

THE DINOSAURS OF WHITE RIVER CANYON

There are three dinosaur petroglyphs (carved or pecked rock art) in the White River Canyon of Natural Bridges National Monument in southeastern Utah. The dinosaur glyphs all portray large sauropods with incredible likenesses to such dinosaurs as Apatosaurus, Camarasaurus, or Diplodocus. These dinosaur drawings have been attributed to the Northern San Juan Anasazi Indians who inhabited the upper White River Canyon from approximately 450 A.D. to their sudden, unexplained departure in 1300 A.D. The dinosaur drawings have been identified with the Pueblo II-Pueblo III Anasazi Period from 900 A.D. to 1300 A.D.

Fran Barnes, noted rock art expert, writes, "There is a petroglyph in Natural Bridges National Monument that bears a startling resemblance to a dinosaur, specifically a Bronotosaurus, with a long tail and neck, small head and all." Polly Schaafsma, one of the foremost authorities in the world on rock art of the Anasazi, says there is a "dinosaur-like zoomorphic petroglyph on Kachina Bridge . . . Patination is comparable to that on other clearly Anasazi petroglyphs."

The scientific verification of these dinosaur drawings would revolutionize paleontology, just as the cave paintings in France did in the 1920's and 1930's. The validation of the drawings would result in an intellectual cataclysm and shatter evolutionary concepts of the demise of the dinosaurs sixty-five million years ago. Did American Indians on the Colorado Plateau draw dinosaurs on sandstone cliffs some 700 to 1100 years ago? The Zuni Indians of the American Southwest have a tradition passed from their ancestors. "They were monsters and animals of prey; they were provided with claws and terrible teeth. A mountain lion is but a mole in comparison to them. Then those above said to these animals: 'Ye shall all be changed into stone . . .'" The Zunis apparently had firsthand knowledge of the great reptilian monstrosities both living and fossilized. Did the Indians really see dinosaurs as their oral tradition infers? Beginning in 1987, the author embarked on a search for rock art sites that display dinosaurs and other animals that were not supposed to be contemporaneous with man.

The dinosaur glyphs have been documented and studied within the historical, environmental, and archaeological data of each geographical region. The dinosaur drawings have been examined in association with the artifacts found in close proximity with them. The weathering, patination, style, and location of the petroglyphs are used to help date the dinosaur drawings.

History of the Canyon

The history of the canyon has a direct bearing on the interpretation of the dinosaur drawings as Anasazi. The upper White River Canyon Basin of Southeastern Utah is an area approximately ten miles in a North-South direction and eight miles from East to West. Within this area, the elevation is 9,040 feet in Elk Ridge to 5,600 feet in White

Canyon. The rugged, remote, inhospitable and inaccessible terrain kept the deep domains of the canyon hidden from explorers and pioneers until recent times. Even today, the plateau is almost completely devoid of settlement.

The Natural Bridges of White River Canyon were first recorded in the year 1883. Except for an occasional cattle rancher or looter of Indian artifacts, the canyon remained virtually unexplored. In the winter of 1892-93, W.C. McLoyal and C.C. Howard Graham went into the canyon and brought out an enormous collection of priceless Indian artifacts that were left behind from the sudden abandonment of the area circa 1300 A.D.

The White River Canyon was known to be rich in archaeological remains, but it wasn't until 1961 that an extensive, detailed, major archaeological survey was conducted by Philip and Audrey Hobler. Their work had to be carried out by long traverses on foot through the canyons and by horseback over the vast, road-less stretches of open country. Two hundred archaeological sites were surveyed covering about thirteen centuries of Anasazi occupation. The archaeological team found kivas, pueblos, granaries, pottery, metates, and rock art within the canyon. Twenty-five of the Anasazi dwellings still had their original roofs intact. The incredible fine conditions of the structures with the roofs still in place is of major archaeological importance. Two things may help to explain this unique phenomenon. The Indians made a sudden, abrupt, and peaceful exodus from the canyons. David Noble says, "When Pueblo Indians moved, they often carried their valuable timbers with them for reuse in their next home because large trees were hard to fell with stone axes." This discovery also reveals that there were no remaining residents to take beams away from the roofs of unoccupied structures to build new ones. The surprisingly pristine preservation of the sites coupled with the fact there is an absolute lack of any evidence that in later times neither Utes, Navahos, Spanish, explorers, or pioneers even made their homes here makes the canyon a sociologically clean area to study. For almost 700 years, the Anasazi dwellings in the White River Canyon were left undisturbed.

