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Altered States of Consciousness in North American Indian Ceremonials

WOLFGANG G. JILEK

Altered states of consciousness has become an accepted designation for phenomena experienced and observed in hypnotic or meditative trance, in so-called hysterical dissociation, in ecstatic states of religious revelation, or during "possession" by a defined power or spiritual entity, usually of ancestral, celestial, or infernal provenance. The differences between these variously labeled states depend on the situational and sociocultural context. They are not psychologically or neurophysiologically based distinctions. The phenomenology and genesis of altered states of consciousness has been described in detail by Ludwig (1966, 1968) and a concise definition was offered by Tart:

An altered state of consciousness for a given individual is one in which he clearly feels a *qualitative* shift in his pattern of mental functioning, that is he feels not just a quantitative shift, but also that some quality or qualities of his mental processes are *different*. [1969:2]

Both Ludwig's descriptions and Tart's definition correspond to

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Manfred Bleuler's (1961) concept of *Bewusstseins-verschiebung* (shifting of consciousness). Ludwig (1968) lists the conditions that may produce altered states of consciousness: (1) reduction of exteroceptive stimulation and/or motor activity; (2) increase of exteroceptive stimulation, motor hyperactivity, and emotional hyperarousal; (3) focused and selective hyperalertness; (4) decreased alertness and relaxation of critical faculties; and (5) somato-psychological states such as hyperventilation, hypoxemia, dehydration, hypoglycemia, sleep deprivation, and exposure to extreme temperatures.

Some or all of these conditions are always operative in the contemporary North American Indian ceremonials that I selected as paradigms for the purpose of this paper and on which I shall present ethnographic data from my own observations and from the literature; these are the Sun Dance of the Plains culture area and the Salish Spirit Dance of the Northwest Coast culture area. Special attention should be drawn to the role of *rhythmic sensory stimulation* which is not only a ubiquitous feature of most North American Indian ceremonials, but also of most rituals associated with trance behavior in other cultures. While the effect of rhythmic sensory stimulation, especially by photic stimuli, has been the concern of neurophysiological research ever since the pioneering work of Adrian and Matthews (1934), an important observation by Walter and Grey Walter (1949) was not taken up for some time. These researchers had come to the conclusion that rhythmic sensory stimulation of the organ of hearing as a whole can only be accomplished by using a stimulus containing components of supraliminal intensity, a steep-fronted sound such as produced by untuned percussion instruments. Leading neurophysiological laboratories continued to experiment with intermittent pure-tone acoustic stimulation (e.g., Gastaut, Roger, Corriol, and Gastaut 1949; Goldman 1952). It was not until Neher's (1961, 1962) investigations that the neurophysiological effects of rhythmic drumming were demonstrated. In controlled experiments Neher (1961) exposed clinically and electroencephalographically normal persons to low-frequency, high-amplitude acoustic stimulation produced by a snare drum without snares—an instrument quite similar to the deerskin drums employed in North American Indian ceremonials. In the EEG of all subjects, *auditory driving* responses were elicited at the fundamental of each stimulus frequency (3, 4, 6, and 8 beats per second), and

also at second harmonics and second subharmonics of some stimulus frequencies. Subjective responses similar to those obtained with photic driving were obtained in Neher's (1961) experiments, including visual and auditory imagery. According to Neher (1962), responses are heightened by accompanying rhythms reinforcing the main rhythm and by concomitant rhythmic stimulation in tactual and kinesthetic sensory modes. Susceptibility to rhythmic sensory stimulation is increased by stress and exertion, with resulting adrenaline secretion, also by hyperventilation and hypoglycemia. All these factors are present in the Salish Spirit Dance and in the Sun Dance ceremonial.

Of particular relevance to these rituals is the finding that intensive sensory stimulation exerts an inhibitory effect on the transmission of pain signals to the brain areas subserving consciousness.

