

Lucid Dreaming Wakes Up

Response to Commentary on “The neurobiology of consciousness: Lucid dreaming wakes up” by J. Allan Hobson

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1. Introduction

I am grateful to the commentators for their thoughtful and thought-provoking comments on my essay. Before responding to some of the substantive issues raised, I would like to emphasize one important general point.

In order to be respected as serious scientists, we need to create a united front and concern ourselves about our credibility with workers in the main stream of cognitive neuroscience. Only in that way will we ever gain the recognition we all seek. That means that we must eschew any and all mystical or hucksterish trappings in order not to be seen as a deviant cult, which must remain marginalized.

To accomplish this goal, we need to publish in mainstream journals to recognize and even to celebrate the skepticism that greets our claims, bend over backwards to assure our critics that we share their doubts and, above all, convince them of our commitment to advance the science of consciousness. There is no place for defiance, pique, hurt feelings about rejection, holier-than-thou self-justification, or paranoid pride in isolation.

When we tackle as difficult a subject as lucid dreaming, we must realize that most card-carrying neurobiologists will consider us to be nuts. They may well be right. We need to take our outlier position seriously, and to accept and understand it, even as we take steps to move closer to the center. If you don't want to move to the center, that's OK, too, but I do.

Definitional Issues. When I say that lucid dreaming is a “problematical” subject, I mean to emphasize that most people have never knowingly experienced it. Its very rarity and its distinctive features make it easy for our peers in cognitive neuroscience to dismiss us. Memory for non-lucid dreams is so poor that many people consider even the undoubtedly ubiquitous state of dreaming too evanescent to be approached by science. A half-century since Aserinsky and Kleitman and thousands of papers later (some published in very respected and widely read journals) has only

begun to crack the barrier of mainstream scientific awareness. Lucid dreaming, like it or not, *is* problematical.

Insisting that lucid dreaming occurs in REM sleep does not help. We can rightly call the REM sleep behavior disorder, REM sleep without atonia. Thus we might reasonably say that lucid dreaming arises out of REM sleep but its physiology can no longer be REM (unless we say that lucid dreaming occurs in REM sleep with frontal lobe activation). I insist that lucid dreaming is not a good way to study normal, non-lucid dreaming because the REM sleep associated with lucidity is no longer normal REM sleep. It is, I repeat, a hybrid state with features of both waking (frontal lobe activation) and REM (brainstem initiated take over of posterior brain function).

It is precisely this hybrid quality which makes lucid dreaming so attractive to scientists hoping to better understand the brain basis of consciousness. Lucid dreaming must be rare and evanescent precisely because it is not adaptive for a person (or any other mammal) to be in two very different states of consciousness at once. Consider psychosis for a minute and you will immediately see what I mean. Being in two different states of consciousness at once is not only hybrid, it is *dissociative*, by which I mean that lucid dreaming is neither REM nor wake but a little bit of both. To be lucid is to regain insight and control. That's interesting because it has strong implications for psychotherapy. Dissociation is a term rejected by many of you because you rightly emphasize the healthy aspects of lucidity. But from a formal point of view, a hybrid state is dissociated (in Mark Mahowald's sense of the word) by definition. Lucid dreaming has aspects of both normal REM and normal waking. It is, in this sense, dissociated. I am not saying, or even suggesting, that lucid dreaming is pathological. Au contraire, it is unusual

And its very bimodality is what excites the interest of a consciousness scientist.

2. Historical Background

My admittedly superficial and selective discussion of lucidity claimants was dictated more by the hope of anecdotal evidence for phenomenological credibility than by historical or ethnic comprehensiveness. I like Hervey because he is so dogged (even if I find his explanatory theory of dreaming as “clichés souvenirs” to be comically provincial) and I like Mary Arnold-Forster because she was so ardently feminist and so virulently anti-Freudian. They are both credible witnesses because they are both intelligent and free from the taint of mysticism.

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In other words, Hervey and Forster appeal to me because they are not embarrassingly dualistic. They have no cult ax to grind. What we don't need, if we want to be taken seriously by other modern scientists, is any suggestion that we are spiritualist backsliders. I honor freedom of religion, but I do not expect much help from those gurus who share my interest in altered states of consciousness but extol their virtues for their own religious cult reasons. I distance myself from anyone who has something spiritual to prove. We all have an innate and unfortunately powerful need to believe. Science is a welcome safeguard against this cognitive folly.

