif, as images defined as shields have been reported in California, the Northwest Coast and the Eastern Woodlands (Grant 1967). However, the reason for this larger distribution may be due in part to a tendency for rock art researchers to classify unknown circular designs as shields for want of a better term.

Shield bearing warriors demonstrate a variety of techniques in their manufacture, including pecked, incised and painted forms (Schuster 1987:33). In some cases a combination of two or more of these techniques are used to create the same image (Loendorf 1990:47). Some have suggested that shield bearer pictographs and petroglyphs are contemporaneous because of their stylistic similarities and because early historic shield bearers occur in both forms of manufacture (Conner and Conner 1971:14-15). Others have argued that pecked shield bearers are older than incised and painted forms (Schuster 1987:35). However, new dating techniques (Loendorf 1990, Francis et. al, 1993) suggest that pictographs might be much older than previously thought possible.

Shield bearing warriors have been incorporated into several classification systems, most notably the Ceremonial and Biographical Styles described by Keyser (1977, 1979) on the Northern Plains. Keyser breaks shield bearing warrior figures into two types or styles: the Ceremonial Style, which is thought to have been used as part of vision quest activities, and Biographical Style, which depicts events in the lives of the individual artists.

Biographical style art is commonly associated with historic material culture, such as guns and horses. He argues that the Ceremonial Style did not develop into the Biographical Style and that they are the products of two different cultural groups (Keyser 1977:54). Plains ledger art is often viewed as a continuation of this Biographical Style.

These figures are widely distributed throughout the Western United States and extend from southern Alberta south into New Mexico and Texas and from Nevada to Nebraska and central Kansas (Wellman 1979, Schaafsma 1980, Wedel 1969, Wormington 1955). Within this large distribution, several areas are known for comparatively high concentrations of shield bearers, including the Uinta Fremont area of Eastern Utah and Northwestern Colorado (Wormington 1955), Central Montana (Conner and Conner 1971), and eastern and central Wyoming (1989). While not the most common motif at these locations, there are also high concentrations of shield bearers along the northern Rio Grande in New Mexico (Schaafsma 1980), and along the Milk River in Southern Alberta (Barry 1991). Shield figures are also occasionally found as isolates or smaller concentrations along the periphery of this distribution, including the Black Hills (Sundstrom 1990), Southern Idaho (Irwin 1930), Central Kansas (Wedel 1969) and at Grapevine Canyon, Nevada (Patterson 1992). Figure 2 shows the approximate distribution of the shield bearing warrior motif. This distribution differs from those offered by previous researchers, most notably that of Keyser (1975) and Gebhart (1966). Keyser's distribution, thought to coincide with the area of Shoshone occupation, did not include sites in Colorado, New Mexico, Kansas, Texas, Arizona or Nevada. Gebhart's distribution is considerably larger, and includes areas east of the Mississippi River as well as Mexico.

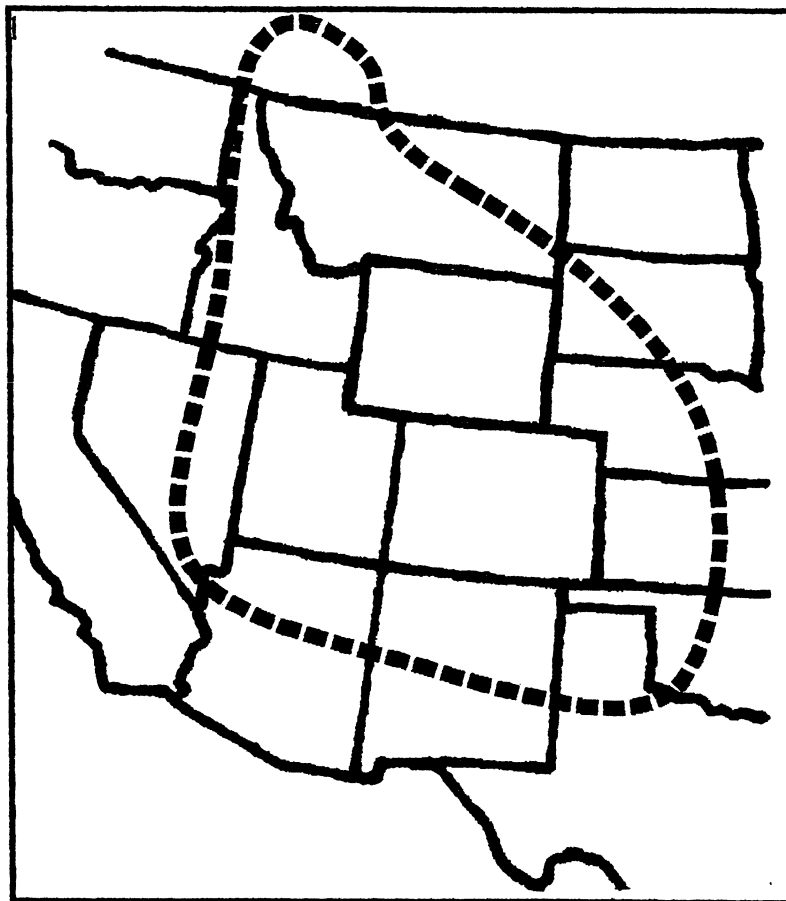


Figure 2.

Map of the Western United States
Showing the Approximate Distribution of the Shield Bearing Warrior Motif

Gebhart viewed the shield bearing warrior motif as much larger phenomena, found wherever the shield was in use. However, Gebhart's definition of a shield bearing warrior is not clearly defined, and many of the figures discussed represent individuals holding a shield to one side rather than individuals whose body is represented by a shield. While the distribution represented in Figure 2 will likely change as new sites are located and reported, it accurately represents the currently known distribution of shield bearing warrior figures as defined earlier in this chapter.

Chapter II.

Previous Research

The study of the shield bearing warrior motif has had a long history and has produced a series of debates regarding these figures. Traditionally, discussions of these figures have been directed toward two distinct goals: identifying their cultural identity of their makers and understanding their meanings. The first recording of a shield bearing figure to appear in the anthropological literature comes from one of Jesse Fewkes' early monographs on the Hopi Mesas (Figure 3). Fewkes reported that:

It is very common to find shield depicted on the rocks by the Tusayan pueblo people. A variety in form among these and somewhat different symbolic decoration is known to me. Of the circular form the most elaborate has the whole interior occupied by a cross with bars of equal length, in each of the four angles of which there are to be seen a circle, the friendship sign, and two smaller crosses. A face with a single *a-la* or horn is appended to the rim. The cross is the symbol of the sky god, *Co-tok-mung-wuh*, and has been observed by me on shields introduced in the *Ma-lo-ka-tci-na* dance at Cipaulovi. (Fewkes 1892:23).

While this represents the first description of such a figure, Mallery, Renaud and other researchers continued to add to their body of data with descriptions of shield bearers found in Utah, Colorado and Wyoming. Mulloy's (1958) interpretations of the shield figures found at Pictograph Cave in south central Montana were limited by a lack of published data and a poorly understood archaeological record for the Northern Plains. As a result, models of diffusion based on the comparison of similar figures found throughout the

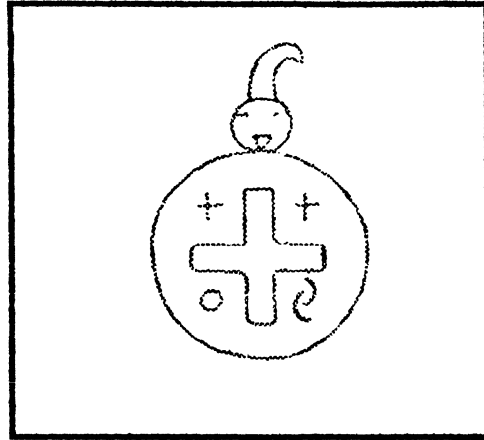


Figure 3.

The first recorded shield bearing figure found on the Hopi Mesas, Arizona. After Fewkes (1896).

Western United States did not occur until years later, when archaeologists began comparing regional styles of rock art motifs.

Much of the early discussion regarding these figures involved data from the Northern Plains and Great Basin. Wormington (1955) was the first to recognize the similarity between shield figures found in the Fremont area of Utah and similar anthropomorphs found on the Northern Plains. These similarities were also discussed in William Mulloy's (1958) influential monograph on Pictograph Cave, Montana, which also included illustrations of shield figures. However, it was assumed by these early researchers that these similarities represented some kind of contact, possibly related to trade, and did not suggest that they were made by individuals of the same generalized cultural group (Wormington 1955:186). Instead, the Fremont were commonly assumed at that time to be closely related to southwestern Anasazi groups.

With new advances in the dating of rock art, questions regarding the originating

location and diffusion of these figures may soon be resolved. However, discussions of the cultural affiliation of their makers will likely remain. This question of affiliation is an important one as it has far-reaching ramifications about the way that archaeologists view past societies.

One of the most popular theories about the cultural origins of shield bearing warriors involves the Shoshone. Gunnerson (1962) originally argued that the Fremont and the Virgin Anasazi were both Uto-Aztecan speakers possibly related to the later Shoshone. While he does not specifically mention shield figures in his argument, Fremont rock art including shield bearers would likely have been attributed to Uto-Aztecan speakers. Keyser (1975, 1979) has argued that shield bearing warriors were made by the Shoshone, and that the distribution of shield bearers coincides with the Numic expansion out of the Great Basin. However, he departs from Gunnerson in his belief that the Fremont were not Uto-Aztecan speakers. Instead, he suggests that the Shoshone might have obtained the motif through interaction, presumably warfare, with the Fremont on the way to the Northern Plains. Furthermore, he argues that this borrowing represents a modification of preexisting Shoshone circular rock art forms, not an adoption of an entirely new motif (Keyser 1975:211). Shield figures from the Southern Plains are explained as the work of the Comanche, who split from the Northern Shoshone in southern Wyoming during the Protohistoric Period and migrated to the Southern Plains (Bamforth 1989:91). Shield bearing warrior figures found on rock art panels in central Colorado have been attributed to historic Utes (Cole 1990:241).

Several lines of evidence have been put forth which clearly suggest Shoshone use

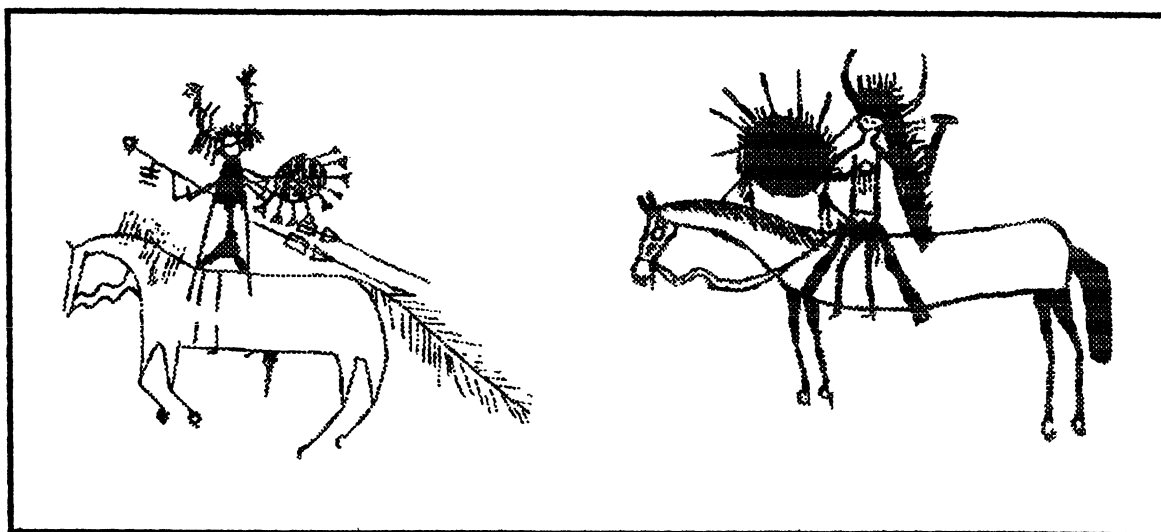


Figure 4.

Similar mounted figures with shields. The figure on the left is a pecked and incised petroglyph from Point of Rocks, Wyoming. The figure on the right is from a Comanche hide painting made about 1860. After Schuster (1989).

of the motif. Not only is the distribution of shield bearing warriors thought to coincide exactly with historic accounts of Shoshone territory but also with the distribution of steatite vessels, flat bottomed pots and tubular pipes, all of which are material traits associated with the Shoshone historically. The high density of shield bearing warrior pictographs in Northeastern Utah and south central Montana were long occupied Shoshone territories (Keyser 1975:213). Additionally, three sites in the Northwestern Plains recovered material thought to be Shoshone in origin in the vicinity of shield bearing warrior rock art: Horned Owl Cave, Pictograph Cave, and the Kobold Site (Keyser 1975:210-211). While problems exist in correlating stratified deposits with rock art panels, these sites clearly suggest a possible association.

Additionally, other researchers (Gebhart 1966, Schuster 1987) have demonstrated

that shield figures are depicted on historic painted buffalo hides associated with the historic Shoshone and Comanche, leaving little doubt that they made use of the motif historically. One such mounted shield bearer, found on a hide painting ascribed to the Comanche, bears a striking resemblance to an incised petroglyph found in Southern Wyoming (Figure 4). This evidence, in addition to the distribution and archaeological data, strongly suggests a relationship between Uto-Aztecanspeakers and the shield bearing warrior motif.

Other researchers have also adopted the Shoshone hypothesis. Sundstrom (1990) has argued that the reason why so few shield figures are found in the Black Hills is because the Shoshone spent very little time there. Schuster (1987) has claimed to recognize problems with correlating rock art with ethnic groups, but then suggests that only the older looking pecked shield bearing warrior figures should be considered Shoshone/Comanche in origin (Schuster 1987:35). The enormous popularity of the Uto-Aztecans hypothesis can also be seen on numerous site forms which cite Keyser's (1975) influential article in their interpretations.

Another motif which Keyser advanced as evidence of Shoshone manufacture of the motif was the depiction of armored horses at Writing-On-Stone. Since the time of Keyser's publication of his article, new depictions of horse armor have been found in the Mussellshell Valley of Montana and the North Cave Hills of South Dakota (Figure 5). As horse armor is commonly depicted in rock art by parallel vertical or diagonal lines and early artists are known for having difficulty in depicting horses during their initial introduction on the Plains, I believe that some figures from the Breaks of the Yellowstone

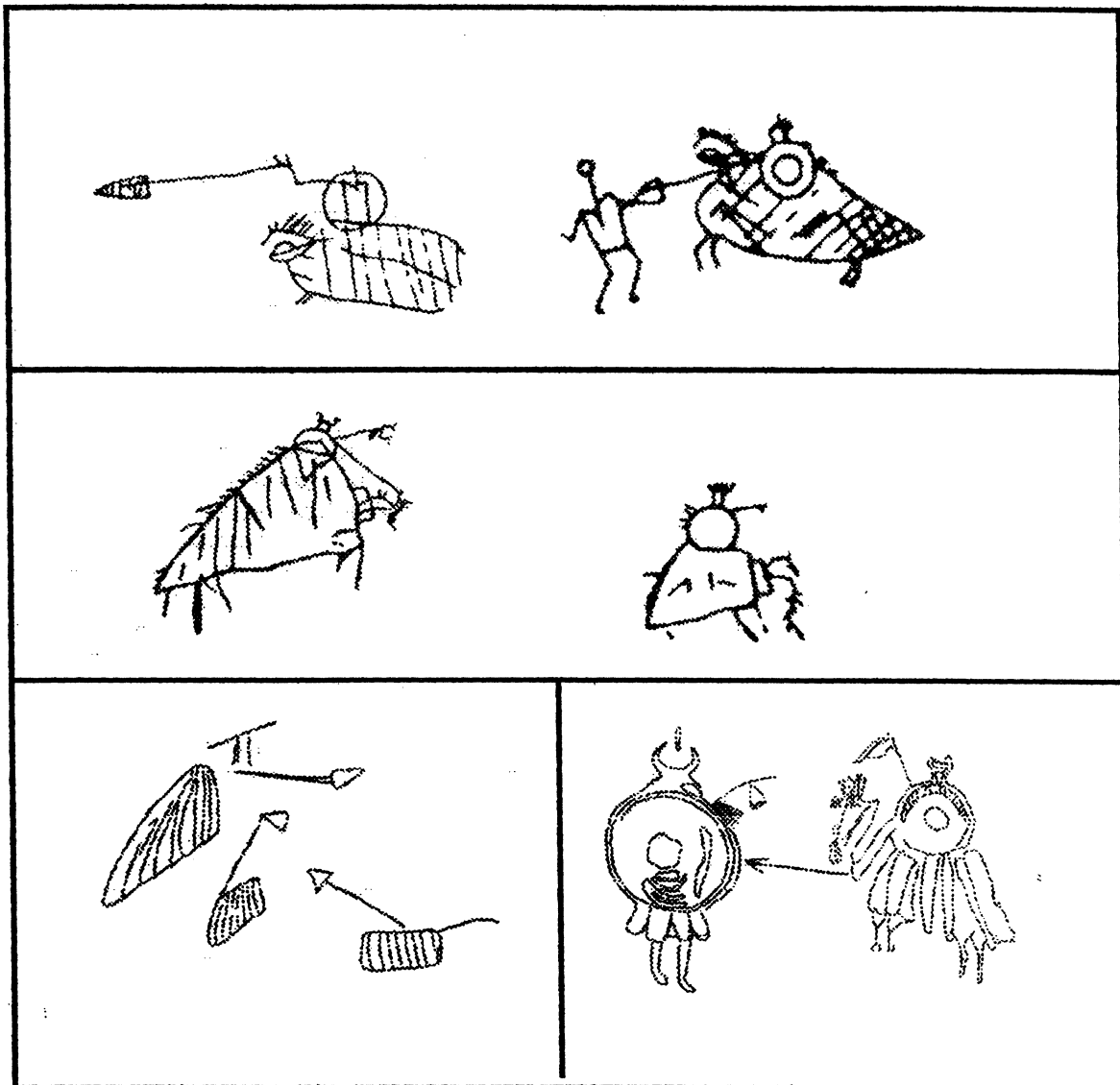


Figure 5.

Depictions of horse armor from Northern Plains rock art sites.
 Top Row: Writing-On-Stone. After (1979); Center Row: North Cave Hills.
 After Keyser (1987); Bottom Left: Breaks of the Yellowstone. After Lewis (1985);
 Bottom Right: Goffena Rockshelter. After Lewis (1992). Not to scale.

(24YL419) may also represent the use of horse armor (Figure 5, Bottom Left).

Traditionally, these figures have been interpreted as having arrows coming out of bundles, forts or triangular objects.

While it has been commonly thought that horse armor was a cultural trait exclusive to the Shoshone (Keyser 1979:43), other researchers have shown that horse armor was also used by different groups, including numerous references to the southern Apache (Secoy 1953:16-18; Hough 1896:646) as well as Cadhoan speakers, including the Pawnee (Hough 1896:646), the Arikira and Wichita (Ewers 1955:85). While it is believed that horse armor moved north as part of the Numic expansion, it is equally plausible that any number of groups could be responsible for its introduction and use on the Northern Plains.

There are also numerous lines of evidence suggesting an Athabaskan origin and use of the motif. Aikens (1966) originally argued that the proto-Fremont people were bison hunters who migrated from the Northwestern Plains, probably Athabaskans. They expanded westward and southward into Utah at approximately A.D. 500. Aikens used the shield bearing warrior as well as the presence of tipi rings as part of his evidence to suggest that the Promontory Culture as defined by Steward (1937) was actually an invading group from the Plains which adopted certain aspects of southwestern culture, including pottery, architecture and horticulture, through interaction with Anasazi groups (Aikens 1966:207).

Additionally, other researchers have also suggested an Athabaskan origin of the motif. Loendorf (1990) obtained two AMS dates of 950 ± 80 b.p. and 870 ± 80 b.p. from pigments found on an abrader which was excavated below a panel of shield bearing warriors at the Valley of the Shields Site in central Montana. If Madsen's (1975) date of AD 1500 for a Numic expansion into southern Montana is correct, this date would precede Shoshone occupation of the area by 200-400 years (Loendorf 1990:46).

However, while this fact might discredit the Shoshone hypothesis, it does not imply that their makers were Athabaskan speakers. Schlesier (1994) has argued that the Promontory Culture was related to the Beehive Complex, which occurs along the border of Montana and Wyoming. Common artifacts associated with the Beehive Complex include a specific variant of Avonlea projectile points, which Greiser (1994) has argued as representative of the Athabaskan migration. An Avonlea point was recovered beneath a shield bearing warrior petroglyph in Chindi Rockshelter in Golden Valley County, Montana, thus providing some archaeological evidence to support this hypothesis (Conner and Conner 1971:15-16).