Neher (1961) found drumming rhythms in, or close to, the theta frequency range of the EEG (4-7 cps) to be most effective and predicted this type of sensory stimulation could be expected to predominate in ceremonies associated with trance behavior. He reviewed ethnographic reports from Siberia, Africa, Haiti, and Indonesia—not from North America—and suggested that “unusual behavior observed in drum ceremonies is mainly the result of rhythmic drumming which affects the central nervous system” (Neher 1962). A direct effect on the central nervous system (CNS) by rhythmic sounds had, of course, long been surmised by observers of trance rituals. As expressed by Aldous Huxley (1961:369):

No man, however highly civilised, can listen for very long to African drumming, or Indian chanting, or Welsh hymn-singing, and retain intact his critical and self-conscious personality. . . . If exposed long enough to the tom-toms and the singing, every one of our philosophers would end by capering and howling with the savages.

Prince (1968) considered the possibility that auditory driving is a “commonly used portal of entry into the dissociative state.” His recommendations for the investigation of trance and possession states by telemetric monitoring of the EEG in fully mobile “native” participants in such rituals have not yet been implemented, and thus our conclusions regarding the role of auditory driving in ceremonies involving altered states of consciousness await confirmation by electroencephalographic field studies.

SALISH SPIRIT DANCE

The Winter Spirit Dance ceremonial of the littoral Salish tribes of British Columbia and Washington is the main survival of the ancient North American Guardian Spirit Complex in the Pacific Northwest. In the past extending over many culture areas of the North American continent, the Guardian Spirit Complex centered around the vision experience as a means of obtaining and controlling supernatural power (cf. Benedict 1923). The content of this vision and the events surrounding it were formalized by mythological tradition and tribal convention and therefore varied from one indigenous population to another. There was, however, universal recognition that a devoted young Indian's spirit quest would be crowned by an intense experience of great personal significance and ineffable thrill, occurring in a state of altered feeling and perception: the encounter with a tutelary spirit who would reveal his secret attributes and bestow his powers upon the seeker. In traditional Coast Salish culture, the juvenile spirit quest, if rewarded by a vision of the propitiated guardian spirit, was in young adulthood followed by the seasonal spirit illness. This was a ritualized pathomorphic (i.e., illnesslike, but not pathologic) prelude to the public exhibition of spirit powers in the winter dance ceremonial. It was expected of those who claimed to have successfully completed their spirit quest to suffer the nostalgic longing and to show the culturally prescribed symptoms of "one who has been made sick by his power." Their spirit illness, in many aspects analogous to Eliade's (1964) initiatory sickness of budding shamans, heralded the advent of the particular winter season in which they would have to be initiated into Spirit Dancing.

By 1951, when the infamous law against "Potlatching and Tamanawas Dancing," passed in 1884 in order to crush aboriginal ceremonialism, was finally removed from the Statutes of Canada, Western observers thought that Salish shamanism was gone forever. However, in the 1960s a few old-time shamanic ritualists traveled through the Coast Salish area in what might be called a nativistic missionary effort to revitalize the Spirit Dance. Initiation into this ceremonial became instrumental in helping many alienated Indian people achieve a positive cultural identity and a successful

psychosocial rehabilitation. In contemporary Coast Salish society, the traditional label *spirit illness* is applied to a chronic state of dysphoria and psychophysiologic symptom formation in the context of sociocultural disorientation and deprivation which I have described elsewhere under the term *anomic depression* (Jilek 1974). For the deculturated Indian person suffering from *anomic depression*, the traditional label *spirit illness* provides access to the therapeutic process of initiation into the Spirit Dance ceremonial, which in the past was a psychohygienic ritual and since its revival in the 1960s has taken on the character of culture-specific ritual psychotherapy. Once identified as affected by spirit illness, a person is conceived of as being possessed by a wild, untamed power that could destroy him or her unless it is tamed through the initiation process and utilized as guardian spirit power. This power is ambivalently perceived as beneficial only to those who observe the traditionally prescribed "Indian ways" of responsible conduct, while the wrath of an insulted guardian spirit will destroy the resisting deviant — which is indeed what happens if they surrender themselves to the "evil spirits of liquor and drugs." Sufferers from spirit illness are called "dying sick," and they have to submit to a ritualized vicarious "death" in the ordeal of spirit dance initiation in which they are "grabbed" and symbolically "clubbed to death" by the ritualist and his aides. They are then resurrected, "stood up again" and reborn as a "baby" to a new and more fulfilling existence after going through a period of quasi-fetal regression in the seclusion of a dark "smokehouse tent" under the nursing care of "watchmen" or "babysitters." Together with his assistants, the shamanic ritualist helps the initiate-patients to "get out their spirit song" in order to manifest their spirit power in the choreographic psychodrama of the Spirit Dance. The "spirit song" signifies and embodies the powers conferred upon the initiate in a peak experience called *su'lia*, "vision dream." The "finding of the spirit song" marks the initiates' rebirth and their "return from the dead": after a gestation period of at least four days the "baby" cries out its newfound song, accompanied by the drumming and singing of the attendants. The initiate is then "run" through the woods, bathed in the smokehouse, and submerged four times in an ice-cold mountain stream, a procedure intended to "bring the baby fully back to life." Shamanic power is instilled in the novice by the initiating ritualist who blows his power-charged breath into the "newborn baby."

