"LUCID" DREAMING AND PSI RESEARCH

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Dreams and Dreaming Sleep

It is intriguing to reflect that we spend a total of some six years of our lives within the strange 'inner universe' of dreaming sleep and yet for most people there is tantalizingly little recall of the often bizarre experiences of that state. It is a highly mysterious and veiled world, clearly full of potential—one has only to consider the many creative ideas in the arts and sciences that originated in night-dreams[1]—and there are also persistent indications that it harbors other fascinating phenomena that undoubtedly question current concepts of ourselves, time and the universe.

REM (rapid-eye-movement) sleep, as it is termed, occurs in a roughly 90-minute cycle starting from sleep-onset and alternates with "slow-wave-sleep" (SWS), which is divided by convention into stages, each consisting essentially of increasingly synchronized cortical activity.[2] Each night there is a total of about two hours of REM sleep in the normal adult. The REM periods lengthen at each cycle during the night's sleep, so that the first half of the night is largely slow-wave-sleep (so called from its accompanying large slow brain waves), while the second half has much REM. These two sleep states appear to be governed by separate neurological mechanisms.

There are a number of bodily signs of REM sleep. A major accompaniment is the presence of occasional bursts of ocular movements.[3] Respiratory rate is generally higher in REM sleep than SWS, and is more variable.[4] Penile or clitoral erection is present (although that cycle can be shifted out of phase with REM sleep by REM awakenings)[5] and there is massive paralysis of the bodily musculature (atonia), reflected in the inability of persons in REM dreams to make actual movements other than very slight twitches.[6]

The function of neither REM sleep nor dreaming has yet been satisfactorily explained. In the 1960s it seemed to be the case that REM sleep was essential to mental health, but later findings have not sup-

ported that view. For instance, some drugs can completely abolish REM sleep and yet individuals so deprived for very long periods evince no apparent abnormalities or deficiencies. Some depressed persons could, it seems, benefit from REM deprivation![7]

Theories concerning dreams have ranged far and wide. In recent times there have been, very basically, two theoretical approaches. Firstly, physiological notions have attempted to explain dreams as being the result of brain stimulations in sleep, or a by-product of computer-like processes going on while the brain is "off-line" to the outside world. Secondly, psychological ideas have tended to stress the significance of unconscious material which, it is claimed, arises in sleep and influences dreams.[8] In truth, dreams and their biological matrix remain open to speculation, a surprising fact after the millenia of man's interest in dreams. Perhaps some of the ancient beliefs concerning some curious abilities of dreams, which were suppressed by subsequent belief systems, might hold insights worth pursuing with modern technology and experimental techniques.

Dreams and Psi—Ancient Ideas

A consistent feature of several ancient societies was the belief that dreams were conducive to the reception of information from both the distant present and the future. Since these notions were developed over a considerable period, it would be arrogant and unscientific of us to dismiss the topic without considering whether early people had actually discovered some important and useful characteristic of dreaming sleep.

The ancient Egyptians thought that dreams were messages from the gods. The technique of dream incubation was practiced, whereby a person requiring, say, future knowledge would sleep in a temple, probably after certain rituals, and have an appropriate dream which would be interpreted by the Oracle.[9] A discourse published in the XIII dynasty (c 1770 BC) listed a number of dream activities, with simple comments as to whether they were auspicious or not. A concept of opposites was applied to some interpretations. Thus, the dream of something apparently pleasant, could mean that an untoward event would happen.[10]

In early Chinese society, dreams were attributed to the nocturnal wanderings of the spiritual soul, or "hun." In the released state it could communicate with the souls of others and with the dead.[9]

A treatise on dreams in the Atharva Veda (a book of wisdom from India, 1500–1000 BC) stated early Indian beliefs in dream interpretation. The future could be ascertained in dreams and a negative cor-

relation was indicated between the period of night of the dream and the latency period to fulfilment.[9]

The Greek philosopher Democritus (460–370 BC) propounded an atomic theory of communication between persons which encompassed telepathy. Atomic images were transmitted particularly strongly by people in an excited state.[11]

These and many other historical considerations point to the fact that ideas akin to the subject matter of modern parapsychological research were widespread in early civilizations.

