Dream Thought Should Be Compared With Waking World Simulations: A Comment on Hobson and Colleagues’ Paper on Dream Logic

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Hobson and colleagues’ study is based on the assumption that in the waking we constantly think in a logical, purposeful and empirically relevant way, which is not the case. There are various degrees of thought control in the waking and consequently different degrees of rationality in the mind’s productions. The conclusions of the Hobson and colleagues’ study might have been very different if the authors had compared dream reports with similar products of the waking mind. For instance, spontaneous remembrances and anticipations share several features with dream reports and informal oral descriptions of an autobiographical episode have a similar sequential organization. Daydreaming includes bizarre elements, abrupt changes of topic, and sometimes a loss of reality testing. Dreaming is producing world simulations, in other words imagining. Like the products of waking imagination it is not devoid of unrealistic aspects and discontinuities. In order to understand why a dreamer imagined a certain event, we must take into account that the human mind is prone to use metaphors. Dreaming has to use metaphors because it cannot literally represent abstract ideas and long and intricate plots. It has to replace them by concrete and rather simple, short, and homogeneous events. Although I disagree with Hobson and colleagues’ method, I am happy to see that the gap between their conception of dreaming and the views of cognitive psychologists is narrowing, now that they admit dreaming is not totally or essentially irrational.

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The implicit assumption of Hobson and colleagues when they compare dream thought and waking thought is that in the waking we constantly think in a logical, purposeful and empirically relevant way. This is not the case. The degree of thought control—and consequently of mental content coherence—varies in the waking state according to the type and aim of cognition. The highest degree of control can be observed when we try to solve an objective problem, and more generally in goal-directed tasks. We think logically and make full use of our executive functions such as working memory, cognitive inhibition, and attention management. They are
used in a flexible way, taking into account the feedback of the external world. The consequence is that the mind’s productions are rational. (I prefer the term rational to that of logical, which should be restricted to certain types of inferences, e.g., deduction and implication.) However, if the problem involves important personal needs that would not be fulfilled by a rational solution, or if people make decisions within a group, irrational elements may influence the process of problem solving. That is why scholars, like other persons, sometimes make irrelevant decisions that a purely rational approach would have avoided. Other kinds of cognitive activity rely much less on thought control. For example, informal verbal exchanges between friends or family members are elliptical and subjects to abrupt changes of topic. The lack of logic is still more complete in our wandering thoughts. For this reason, a promising line of neuroscience research on dreaming consists in comparing the neural substrate of dreams with the so-called default-mode network involved in waking wandering thoughts and world simulations. The arguments in favor of such a comparison and a detailed summary of the recent research on this topic can be found in Domhoff (in press).

Dreaming is not performing actions, delivering a speech, or perceiving the external world. It consists in producing world simulations, that is, in imagining. Consequently the coherence of dream content should be compared to that of the similar waking cognitive functioning: producing imaginary content. Dreaming is at the end of a continuum that starts with waking spontaneous remembrances and anticipations (Montangero, 2009). The latter share several features with dream thought: they are unintentional, they consist in concrete scenes involving visualization and they are parsimonious. They do not represent all the details that could be seen on a video and they skip steps in the sequence of events. Daydreaming and dreams have still more common features. Studies of mental content during relaxed wakefulness have shown the presence of unexpected content, bizarre elements and momentary loss of reality testing, that is, considering the products of imagination as perceptions (Foulkes & Fleisher, 1975). Moreover abrupt changes of topic seem to be more numerous in waking streams of thought than in dream reports (Reinsel, Antrobus, & Wollman, 1992). The conclusions of the Hobson and colleagues’ study might have been very different if the authors had compared the coherence of dream content with that of similar products of the waking mind, for instance daydreaming or reports of an autobiographical episode.

A research has shown similarities between the sequential organization of informal oral descriptions of an autobiographical episode and of dream sequences. Reis and colleagues (1999) segmented into the smallest possible sequential units 16 dream reports from 10 participants, collected upon awakening in REM sleep during the third or fourth cycle of sleep. The sequential relationships between each unit and the successive one were categorized and quantified. The percentage of the different categories of relationship (causal, teleonomic, script-like, plausible) was identical in the dream reports and in the waking descriptions of a recent salient autobiographical episode given by the same participants. In contrast, the frequency of the categories of sequential relationship in the descriptions of what the participants did during the preceding morning was different from what was observed in dream reports.

Taking into account that dreaming is imagining renders dream reports less surprising. I can imagine that I am going to perform a task I am not likely to actually
do (for instance, some people can imagine for a moment they are astronauts or opera singers). Let us consider the very unrealistic dream given as an example in Hobson and colleagues’ paper. If Hobson had imagined, in the waking state, that he was going to prune a tree, it would have been plausible to imagine going toward the working place with the necessary tool, arriving at this place, asking to talk to the owner of the garden, seeing the thing that needed pruning, and discovering that the task would be less work than expected, disproportionate with regard to the importance of the means brought by Hobson. The whole sequence of actions is coherent, although a number of content elements are unrealistic. Considered as imaginary content, some of these unrealistic elements have a certain degree of coherence. For example, a Georgian house can make me think of the Georgian period and imagine the house peopled with its first inhabitants dressed in period clothes.

But why on earth would Hobson imagine he is going to prune a tree? To answer this question we must take into account that the human mind is prone to use metaphors. Lakoff (1993), who underlined the importance of conceptual metaphors in the waking, suggested that they are used to structure dreams. I think that dreaming processes, more than verbal production processes, have to use metaphors. In effect two types of content cannot be literally represented in dreams. First, dreams consist of concrete scenes with at least some visual aspects. A concrete and visual metaphor must be used in order to represent, for example, that the dreamer will have to prune a manuscript on request of a colleague or student. Reading never occurs at length in a dream and the ideas guiding the task of pruning a manuscript are abstract ones that must be replaced in a dream by something concrete and visual. Second, dream scenes are relatively short and simple, probably because during sleep the mind can process only a limited amount of information. Any sequence of events involving numerous steps, a long duration and various actions has to be replaced by a simple sequence. For these reasons, pruning a tree would be a good candidate to represent metaphorically in a dream a task a scholar is likely to do. I have naturally no idea about the personal experiences and ideas linked to the activity of pruning for Hobson. I only know that when you consider the general or encompassing meaning of an element of a dream report, the report usually becomes more coherent than at first sight.

To sum up, the method proposed by Hobson and colleagues does not seem relevant to me because it compares dream content with the form of waking thought which differs most from dreaming. Products of waking cognition that belong to the continuum including dreaming, such as informal conversations, spontaneous remembrances and anticipations or preferably daydreaming and the simulation of a fictional world would be a better choice. The fact that I disagree with the authors on this point (and on the overemphasis on REM sleep which I have no room to deal with) does not prevent me to observe our agreement on several other points. I am happy to see that the gap between Hobson, Kahn, and their colleagues’ conception of dreaming and the views we cognitive psychologists have on this topic is narrowing, now that they admit dreaming is not totally or essentially irrational. Undoubtedly dream content is both coherent and organized on the one hand, and unrealistic and not well controlled on the other hand. The two causes of the ill controlled aspects mentioned by these authors are also evident from a cognitive approach. First the cognitive executive functions are at least partially deactivated during sleep (Montangero, 1999), when a deactivation of regions of the prefrontal cortex can be
observed. Second, the lack of feedback from the external world plays a role in the irrational aspects of dreams. This lack of accommodation was already considered by Piaget (1962) as a main feature of dream production processes.

REFERENCES