The Beehive Complex has been attributed to ancestral Kiowa Apaches or possibly ancestral Kiowas. While the Kiowa are best known from the Southern Plains, oral tradition states that their people originally lived near the headwaters of the Yellowstone River in the vicinity of Virginia City, Montana (Mooney 1898). This tradition holds that they were later driven out of the area and migrated to the Black Hills, from which they subsequently migrated south after being driven out of the area by the Sioux. The presence of shield bearing warriors in both central Montana and the Black Hills has been used to support a Kiowan hypothesis (Loendorf 1990:51).

Despite the fact that a date of AD 1100 corresponds closely with the presumed dates of the Athabaskan migration, there are several problems with this model as well. While an Avonlea projectile point was recovered in the immediate vicinity of a shield bearing warrior, there are few shield bearer rock art sites north of the Missouri River and few Avonlea points found south of the river (Greiser 1994:41). Another problem is that

the earliest absolute date for a shield bearing warrior is approximately AD 1100, which is around the presumed terminal date for the manufacture of Avonlea points.

One of the greatest problems associated with this hypothesis is the lack of delineation between the Kiowa and the Kiowa Apache. I feel that this is in part due to the close alliance of these two groups originating sometime in the Protohistoric Period. While these models do narrow the possible candidates for the manufactures of shield bearers, they fall short of explaining their ultimate origins. The Kiowa Apache are Athabaskan speakers, while the Kiowa speak a form of Tewa. It is interesting to note that the Kiowa represent the only Tewan speaking group not found along the Northern Rio Grande of New Mexico at the time of contact and that this region contains numerous examples of shield bearing warrior figures in the Galisteo and Pecos basins. It has also been suggested that the Kiowa developed from ethnohistorically defined Jumanos in Western Texas and Oklahoma who migrated to the Northern Plains and then later returned south (Hickerson 1996).

It is difficult to explain how the Kiowa might have originated in Montana if their language is clearly rooted in the Southwest. One possibility is that small bands of Tewan speakers migrated to the Northern Plains sometime before European contact and underwent some process(es) of social and political reorganization which ultimately resulted in the Kiowa Nation. Thus, Kiowa oral traditions regarding their origins may refer to a past social and political transformation. Numerous Kiowa place names exist in northern and central Montana, and Blackfeet oral tradition also places them on the Northern Plains. Kiowa presence in the Black Hills has also been well documented

through ethnographic sources.

Other researchers have focused on a possible Southwestern origin of the motif. Gebhart (1966) argued that the motif originated in the Pecos Region of New Mexico between AD 1-1000 and then later spread to Utah and eventually to the Northern Plains. After reaching the Northern Plains, the motif diffused southward into the Southern Plains and Southwest (Gebhart 1966:730). Much of Gebhart's theory regarding the motif came from the comparative dating of artifacts found in association with rock art panels as well as the argument that the shield diffused into the United States from Mesoamerica, inferring that Southwestern groups were the first to own shields. Schaafsma (1971) has stated that

The problem of the earliest appearance of the shield motif in the rock art of the Fremont is still open to speculation in the absence of sound dating for its prehistoric occurrence on the Northern Plains. As the situation now stands, however, there is nothing to indicate an earlier Plains occurrence, and a Fremont source for the diffusion of the motif to the Northern Plains seems more likely. (Schaafsma 1971:143)

Later, she suggested that shield figures found in the Southwestern United States are a variant of *Huizilopochtli*, the Aztec god of war. The influence of this symbolism is thought not to have impacted the Southwest until around 1428 (Schaafsma 1980:298). However, she adds that shield bearers and war symbolism might have occurred prior to this date in the Jordana region, which is commonly associated archaeologically with the Mogollon Culture. If this is true, it suggests that the motif moved north through the rest of the Southwest. Grant (1978) has concluded that the shield motif entered the Kayenta Anasazi region from the east, possibly through Tsegi Canyon, at the end of the Great Pueblo Period (Grant 1978:213). While the motif was clearly used throughout the Anasazi region, as evidenced by figures found at such diverse sites as Canyon de Chelley and Mesa

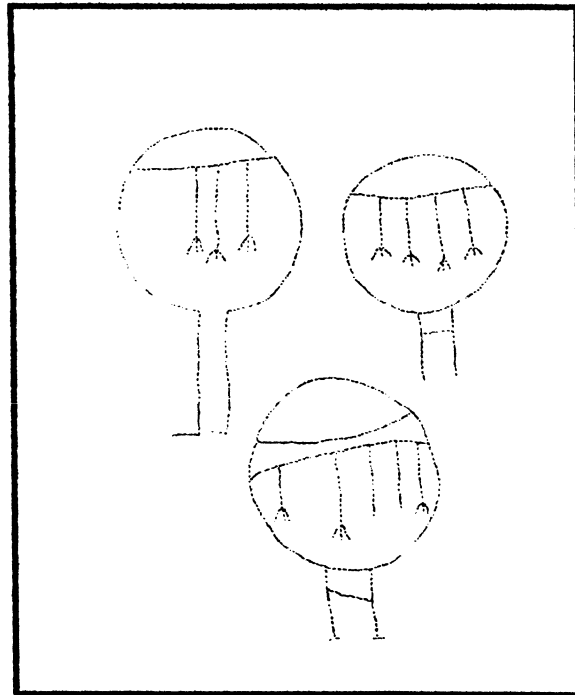


Figure 6.

Shield figures incised into plaster, Kiva K, Cliff Palace, Mesa Verde National Park, Colorado. After Cole (1990)

Verde (Figure 6), it was used only occasionally, and dates for these occurrences tend to be much later than those suggested for shield bearing warriors found in Utah and the Northern Plains. Shield figures from the Hopi mesas may have been manufactured by Tewan speaking refugees who were displaced by the Pueblo Revolt of 1680.

There have also been those who have argued that some shield bearing warriors, specifically those found at Writing-On-Stone in Southern Alberta, were made by the Blackfoot Indians who occupied the area historically. Barry (1991) has argued that the Blackfeet were their makers because the area is of sacred significance to them, and the results of Magne and Klaussen's (1991) quantitative study concluded that there is no reason to assume that the makers of the Milk River rock art were not Blackfeet (Magne

and Klaussen 1991:415). Much of the discussion regarding Blackfoot use of the motif does not necessarily imply that they were the originators of the motif, but rather that they borrowed it from other groups. Also, while the Blackfeet proper were Algonquian speakers, the Sarsi, a component of the Blackfoot Confederacy, were Athabaskans, who may have acquired the shield bearer motif from other Athabaskan speakers.

While each of these hypotheses make a strong case for their respective positions, there are numerous problems associated with assigning prehistoric phenomena to historically defined groups. These problems can be summarized into three distinct categories: those which question the bounded reality of archaeologically defined groups, those which question the bounded reality of tribal (ethnic) units, and those which question the correlating of archaeologically defined cultures with existing tribal and ethnic groups. Archaeologically defined cultures consist of a generalized material assemblage and locational patterning within a given range of variation. Examples of archaeologically defined cultures include the Mogollon Culture of the Southwest and the Hopewell Culture of the Eastern United States. The bounded reality of archaeological types has been discussed in detail (Spaulding 1953, 1954, Ford 1954a, 1954b), and much of the same conclusions are evident in the reality of archaeologically defined groups: that either archaeologically defined cultures existed and had meaning to prehistoric people or else they are arbitrary distinctions imposed on the data by the archaeologist.

There is a general tendency for archaeologists to use the discussions about origins to make claims about the ethnic identity of shield makers. Thus, anyone finding a shield bearing warrior figure can then classify that area as having at one time been occupied by

members of a specific group. This assumes that shield figures were made by the same cultural group over the course of 1,000 years of popularity. Even if it were possible to state with certainty which cultural group first made shield bearing warriors, there would be no reason to assume that they were the sole users of the motif. Keyser (1975) has consistently argued that shield bearers represent Uto-Aztecan groups on the Plains, even though they did not develop the motif themselves but rather borrowed it from the Fremont (Keyser 1975:214). If the Shoshone borrowed the motif from the Fremont through warfare, it should be equally plausible that other groups might have borrowed it under similar kinds of conditions.

Another serious problem with identifying ethnicity through the use of archaeology is that ethnic groups do not easily lend themselves to bounded classification. Rather, many anthropologists have recognized that ethnicity contains both a self image and a public image which are both directly related to how people classify themselves and how they are classified by others (Jenkins 1997:59). Additionally, many individuals have more than one group to which they are affiliated. As well as being flexible, ethnicity is situational in that ethnic meaning is conveyed only when it is a useful way of classifying groups, either self or group identification (Jenkins 1997:14).

One of the greatest problems with assigning prehistoric phenomena to historically defined groups is that groups are constantly undergoing processes of demographic and political reorganization. John Moore's (1987) discussion of the formation of the Cheyenne Nation gives an excellent example of the process of continual reorganization which occurs in what are often perceived as distinct cultural groups. Other researchers, such as

Sharrock (1974), have also demonstrated that what might superficially appear as bounded groups such as tribes or nations are in actuality composed of ethnically and socially distinct units within a larger whole. Through the processes of ethnogenesis, old groups reorganize to form new groups and that occasionally small groups with very different histories and languages are reformed into a single, larger group. Thus, it is unlikely that historically known groups existed a thousand years ago in the capacity that we know them today. This has serious repercussions for archaeologists in the development of models to reconstruct prehistoric group identities.

Thus, the model of ethnicity or identity used in this discussion is one which assumes that 1) ethnic meaning is communicated through symbolism in the material record, 2) that ethnic groups are open classes which are situational and not innate, and 3) that ethnic groups constantly undergo processes of reorganization. Beginning with these assumptions it is possible to examine rock art as a form of ethnic phenomena.

If we assume that the shield bearing warrior was inclusive to a single group, it must have differentiated their makers from other tribal groups. As an ethnic marker, the figures would have to express an explicit ethnic meaning to those inside as well as outside the group (Jones 1997:210-212). Under such a premise I would argue that shield figures could not have represented ethnic markers for three specific reasons: the lack of ethnic content in shield bearing warrior panels, the wide spatial and temporal distribution of the motif, and the varied archaeological and ethnographic evidence associated with shields and shield bearers.

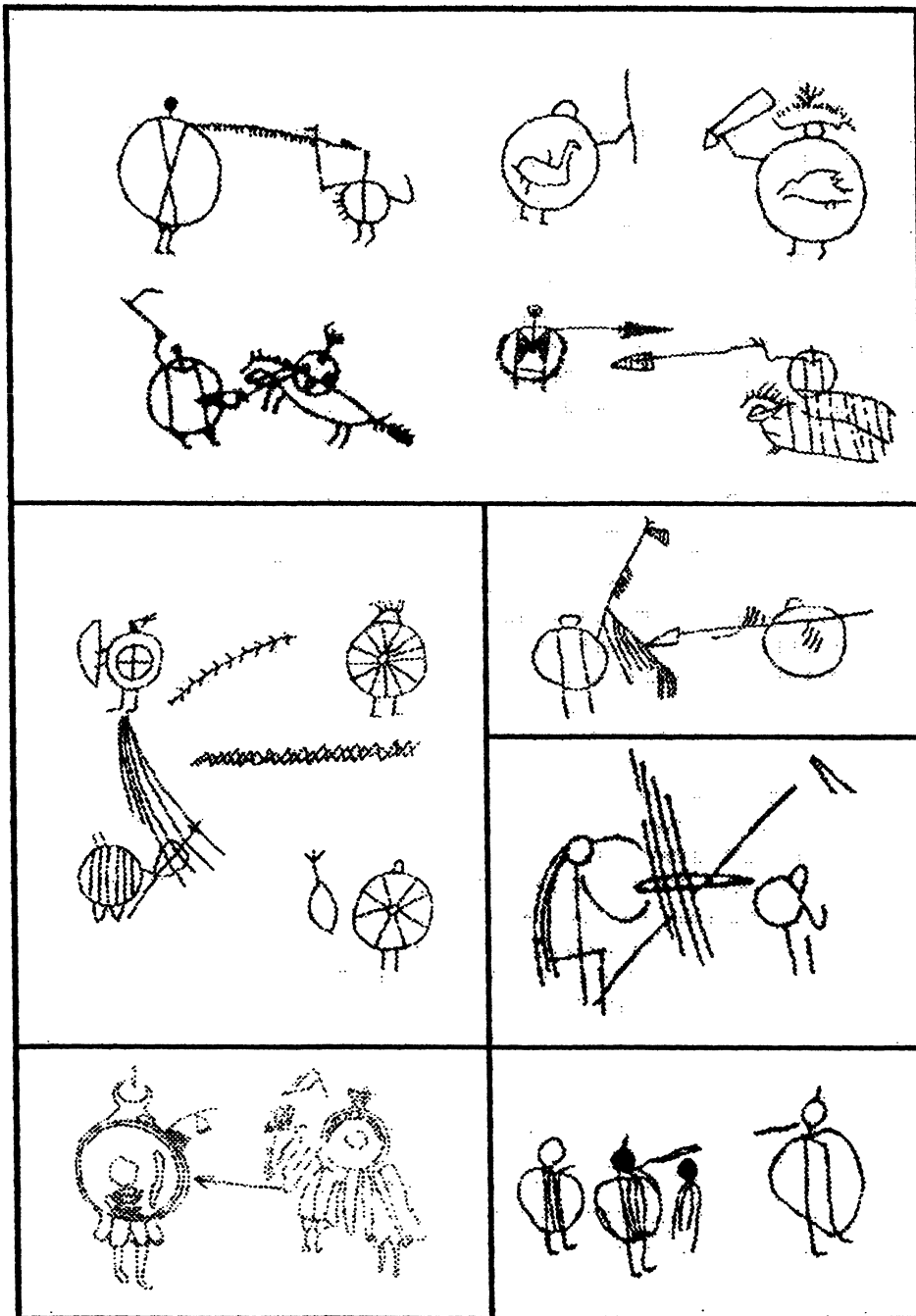


Figure 7.

Shield bearing warrior figures apparently engaged in combat with other shield bearing warriors. Top row: Writing-On-Stone. After Keyser (1979); Center Left: 24FR2. After Secrist (1960); Center Upper Right: Nordstrom-Bowen Site. After Lewis (1985); Center Lower Right: Wind River Drainage. After Stewart (1995) Bottom Left: Goffena Rockshelter. After Lewis (1992). Bottom Right: Grinvoll Rockshelter. After Conner and Conner (1971). Not to scale.

One argument against the use of shield bearing warriors as ethnic markers comes from the content of the rock art itself. Some panels at Writing-On-Stone in Southern Alberta as well as other sites show pedestrian shield bearing warriors fighting with one another (Figure 7). Much of this evidence was used by Keyser (1979) to make inferences about the Plains warfare complex. If shield bearing warriors represent an ethnic marker, why are warriors and their enemies both displayed as shield bearing warriors? This contradicts much of what is currently thought about ethnic markers as a means of separating us versus them. If the presence of shield bearers holds ethnic meaning, whoever made them did not appear to have used them as a means to distinguish themselves from one another.

Some researchers might argue that this line of reasoning confuses content with style. Hypothetically, group A might always portray warriors as shield bearers while group B would portray warriors a different way. It could be argued that Group A would portray all individuals, regardless of affiliation, as shield bearers because such a style is symbolic of an ethnic identity. Thus, the style itself could be representative of the specific ethnic group regardless of who was being portrayed.

As tempting as this argument might sound, it contains several unsettling premises. If one group always portrayed warriors in the same manner they would have no means of differentiating between themselves and others in rock art depictions. If ethnic markers are by definition recognized both internally and externally, and all individuals were familiar with the ideological symbolism of other groups, it is interesting that they did not choose to differentiate between one another. I would argue that warfare complexes such as that proposed for the Plains tend to delineate a sharp contrast between individuals and their

enemies and that the ideological reinforcement of violence toward another group involves the dehumanization of the enemy into the category of “other.” Such an ideology places great emphasis on group difference as opposed to the commonality depicted on these panels.

Additionally, cross-examination of content as a means of distinguishing specific groups is commonly applied in the examination of robes, hides and ledger art. The examination of how individuals view themselves and others has been applied by Gebhart (1966) and Schuster (1987) in establishing group identity in historic Plains art. While the subject matter in this paper is largely prehistoric, it is possible to use the same type of analysis to examine how their maker viewed themselves and others.

Another strategy to address this problem would be to argue that these depictions represent internal group conflict. However, numerous Plains researchers (Brooks 1993, Bettinger 1991) have shown that internal competition among hunter gathers is more likely to result in group fissioning or dispersal rather than the widespread warfare pattern seen on the Plains. It seems far more likely that many of these figures represent violence between individuals of two different groups and not internal conflict.

If one accepts that these figures represent conflict between groups and that they do possess ethnic symbolism, then it suggests that large shields were used by more than one group. The use of comparatively large shields among the Shoshone has been suggested by Malouf (1968) and used by various researchers to support the theory of Uto-Aztecan makers of the shield bearer motif (Schuster 1987:35). The presence of the motif on historic hides also suggests its use among Numic peoples. While Heitzer and Baumhoff

(1962) report that Shoshone informants have claimed that they were not responsible for the motif, much of the archaeological and ethnographic records disputes this assertion. Merriwether Lewis provides an account of a Shoshone shield making ceremony in which the maker gave a feast for all adult males in the group. A pit was dug the size of the proposed shield and hot stones were placed inside. A circle was cut from the hide of a two year old bison male and stretched by hand over the stones. After removing the hair, the hide is passed among those in attendance who take turns trampling the hide with bare feet. After several days, the hide is returned to the owner and declared arrow proof by all of those who participated. It is suggested that this was the primary means by which shields developed their spiritual powers (Lowie 1909:193).

Likewise, the significance of shield ceremonialism has been argued for the Kiowa and Kiowa Apache (Mooney 1898) and used in support of a Kiowa/Kiowa Apache origin of the shield bearer motif. The Kiowa were the only Plains group to incorporate shields as a central part of their version of the Sun Dance (Schlesier 1994:330). Loendorf and Conner (1993) have reinvestigated the Pectol Shields, large round hides found in a dry cave in central Utah with hopes of assigning them to the Fremont, but with little success. However, they do provide evidence which suggests that large shields were a common Plains attribute, citing several ethnohistoric accounts to their use among numerous groups including the Blackfeet, Hidatsa and Crow (Loendorf and Conner 1993:222). This suggests that numerous Plains groups adopted the use of large, circular shields before the arrival of the horse. Rather than a specific trait possessed by a single group, large circular shields were commonly used by numerous Plains groups.

Furthermore, I would argue that the shield bearing warrior motif also represents a common Plains phenomena not limited to a single ethnic or cultural group. The problems associated with assigning a single cultural affiliation to this motif include the vast body of archaeological and ethnohistoric evidence suggesting that these figures were made by more than one group. Material thought to be representative of both Uto-Aztecs and Athabaskans has been found in stratified deposits adjacent to shield bearing warrior figures and both theories possess ethnographic and historical evidence to support them. Evidence that supports the theory of one ethnic group have generally been used as a means of discrediting competing hypotheses. The inclusive nature of previous studies surrounding the motif has created a barrier to a wider understanding of Plains social systems.

Chapter III.

Research Questions

The suggestion that shield bearers were made by more than one group does not mean that the figures do not possess ethnic symbolism or that it is impossible to use them as a means of identifying prehistoric cultures. Rather, it means that the simple presence of the motif can not be used to directly infer ethnic relationships. The stylistic variation between shield figures might possess insight into cultural identity, as there is considerable variation within the large geographical distribution. Spacial and temporal variation of rock art motifs has been studied by Keyser (1977) and is apparent in his distinction between the Ceremonial and Biographical Styles. It is possible that an examination of the variation within a single motif could demonstrate patterns consistent with cultural identity.

However, Magne and Klaussen's (1991) study of anthropomorphic figures at Writing-On-Stone has suggested that the variation present is not significant enough to be attributed to different makers. Instead the authors explain this variation as the evolution of a single artistic tradition (Magne and Klaussen 1991:409). While this suggests that differences between rock art images do not represent the work of different groups, it does not necessarily follow that the variation does not represent the depiction of different groups. Variation is best explained as the result of temporal change, spacial distribution and individual choice. Ethnicity is communicated symbolically through individual choice as it changed over time in different areas.

Another possibility is that the designs on the shields might represent different groups, with different design elements being more popular among different groups. Such a

perspective, while not without its own perils, has met with some success in assessing tribal affiliation in studies of historic beadwork, and there may be a similar correlation between rock art shields and archaeologically defined groups. Mooney (1898) counted over fifty design motifs on shields and tepees used by the Kiowa. He states that these design elements are significant to individual families and that members of the same extended family used the same elements in various combinations (Mooney 1898:231).

