Reviews

“I very much like the way you set out the aspects you are examining (following Rappaport) and then apply them effectively in the field, with a specifically acoustic slant. Many congratulations on a very useful piece of work.” Colin Renfrew, (Andrew Colin Renfrew, Baron Renfrew of Kaimsthorn, Ph.D., FBA, FSA, HonFSAScot), July 25, 2012.

The full text of this article is available from the editor of the international academic journal *Rock Art Research* (Volume 29, Number 1, May 2012, pp. 35-46) which is a publication of the Australian Rock Art Research Association and the International Federation of Rock Art Organizations.
ROCK ART AND PRE-HISTORIC RITUAL BEHAVIOUR:  
A LANDSCAPE AND ACOUSTIC APPROACH

Gregory E. Williams

Abstract. This research project examines the relationship between the rock art of Colorado’s Uncompahgre Plateau (U.S.A.) and the seven characteristics of human ritual behaviour as defined by Roy Rappaport and reinterpreted by Ross and Davidson. It employs a landscape approach in an effort to interpret rock art in both a physical and cultural context. The project is exploratory and narrows a long list of potential variables to a much shorter list, including echoes, which potentially associate rock art with pre-Historic ritual behaviour. It suggests that the boundary of a rock art site does not ‘end’ when the pecking or incising on a cliff face or boulder stops. From an acoustical perspective rock art appears to be part of a larger natural and cultural landscape that includes nearby reflective surfaces (such as large undecorated boulders and nearby ridges) because these landforms provide the surface area necessary for an echo to occur. It has direct implications for recording, documenting and managing this type of cultural resource.

Introduction

This research project is about the link between rock art and pre-Historic ritual human behaviour. It employs a landscape perspective and builds on the work of previous archaeologists and anthropologists with an interest in ritual activity, such as Bell (1997), Bradley (2002), Rappaport (1999) and Turner (1969). The study area is the Uncompahgre Plateau of west-central Colorado (U.S.A.), yet the potential applications are geographically broad in scope. The focus is on open-air rock art sites although it has possible utility in other settings as well. It demonstrates new ways that the boundaries of rock art locations can be perceived to extend beyond the limits of the pecked or painted images and it identifies several discrete variables that can be associated with different characteristics of ritual activities. As such it is very much a contextual approach to rock art research with an emphasis on human social behaviour (Ross and Davidson 2006: 309). It is, to some degree, about the multi-sensory experience of rock art locations and not only about the visual identification and subsequent interpretation of the iconography and images.

In this regard it will help researchers address the often unsubstantiated claim that any archaeological evidence that cannot be placed into functional categories such as subsistence, warfare or trade can be classified as ‘ritual’ (Howey and O’Shea 2006: 21). It can help archaeologists be more precise when addressing ritual behaviour and rock art, regardless of the particularities of relatively unique study areas. This paper also addresses the creation of special places in a physical landscape imbued with cultural meaning. There is a difference between a space and a place (Crumley and Marquardt 1990: 78) and while individual rock art sites are important; this research is largely about a landscape approach that involves multiple sites and multiple meanings (Hodder 1982: 217). These are all characteristics of the human cognitive experience.

Cultural anthropologist Roy Rappaport identified seven characteristics of ritual behaviour (invariance, repetition, special time, stylised form, performance, canonical messaging and special place), which were the focus of this study (Rappaport 1999). They will be discussed in more detail later. Rappaport’s seven characteristics of ritual as applied in this research project were supported by two, and often more, variables that were recorded in the field at various locations within the study area. Eighteen variables were measured at twenty-two rock art panel locations (see Table 1). For the purposes of this research project it was not important to identify any specific ‘type’ of ritual activity, to interpret the iconography of the images, or to provide a temporal context linking the rock art stylistic traditions to a specific time period or pre-Historic cultural group, although the sites in the sample included rock art purportedly dating from the late Archaic to proto-Historic, a timespan that
approximately covers the last 2000 years. Instead, the project focused on Rappaport’s emphasis on the ‘structure’ of ritual behaviour. ‘It is this concern with the structure of ritual rather than with the content of the individual rituals that makes his [Rappaport’s] research so pertinent to archaeological investigation’ (Ross and Davidson 2006: 311, emphasis theirs).

