

# Distinguishing continuity/discontinuity, function, and insight when investigating dream content

Commentary on “The continuity and discontinuity between waking and dreaming: A Dialogue between Michael Schredl and Allan Hobson concerning the adequacy and completeness of these notions”

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**Summary.** This commentary argues firstly that we are so far from an account of what causes dream content that we should be cautious in linking that partial knowledge to a quest for function. Secondly, that it may be that all current data on the causes of dream content allow for the null hypothesis of dream function, that is, dreams do not have a function and dreaming has not been selected for during evolution. Thirdly, that the difficulty in investigating dream function is that the experimental designs currently used are of necessity correlational rather than a random assignment to dream content conditions. And, fourthly, that the continuity / discontinuity continuum needs to be augmented by an insight dimension.

## Continuity / discontinuity and dream function

As is clear from the discussion between Hobson and Schredl (2011) there is a wide variety of models of dream content, and these can be placed at various points on the continuity / discontinuity continuum. This continuum represents the degree to which each model holds that waking life individual differences, such as differences in waking life concerns, can be mapped onto dream content. For example, a delirium view (Hobson) will emphasise discontinuity, and a difficulty for independent judges in identifying from a group of people which one or ones had a particular dream or type of dream. Towards the continuity end of the continuum we have claims for waking life experiences (Schredl), and concerns (Hall and Domhoff) being incorporated into dreams. Wherever each model sets the mean level of continuity / discontinuity for dreams in general, individual dreams will obviously have a combination of these two factors, a point that Hobson and Schredl agree on.

However, what is striking about the discussion between Hobson and Schredl is the high frequency of sentences that mention both content and function of dreams, and which ask about the implications of continuity or discontinuity for dream function. Furthermore, other ideas related to function also occur frequently in the discussion, such as that dreams “prepare the person for future experiences in waking life,” and that dreaming is a “practice session”. It may be that in discussing continuity and discontinuity we might sometimes speculate about whether we have evolved to have dream content as described by each model, but when there is so much still to investigate about the relationship of dream content to waking life, the frequent leaps in the discussion to the issue of function (14 times, I counted) seems,

to me, premature. I would note positively that Bryant et al. (2011) do not address dream function in their report of empirical studies of the relationship between dream content and thoughts that have been repressed in waking life.

To summarise this section, the data we have on the dimension of continuity / discontinuity of dream content with waking life may currently tell us little about any possible evolutionary dream function.

## The importance of always considering the null-hypothesis for dream function

To illustrate how arguably all current evidence regarding the relationship of dream content to waking life can be in accord with the null hypothesis of no dream function, we can take the following current themes in dream research.

(a) As stated in the discussion, dreams can be about future experiences, with the creation of “an infinitely varied set of possible scenarios”, a view also taken by Blechner (2001) in his theory of oneiric Darwinism. However, this does not show that any benefit or function is occurring. (This is aside from the empirical data of very low correspondences between dream content and waking life experiences over the 12 days after the dream, and which are significantly lower than the day-residue effect; Figures 1-3 in Blagrove, Henley-Einion et al., 2011.) In the same way, even if many dreams are about threats, or fears, it does not follow that some threat simulation function (Revonsuo, 2000), or fear extinction function (Nielsen & Levin, 2007), is occurring. These references to imagined scenarios, threats or fears may just be a purposeless, but meaningful, characteristic of dreams.

(b) The production of metaphors in dreams can fit functional proposals for abstraction occurring during dreams. However, as pointed out by Antrobus (1977), there is a simpler alternative to this active abstraction process. This is that when one attribute of a waking life conception is taken and placed in a new, dream context, a metaphor results. Antrobus proposes that the missing attributes (those that were present in waking life but which are not present in the dream metaphor) may be lost by a random process, rather than by

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some selective process. So, even something as wondrous as the production of metaphors in dreams, as caused by the incorporation of separated single attributes into new contexts, followed by the waking life appreciation of such metaphors, could be analogous to the procedures involved in forming and discussing a Tarot card array, and then confabulating new knowledge from the array.

(c) Hartmann (2011), with his model of thin boundariness and novel associative thinking during sleep, proposes that dreams involve the “integration of new material with old material, guided by emotion.” However, although he states that dreams may thus have an adaptive function, he does allow the possibility that they may occur for no functional reason; the latter is detailed also in the epiphenomenal view of Flanagan (2000).

