

# Psychedelic Drugs and Creativity

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The use of drugs as a means to facilitate creativity has a long history. In Central America, stone sculptures from 1500 B.C. have been found that portray hallucinogenic mushrooms from whose stems emerge the heads of gods. Much of the cave and rock art of the southwestern United States has been attributed to medicine men working under the influence of psychedelic (from the Greek for mind-manifesting) plants (Wellman 1978).

In 1796 the physician Samuel Hahnemann claimed that the mushroom *Amanita muscaria* heightened poetic abilities. A century later, the neurologist S. Weir Mitchell rhapsodized on the properties of peyote, persuading William James to try the cactus buds. James became nauseous and commented (Masters & Houston 1966: 47), "I will take the visions on trust." Henri Michaux (1963), the French artist and writer, originally referred to mescaline as "a miserable miracle," but found that his nausea diminished with additional use of the chemical. Professor J.R. Parsons (1971) described his use of psychedelic drugs in the study of history, and Navy Captain John Busby reported using lysergic acid diethylamide (LSD) to solve an elusive problem in pattern recognition while developing equipment for a naval research project (Rosenfeld 1966).

On certain occasions, LSD has been utilized in a psychotherapeutic session to facilitate creativity. The case study of Ramona Davidson (pseudonym) has been presented by Richards and Berendes (1977-78), her ther-

apists at the Maryland Psychiatric Research Center. Suffering from guilt and depression that appeared to inhibit her creativity as a writer, Davidson participated in an LSD-assisted intervention. A dose of 200 micrograms ( $\mu$ g) was administered, after which Davidson reclined on a couch, wearing a sleepshade and stereophonic headphones—the former to assist in focusing attention on internal phenomena and the latter to enhance continuity and nonverbal support. Nine months after the LSD session, Davidson was able to terminate nearly three years of psychotherapy, had obtained a promotion in her work and reported improved relations with her husband and children. She had not completed any new manuscripts, but did not feel guilty about the situation. Richards and Berendes observed (p. 146), "Whether or not the writer within herself will someday produce a disciplined work of literary excellence remains to be seen." In evaluating her own experience, Davidson observed (p. 146):

Insofar as the program is concerned, I could not begin to put in a letter what it has meant to me. . . . The only way I can explain is by using the metaphor of Gulliver. It was as if one day I awakened and discovered that all the chains and strings that held me to the ground were the flimsy strings of tiny little men. I was a giant, and these chains were the product of absurd childhood fears. . . . All of my writing reflexes have changed. There is no longer the kind of terror/ecstasy state . . . that I experienced before. Now writing is something matter of fact (hard as hell

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still), but I'm not either up or down when I do it; I'm just there . . .

Davidson commented that when her neurotic drives vanished she began to fear that she would never write again, because her neurosis had motivated her writing, to some degree, as well as blocking it. Nevertheless, she was amazed to feel "matter of fact" about writing and to be focused in the "present moment."

The Mexican psychiatrist Salvador Roquet has used LSD and similar drugs to treat creative individuals. Pedro Alatriste, Fred de Keijzer and Rodolfo Aguirre Tinoco are among the artists who have spoken openly of their work with Roquet (Clark 1977). Alatriste confessed, "For four years before the treatment I had produced no art and had done nothing but drink." His recovery was aided, he felt, not only by the guided psychedelic sessions but by Roquet's request that he teach the Mixe Indians pottery making. Alatriste recalled, "I showed them how to mold clay and produce objects and I painted a portrait of a fellow worker. But, basically, they showed me how to live, and my self-respect returned." Fred de Keijzer, another of Roquet's patients, described how his work with Roquet led to a "confrontation with death." De Keijzer also spent time with the Indians and eventually was able to resume his painting career. Rodolfo Aguirre Tinoco remarked that his work with Roquet led to a style of painting that tried to "touch the depths and the mystery of life."

In 1965 the psychiatrist Humphry Osmond and the architect Kyo Izumi announced that they had used LSD in the designing of a mental hospital. Izumi (1970) took LSD during several visits to traditionally designed mental hospitals to determine the effects of the architecture on people in altered states of consciousness. The result was a realization that traditional buildings were unsuitable. Izumi stated (pp. 387-8) that under LSD the "hard, glaring, and highly reflective surfaces of polished terrazzo floors, glazed-tile walls, and white ceiling tiles created spaces of unusually intimidating qualities, particularly if there were also other people in this space."

#### STUDIES OF PSYCHEDELICS AND ARTISTS

Similar personal accounts and case studies exist in the literature (e.g., Grinspoon & Bakalar 1979: 261-7; Durr 1970; Krippner 1968). Scientific approaches to the topic initially centered around the notion that a "model psychosis" was produced by LSD and similar drugs. Artists were investigated with the expectation that their behavior and work would conform to this model (e.g., Cohen 1965: 104-5; Maclay & Guttman 1941). Tonini and Montanari (1955) administered LSD and mescaline to an artist, asking him to paint during his sessions. They concluded (p. 238), "The pictures do not contain any new

elements in the creative sense, but reflect pathological manifestations of the type observed in schizophrenia."

