

ROCK ART, SHAMANS, PHOSPHENES AND HALLUCINOGENS IN NORTH AMERICA

Klaus F. Wellmann, New York, U.S.A.

The North American continent harbors an exceptionally large array of aboriginal rupestral art (Wellmann, 1979). Among the numerous rock paintings in this part of the world there are some that may have been produced by persons exposed to the effects of plant-derived hallucinogenic agents, or appear to depict designs akin to those visualized during the drug-induced trance, or show shamans engaged in a drug-related ritual. While I have dealt with this subject a number of times (Wellmann, 1974, 1978a, b, d, 1979, pp. 74, 147), it may be appropriate to do this once again as additional arguments, both for and against the drug hypothesis as it relates to rock art, have been advanced within the past few years.

The Rock Paintings and the Hallucinogens

Sun- or disk-like motifs are a constantly recurring theme in the rock art of the Chumash Indians found in the trackless coastal mountains near Santa Barbara, California. They range from red or white linear drawings of simple or concentric circles, many of them adorned with rays, spokes, cogs or still other elaborations, to complex circular designs depicted in multiple contrasting colors and employing a variety of internal geometric patterns.

Life forms are a second category of motifs commonly encountered in the Chumash pictographs. Most appear four-legged and are depicted in spread-eagle-like fashion. Some are definitely human, others zoomorphic, but the majority seem to defy any further attempts at classification. Many display strange barbed or antlered head appendages or tails, imparting to them a bug-like quality. The shapes of others suggest such creatures as bear, deer, turtle, horned toad, lizard or centipede. Some carry horns, feathers or sunbursts, but a few lack heads altogether.

The sum of the available evidence indicates that the Chumash paintings (subsumed under the designation "Santa Barbara Painted Style") were made during the millennium preceding the initiation of the Spanish mission period (which began in 1772) (Grant, 1965, pp. 93-96; Wellmann, 1979, pp. 66-67).

The Yokuts country in the southern Sierra Nevada foothills of Kern, Fresno and Tulare countries in California contains a very large concentration of pictographs. Most occur on the slanting sides of large granite boulders while others are found in small caves and rock shelters. Figures outlined in contrasting colors, dotted lines, cogged wheels, multicolored target-like designs, and shapes resembling amoebas, pelts, insects and centipedes, as well as humans, are among the most characteristic elements here as in the Chumash region (Ste-

ward, 1929, pp. 110-139; Heizer & Clewlow, 1973, pp. 43-46; Wellmann, 1979, pp. 67-68). The Yokuts pictographs, subsumed under the term "Southern Sierra Painted Style", were probably made during the last two thousand years.

The anthropologist Alfred L. Kroeber (1925, p. 938) was the first to suggest that a relationship existed between the art of the Chumash, including, in particular, their polychrome cave paintings, and the Jimsonweed or toloache cult. Indeed, the area in which the toloache ritual was strongest coincides fairly closely with the extent of the Chumash and Yokuts pictographs (see Map 14, in Driver, 1969), even though the ritual was also practiced further to the south. The various Jimsonweed species (*Datura stramonium*, *D. meteloides* and others) are members of the Solanaceae (nightshade) family. The plants are rank-scented annual herbs with large, white, five-lobed, trumpet-shaped flowers and broad, ovate, shallowly lobed leaves. They grow in profusion near the pictograph sites of both the Chumash and the Yokuts.

The natives in much of southern California concocted a brew by grinding the roots, stems or leaves of the *Datura* plants, and then soaking them in water. Since Jimsonweed contains alkaloids such as scopolamine and atropine, this drink induces visions (Gowdy, 1972). With higher doses, amnesia and coma will ensue, narcotic effects that the Indians utilized when setting fractures or treating wounds (Vogel, 1970, pp. 326-328). In the area under discussion, the major aspects of the Jimsonweed cult appear to have been worked out by the Gabrielino, the southern neighbors of the Chumash, but its ultimate

Fig. 42

*The trumpet-shaped, white flower of Jimsonweed (*Datura meteloides*) is found throughout the Chumash and Yokuts country and elsewhere in southern California.*

Fig. 43

A polychrome Chumash Indian painting (Santa Barbara Painted Style; the colors are red, yellow, white, blue and green) decorates the ceiling of this small sandstone cave in a poorly accessible part of the San Emigdio Mountains near Santa Barbara, California. A sun disk and several bizarre animate creatures can be recognized. Wind erosion has destroyed a part of the painting.