A list of tree ring dates reinforces the interpretation of the Anasazi abandonment of White River Canyon by 1300 A.D. and continued non-habitation from that time. A cluster of tree ring dates fall into the mid 1100's when the population of the canyon was at its height. The last tree ring date gives a reading of 1251. The 1961 expedition took a sampling of standing dead trees or snags in the canyon. The Anasazi used dead trees in construction because live trees were extremely difficult to cut down with stone axes. The standing dead trees gave dates centuries after the Anasazi exodus from the canyon. Indeed, according to the most prominent experts on the Anasazi, the tree ring dates taken from all over the four corners region leads to the inescapable conclusion that the whole of the Colorado Plateau was abruptly abandoned within three or four years after 1295, and we know that the Anasazi never came back. The solid scientific evidence is definitive in its declaration of White Canyon's non-occupation from 1300 A.D. to modern times.

Ceramics

The ceramic collection found in White River Canyon consists of 3,940 pottery shards. The pottery samples demonstrate that during the Pueblo II-Pueblo III period. The ceramic styles consistent with the Mesa Verdean, San Juan culture, and carried on trade with the Kayata Anasazi. No pottery of any kind was found in the canyon beyond the Pueblo II-Pueblo III period. The ceramic study helps to solidify the scientific opinions that after the Anasazi exodus, no other Indian tribes moved into the canyon or ceramic shards would have been found.

Other Artifacts

Plant specimens and other perishable remains from the rock shelter sites are unequivocal that the last people to live in the White River Canyon were the Anasazi. Arrowheads and stone implements found throughout the canyon all are identified with either the Desert Archaic period or Anasazi with no modern Indian artifacts found. If Utes or Navahos had hunted in the canyon area, they would have left behind lost arrowheads, for that was common in the hunting of game.

Rock Art Sites

The dinosaur drawings are found near rock shelter habitations of the Anasazi. The close association of rock art with habitation sites at Natural Bridges is fully consistent with findings in other Anasazi locations as evidenced by surveys at Mesa Verde, Glen Canyon, and in Tsegi Canyon. The dinosaur drawings are found near an Anasazi storage structure of coursed masonry, vertical slates, and adobe. The pictographs on the storage structure reflect an Anasazi style, while the surrounding petroglyphs on sandstone cliff walls are Anasazi and fall within the Pueblo II and III Periods. The evidence is overwhelming both in style and in association with other cultural remains that the sites in the canyon are of Anasazi origin.

The dinosaur glyphs are carved on sandstone at Kachina Bridge. The largest dinosaur drawing is three feet long with all the distinctive features of a sauropod. The drawing is just above a sloping rock ledge; nine feet at the lowest point of the ledge and twelve feet at the highest point. The rock ledge overhang can only be reached with a ladder, and the Anasazi were very adept at constructing wooden ladders or notched logs. Ladders have been found at Anasazi dwellings with an average length of 3.5 meters; the largest more than 15 meters.

The other two dinosaur glyphs are nineteen feet above the canyon floor on the cliff wall. The artists certainly used a ladder to get to a ledge about eight feet below and worked off another ladder to peck out the dinosaur. The glyphs are very faint and badly weathered, but easily recognized as dinosaurs.

The Feasibility of a Fake

The preponderance of the evidence leads one to the logical conclusion that the dinosaur drawings would be impossible to fake. No modern hoaxer could give them the appearance of age or duplicate the Indian's application technique.

Any attempt to debunk the White River Canyon dinosaurs must give persuasive evidence that counters the overwhelming weight of scientific evidence that declares them authentic.

