

Late Pueblo Iconography in Petrified Forest Rock Art: Implications for the Origin and Development of the Kachina Cult

Jeffery F. Burton

In northeastern Arizona over 100 rock art sites have been recorded in Petrified Forest National Park, nineteen dating to the Pueblo IV period, A.D. 1300 to 1450. These Pueblo IV rock art sites can be divided into two distinct geographic groups that cluster near the only two Pueblo IV villages in the Petrified Forest region. Comparison with earlier Petrified Forest rock art suggests that kachina, cloud terrace, and parrot motifs were introduced during the Pueblo IV period and several kachina types can be identified. While most of the identified kachina types occur near both villages, some only occur at Puerco Ruin, suggesting that kachinas may have served to distinguish, as well as to integrate, individual villages. The number, detail, and elaboration of the Petrified Forest kachinas rival that of larger sites, such as those in the Rio Grande Valley of New Mexico, and may have implications for the introduction of the Pueblo kachina cult.

Kachinas are benevolent spirit beings who serve as intermediaries between humans and gods. Though the kachinas reside in mountains and at springs, they visit the pueblos in spirit, through the kachina dancers. Kachina masks are believed to have great power and serve to transform the wearers into spiritual beings. Wearing the distinctive symbol-laden masks and costumes, the dancers distribute food and gifts. Because the kachina cult is open to all regardless of lineage or clan, kachinas help integrate large villages. Most researchers believe the concept of kachinas diffused into what became the southwestern United States from larger population centers in Mexico during late prehistoric times, a period of population aggregation (Adams 1991; Schaafsma and Schaafsma 1974).

Rock art data from Petrified Forest National Park illustrate changes in styles and motifs through time. Several elements, especially masks,

Jeffery F. Burton

National Park Service

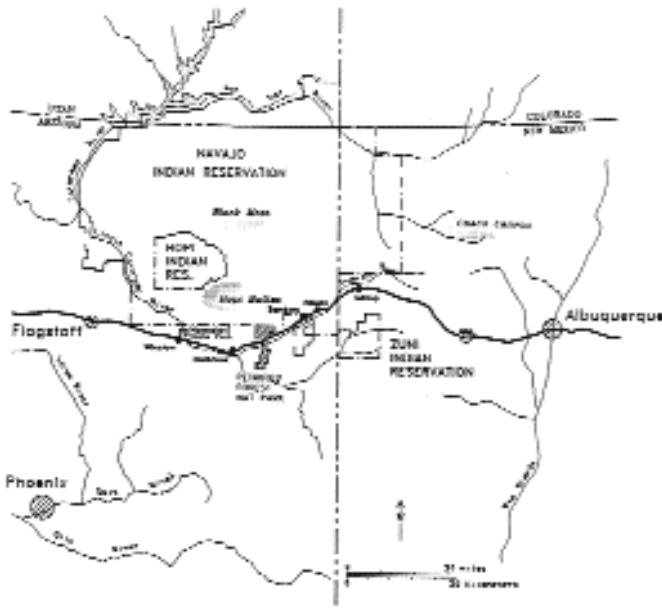


Figure 1. Regional map showing the location of Petrified Forest National Park.

appear during the Pueblo IV period, and may indicate the introduction of the kachina cult. Petrified Forest National Park is located in the Painted Desert region of the Little Colorado River Valley, 20 miles northeast of the town of Holbrook, Arizona (Figure 1). Covering 146 square miles within the Colorado Plateau physiographic province, the park is characterized by a variety of landforms, from rolling grasslands and steep-sided mesas in the southern portion of the park to eroded badlands in the northern section. Irregular sandstone beds are separated by siltstones and mudstones, all part of the Petrified Forest member of the Triassic Chinle Formation. Extensive exposures of petrified wood are concentrated mainly in the southern portion of the park but occur throughout the region as well. The park and surrounding area contains one of the greatest concentrations of prehistoric rock art in the southwest; two rock art sites, Newspaper Rock and Puerco Ruin, are open to the public.

THE ROCK ART DATA

Since 1979, the National Park Service's Western Archeological and Conservation Center, together with support from volunteers and the American Rock Art Research Association, has recorded over

100 rock art sites in the park (Bock 1988; Bock and Bock n.d.; Burton 1990, 1993a; Christensen 1988, 1989, Jones 1987). Large areas of the park have been intensively surveyed and virtually all suitable areas both within and adjacent to the park have been searched for rock art. Rock art sites range in size and complexity from isolated petroglyphs to the thousands of elements at Newspaper Rock and other sites. The survey and recording work provide a good basis for estimating chronological and distributional characteristics of the rock art within the park.