Fig. 44

One first glance, these patterns in red, yellow, green, white and bluish-black appear merely ornamental. However, the dotted figure is endowed with short arms and fingers and is, therefore, a highly stylized animate design. Santa Barbara Painted Style; San Emigdio Mountains near Santa Barbara, California.

Fig. 45

Sun disks, strange animate creatures, and other designs, painted in red, white and black. Santa Barbara Painted Style, Painted Cave near Santa Barbara, California.

source may have been in the Pueblo region to the east, and further south, in Mexico. A Pueblo IV mural (1300-1550 a. D.) in the painted kiva of Kuaua near Bernalillo, New Mexico, portrays a ceremonial figure holding a *Datura* plant in his hand (Dutton, 1963, p. 59), and *Datura* seeds have been found in several Precolumbian Pueblo ruins (Yarnell, 1959). It is known that the Aztecs used *Datura* as a narcotic and pictured the plant in their herbal (Vogel, 1970, p. 326).

That there are links between the toloache cult and certain rock drawings in southern California has been documented in several ethnographic sources. Du Bois (1908, p. 92) recorded that the winner of a foot race that was part of the toloache ritual among the Luiseno Indians had to paint designs on rocks in red or black. There are many accounts of how the toloache ceremony was practiced among the Yokuts (Kroeber, 1925, pp. 502-504; Gayton, 1948, pp. 38-39, 118-120, 150-151, 173-174, 245-247, 281-283).

Essentially, the Jimsonweed ritual was an initiation ceremony for adolescent boys (less often girls), conducted outdoors, away from the village, during February and March. A period of fasting preceded the rite and must have enhanced the hallucinogenic effect of the drug. All things seen during the trance were widely discussed among the participants and bystanders of the rites.



Gayton (1948, p. 113) also relates that among the Yokuts most shamans had private caches in a cliff or rock pile where they kept their sacred ceremonial objects, and adds that "any rock with a pictograph was thought to be a cache". And among the Chumash, *Datura* was regarded as the source of all supernatural power and was relied upon in their quest for a dream helper or guardian spirit (Applegate, 1975); indeed, as Lee (1977) has stated, "the narcotic plant, *Datura meteloides*, which was believed to contain spirit power, becomes, at the time of the flood, the old woman Momoy, who is a central character in one of the most important myths" of the Chumash.

Among the objects visualized during the trance were birds and animals, such as the mountain lion and bear, as well as supernatural beings, but also swarms of insects and less well defined yet terrifying "things flying about" (Gayton, 1948).

Both the vision-inducing ritual and the graphic depiction of strange and transcendental creatures are obvious attempts to gain some measure of control over the threatening forces of the unseen world. At least some of the pictographic designs combine just the right touch of the bizarre with both a sense of the familiar and a feeling for the remote and awesome to be plausible as records of visions actually experienced, as has been suggested by several observers (Grant, 1965, p. 34; Applegate, 1975; Blackburn, 1977; Lee, 1977).

The second North American region in which a connection between rock paintings and mind-expanding drugs has been deemed possible is the lower Pecos River region of Texas and the adjacent portion of the Mexican state of



Coahuila. Here, more than forty shelters with polychrome pictographs probably dating back to before the time of Christ have been found (Gebhard, 1960; Kirkland & Newcomb, 1967, pp. 37-80; Wellmann, 1979, pp. 142-147). At most sites, the multi-colored paintings of the Pecos River Style form sizable panels which decorate the walls and often also parts of the ceilings of rock shelters. These panels are dominated by large, stylized human figures and their cultic regalia (such as medicine pouches, weapons, staffs and others). Smaller anthropomorphic renditions, animals (especially deer and cougars, some plants, and various geometric designs constitute the supporting cast.