Analyses of Collected Reports of Dream Psi

The founding of the Society for Psychical Research in England in the last century, revived interest in several areas of parapsychology including that of dream telepathy. Gurney, Podmore and Myers produced the epic *Phantasms of the Living* in 1886.[12] The book detailed many reported cases of apparent telepathy and included 149 examples of dream telepathy. The findings suggested that the dream could provide a channel of communication for emergency information. Several studies since that time have given further support to the idea that dreams are favorable to telepathy and premonition. Louisa Rhine (1962) found that 68 percent of reported precognitive cases involved dreams, with a figure of 35 percent for contemporaneous cases.[13]

This author performed an analysis of 88 detailed questionnaire responses from persons reporting premonitions.[14] The largest category type was the dream state (44 percent). Over half the cases concerned death (53 percent), although, incidentally, content analysis work shows that death is not a common dream theme. Almost 90 percent of percipients were female and this seemed not to be wholly a reporting bias. A curious negative correlation was observed between age at first premonition and number of offspring later in life (based on data of older women). The results, viewed collectively, suggested that premonitions are an evolutionary development in the human species, providing forewarnings of disasters, mediated principally through females and resulting in the replenishment of numbers in a social group as quickly as possible after losses.

Sleep Laboratory Work on Dream Psi

The sleep laboratory investigation of dream telepathy was an inevitable progression and a remarkable series of experiments emerged from the Maimonides work, which started formally in 1964.[15] These were studies where the subject's dreams were recorded after each REM

period and on each night a separate theme was "transmitted" by the agent during the subject's REM. The agent looked at a picture and sometimes had other materials associated with the target. Screening studies selected likely subjects for fuller investigation. Highly significant results were achieved in most of the studies.

A fascinating development was an eight-night precognitive study using Malcolm Bessent, an English "sensitive," as the subject. This imaginative experiment was designed to seek any foreknowledge in dreams of an experience that would be chosen at random and structured *after* the sleep period. Statistical testing revealed a highly significant outcome to the experiment.

Some replications of the Maimonides paradigm have been carried out, producing differing results. No support for dream telepathy was concluded in studies from some laboratories,[16] but gratifying confirmations appeared elsewhere.[17]

This author has conducted two sleep laboratory studies in an endeavor to seek a physiological index of psi in REM sleep. Both experiments were based on the observation that telepathy often seems to be precipitated when the agent is emotionally distraught. Thus, an attempt was made to produce emotional responses in persons "on demand." In one experiment,[18] subject/agent pairs were used who reported having a common phobia (e.g., spiders). Half the S-A pairs were emotionally close, the others complete strangers. While the subject was monitored in the sleep laboratory during REM, the agent was presented, or not (according to a random sequence), with the phobic object, which was placed as close to the agent as could be tolerated for a short while. It was hypothesized that the heart-rate of the sleeping subject should increase and decrease, corresponding with the presentation sequence to the agent. Unfortunately, no significant effect was discernible.

In the second study,[19] eight emotionally-close S-A pairs were used where the agent received eight electric shocks while the subject was in REM sleep. During control trials, the shocks were diverted to a resistor. The same procedure was also applied when the subject was awake and in SWS. Subject and agent were distanced by some 300 meters in order to eliminate possible sensory cues. Here too, there were no significant differences between experimental and control trials overall, or in any of the three conditions.

It might be argued that in both studies the level of arousal in the agent was high not only during stimulation, but also in anticipation of stimulation, so that a clear cut differentiation could not be detected by the subject. The experiments also assumed, very possibly erroneously, that any response in the subject would occur simultaneously in real

time. For these and other reasons, while the studies did not support the notion of dream psi, it must be admitted that they may not have been sophisticated enough to capture a genuine effect.