The Archaic period, 6000 B.C. to A.D. 300, marks a shift from the big game hunting of the Paleoindian period to a broader subsistence base of hunting and gathering. This period is well represented by archaeological sites in the Petrified Forest region (Tagg 1987; Wells 1994), although Archaic elements have been identified at only one rock art site at the park. In the region, Archaic rock art sites are nearly always located along a permanent watercourse. Archaic style petroglyphs consist of oval-bodied sheep and deer, human figures, stick figures, and snakes. Outlined forms partially filled in with stripes or other designs are common in portrayals of sheep and humans and a horn-like headdress is also common (Christensen 1992). The Archaic elements at Petrified Forest are repatinated, much fainter than the adjacent, and in some cases superimposed, Pueblo style figures.

Archaic rock art reflects the importance of hunting; many of the Archaic figures carry hunting tools. At Petrified Forest some anthropomorphs appear to carry an object in one hand, which in a few cases is a long stick with an enlarged or barbed end, perhaps an atlatl. Some figures, possibly shamans or others conducting ritual, hold S- and bow-shaped objects. The juxtaposition of hunting and ritual figures undoubtedly reflect the importance of, and perhaps the uncertainty of, hunting.

The following Basketmaker period, A.D. 300 to A.D. 700, is marked by increasing sedentism. At Petrified Forest, Basketmaker sites commonly include from five to fifteen pit houses, although some sites contain well over fifty houses (Burton 1991, 1994). No

rock art at Petrified Forest has yet been attributed to this time period and distinctive elements attributed elsewhere to the Basketmaker Period have not been identified. However, most Basketmaker settlements are not located near suitable rock outcrops, and potential associations are not clear.

The early Pueblo period, from A.D. 700 to 1300, is indicated marked by the introduction of above-ground habitation rooms. Early sites, consisting of eight to 15 rooms and a kiva, appear to be clustered around great kiva sites (Burton 1993b). Site clusters appear to be regularly spaced across the landscape, with habitation expanding into new, previously unexploited micro-environments (Wells 1994). Later, sites become larger, with up to 35 rooms, but fewer (Burton 1993a). Petroglyphs attributed to the early pueblo period are the most abundant in the region. Motifs consist predominately of pottery and textile designs, human figures, bird tracks, bear paws, sheep ticked lines, and footprints (Martyneec 1985; Pilles 1975, Christensen 1991). While game animals indicate the continued importance of hunting during the early Pueblo period occupation of the region, flute players and large female figures suggest a new emphasis on fertility (McCreery and McCreery 1986).

Near the end of the early pueblo period, petroglyph motifs include elaborations of previous themes. Quadrupeds have cloven hoofs or balls for feet, open mouths, knee joints, long legs, and often bird-shaped bodies. While snakes and sheep are the only easily identifiable animals in earlier rock art, now dogs, antelope, deer, and birds are common. Human figures are highly stylized, and often lack hands, feet, and heads (Martyneec 1985; Pilles 1975). A hallmark of this later period are anthropomorphs with staffs. The figures with staffs, whether interpreted as hunting or agricultural symbols, appear to represent ceremonialism (McCreery 1992). Many occur in groups, suggesting communal ritual.

PUEBLO IV PERIOD

The late prehistoric Pueblo IV period, from A.D. 1300 to 1450, sees the appearance of large pueblo sites of over 100 rooms and several kivas. Only two