In the initiation procedures practiced today, the time-consuming traditional quest for a tutelary spirit has become merged, under acculturative pressures, with the initiation into Spirit Dancing. Thus, while in bygone days spirit power was obtained in an individual quest and later manifested and tamed in the initiation, it is today acquired by, and in, the initiation process, which also constitutes the sole therapy for spirit illness.

A strict initiatory regime is continued until the candidates "find their song and dance," when the guardian spirit—today also referred to as the "Indian Spirit" or the "Power Animal"—appears to the initiates and bestows upon them the gift of individual spirit power, song, and dance. The initiates feel their newly acquired power when the song bursts forth from their lips and the leaping steps of their first spontaneous dance carry them through the smokehouse. To modern spirit dancers this blissful experience may appear comparable to that of altered states of consciousness induced by opiates:

I was jumping three feet high and I had such a thrill, a terrific feeling as if you were floating, as if you were in the air, you feel really high. I've only had such a feeling once before in my life when I was on heroin mainlining, but then I went through hell afterwards, it was terrible—but with the spirit song's power you get this feeling without the terrible aftermath.

The initiation process provides the new spirit dancers with a learning experience which will enable them to reenter altered states of consciousness without initiatory preparation in order to feel and display their shamanic powers on future Spirit Dance occasions. Every winter season they will henceforth be immersed in a therapeutic ceremonial program that combines occupational activity with physical exercise, psychodrama with cathartic abreaction, direct suggestive ego-support and logotherapeutic reaffirmation of the meaning of native existence.

SUN DANCE

The Sun Dance was the most magnificent ceremonial of the Plains tribes of Algonquian, Siouan, Caddoan, and Shoshonean stock. "More than any other ceremony or occasion, it furnished the tribes the opportunity for the expression of emotion in rhythm"

(Dorsey 1910). It involved complex group rites associated with medicine power and mythological themes relating to warfare and bison hunting, and drew a large number of participants, dancers, singers, drummers, and spectators.

In Siouan tribes, the Sun Dance was celebrated every summer; in others, such as the Blackfoot nation, it was held at irregular intervals of two or three years. Among the Plains Algonquians, performance required a vow or pledge, usually made by a chaste woman, in order to ward off sickness from self or kin—the ceremonial therefore had prophylactic significance. The actual dancing ceremony lasted up to four days; it was preceded by three or four days of fasting, thirsting, and preliminary rites, and followed by games, banquets, and other celebrations, so that the whole festive occasion might extend to almost a fortnight. Medicine men displayed their power and officiated at healing rites; among the Assiniboine one whole day was reserved for this purpose (Jenness 1960). The traditional Sun Dance lost its major function, that of securing supernatural support for individual and collective success in warfare and the chase, when Indian resistance to “manifest destiny” was finally crushed by U.S. Cavalry and when the bison herds were exterminated by railroad-riding hunters. In a desperate last resort to supernatural means, most Indian peoples who had performed the Sun Dance ritual turned to the Ghost Dance religion, often following the example of preeminent Sun Dancers (Mooney 1896). This *transformative* movement (Aberle 1966) aimed at a total change in the supra-individual system and was inspired by prophetic visions experienced in altered states of consciousness that were sought by both leaders and followers. The Ghost Dance movement ended with the bloody suppression of the Sioux outbreak of 1890. The failure of the Ghost Dance led the shamans of the Shoshone, again acting upon inspiration by oneroid visions, to shift the emphasis of the Sun Dance ceremonial to the curing of illness and alleviation of social misery (Jorgensen 1972). The ceremonial developed into a *redemptive movement* (Aberle 1966) with therapeutic aims of achieving a total change in individuals, to promote spiritual, emotional, and physical health and thereby benefiting the community. The Sun Dance as such a therapeutic movement continued on a small scale among the Shoshone and Ute. The Sioux Sun Dance was officially banned in the 1880s by U.S. government authorities,