The suggestion that the Pecos River Style anthropomorphs are shamans engaged in mescalbean cult activities has first been proposed by Campbell (1958). The mescal bean (*Sophora secundiflora*), also known as Texas mountain laurel, is an evergreen shrub that grows in profusion in the lower Pecos River region as well as in other parts of Texas and in northeastern Mexico. Mescal bean seeds have been found in eight caves or shelters attributed to the same Archaic tradition that produced these rock paintings; at one site, near Comstock, they were associated with a mass of red pigment, the main color employed in the pictographs (Campbell, 1958). Also present at this location were eleven halves of rodent mandibles and other objects suggesting ritual use of the mescal bean. Specimens of peyote (*Lophophora williamsii*), a spineless cactus with hallucinogenic properties, have also been recovered from some ancient sites in this region.

There are, as both Campbell (1958) and Newcomb (in Kirkland and Newcomb, 1967, p. 75) have pointed out, rather striking parallels between some

Fig. 46

A sun disk, salamander-like forms, dot patterns and other Chumash Indian designs of the Santa Barbara Painted Style, all done in red, are present on a slanting rock above a spring in the coastal mountains near Santa Barbara, California.

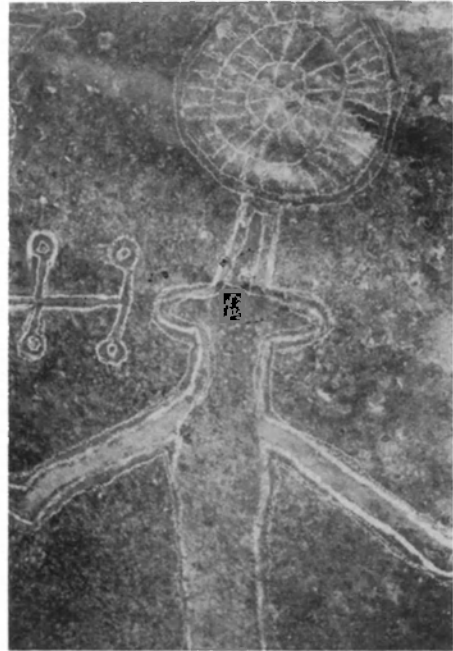


Fig. 47

Sun disk and part of an animate form; according to local tradition, this Yokuts Indian pictograph (Southern Sierra Painted Style), painted in yellow, white and red, represents the evil spirit Sok-só-ub holding the sun in its mouth. A previous visitor has chalked these designs. Tule River Indians Reservation near Porterville, California.

Fig. 48

Animate forms, the largest one seemingly headless; they are painted in red and have been chalked by a previous visitor. Southern Sierra Painted Style; Tule River Indian Reservation near Porterville, California.



of the objects depicted in these archaic paintings and in the trappings associated with the mescal bean cult as practiced by tribes of the central and southern Great Plains during historic times. The historic cult is frequently linked with deer and with hunting; its participants dance with weapons in their hands, and they utilize gourd rattles, feathers and animal skins during the act. Conceptual analogues, if not actual replicas, of all of these traits can be spotted in the Pecos River Style paintings. Many of the historic dancers paint their bodies in imitation of animals, and some society initiates receive power for curing through animals. The cougar images in the ancient drawings, and perhaps those of other animals as well, could be explained along similar lines, that is, as potential sources of supernatural aid. Even the purpose of the rodent jaws mentioned above is suggested by the use of garfish jaws in the modern cult.

Recently, Hatfield *et al.*, (1977) recorded the isolation of seven different quinolizidin alkaloids from mescal bean seeds; the major alkaloid present was cytisine. These authors were unable to confirm that mescal beans are genuinely hallucinogenic. Rather, the trance-like state described in early ethnographic accounts on Plains Indians ingesting this plant is attributed to "combined effects of a lack of sleep and sustenance, forced exertion lasting from twelve to sixteen hours, and possibly the nonhallucinogenic toxic effects of the mescalbeans ingested".

Objections to and New Data for the Drug Hypothesis

The proposed connections between certain North American rock drawings and plant-derived hallucinogens are certainly tentative and conjectural, for there exists only a single ethnographic observation, the one recorded by Du Bois (1908, p. 92) and alluded to above, that directly links rock paintings and mind-expanding drugs. It is not surprising, then, to find two well-known authorities in the field who caution us that "unless and until we have direct information, it is advisable to restrict speculation on drug-induced explanations for California rock art" (Heizer & Clewlow, 1973, p. 43).