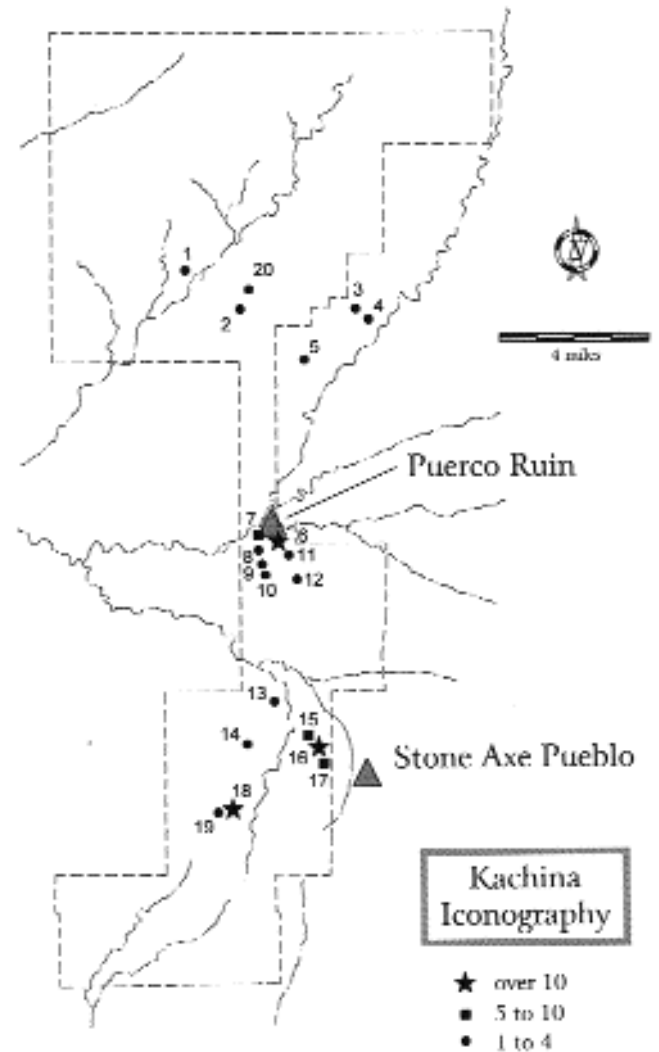


Figure 2. Rock art sites with Kachina iconography at Petrified Forest National Park; 1. Lithodendron Wash #1, 2. Lacey Point #5, 3. Dead Wash #1, 4. Dead Wash #2, 5. Dead Wash #5, 6. Puerco Ruin, 7. "Basketmaker Site", 8. Newspaper Rock North, 9. Newspaper Rock, 10. Newspaper Rock South, 11. CCC Camp, 12. Kokopelli Tinaja, 13. Lot's Wife, 14. Jasper Forest, 15. Boulder Wash, 16. Crystal Forest #1, 17. Lone Juniper, 18. Mountain Lion Mesa #1, 19. Mountain Lion Mesa #2, 20. Lacey Point #8 (historic).

Pueblo IV occupation sites are known in the Petrified Forest region: Puerco Ruin and Stone Axe Pueblo (Wells 1994). However, 19 rock art sites within the park contain Pueblo IV elements. These Pueblo IV rock art sites can be divided into two distinct geographic groups that cluster near the two Pueblo IV villages (Figure 2).

It is during the Pueblo IV period that the kachina cult is introduced, marked by kachinas in pottery, kiva murals, and Rio Grande Style rock art. Kachina depictions, the hallmark of Rio Grande Style rock art, usually consist of heads or masks with facial features, however torsos and full-bodied examples are present as well. Other common motifs include corn plants, cloud terraces, parrots, and composite animals (Schaafsma 1967, 1980, 1981, 1992). Researchers have inferred that certain features that appear in the archaeological record at about the same time might also be associated with the arrival of the kachina cult. These include slipper pots, piki stones used to make wafer-thin bread, enclosed plaza architecture, Awatovi and Fourmile pottery, and rectangular kivas (Adams 1991).

On a small mesa overlooking the Puerco River, Puerco Ruin consists of the remains of a rectangular pueblo of about 125 rooms. Chronometric data recovered during excavations at the site indicate a relatively short occupation from about A.D. 1250 to 1350, placing Puerco Ruin in the late Pueblo III to early Pueblo IV period (Burton 1990). Puerco Ruin has several of the characteristics that have been associated with the kachina cult: a large central plaza, rectangular kivas, Awatovi and Fourmile pottery, and piki stones.

The rock art at Puerco Ruin includes 852 elements in 13 loci, most located along the mesa edge to the east and south of the Ruin. Many of the elements are hands, feet, or tracks, including bear paws, bird, cloven hooves, human feet or foot prints, and hands. Zoomorphs include sheep, antelope, mountain lions, birds, lizards and snakes, a bat, and a rabbit. Most of the birds have long legs, and many also have long necks, like water birds that once may have been abundant along the river. Also present are pottery/textile designs, pahos (prayer sticks), spirals, circles, and other geometric elements. One geometric design is recognized as a spring equinox marker (Preston and Preston 1985).

Fourteen percent (n=161) of the elements at Puerco Ruin are anthropomorphs. Of these most are elaborated to some degree, including one with a flute, two with bows, 29 with digits or hair, and 24 with