who clearly recognized the inherent nationalistic potential of this ceremonial while drawing public attention to its "uncivilized" torture rites. In the aboriginal Sun Dance ceremony of the Plains tribes—with the exception of the Kiowa and Assiniboine—the self-inflicted torture was a prominent feature of the public performance (Dorsey 1910; Jenness 1960). Younger braves would propitiate supernatural agencies by the sacrifice of their pain and at the same time obtain individual spirit powers as well as the recognition of their fellow tribesmen. The devotee's skin was pierced with sharp skewers at breast, shoulders, or back, and fastened by strong thongs to the center pole or to buffalo skulls. For many hours he would then dance while leaning back, his weight hanging at the pole, or, if attached to buffalo skulls, he would drag them around the entire camp circle. Among the Oglala Sioux, the prestige of a man depended on his having undergone the tortures of the Sun Dance and possessing the scars to prove it (Driver 1969).

The Sun Dance ceremonial, previously outlawed by North American majority society, experienced a spectacular revitalization when the changing *Zeitgeist* encouraged the native renaissance we are witnessing since the 1950s (Jilek 1978). By the mid-1960s the Sun Dance flourished again as the major indigenous ceremonial of the Indian tribes in Wyoming, Idaho, Utah, and Colorado, claiming more adherents than the Native American Church of the Peyote Cult and attracting many of its members. Since the Sun Dance was also revived among the Sioux around 1960, hundreds of participants and spectators again gather every August at the Pine Ridge reservation in South Dakota.

The Sun Dance ceremonial, like the Salish Winter Dance initiation, focuses on the acquisition of supernatural power which may be sought by a devotee for his own health and success, to propitiate spiritual forces, to comfort suffering and bereaved kinspeople, or to counteract evil influences. In essence, this is *shamanic* power, and on the basis of comparative analysis we can say that the Sun Dance has the characteristics of a shamanic initiation. It includes calling and instruction by dream visions, guidance and tutoring by a shaman, and enduring an ordeal with fasting, thirsting, and painful self-torture in the quest for a personal power-vision. The original shamanic initiation character of the ceremonial is confirmed by Sioux tradition, for in the past an exceptional performance in the

Sun Dance ordeal qualified the brave for the medicine man role (Burland 1965). Today, the revived Sioux Sun Dance again includes the self-sacrificial ordeal, formerly prohibited by U.S. authorities. Some devotees take a sacred vow to dance "with pierced flesh" in several consecutive annual ceremonies (cf. Nurge 1966).

Contemporary Sun Dance ceremonies are conducted throughout three days and three nights as a rule. The dancers are accompanied by teams of singer-drummers and by a native audience providing comfort and encouragement. The ritual procedures are directed by the shamanic Sun Dance chiefs who also tutor the new dancers and supervise the initiation process. Among the Ute, shamans counsel and validate a candidate by analyzing and interpreting his dreams (Jorgensen 1972). Sun Dance novices and singing teams are busy with preparations throughout winter and spring. Contemporary Sioux Sun Dancers purify themselves in sweat lodges and pass the calumet pipe before entering the arena in a procession led by the Sun Dance chiefs and by the buffalo skull bearer. Moving four times in each cardinal direction, the dancers alternately charge toward and retreat from the treelike pole erected in the center of the Sun Dance corral. This center pole with the traditional paraphernalia attached to it is charged with a symbolism reminiscent of the archetypal *arbor vitae*, and is considered a source of power as well as the medium through which cosmic power is channeled. A dancer who has taken the sacred vow is tethered to the center pole by rawhide ropes. These are tied to one or two skewers which the Sun Dance chief slides through the supramammillar skin of the dancer's chest after making incisions, often bloodless, with a knife reserved for this ceremonial use. Blowing his eagle-bone whistle and sometimes holding a power-staff for protection and strength, the devotee may dance for hours and continue tugging until he "breaks the flesh." Torn loose from the center pole, he falls to the ground in a semi-conscious state. Other dancers may seek a power-vision without this particular self-torment, but they would still have to endure fasting, thirsting, and exhaustion by strenuous dancing. Teams of drummers and singers accompany the dancers, other participants blow their whistles or beat willow wands in time while the audience is stirring them up by yelling war whoops. In his endeavors to achieve the desired altered state of consciousness that will finally bring him a vision, the dancer is helped by intensive rhythmic drum-