More nearly principal objections to the drug hypothesis have recently been raised by Jonaitis (1978), in response to one of my earlier papers (Wellmann, 1978a). This author alleges that "rarely does an individual express his visionary experience in an artwork" and continues: "The shaman's *experience* is by and large artless. He does not seem motivated to express his spiritual and social status that he employs (through) conventional and predetermined motifs in artworks". Any attempt to relate Indian rock art to altered states of consciousness is therefore, according to Jonaitis, doomed to fail.

But Jonaitis' basic tenet is not borne out by the ethnographic record. The direct transformation of visions into rock drawings has, for instance, been documented by Teit in British Columbia. For the Okanagan language area, he stated: "In connection with their training period, adolescents of both sexes made records of remarkable dreams, pictures of what they desired or had seen, and events concerned with their training. These records were made with red paint on boulders or cliffs ..." (Teit, 1930, pp. 283-284). Similar conditions applied to other Salishan tribes, among them the Lillooet, the Shuswap

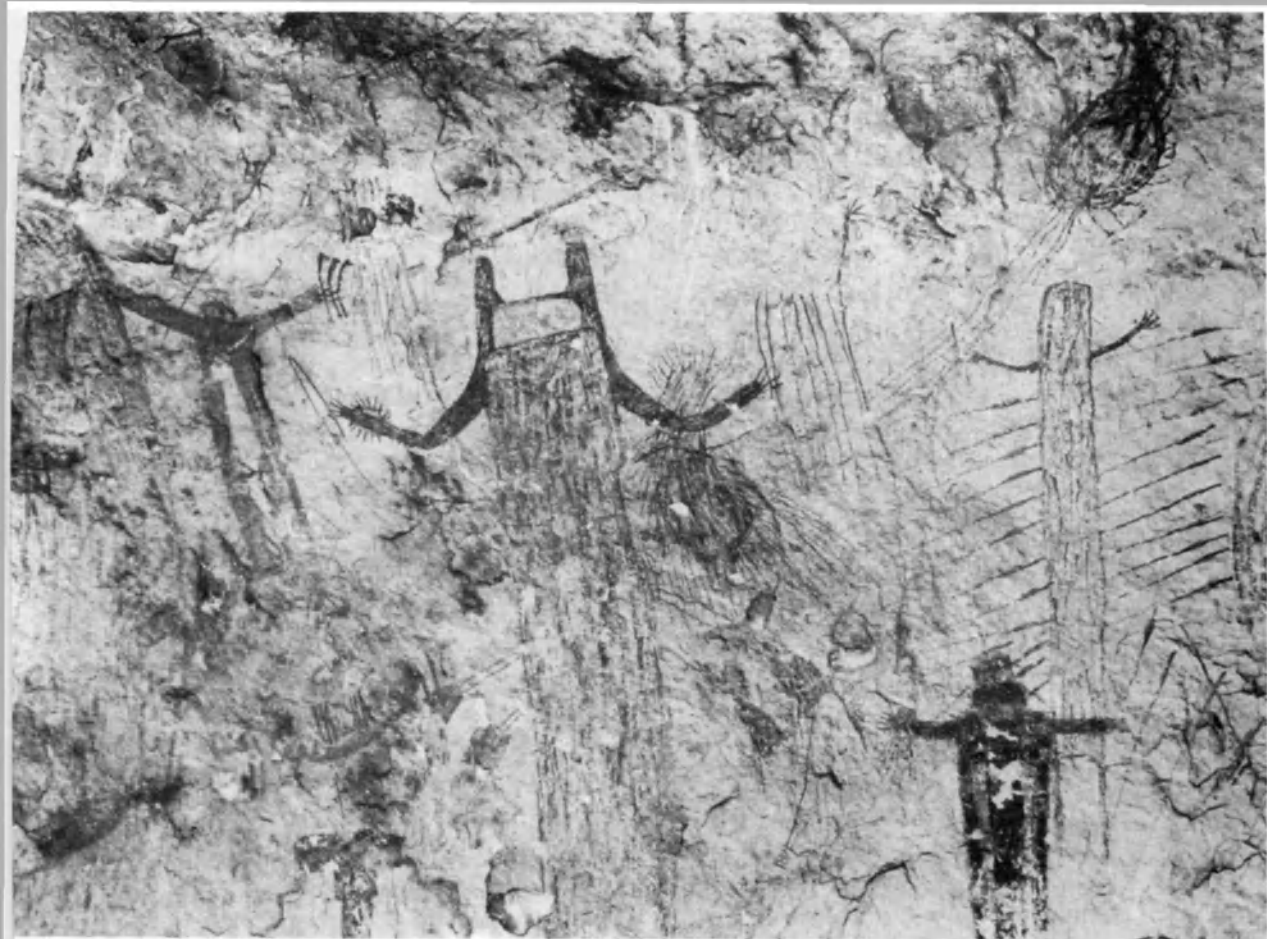


Fig. 49
Part of a panel with Pecos River Style
shamans, painted in red and black.
The largest figure is eleven feet (335

cm) tall; it carries atlatl (spearthrower) and dart and a prickly pear pouch. Panther Cave, Seminole Canyon, Texas.

and the Thompson in British Columbia as well as the Coeur d'Alène in Idaho (Wellmann, 1979, p. 44). It does not matter, within the context discussed here, that the rock art-inducing visions were not triggered by hallucinogens but, in all of these cases, originated from an altered state of mind brought on by solitude, prolonged deprivation of food, and physical exhaustion. What does matter is the ethnographically verified, direct transformation of visions into works of art. Also, Jonaitis' allegation of "artlessness" with regard to the shaman's experience is contradicted by the growing number of reports detailing the shamanic roots and affiliations (explicit or implied) of many rock drawings in North America (Grant, 1967, p. 29; Dewdney, 1970; Vastokas, 1973, pp. 55-75, 126-129; Hedges, 1976; Snow, 1976, 1977; Ritter 1977; Wellmann, 1976, 1978c, d).