In the case of pictographs, the use of specific colors and color patterns might have also been of ideological significance. On the Northern Plains, seven colors and numerous shades are known to have been used alone and in various combinations (Conner and Conner 1971:15). While red appears most commonly and may not be a good indicator of group affiliation, other colors, such as green, are relatively rare on the Plains and may be more expressive of group identity.

The Data Set

In order to test hypotheses about shield figure variability, it is necessary to construct a data set that accurately reflects the variation and distribution of the motif. In total, the selected database consists of 166 shield bearing figures from four regions of western North America. Sites were selected from published sources in four regions with high concentrations of shield bearers: Central Montana, the Uinta Fremont area of Utah and Colorado, along the Milk River in Alberta, and along the northern tributaries of the Rio Grande in New Mexico. The majority of the descriptions used come from drawings, although some photographs were also used in constructing this data set. In surprisingly

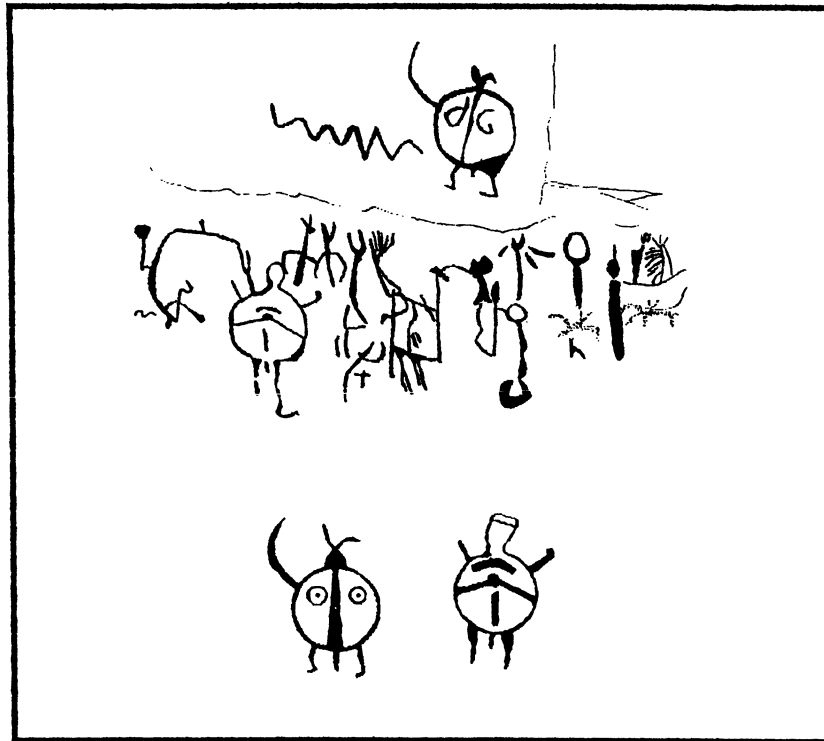


Figure 8.

Differing depictions of two shield bearing warriors from Westwater Creek, Utah. The panel on the top is after Schaafsma (1980:28), while the bottom is after Wormington (1955:167)

many cases, scale and occasionally color were omitted in the published descriptions, making hypothesis testing difficult if not impossible in these areas.

There are several potential sampling biases inherent in the data set. All shield figures described and used in these analyses come from published sources, and as a result, it may not accurately represent the quantity or variation present in any given region. The fact that the data have been derived exclusively from published sources is not necessarily a problem for the purposes of this research, because in testing published theories about shield bearing figures, it may be more advantageous to use figures that are familiar. Many

of these images, such as those described by Wormington (1955), Mulloy (1958), Schaafsma (1972) and Barry (1991), represent world-renowned rock art figures that have largely shaped how rock art researchers think about a shield bearing warrior. I am using many of the same shield figures that previous researchers used in creating their theories. Although this creates biases, even if all published and unpublished data were considered, it would still be impossible to account for the variation present on shield figures which have not been discovered and recorded.

Another problem is that published drawings of rock art can vary significantly from researcher to researcher. Figure 8 shows two different depictions of two figures from a site in Uinta Fremont area. The panel on the top comes from Schaafsma (1980), while those on the bottom show Wormington's (1955) version of the same two shield figures. Based upon this example, it is easy to see how variation with respect to head shape, limbs and shield design can differ between versions of the figures presented.

Region I- The Uinta Fremont Area.

This designation refers to the area of northeastern Utah and northwestern Colorado which possesses a unique stylistic rock art tradition. The boundaries of this area were created by previous rock art researchers (Grant 1967; Schaafsma 1971, 1980) on the basis of stylistic similarity with respect to numerous motifs, including shield bearing figures. This area extends from the Uinta Mountains west to the Yampa River drainage at Dinosaur National Monument in Northwestern Colorado and south into the northern Colorado River drainage along the border of the Uncompahgre Plateau (Figure 9). This

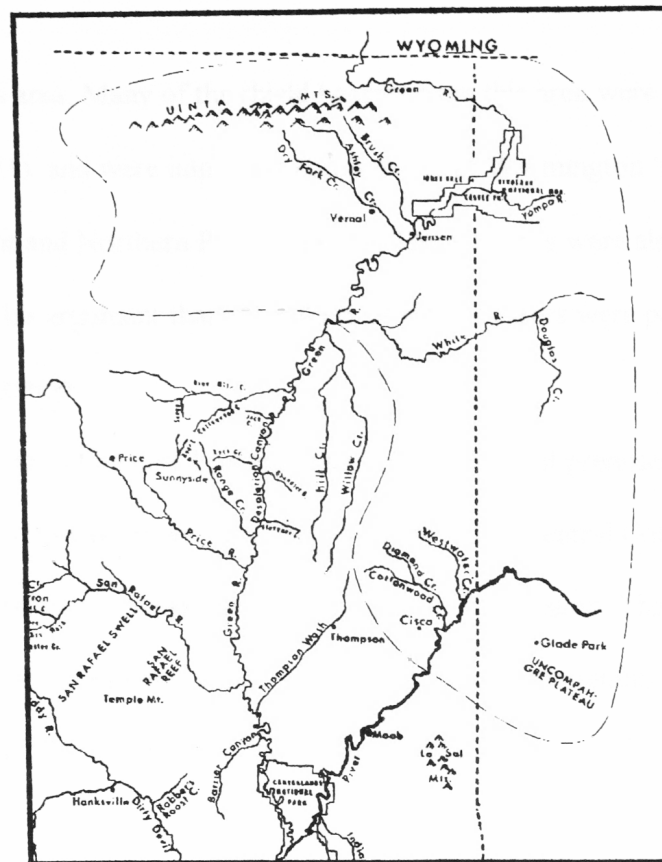


Figure 9.

Approximate distribution of the Uinta Fremont Culture Area. After Schaafsma (1980).

area is well known for its rock art, including several examples of shield bearing figures. A total of 55 shield bearing warrior images from the Uinta Fremont area are included in the data set. Figures used in these analyses come from published descriptions by Stewart (1941), Wormington (1955) and Schaafsma (1980) and are shown in Appendix I. A significant type of shield bearer found only in this area are often referred to as classic vernal figures. The major distinctions between classic vernal figures and other shield bearers are the rectangular or trapezoidal head and neck designs found on many shield

bearers from this area. Many of the shield bearers from this area were originally described by Steward (1941), and were important components of Wormington 's comparison between Fremont and Northern Plains rock art. These figures were also used by Aikens (1966, 1967) in his argument that the makers of shield bearers were part of the Athabaskan migration.

The creation of a Uinta Fremont area assumes several premises. Shield bearers are also found in surrounding areas, including southern Idaho, central Colorado and other parts of Utah, , although in less numbers than in the Uinta region. This region also incorporates several ecological zones, most conspicuously mountains found on the Colorado side and flat plains in the Vernal area of Utah.

Region 2- Central Montana

This region comprises that area of Montana from the eastern slopes of the Rocky Mountains to Miles City and from the Missouri River south to the border of Wyoming (Figure 10). While some of the boundaries in this constructed region are clearly arbitrary, the area within the region has a much greater density of shield figures than in the regions surrounding it. A total of 108 shield bearing figures from 19 sites were chosen to represent this region. Figures used in these analyses are shown in Appendix I, and come from published descriptions by Mulloy (1958), Secrist (1960), Conner (1960, 1984, 1992), Frison (1970), Mackinon and Thomas (1983), Lewis (1982, 1984, 1985a, 1985b, 1986, 1990), Gregg (1977a, 1977b) and Loendorf (1988, 1990).

Two of the sites have stood out in this distribution as being a source of discussion

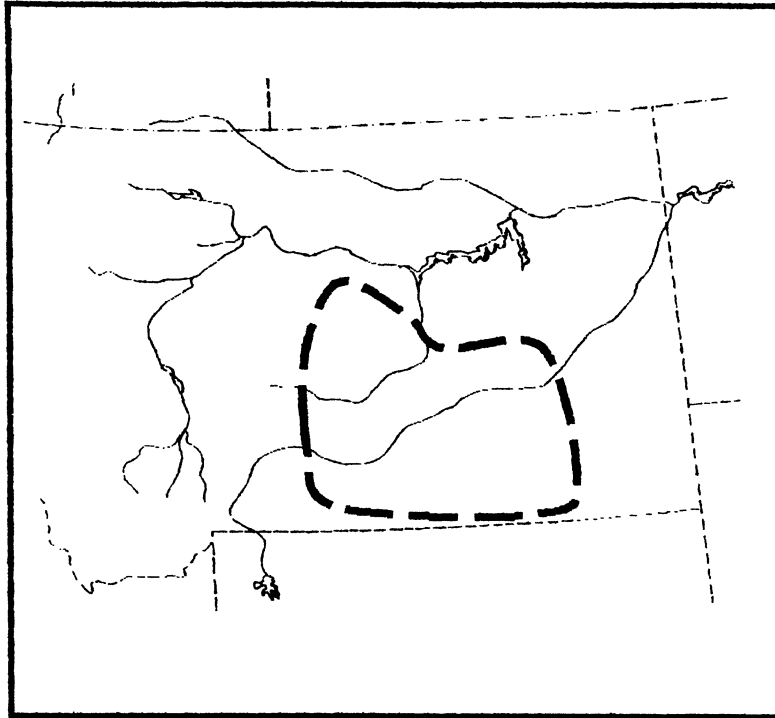


Figure 10.

Map Showing the Boundary of the Central Montana Region

and debate for many years. The first, 24YL 1 is the Pictograph Cave site near Billings, Montana. The results of excavations from this site formed the basis of Mulloy's (1958) cultural chronology for the Northwestern Plains. The shield figures from this site are also important, as they were significant components of both Wormington's (1955) and Aiken's (1966) comparisons of Great Basin and Northern Plains rock art.

The second location worthy of distinction within this distribution are the Fergus County pictographs at Bear Gulch near Livingston, Montana. This cluster is actually composed of two neighboring sites, 24FR2 and 24FR3, which together depict over 43 shield bearing warrior figures. This area represents the largest known concentration of

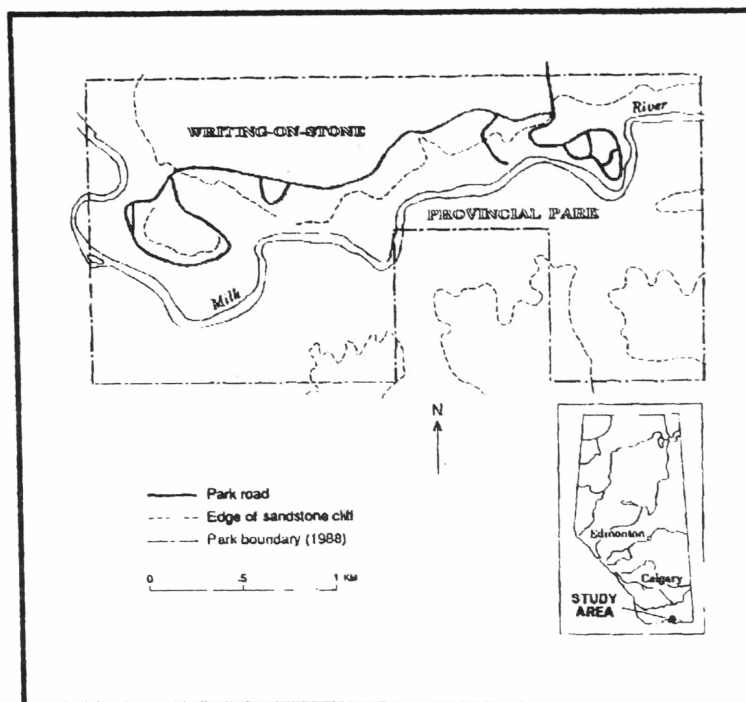


Figure 11.

Writing-on-Stone Provincial Park, Alberta, Canada. After Magne and Klaussen (1991)

shield bearing warriors, roughly twice that of Writing-On-Stone. Some of these figures were used by Keyser (1975) in creating his Shoshone hypothesis. These sites were described by Secrist (1960), who used the figures to postulate certain similarities between Utah and Montana shield bearers.

Region 3-The Milk River

This region is by far the smallest of any of the areas used in these analyses. Shield figures are found in a single high concentration of rock art at Writing-On-Stone in southern Alberta (Figure 11). A total of 22 shield bearing warrior images from Writing-On-Stone are included in the data set. Figures used in these analyses come from published

descriptions by Barry (1991), Dewdney (1964) and Keyser (1975, 1977, 1979) and are shown in Appendix I. Figures from this site, most importantly those depicting horse armor, were used by Keyser (1975) in citing the Northern Shoshone as the makers of the shield bearing warrior motif. These figures were also used by Magne and Klaussen (1991) to refute Keyser's ceremonial and biographical styles. These are also the only figures that have been suggested as possibly Blackfeet in origin (Barry 1991).

While this area might be close and ecologically similar to the Central Montana region, there are several characteristics which differ between the two groups. The shield figures along the Milk River are among the very few such figures found north of the Missouri River (Greiser 1994:41). There has also been discussions regarding the function and cultural affiliation of the shield bearer motif that are exclusive to the Milk River and not directly related to the Northern Plains.

Region 4- The Rio Grande Region

This region extends along the Rio Grande from the border of Colorado to the pueblo of San Cristobal (Figure 12). In addition to the river bottoms, shield figures are also found to the east in the Galisteo Basin near Santa Fe and in the Tompiro district. Like the Uinta Fremont area, boundaries of this region were determined by other researchers (Schaafsma 1980, 1992; Cole 1990) on the basis of stylistic similarity. Schaafsma (1980, 1992) breaks this region down further into rock art districts and labels them according to the language of the people who came to occupy the areas historically. A total of 10 shield

Statistical Procedures

To test the variation present within the category of shield bearing warrior, several hypotheses were constructed. Each hypothesis is designed to address a different form of variation, and is tested using chi-square procedures to determine whether or not a correlation exists between geographic regions and different forms of variation. The chi-square independence test determines, within a degree of error, whether or not there is a statistical dependence between two characteristics of a sample population (Weiss and Hassett 1987:473). As part of inferential hypothesis testing, two hypotheses are constructed for each research question: the research hypothesis which states that a statistical dependence exists, and a null hypothesis which states that the distribution is random with regard to these variables. The chi-square independence test is a means of deciding whether or not to reject the null hypothesis.

Hypothesis 1: Horizontal and Vertical Shield Elements

This study compares the presence of vertical and horizontal shield design elements to determine if these elements are used more frequently in some regions. Interest in this study developed out of Hendry's complaint that numerous types of circular bodies anthropomorphs have been lumped together into the category of shield bearing warrior (Hendry 1983:15). I hypothesize that significantly more vertically divided shield patterns will be found than horizontally divided shields in certain areas. I believe that this is due to another type of motif which depicts rectangular anthropomorphs holding a transparent

shield or hoop. Some of these figures may be interpreted as shield bearing warriors having vertical design elements on the shields. Assuming that the angles of design elements are random, no significant differences in the frequency between horizontally divided and vertically divided shields should exist.

Furthermore, I believe that many of these vertically divided shield bearing warrior figures could be classified into a separate category of shield figure as opposed to shield figures with complex shield designs and decorations. To examine this distinction, two categories were created: Simple shield figures with shield designs with only one or two lines and complex shield figures which depict multiple lines or shield design elements. Simple shield bearers would also include figures with blank shields, as well as pictographic representations with a single fill color. Examples of shield bearing warrior figures with simple shield designs are shown in Figure 13. I believe that simple shield bearers are more likely to occur in panels in association with multiple individuals (in what Keyser 1977 has described as Biographical Style Rock Art), and also in historic contexts. I feel that this is due to the simplification of shield bearing figures, possibly to create “anonymous” enemy and allied figures, or to save time in depicting large scenes.

To test these hypotheses, I have selected shield figures from several panels from the data set without regard to their geographic location. The first test compares the distinction between simple and complex shield bearers and historical association (the presence of a horse or gun in association with the figure). The research hypothesis for this test states that there is a statistical dependence between the distinction between simple and complex shield figures and the depiction of European material culture. The second test

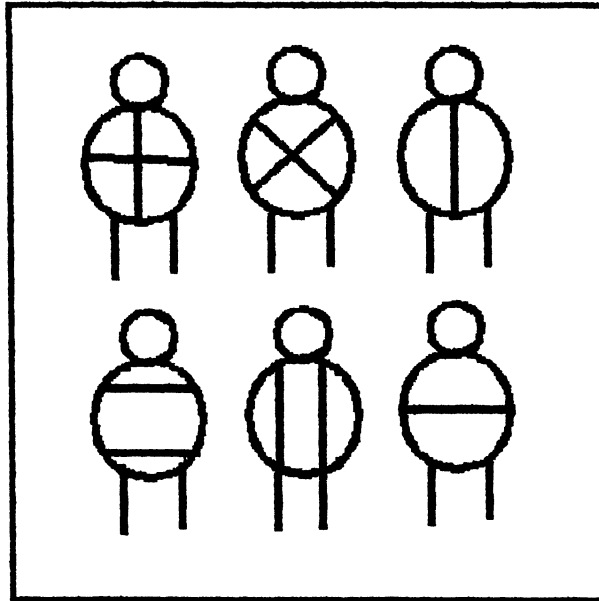


Figure 13.

Examples of simple shield designs incorporating only one or two lines

compares the distinction between simple and complex shield bearers and the presence of four or more anthropomorphic figures in association with the figure. Figures for which the numerical context is not known could not be coded and are excluded from this test (See Appendix II). The research hypothesis states that there is a statistical dependence between the distinction between simple and complex shield bearers and the number of figures depicted in a panel. Together, these two tests should address the context of simple and complex shield designs.

2. Shield Extensions

This test examines the absence or presence of weapons or other objects protruding from behind the shields to test the context or function of the shield figures as they differ

regionally. The null hypothesis of this test states that no correlation exists between the absence or presence shield extensions including weapons and other objects and their geographical relationships. Figures are divided into five groups: those with no object protruding (NOARM), those clearly depicting weapons (WEAPONS), those depicting hands (HANDS), those depicting arms but no hands (ARMS), and those with an unidentified object protruding from behind the shield (UNKNOWN). A major assumption of this study is that the absence or presence of object protruding from behind a shield is a good indicator of that figure's possible function. Because the identification and classification of shield extensions is difficult at best, any bias introduced as a result of the coder would likely be reflected in the relationship between the UNKNOWN category and the others. It is also possible that bias might be introduced as the result of how the recorder drew these figures. Another concern is that weathering may have caused once clearly distinguishable objects to become illegible and consequently categorized as UNKNOWN.

3. The Uinta Fremont Area

As stated previously, the Uinta Fremont area is a distinct culture area created by previous researchers (Schaafsma (1972, 1980; Wellman 1979; Grant 1978) on the basis of stylistic similarity. Within this culture area, two forms of shield bearers appear to exist: Classic Vernal Figures with geometric heads and shield figures with round heads similar to those found on the Northern Plains. From a casual glance, it appears that there are significantly fewer Classic Vernal Figures along the Colorado side of the area and

significantly fewer round headed shield figures on the Utah side of the distribution. While the boundary between Utah and Colorado is arbitrary, the region immediately on the Colorado side of the region is more mountainous in the north and continues south along the Uncompahgre Plateau. To test this hypothesis, shield bearers from both states were selected and coded for head shape. The null hypothesis states that head shape is random with respect to the border of Utah and Colorado.