ming with many untuned animal hide drums. Dancing vigorously with accelerating tempo for one hour, two hours, or even more, the dancer finally receives his vision. He is lifted from his feet and thrown to the ground by what he perceives as a jolt of power. Then his body lies motionless "stone cold," while his soul has temporarily left him for its archetypal shamanic journey. Under the supervision of the Sun Dance chief, fellow participants carry him to his place and hold him down. They position the semiconscious devotee so that his head points to the center pole, the source of the shamanic power which now pervades him. Thus the Sun Dancer fulfills his sacred vow.

THE PRODUCTION OF ALTERED STATES OF CONSCIOUSNESS

The practices observed today in Salish Spirit Dancing and in the Sioux Sun Dance can be classified under two headings: (1) those subserving personality depatterning, and (2) those subserving personality resynthesis and reorientation. The latter consist of individual and group-therapeutic approaches, in which various techniques of providing ego support are combined with physical training and with didactic methods for imbuing the candidate with culture propaganda and pan-Indian *opposition mythology* (cf. Jilek 1977). What concerns us here are the techniques that subserve personality depatterning and the production of altered states of consciousness. They include conditions of increased external stimulation and motor hyperactivity, alternating with those of reduced external stimulation and motor hypoactivity, and they involve several somato-psychological factors (cf. Ludwig 1968).

FOCUSED SUGGESTIVE ATTENTION

Candidates are singled out for special treatment. In the Salish Spirit Dance initiation they are "grabbed"—supposedly while not expecting this—by husky ritualist-aides, whose faces are blackened. They rush at the novices, immobilize their limbs, blindfold them, and present them to the officiating shamanic ritualist who will supposedly "club them to death" by touching them with the power-filled ceremonial staff. Collective suggestion of shamanic power is

still operative in the population to the extent that this symbolic gesture has tremendous impact upon the person so treated.

In the Sioux Sun Dance, the candidate who has vowed to "dance with pierced flesh" is separated from other dancers and placed near the center pole. While the Sun Dance chief prepares for the ritual incisions, sharpening the sacrificial knife and rubbing sage on the chest of the candidate, the drums stop and the crowd watches in silent suspense as the candidate lies down. The chief then makes quick cuts in the supramammillar skin and inserts skewers tied to raw hide thongs.

PAIN STIMULATION

In Salish Spirit Dancing initiates are "tortured" during the repeated "grabbing" procedures: They are "rattled" with the deer-hoof staffs, slapped, bitten, tickled, and pinched on exposed areas of chest, abdomen and legs. In the words of a young initiate:

They use the old dancers to work on you because they've got the power, and they bite on your side to put their power inside you. You feel a lot of pain when they bite you, you have to scream and holler, and pretty soon your song comes. I felt the pain in the stomach where they bit me. I passed out about three times while they worked on me. They kept doing that to me every morning and night for four days.

In the Sioux Sun Dance, a self-sacrificial vow commits the candidate to dance in repeated movements forward toward the center pole and backward from it, at least four times in each cardinal direction; steadily increasing the pull at the ropes and skewers that tie him to the pole, until he finally "breaks the flesh." His ordeal may last one, two, or more hours.

HYPOGLYCEMIA AND DEHYDRATION

In the Salish ceremonial, the initiate is starved for four to five days. This regime of strict fasting and thirsting is rendered more stressful by such frustrating maneuvers as "teasing" the novice with tasty salmon bits held close to his mouth or offering him water in leaking cups. For at least four to five days the novice's fluid intake is restricted to a minimum. His lips must not touch liquid, but he may suck a few fluid ounces of water through bone or plastic tubes tied around his neck. At the same time, he is losing fluid through

perspiration during the "runs" and when sweating under the blankets.