What can be said about the shaman's relationship to hallucinogens? Eliade (1964, p. 401) deems the use of narcotics "a vulgar substitution for pure trance", a decadent technique to be "called on to provide an *imitation* of a state that the shaman is no longer capable of attaining otherwise". But, as Harner (1973a, VII) has pointed out, the importance of hallucinogenic

substances in shamanism and religious experience in general has long been underestimated by scholars in this field of study, in part perhaps because very few of them have actively participated in such rituals.

It should also be remembered that Eliade's concern primarily centers upon Old World cultures. On February 6, 1965, after a visit to the Anthropological Museum of Mexico City, he wrote in his diary: "For the first time I realize that there is not enough time left for me to familiarize myself with a culture that I do not know" (Eliade, 1977, p. 270). Furst (1972, p. IX), on the other hand, has pointed out that the available linguistic, archaeological, historic and ethnographic data all argue for a derivation of the widespread use of hallucinogens by New World shamans from ancient Eurasian roots and customs already established in Paleo- and Mesolithic times, so "that the Paleo-Indian immigrants into North America came culturally predisposed toward a conscious exploration of their new environment for psychotropic plants". For the New World, at any rate, La Barre determined the existence of a "narcotic complex", a postulate that originally (1964) received support from ethnographic sources but was further strengthened subsequently (1972) by ethnobotanic data as well.

Thus, he pointed out that only about half a dozen drugs with hallucinogenic properties had been known in the Old World, whereas New World tribes knew (and made use of) no fewer than eighty to one hundred such pharmacologically active agents. He also emphasized the essentially shamanic nature of much if not all aboriginal religion throughout the New World. An important corollary of this very observation is the realization that shamanism, firmly rooted as it is in ecstatic and visionary experiences, appears "culturally programmed for an interest in hallucinogens and other psychotropic drugs" (La Barre, 1972, p. 272). Within the context of New World shamanism, hallucinogens thus appear to play a primary and very essential role, and not one that is merely derivative and degenerative, as Eliade would have it.

