



## Learning in Dreams: Psychological Growth

By Robert Hoss, MS

Aside from the task learning and performance improvement discussed yesterday in part 1 of this article, a number of contemporary psychologists and researchers have concluded that dreams promote a particular type of psychological learning – adaptive learning – where we simulate our waking-life situation, test various solution scenarios, and dream about the past to prepare for the future.

The 2017 IASD book *Dreams That Change Our Lives* contains more than 100 reports from persons who were experiencing an emotionally conflicted waking-life situation, then woke from a dream that dealt with it in a manner that was truly “life changing.” The nature of these stories suggests that life-changing dreams are not simply a random occurrence, but indeed are the brain’s response to a complex, less than ideal life situation. The dreams have elements that provide a more complete solution to the problems of the dreamer than anything they could have imagined cognitively – that is, using their conscious intellect.

To list just a few of these researchers: Donald Stewart and David Koulack in 1993 and Richard Coutts in 2008 proposed that dreams help us adapt to stress by testing mental plans and modifying our concepts and social skills. According to Antti Revonsuo (2000) at the University of Turku, dreams simulate threatening events and rehearse avoidance responses in the safe virtual environment of the dream – all to better prepare us for dealing with waking life. More recently (2016), Revonsuo, Jarno Tuominen, and Katja Valli have suggested dreams also simulate social situations.

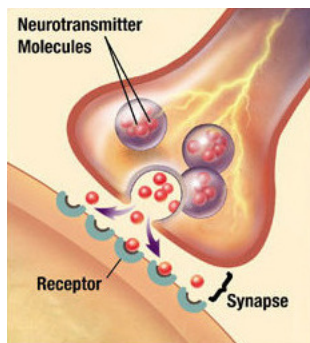
Carl Jung was one of the earliest psychological theorists to propose that dreams bring about change, by virtue of what he called a transcendent function – a natural self-regulation that

enables transition from one condition of the psyche to another, manifesting as a new attitude toward oneself and life. The unconscious introduces a compensating scenario, which generally opposes, balances, or corrects for misconceptions of the conscious ego that have left the person stuck in an emotionally conflicted situation. Patrick McNamara (2002) at the Boston University School of Medicine termed this compensating scenario a “counterfactual” (a mental simulation of what might happen if a different decision were made) and observed the introduction of counterfactuals in 97 percent of dreams studied in a 34-subject study.

In dream sleep this process may begin with reactivating a memory – such as an unresolved emotional problem or conflict – perhaps triggered by a waking-life experience that day. Researcher Ernest Hartmann (2011) observed that dreams “illuminate,” generally via a visual metaphor, the patterns in the dreamer’s memory related to the emotional concern.

### ***The Fleeting Opportunity for Change***

Erin Wamsley (2016) states that sleep doesn’t just cement memory in its original form (termed memory consolidation); it extracts “meaning” from memories. For example, researcher Jessica Payne (2012) at the University of Arizona found that when subjects learned a word list pre-sleep, the subsequent dream reports resulted in more of the “gist” of the word list and not so much the words themselves.



Dreams reflect memory consolidation, or rather re-consolidation, in the sleeping brain – actually “changing” your memory. The process may be similar to that found in waking-state memory reconsolidation studies whenever permanent change is observed. A study by Karim Nader, Glenn Schafe, and Joseph LeDoux in 2000 concluded that even strongly consolidated memories (old learning) can be made unstable and readily open to change when we recall them. The synapses involved deconsolidate; that is, the small spaces across which neurons communicate with each other chemically unlock. And they stay unlocked for about four to five hours. If a critical new learning experience takes place during that “reconsolidation window,” the old learning can be permanently altered or replaced by the new learning.

In a review of animal and human studies from 2004 to 2009, Bruce Ecker observed three common elements in the process that brought about permanent change. He called this the “transformation sequence”: (1) reactivate (recall and deconsolidate) the original learning; (2) create a “mismatch schema,” an experience contradictory to that original learning (similar to Jung’s “compensating scenario”); (3) juxtapose the old and the new during the reconsolidation window, such that the memory reconsolidates with the new learning.

This process seems to have occurred in the following dream. The dreamer was offered a teaching position in an area of expertise he had abandoned many years before. He felt he could never resurrect his talents, so he decided to turn the position down the next day. But that night, he dreamt:

*I am wandering through a desert and see an old rusty car. I look inside and find a man who is not moving. I am going to give him up for dead [recall/illuminate/deconsolidate]. My unknown companion from behind states he may be just asleep and urges me to wake the man [contradictory schema/compensation/counterfactual]. I argue that it is useless, but after much discussion I reluctantly give in and shake the man [juxtaposing the old learning with the mismatch schema and testing the schema in a learning experience, resulting in a reversal]. When I do, both the man and the car come to life and the car transforms into a newer car [emotional reinforcement influencing reconsolidation].*

What is interesting is that the change or new learning seemed to be achieved within the dream. The next day the dreamer accepted the assignment, having reversed his decision. It was only upon later reflection that he fully recognized the role the dream may have played in changing his decision.

Dreams appear to recall and reactivate memory fragments. And they reorganize, interleave, and reintegrate those fragments of the recent event with past experiences, and other content, to prepare for the future. As researcher Robert Stickgold at Harvard Medical School (2016) puts it: "When you wake, you understand how the world works better than you did when you went to bed."

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© 2018 Robert Hoss. Robert Hoss, MS, is a director and past president of the International Association for the Study of Dreams, and director of the DreamScience Foundation ([dreamscience.org](http://dreamscience.org)). A former scientist, he has training in Gestalt therapy and a background in humanistic psychology and Jungian studies. He is the author of *Dream Language*, coauthor of *Dream to Freedom*, and coeditor of *Dreams That Change Our Lives* and the forthcoming two-volume reference book *Dreaming*. His work has been featured in ten others books, four journals, a PBS special, *Reader's Digest*, *Prevention*, and *USA Today*.

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