
Recurrent dreams: Clues to conflict

Do dreams bear any relation to how a person feels while awake? Sigmund Freud and his psychoanalytic offspring held that the imagery of dreams has psychological significance for the dreamer. Biologist Francis Crick, the co-discoverer of the DNA structure, more recently proposed that dreams have no meaning; in his opinion, they randomly purge the brain of unneeded and overabundant associations stored in networks of brain cells (SN: 6/13/81, p. 378).

Recurrent dreams, however, do not fit into Crick's picture of disorganized, random dream production, say psychologists Ronald J. Brown and Donald C. Donderi of McGill University in Montreal. In fact, they report in the March *JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY*, people experiencing a recurrent dream tend to report more psychological distress than people who either no longer have or never had recurrent dreams. The researchers conclude that decades-old clinical observations, most notably those of psychoanalyst Carl G. Jung, are correct in suggesting a relationship between recurrent dreams and psychological conflict.

"Most people outside of the psychoanalytic schools have treated dreams as a kind of accident," says Donderi. "But the state of recurrent dreaming appears to be related to reports of decreased psychological well-being, regardless of the validity of psychoanalytic theory."

The investigators used newspaper and radio ads to recruit 30 people who were currently experiencing a recurrent dream that had appeared for at least six months, 18 individuals who had had a recurrent dream in adulthood that appeared for at least six months but had not recurred for a year or more, and 19 people who reported never having experienced a recurrent dream in adulthood. Volunteers first completed a dreaming questionnaire; if a remembered series of dreams contained the same theme, characters and emotions, it was considered to be recurrent. Six standard measures of psychological functioning were also administered. Subjects then wrote down remembered dreams for 14 consecutive days. They slept at home, not in a sleep laboratory, and each subject recalled about one dream per night. The dreaming questionnaire and psychological tests were then repeated.

Recurrent dreamers, when compared with the other two groups, reported marked elevations in anxiety, depression, stressful life events and minor physical complaints. Their 14-day dream reports yielded larger proportions of aggressive, anxious and upsetting dream content than reports of the comparison groups. All subjects scored within or near the normal range on psychological

tests, add the researchers, but "the data indicate a systematic and statistically significant deficit [for recurrent dreamers] across the entire range of well-being measures." Subjects who no longer experienced a recurrent dream had the highest well-being scores and most tranquil dream content, says Brown, supporting Jung's contention that a recurrent dream ceases once some type of psychological conflict is resolved.

Another Jungian aspect of dreams, archetypality, was also found to be most common among former recurrent dreamers. Archetypal dreams contain bizarre, emotionally charged, often metaphorical elements and, according to Jung, reflect fundamental aspects of psychological functioning. Former recurrent dreamers, notes Brown, may have developed a greater awareness of their own unconscious processes through resolving a conflict and thus remember more dreams with archetypal content.

— B. Bower

The magnetic attraction of periodicities

Scientific interest in the cyclic patterns of nature has passed through cycles of its own. The most recent upswing in the hunt for periodicities in the earth's history was sparked by the suggestions that mass extinctions have occurred regularly every 26 million years or so (SN: 10/1/83, p. 212) and that at least one mass extinction was caused either by meteorites that bombard the earth about every 30 million years (SN: 6/2/79, p. 356) or by episodes of volcanic eruptions.

While scientists go back and forth over the statistical validity of studies showing similar periods for events in a number of geologic records, they are becoming increasingly intrigued by the possibility that all these periodic processes are somehow linked. Two new papers, taking very different tacks, focus on the possible connection between extinctions and the rate at which the earth's magnetic field reverses its direction.

In the March 13 *NATURE*, Poorna C. Pal of the University of Ilorin in Nigeria and Kenneth M. Creer at the University of Edinburgh in Scotland resurrect a 30-million-year (Myr) pattern in the record of magnetic field reversals after the pattern had recently been questioned on statistical grounds (SN: 10/19/85, p. 245). Instead of analyzing the entire 165-Myr geomagnetic history, as other researchers have done, Pal and Creer focused on the last 83 Myr, in which the reversals have been relatively frequent. Pal and Creer reason that if impacts do disturb the geomagnetic field, their effect would be most evident during such periods of frequent reversals, when the field is the most unstable.

The researchers found that the reversal frequency increased sharply during three periods, each separated by 30-Myr intervals: at 8 to 12 Myr ago, 35 to 45 Myr ago and 65 to 75 Myr ago. They point out that the spurts coincide with global-scale catastrophic episodes signaled by mass extinctions, impact craters, geochemical anomalies and the production of small glass grains called tektites, which are thought to be created by impacts. Pal and Creer suggest that "the approximately periodic recurrences of cat-

astrophic episodes caused reversal spurts during [times of frequent reversals]."

The researchers argue that during periods of frequent reversals, comets or asteroids bombarding the planet enhance the turbulence in the earth's fluid outer core. Many scientists believe that, somewhat like a giant dynamo, the motion of these electrically conductive core fluids produces the geomagnetic field (SN: 10/5/85, p. 218). Reversals may be triggered by changes in the fluid motion, such as increased core turbulence.

However, according to Richard Muller at the University of California at Berkeley, "the model that they [Pal and Creer] describe fails miserably when you try to work it out in detail." Last December, Muller announced at the American Geophysical Union meeting in San Francisco that he and Donald Morris, also at UC Berkeley, have taken a more detailed look at how impacts might trigger field reversals. In their model, the dust thrown up into the atmosphere by impacts cools the planet, enhancing the growth of ice sheets at northerly latitudes, which changes the planet's moment of inertia by effectively bringing water closer to the earth's axis. This in turn speeds up the earth's rotation, disrupting the flow patterns of the liquid core and changing the geomagnetic reversal rate. Muller says he can't discuss the details of this model because the work has not yet been published.

David E. Loper and his co-workers at Florida State University in Tallahassee have also explored the relation between extinctions and the magnetic field. But unlike Pal, Creer and Muller, Loper does not think impacts play an important role in triggering either reversals or extinctions. Loper's group believes that the natural activity within the earth causes episodes of frequent reversals and bouts of vigorous volcanic eruptions, which, some researchers have argued, are responsible for mass extinctions (SN: 3/16/85, p. 172). Loper presented his ideas March 14 at a symposium on the environmental effects of volcanism, held at the University of Rhode Island in Kingston.