La Barre's view received its most convincing documentation through ethnographic data collected from two Amazon Basin tribes in South America, the Tukano in Colombia and the Jivaro in Ecuador. For the Tukano, it has been established that "everything we would designate as *art* is inspired and based upon the hallucinatory experience" (Reichel-Dolmatoff, 1972, p. 104). These Indians stated that the patterns painted on the exterior walls of their communal houses represent "the things we see when we take yajé; they are the *gabpi gobóri* - the yaié images" (ibidem). "Yajé" is the aboriginal name for the plant *Banisteriopsis caapi* and for the hallucinogenic drink prepared from it. Reichel-Dolmatoff collected and codified the geometric design elements of the Tukano Indians who also interpreted them for him. He found the same artistic elements also as decorations on everyday utensils as well as in form of rock drawings in a wider region (Reichel-Dolmatoff, 1967; 1972, p. 111).

The Jivaro in Ecuador call the hallucinogenic drink from *Banisteriopsis caapi* "natäma", but they also ingest decoctions of *Datura arborea* if particularly strong visions are desired. Harner (1972, p. 138; 1973b) recorded the shapes and colors the shamans of this tribe had experienced during their trance.

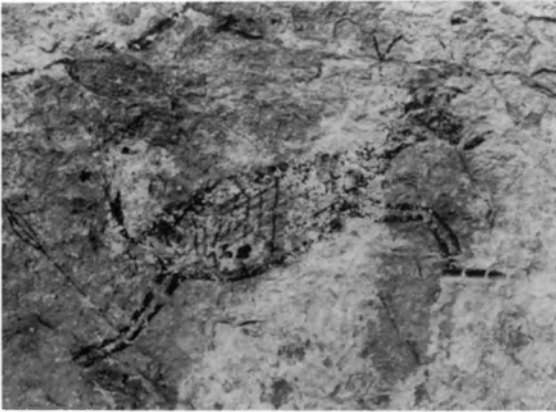


Fig. 50
One of the small, fleet-footed deer of Panther Cave. If it is painted in red it measures about two feet (60 cm) in length; note dart in hind leg. Pecos River Style; Panther Cave, Seminole Canyon, Texas.

Fig. 51
One of the tall "panther" (cougar) figures that gave Panther Cave its name. It is painted in red and measures nine feet (275 cm) in length, tail excluded. Pecos River Style; Panther Cave, Seminole Canyon, Texas.



There can thus be no doubt that plant-derived psychotropic substances played, and still play, a major role within the religious practices of the aboriginal peoples of America. The great extent to which this fact is reflected in objects of Precolumbian art has been documented in a richly illustrated and lengthy article by Furst (1974). Nothing compels us to assume that the rock drawings of this continent, most of which represent religious documents (Wellmann, 1979, pp. 18-20), are to be excluded from this whole complex.

Rock Art and Phosphenes

We all know that, if we were to receive a blow to the eye, we would "see stars". In scientific parlance such "stars" are known as "phosphenes". These are subjective light patterns induced by agents other than light waves; such "inadequate" stimuli may be mechanical (blows, pressure, rapid eye-ball movements), electric, or chemical (alcohol, psychotropic substances) in nature. Phosphenes can also arise spontaneously, especially after prolonged visual deprivation.

It has been established that phosphenes do not come in a boundless variety

of shapes but occur in a comparatively small and limited number of basic patterns. By means of electrical stimulation in more than one thousand individuals, the late Max Knoll and his coworkers were able to isolate and define fifteen steadily recurring, basic phosphene elements (Knoll & Kugler, 1959; Knoll *et al.*, 1963; Kellogg *et al.*, 1965; Oster, 1970); these include parallel straight or wavy lines, parallel rows of dots, complete or incomplete concentric circles, star and sun patterns, spirals, triangles, diamonds, crosses, and a few additional forms. Knoll himself had already investigated how hallucinogens modify the shapes of phosphenes, and Oster experienced brilliant phosphenes in form of basic geometric shapes, similar to those defined by Knoll, during the first six months after he had ingested a small quantity of lysergic acid diethylamide (LSD) (Oster, 1970).

