Into the mystic: scientists confront the lazy realm of spiritual enlightenment.

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After spending 8 years training in the meditative practices of Zen Buddhism, neurologist James H. Austin spent a sabbatical year from 1981 to 1982 at the London Zen Center. On a pleasant March morning, while waiting for a subway train on a surface platform and idly glancing down the tracks toward the Thames River, Austin got his first taste of spiritual enlightenment.

Instantly, the panorama of sky, buildings, and water acquired a sense of what he calls "absolute reality, intrinsic rightness, and ultimate perfection." He suddenly shed his formerly unshakable assumption that he was an individual, separated from the rest of the world by a skin suit. The sky and river remained just as blue, the buildings just as gray and dingy, yet the loss of an "I-me-mine" perspective imbued the view with an extraordinary emptiness, he says.

Within seconds, other insights dawned. These included the notion that Austin had experienced an eternal state of affairs, had nothing more to fear, couldn't possibly articulate what had happened, and felt a rush of mental release that impelled him to take himself less seriously.

In Zen and the Brain (1998, MIT Press), Austin described how this brief experience spurred him to investigate brain processes that underlie spiritual or mystical encounters.

Austin's fellow neurologists haven't taken his approach either to heart or to brain. The harsh reality of science is that those who study mysticism and meditation rarely hear the sound of even one hand clapping among their colleagues, to paraphrase a Zen saying.

Austin's Zen instructor told him that although many people attain what she called "moments of no-I," such experiences seem incomprehensible to those who haven't had them. For scientists, creatures of the rational thinking embraced by the l7th-century Enlightenment, claims of mystical enlightenment have long smacked of self-deception, gullibility, mental disorder, charlatanism, or all of the above.

However, a small band of researchers has begun to probe the nature of mystical

experiences and other extraordinary psychological happenings. They've issued a manifesto of sorts in Varieties of Anomalous Experience (2000, American Psychological Association). The book explores scientific evidence on altered states of consciousness associated with mystical experiences, near-death incidents, alien-abduction reports, and other so-called anomalous events.

The new book--edited by Etzel Cardena of the University of Texas Pan American in Edinburg, Steven J. Lynn of the State University of New York at Binghamton, and Stanley Krippner of the Saybrook Graduate School in San Francisco--doesn't take an X Files approach to this material. The three psychologists see no reason to assume that supernatural worlds and people-nabbing extraterrestrials exist outside the minds of people who report them.

Instead, the three academics want to launch a science to study the characteristics of human consciousness that make mystical experience possible. Their focus on a spectrum of conscious states defies the mainstream-neuroscience notion that there's a single type of awareness, which is either on or off, as if controlled by a light switch. Conscious experience instead comes with a dimmer switch that varies in sweep and intensity from one person to another and gets wired up mainly by cultural forces, in their view.

Psychologist William James said much the same in The Varieties of Religious Experience, first published in 1902. The title of the new volume pays homage to James' book.

"Anomalous experiences aren't just reported by people on the fringe [of society] or who have mental or neurological disorders," Cardena says. "Let's not renounce mystical experience as inherently impossible to study scientifically."

Athough mystical experiences can't easily be diced up and quantified, they affect a surprisingly large number of people. National surveys in the United States and England find that roughly one-third of adults say that they've had, for example, a moment of sudden religious awakening or felt close to a powerful, spiritual force that seemed to lift them out of themselves.

Such experiences may extend far back into human prehistory. According to archaeologists, cave and rock art from Africa to Australia depicts shamans' supernatural encounters, which occurred during conscious states achieved through chanting, dancing, hallucinogenic drugs, or other means (SN: 10/5/96, p. 216). In traditional societies, shamans act as spiritual leaders and healers.

"Mystical experiences occur on a continuum," says psychologist David M. Wulff of Wheaton College in Norton, Mass. "Even if they're not religiously inspired, they can be striking, such as the transcendent feelings musicians sometimes get while they perform. I have colleagues who say they've had mystical experiences, although they have various ways of explaining them."

In Varieties of Anomalous Experience, Wulff reviews current scientific evidence and theories about mystical experience. He defines such events as those that deviate sharply from a person's ordinary state of awareness and leave the person with an impression of having encountered a higher reality. Mystical encounters are rare and fleeting, yet they stand out as defining moments in the lives of those who have them, Wulff says.

They can include a sense of existing in a unitary place outside of space and time or feeling immersed in a kind of objective or ultimate reality that eludes verbal description. For many people having mystical experiences, physical objects recede from view in the wake of feelings of peace, joy, and having encountered the sacred or divine, Wulff reports.

