

## **Alpha and Dream Lucidity**

**Harry Hunt**

*Department of Psychology  
Brook University*

First I should begin with an apology. Of the three of us doing this work, Bob Ogilvie, Paul Tyson, and myself, I am the non-physiologist. But I am here and they're not, so I will try and give you an idea of our work over the past few years and where we think it's going, without being able to go into perhaps some of its more technical points.

In our first two studies, a pilot study in 1978 (Ogilvie, Hunt, Sawicki, & McGowan, 1978) and our main one, first published in 1982 (Ogilvie, Hunt, Tyson, Lucescu & Jeakins, 1982) we found an association between heightened alpha rhythms in the REM EEC with subsequent waking recall of lucid dreams. The experimental awakenings were based on high and low alpha readings for that subject's normative RE2M EeG, which had already been established. We waited until they were at least 5 minutes into REM and then we looked for arousal artifact free 30 second periods characterized by high and low incidence of REM alpha. Heightened alpha seemed to go with lucid recall. Now it's important to emphasize, as we'll see, that these subjects were not experienced lucid dreamers. They had good dream recall. Most of them had laboratory experience, and there was a degree of lucidity reported in about half the awakenings. Paul Tyson has just published a reanalysis of this data (Tyson, Ogilvie & Hunt, 1984), which is a more precise spectral analysis, looking in particular at alpha and theta frequencies. His reanalysis shows that heightened alpha went with pre-lucid dreams, not with fully lucid dreams. These pre-lucid dreams tended to be highly bizarre in content, whereas the fully lucid and the non-lucid episodes tended to be less bizarre. He also found that fully lucid dreams tended to show heightened alpha early in the REM period which then dropped off. Furthermore, we found significant relations between incidents of dream bizarreness and heightened alpha during REM, which Alan Moffit's group at Carleton has also found. But in the study I'm talking about here, alpha was a better statistical predictor of pre-lucidity than was bizarre content.

Now the problem, of course, is that as far we can tell, other laboratories haven't gotten this effect. We think there are two primary factors to consider here that may be responsible. First of all, the association is with pre-lucid dreams, i.e. with lucidity that is not as fully stabilized as that presented by LaBerge and Hearne. The second factor that we think may be important here is that we specifically filtered alpha rhythm out of the EEG and used that special filtering as the basis for experimental awakening, no one else has done this. In addition, each subject was allowed to set their own alpha level, depending on average alpha during their REM periods. But we think filtering is particularly important. If you don't filter specifically for alpha, we don't think you have a chance to detect this phenomenon visually from an ordinary EEG recording. Finally, we

question the frontal electrode placements in LaBerge's work. These are not optimal for alpha recording.

In our third study, which has only been reported so far by Bob Ogilvie at the SRS meeting in Italy a couple of years ago (Ogilvie & Wilkinson, 1983), we found no alpha effect with lucidity or pre-lucidity, (although we lumped them together in that analysis). But most unfortunately we changed two parameters of the experiment in this third study. We changed the subjects from good recallers who we tried to train to experience lucid dreams to experienced lucid dreamers who we recruited by newspaper. And secondly, we changed the procedure to that associated with the research of Stephen LaBerge. We asked the subjects to signal when they were aware of dreaming with eye movements and we also gave them cues (i.e., auditory cues), after a certain period of REM without such signals, that they were in REM period. So we don't know, unfortunately, if the change in findings is associated with a subject change or an experimental procedure change. We did find, once again, that heightened alpha in REM EEC in the 30 seconds prior to awakening was significantly associated with reports of dream bizarreness.

In addition, we got an unexpected surprise in terms of the effects of some of the signaling. Our cues often terminated the REM periods, from a physiological point of view. In other words, we often awakened the subjects physiologically. However, the fascinating thing, which we think might bear some looking into in terms of the general issues it raises, is that often the dreaming experience continued (most often with lucid or pre-lucid dreams). Psychologically these subjects were not awakened by the cue, did not recall the cue, and continued to dream. In other words, the technician went in to get the report because he assumed they were awake and as far as they were concerned, they were being interrupted in mid-dream, which was often lucid. I think it's useful to keep in mind, going back to some of Green's early observations, that normatively lucid dreaming, unless it's extraordinarily stabilized and skilled, is right on the edge of waking up. Also meditation and other altered states are often associated with organismic states showing mixed physiological and psychological features of sleeping and waking. So we suspect that lucid dreaming may develop potentially into a transitional organismic state, like meditation in physiological as well as psychological dreams, under certain circumstances and that this is worth keeping in mind.

In terms of future questions we'd like to see addressed in the literature, there is first the role of alpha in the EEG. Alpha predominance does make sense both in terms of ERG findings in meditation and findings of cognitive alertness and reflectiveness by other researchers associated with alpha in REM, independent of lucidity. The question is what is REM alpha? Is it reflectiveness, bizarreness, and or lucidity signaling?

It seems possible that the LaBerge type signalling and cueing could change the EEG of lucid REM. We did find that cueing our subjects who were in high alpha woke those people up at a disconcerting rate. And those were the people we had wanted to talk

to most. We also have a question about the relative merits and debits of using star lucid dreamers, including looking at the more normative range of lucidity in the lab. We think that non-signaling approaches to lucid dreaming have to be used at certain points. Particularly when you're looking at the content of lucid dreams and you don't want that changed by the possibility of what signaling will do to the dream. There could well be differences between natural lucid dreams and signaling dreams in terms of what happens to the EEG. These are things that have to be looked at. What we would like to see, and we think ideally that more than one laboratory should undertake this to settle these questions, would be to combine in one study the different methods and subjects that have been used.

One would need a study in which there was a group of very good recallers trained to be lucid and another group of subjects who were experienced lucid dreamers. Second, all of the subjects should be initially pursued through laboratory recordings in which no signaling or cueing was done, i.e. in which only post REM awakenings and questioning was pursued. Then with all of these subjects, one could switch over into the LaBerge type signaling methodology. This would tell us whether signaling has an effect and whether sub type of lucid dream (i.e. pre-lucid) and type of dreamer have an effect. It is only when one or more laboratories do something like this study that these kinds of questions can be settled.

### References

- Ogilvie, R., Hunt, H., Sawicki, C. & McGowan, K. (1978). Searching for lucid dreams. *Sleep Research*, 7, 165.
- Ogilvie, R., Hunt, H., Tyson, P., Lucescu, M. & Jeakins, D. (1982). Lucid dreaming and alpha activity: A preliminary report. *Perceptual and Motor Skills*, 55, 795-808.
- Ogilvie, R. & Wilkinson, R.T. (1983). Behavioral and physiological indicators of sleep onset. *Sleep Research*, 12, 162.
- Tyson, P., Ogilvie, R. & Hunt, H. (1984). Lucid, pre-lucid, and nonlucid dreams related to the amount of EEG alpha activity during REM sleep. *Psychophysiology*, 21, 442-451.