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# TECHNICAL NOTE

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## THE CARE AND REPAIR OF PETROGLYPHS

Petroglyph literally means "rock carved symbol." It is not to be confused with "pictograph" meaning "painted drawing." Both are terms used to describe, in particular, prehistoric American Indian rock art. This paper will deal with petroglyphs alone although some of the techniques and methods are applicable to pictographs also.

Petroglyphs were made in several rather primitive ways by the ancient inhabitants of the new world. They were pecked, scratched, incised, and ground or rubbed into the rock surface chosen for the display. In pecking, a hammerstone may have been applied directly to the surface or, in some of the finer work, a small pebble applied to the surface and struck with a larger hammerstone to gain better control. A dimpled surface indicates the use of pecking.

Scratching or incising seems to have been the result of the use of a sharp stone or bone instrument hard enough to cut into the surface of the rock. Rubbing was done with another stone and may have been done after first pecking if some depth of engraving is present in the petroglyph. Any combination of the techniques may be found in petroglyphs plus occasionally an application of paint to the carving.

To gain the most visible results from the work, the prehistoric artist usually pecked a rock surface that was fairly dark but one that would reveal a lighter color underneath when the surface was removed. A favorite among the prehistoric artists were those rocks with a heavy patina of what is called "desert varnish." Desert varnish is, in reality, a deposition of chemicals brought from the interior of the rock by rainwater which penetrates the rock, absorbs the various carbonates, sulphates, silicates, iron oxides, magnesium oxides, etc., which the rock contains; then deposits them on the surface as the rainwater is brought to the surface and evaporated in the drying-out process. Desert conditions are particularly conducive to the formation of this patina.

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Although no good method of dating petroglyphs has yet been devised, except where they are on or directly associated with other datable objects like buildings, cave deposits, etc., relative dating can be made through the use of degree of patination and superimposition. The rate of formation of desert varnish and other rock patinas is not precisely known; however, the amount of patination on the petroglyph can indicate its age - the closer to the original patination on the rock the older it is. Local geological interpretations may give some rough idea of how much time has elapsed since the heavy patination took place or at what rate it may be occurring in the area. Petroglyphs with varying degrees of patination in association with each other are dated relatively according to the amount of patination they have - the more patination the older they are.

Occasionally one finds petroglyphs placed over one another. Obviously those made last are younger than those underneath but only relative guesses can be made as to their ages and time elapsing between them. Petroglyphs are not writing in the sense that they symbolize spoken sounds or are an attempt to write down a language. In another sense they are an attempt to communicate. Many of them undoubtedly are communications similar to those used by today's artists; an attempt at expression through an artistic representation. Some, particularly many in Nevada, seem to be involved with hunting, either indicating where game is to be found or casting a spell over the game through magico-religious drawings of the game desired. Other petroglyphs are renditions of supernatural beings and may have been used by priests for religious purposes or to teach others what the supernaturals looked like. Some also may be classified under the terms "doodling" and "graffiti" for they seem to have no rhyme nor reason.

With present knowledge it is difficult to assign real historical values to prehistoric petroglyphs and much of our evaluation for recreation use and preservation must be based on such things as uniqueness, artistic skill, pictorial reality, rarity of type, imagined meaning, etc. They do give present day recreationists much pleasure in finding them, looking at them, and speculating about them. From an esthetic point of view they are an art form representing the ideas of beauty, form, and expression of the primitive society that produced them. They should give us some psychological insight into the thinking and mental makeup of the peoples who made them once we are able to tie the petroglyphs to specific cultures. On a more practical level they have provided design elements for use in illustrating books, fabric designs, jewelry, etc. So they are a vital part of our past, a fragile and irreplaceable part, worthy of preservation for the above reasons and the possibilities and potentials that they possess with future research work.

Recording of petroglyphs is a method of preservation that saves the knowledge and scientific data that they may have for future investigation. At a minimum, all petroglyphs should be photographed in both black and white and color film. Black and white photography is best for recording the actual detail but color is necessary also to indicate the contrasting colors and textures developed by the artist's choice of stone in making the petroglyph. The importance of the color combination developed by the petroglyph is unknown with present knowledge, but to duplicate petroglyphs for exhibits or to study them in the future, requires recording on color film.

Standard varieties of color and black and white films are usually sufficient to do the job. A scale like a yard stick or a ruler should be included to one side of the photograph to show the size of the petroglyphs. The scale should be placed far enough to one side so that it can be masked out when the photograph is used for purposes where the scale would be a distraction.

It has been common in the past to chalk in petroglyphs to emphasize them for photography. Unfortunately, the chalk lasts for a long time and detracts from their public display value by giving them an artificial look. Photographing most petroglyphs in a good side light will produce enough shadow to give a good photo. If emphasis is still needed, aluminum powder mixed with water and applied to the petroglyph will produce a non-glaring surface that will photograph well and wash off with the next rain or brush off easily after it dries. Aluminum powder can be purchased at paint stores but it should not be mixed with the water until it is to be used as it can produce a hydrogen gas with certain types of water that makes storage dangerous.