In summarizing his observations of LSD users, Arieti (1976: 371) admitted that the use of primary process mechanisms was enhanced, but that the secondary processing needed to put the imagery to creative use was impaired. This assertion received experimental support from Pittel (1970) who administered Rorschach ink blots to frequent LSD users, finding that they usually gave highly imaginative, albeit bizarre responses. However, when asked to describe the ink blots in "objective, non-creative terms," most of the subjects were unable to do so. Furthermore, Pittel reported that they had a "diminished capacity for spontaneous fantasy" and that their ability to create spontaneously was replaced by using drugs to recreate experience. Similar effects have been noted by Freedman (1968), Frosch, Robbins and Stern (1967) and Mamlet (1967) who spoke of the "consciousness-limiting" effects of LSD and similar drugs.

Only nine major research projects in the area of psychedelic drugs and creative performance have been reported, with most of them having been described as pilot studies rather than full-scale experiments with conclusive results. Berlin and colleagues (1955) investigated the effects of mescaline and LSD on four graphic artists of national prominence. There was an impairment of finger-tapping efficiency and muscular steadiness among the four artists, but all were able to complete paintings. A panel of art critics judged the paintings as having "greater aesthetic value" than the artists' usual work, noting that the lines were bolder and that the use of color was more vivid. However, the technical execution was somewhat poorer than in their other paintings.

Barron (1963) administered psilocybin to a number of highly creative individuals and recorded their impressions. One of Barron's subjects stated (p. 253), "I felt a communion with all things." A composer wrote (p. 255), "Every corner is alive in a silent intimacy." Barron concluded (pp. 256-7), "What psilocybin does is to . . . dissolve many definitions and melt many boundaries, permit greater intensities or more extreme values of experience to occur in many dimensions."

Some of Barron's subjects, however, were wildly enthusiastic about their apparently increased sensitivity during the drug experience only to discover, once the effects wore off, that the production was without artistic merit. One painter recalled (p. 251), "I have seldom known such absolute identification with what I was doing—nor such a lack of concern with it afterward." This statement indicates that an artist is not necessarily able to judge the value of his/her psychedelically inspired

work while under the influence of the drug.

Janiger (1967, 1959) asked 60 prominent artists to paint a picture of an American Indian doll before ingesting LSD. During their psychedelic sessions, they again painted the doll. The 120 paintings were evaluated on the basis of several artistic criteria in an attempt to determine what type of change took place. There was general agreement by the judges that the craftsmanship of the LSD paintings suffered, but many received higher marks for imagination than the pre-LSD paintings.

Leary (1963) administered psilocybin to 65 writers, musicians and artists. Written reports were elicited from each subject. The great majority claimed that they had undergone "a creative experience." Leary reported (p. 24) that the group, as a whole, responded positively to the psychedelic sessions and appreciated the "intense and direct confrontation with the world around them." Leary postulated that creative persons must break through "game structures" (i.e., their cultural conditioning) if they are to create innovative productions that will be of artistic merit. LSD and similar drugs are seen as one method to facilitate this breakthrough.

Hartman administered LSD to 20 well-known artists in West Germany, devoting about a week to each person (Kipphoff 1969). The dosage varied from subject to subject, having been mutually agreed on following discussion. The results also varied: Friedrich Hunderwasser simply refused to work in the LSD condition; Gerd Hoehmann experienced such severe pain in his head (apparently due to recall of a wartime experience) that he was incapable of working; and the LSD work of C.O. Goetz was indistinguishable from his ordinary paintings.

In most cases, however, differences were observed, subdivided into those in which the difference was mainly formal and those in which it was principally thematic. For example, Alfred Hrdlicka, ordinarily a technical perfectionist, subsided into caricature and primitive shapes drawn with crude gusto. In the case of Waldemar Grzimek, the loss of form was even greater: attempting to draw a female figure, the anatomical details developed into problems insoluble with his charcoal pencil. An almost complete disappearance of form characterized Heinz Trökes' efforts to realize on paper his freshly perceived world. In other cases, thematic changes were observed as the artists painted topics and figures outside their ordinary repertoire. Two artists, Eberhard Eggers and Thomas Häfner, succeeded in holding the pictures in their minds while transferring them to canvas. In the case of Eggers, the LSD experience was judged to have involved an increase in artistic ability.

When part of the experience was televised, changes in behavior were apparent. Werner Schroib, who had a

reputation for being aggressive in his manner, chatted pleasantly while covering the paper with drawings. For Manfred Garstka, however, the experience was a nightmare. Afterwards he commented, "I held fast to painting for it was the only thing I had to cling to to save myself from total submergence in an inferno." Nevertheless, none of the artists who took part in the experiment regretted it. It was observed that sensitivity and susceptibility to stimulation are part of the artist's life. The 30 subjects concurred that the experience was of value and the results were placed on display in a gallery in Frankfurt.