- 1) No modern hoaxer could give them the appearance of age or duplicate the Indian's application technique.
- 2) The remote, rugged terrain and inaccessibility of the canyon kept this area hidden from civilization for almost 700 years. The author had marshaled compelling historical, archaeological, geographical, and scientific evidence that clearly shows the canyon was suddenly abandoned by the Anasazi circa 1300 A.D. The canyon remained uninhabited after the Anasazi exodus and indeed was not explored fully until 1961.

Hoaxers are noted for putting their fake artifacts in places that can be readily discovered. No sane individual would postulate the opinion that a hoaxer in the last century went to the arduous task of trekking across fifteen miles of mile high mountain terrain on foot or horseback and then performed the Herculean task of hauling a ladder down the canyon and applying dinosaurs on the sandstone cliff with the artistry and mastery of ancient Indians.

The suggestion that the dinosaur glyphs are the work of clever hoaxers stretches credibility to the breaking point. Sound reason indicates the drawings could not have been done by a hoaxer. The weathering process is more conclusive in rendering a verdict of authenticity to the dinosaurs. Every rock art expert considers the weathering factors impossible to fake. The rock art panel at Natural Bridges is underneath a gigantic sandstone arch and shows extensive weathering. Several other rock art carvings are on the panel on which the large dinosaur appears, and all are equally weathered. These faded, pitted, weathered petroglyphs had to take hundreds of years to become eroded. The dinosaurs are also heavily patinated with desert varnish.

Observing application techniques is important in verifying authenticity. The large dinosaur petroglyph in White River Canyon bears the unmistakable marks of having been made with a hammer stone and a chisel stone. Indians would take a chisel stone of flint, agate, or jasper, hold it in position, and strike it with the hammer stone. The point of the chisel stone was fairly sharp and would make an indentation with each blow from the hammer stone. In this way, small dents were created one at a time and with an amazing precision, otherwise the design would be ruined. Without a doubt, this is the characteristic stipple method of application used by the Indians of the American

Southwest. The numerous small pits that go into a moderately complex figure like the dinosaur design, are made with twenty-five to one hundred dents per inch and are applied with phenomenal accuracy.

Dating Rock Images

Determining the actual age of rock art with any degree of certainty is missing. Any attempt to date rock art is fraught with difficulties and uncertainties. We do not have the ability to assign an absolute date to specific petroglyphs and pictographs. All of the archaeologists' scientific tools, stratigraphic analyses, sequence dating through serration, cross dating, archeomagnetic dating, potassium argon dating, fission track dating, thermoluminescence dating of pottery, cation ratio dating, and obsidian hydration studies are simply useless in dating rock art. Recently, researchers have attempted to obtain carbon 14 dates from small samples of pollen beneath the desert varnish as the patina recoats the surface and results in a variety of C-14 dates for the same glyph.

Inference Dating

While no absolute dating methods exist for assigning precise dates to rock art, it is possible to narrow the time span in which a particular figure might fall. There are eight major methods which provide clues for general dating of rock graphics: 1) Association with dating archaeological deposits or remains, 2) Association with datable portable art, 3) Portrayal of datable objects, 4) Superimposition of designs, 5) Patination, 6) Style or design, 7) Lichenometry, and 8) Weathering.

Association with dated Archaeological Deposits

Dendrochronology is the dating of tree rings and is fairly reliable in dating ruins where timbers were used in the construction. One can conclude that where ruins have collapsed and rock art is found buried inside them, that the respective art is about as old as the ruins. Pictographs or petroglyphs actually on constructed walls means they were put there when the Indians lived in the kiva or pueblo. Other examples include the burying of abstract rock carvings by volcanic ash in South Central Oregon with the explosion of Mount Mazama that formed Crater Lake.

Datable Portable Objects

Attempts have been made to date rock art by comparing it with similar designs on pottery, wall murals, baskets, figurines, jewelry, tools, weavings, and other cultural artifacts. There are cases where a number of patterns or temporal time-links emerge between cultural objects and rock art imagery. This has been done with the materials found among the San Juan basket makers and ceramic decorations utilized by the Anasazi that have remarkable similarities to rock art graphics through time.