This supports the idea that the relationship between rock art and the rest of the landscape may likely be as important as the rock art itself. Rock art is by definition the imagery that is painted, pecked, incised or scratched on a cliff face, in an overhang or cave, or on a boulder, but these locations must be viewed in a cultural context. Rock art is part of a larger landscape and viewed and is tied to several variables, including the acoustic features of the nearby environment. This suggests to cultural resource managers that there is more to objectively defining a rock art site than documenting the extent of the images and that natural local landforms (and even minor anthropogenic modifications to local landforms) need to be taken into account as well. For some this is a profound revelation; for others it is a mundane platitude (Gusterson 1996). The advantage for both is that this formal approach (Whitley 2011: 151) provides a fairly objective framework for analysis that captures both the qualitative and quantitative aspects of rock art sites.

Ritual behaviour

Before searching for clues concerning ritual activity it is helpful to establish a useful working definition of ritual behaviour. As noted earlier Howey and O’Shea observed, ‘when archaeologists encounter patterns in their data that cannot be easily attributed to such factors as subsistence, warfare, or trade the “reflexive explanation” is to call it ritual activity’. This ‘evergreen truism’ (2006: 261) is most often attributed to rock art and monumental structures without much justification or supporting evidence. This project seeks to ameliorate that situation by turning to Rappaport and Turner, although clearly many others have contributed extensively to this topic, for a working definition of ‘ritual’.

Rappaport’s definitions are explored in more detail below. Turner, for example, argues that it is the whole person who is engaged in ritual performance; not simply the subject’s physical being or the subject’s mental state (Turner 2009[1969]: 43).

According to Rappaport and Turner, then, ritual is in the doing. It is something that is participated in, not merely observed. There is generally not a passive audience in a ritual ceremony but instead there are active participants and it is a multi-sensory (not just visual) experience. The active nature of ritual provides a theoretical framework suggesting that associated landforms and related phenomena (such as the acoustical properties of a small area) can be identified, measured and tested in order to establish a link between the rock art and the physical landscape associated with the rock art images. It does not suggest that all rock art is ritual in nature. It does suggest that there are attributes and characteristics of rock art sites that extend beyond the images of the art that are important when ritual may have been involved.

In our minds ritual is often associated with religion, the sacred and the supernatural; not so much with the mundane or the material. This view is reminiscent of Durkheim’s dualistic approach that essentially saw religion as the bridge between the sacred and the profane (Durkheim 1995[1912]) and is also addressed by Bhaskar’s more recent critique of dichotomies and dualisms (Bhaskar 1998: xiii). We often look to images for ritual inspiration and therefore often overlook the material setting. While immensely understandable, this approach embodies a Western ‘Cartesian dualism’ (Damasio 1994: 124) that is still largely reflected in modern science. It is a useful approach but it is not the only viable approach to rock art and it is possible that it is one that was not shared by the original creators, whose worldview in all likelihood was not a Western one that separated the sacred and the profane. The archaeology of rock art presents a classic anthropological challenge in terms of emic and etic perspectives. By applying the Western ‘occularcentric’ or vision-based epistemology (Pallasmaa 1996: 10; Rifkin 2009: 585), by a Westerner, to a Western audience, in order to attempt to understand something that is by its very existence is non-Western it is possible, and arguably probable, that our research questions may sometimes be focused on artificial typologies, assemblages and culture histories that we construct as archaeologists (Renfrew and Bahn 2007: 94) while unintentionally overlooking other valid data based on a landscape analysis. A research avenue that includes a landscape approach (including acoustics) expands our understanding and appreciation of rock art and its place in the spatial and cognitive landscape of human activity (Loendorf 2008: 231) and helps explain why it is not randomly distributed over the terrain in which we find it (Schaafsma 1988: 1).

Using acoustics is an example. It is worth noting that recent advances in neuroscience have helped expand our understanding of the cognitive aspects of many of the variables which affect the human experience; one such variable is sound. According to archaeologist Steven Mithen, ‘[m]usic induces emotional states both in those who perform and in those who simply listen’ (Mithen 2006: 94). The human body itself (feet, hands and voice) is the most ancient sound-producer of all (Scarre 2005: viii). The sound component of the human lived experience is clearly fundamental to ritual. Due to our neurobiology most humans are ‘expert musical listeners’ and in most societies, ‘music and dance are inseparable’ (Levitin 2006: 251). It follows that in addition to visual information, sound is a second major human sense potentially linking rock art and ritual. This approach is in line with recent discussions in anthropology and archaeology concerning the role of the senses in the human perception and behaviour (DeSalle and Tattersall 2008: 178). A study of the basic
this assumption; however, all the locations in this sample produced acoustical data, including echoes (although the echoes at one location were very faint), but not all echoes were alike. Four echo patterns were identified by visually reviewing the sonograms of over 325 identified echo readings. These include a classic echo pattern, a modulated echo pattern, a double echo pattern and a loud echo pattern (where the trailing sound is nearly as great in intensity as the original sound stimulus); see Figure 2.