Fischer, Fox and Ralstin (1972) administered psilocybin to 21 college-age volunteer subjects. A test for brain damage and a creativity measure were administered before ingestion of the drug as well as 90 minutes and 270 minutes after ingestion. Under the influence of psilocybin, about half the subjects obtained scores resembling those of brain-damaged individuals, while the other half did not. Seventeen (17) subjects were able to complete the creativity measure 270 minutes after drug ingestion. A significant inverse relationship between their scores and the test for brain damage was noted. Figure-drawing tests were administered to several of these subjects. Drawings by subjects with the lowest creativity scores and the highest brain-damaged scores were judged to be the most "aesthetically pleasing" by outside evaluators, causing the authors to comment that one person's "brain damage" is another's "creativity." As for the group as a whole, sensitive intuitive subjects with large perceptual-behavioral variability and a field independent cognitive style were found to have creative experiences during the drug-induced state, while insensitive, practical, field dependent subjects with small perceptual-behavioral variability merely "got stoned." Of the subjects having creative experiences, only a few were able to combine these experiences with creative performance. It was observed (p. 35) that "the widely held generalization that hallucinogenic drugs impair performance cannot be maintained, since we have found that certain inter-individual differences may disappear under hallucinogenic drug-induced arousal, while others become manifest only under drug-influence."

These six studies indicate that creativity is not automatically enhanced by psychedelic drugs. Technical execution and evaluation often suffer. Indeed, the research literature (e.g., Abramson, Jarvik & Hirsch 1955; Abramson et al. 1955) demonstrates that LSD may have a negative effect on the concentration and motor performance of naive subjects. On the other hand, certain aspects of creative behavior sometimes change in positive directions. These changes are amenable to outside evaluation as well as to post-LSD evaluation by the artists

themselves.

### LONG-LASTING EFFECTS OF LSD

McGlothlin, Cohen and McGlothlin (1967) made an intensive study of 72 volunteer graduate students. In a preliminary study (McGlothlin, Cohen & McGlothlin 1964) involving only 15 subjects, no significant changes in creativity were noted following a 200 µg LSD session. A number of creativity tests were given before the session and were repeated one week after the session. However, some significant changes were reported on anxiety and attitude tests.

The 1967 study considered three groups of 24 subjects each, including an experimental group receiving 200 µg of LSD per session, a control group receiving 25 µg of LSD per session, and another control group receiving 20 mg of amphetamine per session. A large battery of psychological tests was administered to each group prior to the series of three 200-µg LSD sessions and again at intervals of two weeks and six months following the third session. Among the tests in the battery were three art scales, a measure of artistic performance, a test of imaginativeness, a test of originality, four tests of divergent thinking and a test of remote associations. As there were no systematic differences between the two control groups at the end of the study, they were combined for purposes of comparison with the experimental group.

In the experimental group, the most frequently reported change on a questionnaire completed six months after the third session was the statement by 62 percent of the subjects that they now had "a greater appreciation of music." The increase in number of records bought, time spent in museums and number of musical events attended in the postdrug period were also significantly greater for the experimental group. However, experimental subjects' scores on the art tests did not show a significant increase. The authors concluded (1967: 529) that the data "do not indicate that the increase in aesthetic appreciation and activities is accompanied by an increase in sensitivity and performance."

On the same questionnaire completed six months after the third session, 25 percent of the experimental subjects felt that their LSD experience had resulted in enhanced creativity in their work. However, the creativity tests showed no evidence to substantiate this subjective report for the experimental group as a whole or for those claiming greater creative ability.

The other tests in the battery produced provocative results in regard to personality variables and the ingestion of LSD. According to McGlothlin, Cohen and McGlothlin (1967: 532), "Persons who place strong emphasis on structure and control generally have no taste for the expe-

rience and tend to respond minimally if exposed. Those who respond intensely tend to prefer a more unstructured, spontaneous, inward-turning (though not socially introverted) life, and score somewhat higher on tests of aesthetic sensitivity and imaginativeness. They also tend to be less aggressive, less competitive, and less conforming."

On the one measure of artistic performance used (the Draw-A-Person Test), the LSD subjects showed a significant decrease in scores after six months. This finding may relate to changes in the subjects' perception of body image.

### LSD AND CREATIVITY TEST SCORES

Zegans, Pollard and Brown (1967) investigated the effects of LSD on creativity test scores of 30 male subjects chosen from a group of volunteer graduate students. On their arrival, the first battery of tests was given and certain physiological measures (blood pressure and pulse rate) were taken. The battery of tests included a measure of remote associations, a test of originality for word associations, a test for ability to create an original design from tiles, a free-association test and a measure involving the ability to perceive hidden figures in a complicated line drawing. A tachistoscopic stimulation test was also included to determine speed of visual perception. A dose of LSD equal to 0.5 µg/kg of body weight was added to the water of 19 subjects randomly selected to receive the drug. The other 11 subjects served as controls and did not receive LSD. After ingestion, all subjects were escorted to a lounge where they relaxed for two hours. Immediately prior to the administration of the second half of the test battery (which consisted of alternate forms of the same creativity tests previously given), the physiological measures were again recorded.