The most systematic scientific study of how mystical experience alters people's lives will probably never be replicated. In 1966, Berkeley, Calif., physician Walter Pahnke randomly selected half of a group of 20 Protestant seminarians and gave them the hallucinogenic drug psilocybin before the entire group listened to a radio broadcast of a Good Friday service. Those who didn't receive psilocybin got a B vitamin that caused the skin to flush, thus serving as a placebo.

After the service, those who ingested psilocybin reported having had experiences resembling those of classic mystics, such as a feeling of oneness with God or ecstatic visions. The B vitamin group recalled more mundane reactions. Immediately afterward, participants learned whether they had received drug or placebo.

Six months later, the researcher surveyed the participants. After 25 years, another researcher contacted seven of those who had received psilocybin and nine who had gotten the placebo. In both follow-ups, members of the psilocybin group cited many more positive changes in their attitudes and behavior that they attributed to the Good Friday broadcast than placebo-group members did.

Pahnke's work suggests that healthy people who are open to mystical experiences and have them in supportive situations enjoy lasting, positive aftereffects, Wulff notes.

In other situations, he points out, mystical encounters can turn sour. For example, in Varieties of Religious Experience, James cited the writings of English poet John Addington Symonds in which he described periodic "moods" resembling mystical experiences, complete with loss of a sense of self and obliteration of space and time. But the poet reported dreading these moods.

In contrast, some people stage mystical states for their own ends. James characterized most self-proclaimed mystics as superficial and petty but thought that a small number of people possess mind-altering qualities "indispensable to the world's welfare."

In the past 20 years, investigations of epilepsy patients have linked reports of mystical and paranormal experience and religious preoccupation to bursts of electrical activity in the brain's temporal lobes. A novel written by Mark Salzman, Lying Awake (2000,

Knopf), revolves around a nun who fears that medical treatment for her temporal lobe epilepsy will also wipe out her vivid religious visions.

In How We Believe (2000, WH. Freeman and Co.), Michael Shermer of Occidental College in Los Angeles speculates that many religious visionaries and founders of major religions may have had temporal-lobe seizures that jump-started their mystical journeys.

Whatever happened inside the skulls of the ancient mystics, most people today who report mystical and so-called peak experiences don't have brain or mental ailments, Austin says

Some people consider the hallucinations and altered thinking of schizophrenia as akin to mystical visions. But this mental disorder exhibits only a superficial similarity to mystical experiences, Austin contends. Consider that schizophrenia lasts for decades, disrupts psychological development, heightens one's sense of self and isolation, and often includes the torment of being berated by imaginary voices--opposite extremes of mystics' reports of their transcendence.

Neither schizophrenia nor mystical experience has been comprehensively explained, Wulff maintains, although theories abound. Sigmund Freud viewed mystical reports as a sign of a person's regression to an earlier stage of development. Freud's psychoanalytic disciple Carl Jung described mystical experience as a positive process springing from a shared, unconscious reservoir of human experiences and themes.

In the 1960s, humanistic psychologist Abraham Maslow proposed a hierarchy of "self-actualization" that was topped off by having peak experiences of ecstatic fusion with the world. Lower in the hierarchy are experiences that psychologists now refer to as "flow" and attribute to creativity.

Some researchers argue that mystical experiences, from Zen enlightenment to born-again religious conversions, sprout from the types of mental errors that people commit in experiments that probe logical thinking. Examples include seeing what one expects to see and assuming that random events are connected and have meaning.

These theories don't attempt to explain why some individuals have more mystical experiences than others do or how culture and ritual behavior shape such events, Wulff says. "There does seem to be an innate capacity in the human brain for having mystical experiences that needs to be explored," he remarks.

People who enter deep hypnotic states with great ease offer valuable opportunities for studying mystical experiences, in Cardena's view. Deep hypnosis typically triggers sensations of merging with a bright light, becoming one with the world, and other responses that correspond with those in descriptions of near-death experiences and of shamans' activities in traditional societies, the Texas psychologist says.

Hypnosis inspires much controversy in scientific circles. Some psychologists argue that

during hypnosis, a person simply tries to please the hypnotist by responding to his or her suggestions but doesn't enter a new conscious state.

Only a portion of hypnotized people appear to manage their responses in this way, Cardena argues. Using in-depth interviews and self-report questionnaires, psychologist Ronald J. Pekala of Coatesville Veterans Affairs (VA) Medical Center in West Chester, Penn., has distinguished between people who mainly react to a hypnotist's suggestions and those who rapidly enter deep hypnotic states on their own.