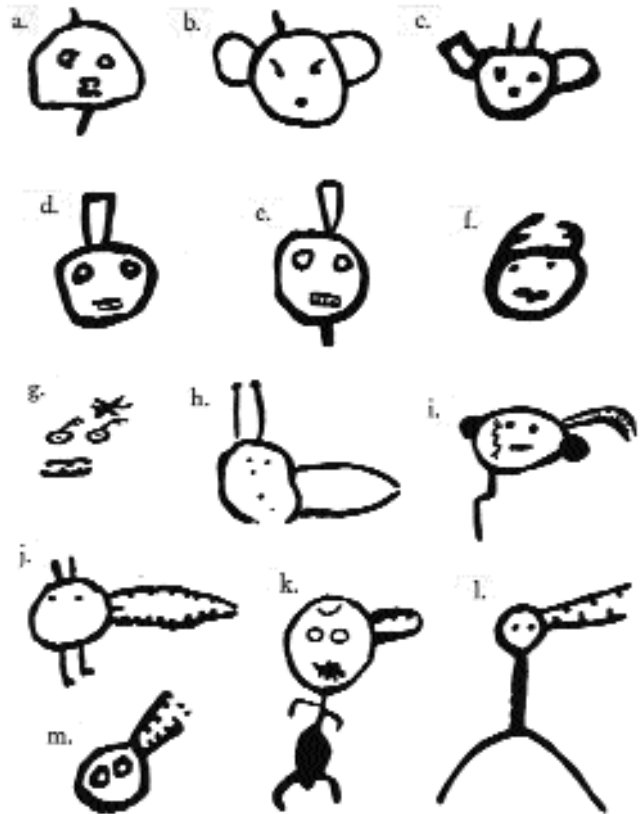


Figure 3. Kachina iconography at Puerco Ruin and vicinity; a. indeterminate kachina, b-c. mudheads, d-e. solstice kachinas, f. antelope kachina, g. indeterminate kachina, h-m. ogre kachinas (scale varies).

headdresses or one or more staffs. Staffs are depicted as vertical sticks with one to five perpendicular cross members. While many of the anthropomorphs with staffs occur alone, they also appear in lines, possibly depicting a ceremony or dance.

Three percent (n=35) of the elements at Puerco Ruin are identifiable as kachinas (Figure 3). Unlike the anthropomorphs, kachinas are usually only heads, or masks, and almost all have facial features. All but seven are round-headed. Specific kachinas identifiable include some with large ears that look like mudheads, some with a hollow elongated circle above the face that look like the gourd-topped solstice kachina, and some with forked horns that look like antelope kachinas.

Eleven of the kachina depictions have a protruding mouth, most with teeth (Figure 3). Evidence from Zuni informants led Young (1989) to interpret similar elements at Zuni as birds. Indeed, the protruding mouth does look like a beak, and there are several complete, unequivocal birds at the site.

However, evidence at Puerco Ruin suggests that most of the figures there are ogre kachinas. They bear a striking resemblance to Hopi ogre masks and a few were apparently originally round-headed kachina masks to which beaks were added (Figures 3i and 3k).

Ogres with protruding mouths are not present at other rock art sites recorded in the park and only a few have been recorded elsewhere in the region. Although it has been suggested that the kachina figures at Puerco Ruin may have been added after abandonment of the pueblo (Adams 1989, 1991), the predominance of ogres at Puerco Ruin and their paucity elsewhere indicates ogre kachinas may have been an indigenous development at Puerco Ruin. The ogre kachinas, historically used to scare children into good behavior, are spread out along the mesa edge, perhaps as a constant reminder of moral strictures, or to protect the pueblo from disruptive outside forces.

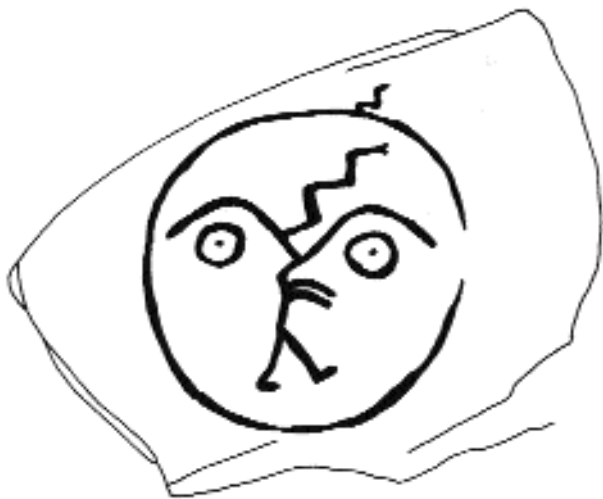


Figure 4. Large shield-like kachina mask at Newspaper Rock North (110 cm diameter).



Figure 5. Kachina mask depiction at Newspaper Rock North (60 cm diameter).

In addition to the rock art at Puerco Ruin, several other sites in the immediate area contain kachina masks. For example, less than one-half mile southwest near Newspaper Rock there are several masks, some elaborate and some simple (Figures 4-6a). To the south of Puerco Ruin, at a large tinaja that holds water year-round, is an unusual kachina that includes an elaborated full body with teeth and a snake and a parrot on its chest (Figure 7). A mask at a site between the tinaja and the ruin is a simple round outline with dots for the eyes and mouth (Figure 6b).

Northeast of Puerco Ruin, in the Dead Wash area among the abundant Pueblo II-III rock art, there are three widely scattered masks (Figure 6c). Further afield are two bird-like kachinas in the Painted Desert (Figure 8) and a simple mask at Lacey Point (Figure 6d). Nearby is a boulder with elements resembling kachina headdresses.