Portrayal of Datable Objects

At some rock art sites, the objects portrayed narrow down the time frame or period in which they were done. For example, if the glyph illustrates a horse, then it must have been created after A.D. 1540 when Coronado's Spanish expeditions introduced the horse into the Southwest.

Indian weapons, crops, and pets also give a rough time index to date a rock art site. Scenes depicting Indians with bows and arrows had to be made after the appearance of the bow and arrow into the Southwest around 200 A.D.

Illustrations of corn are post 200 A.D., when the grain was brought to the Southwest. If the corn drawn has ears with eight rows of grain and not twelve to fourteen, then it is dated from about 900 A.D. when eight-rowed corn arrived in the Southwest. The Indians also traded with other cultures in Mexico and Central America as evidenced by their petroglyphs of parrots. One petroglyph depicts a caged parrot. Scarlet Macaws and other parrots were traded to the Anasazi, and these exotic tropical birds have been excavated from Anasazi graves at numerous locations dating from 1100 A.D.

Superimposition of Designs

Occasionally, one design will be superimposed on an earlier design. If a bone or arrow is applied on top of a carving, then the superimposed glyph is no older than 200 A.D., while the original must be dated to an earlier period. In other cases, a distinctive historic Ute Indian motif may be laid over a prehistoric Indian scene. The late Ute style can be seen at Newspaper Rock in Utah, where imagery of equestrian animal "pelts" and broad-shouldered anthropomorphs are superimposed over prehistoric and Anasazi figures. The subject matter at Newspaper Rock illustrates the introduction of Euro-American influence of the culture in the 1800's.

Patination

In the semi-arid regions of the world such as the American Southwest, a desert varnish or patina begins to cover the rock carving. The varnish is the accumulation of clay, manganese, and iron oxides with several trace materials fixed to the rock by manganese-oxidizing bacteria. Iron minerals make a brown-colored varnish, while manganese makes a black or deep purple sheen.

The build-up of the varnish is affected by exposure, moisture, temperature, wind, and other factors. The varnish resurfaces the glyph at variable rates depending on general conditions, but the process is still a slow one, and desert varnish takes considerable time to develop. It can be generalized, that if the varnish on a glyph is as dark as its surrounding undisturbed surface, then the glyph is significantly old. One could easily tell if a glyph was recent because, it would clearly stand out as very light against a dark background. Methods involving observations of patination are most useful when restricted to individual rock art panels on a single geologic formation. Differential patination can be seen at Newspaper Rock in Utah where heavily patinated figures from

Desert Archaic and Anasazi are in direct contrast with the more recent and lightly patinated Ute petroglyphs.

Style or Design

The style or design can sometimes be used to describe, date, compare, and interpret rock art. There are various styles such as Desert Archaic, Barrier Canyon, Anasazi, Fremont, and Tsegi painted styles as well as Ute and historic Indians of the Colorado Plateau.

Styles are convenient categories that at some sites are highly reliable indicators of the source and age of the petroglyphs. However, sometimes a single culture may utilize more than one art style at a given time.

Lichenometry

Studying lichens (common plants consisting of an algae and a fungus living together) which form a scaly adherence on rock surfaces helps us to date rock art. Lichenometry, the study of lichen cover patterns, colonization, and growth, are based on the slow rate of lichen's unexposed surfaces and the long life expectancy of their colonies. In certain habitats, lichens may reach their final size only after several thousand years. Lichenometry can help tell us if a particular piece of rock art is hundreds of years old. A modern hoaxed glyph would have no lichen growth. Some archaeologists say that if a petroglyph has lichens within the markings, the glyph is probably at least 600 years old.

Weathering

Erosion of the exposed rock carving by wind and water wears the surface of a drawing and gives it a pockmarked appearance. A newer glyph has a bright, fresh appearance. The degree of weathering provides a clue to the age, and the weathering factor is considered impossible to fake.

Petroglyphs have to be examined with considerable care. The time required for weather to obliterate a petroglyph depends on the kind of rock on which it is placed, depth of the cut of the figures, and the rock exposure to the elements. Weathering is not conclusive in pinning a glyph to a precise age, but is comparative in that Pre-Columbian and historic rock art can be distinguished in most all cases.