When the creativity test data were analyzed, it was discovered that the LSD group did significantly better than the control group on the retest for originality of word associations (a modified form of the Rapaport 1958 Word Association Test). Although most other comparisons favored the LSD group, no other results were statistically significant. Zegans, Pollard and Brown (1967: 746) concluded that "the administration of LSD-25 to a relatively unselected group of people, for the purpose of enhancing their creative ability, is not likely to be successful."

A further analysis of the data demonstrated that Zegans, Pollard and Brown were able to predict physiological reactions to a significant degree of accuracy on the basis of previously administered personality tests. Although it was also noted that the LSD subjects did significantly better than control subjects on the word association test, they performed badly on those tests

requiring visual attention (e.g., the tachistoscopic test, the title design test and the hidden figures test). It was suggested by the authors (p. 746) that LSD "may increase the accessibility of remote or unique ideas and associations" while making it difficult for subjects to narrow their attention on a delimited perceptual field. As a result (pp. 746-7), "greater openness to remote or unique ideas and associations would only be likely to enhance creative thought in those individuals who were meaningfully engaged in some specific interest or problem."

### MESCALINE AND THE CREATIVE PROCESS

Harman and his colleagues (1966) employed mescaline in an attempt to facilitate the creative process. The subjects included professional workers in architecture, engineering, commercial art, furniture design, mathematics and physics. They were asked to bring to their sessions a problem of professional interest that required a creative solution. A number of subjects had worked for weeks or months on their chosen problems without obtaining a satisfactory solution. It was decided to evaluate the creative output of each subject by means of psychological tests, subjective reports and the eventual industrial or commercial validation and acceptance of the finished product or final solution.

Following a pilot study in which both LSD and mescaline were used, a formal study was inaugurated. The sessions were individual in nature, each subject working alone and in silence, but with two or three other subjects working in different parts of the room. The dose for these sessions was 200 mg of mescaline administered in the morning, and was also combined with a stimulant (methylphenidate). An additional dose of the stimulant was administered at midday. The Purdue Creativity Test (Lawshe & Harris 1960), the Object Visualization Test (Miller 1955) and the Embedded Figures Test (Witkin 1950) were administered while subjects were free from the influence of mescaline and again during the psychedelic session.

The Purdue Creativity Test requests a subject to find as many uses as possible for each of a variety of pictured objects. The test is scored for fluency of ideas and range of solutions. The subjects showed an increase for both abilities under mescaline, but only in the instance of fluency of ideas was the increase (which averaged 30 percentile points) statistically significant.

The Miller Objective Visualization Test asks a subject to envision a two-dimensional outline figure folded into a solid. Most subjects solved these problems by attempting to visualize the figure "in the mind's eye." All of the subjects using this approach improved under mescaline. One subject used an analytical approach rather than a

visualization approach, which resulted in a decline in score. The other subjects used both visual and analytic approaches. In general, their scores improved and they tended to shift to a more direct visualization under mescaline. The improvement for the group as a whole was statistically significant.

The Witkin Embedded Figures Test involves distinguishing a simple geometric figure embedded in a complex colored figure. Every subject but one improved on this measure—some of them as much as 200 percent. The results of this test were highly significant: There was a shift from field dependence to field independence, a shift that some previous research had found to be related to creativity.

Questionnaires and subjective reports were also analyzed. About half the subjects reported that they had accomplished a great deal more during the session than would have characterized their usual workday. About 20 percent were unable to concentrate on their projects because they were diverted by other psychedelic effects, such as personal memories and insights. The responses of some 30 percent of the subjects fell between the two groups. All subjects reported positive, overall reactions while under the influence of mescaline.

When analyzed, the subjective reports yielded 11 factors: (1) a reduction of inhibition and anxiety under mescaline; (2) the capacity to restructure a problem in a larger context; (3) an enhanced fluency of ideas; (4) a heightened capacity for visual imagery; (5) an increased ability to concentrate; (6) a greater empathy with external processes and objects; (7) a heightened empathy with people; (8) a greater accessibility of unconscious material; (9) an increased motivation to obtain a solution; (10) an ability to associate dissimilar ideas; and (11) a visualization of the completed solution.