The other Pueblo IV occupation site in the region, Stone Axe Pueblo, is located at a spring just outside the Park, 7.5 miles southeast of Puerco Ruin. The site is easily twice as large as Puerco Ruin, with a conservative estimate of 250 rooms and at least one large plaza. Data from a recent survey and from limited excavations at the turn of the century indicate Stone Axe Pueblo was occupied earlier and

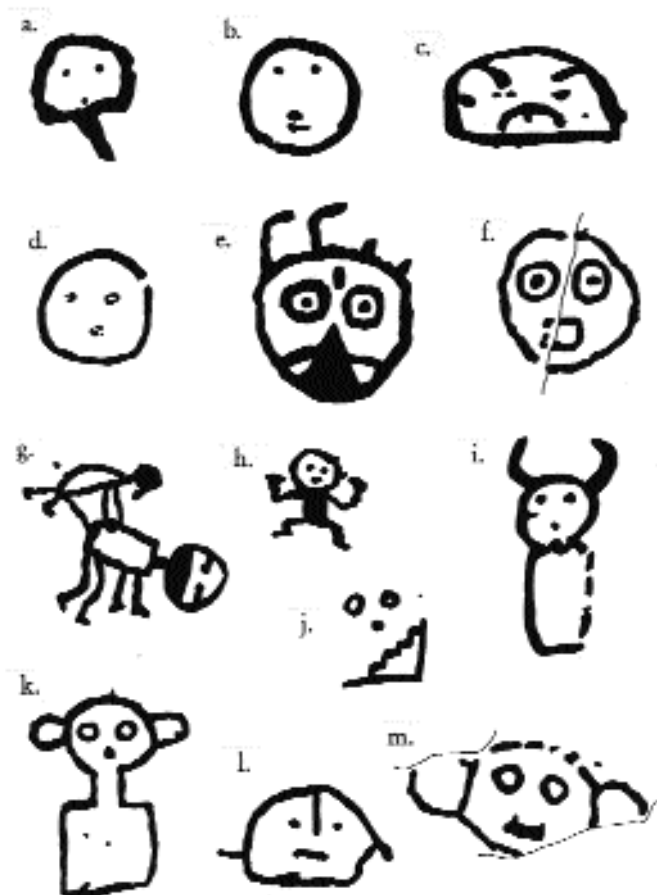


Figure 6. Kachina iconography at miscellaneous sites within Petrified Forest National Park; a. Newspaper Rock South, b. CCC Camp, c. Deadman Wash #1, d. Lacey Point #5, e-h. Lone Juniper, i-j. Boulder Wash, k-m. Jasper Forest (scale varies).

abandoned later than Puerco Ruin (Burton 1993a; Hough 1903).

There is no suitable rock at Stone Axe Pueblo for producing rock art. But, within a mile to the west and northwest there is a series of rock art sites that contain abundant Pueblo IV elements. The closest rock art site to Stone Axe Pueblo contains four kachina masks in the shade of a lone juniper tree. These consist of elaborated and simple outline masks (Figure 6e-f). A small full-bodied figure at the site, classified as an anthropomorph, may also be a kachina depiction (Figure 6h). But at least some full-faced figures may represent a tattooed face, as commonly depicted on Mimbres ceramics, rather than kachinas, as suggested by a copulation scene at the site (Figure 6g).

Several other Pueblo IV rock art sites occur close to Stone Axe Pueblo. At a site northwest of Crystal Forest, kachina depictions include numerous masks, both simple and elaborated, as well as masks with torsos and full-bodies (Figures 6i-j and 9). One is suggestive of an abstract Tlaloc-like design (Figure 6j). At Jasper Forest there are three masks which look similar to current mudheads (Figure 6k-m). An isolated boulder near a rock formation called Lot's Wife contains several distinctive Pueblo IV elements: a mask, a cloud terrace, a parrot, and a horned serpent (Figure 10).

By far the largest and most impressive Pueblo IV



Figure 7. Large full-body kachina depiction at Kokopelli Tinaja (30 cm scale).



Figure 8. Rock art panel at Lithodendron #1 (largest figure 45 cm high).

rock art concentration potentially associated with Stone Axe Pueblo occurs in the central portion of the park at two sites at Mountain Lion Mesa (Christensen 1989). Here 17 kachina depictions were recorded. These masks include circular or elliptical forms as well as rectangular forms (Figures 11-13). Projections from the heads include a single curved



Figure 10. Rock art panel at Lot's Wife (mask 24 cm wide).

horn, large ears, a short single line, and a long meandering line. There are three exceptional full-bodied Kachina figures. One is an extremely large figure reclining on its side, with upraised arms, two pointed curved horns protruding from the side of its head, large circular eyes, teeth, knee caps, limbs with digits, exposed ribs and a curvilinear spiral in midtorso suggesting a digestive tract (Figure 13). A Hopi elder taken to the site suggested that the figure depicted starvation. A similar mask with dual horns, snout and large eyes was recorded at another panel nearby. In this case, however, the head was attached to a stylized rectangular body decorated with rectilinear geometric designs and no limbs were indicated (Figure 11a).