I am grateful to colleagues better read than me for references to our empirical scientist predecessors in the study of lucidity. We need all the help we can get but we need to pick our co-workers carefully to avoid even such tolerance of other-worldliness as my own special hero, William James. Because he was so deeply committed to spiritualism, James encouraged his hypnosis colleagues, the Myers's, to photograph his death in the hope of getting a snapshot of his soul leaving his body. Maybe they didn't trip their shutter at exactly the right time but there is no evidence of a soul in any of the hundreds of photos now on file in the Houghton Library at Harvard! Unaccountably, given his interest in exceptional mental states, James had little to say about dreaming, lucid or not. My theory is that he was such a deep sleeper that he had little or no dream recall. So I don't cite James in this connection although I wish I could because, despite hedging his bets about religion, he was a great thinker and writer. We could use him on our team.

I do cite Jay Vogelsong and Janice Brooks whose admirable descriptions of the results of their home-based research on lucidity should inspire like-minded amateurs to undertake self-study of their own subjective experience. While their initial impulse may have been spiritual, they are by now completely free of any such dubious motivation. There must be many more individuals like them out there and we should make the pages of our own journals and books open to them. I admire Brooks and Vogelsong, in part, because I myself was only circumstantially lucid and, in part, because it was impossible to get any publisher to print and distribute their wonderful book, *The Conscious Exploration of Dreaming*. Undaunted, they placed their text on the web where it can be downloaded free of charge. The point here is that history is being made every day and lay persons like Hervey, Forster and the Vogelongs are an important component of our effort.

3. Previous Laboratory Studies

Having lived through and watched with interest the sleep lab study of lucidity, it seems to me significant that the whole field fell so rapidly and so far out of favor. The NIH singled out sleep research for unstinting support in about 1960.

By 1975, it was all over. Perhaps no amount of scientific caution and no amount of conscientious consensus building could have helped dream science to survive this politically motivated downturn. We may simply never enjoy such a favorable funding climate again whatever we do.

But we can learn from our mistakes in the past even as we contemplate the present and plan for the future. In my opinion, the time period that I call Phase I of sleep and dream science (1960-1975) was characterized by sloppy thinking, by unproductive internecine fighting, and above all, by too little attention to physiology. It was neither physiology nor physiologists that did in sleep and dream laboratory re-

search. The psychologists themselves deserve the credit (and the blame) for their own failure. There are good scientific reasons for this failure.

The *first reason* is that science credits physiology and is suspicious of psychology. Many scientific philosophers even hold that first person witness is not scientific data. And yet we need first person subjective data to study consciousness. We therefore need to take every precaution to be sure that we are not merely harvesting just-so stories and popular beliefs. That is why I advocate the formal approach to all reports of subjective experience, as against the narrative, literary approach that is usually taken by psychologists interested in dream content. Formal analysis should also be applied to the mental content of lucid dreams. We need valid and reliable scales of lucidity, including affirmative probes. I think all this can be done and the development of consortia, in Europe and the US will help to establish the objectivity, validity and reliability of our instruments.

The *second reason* for the eclipse of sleep and dream science is that few psychologists are capable of understanding physiology much less doing it. We now need to train a new generation of young scientists with that rare combination of talents so much needed by the pursuit of cognitive neuroscience. Lucid dreaming research especially needs the complementarity of a rigorous psychology and state of the art neurophysiology in order to convince main stream science that our efforts are worth paying attention to and supporting. Any young person contemplating a career in brain-mind research today should consider a doctorate in one field (and let it be physiology) and at least two post-doc years in the other (let it be psychology).

A good example of the sort of work that is necessary to advance the science of lucid dreaming is the intersection of visual perception (and dream imagery), oculomotor control (both brain stem saccadic and cortical scanning mechanisms) and the interaction of the two systems in the dream image generation of REM vs. the image generation of lucid dreaming vs. the image generation of waking. The array of technical skills necessary to address this program does not reside in any living person today (and, at the rate that we are going never will) but the future of our field depends on at least partial solution of these psychophysiological problems. I daresay that even meager results of this kind would be publishable in *Nature* or *Science*, which would serve to call attention to the scientific power of the lucid dreaming paradigm.

There are many more substantive details to discuss than this general response covers. I look forward to pursuing them with each of you. Meanwhile, I hope that an ecumenical enthusiasm can bind us together and help us do the science that the occurrence of lucid dreaming now permits.