It is of great interest that more or less convincing correspondences have been observed between the shapes of phosphenes and certain artistic motifs derived from various cultural contexts. Thus, Rhoda Kellogg and her coworkers (1965) recorded striking similarities between the phosphenes seen by adults and the drawings of pre-school children in a racially mixed kinder-garten in San Francisco. Phosphene patterns have also been noted in some prehistoric paintings from Almeria in Spain and in certain clay stamp motifs from Mexico (Oster, 1970). Of particular significance for the topic discussed here is the fact that Reichel-Dolmatoff (1972) compared the codified design elements of Tukano Indian art with Knoll's list of basic phosphene types, and that he found many correspondences between the two sets of forms. Apparently, then, the Tukano Indians of Colombia select the basic artistic elements for their pictorial endeavors from the supply of phosphenes, the latter induced by a known hallucinogen, and then interpret the resulting designs in terms of their own cultural fabric, as Reichel-Dolmatoff has been able to document in some detail.

Can this model be applied to the rock paintings of the Chumash Indians in California, a body of native artistic work that has also been linked to drug-induced visions, as was discussed above? Thomas Blackburn (1977) has recently attempted to do just that, observing that many of the elements of Chumash rupestral art are, indeed, "strikingly similar" to Knoll's phosphenes. Blackburn deemed the correspondences "extensive" and "systematic" and concludes "that what we are seeing in much of Chumash rock art are individual expressions of mythological themes or characters as 'seen' or experienced by the artists as a direct or indirect consequence of ingesting a known hallucinogenic substance".

Riassunto: L'Autore ipotizza che alcuni tipi di pitture rupestri del Sud California, tra le quali quelle degli Indiani Chumas e Yokuts e quelle dei ripari del basso corso del fiume Pecos nel Texas, siano stati eseguiti mentre gli artisti erano drogati con allucinogeni di origine vegetale: lo Jimsonweed in California, il fagiolo Mescal e il cactus Peyote nel Texas. Questa ipotesi è corroborata dalla stessa essenza delle religioni del Nuovo Mondo che tendono ad essere immaginarie e sciamanistiche ed appaiono notevolmente predisposte a visioni prodotte da droghe psicotropiche. Anche Teit, nella Columbia Britannica, Reichel-Dolmatoff e Harner in Sud America, hanno documentato in lavori etnografici, la

diretta trasposizione delle visioni nelle composizioni artistiche. Nell'ultima parte dell'articolo, vengono analizzate le corrispondenze strutturali fra elementi di arte rupestre del Sud California e gli effetti dei fosfeni. I fosfeni sono luci soggettive le quali possono essere indotte da vari stimoli, inclusi gli allucinogeni.

Résumé: Les peintures rupestres du sud de la Californie (indiens Chumash et Yokuts) ainsi que celles de la partie basse du fleuve Pecos au Texas, certaines figures semblent être influencées par les hallucinogènes dérivés de plantes (le "Jimsonweed" dans la Californie, "mescal bean" et "peyote" au Texas). Une telle hypothèse est soutenue par la nature même des religions du Nouvel Monde qui tendent à être visionnaires et shamanistes et donc prédisposées envers la drogue psychotrope. Teit dans la Colombie Britannique, Reichel-Dolmatoff et Harner dans l'Amérique du Sud, ont documenté d'une façon ethnographique la transposition directe des visions dans les oeuvres d'art. Les correspondances structurelles entre les éléments de l'art rupestre du sud de la Californie et les effets des phosphènes sont abordées dans cet article.

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KLAUS FRIEDRICH WELLMANN
IN MEMORIAM

E' mancato alla moglie Margot, agli amici ed ai colleghi, il Dr. Klaus Friedrich WELLMANN, già presidente della American Rock Art Association ed autore di diverse importanti opere su l'arte rupestre del Nord America. Su questo volume del *Bollettino* pubblichiamo un suo manoscritto inedito: "Rock art, shamans, phos-

phenes and hallucinogens in North America".

E' stato vittima della malattia del secolo, il cancro, contro la quale ha lottato per sei duri mesi.

Nato a Gerbstedt, in Germania, il 18 febbraio 1929, si è spento a New York il 24 luglio 1980. Nato nel "Vecchio Mondo" e deceduto nel "Nuovo Mondo", per espresso desiderio, le sue ceneri riposano nell'oceano. Il suo lavoro e i suoi studi sopravvivono al suo corpo.