

# Sleep on a problem...

## it works like a dream

**S**PENT the night naked in a public place again? Late for an important appointment? Picking your teeth up off the floor? You may not see the need for this nightly torture, but the typical person dreams every night, implying that dreaming is an evolutionarily adaptive state.

Despite over four decades of research elucidating the neurophysiology of sleep (see Maquet *et al.*, 2005 for a recent meta-analysis) there is currently no consensus about *why* we dream. But the idea that dreams are given to us for our advantage and instruction is very old: Antiphon, a Greek living in the fourth century BC, wrote the first known descriptive book of dreams, designed to be used for practical interpretations (Crisp, 1990). In the second century AD a similar book was written by Artemidorus – he claimed to have gathered his information from ancient sources, including an Egyptian dream book dating from 2000BC (Schatzman, 1984).

In support of these antiquated sources, and in opposition to the modern mantra ‘you snooze, you lose’, there are several 19th- and 20th-century accounts of inspirational, or problem-solving, dreams. Anecdotal accounts of artistic and scientific insights occurring in dreams make fascinating reading (for example the excellent book by Martin, 2002).

Romantic poet Samuel Taylor Coleridge (1772–1834) is widely cited as claiming that he dreamt his poem *Kubla Khan* word for word. Further endorsement of the creative value of sleep comes from the composer Richard Wagner (1813–1883), who stated of his opera *Tristan and Isolde*:

*For once you are going to hear a dream, a dream that I have made sound... I dreamed all this: never could my poor head have invented such a thing purposefully.* (Krippner, 1981)



**JOSEPHINE ROSS** with some fascinating anecdotal accounts of creative and scientific insight in dreams.

In an explicit effort to capitalise on sleep, Robert Louis Stevenson (1850–1894) reportedly trained himself to dream plots for his literature, notably crediting the plot of his novel *Dr Jekyll and Mr Hyde* to his unconscious thought processes:

*For two days I went about wracking my brains for a plot of any sort, and on the second night I dreamed the scene at the window and a scene afterward split in two, in which Hyde, pursued for some crime, took the powder and underwent the change in the presence of his pursuers.* (Terry, 1996)

Apparently of a similarly strong work ethic, Elias Howe (1819–1867) lends further support to the contention that there is no need to confine inspiration to waking hours. He patented the first sewing machine following a dream in which an essential element of his invention was presented metaphorically. In his dream, he was in Africa running from wild cannibals who attacked him with sharp spears. Each spear had a hole at its tip. Upon waking in a cold sweat, Howe is said to have realised that the trick to making his sewing machine work was to move the thread hole up to point of the needle as opposed to the base (Krippner, 1981).

The creativity of unconscious thought was the focus of the Surrealist art movement, and many paintings of this genre are said to be direct reproductions of dreams. For example, Salvador Dali described work in his surreal period as ‘hand-painted dream photographs’ (Ades, 1982).

Impressive examples of problem solving dreams are also in evidence amongst the sciences. Legend has it that Dimitri Mendeleev (1834–1907) was able to write out for the first time the entire periodic table – which forms the basis of modern chemistry – following a metaphorical dream. Mendeleev is said to have realised in his dream that the basic

chemical elements are all related to each other in a manner comparable to the themes and phrases in music (Krippner, 1981). The structure of the chemical benzene was similarly revealed in a dream to the chemist August Kekulé (1829–1896), who related his dramatised account as follows at a scientific festival:

*Again the atoms were juggling before my eyes... my mind's eye, sharpened by repeated sights of a similar kind, could now distinguish larger structures of different forms and in long chains, many of them close together; everything was moving in a snake-like and twisting manner. Suddenly... one of the snakes got hold of its own tail and the whole structure was mockingly twisting in front of my eyes. As if struck by lightning, I awoke... Let us learn to dream, gentlemen, and then we may perhaps find the truth.* (Strunz, 1993)