The last factor was illustrated by an architect's visualization of a shopping center he was to design (p. 224): "I looked at the paper I was to draw on. It was completely blank. I knew that I would work with a property 300 feet square . . . . Suddenly I saw the finished project. I did some quick calculations . . . it would fit the property and . . . would meet the cost and income requirements. . . . I visualized the result I wanted and subsequently brought the variables into play which could bring that result about. . . . I could imagine what was wanted, needed, or not possible with almost no effort." This example confirms Bowers and Bowers's conclusion (1972) that "unrealistic or fantastic experiences" may occur in the context of a creative act. Although they were referring to hypnosis, their remark may hold for some LSD experiences as well.

Two of the nine cited studies (McGlothlin, Cohen &

McGlothlin 1967; Zegans, Pollard & Brown 1967) suggest that unselected subjects cannot expect an increase in creative ability as a result of their participation in an LSD experiment. Another study (Fischer, Fox & Ralstin 1972) produced equivocal results. The six studies using creative people as subjects (Kiphoff 1969; Janiger 1967, 1959; Harman et al. 1966; Barron 1963; Leary 1963; Berlin et al. 1955) demonstrated an enhancement of creative functioning. These results must be regarded as tentative until additional work has been done in this field and until greater control is exerted over the many variables present. In the meantime, Cohen's statement (1964: 80-81) is worth considering: "Whether LSD does or does not increase creativity remains an open question. No systematic research is available to help in finding an answer. . . . All that can be said at this time about the effect of LSD on the creative process is that a strong subjective feeling of creativeness accompanies many of the experiences."

#### PSYCHEDELIC DRUG USE AMONG 180 ARTISTS AND 27 MUSICIANS

In 1969 half a dozen federally approved research projects concerning psychedelic drugs were still in existence (as opposed to several dozen that flourished in 1965). Because the studies were limited to the therapeutic utility of these drugs with psychoneurotics, alcoholics, narcotics addicts and terminal cancer patients, no opportunity was available in the U.S. for artists who desired a legal LSD session. As a result, many artists took psychedelic substances illegally.

In an attempt to discover the types of psychedelic drugs being used as well as the subjective reactions and opinions of the users, this author surveyed 180 artists (Krippner 1977, 1970b, 1969). All 180 artists reported having had at least one psychedelic experience.

Interviews with amateurs and Sunday painters were avoided. The artists in the survey were professionally committed to the creative life. Their talents and comparative development as artists did, of course, vary. Among the 180 were two award-winning film makers, a Guggenheim Fellow in poetry, a recipient of Ford, Fulbright and Rockefeller study grants in painting, several college faculty members and a number of musicians, actors and writers. Most of the artists were from the New York area. However, some of them lived in other cities in various parts of the U.S., Canada, England, France, Spain, Austria and the Netherlands. The group consisted of 151 men and 29 women. Most of the artists were in their twenties or thirties, many were in their forties, and some were in their fifties or sixties. Those who could not be interviewed personally were sent a questionnaire by mail.

These data suffer from inevitable biases. It was

necessary to ask questions that were positively stated in order to maintain rapport, and this procedure may have altered the responses in some cases. Furthermore, the sample was neither random nor systematic.

Masters and Houston (1968: 17) have defined a "psychedelic artist" as one "whose work has been significantly influenced by psychedelic experience and who acknowledges the impact of the experience on his work." An experience defined as "psychedelic" is delineated by Masters and Houston (1968: 88) as one in which awareness is profoundly different from the usual conscious waking state, from dreams and from familiar intoxication states. Sensory experience, thoughts, emotions and awareness of the internal and external world undergo marked changes as one's consciousness expands to take in the contents of the ordinarily inaccessible regions of the psyche. They further state that "of the classes of phenomena most common to the psychedelic experience, a few have particular relevance for the artist. They include (among others) accessibility of unconscious materials, relaxation of the boundaries of the ego, fluency and flexibility of thought, intensity of attention or heightened concentration, a breaking up of perceptual constancies, high capacity for visual imagery and fantasy, symbolizing and myth-making tendencies, empathy, accelerated rate of thought, 'regression in the service of the ego,' seeming awareness of internal body processes and organs, and awareness of deep psychical and spiritual levels of the self with capacity in some cases for profound religious and mystical experiences."

Art may be defined as the controlled structuring of a medium or a material to communicate as vividly and as movingly as possible the artist's personal vision of experience (Angus 1967). Thus, it was suggested to the 180 artists interviewed that the psychedelic artist is one whose paintings or other forms of artistic expression demonstrate the effects of psychedelic experience, which usually but not necessarily has been chemically induced. The work may have been produced as a *result* of psychedelic experience, *during* one of the artist's psychedelic experiences, in an attempt to *induce* a psychedelic experience, to *remind* someone of a psychedelic experience or to *facilitate* a psychedelic experience triggered by something other than the work of art. Each artist was asked whether or not this description agreed with his/her point of view.