4. Head Extensions

This test, an examination of the numbers of feathers found on shield bearers as they vary geographically, tests a hypothesis put forth by Kenneth Secrist. He stated that Northern Plains shield figures usually had only one or two feathers while those in Utah generally had more than two (Secrist 1960:6). The null hypothesis of this test states that there is no correlation between the number of elements extending from the heads of shield figures and their geographic relationships. Probably the greatest assumption underlying this component is that elements extending from the heads of shield figures actually represent feathers, as opposed to bison horns or other objects as Secrist proposes. This poses no serious problem as the hypothesis is defined, because the number of elements would still remain the same.

5. Other Sources of Variability

In addition to the above mentioned variables, I also wanted to examine the distribution of colors, as its use may be suggestive of cultural identity. My interest in the

use of colors was inspired by Loendorf, who suggested that the use of the color green at the Valley of the Shields Site in southern Montana may be associated with a specific cultural group (Loendorf 1990:50). However, in attempting to find information for an objective study, I found very little useful data. There are several reasons for my difficulties, most significantly the multitude of published reports that describe figures as pictographs but fail to mention the colors involved. Another serious problem is that these studies only include shield bearing warriors, and as a result, the appearance of colors on other types of images is not examined. Also, all figures in the data set from the Northern Rio Grande area of New Mexico are petroglyphs, and no color examination could be developed for this region. As a result of these problems, strict hypothesis testing could not be conducted in this area. Red is by far the most commonly used color, followed by black and yellow (Conner and Conner 1971:14). Combinations of colors on individual shield bearing warrior figures is rare, but occurs in Montana, Wyoming, Utah and Colorado. Likewise, the use of colors such as green, orange, and purple are equally rare in their frequency and source distribution. A total of three shield bearing warrior figures incorporating the color green were discovered as part of my research: one from 24FR2 in Fergus County, Montana (Secrist 1960), another from the Valley of the Shields Site (24CB1094), in Carbon County, Montana (Loendorf 1988), and a third from 5RT6 along the Yampa River near Dinosaur National Monument in the Uinta Fremont region (Cole 1990) (Figure 14). Green pigments were also used at the Castle Gardens Site in Central Wyoming (Sowers 1954), but while the site contains numerous shield bearing warrior figures, none incorporated green pigment.

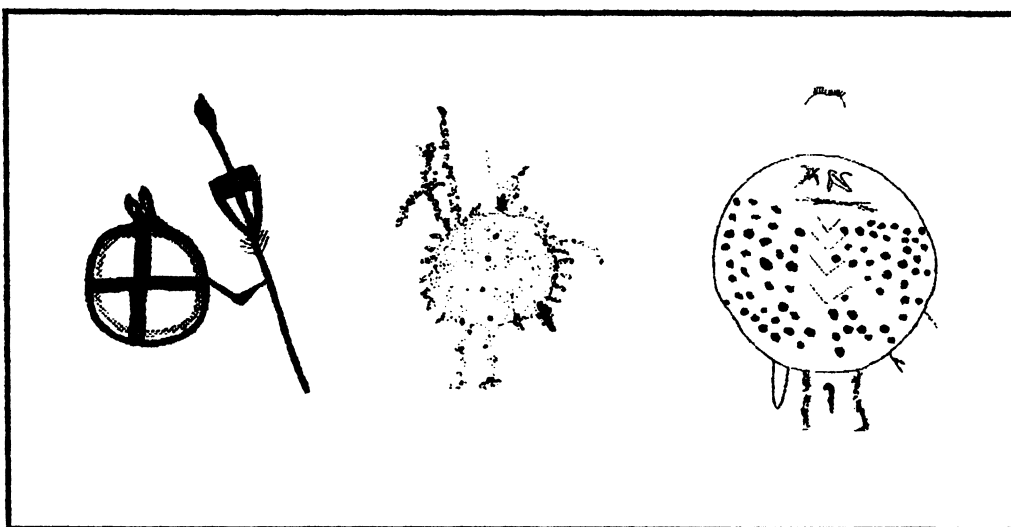


Figure 14.

Shield bearing figures incorporating the color green. Left: from 24FR2 in Fergus County, Montana. Shaded indicates green. After Secrist 1960. Center: from 5RT6 along the Yampa River near Dinosaur National Monument in the Uinta Fremont region. Shaded indicates green. After Cole 1990. Right: from the Valley of the Shields Site (24CB1094), in Carbon County, Montana. Solid indicates green. After Loendorf 1988.

While not a part of this study, the use of colors might in the future prove to be a good indicator of cultural identity. If the source of a particular pigment is found only in the home range of a specific group, it would follow that the group controlled its access and use. Furthermore, the fact that this pigment might be exclusive to a particular group might lend itself to becoming a symbol of their identity. Following this line of thinking, a test of colors as symbols of group identity would do well to examine hide paintings, robes and shields which are painted using aboriginal pigments and associated with historically known groups. A larger study incorporating data from site forms and encompassing figures in addition to shield bearers might provide new insights into the cultural identity of rock art images.

Overall, these hypotheses should provide a good measure of variability found between regions. Variability in the form of head and shield extensions, as well as comparisons within and between regional groups should shed light into the form and function of shield bearing warrior rock art.

Chapter 4.

Results

Research hypotheses were tested according to the procedures discussed previously. All testing involved the use of chi-square procedures which seek to determine if two different variables are related. After stating the research hypotheses for each test, figures from the data set were coded with regard to each of the variables. More specific coding information for each test can be found in Appendix II. Degrees of freedom (df) were determined using the formula $(c-1)(r-1)$ where c represents the number of columns in a table and r represents the number of rows. All tests were conducted at the .05 significance level (α), which provides a cutoff point in deciding when to reject the null hypothesis.

In the results that follow, all of the tests involved small samples that consequently had small expected and observed frequencies. Traditionally, most statisticians state that all expected frequencies need to be greater than 5 (Weiss and Hassett 1987:473). The standard method of addressing this problem is to combine categories, which raises expected frequencies but detracts from the amount of variability in the study. However, previously held assumptions about low frequency values are now beginning to appear to be an arbitrary rule of thumb left over from the pre-computer era. Numerous new studies, summarized by Nelson (1993:34-35), suggest that values of N that are 4-5 times greater than the number of cells are adequate for the application of chi-square statistics and that frequencies around one are just as suitable for use in chi square as frequencies of five or

more. Using numerous variables in hypothesis testing allows for more varied and patterned analyses than combining cells to create higher frequency values.

Test 1. Horizontally and Vertically Divided Shields

This test was designed to address regional variation in the number of horizontally and vertically divided shield bearing warrior figures throughout western North America. Results from this study are shown in Table 1 and specific information can be found in Appendix II. My research hypothesis stated that significantly more vertically divided shield patterns will be found than horizontally divided shields in certain areas. I believe that this is due to another type of motif, which depict rectangular anthropomorphs holding a transparent shield or hoop, being interpreted as shield bearing warriors with vertical design elements on the shields.

As the chi-square score for this test is less than the critical value for α at the .05 significance level with 6 degrees of freedom, the research hypothesis is rejected, and the null hypothesis which states that there is no statistical relationship between the number of horizontally and vertically divided shields with respect to their geographic location is retained. Examples not exhibiting horizontal and vertical shield elements are clearly the most frequent in all regions. Vertical shield elements appear to be far more common than horizontal ones, outnumbering horizontal shield elements in all regions.

While the directionality of shield designs appears random with respect to geography, it is interesting that such a strong association exists between horizontal and

Table 1.					
Horizontally and Vertically Divided Shields with Respect to Region					
		Horizontal	Vertical	Other	Total
Uinta Fremont					
	Observed	1 (2.4%)	9 (21.4%)	32 (76.2%)	42 (100%)
	Expected	3.147	7.570	31.256	42
	(O-E)²/E	1.465	.270	.018	1.753
Central Montana					
	Observed	12 (12.4%)	17 (17.5%)	68 (70.1%)	97 (100%)
	Expected	7.407	17.663	72.930	97
	(O-E)²/E	2.848	.025	.333	3.206
Milk River					
	Observed	0 (0%)	4 (18.2%)	18 (81.8%)	22 (100%)
	Expected	1.663	3.965	16.372	22.0
	(O-E)²/E	1.663	.000	.162	1.825
Rio Grande					
	Observed	0 (0%)	1 (10%)	9 (90%)	10 (100%)
	Expected	.756	1.802	7.442	10
	(O-E)²/E	.756	.357	.326	1.439
df = 6	$\alpha = .05$	$X^2 = 8.223$		Critical Value = 12.592	
$X^2 < \text{Critical Value} = \text{Accept Null Hypothesis}$					

vertical shield elements in all areas. If many of these vertically divided figures represent rectangular anthropomorphs with an invisible shield or hoop, it would suggest that the convention of depicting an individual's shield as a circle around their torso represents a much larger phenomena found throughout western North America.

Some shield figures clearly demonstrate this transparent shield or hoop phenomena, such as those shown in Figure 15. In one example, (second from the right) the

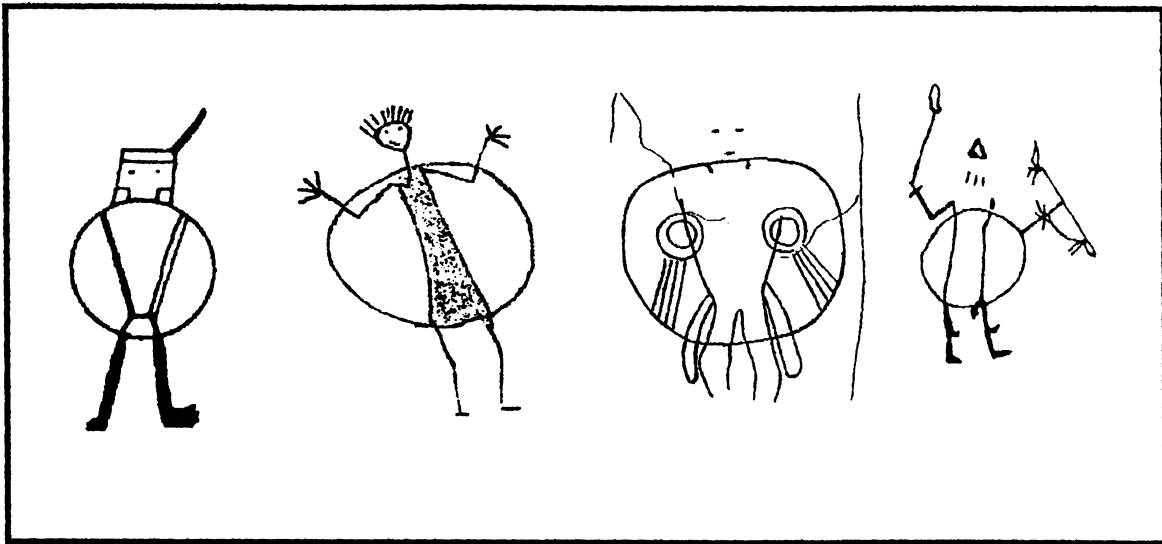


Figure 15.

Shield bearing warrior figures depicting the individual behind the shield. From left to right: Nine Mile Canyon, Utah. After Wormington (1955:168); 24RB1019, Central Montana. After Conner (1984:126); Ashley Dryfork Valleys, Utah. After Schaafsma (1980:20); Pictograph Cave, near Billings, Montana. After Mulloy (1958: insert).

artist has depicted both the individual's torso and designs on his shield. In many cases, however, it is difficult to determine if these vertically divided shield figures actually represent the torso of a rectangular anthropomorph or an individual bearing a vertically divided shield.

The placement and depiction of arms and legs is often a useful tool in attempting to distinguish these two categories. In many "transparent" shield figures, legs connect or are extensions of the vertical shield elements. As shown in Figure 16, the shield design on the figure on the left likely represents the torso of a rectangular anthropomorph while the

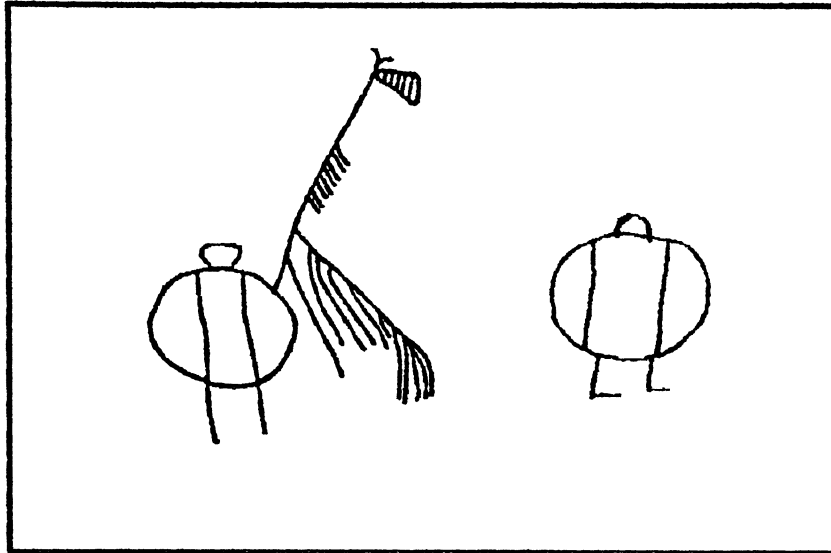


Figure 16.

Shield bearing warrior figures with different legs. The figure on the left is from the Breaks of the Yellowstone, central Montana. After Thomas (1985:16). Figure on the right is from the Bear Gulch Site, central Montana. After Secrist (1960:11).

figure on the right likely represents an individual carrying a vertically divided shield. The distribution of this “transparent” or “x-ray” shield convention appears more widespread than previously assumed. While this might suggest that its use carried meaning over a large distribution simultaneously, temporal biases in this analysis due to the lack of reliable dates prevent testing this hypothesis. While such figures appear in historic depictions from all regions, it is currently impossible to obtain accurate dates for the invention, diffusion and adoption of the “x-ray” shield theme.

Test 2. Historic Association and Shield Design

This test was designed to determine if a statistical association exists between the

Table 2.				
Historical Material Culture and Shield Design				
		No Historic Association	Historic Association	Total
Simple Shield Designs				
	Observed	52 (74.3%)	18 (25.7%)	70 (100%)
	Expected	58.605	11.395	70
	(O-E)²/E	.744	3.829	4.573
Complex Shield Designs				
	Observed	92 (90.2%)	10 (9.8%)	102 (100%)
	Expected	85.395	16.605	102
	(O-E)²/E	.511	2.627	3.138
df = 1	$\alpha = .05$	$X^2 = 7.711$	Critical Value = 3.841	
$X^2 > \text{Critical Value} = \text{Reject Null Hypothesis}$				

distinction between simple and complex shield figures, as defined in Chapter 3, and the depiction of European historical material culture in association with the figures. Results from this study are shown in Table 2 and specific information can be found in Appendix II. My research hypothesis stated that significantly more simple shield figures will occur in different temporal associations. It is thought that simple shield bearers might represent a later development and consequently be more frequently depicted in association with historic material culture.

As the chi-square score for this test is greater than the critical value for α at the .05 significance level with 1 degree of freedom, the null hypothesis is rejected and the research hypothesis, which states that there is a statistical relationship between the distinction between simple and complex shield bearers and the depiction of associated historical

material, is retained. Simple shield figures showed a higher association with historic cultural material than figures with shield designs defined as complex. Roughly two-thirds (64.3%) of figures with associated historic material had simple shield designs. Chi-square coefficients for simple shield bearers were higher regardless of the number of figures depicted, suggesting that greater variability exists in the relationship between complex shield figures and the depiction of European material. This suggests that simple shield bearers might have been a more recent phenomena, possibly developing out of more complex forms.

It is important to note that the lack of historic material culture does not necessarily indicate that the figure was manufactured before a specific date. There is a distinct possibility that at least some figures may date to the historic period, yet not depict recognizable European material. Therefore, this test can only compare the frequency of the depiction of European derived objects with relation to shield bearer type.

Test 3. Number of Figures and Shield Design

This test was designed to determine if a statistical association exists between the distinction between simple and complex shield figures as defined in Chapter 3 and the number of other anthropomorphs in association with the figures. Results from this study are shown in Table 3 and specific information can be found in Appendix II. My research hypothesis stated that significantly more simple shield figures will occur on panels depicting four or more anthropomorphic figures. I feel that this may be due to the

Table 3.				
Number of Figures and Shield Design				
		Less than 4	Four or More	Total
Simple Shield Designs				
	Observed	17 (27.9%)	44 (72.1%)	61 (100%)
	Expected	27.111	33.889	61
	(O-E)²/E	3.771	3.017	3.778
Complex Shield Designs				
	Observed	47 (56.6%)	36 (43.4%)	83 (100%)
	Expected	36.889	46.111	83
	(O-E)²/E	2.771	2.217	4.988
df = 1	$\alpha = .05$	$X^2 = 11.776$	Critical Value = 3.841	
$X^2 > \text{Critical Value} = \text{Reject Null Hypothesis}$				

simplification of shield bearing figures to save time in depicting large scenes. As the chi-square score for this test is greater than the critical value for α at the .05 significance level with 1 degree of freedom, the null hypothesis is rejected, and the research hypothesis, which states that there is a statistical relationship between the distinction between simple and complex shield bearers and the number of anthropomorphic figures in association with them, is retained. Figures for which the primary context is not known could not be coded and are excluded from this test (See Appendix II). Simple shield figures showed a higher association with the depiction of four or more anthropomorphs than figures with shield designs defined as complex. Over two thirds (72.1%) of simple shield figures appeared in association with four or more anthropomorphs. Chi-square coefficients for simple shield

bearers were higher regardless of the number of figures depicted, suggesting that greater variability exists in the relationship between complex shield figures and the number of human figures depicted.

This suggests that, when depicting four or more human figures, the artist usually depicted shield designs on shield bearing warriors as consisting of one or two lines, of being filled in solidly, or else left blank with no shield decoration. One reason for this may be that the artist simplified the depiction of shield designs to create “anonymous” shield bearing warrior figures for which an actual shield design was not known or irrelevant to the composition. Simple shield designed may have also been used by the artist to save time in creating large and complex panels. Very few historic shields with which I am familiar were blank or had only one or two elements, which suggests to me that this may very well represent some form of simplification. I believe that the artist is often employing the “x-ray” or “transparent shield” style described in Test 1, or in the case of blank or solid shield figures, that the artist has for some unknown reason chosen not to depict the shield design in the composition.

Another reason for the structuring of this test is that I hoped that the number of human figures in association with a shield bearer might prove to be an objective means of examining shield figures interacting with other figures. Whether or not figures appear to be interacting is largely subjective, and I have attempted to examine variables that can be as objectively defined as possible. While using the number of human figures as a quantifiable means of indicating interaction has advantages, it is not without potential biases. In some cases, such as large battle scenes, interaction between figures is clear,

often designated by lines extending toward and in some cases connecting with other figures. In other examples, it is unclear whether or not the figures are portrayed as involved in some action or even if they were manufactured at the same approximate time. Additionally, some figures may be interacting with less than four anthropomorphs, compounding this confusion. While there is no perfect way to determine or measure interaction between figures with any certainty, the number of human figures present can provide a general index of some of the context associated with these figures.

These questions of interaction are significant because they relate to the Ceremonial and Biographical Styles described by Keyser (1977, 1979) on the Northern Plains. Keyser breaks shield bearing warrior figures into two types or styles: the Ceremonial Style, which is thought to have been used as part of vision quest activities, and Biographical Style, which depicts events in the lives of the individual artists. Biographical style is commonly associated with European related materials much like simple shield figures as suggested by the results of Test 2. Keyser argues that the Ceremonial Style did not develop into the Biographical Style and that they are the products of two different cultural groups (Keyser 1977:54). Plains ledger art is often viewed as a continuation of this Biographical Style. If the distinction between Ceremonial and Biographical style art roughly correlates with simple and complex shield figures, the results of Tests 2 and 3 suggest that the context of shield figures may have changed. However, it is exceedingly difficult to confirm that early shield bearing warrior figures were used or related to the acquisition of visions, and Magne and Klaussen's (1991) study of anthropomorphs at Writing-on-Stone suggests that the distinction between ceremonial and biographical rectangular anthropomorphs is largely

Table 4.							
Shield Extensions with Respect to Region							
	NOARM	ARM	HANDS	WEAPONS	UNKNOWN	TOTAL	
Uinta Fremont							
Observed	29 (69.0%)	1 (2.4%)	0 (0%)	5 (11.9%)	7 (16.7%)	42 (100%)	
Expected	18.314	.488	.977	13.919	8.302	42	
(O-E)²/E	6.235	.537	.977	5.715	.204	13.668	
Central Montana							
Observed	35 (36.1%)	1 (1.0%)	2 (2.1%)	39 (40.2%)	20 (20.6%)	97 (100%)	
Expected	42.733	1.140	2.279	32.477	19.372	97	
(O-E)²/E	1.399	.017	.034	1.310	.020	2.780	
Milk River							
Observed	8 (36.4%)	0 (0%)	2 (9.1%)	5 (22.7%)	7 (31.8%)	22 (100%)	
Expected	9.593	.256	.512	7.291	4.349	22	
(O-E)²/E	.265	.256	4.325	.720	1.616	7.182	
Rio Grande							
Observed	3 (30%)	0 (0%)	0 (0%)	7 (70%)	0 (0%)	10 (100%)	
Expected	4.360	.116	.233	3.314	1.977	10	
(O-E)²/E	.424	.116	.233	4.100	1.997	6.850	
df = 12 α = .05 X² = 30.480 Critical Value = 21.026							
X² > Critical Value = Reject Null Hypothesis							

unfounded. It is possible, however, to state with some certainty that simple shield designs as defined in Chapter 3 are strongly associated with the depiction of other anthropomorphs and the presence of historic material culture.