DISCUSSION AND CONCLUSIONS

The kachina elements at Petrified Forest are stylistically similar to, but more numerous than those at the much larger pueblos in the Homol'ovi area. At



Figure 9. Kachina depictions at Boulder Wash (12 cm scale).

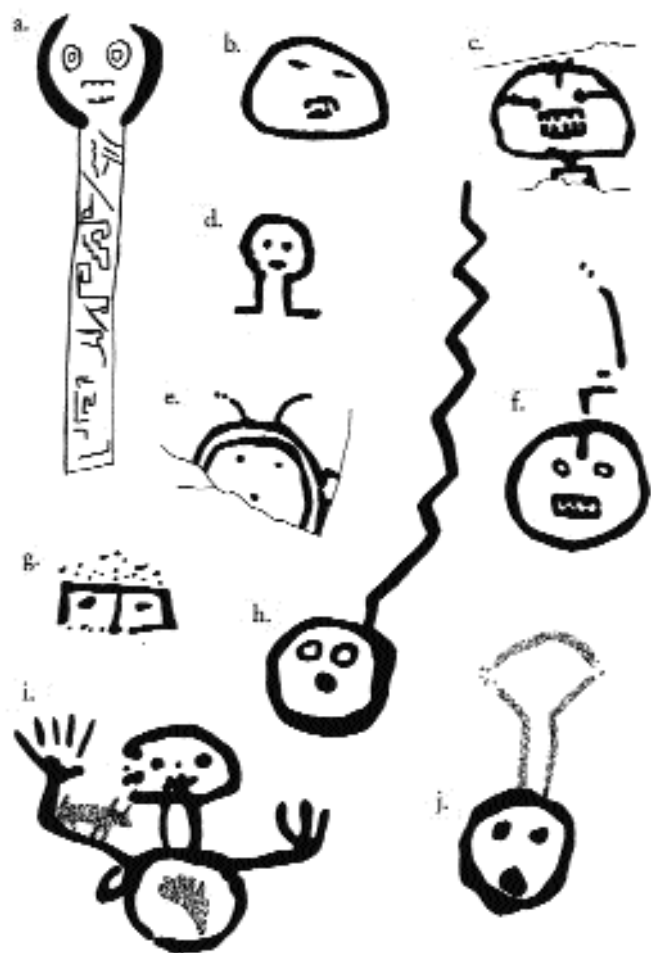


Figure 11. Kachina iconography at Mountain Lion Mesa (scale varies).

Petrified Forest there is roughly one kachina depiction for every four rooms, while at Homol'ovi there is about one kachina depiction for every 12 rooms (Cole 1989, 1992). However, compared to rock art associated with the Rio Grande pueblos, with their thousands of kachina depictions and associated symbols such as parrots, corn, cloud terraces, and horned serpents, the Petrified Forest area rock art may seem to indicate only peripheral participation in the kachina cult. However, the discrepancy in numbers and types can easily be explained by the larger population and much longer span of occupation of the Rio Grande pueblos. The Petrified Forest rock art sites do have a fair number of the associated elements, such as cloud terraces and parrots, and



Figure 12. Kachina masks and other elements at Mountain Lion Mesa (mask on left 38 cm wide).

the detail and elaboration of the Petrified Forest kachinas rival that of those in the Rio Grande Valley. Conversely, the greater number and elaboration at Petrified Forest compared to Homol'ovi does not imply a relatively greater emphasis on the kachina cult at Petrified Forest; the difference may be due to the abundance of high quality, patinated rock suitable for rock art at Petrified Forest, lacking at Homol'ovi.

If one takes the commonly accepted date of A.D. 1300 for the introduction of the Kachina cult into the northern Southwest, both Stone Axe Pueblo and



Figure 13. Large full-body kachina and other elements at Mountain Lion Mesa (40 cm scale).



Figure 14. Historic-era kachina depiction at Lacey Point #8 (20 cm high).

Puerco Ruin were settled prior to the cult's arrival. So, the kachina cult was not a necessary precursor to aggregation. The grouped staff bearers at Puerco Ruin and other earlier sites hint at a communal ritual or dance with an integrative function prior to the arrival of the kachina cult. Further, the presence of kachinas in the rock art at Puerco Ruin indicate the kachina cult was most likely well established in the area prior to 1350, when Puerco Ruin was abandoned.