When this description was presented to the 180 artists surveyed, 155 agreed with the definition, 18 gave a qualified endorsement and seven disagreed. Two artists agreed with the statement, but pointed out certain problems that arise in defining psychedelic art. A photographer, Irwin Gooen, stated that all art can be termed "psychedelic" because "art gives the viewer a feeling of

sharing something with an already expanded consciousness—that of an artist.' The poet Allen Ginsberg noted that the type of consciousness produced by LSD or peyote often resembles the type of consciousness produced by Yoga, religious discipline or peak experience. Ginsberg continued, "All the art that I always have been interested in—even before my use of psychedelic chemicals—grows out of that area."

Each of the 180 artists was asked if s/he considered him/herself to be a psychedelic artist. Six did not answer, 13 answered negatively, 144 answered affirmatively and 17 gave a qualified affirmative answer. For example, Walter Boward, a painter and newspaper editor, found the term "visionary artist" more valid than "psychedelic artist," noting that "all art attempts to expand consciousness and, in that sense, is psychedelic."

Of the 180 artists surveyed, 171 reported having had at least one psychedelic experience, insofar as they understood and interpreted the term. The other nine recalled experiences that they felt would probably be termed "psychedelic," although they hesitated to utilize a label that they felt had been commercialized and misused.

When asked whether or not they had ever ingested a psychedelic substance, 162 of the artists answered affirmatively, while 18 responded negatively. For example, a set and costume designer, Joseph Felician, had never ingested such chemicals as LSD, but used self-hypnosis that he often preceded with the chanting of prayers to produce an altered state of consciousness. A Canadian artist had never used psychedelic substances, but did utilize a type of meditation he referred to as "choiceless awareness." A California painter stated that he attained alterations in consciousness by means of Yoga. Other artists reported having used Zen, fasting, chanting or achieving the experiences spontaneously. All of the 18 artists who had never used psychedelic substances reported finding creative benefits in their nonchemical psychedelic experiences.

The artists surveyed were asked whether or not their psychedelic experiences (chemically as well as nonchemically induced) were generally pleasant. An unqualified affirmative response was given by 149 artists, while 26 gave a qualified affirmative response. In the latter cases, it was stated that some of their initial trips were unpleasant, but that their later experiences were pleasurable. Two artists answered this question negatively and three others did not respond. An interior decorator described his psychedelic experiences as "always stimulating artistically, whether pleasant or unpleasant." A painter noted that his experiences were "always meaningful, no matter what." Simon Vinkenoog, a Dutch poet, described the reason why his first experience was unpleasant: "In 1959,

LSD was inflicted upon me by a team of unqualified doctors-to-be who messed up some of my most beautiful experiences ever by having me fill in silly forms, by hooking me up to an electroencephalograph going 'momomomomomomomo' . . . ."

The painter Arlene Sklar-Weinstein had only one psychedelic session but claimed that "it opened thousands of doors for me and dramatically changed the content, intent, and style of my work." Sklar-Weinstein also stated that she was still working with the material that manifested itself during the time of her LSD session, which was guided by a trained psychologist.

Of the substances mentioned by the 164 artists, marijuana was the most popular, being mentioned by all but one of the respondents. Marijuana mentions were followed by LSD (illicitly manufactured), hashish, dimethyltryptamine (illicitly manufactured), mescaline (illicitly manufactured), peyote, morning glory seeds, tetrahydrocannabinol (probably illicitly manufactured phencyclidine), psilocybin (illicitly manufactured), yagé, diethyltryptamine (illicitly manufactured) and Hawaiian woodrose seeds. Smaller numbers of artists had tried pharmaceutical LSD, mescaline and psilocybin. A few artists had sampled bufotenine, ibogaine, Kava-kava, nitrous oxide and a variety of illicitly manufactured preparations that combined psychedelic substances with amphetamines (e.g., DMZ, MDA, STP, Peace). The artists' claims regarding illicitly manufactured preparations must be viewed with some caution for the simple reason that many preparations being sold as LSD, mescaline or psilocybin may only have a minuscule amount—if any—of the chemical in the capsule or tablet that is sold (Krippner & Leibovitz 1978: 23; Krippner 1970a). A number of artists claimed to have obtained psychedelic effects from substances generally not considered psychedelic: amphetamines, opium, methylphenidate, cocaine, ketamine and amyl nitrite.

The most provocative question of the survey was "How have your psychedelic experiences influenced your art?" None of the artists felt that their work had suffered as a result of psychedelic experience, although some admitted that their friends might disagree with this judgment. Rossak (1969), for example, has implied that Allen Ginsberg's predrug poetry was superior to his later poetry. Five of the artists stated that their psychedelic experiences had not influenced their work one way or the other. The others cited a number of effects that fell into three broad categories: content, technique and approach. In most cases, the artists reported effects that fell into more than one category.

Of the group, 114 artists stated that psychedelic experience had affected the content of their work, with the

most frequently cited example being their use of eidetic imagery as subject matter. Roger Aplon, a Chicago writer, described his fantasies with peyote and mescaline as prime subject matter for his poems and stories. Irwin Gooen attempted to interpret his visualization to others by painting with light on photosensitive paper. The husband-wife team, José and Miriam Arguelles, reported having seen "the most beautiful patterns and mandalas in a clear sky; these in turn influence the lines of our drawings." After ingesting LSD, Jean Millay claimed to see auras around people. She attempted to reproduce the colors of these energy fields in her artwork.