Because this variable (an echo) is a direct result of the physical structure of the adjacent landscape it links the site closely to the physical environment in which it is located. Occasional anthropogenic modifications to site locations may have increased the echo potential of the site, such as the construction of low stone walls which may serve other purposes as well but which also increase the echo properties of the site location. This echo pattern is replicable and can be initiated and repeated at will when the proper conditions are present (for example, high winds will dampen and scatter sound waves and transient environmental conditions such as vegetation or snow cover can also affect an echo pattern).

Results

Each of Rappaport’s seven characteristics of ritual (as adapted by Ross and Davidson) was anticipated to be supported by one or more (but not all) of the eighteen variables measured at each of the twenty-two rock art panel locations in the study area. Not all of the variables were expected to be equally useful and some were anticipated to explain large amounts of the variance for more than one characteristic of ritual. The data analysis confirmed this supposition and produced a ‘short list’ of useful variables, which are described below and presented in Table 2.

Performance

Performance and participation was initially expected to be established in several ways. The possibility of group performances at a site (Rappaport contended that ritual is usually but not always a group practice) can be estimated, based on the proximity of nearby flat and open topographic spaces, by the characteristics of access to the site, or possibly by the location of the art on the panels relative to these open spaces and access routes. For example, some art is visible from obvious game trails or water sources (which may be above or below the panel locations), yet other rock art is not readily visible at all until the viewer is in close proximity to it. Although not all modern trails are presumed to have been present in antiquity, some likely were (for a detailed discussion of trails in the Uncompahgre Plateau see Baker 2008: 32) and proximity to trail access is measurable. Is there a space near the rock art for groups of ten or twenty people to congregate (with ‘near’ being defined as within touching or sound reverberation distance)? Secondly, reworking, refreshing, superpositioning and abrading of existing motifs may suggest participation by people other than the original artist.

The performance characteristic of ritual was supported by five variables (ease of access, panel visibility, echo reading, panel location and repatination variability). The factor analysis accounted for 65.66% of the variance in the dataset; see Tables 1 and 2. This suggests that ritual performance activities can be supported by rock art sites with relatively easy access, clear visibility and the presence of an echo. The data also suggest that the images on the sites will contain variability in patination and the rock art will likely appear on cliff faces (rather than boulders or in overhangs). The anticipated results included four tested variables with low scores that were excluded by the factor analysis. These variables were number of motifs, the presence of an assembly area, superpositioning and/or reworking of motifs, and repeated geometric motifs. Although assembly area was excluded here it scored high enough to be included in the special place characteristic.

Invariance

Invariance was initially expected to be established in the selection of motif type, the technique of creating the motifs, the presence of repeated geometric imagery, or by the physical location of the motifs. Each of
these variables lend themselves well to establishing invariance in almost every aspect of image creation, ranging from the selection of the location within the site to the method of creation, to the selection of motif type to the repetition of the selected motif type as an invariant form; see Table 1.

The invariance characteristic of ritual was supported by four variables (repeated geometric motifs, distinct image type, technique of creation and panel location). The factor analysis accounted for 56.98% of the variance in the dataset; see Table 2. This suggests that invariance in ritual activities can be supported by rock art sites in the study area that display distinct images and geometrics (such as ‘bear paws’ and circular motifs). The data also suggest that the images on the sites will often be scratched or painted (rather than pecked) and that the location of the rock art will likely not be on a boulder but rather on a cliff face or overhang, for example. None of the four anticipated variables were excluded by the factor analysis.