It has been suggested elsewhere that the Puerco Ruin kachinas may not coincide with the occupation of the pueblo; because pottery recovered from the site does not depict kachinas, the kachinas were considered to have been added by post-occupation visitors (Adams 1989, 1991). However, this does not seem likely for two reasons. First, kachina iconography appears in the rock art of the Rio Grande Pueblos before it does on pottery, and the depiction of kachinas on pottery is not a necessary correlate of

the kachina cult. Second, and perhaps more importantly, some of the Puerco Ruin kachinas appear to be unique and perhaps indigenous elaborations of kachina cult icons. Ogre kachinas with protruding mouths are common at Puerco Ruin but rare elsewhere; none are known from other areas of the park and few are known from other Pueblo IV rock art sites. If the ogres and other kachinas were created by people who did not live at Puerco Ruin, the distinctive ogre type should have a more widespread distribution. It seems likely the ogre was symbolically associated with the Puerco Ruin inhabitants.

If kachinas are associated with a warrior society, as has been suggested, it is possible that kachinas became more important in the integration of villages as tensions between villages increased. Indeed, archaeological evidence suggests the abandonment of Puerco Ruin was not peaceful: one of every three rooms excavated was burned, along with large quantities of food — as though destroyed in a rapid exit (Burton 1990). Puerco Ruin, Stone Axe Pueblo and the entire Petrified Forest region was apparently abandoned by the end of Pueblo IV times. The Hopi and Zuni may have continued to use the area for resource procurement or as a travel corridor (Stewart 1980), but it does not appear that they were responsible for any additional rock art, except possibly for a kachina (Figure 14) and other elements on a panel with a 1935 inscription.

At Petrified Forest National Park, rock art identified stylistically and through associated archaeological sites to the Pueblo IV period includes kachina elements, cloud terraces, and parrots: the kachina figures appear to cluster around the two Pueblo IV village sites in the area, Puerco Ruin and Stone Axe Pueblo. Though initial aggregation in the Petrified Forest area apparently preceded the introduction of the kachina cult, the distribution of specific kachina types suggests they may have been associated with particular villages. Their role in intra-village integration may have been complemented by inter-village differentiation.

ACKNOWLEDGEMENTS

I thank Mary Farrell, Dan Burton, Don Christensen, Pat and Jack McCreery, Frank and A.J. Bock, Jim and Kitty Stoddart, Ferrell Knight, Trinkle Jones, and many others for the many enjoyable days spent wandering the Painted Desert in search of rock art.

REFERENCES CITED

- Adams, E. Charles
1989 Homol'ovi III: A Pueblo Hamlet in the Middle Little Colorado River Valley. *Kiva* 54(3):217-230.
1991 *The Origin and Development of the Pueblo Katsina Cult*. University of Arizona Press, Tucson.
- Bock, Frank
1988 Petrified Forest National Park Rock Art Recording: Puerco Ruin (AZ Q:1:22), Cave of Hands (PEFO 1988 A-6), Basketmaker Site (AZ Q:1:67/77). MS. on file, Western Archeological and Conservation Center, National Park Service, Tucson.
- Bock, Frank, and A.J. Bock
n.d. Petrified Forest National Park Rock Art Recording: Newspaper Rock and Environs (report in preparation).
- Burton, Jeffery F.
1990 Archeological Investigations at Puerco Ruin, Petrified Forest, Arizona. *Western Archeological and Conservation Center Publications in Anthropology* 54. National Park Service, Tucson.
1991 The Archeology of Sivu'ovi: The Archaic to Basketmaker Transition at Petrified Forest National Park. *Western Archeological and Conservation Center Publications in Anthropology* 55. National Park Service, Tucson.
1993a Days in the Painted Desert and the Petrified Forests of Northern Arizona: Contributions to the Archeology of Petrified Forest National Park, 1988-1991. *Western Archeological and Conservation Center Publications in Anthropology* 62. Tucson: National Park Service.
1993b Excavations at McCreery Pueblo, Petrified Forest National Park. *Western Archeological and Conservation Center Publications in Anthropology* 63. National Park Service, Tucson.
1994 An Overview of Archeological Research in the Middle Little Colorado River Area. In "Middle Little Colorado River Archaeology: From the Parks to the People," edited by A. Trinkle Jones and Martyn D. Tagg. *Arizona Archaeologist* 27:1-32. Arizona Archaeological Society, Phoenix.
- Christensen, Don D.
1988 Rock Art Sites. In "Archeological Survey and Testing at Petrified Forest National Park, 1987," by Susan J. Wells, pp. 80-91. *Western Archeological and Conservation Center Publications in Anthropology* 48. National Park Service, Tucson.
1989 The Rock Art of Mountain Lion Mesa. In "Petrified Forest National Park Boundary Survey, 1988: the Final Season," by Susan J. Wells, pp. 37-62. *Western Archeological and Conservation Center Publications in Anthropology* 51. National Park Service, Tucson.
1991 Rock Art, Ceramics, and Textiles: the Validity of Unifying Art Motifs. In *Rock Art Papers*, Volume 11, edited by Ken Hedges, pp. 107-116. *San Diego Museum Papers* 24.
1992 Pre-Pueblo Rock Art in the Little Colorado River Drainage. In *American Indian Rock Art*, Volume 17, edited by Donald E. Weaver, Jr., pp. 36-43. American Rock Art Research Association, El Toro, California.
- Cole, Sally J.
1989 Katsina Iconography in Homol'ovi Rock Art. *Kiva* 54(3):313-329.
1992 Katsina Iconography in Homol'ovi Rock Art, Central Little Colorado River Valley, Arizona. *Arizona Archaeologist* 25. Arizona Archaeological Society, Phoenix.
- Hough, Walter
1903 Archaeological Fieldwork in Northeastern Arizona: The Museum Gates Expedition of 1901. *Annual Report of the Smithsonian Institution, 1901*. Washington, D.C.
- Jones, Anne Trinkle
1987 Contributions to the Archeology of Petrified Forest National Park, 1985-1986. *Western Archeological and Conservation Center Publications in Anthropology* 45. National Park Service, Tucson.
- Martynec, Richard J.
1985 A Synthesis of Petrified Forest National Park Rock Art and Ceramics. In "The Petrified Forest through the Ages," edited by Edwin H. Colbert and R. Roy Johnson, pp. 69-74. *Museum of Northern Arizona Bulletin* 54. Flagstaff.
- McCreery, Pat
1992 Two Ritual Objects in Rock Art of the Lower Puerco, Little Colorado Region, Arizona. In *American Indian Rock Art*, Volume 17, edited by Donald E. Weaver, Jr., pp. 68-83. American Rock Art Research Association, El Toro, California.