Some individuals in the latter group are especially fantasy-prone and generate vivid visual images that they can partially control and remember later. Others, dubbed dissociaters, experience hypnosis in a different way. Their sense of self or personality changes in ways that are profoundly meaningful, they say during hypnosis, but that they forget immediately afterward.

In a study of 12 highly hypnotizable college students, Cardena told each of them to go into a deep hypnotic state as he counted from 1 to 30. Within about 15 minutes, they all began to report altered states of awareness that included sensations of floating, flying, and becoming separate from their physical bodies. They recalled encountering a limitless sea or other unusual worlds, experiencing sounds as colors or other strange sensory mixes, existing outside time and space, uniting with a bright light, and reaching enormous mental calm.

Their descriptions of deep hypnosis contain many of the themes found in shamans' "soul journeys," Cardena asserts. Shamans' soul journeys typically include vivid flights or falls through openings in the earth. The shaman then reaches a culturally defined supernatural world where he contacts spiritual allies for various purposes.

In traditional societies, people often prize personal reflection. in semiconscious states. Shamans represent a small minority of people best able to enter and control altered states of consciousness (SN: 9/25/99, p. 205).

However, the experiences of highly hypnotizable dissociaters more closely resemble what happens in spirit possessions, as experienced by shamans and others in traditional cultures, Cardena says. Spirit possessions usually don't include vivid sights. Instead, the practitioner feels dizzy, overcome by a perceived change of body or self, and pressed down by a weight on the shoulders frequently interpreted as a spirit's presence. The visited person remembers little of what transpired during a possession.

"The parallels between shamanic and deep hypnotic phenomena strongly suggest that there is a universal disposition to having extraordinary experiences," Cardena contends.

Cognitive and brain scientists appear more inclined to dismiss the mystical realm than to study it. "There's nothing in our conception of what a human is that allows this stuff to fit in," comments psychologist Eleanor Rosch of the University of California, Berkeley.

Austin suspects that a better understanding of brain areas that contribute to the individual notion of self will lead to insights about spiritual enlightenment. Parts of the cortex and the inner brain, including the thalamus and the amygdala, work together to generate each person's sense of "I-me-mine," he theorizes. During mystical or spiritual episodes, transmission of chemical messengers, including consciousness-altering opioids, within this brain system might undergo dramatic changes.

Rosch, who has studied Buddhist meditation traditions since 1977, takes a more radical stance. She rejects the popular scientific assumption that the brain somehow weaves together perceptual information emanating from objects and events that exist independently of perceivers and of each other.

Along with neuroscientist Christine A. Skarda, Rosch turns that theory on its head. People initially perceive the world through their sensory organs as a seamless whole with no separation of self from surroundings, Rosch and Skarda say. In a series of operations, the brain combines contrasting elements, such as different wavelength frequencies of light, into perceptions, such as color, that inform behavior.

As people employ the perceptions that the brain wrests out of a web of interconnected sensations, they become conscious of looking at the world as separate beings. That's an eminently handy ability, Skarda contends, but it's a creation of the perceptual system rather than a reflection of an absolute state of affairs.

Much evidence on how brain cells operate can be interpreted within this framework, according to Skarda, who had worked at the University of California, Berkeley and now studies meditation practices at a Buddhist institute in India.

Skarda's approach suggests that the brain cultivates concepts that can be tailored flexibly to different situations, Rosch asserts. For instance, the concept of big takes on a different implication when applied to fleas, as opposed to elephants. And the concept of great, as expressed in the exclamation "Great!" can involve feelings ranging from excitement to disgust, depending on the situation. A set of conceptual definitions, or representations, in the brain couldn't keep its balance on this shifting terrain of meaning, Rosch argues.

Moreover, people form these kinds of concepts over a background of nonconceptual thought, she says. Nonconceptual thinking is often hard to describe in words. Still, it fires up intuition, artistic experiences, and the indescribable feelings attached to phenomena such as doing complex mathematics, feeling love or grief, and finding spiritual enlightenment.

In fact, Rosch notes, if the brain indeed fashions a sense of self and of external objects from a seamless fabric of sensations, then the moments of "no-I" that meditators such as Austin ascribe to enlightenment may signal the recovery of a larger reality, as it's initially picked up by our senses. As Zen practitioners have long held, everyday perception--even when brokered by tens of billions of brain cells--may be a useful fiction.

Still, even far less provocative approaches to mystical experience draw blank stares from many scientists, Wulff notes. "I don't think this is likely to become a popular area of research," he says.

Seeds of mystical research, however, may flower as researchers increasingly turn to examine positive aspects of mental life, such as the nature of happiness, Cardena remarks.

"Psychologists haven't really entered into the study of mystical experience, but they're parked just outside the door," he says.

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