(d) Even the dream-lag effect may be given a non-functional explanation. Whereas the resurgence of incorporations of waking life events and experiences into dreams at 5-7 days after the events and experiences has been proposed as suggesting a week-long memory consolidation process (Blagrove, Henley-Einion et al., 2011; Horton, 2011; Nielsen et al., 2004; Nielsen & Stenstrom, 2005), an alternative explanation is that there could instead be some memory retrieval effect in operation, such that events from 2-4 days previously are rarely incorporated into dreams, whereas events from 5-7 days previously are somehow more available. It may even be that memory retrieval in waking life for some classes of events is better for events 5-7 days previously than for events 2-4 days previously. It is thus not necessary to propose some memory consolidation function to explain the U-shaped time course of incorporations into dreams, although this proposed function is a plausible explanation for that time course, and one that is admittedly made even more plausible by the dream-lag occurring for REM but not N2 dreams (Blagrove, Fouquet et al., 2011). To summarise this section, as Hobson states in the discussion, dreaming may be “not a means to an end but an end in itself.”

### The difficulty in investigating dream function

The main difficulty in investigating dream function is not that we are reliant on self-reports of dream experiences, or that the person reporting the dream may then think about the dream after telling it, as Schredl states in Box 5, for such reporting issues and confounds are present in much of experimental social and cognitive psychology. The main difficulty in addressing dream function is because of the necessity in experimental designs of assigning participants to groups or conditions at random. Instead, in the case of dream content, the participants in effect assign themselves to conditions, such as people undergoing divorce who dream of their spouse versus those who don't (in Cartwright, 1991), or participants who dream of the motor task they were set versus those who don't (in Wamsley et al., 2010). Therefore studies of the effects of dream content are, almost invariably, correlational rather than experimental, a point described at length by Blagrove (1992). Such studies investigate the association between a dream characteristic and a subsequent waking life variable, neither of which is controlled by the experimenter. This means that such studies cannot give evidence for dream content having an effect, in that it may be that those who will recover from their divorce also dream of their spouse (Cartwright, 1991), and those who initially

have poor performance on a maze learning task, and later have the greater improvement in performance, also dream of the task (Wamsley et al., 2010). These authors, and many other authors, of course, recognise and address this aspect of their experimental designs. But this nuance that they are careful to recognise is lost in many reviews that explore dream function.

There is to my knowledge no evidence that dreaming has a functional effect, or is associated with any brain process that is having a functional effect, as the literature on the supposed consequences of particular dream imagery is composed of correlational studies, just as is Wright & Koulack (1987), which Schredl cites regarding a “problem-solving function” of dreams.

### Continuity / discontinuity and insight

In the discussion Schredl proposes that “dreams, especially dreams that show thematic continuity to waking life, help the dreamer to mature” in the sense of promoting “personal growth”, and may even provide “some ideas for change”. Thus dreams may have the effect of “helping the dreamer to understand himself or herself better.” Such a view has been proposed by many others, and with such phrases as “The innocence of dreams” (Rycroft, 1979) and “We never lie in our dreams” (title of chapter 5 in Blechner, 2001). This suggestion fits with current experimental work on the return of the (temporarily) repressed in dream content (Bryant et al., 2011; Wegner et al., 2004).

Whether dreams can stimulate such insight and personal growth is, obviously, an empirical question, and experiments to investigate this are needed, as detailed by Blagrove (2009). Hobson's “over 20 years' experience in working with dreams” can, of course, lead to a hypothesis, or rather null hypothesis, that dreams do not have this effect of insight. As Hobson states: “I never learned anything from a client's dreams that I did not already know.” But, of course, the scientific method is not solely the generating of hypotheses, or the authoritative stating of null hypotheses. The scientific method requires the testing of these hypotheses by experiment.

Such experiments could test the strong hypothesis, that dreams give us information about ourselves that we do not know when we are awake, or the weaker hypothesis, that thoughts and beliefs that are being overlooked or ignored during the day can surface in dreams, which act as a reminder to us when we wake. Such experiments could also investigate whether REM dreams are more facilitative of such personal growth than are NREM dreams, or whether the time of night that the dream occurred affects the level of insight that can be obtained as a result of considering the dream. And such experiments would obviously have to involve a comparison with control conditions, such as just talking about issues, as Schredl points out in the discussion, or interpreting for oneself a report of someone else's dream, or interpreting a report of one's own waking life episode, as Clara Hill et al. (1993) have done. Whether examining dream content leads to personal insight is an empirical question, and a very preliminary attempt at developing measures of such insight has been conducted by Blagrove et al. (2010), albeit without control conditions.

## Summary

The degree of meaning in dreams (i.e., their level of continuity / discontinuity with waking life), the degree of insight (if any) that can be obtained from dreams, and the possible evolutionary functions / lack of function of dreams, are separate empirical issues. Or, as put by Domhoff (2011), “psychological meaning and cultural usefulness have to be distinguished from each other and from the issue of adaptive function in order to develop an adequate theory of dreams.” Only for the first of these three empirical issues are there currently any substantial data.

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