McCreery, Pat, and Jack McCreery

1986 A Petroglyph Site with Possible Hopi Ceremonial Associations. In *American Indian Rock Art*, Volume 11, edited by William D. Hyder, Helen Crotty, Kay Sanger and Frank Bock, pp. 1-7. American Rock Art Research Association, El Toro, California.

Pilles, Peter J., Jr.

1975 Petroglyphs of the Little Colorado River Valley, Arizona. In *American Indian Rock Art: Papers presented at the 1975 Rock Art Symposium*, edited by Shari T. Grove. San Juan County Museum Association, Bloomfield, New Mexico.

Preston, Ann L., and Robert A. Preston

1985 The Discovery of 19 Prehistoric Calendric Petroglyph Sites in Arizona. In *Earth and Sky: Papers from the Northridge Conference on Archaeoastronomy*, edited by Arlene Benson and Tom Hoskinson. Slo'w Press, Thousand Oaks, California.

Schaafsma, Polly

1967 Rock Art in the Cochiti Reservoir District. *Museum of New Mexico Press Papers in Anthropology* 16. Santa Fe.

1980 *Indian Rock Art of the Southwest*. School of American Research, Santa Fe, and University of New Mexico, Albuquerque.

1981 Kachinas in Rock Art. *Journal of New World Archaeology* 4(2):24-32.

1992 *Rock Art in New Mexico*. Museum of New Mexico Press, Santa Fe.

Schaafsma, Polly, and Curtis F. Schaafsma

1974 Evidence for the Origins of the Pueblo Kachina Cult as Suggested by Southwestern Rock Art. *American Antiquity* 39(4):535-545.

Stewart, Yvonne G.

1980 An Archeological Overview of Petrified Forest National Park. *Western Archeological and Conservation Center Publications in Anthropology* 10. National Park Service, Tucson.

Tagg, Martyn D.

1987 Excavations at AZ K:13:60: Utilization of Corn at a Late Archaic Site in Petrified Forest National Park. In "Contributions to the Archeology of Petrified Forest National Park, 1985-1986," by Ann Trinkle Jones, pp. 161-196. *Western Archeological and Conservation Center Publications in Anthropology* 45. National Park Service, Tucson.

Young, M. Jane

1989 *Signs from the Ancestors: Zuni Cultural Symbolism and Perceptions of Rock Art*. University of New Mexico Press, Albuquerque.

Wells, Susan J.

1994 Settlement and Environment at Petrified Forest National Park, Homolovi Ruins State Park and the Southwest Hopi Buttes: A Comparison. In "Middle Little Colorado River Archaeology: From the Parks to the People," edited by A. Trinkle Jones and Martyn D. Tagg. *Arizona Archaeologist* 27:69-86. Arizona Archaeological Society, Phoenix.