Albert Einstein's 1905 theory of relativity was apparently inspired by a dream in which he was sledding down a mountainside, watching the appearance of the stars change relative to his own speed (Mendlam, 2003). Einstein's contemporary Niels Bohr (1885–1962) reputedly gained insight into how electrons remain in their orbits from a dream of horses running around a race track. Based on this image Bohr was able to formulate his quantum theory, a scientific breakthrough for which he was eventually awarded a Nobel Prize. Otis Loewi repeated this seemingly implausible feat, describing the origin of his own Nobel prize-winning contribution to science as follows:

*In the night of Easter Saturday, 1921, I awoke, turned on the light, and jotted down a few notes on a tiny slip of paper. Then I fell asleep again. It occurred to me at six o'clock in the morning that during the night I had written down*

## WEBLINKS

Quantitative Study of Dreams: [dreamresearch.net](http://dreamresearch.net)  
University of California's dream database:

[www.dreambank.net](http://www.dreambank.net)

International Association for the Study of Dreams:  
[www.asdreams.org](http://www.asdreams.org)

Online resource centre: [www.dreamtree.com](http://www.dreamtree.com)

*something most important, but I was unable to decipher the scrawl. That Sunday was the most desperate day in my whole scientific life. During the next night, however, I awoke again, at three o'clock, and I remembered what it was. This time I did not take any risk; I got up immediately, went to the laboratory, made the experiment on the frog's heart, and at five o'clock the chemical transmission of nervous impulse was conclusively proved. (Loewi, 1953)*

Claims to have gained valuable inspiration from dreams persist in popular culture. Although his award was perhaps not as impressive as a Nobel Prize, sporting

legend Jack Nicklaus credited a crucial improvement in his golf game to dreaming of a new way to grasp his club (cited in Dement, 1974). The most frequently covered song of the 20th century – The Beatles' 'Yesterday' – was reportedly written by Paul McCartney following a dream. McCartney was so impressed by this work that he subsequently had to be convinced that the melody was of his own creation (Delano, 2003). Echoing this creative confusion, poet Laureate Ted Hughes tells of his dismay – and subsequent delight – at dreaming the full text of his play *The Wound*. In his dream the work was written by contemporary playwright John Arden:

## DISCUSS AND DEBATE

Is there a true distinction between waking and sleeping cognition? If so, under what category do we consider lucid dreams?

Can the content of dreams ever be truly creative, or are they always just a product of waking experience?

How does culture influence the interpretation of dreams and their function?

Do recurring dreams highlight recurring problems, and do they cease when the problem has been solved?

*Have your say on these or other issues this article raises. E-mail 'Letters' on [psychologist@bps.org.uk](mailto:psychologist@bps.org.uk) or contribute to our forum via [www.psychforum.org.uk](http://www.psychforum.org.uk).*

*And I was furious that this play, which seemed to be so absolutely what I wanted to write, should have been written by somebody else, and that he'd got it. And then as I lay there, it gradually dawned on me that, in fact, if I had dreamed it, it was my play. (Skea, 1976)*

An example of a lucrative nightmare is offered by horror writer Stephen King, who admits of his 1988 novel (and eventual screenplay) *Misery*.

*I fell asleep on the plane and dreamt about a woman who held a writer prisoner and killed him, skinned him, fed the remains to her pig and bound his novel in human skin. His skin, the writer's skin. I said to myself, 'I have to write this story'. Of course, the plot changed quite a bit in the telling. But I wrote the first forty or fifty pages right on the landing here, between the ground floor and the first floor of the hotel. (Nicholls, 2004)*

An interesting attempt to test endorsement of the problem-solving function of dreams in 'ordinary' people is provided by Schatzman (1983a, 1983b, 1984, 1986). He distributed 'brain-teasers' via the mass media, along with incubation instructions. He received numerous anecdotal examples of dreams solving these problems, although he has no way of knowing how many people took part. An exemplary anecdote related by Schatzman (1984) involved a colleague's incubation of the problem 'Which two English words begin and end with the letters H and E?' Schatzman's friend reportedly contacted him with the correct answer and the following dream report:

**Salvador Dali's 'Dream caused by the flight of a bumblebee around a pomegranate one second before waking up'**