Test 4. Shield Extensions with Respect to Different Regions

This test was designed to determine if a statistical association exists between the depiction of shield bearing figures with weapons, limbs and other shield extensions and the region where that figure is found. Results from this study are shown in Table 4 and specific information can be found in Appendix II. My research hypothesis states that significantly more shield figures with different shield extensions will occur in different regions. This test was designed to examine the context of these images, inferring that figures with weapons or hands may have been created in different social and temporal contexts than figures with no shield extensions.

As the chi-square score for this test is greater than the critical value for α at the .05 significance level with 12 degrees of freedom, the null hypothesis is rejected and the research hypothesis, which states that there is a statistical relationship between the depiction of shield figures with shield extensions and their regional locations, is retained. Figures with no shield extensions appear to occur approximately one third of the time in the Central Montana, Milk River and Rio Grande regions, but appear over two thirds of the time (69.0%) in the Uinta Fremont region. Figures possessing shield extensions were more likely to depict weapons or unknown objects, while figures with arms and hands appear to be more unusual in all areas.

This suggests that the Uinta region possesses a pattern different from the other regions with respect to shield extensions. Figures from other regions are often depicted with weapons, suggesting a possible war (or at least a defensive or protection based)

Table 5.				
Absence or Presence of Shield Extensions with Respect to Region				
		NOARM	ARM	Total
Uinta Fremont				
	Observed	29 (69.0%)	13 (31.0%)	42 (100%)
	Expected	18.314	23.686	42
	(O-E)²/E	6.235	4.821	11.056
Central Montana				
	Observed	35 (36.1%)	63 (64.3%)	98 (100%)
	Expected	42.733	55.267	98
	(O-E)²/E	1.399	1.082	2.481
Milk River				
	Observed	8 (36.4%)	14 (63.6%)	22 (100%)
	Expected	9.593	12.407	22
	(O-E)²/E	.265	.205	.470
Rio Grande				
	Observed	3 (30.0%)	7 (70.0%)	10 (100%)
	Expected	4.360	5.640	10
	(O-E)²/E	.424	.328	.752
df = 3	α = .05	X² = 14.759	Critical Value = 7.815	
X² > Critical Value = Reject Null Hypothesis				

context, while those in the Uinta region are often depicted without objects protruding from behind the shields. This pattern suggests that the function or context of these figures may be different.

In coding examples for this test, I discovered that many of the variables I created

were more problematic than I had thought. These categories were designed to be mutually exclusive, but in practice they are not. Figures with hands all had arms, but were not included in frequencies of arms. Likewise, figures with arms and hands holding weapons were coded as having weapons but were not included in frequency total for hands or arms. Also, single straight lines radiating from the shield could be interpreted as being either lances or arms, and many figures had extensions which had to be classified as unknown. Other figures had weapons in close association, but were coded as NOARM because the weapon was not touching or extending from the shield.

Although this test was determined to be significant, a second test was run to provide greater reliability in the test results. In this second test, all shield extensions were included in the category of ARM, and figures with no extensions were classified as NOARM. Results from this study are shown in Table 5 and specific information can be found in Appendix II. The research hypothesis for this test states that a statistical association exists between the absence or presence of shield extensions and their regional location.

As the chi-square score for this test is greater than the critical value for α at the .05 significance level with 3 degrees of freedom, the null hypothesis is rejected, and the research hypothesis, which states that a statistical relationship exists between the absence or presence of shield extensions and their regional locations, is retained. Results from this test confirm that the significance of the pattern shown in the previous test is largely due to the high frequency of shield figures with no extensions from the Uinta region.

Table 6.				
Utah and Colorado Shield Bearers with Respect to Head Shape				
		Geometric	Round	Total
Utah				
	Observed	16 (57.1%)	12 (42.9%)	28 (100%)
	Expected	11.610	16.390	28
	(O-E)²/E	1.660	1.176	2.836
Colorado				
	Observed	1 (7.7%)	12 (92.3%)	13 (100%)
	Expected	5.390	7.610	13
	(O-E)²/E	3.576	2.532	6.108
df = 1	$\alpha = .05$	$X^2 = 8.944$	Critical Value = 3.841	
$X^2 > \text{Critical Value} = \text{Reject Null Hypothesis}$				

Test 5. Head Shape in Utah and Colorado Uinta Fremont Shield Figures

This test was designed to address variation in the head shape of shield figures found within the Uinta Fremont area. Results from this study are shown in Table 6 and specific information can be found in Appendix II. My research hypothesis stated that significantly more geometrically shaped heads will be found than round heads in different parts of the Uinta Fremont area. Specifically, the boundary between Utah and Colorado was used to determine if round headed shield figures were significantly more frequent in the Colorado portion of the Uinta Fremont area as shown in Figure 9.

As the chi-square score for this test is greater than the critical value for α at the .05

Table 7.				
Utah and Colorado Shield Bearers and Shield Extensions				
		NOARM	ARM	Total
Utah				
	Observed	6 (20.7%)	23 (79.3%)	29 (100%)
	Expected	9.667	19.333	29
	(O-E)²/E	1.391	.696	2.087
Colorado				
	Observed	8 (61.5%)	5 (38.5%)	13 (100%)
	Expected	4.333	8.667	13
	(O-E)²/E	3.103	1.552	4.655
df = 1	$\alpha = .05$	$X^2 = 6.742$	Critical Value = 3.841	
$X^2 > \text{Critical Value} = \text{Reject Null Hypothesis}$				

significance level with 1 degree of freedom, the null hypothesis is rejected and the research hypothesis, which states that a statistical relationship exists within the Uinta Fremont region between the shape of a shield bearer's head and its location with respect to the border of Utah and Colorado, is retained. Shield bearers from the Utah distribution showed greater variability in head shape compared with the Colorado portion of the study area, where round heads are found on over ninety percent (92.3%) of figures examined.

The results of this test lead me to wonder if the Uinta Fremont region as defined by Schaafsma (1972, 1980), Grant (1978) and Wellman (1979) may be in need of reexamination as an analytical unit. The alternative is that the region is well defined stylistically in relation to rock art from neighboring areas, but that geometrically head

shaped “Classic Vernal Figures” are primarily concentrated along the Utah side of the region while shield figures with round heads are more widely distributed.

As discussed in Chapter 3, one of the most dangerous biases with respect to the creation of bounded geographic regions is that rock art from different time periods is combined into a single category without a means of temporal control. Thus, the title “Uinta Fremont Area” may be misleading, because rock art within the boundaries was likely made both before and after the rise and disappearance of the people which archaeologists have named the Uinta. Classic Vernal Figures with geometrically shaped heads might represent a geographically and temporally localized phenomena within the larger area.

To further investigate this pattern a second test was conducted examining the absence or presence of shield extensions with regard to the Utah and Colorado portions of the area. The hope was to compare the results with those from the entire data set to determine if one of the portions of the Uinta region more closely correlates with the larger distribution. Results of this test are found in Table 7 and more specific coding information can be found in Appendix II. Shield bearing warrior figures were coded on the absence or presence of shield extensions similar to the refined test described in Table 5. Research hypothesis for this test states that a statistical association exists between the shape of shield figures head and its location with respect to the border between Utah and Colorado. The null hypothesis states that head shape is random with respect to the border of Utah and Colorado.

As the chi-square score for this test is greater than the critical value for α at the

.05 significance level with 1 degree of freedom, the null hypothesis is rejected, and the research hypothesis, which states that a statistical relationship exists within the Uinta Fremont region between the presence of lines extending from a shield figure and its location with respect to the border of Utah and Colorado, is retained. Frequencies of shield extensions from the Colorado portion compare well with the rest of the distribution, possessing shield extensions in approximately two thirds (61.5%) of the cases examined. Those from the Utah portion, however, showed a strong inverse correlation, with figures possessing no arm extensions in almost eighty percent (79.3%) of all cases. The results of these two tests combined suggests that shield bearers with geometrically shaped heads and no arm extensions are dominant on the Utah side of the distribution while those on the Colorado side appear to have frequencies similar to that of other regions with regard to these two variables.

While the boundary between Utah and Colorado is an arbitrary distinction, it does suggest a starting point for future reexaminations of this area. In comparing these two tests, chi square scores for head shape were higher than that for shield extensions in the Uinta region ($8.944 > 6.742$ [df = 1]). This suggests that variation in head shape is strongly patterned and may represent a better indicator of stylistic variation with respect to the boundary between Utah and Colorado. The results of these tests on the Uinta region suggest that two distinct patterns are emerging: one style of shield bearing figure with round heads and weapons found most frequently on the eastern boundary, and classic vernal figures with geometrically shaped heads and no shield extensions which are found primarily in the west. Future rock art research to test the validity of the category of Uinta

Table 8.					
Number of Head Extensions with Respect to Region					
		0	1-2	3+	Total
Uinta Fremont					
	Observed	20 (48.8%)	13 (31.7%)	8 (19.5%)	41 (100%)
	Expected	16.400	13.826	9.738	41
	(O-E)²/E	.790	.049	.310	1.149
Central Montana					
	Observed	32 (36.8%)	35 (40.2%)	20 (23.0%)	87 (100%)
	Expected	35.200	31.900	20.900	87
	(O-E)²/E	.291	.301	.039	.631
Milk River					
	Observed	9 (42.9%)	4 (19.0%)	8 (38.1%)	21 (100%)
	Expected	7.814	7.613	4.988	21
	(O-E)²/E	1.80	1.715	1.819	3.714
Northern Rio Grande					
	Observed	3 (30.0%)	5 (50.0%)	2 (20.0%)	10 (100%)
	Expected	4.000	3.625	2.375	10
	(O-E)²/E	.250	.522	.059	.831
df = 6	α = .05	X² = 6.325		Critical Value = 12.592	
X² < Critical Value = Accept Null Hypothesis					

style rock art is sorely needed, but is outside of the scope of this thesis. While my research is concerned primarily with shield bearing warrior figures, a thorough examination of the Uinta style would require an examination of all rock art motifs from the region as well as from all outlying areas.

Test 6. Head Extensions

This test was designed to address regional variation in the number of feathers, bison horns and other head extensions on shield bearing warrior figures throughout western North America. Examples from the data set were counted with respect to the region in which it is located and the number of extensions. The results of this analysis are shown in Table 8. Of the 172 figures in the data set, only 159 were used as 13 had indecipherable or existent heads and were excluded from this test (See Appendix II)

As the chi-square score for this test is less than the critical value for α at the .05 significance level with 6 degrees of freedom, the research hypothesis is rejected, and the null hypothesis, which states that there is no statistical relationship between the number of elements extending from the heads of shield figures with respect to their geographic location, is retained. This test suggests that the number of head extensions fluctuated randomly without respect to geographical location. Consequently, the number of feathers, bison horns and other head extensions may not be a good indicator of geographical variation.

The evidence does not support Secrist's (1960:6) statement that Northern Plains shield figures usually had only one or two feathers while those in Utah generally had more than two (Secrist 1960:6). Instead, evidence suggests that only one in five (19.5%) shield figures from the Uinta Fremont region possess three or more feathers or head extensions. While shield figures with one or two feathers appear to be the most common in the Central Montana region, figures with no head extensions are most frequent among the

Uinta Fremont, as opposed to figures with three or more head extensions as Secrist suggested.

It is important to note that the results of this study do not suggest that symbolic information does not exist with regard to head extensions. Rather, they suggest that the number of head extensions does not appear to vary geographically and that consequently it may not be a good indicator of cultural affiliation. Other factors related to head extensions, including design and style, might be better variables for use in future studies of ethnic groups. Mallory (1891) has noted that hairstyles are the primary means of conveying tribal affiliation on winter counts, and the same may be true for some rock art depictions. However, in the data set, almost half (46.0%) of all shield bearing warrior figures have no head extensions, suggesting that stylistic analysis of hairstyles would have limited utility in examining shield bearing warrior figures.

The results also suggest that different regions and cultural groups probably used varying numbers of head extensions within their populations. On the Plains, feathers were often used to denote various achievements and war honors, with individuals with more feathers being more accomplished than those with few feathers. This system was used by numerous historic Plains groups and had meaning which carried beyond that of the individual cultural group.

The fact that almost half of the figures presented had no head extensions does not directly indicate that those individuals were lacking in social status. Rather, head extensions may not have seemed to the artist to be a necessary component of what was being expressed. Although the number of feathers implied status among many historic

ins groups, other regional and temporal groups may have expressed status in different ways.

Chapter 5.

Concluding Remarks

Overall, the results of these tests suggest a remarkable degree of similarity between the four regions. All regions possessed higher frequencies of vertically divided shields to horizontally divided ones, suggesting that the “x-ray” or “transparent” shield convention may be a widespread phenomena found throughout western North America. Likewise, the number of feathers, bison horns and other head extensions appears to be random across regions, suggesting that the use of a specific number of feathers was not confined to any specific region or group. Figures associated with historic material culture and four or more anthropomorphs often possess simple shield designs in all areas, suggesting that these similarities extended into the historic period. Taken as a whole, the results suggest that these variables held symbolic meaning over a large geographic distribution.

The regional variation which does exist appears to be between the Uinta Fremont area and the other regions. Results suggest that figures from the Uinta region are almost twice as likely to be lacking shield extensions than in other regions. More specific analyses with regard to this region suggest that figures on the western portion of the area have high frequencies of geometrically shaped heads and no shield extensions while those along the eastern boundary of the region appear to conform with frequency values of the other regions (at least with regard to shield extensions). This suggests that something different may be occurring along the Utah side of the distribution. Shield figures from Alberta to New Mexico appear to possess many similar attributes, while Classic Vernal Figures in

Utah appear to be quite different.

It was hoped that an examination of local and regional variation within the shield bearing warrior motif may provide clues toward the identity of their makers, as different groups might have depicted shield bearing figures in different ways and contexts. While the results suggest strong similarities over a large geographic distribution, this does not directly infer that they were made by a single tribal or cultural group. Rather, they suggest that shield bearing warriors show a high degree of formal similarity and were likely used in similar ways throughout much of Western North America.

As described in Chapter 2, I believe that shield figures could not have represented ethnic markers of a single cultural group for three specific reasons: the lack of ethnic content in shield bearing warrior panels, the wide spatial and temporal distribution of the motif, and the varied archaeological and ethnographic evidence associated with shields and shield bearers. This evidence, combined with the results of this study, suggest that shield bearing warriors were a common Plains phenomena which probably held similar meaning to several cultural groups.

In Keyser's (1975) influential article on the shield bearing warrior, he states that the Shoshone did not create the motif, but rather borrowed it from the Fremont and brought it to the Northern Plains. If this is true, then this test suggests which traits were borrowed from the Fremont and how the motif was reinvented. The Shoshone may have borrowed the depiction of a figure behind a shield and adapted it to suit their own cultural needs by depicting shield figures with round heads and carrying weapons or other objects. However, as discussed in Chapter 2, statements about the cultural affiliation of rock art

images are problematic at best, leaving such inquiries open to speculation.

Other tests were conducted to determine if a statistical correlation exist between the distinction between simple and complex shield designs as defined in Chapter 3 and temporal and contextual variables. Results suggest that, when depicting four or more human figures, the artist usually depicted shield designs on shield bearing warriors as consisting of one or two lines, filled in solidly, or left blank with no shield decoration. One possible explanation may be that the artist simplified the depiction of shield designs to save time in creating large and complex panels. Many simple shield forms appear to represent rectangular, stick, or hourglass shaped figures with a circle around their torso representing a shield. It appears that in depicting simple shield forms including blank and solid examples, the artist has chosen not to depict shield designs in the composition.

This does not necessarily infer that these figures are lacking in symbolic value. Rectangular and hourglass shaped torsos with or without shields may have been used as a means of collectively identifying members of specific groups. Figure 17 provides examples of anthropomorphic figures of different body styles with and without shields. One such body style, often referred to as a “v-neck anthropomorph” (Figures 17, far right), appears

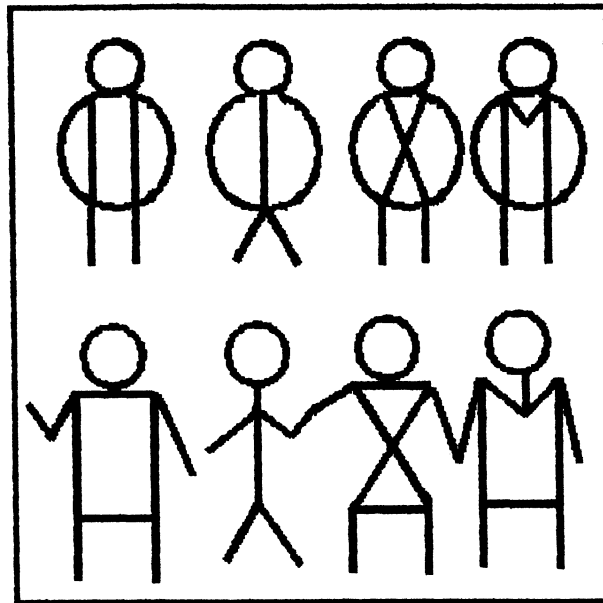


Figure 17.

Simple shield bearers and their anthropomorphic counterparts.

to be quite common on the Plains. Some panels, such as the one shown in Figure 18, appear to depict anthropomorphs with different body shapes performing different tasks. In this battle scene from *Writing-On-Stone* in Alberta, rectangular anthropomorphs appear to be fighting in the center of the panel while hourglass shaped figures remain either in the camp circle on the left or in the rear with the horses on the right. Magne and Klaussen attribute differences in body shape in the panel to be suggestive of gender (Magne and Klaussen 1991:414). If gender related symbolism can be communicated through anthropomorph shape, it is possible that other kinds of information, including that of cultural affiliation, may be communicated as well.

Shield bearing warrior figures with complex shield designs may symbolically

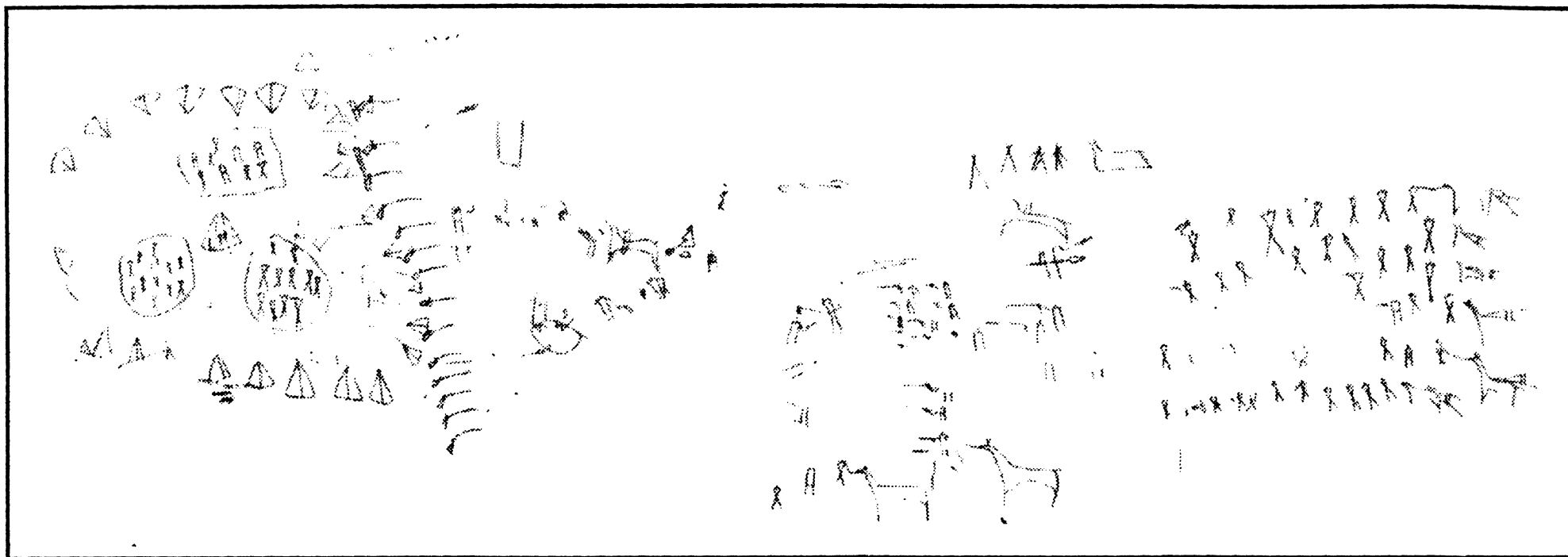


Figure 18.