When petroglyphs are in danger of being destroyed they should also be recorded in detail by tracing them direct from the originals. There are several methods of doing this tracing and among the best are the use of transparent material, rubbings, and surface printing. Sheets of frosted or clear mylar or similar transparent plastic sheeting can be taped to the rock surface and direct tracings made of the petroglyphs with grease pencil or felt tip pen. Opaque heavy-duty paper can be used to obtain a rubbing of a petroglyph by taping the paper to the rock surface and rubbing either crayon, charcoal, soft pencil, or pastel chalks over the surface. The form of the petroglyph and some of the texture of the rock will be obtained this way. Charcoal and pastel chalks should be fixed so they cannot smear by spraying with a clear plastic.

Prints similar to the rubbings can be made by taping thin, unsized muslin (best), cheesecloth, or rice paper on the rock surface and rolling an oil-based ink (printer's ink) onto the material with a soft printers hand inking roller. Rice paper has to be placed on a wet surface to

cling properly. On unusually rough or curved surfaces a pad of soft material to daub the ink on the material should be used in place of the roller. A cookie sheet is suggested for an ink palette.

Prints can also be made by using water soluble ink on all of the rock surface but the petroglyphs themselves and then pressing or rolling paper or cloth against the surface of the rock. This is a somewhat messy operation and if the ink is not entirely water soluble the rock surface may be stained, so the method is not recommended except as the solution to problems unsolvable by other methods.

A good artist can sketch petroglyphs and do it with some accuracy if a grid system of strings is taped to the rock but the time element and degree of accuracy does not always compare well with other methods.

Casting techniques of copying petroglyphs for the record, such as the use of plaster of paris, paper mache' or latex have not proven too successful. Usually the casting material penetrates the rock and does not completely pull away leaving some of the material embedded in the petroglyph. If some sort of material such as grease or plastic spray is used to prevent the casting material from sticking, this material usually either speeds up the breakdown of the rock that the petroglyph is on or leaves such a permanent mess that it detracts from the esthetic qualities of the rock art.

Over the years many petroglyphs have suffered untold indignities. They have been painted on, modern graffiti scratched on them; they have been gouged from their home and removed and in one instance a circus poster plastered over them. There are ways in which some of these wrongs can be corrected so that the petroglyphs can be displayed to the public in a somewhat natural way as the original makers intended them.

In cases where ordinary lead or rubber-based paint has been placed on and over petroglyphs one should try the commercial products designed for removing grease from ovens, such as "Easy-Off." Spray the oven cleaner on and leave it overnight, removing it the next day with sponge and water. A blowtorch can also be used to some advantage on paint that has been placed on sandstone; however, some of the sandstone may chip away too. In any and all cases it is best to first test in a place that will not show and where it will not damage any of the glyphs if something does not work out.

When the petroglyph has been marked up with the ink found in the felt-tipped pens such as "Marks-a-Lot" and "Magic Marker" the marks can be removed by using a mixture of Xylene and Naccanol. The mixture should be applied with a saturated cloth to soak the marked areas and alternated with wire brushing. Both Xylene and Naccanol are chemical trade names. Naccanol is an organic detergent and can be obtained from chemical

supply houses or will be found in most rug or dry-cleaning establishments. Xylene is available from drug stores. Both are safe, non-toxic and non-flammable.

Scratching or incising can be removed by rubbing or smoothing the area with another stone as hard or harder than the scratched stone. If removing the scratching or incising creates a disturbing lighter colored area it can be painted to match the original rock surface color. It has been reported by Mac Ellingston, Dead Horse Point State Park, Utah, that desert varnish can be duplicated by boiling a mixture of water, soil, and sand from near the petroglyph to obtain a liquid rich in manganese and iron. The solution is placed on the area to be covered and baked into place with a blowtorch or by using sunlight through a ten-inch Fresnel lens. Pure manganese oxide can be added to the liquid to darken it if necessary.

Sandstones and other sedimentary rocks many times tend to deteriorate and the surface material is slowly removed until petroglyphs made in the surface disappear. This process can be slowed down or even stopped by the use of Pencapsula, a product of the Texas Refining Corporation of Fort Worth, Texas. Pencapsula should be mixed at about 1 part Pencapsula to 5 parts mineral spirits and sprayed onto the surface to be strengthened, respraying several times if necessary to get the required 1/4 inch penetration of the Pencapsula into the sandstone that will do the protection job. Pencapsula is a synthetic resin that encapsulates the grains of sand in the sandstone leaving the natural spaces between them so that the sandstone continues to "breathe" allowing for passage of air and water, thus reducing the tendency of the sandstone to spall.

If none of the above solve the problems of the deterioration or disappearance of the petroglyphs then reworking the petroglyphs to bring them back to close to the original state should be considered. Reworking should be done in the original technique, preferably with aboriginal type tools and preferably by someone with artistic skills. Complete recordation should be made before and after reworking. If the petroglyphs are too far gone to readily tell what was there originally, then it is better to forget about them than to restore them with something that may be questionable. Another preservation method to be used only in cases where there is danger of complete loss of the glyphs is the removal and placing of the glyphs in a public museum or similar situation. This is most applicable where there are glyphs on boulders or loosened rocks that can be carted off easily by anyone or where they are to be submerged in reservoirs. First consideration should always be given, however, to preservation and protection in place.

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