Repetition

Repetition was initially expected to be established by reworking of a motif, superpositioning of one motif over another, greater motif depth, style, acoustics, or by variations in patination of different motifs in a panel location. Reworking a rock art motif is a repetitive act and evidence of reworking was expected to support this characteristic. Superpositioning of one motif over another suggests that the panel location was visited repeatedly over time, as would variations in patination. An echo reading is by definition a repeated sound and if present could potentially support the repetition characteristic. Some confusion has arisen concerning this variable. What was measured in the field was the presence or absence of an echo within the near vicinity

<table>
<thead>
<tr>
<th>Variables</th>
<th>Values</th>
<th>Performance</th>
<th>Invariance</th>
<th>Repetition</th>
<th>Stylised form</th>
<th>Special place</th>
<th>Canonical message</th>
<th>Special time</th>
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<td>1 Rock art styles</td>
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<td>2 Number of motifs</td>
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<td>3 Technique of creation</td>
<td>Pecked, scratched, incised, pictogram etc.</td>
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<td>4 Superpositioning or reworking</td>
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<td>5 Repetition variability</td>
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<td>6 Rock feature incorporation</td>
<td>Presence or absence</td>
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<td>7 Surface abrading</td>
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<td>8 ‘Identifiable’ motifs</td>
<td>Presence or absence (such as ‘bear paws’, Zoomorphs)</td>
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<td>9 Repeated geometric motifs</td>
<td>Circular etc.</td>
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<td>10 Viewshed aspect</td>
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<td>11 Viewshed content</td>
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<td>12 Panel dimensions</td>
<td>Square metres</td>
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<td>13 Other cultural resources</td>
<td>Cairn, hearth etc.</td>
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<td>14 Ease of access</td>
<td>Three point Likert scale</td>
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<td>15 Panel visibility</td>
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<td>16 Assembly area</td>
<td>Presence or absence</td>
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<td>17 Panel location</td>
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<td>18 Echo reading</td>
<td>Presence or absence of echo type</td>
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Table 2. Final results linking the tested variables and Rappaport’s (1999) seven characteristics of ritual. See Table 1 for the anticipated results.
analysis accounted for 57.31% of the variance in the dataset; see Table 2. This suggests that stylised form in ritual activities can be supported by rock art sites in the study area that display distinct rock art styles and show evidence of repeated geometric motifs (such as circular motifs) and distinct image types (such as ‘bear paws’). This was consistent with the anticipated results except for the exclusion of technique of creation variable by the factor analysis.

Special place

Special place was initially expected to be established in several possible ways. First, in the study area rock art is often (surprisingly) not present on vertical surfaces that would seem ideal for pecking. This suggests that there is something else involved in the selection of suitable locations for the creation of rock art than the naturally occurring ‘canvas’. Second, the addition of motifs over time as suggested by superpositioning and through reworking are both indicators that the location was re-utilised over an extended period and therefore considered a ‘special place’. Repatination is indicative of a special place that has been re-visited (and reworked at different times) as well. This places it into a cultural framework as a locus or magnet for ongoing artistic activity; see Figures 3 and 4 and Table 1.

The special place characteristic of ritual was supported by seven variables which include ease of access, the presence of a nearby assembly area, panel visibility, distinct image types, panel location, panel dimensions and viewedh content; see Table 2. The factor analysis accounted for 48.21% of the variance in the dataset. This suggests that the special place characteristic of ritual activities can be supported by rock art sites in the study area that are not difficult to access, have a nearby assembly area, are not difficult to see from a distance, contain distinct image types, are generally located on a cliff face and overlook a small drainage.

Canonical messaging

Canonical messaging can be defined by tradition and social convention, it can convey supernatural meaning, and is not profane, personal, or spontaneous. Invariance and repetition in rock art can indicate canonical messaging and it is irrelevant what the message is — in fact the message can change over time and from one culture group to the next, even when the symbol remains constant. In this regard rock art styles and motifs that are invariant, persistent and repetitious can be a priori canonical in their messaging. Representational symbols and motifs that are used to ‘tell a personal story’ usually cannot, by definition, be canonical (unless the story is recounting a myth, for example) but geometric and abstract motifs (especially when they are repeated) can lend themselves well to canonical messaging. As stated earlier it is important to note that there is a fair amount of disagreement about Rappaport’s definition of canonical messaging and this characteristic of ritual may be one of the most ambiguous. Canonical messaging was initially expected to be established by the presence of identifiable motifs or repeated geometric motifs because only images can potentially convey canonical messages; see Figures 3 and 4.

The canonical messaging characteristic of ritual was supported by two variables, which include repeated geometric motifs and distinct image types. The factor analysis accounted for 66.24% of the variance in the dataset; see Table 2. This suggests that the canonical messaging characteristic of ritual activity can be supported by rock art sites in the study area that contain geometric images such as circular motifs and distinct image types such as zoomorphs and repeated ‘bear paw’ images. This was consistent with the anticipated results.