Of the artists surveyed, 131 said that there had been a noticeable improvement in their artistic technique resulting from their psychedelic sessions: A greater ability to use color was the example mentioned most frequently. One California painter described his participation in the LSD research study conducted by Janiger (1959). He commented, "I always had been afraid to use color in my work, but a single LSD session helped me to conquer that fear."

Of the artists, 142 attributed a change in their creative approach to the psychedelics. One artist claimed that his work had become more representational; two others asserted that their work had become more abstract. Mentioned even more frequently was the claim that psychedelic experience had eliminated superficiality from the artists' work and had given them greater depth as people and as creators. Some referred to their first psychedelic experience as a "peak experience," as a turning point in their lives. "My dormant interest in music became an active one," said a musician, "after a few sessions with peyote and DMT." Another said that a psilocybin experience "caused me to enjoy the art of drawing for the first time in my life." The Dutch writer Ronny van den Eerenbeemt stated, "When very young, I started writing stories and poems. The older I got, the more I had a feeling of not being able to find something really worthwhile to write about. My psychedelic experiences taught me that what I used to do was no more than scratch the surface of life. After having seen and felt the center of life, through the psychedelics, I now think I do have something worthwhile to write about." The poet Alex Glidzen wrote a verse about his LSD experience:

I walked through the door of myself  
into harpsichordal melodies rolling  
wave flow into floorcracks filling  
caverns emerging tidal wave.  
I wove underbridge, weary of rolling,  
and walked up a bank tussocky with fern  
to return to sandpile visions

of oranges as edgeless jewels,  
shimmering pendants of sun.  
I became Bacchus juggling grapes and died.

Thus, the artistic approach of about half the artists surveyed reportedly changed due to psychedelic experiences. However, rather than accepting these data on their face value, one should view them as suggestive of the information that could be obtained from a more representative sample of artists questioned in greater depth.

In 1968 and 1969 this author interviewed 27 pop musicians (25 instrumental performers and two vocalists), most of them rock performers (Krippner 1970b). All 27 had smoked marijuana and 24 had tried LSD. Five musicians stated a preference for smoking marijuana before performing, seven felt it impaired their performance, while the others claimed it had neither a positive nor a negative effect. Three musicians claimed that their performance was enhanced by LSD, while six claimed the substance had no effect on their performance. The other 15 were of the opinion that LSD and similar drugs had a negative effect on the quality of their performance, although many claimed that some of their most creative ideas had come to them during psychedelic experiences. This consensus tallies with the position taken by Bill Graham, the rock music entrepreneur (Stafford 1969: 6): "For the most part the musicians I've seen perform under the influence of acid—it was close to tragic. . . . I've known of cases in which a gig had to be cancelled because a certain party was up on Cloud Nine. . . . [However,] I don't know anyone who has used it and found it detrimental. . . . It has made musicians more serious . . . about their music and what they are about."

Some composers have combined drug-influenced mood, lyrics and texture to produce a song that the psychedelic enthusiast refers to as "a real trip." Examples often cited include the Beatles' "Lucy in the Sky with Diamonds," the Rolling Stones' "You Turn Me On," the Byrds' "Eight Miles High" and the Grateful Dead's "Dark Star." Some groups combine simple lyrics with a complex musical texture that demands structure and interpretation from the listener who is in an altered state of consciousness.

These findings parallel those of Baumeister's discussion (1984: 344) of acid rock and its features that derived from drug use: "emotional ambiguity," "interest in novel sensations" and the "impatiently creative desire to explore complex and subtle elaborations." The psychopharmacological properties of LSD and similar drugs did not directly produce the musical forms, but apparently "created mental states with certain preferences and receptivities." Consequently, the music assumed features

that corresponded to these mental states.

In conclusion, this author's interviews indicated that very few artists and musicians created or performed during a psychedelic experience. However, most of those interviewed felt that the experience itself had been of artistic value. It should be recalled that the assertions of LSD's so-called schizophrenic effect on creative people typically were based on cases in which an individual painted or wrote *during* a psychedelic session. However, the musicians and artists interviewed generally realized the deleterious effects LSD would have on their performance. Therefore, if the drug was used for creative purposes, it was ingested at a time when pressures to perform or create were absent.

In many instances, the effects of LSD and similar drugs have been long lasting. Arthur Hoener (1963: 44), a painter and sculptor, observed: "I find the continuing influence of the drug experience upon my work most interesting. . . . In my paintings . . . form is altered only slightly, but the aesthetic concepts have changed considerably. They are now more abstract and universal in attitude, and there is a greater emphasis on the relationship of the viewer to the spatial modulations."