Battle scene depicting rectangular and hourglass shaped anthropomorphs.
 From Writing-On-Stone Provincial Park, Alberta. After Magne and Klausen (1991)

communicate information about an individual's tribal or cultural identity under an assumption similar to that described by Mooney (1892), in which Kiowa men from extended families would all use the same design elements and pass them down to their sons. In perusing this line of inquiry, it may be beneficial to develop a research design which would first examine actual shields as well as hide paintings and ledger art for which tribal affiliation is known. This information could then be coded and compared with prehistoric shield designs. This technique is commonly referred to as the direct historical approach, a method which has dwindled in popularity in favor of other methodological positions. While this method is not without its own faults, biases and assumptions, it may provide a more logical and objective place to begin further studies of tribal affiliation and shield bearing warriors.

In addition to testing various hypotheses about shield bearing warriors, I hope that this thesis can provide a useful methodology for future rock art studies. Rock art studies have traditionally been associated with subjective and interpretive methodologies, a trend which has only recently begun to decline. While subjective analyses and interpretations often provide valuable insights into rock art images, those which are strongly grounded in the data often have the most explanatory power and contribute the most to our general body of knowledge. Future tests would do well to revise this database to include more specific information through site records. Variables such as size, aspect and elevation could all be tested for potential correlations. In the case of pictographs, site forms would likely also contain more specific color information. While the results of the tests presented here raised more questions than they answered, I feel that they represent a positive step

toward addressing variability within the shield bearing warrior motif.

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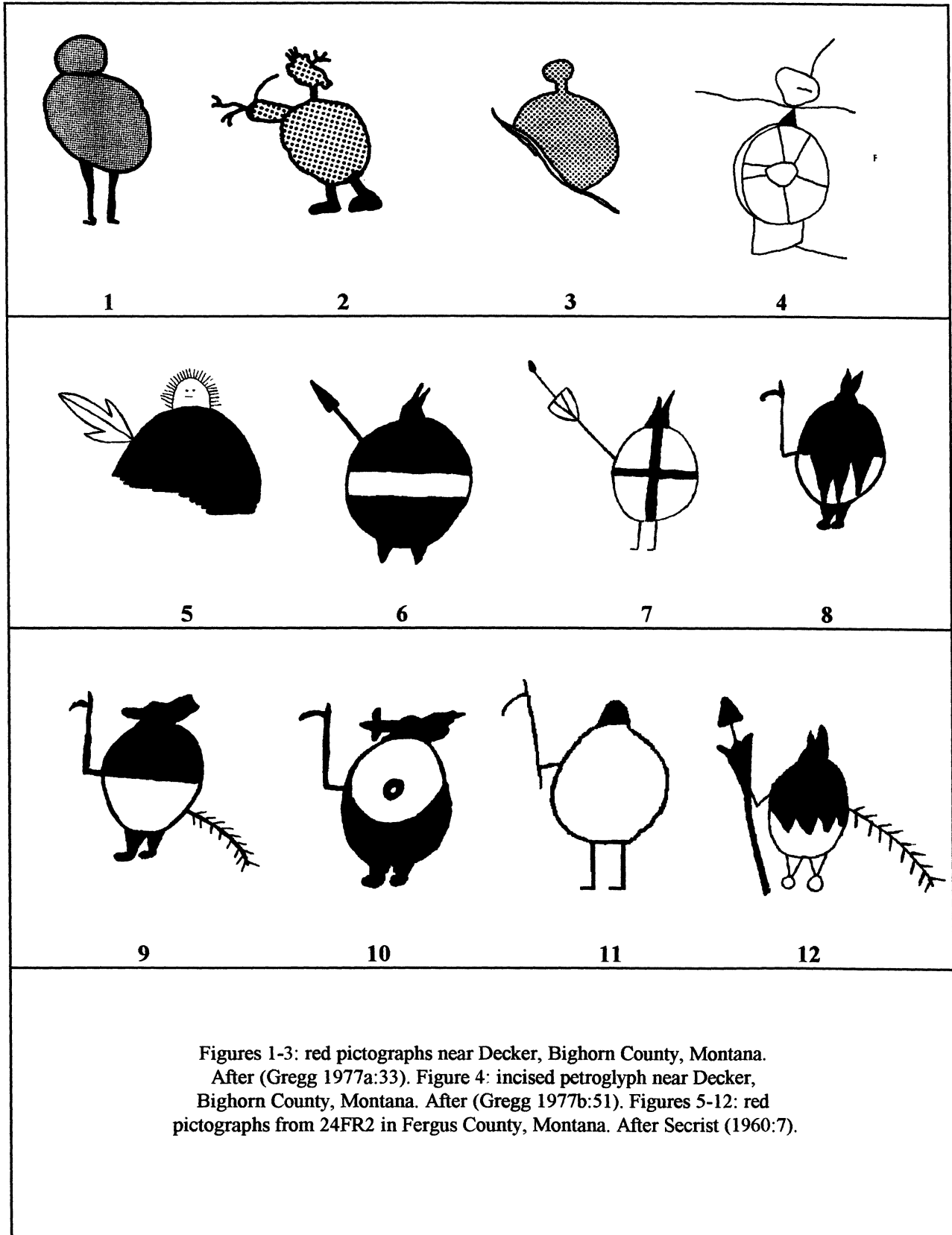
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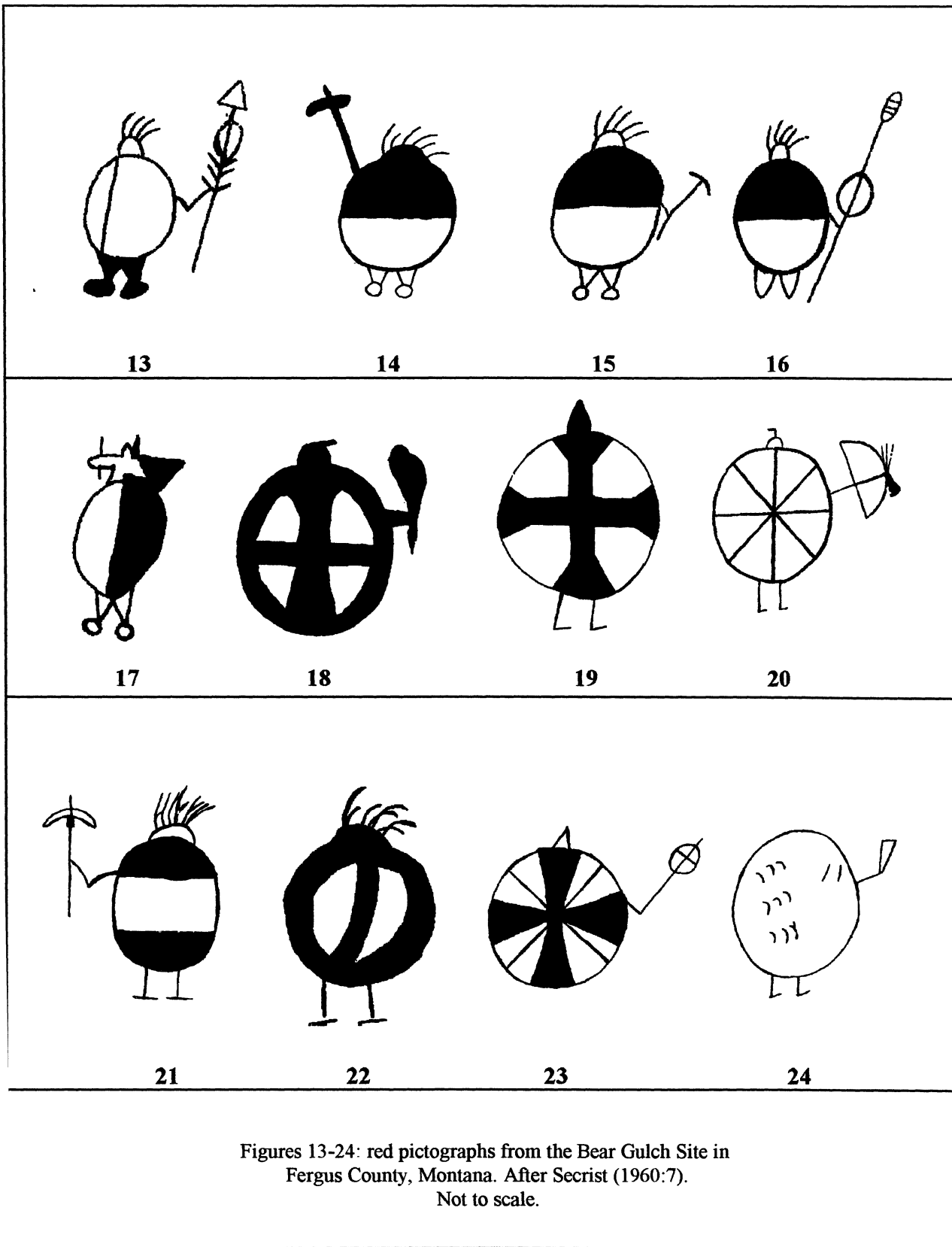
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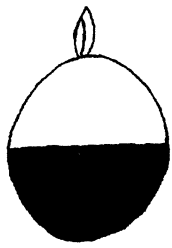
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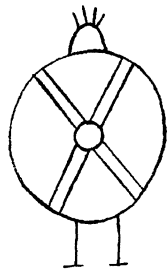


Figures 1-3: red pictographs near Decker, Bighorn County, Montana. After (Gregg 1977a:33). Figure 4: incised petroglyph near Decker, Bighorn County, Montana. After (Gregg 1977b:51). Figures 5-12: red pictographs from 24FR2 in Fergus County, Montana. After Secrist (1960:7).





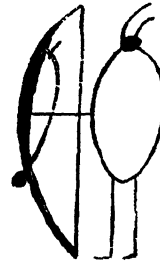
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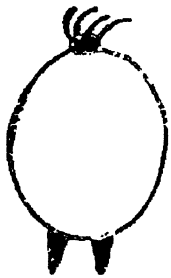
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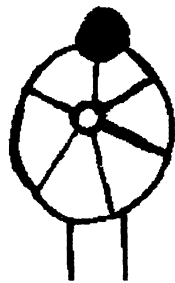
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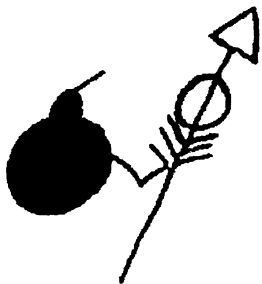
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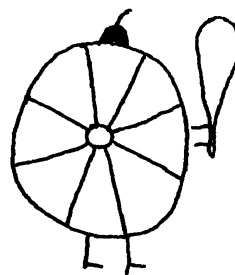
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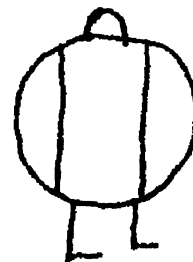
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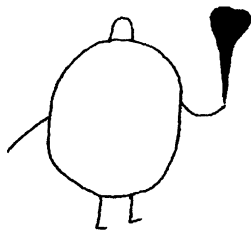


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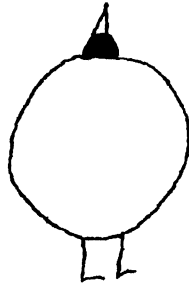


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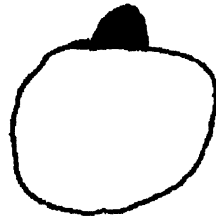
Figures 25-36: red pictographs from the Bear Gulch Site, 24FR2 in Fergus County, Montana. After Secrist (1960:9-11).



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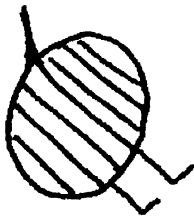
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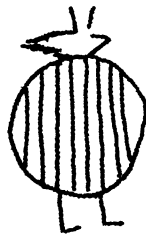
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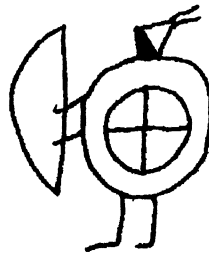
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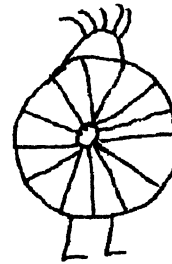
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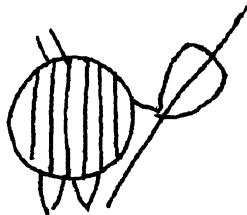
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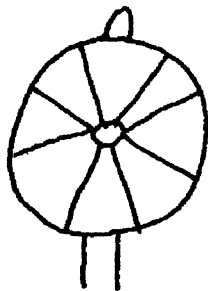
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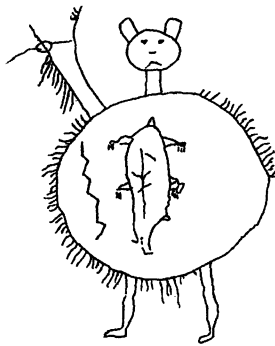
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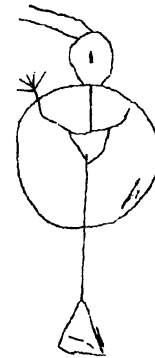
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Figures 37-46: red pictographs from 24FR3 in Fergus County, Montana. After Secrist (1960:11).
Figure 47: incised figure from the Tongue River drainage, Montana. After Carbone (1972:25).
Figure 48: incised figure near Otter, Montana. After Gilbert (1962:74).

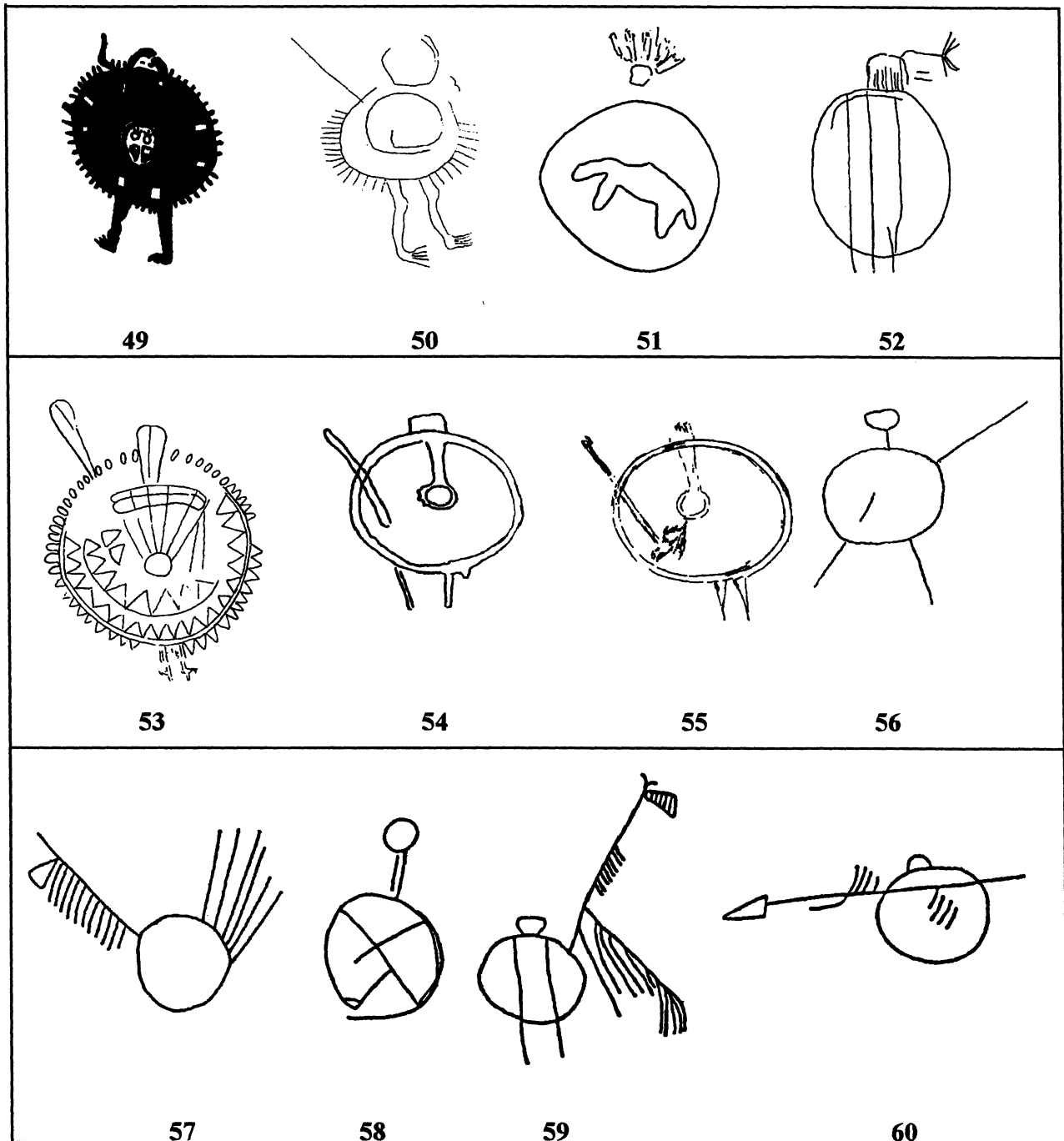
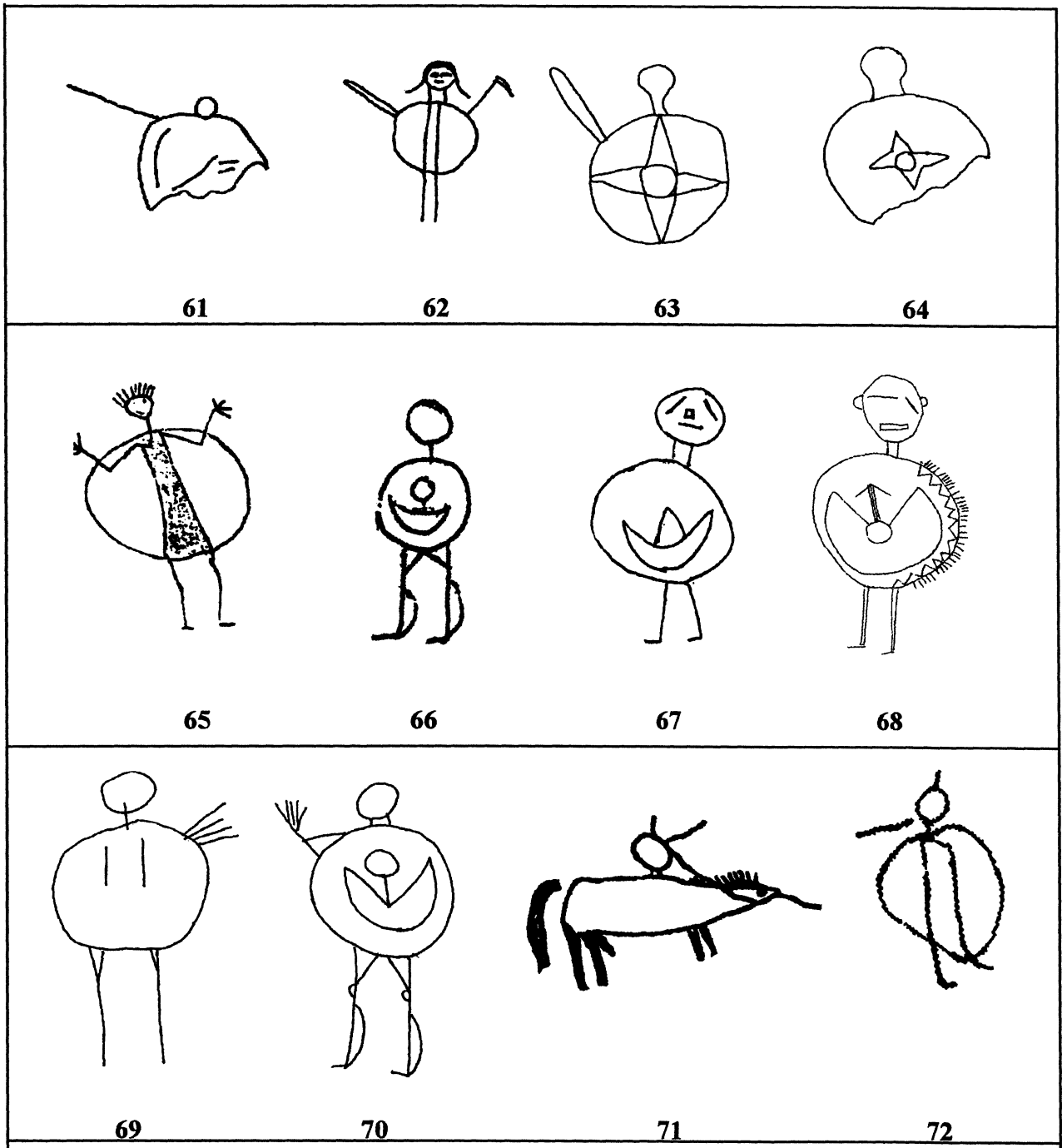
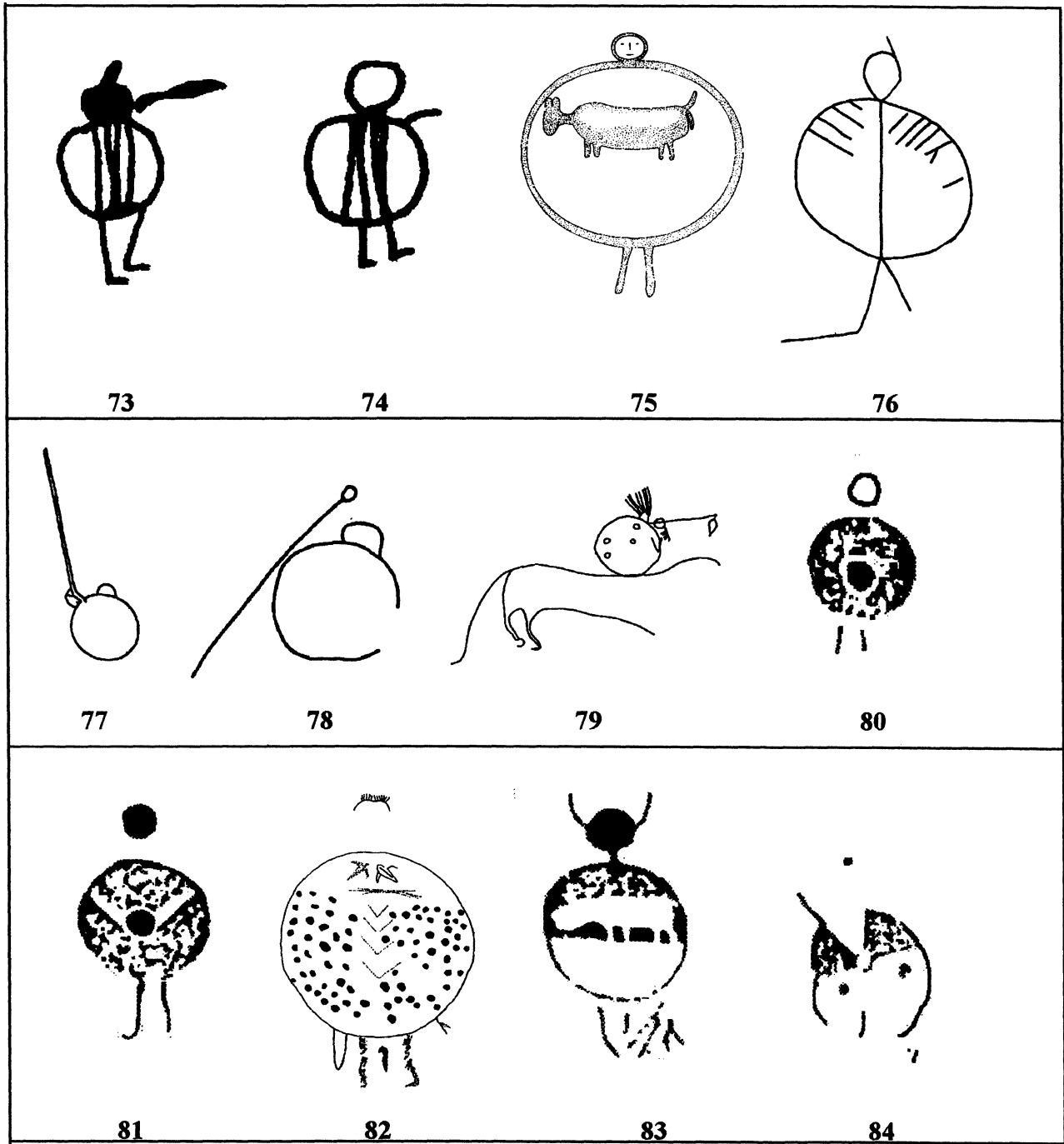