The traditional Sun Dancer, too, prepares himself for the ceremonial by days of fasting and thirsting, and often observes total abstinence for the duration of the annual dance.

FORCED HYPERMOTILITY

The Spirit Dance initiate is taken on daily "runs" around the smokehouse hall or through the bush, tied to his attendant, often until he is completely exhausted. At Sioux Sun Dance ceremonies, strenuous dancing may go on from sunrise to sunset, interrupted by only brief rests.

TEMPERATURE STIMULATION

(1) *Cold*: During barefoot runs in snow, Salish novices are made to bathe in icy rivers or in the wintry ocean. In the smokehouse they may be unexpectedly doused with cold water. Such hydrotherapeutic shocks are considered helpful in bringing out the desired cry-song. (2) *Heat*: The Salish Spirit Dance initiate is "roasted" under a heavy cover of woolen Hudson Bay blankets. Sioux Sun Dancers are exposed to the heat of the sweat lodge for 30 to 50 minutes prior to the dance procession; there they sit closely together and pass the calumet while the Sun Dance Chief is praying.

ACOUSTIC STIMULATION

During Salish Spirit Dances and Sioux Sun Dances, the beating of rhythms on animal-hide drums, accompanied by chanting, goes on for hours. Additional rhythmic sounds are produced by clashing cedar sticks together and shaking deer hoof rattles (Salish); by blowing eagle bone whistles and beating willow wands in time (Sioux). In view of the experimental findings on the neurophysiological effects of rhythmic drumming (Neher 1961), the prominence of this type of sensory stimulation is quite understandable. Physical analysis of records of drumming during Coast Salish Spirit Dance ceremonies revealed that rhythmic drumming encompasses a frequency range from 0.8 to 5.0 cps, with a mean frequency of 2.95 cps.¹ One third of the recorded frequencies were in the theta range of the human

electroencephalogram, and frequencies from 4.0 to 5.0 cps were entirely predominant in drumming records taken during "grabbing" procedures. Due to the presence of theta rhythms (4-7 cps) in the electrical activity of the temporal auditory region of the cerebral cortex,² experimental subjects react to intensive rhythmic drumming in this frequency range by showing auditory driving responses in their EEG, associated with experiences similar to those described in trance states (Neher 1961, 1962). Rhythmic acoustic stimulation by percussion instruments during Salish Spirit Dance initiation is, of course, far more intensive than under experimental conditions: not one, but many deerskin drums are employed.

In addition to the consciousness-altering practices described above, the following techniques are employed in Salish Spirit Dance initiation only:

SECLUSION AND RESTRICTED MOBILITY

For a period of at least four and often more days, the initiate is placed in a dark smokehouse cubicle, guarded by the "baby sitters," who sit on the fringes of his blankets. He must observe the strictest silence and avoid any body movement while lying there.

VISUAL-SENSORY DEPRIVATION

The initiate is blindfolded during the "grabbing" procedure and remains so throughout his seclusion in the darkness of his "smokehouse tent."

SLEEP DEPRIVATION

While lying in the cubicle, the novice sleeps very little, due to his uncomfortable situation. On frequent and prolonged occasions, the ceremonial workers sing and drum and interrupt his rest for required activities.

KINETIC STIMULATION

The "grabbing" procedure is repeated twice every day: he is

thrown up and down, swayed and whirled about, and hurriedly carried around the smokehouse.

HYPERVENTILATION

Forced rapid and deep breathing is required immediately before dancing runs. An old dancer recalls:

They used to tell us—the baby-sitters as they are now called—when you are about to get into a trance breathe hard, real hard, don't hold it back: if you do you are liable to faint. Breathe hard from down here, from your stomach, all out. So you breathe deep; your whole body, chest and stomach is moving. You get into trance before you jump up and dance.