The merit of the psychedelic artists will be determined by the test of time. However, revivals of psychedelic art, music and fashion in Western Europe and on the East and West Coasts of the U.S. are variously reported (e.g., Elder 1985).

### POSSIBLE OUTCOMES

According to Barber, Spanos and Chaves (1974: 139), the research literature on altered states of consciousness suggests relationships "between responsiveness to test suggestions . . . and propensity for involvement in imaginative activities." These relationships may be explained in terms of role models, demand characteristics of the task, and other factors. Experimentation with LSD and similar drugs often demonstrates these relationships, because subjects' reactions to psychedelic substances are heavily influenced by expectancy, personality and setting (Masters & Houston 1968). The same factors may influence reactions to LSD in nonexperimental informal situations.

The varied reactions of both artists and nonartists to LSD and similar drugs make it difficult to conceive of a uniform psychedelic state. Perhaps psychedelic substances could be conceived of as triggers that evoke certain experiences. If an experimenter and subject have agreed, implicitly or explicitly, on the type of phenomena to be experienced, the outcome is somewhat more assured. If the suggested outcome is directed toward unusual experiences, the chances are greater that some type

of creative experience or creative behavior may emerge from an alteration in consciousness.

Is it sufficient to explain these phenomena on the basis of a trigger that leads to unusual experiences—if this has been one's expectation—that then may lead to enhanced creativity? Not quite. Why should any trigger at all be necessary if the goal is mere fantasy? Why not just tell an artist to fantasize in an ordinary waking state and expect a creative product to emerge? Bowers and Bowers (1972) have suggested that the information-processing style differs in ordinary and nonordinary consciousness. Tart (1975) has proposed 10 major subsystems of consciousness that vary from one condition to another. These subsystems (exteroception, interoception, input processing, unconscious processes, memory, emotion, evaluation, space-time sense, sense of self, motor function) involve the handling of information. The chemical changes brought about by LSD interact with the situational variables to alter the amount and type of information available to the brain.

For example, exteroception and interoception deal with sense perception of the external and internal environments. Schulman (1966) has claimed that openness of perception is generally a condition for creativity. Oster (1966) has observed the heightening of colors and the shift in figure-ground relationships during an LSD session and has discussed how these visual effects can be duplicated with the use of moiré patterns (e.g., placing a screen over a multicolored patterned object isolates the colors from a color-diluting background, thereby enriching them). Oster (p. 39) also dealt with Tart's subsystem of input processing, noting that LSD "makes us more aware of the visual world with the usual rejection of 'useless' information."

Horowitz (1964) has related figural forms with eyes closed to the retinal ganglionic network (a complex circuitry of interlacing neurons fed by stimuli from the rods and cones) and the anatomic structure of the eye (e.g., the retinal blood vessels, the shadows of which could give rise to wavy, radiating, filigreed elements). In addition, the fibers of the lens are arranged around six diverging axes. This could cause the star-like rays seen around distant lights. Optic rotation, floaters in the vitreous humor, and lens artifacts might give rise to additional designs, which—under conditions of special facilitation—impinge on higher central nervous system centers. Similar hypotheses have been posed by Klüver (1966) in his account of mescaline imagery. Siegel and Jarvik (1975) have described how the observer's experience of sensory fields can combine with emotion and memory to produce unusual imagery. An artist, of course, can transform such an image into a creative product of merit (Hoener 1963).

A nonartist can enjoy the image, be terrified by it, attempt to recreate it by nondrug means or even attempt to render it artistically.

Several subsystems (e.g., unconscious processes, memory, evaluation) are probably involved in the experience of newness and strangeness commented on by many LSD subjects (Korngold 1963-64). The aesthetic experience typically involves an awareness of something strange, unusual and incredible. Both the nonartist and the artist can experience surprise and wonder as their information-processing mechanisms are altered, magnifying the strange perceptual and cognitive material that emerges in psychedelic experiences.

If one's sense of self is placed in abeyance and if one's space-time sense dissolves, a mystical experience may occur. If the subject attempts to write about this incident, or draw or paint it, his/her motor functioning may be impaired simply because the usual flow of information to the hands and fingers is inoperative. What is more typical is that the creative person uses the psychedelic

experience as raw material for an eventual painting, composition, poem or invention (Ebin 1961). Other individuals may have access to aesthetic information once the experience is over and subsequently demonstrate a greater interest in art or music. Thus, each of Tart's 10 subsystems may be affected by the ingestion of LSD. In the case of artists and musicians, states of consciousness are evoked with properties that are reflected in the creative products.

Little scientific research has been undertaken with LSD and similar drugs since the recent advances that have been made in information theory, brain physiology and the study of consciousness (e.g., John & Schwartz 1978). It would appear that the time is ripe for the resumption of work in LSD and creativity. The increase in knowledge and in sophistication would allow science a unique opportunity to study the creative act. Creativity has been a perpetual enigma. Now, at last, it may be prepared to divulge its secrets.

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