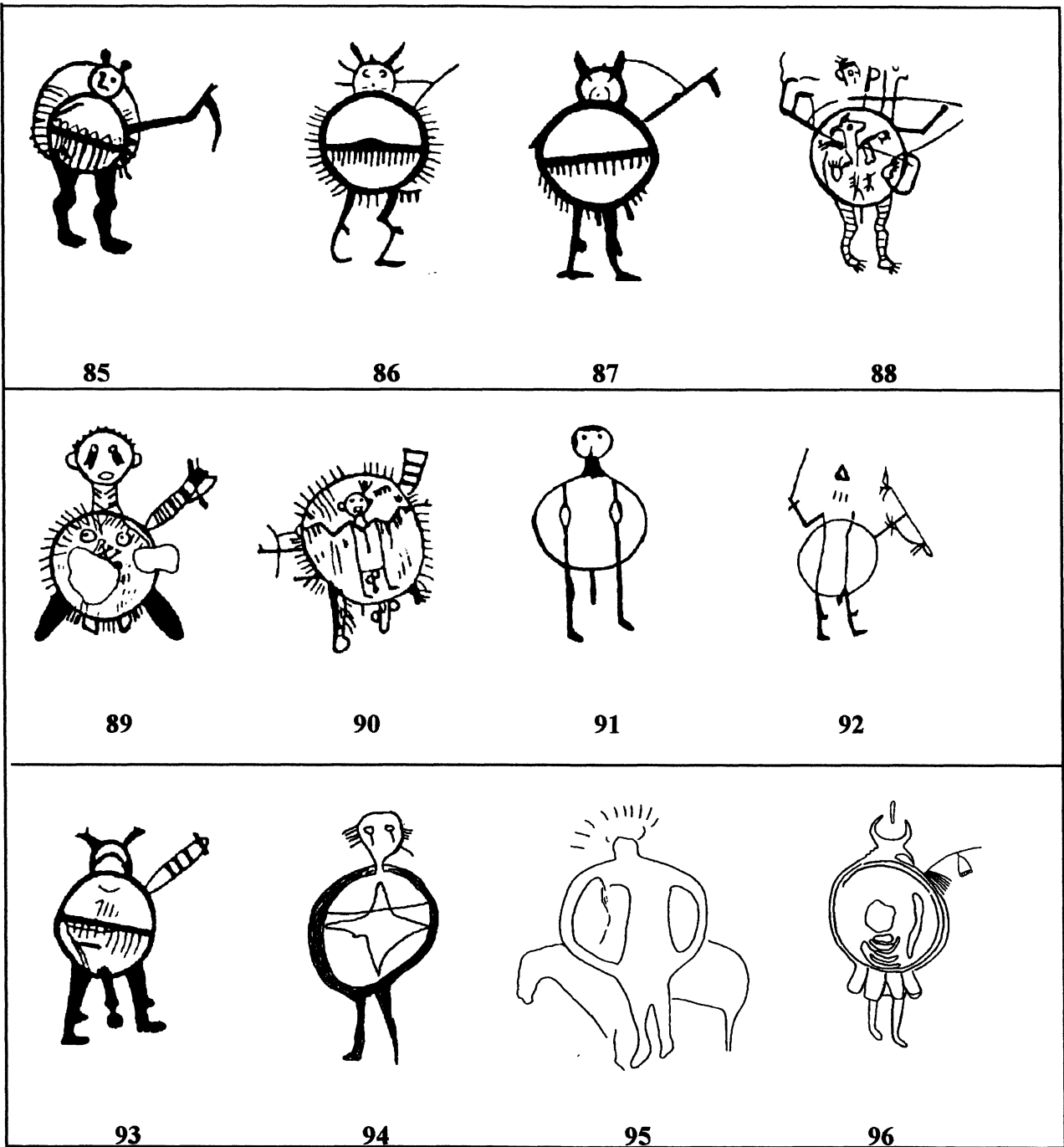
Figure 49: black and red pictograph from the Owl Canyon Site (24WL402). After Conner (1960:8).
 Figure 50: incised petroglyph from the Pryor Creek Area, Montana (24YL406). After Lewis (1985b:24).
 Figures 51-53: 51= red pictograph, 52-53 = incised petroglyphs, from the Provinse Site (24CB408). After Lewis (1984:14, 15, 17).
 Figures 54-55: red and black pictographs from the Bear Two Shield Site (24CB630). After Lewis (1984:20).
 Figure 56: incised petroglyph from Beehive Rock (24CB618). After Lewis (1982:29).
 Figures 57-60: incised petroglyphs from the Nordstrom Bowen Site (24YL 419). After Lewis (1986:169).



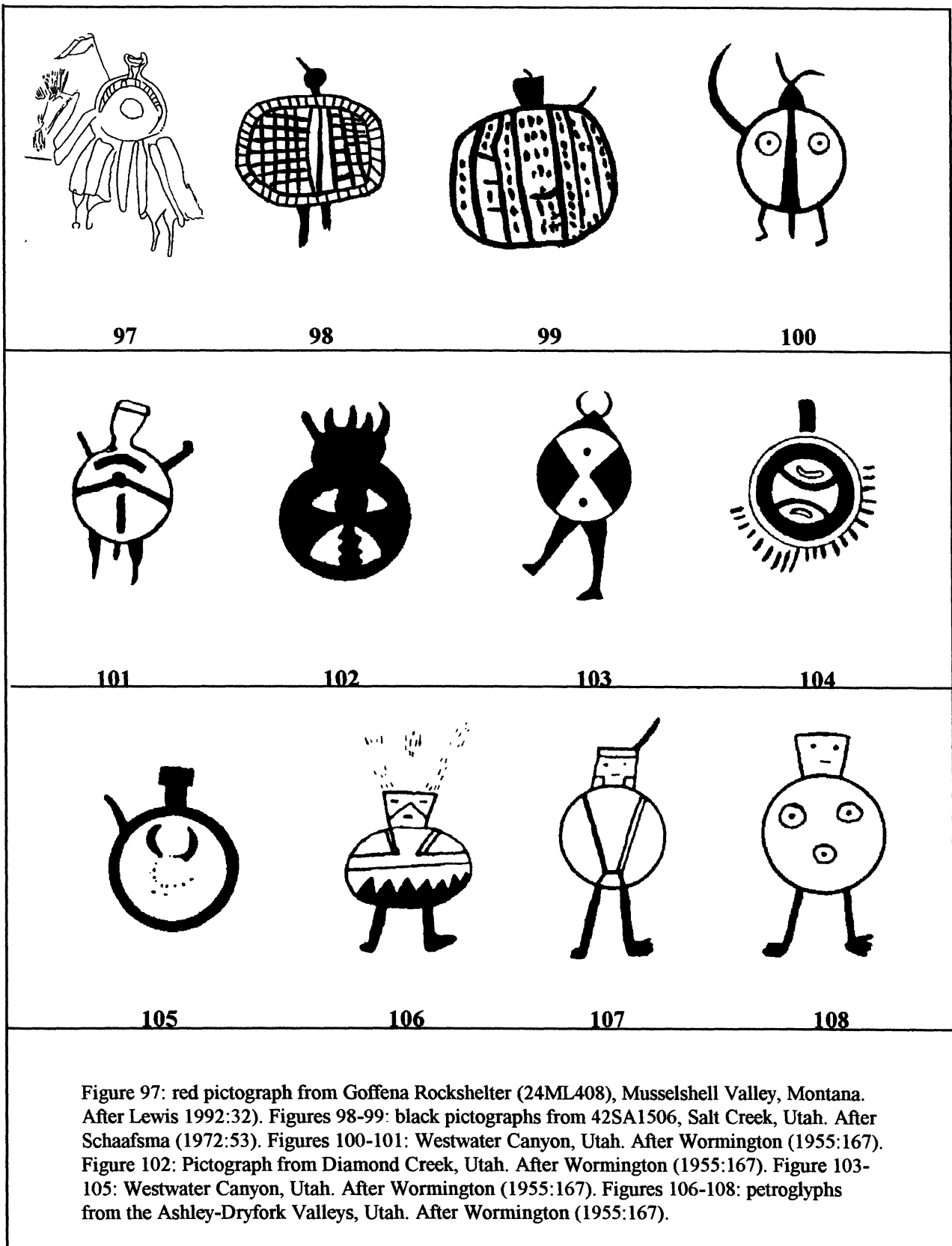
Figures 61-64: pecked and incised figures from the Kobold Site (24BH406). After Frison (1970:30-31). Figures 65-70: incised figures from (24RB1019) Rosebud County, Montana. After Conner (1984:126, 137, 139). Figures 71-72: black pictographs from Grinnvoll Rockshelter (24JT401). After Conner (1992:4).



Figures 73-74: black pictographs from Grinnvoll Rockshelter (24JT401). After Conner (1992:4).
 Figure 75: pecked figure from the Joliet Site (24CB402), Central Montana. After Loendorf (1988:12).
 Figure 76: incised figure from 24YL1190, Yellowstone County, Montana. After Mackinnon and Thomas (1983:103).
 Figures 77-79: incised petroglyphs from 24YL600 along the Yellowstone River, Montana. After Lewis (1985a:7).
 Figures 80-84: orange, red, purple and green pictographs from the Valley of the Shields Site (24CB1094) in Carbon, County, Montana. After Loendorf (1988:15).



Figures 85-93: red, black and yellow pictographs from Pictograph Cave (24YL1), near Billings, Montana. After Mulloy (1958: insert). Figure 94: incised petroglyph from the Langstaff Site (24CB413), southern Montana. After Lewis (1990:79). Figures 95-96: red pictographs from Goffena Rockshelter (24ML408), Musselshell Valley, Montana. After Lewis 1992:29-30).



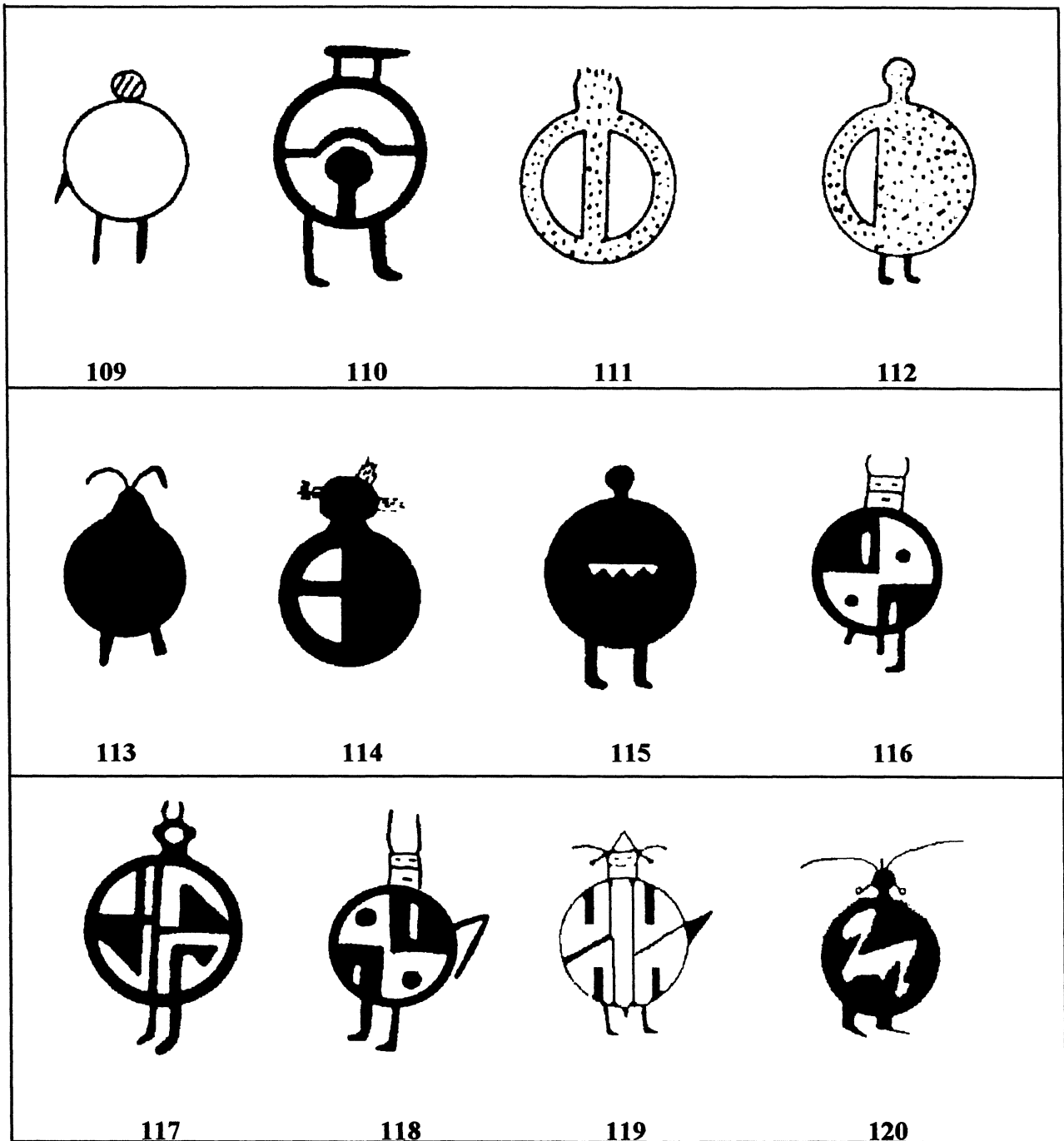
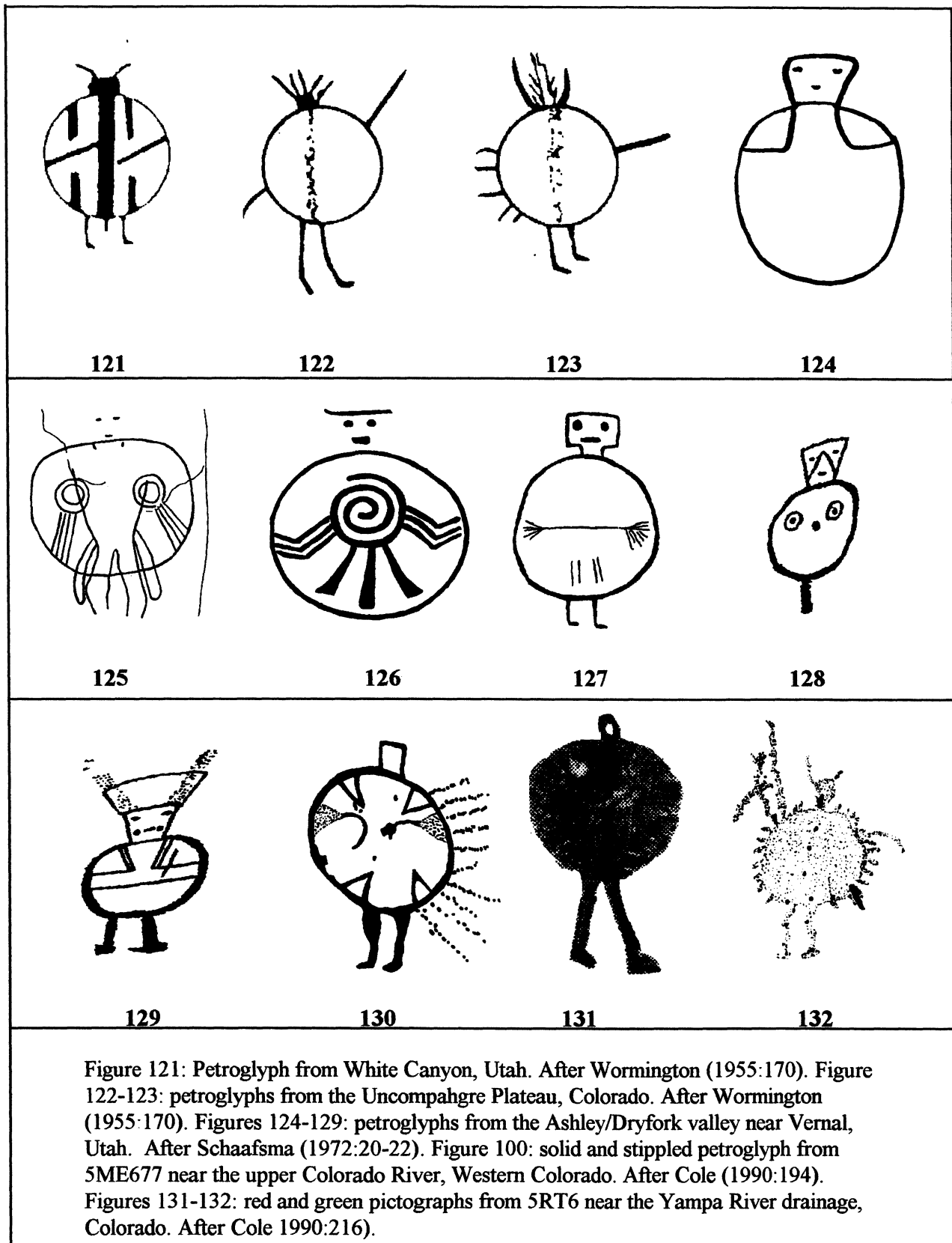


Figure 109: pictograph from Ladder Cave, Dinosaur National Monument, Colorado. After Wormington (1955:168). Figure 110: pictograph found on the back wall of a masonry house from White Canyon, Utah. After Wormington (1955:169). Figures 111-120: petroglyphs from White Canyon, Utah. After Wormington (1955:169).