ALTERED STATES OF CONSCIOUSNESS AND ENDOGENOUS OPIOIDS

The endogenous opioid agents enkephalin and beta-endorphin, and possibly also other neuroendocrine peptides such as neurotensin and bradykinin, are assumed to play an important role in the integration of pain information. As presented in the recent overview by Snyder (1980), enkephalin and perhaps also neurotensin appear to inhibit the release of a transmitter substance of sensory neurons at the spinal cord and brainstem level. Furthermore, there are indications of a functional relevance of the neuroendocrine opioid system to auditory, kinetic, and visual perception. Brainstem structures related to auditory and vestibular functions show a high density of enkephalin cells. Some of these areas, such as the dorsal cochlear nucleus and the inferior colliculus, are also rich in opiate receptors; the latter are highly concentrated, too, in the inferior accessory optic nuclei (Snyder 1980). Endogenous polypeptides with opioid activity appear also to be involved in emotional reactions to pain stimuli and in the control of affective states associated with food and fluid intake (cf. Cleghorn 1977). Recent clinical trials in the United States, Switzerland, and Sweden indicate that the parenteral administration of beta-endorphin is followed by significant but transient psychotropic effects in clinically depressed nonschizophrenic and not mentally deficient patients. Kline (1981) has described these effects as antidysphoric, antidepressant, anxiolytic, analgesic, and disinhibiting; they occur within five to ten minutes and last from one to six hours after injection of beta-endorphin. He speculates

that "beta-endorphin, produced by the anterior pituitary, may be the body's own way of producing and controlling affective states" (Kline 1981:140). The same psychotropic effects as shown in clinical trials with beta-endorphin can also be observed in the North American Indian ceremonies described above. I have elsewhere elaborated on the positive therapeutic results of the initiation into, and further practice of, Salish spirit dancing (Jilek 1974), as seen in cases of depression, dysphoria, and psychophysiological symptom formation. We may propose that these therapeutic results could in part be due to the antidysphoric, antidepressant, and anxiolytic effects of endogenous opioid peptides released through specific treatment modalities during the initiation process. We may further propose that the release of these substances could be triggered by the same conditions known to induce altered states of consciousness in the rituals under discussion; notably pain, acoustic and kinetic stimulation, hypoglycemia, and dehydration, in combination with physical exertion. Such a hypothesis is suggested on the basis of the apparent linkage of the neuroendocrine opioid system with CNS areas subserving the transmission, processing, and integration of signals in pain, auditory and kinetic perception (cf. Snyder 1980), and also with CNS areas involved in the control of affective states associated with eating and drinking (cf. Cleghorn 1977). In the above sketched ceremonies, pain stimulation is often combined with physical strain through forced hypermotility. The euphoria-producing effect of this combination is manifested by Salish Indian initiates, who on their exercise runs have traditionally whipped their legs with cedar bows in order to feel lightfooted, exhilarated, and tranced—indeed some candidates experienced their power-vision during such a run. One is reminded here of present-day jogging addicts who forcefully overcome the initial running pains in order to then experience their "jogger's high"—a euphoric trancelike state perhaps attributable to endogenous opioid release. It is known that suggestion and hypnosis can induce analgesia which is reversible by naloxone, the opiate-antagonist and opioid-blocker. Suggestion plays an important part in the achieving of altered states of consciousness. In the process of Salish spirit dance initiation, some candidates have instantly entered cataleptic states under the influence of direct and collective suggestion, and under the same influence most candidates appear to be able to endure painful procedures (cf. Jilek 1982).

CONCLUSION

In this paper I have offered observations on two North American Indian ceremonies which appear culture-specific, yet which also confirm the transcultural validity of certain theoretical propositions regarding the factors involved in the creation of altered states of consciousness. What awaits clarification are the biochemical and neurophysiological mechanisms underlying those altered states of consciousness that are associated with a peak experience of potential therapeutic significance. The recently discovered endogenous opioid polypeptides may play a role here. It would therefore be worthwhile to explore the release of neuroendocrine opioid agents under conditions of metabolic changes and sensory stimulation as obtain in the ceremonies described above, such as with the particular rhythmic acoustic stimulation leading to auditory driving responses.

In order to arrive at a holistic theory of human behavior, socio-cultural and biological data have to be linked up. Claude Lévi-Strauss (1962:174) reminds us that "*l'ethnologie est d'abord une psychologie*"; to which we may be permitted to add that *la psychologie est d'abord une physiologie*.

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