Special time

The seasonal migrations of hunter-gatherers in western Colorado is well-established and may serve as an indicator that the utilisation of pre-Historic rock art sites could have been seasonal; as is the occupation and use of many known habitation and butcher sites, for example. Possible indicators include other cultural resources nearby; viewshed azimuth and elements; and distinct image type (such as migrating wildlife). Special time was initially expected to be established by identifiable motifs, viewshed aspect, viewedh content, or the presence of other cultural resources.

The special time characteristic of ritual was supported by three variables, which include viewedh content, viewshed aspect and distinct image types. The factor analysis accounted for 70.74% of the variance in the dataset. This suggests that the special time characteristic of ritual activity can be supported by rock art sites in the study area that overlook a valley with a river or stream view (usually with a confluence of two drainages present), have a southern exposure, and contain zoomorphic images. This was consistent with the anticipated results.

Discussion and conclusions

This research approach allows us to expand our awareness of pre-Historic social behaviour as defined by Rappaport’s seven characteristics of ritual using a combination of material culture and the associated local landscape features. The potential for ritual activity was established at all of the twenty-two panel locations in the study area, using the variables identified in Table 2. This analysis also suggests several new variables that are important when recording rock art panels and for site definition. For example, panel visibility, ease of access and an echo may all be important indicators of pre-Historic ritual activity that have heretofore been largely overlooked in rock art research. A recent article on archaeological survey methods in the study area offers this insightful suggestion concerning rock art: ‘South-facing locations with good echoes and...
panoramic views ... are all high probability locations’ (Landem 2011: 22). Hopefully this work will provide some justification for these time-tested and field-tested survey tips.

The acoustical properties of the rock art sites, in association with other variables, have the potential to inform us of the relative likelihood of auditory performance activities near the panels. The documentation provides a potential link between landscape, human perception and cultural behaviour in association with rock art. Rock art no longer ‘ends’ when the pecking or incising on a cliff face or boulder stops. The rock art appears to be part of a larger natural and cultural landscape that includes nearby reflective surfaces (such as large undecorated boulders and nearby ridges) because these landforms provide the surface area necessary for an echo to occur.

Traditional approaches to rock art analysis have also been validated by this project and so have Ross and Davidson’s (2003) re-interpretation of Rappaport’s (1999) seven characteristics of ritual behaviour. Visual styles and image types (such as repeated geometric images) are clearly very important in the study of pre-Historic behaviour as it relates to rock art, but they are not the only indicators that we can study. The context of the rock art in relation to the neighbouring physical landscape is an important consideration that should not be overlooked. This includes acoustical properties such as strong echoes, ease of access, visibility, and the presence of a nearby group assembly area. The superpositioning of images, reworking of images and varying degrees of repatination can suggest more than a relative chronology; they also suggest repetition, performance and special place. Ritual human behaviour is elusive; however, a use of Rappaport’s seven interrelated characteristics may make it possible to attempt to address the potential for ritual through an analysis of the variables identified above.

This research project has generally established that an analysis of pre-Historic ritual behaviour through rock art is a viable approach to an archaeology of the senses that takes Turner’s ‘whole person’ into account. There are clearly many future opportunities to further investigate the relationship between material culture and the lived human experience, one component being an ‘archaeology of the senses’ (Kus 1995; Scarre 2005: vii; Smith 2000; Tarlow 2000).

Finally, this landscape-based approach can be of considerable utility to cultural resource managers and policy-makers as they consider the effect of land development and recreation on cultural resources under their stewardship.

Additionally work

Additional work is clearly warranted in order to expand this preliminary, coarse-grained research. The acoustical properties of rock art locations in the landscape need to be further addressed. This is a promising area for future work that already has a basic foundation (Devereux 2006; Scarre 2005; Waller 1993, 2000, 2003, 2006; Waller and Lubman 1999). Better ways of addressing the special time (seasonal) characteristic of rock art as it relates to ritual need to be developed. Another important line of investigation would be to employ the techniques of ethn archaeology and ‘field test’ some of the highest scoring variables in Table 2 with local descendent populations in terms of their world view, cosmology and mythology, in order to incorporate multiple relevant viewpoints (Hodder 1982, 1991, 1999) into the story of the rock art of the region.

Acknowledgments

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