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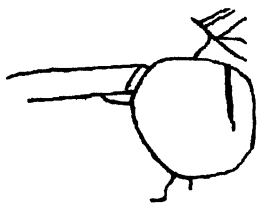
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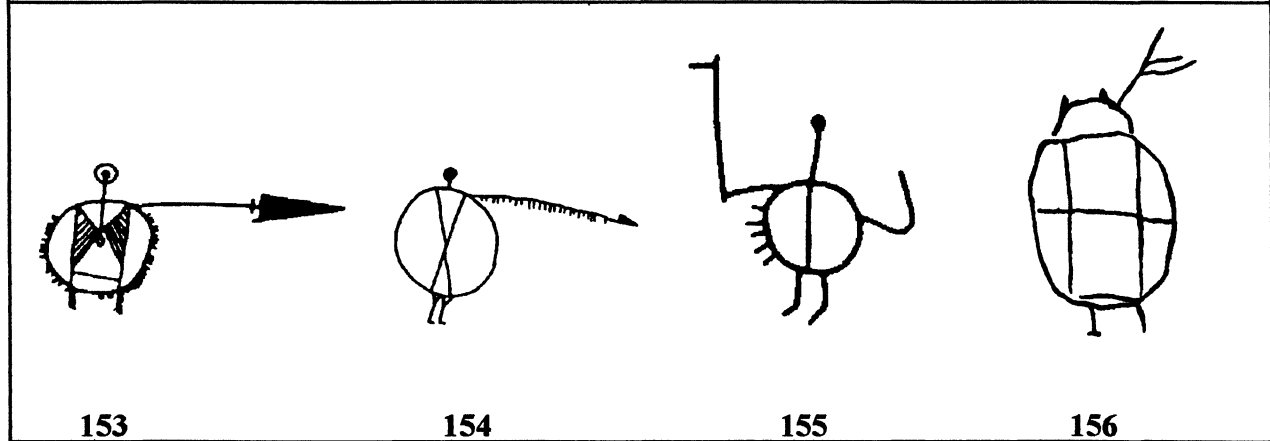
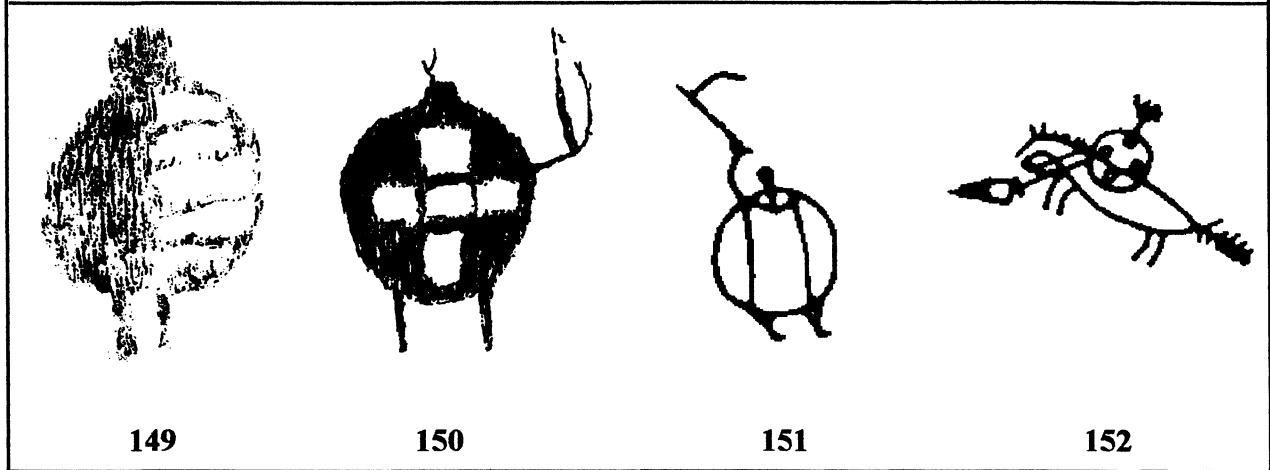
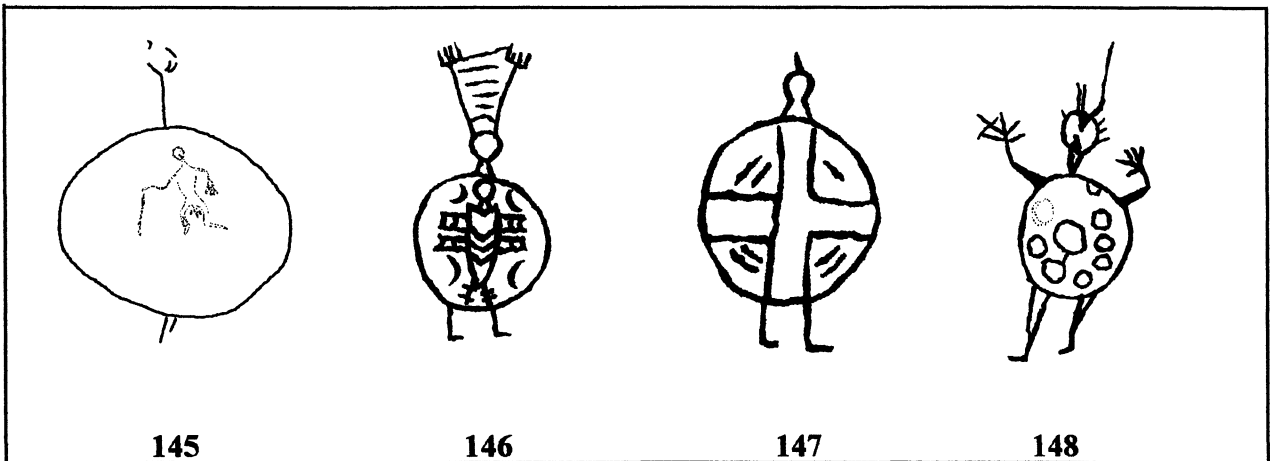


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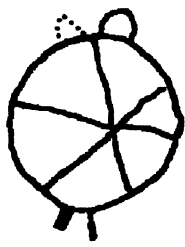


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Figures 133-134: red pictographs from 5RT6 near the Yampa River drainage, Colorado. After Cole 1990:216). Figures 135-138: red pictographs from site 5RT90 near the Yampa River drainage, Colorado. After Cole (1990:229). Figure 139: combination gray pictograph with incised lines from site 5DT1 near the Lower Gunnison River, Colorado. After Cole (1990:236). Figures 140-144: incised petroglyphs from Writing-On-Stone Provincial Park, Alberta. After Barry: (1991:69, 89, 92).



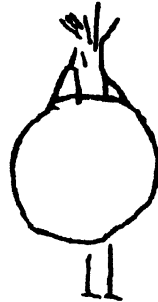
Figures 145-156: rock art from Writing-On-Stone Provincial Park, Alberta.
Figures 149 and 150 are black pictographs, all others are incised petroglyphs.
After Barry (1993:20, 25, 31, 34, 44, 46, back sheet).



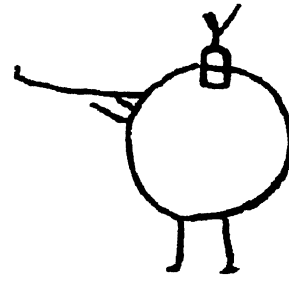
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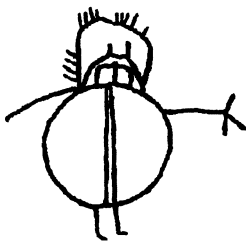
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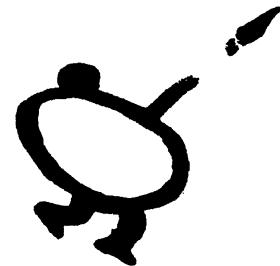
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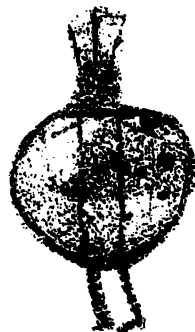
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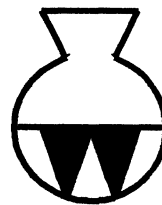
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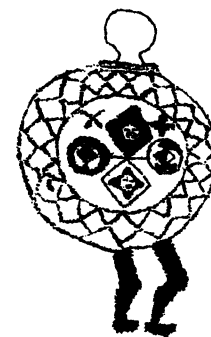
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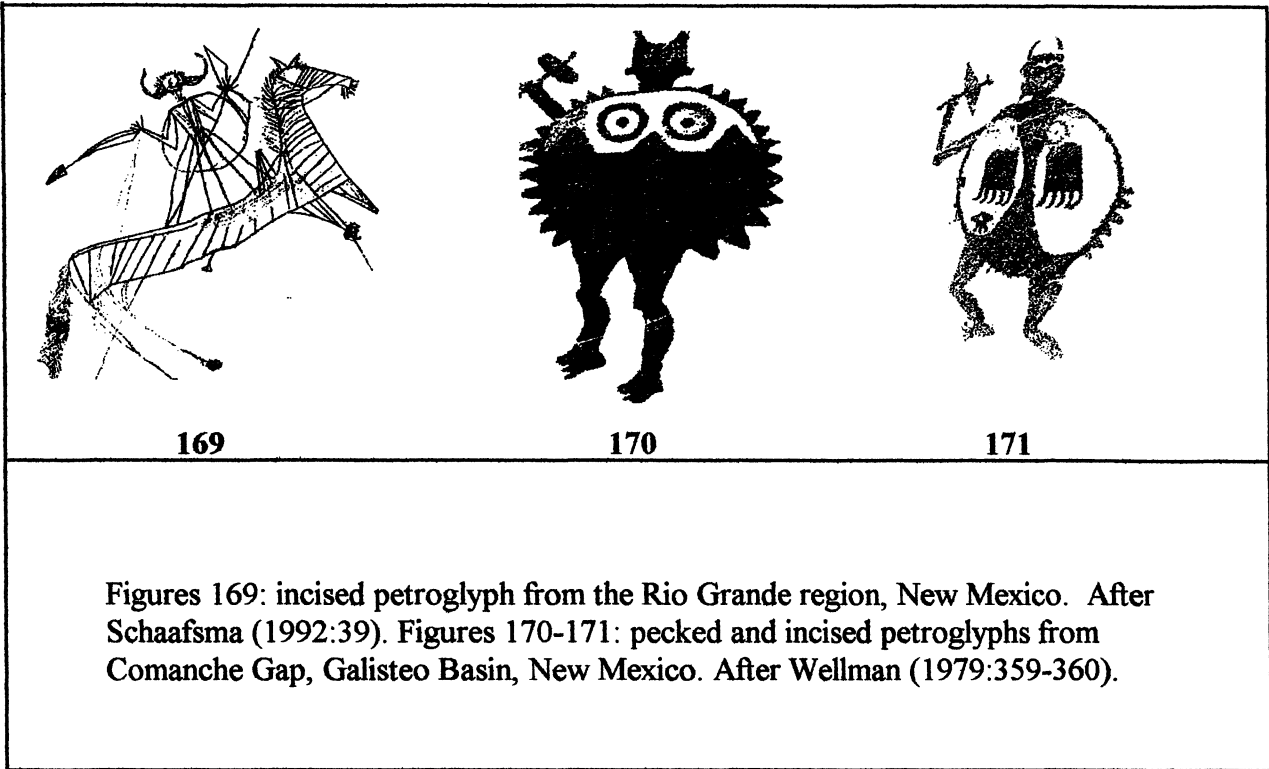


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Figures 157-161: incised petroglyphs from Writing-On-Stone Provincial Park, Alberta. After Barry (1991: back sheet). Figures 162-164: petroglyphs from Tenabo, New Mexico. After Schaafsma (1980:263-264). Figure 165: pecked petroglyph from Los Lunas, New Mexico. After Schaafsma (1980:237). Figure 166: pecked and incised petroglyph from the Northern Tewan District, New Mexico. After Schaafsma (1992:139). Figure 167: Pecked petroglyph from the Northern Tewan District, New Mexico. After Schaafsma (1992:133) Figure 168. Petroglyph from Comanche Gap, Galisteo Basin. After Schaafsma (1992:116).



Appendix II

All figure numbers correspond to those in Appendix I.

Test 1. Horizontal and Vertically Divided Shield Figures

The following figures were coded as having horizontal shield elements: Central Montana region: 6, 9, 14-16, 21, 25, 27, 85-87 and 93. Uinta Fremont area: 127. No figures from the Milk River or Rio Grande study areas were coded as having horizontal shield elements.

The following figures were coded as having vertical shield elements: Central Montana region: 17, 36, 40-42, 45, 48, 59, 62, 72-74, 76, 91-92 and 95. Uinta Fremont area: 100, 111, 119, 121-123, 131, 135, and 139. Milk River: 151, 153, 155 and 161. Rio Grande region: 166.

The following figures were coded as having shield elements that are not horizontally or vertically divided: Central Montana region: 1-5, 7, 8, 10-13, 18-20, 22-24, 26, 28-35, 37-39, 43-44, 46, 47, 49-58, 59-61, 63-71, 75, 77-84, 88-90, 94, and 96-97. Uinta Fremont area: 98-99, 101-110, 112-118, 120, 124-126, 128-130, 132-134 and 136-138. Milk River: 140-150, 152, 154 and 156-160. Rio Grande region: 162-165 and 167-171.

Test 2. Historical Association and Shield Design

The following figures were coded as having simple shield designs and historical association: 57, 59, 65, 71-74, 76-79, 95 and 136-139. The following figures were coded as having simple shield designs and no historical association: 1-3, 5-7, 9, 11, 13-17, 21, 22, 25, 27-29, 31-34, 36, 37-39, 62, 69, 91-92, 109, 111-114, 122-123, 133, 140-141, 154-155, 158-164 and 166.

The following figures were coded as having complex shield designs and historical association: 58, 60, 66, 96-97, 151-153, 156 and 169. The following figures were coded as having complex shield designs and no historical association: 4, 8, 10, 12, 18-20, 23-24, 26, 30, 35, 40-49, 61, 63-64, 67-68, 70, 75, 80-90, 93-94, 98-108, 110, 115-121, 124-129, 134, 142-150, 157, 165, 167-168 and 170-171.

Test 3. Number of Figures and Shield Design

The following figures were coded as having simple shield designs and occurring in

association alone or with less than 4 anthropomorphic figures: 1-3, 56, 69, 76-79, 95, 140-141, and 154-155. The following figures were coded as having simple shield designs and occurring in association with four or more anthropomorphic figures: 5-7, 9, 11, 13-17, 21-22, 25, 27-29, 31-34, 36-39, 57, 59, 62, 65, 71-74, 135-139, 158-161 and 163-164.

The following figures were coded as having complex shield designs and occurring in association alone or with less than 4 anthropomorphic figures: 4, 47-53, 54-55, 67-68, 70, 75, 94, 96-101, 124-126, 130, 132, 134, 142-153, 165, and 167-171. The following figures were coded as having complex shield designs and occurring in association with 4 or more anthropomorphic figures: 8, 10, 12, 18-20, 23-24, 26, 30, 35, 40-46, 58, 60-61, 63-64, 66, 80-84, 106-108, 128-129 and 156-157.

Test 4. Shield Extensions

The following figures were coded as having no shield elements (NOARM): Central Montana region: 1, 3, 17, 19, 22, 25-26, 29-32, 34, 36, 38-42, 44, 46, 51-52, 61, 64, 66-68, 75-76, 80-83, 91 and 95. Uinta Fremont area: 98, 102-104, 106-117, 120, 120-121, 124-129, 131, 133-135 and 139. Milk River area: 144-147, 149, 156-157 and 159. Rio Grande region: 166-168.

The following figures were coded as having arms (ARM): Central Montana region: 4. Uinta Fremont Region: 138. No shield bearing warrior figures from the Milk River and Rio Grande study areas were coded as having arms.

The following figures were coded as having hands (HANDS): Central Montana region: 48 and 65. Milk River area: 148-161. No shield bearing warrior figures from the Uinta Fremont and Rio Grande study areas were coded as having hands.

The following figures were coded as having identifiable weapons (WEAPONS): Central Montana region: 6, 8-16, 18, 20, 27-28, 33, 35, 37, 43, 47, 50, 53, 56-60, 62-63, 71-74, 77-79, 85-87 and 92. Uinta Fremont area: 100, 122-123 and 136-137. Milk River area: 143 and 151-154. Rio Grande area: 163-165 and 169-171.

The following figures were coded as having unknown shield extensions (UNKNOWN): Central Montana region: 2, 5, 7, 21, 23-24, 45, 49, 54-55, 69-70, 84, 88-90, 93-94 and 96-97. Uinta Fremont area: 99, 101, 105, 118-119, 130 and 132. Milk River area: 140-142, 150, 155, 158 and 160. No shield bearing warrior figures with unidentifiable shield extensions were coded for the Rio Grande study area,

New test combines the variables ARM, HANDS, WEAPONS and UNKNOWN into the category of ARM. Thus, shield figures possessing these variables were used in the analysis while the NOARM variable remains the same as in the previous test.

Test 5. Head Shape in Utah and Colorado Shield Bearing Warriors

The following figures were coded as having round heads: Utah: 98, 100, 102-103, 111-1145, 117 and 120-121. Colorado: 109, 122-123 and 131-139. The following figures were coded as having geometrically shaped heads: Utah: 99, 101, 104-108, 110, 116, 118-119, 124 and 126-129. Colorado: 130.

The following figures were coded as possessing shield extensions (ARM): Utah: 99-101, 105 and 118-119. Colorado: 109, 122-123, 130, 132 and 136-138. The following figures were coded as possessing no shield extensions (NOARM): 98, 102-104, 106-108, 110-117, 120-121 and 124-129. Colorado: 131, 133-135 and 139.

Test 6. Head Extensions

The following figures were coded as having no head extensions: Central Montana region: 1, 3, 11, 30-31, 34, 36-37, 39, 46, 49, 53-54, 56, 58-61, 63-64, 66-70, 74-75, 77-78, 80, 82 and 91. Uinta Fremont area: 101, 104-105, 108-110, 112, 115, 124, 126-128, 130-131 and 133-138. Milk River area: 140, 142, 149, 151, 153-155 and 157-158. Rio Grande area: 164 and 167-168.

The following figures were coded as having 1 or 2 head extensions: Central Montana region: 4, 6-8, 12, 18-20, 23, 25, 27,-28, 33, 35, 38, 40-43, 45, 52, 62, 71-73, 76, 83, 85, 87, 92-93 and 96-97. Uinta Fremont area: 98-100, 103, 106-107, 113, 116-118, 121, 129 and 132. Milk River area: 146-147, 150 and 160. Rio Grande area: 162, 165 and 169-171.

The following figures were coded as having 3 or more head extensions: Central Montana region: 2, 5, 13-16, 21-22, 26, 29, 32, 44, 51, 55, 65, 79, 86, 89 and 94-95. Uinta Fremont area: 102, 111, 114, 119, 120, 122-123 and 139. Milk River area: 141, 143-144, 148, 152, 156, 159 and 161. Rio Grande area : 163 and 166.