Overall though, there is substantial scientific and anecdotal evidence that dreaming sleep is conducive to psi. In these experiments however, the uncritical, illogical state of mind of the ordinary dream has perhaps been a drawback for the subject. How much better it would be if the subject could think clearly in the dream, realize fully that he or she is taking part in an experiment and even manipulate the dream's contents and course of events. Is the paradox of a thinking, conscious dreamer in REM sleep a possibility?

The "Lucid" Dream

There exists a type of dream which until recently was hardly known about even among sleep and dream researchers! It is a dream where the sleeper becomes perfectly aware of being in a dream and can from there on control the dream by volition.[20,21,22] Normally, although dreams may be vivid, the sleeper's comprehension of the dream at the time is severely limited, so that nonsensical situations are accepted without qualm. The dreamer examines the remembered fragments retrospectively on waking. However, in lucid dreams consciousness arises within the dream itself. It is just like being awake, but in a totally artificial "other" world having its own strange laws of science.

Lucid dreaming is rather rare in the population, but there is evidence that once the concept is established in people's minds, the frequency of lucid dreaming increases. There may occasionally be a brief realization of dreaming at the end of an anxiety dream or nightmare ("It's only a dream"), but it is more than that. In a lucid dream, the state can persist for several minutes and is not stressful, usually quite the opposite.

The sudden transformation of an ordinary dream into the very different lucid type often occurs as a result of the dreamer noticing some glaring incongruity in the dream: "My sister showed me a vase she had found. She dropped it and after breaking into tiny pieces it became whole again. I realized something was not right. After pinching myself and feeling the tell-tale sign of foam rubber, I knew I was dreaming." "I dreamt I was on a gondola and the man who was taking me across had colored baubles in his hair. I realized I was dreaming when I could change the color of the baubles."

In a study conducted by this author,[23] 53 percent of the apparent causes of lucidity in dreams involved inconsistencies:

(1) Seeing persons who are known to be dead in reality . . .	2%
(2) Home or residence from previous period in life seen . .	2%
(3) Malfunctions of equipment	3%
(4) Outside scenery seen to be wrong	5%
(5) Inside scenery seen to be wrong	5%
(6) Something odd about *self* e.g., own body, circumstances, e.g., driving car when can't in reality	6%
(7) Specific objects, or animals, cause lucidity	14%
(8) A person, or persons, in the dream triggers lucidity in some way e.g., strange appearance, behavior, voice	16%
	53%

Sixteen percent of cases were where persons "just knew" they were dreaming. Various anxieties (e.g., losing something or someone, being threatened, attacked or pursued) precipitated lucidity in 13 percent of cases, recognizing a previous dream situation accounted for nine percent, and it was unclear how lucidity resulted in a further nine percent of reports. The most frequent category of settings at the moment of lucidity was an outside place which was unfamiliar to the person (23 percent).

In a group of 314 lucid dreamers, most (63 percent) stated that lucid dreams were more vivid than ordinary dreams, their thinking was even more clear than when awake (!) in 45 percent, but most (66 percent) had never tried to experiment in the lucid state.

The Sleep Laboratory Investigation of Lucid Dreams

Until lucid dreams could be captured in the sleep laboratory, there remained the possibility that the state did not represent true dreaming at all, but rather a form of hypnopompic imagery experienced by some good visualizers on waking.

In 1975 this author, then conducting research into visual imagery and evoked responses at Hull University,[24] decided to experiment with lucid dreaming.[25,26,27,28] It seemed that the only way to identify lucid dreaming in the polygraphic chart record was to request the subject to signal in some way on becoming lucid (as suggested by Tart in 1965).[29] However, the atonia of REM sleep was a problem concerning bodily movements. It was realized though, that eye-movements were exempt from the general inhibition, so the subject (an habitual lucid dreamer in his late thirties) was asked to make a regular series of eight left-right eye-movements on becoming lucid and simultaneously to press a micro-switch taped to the hand.

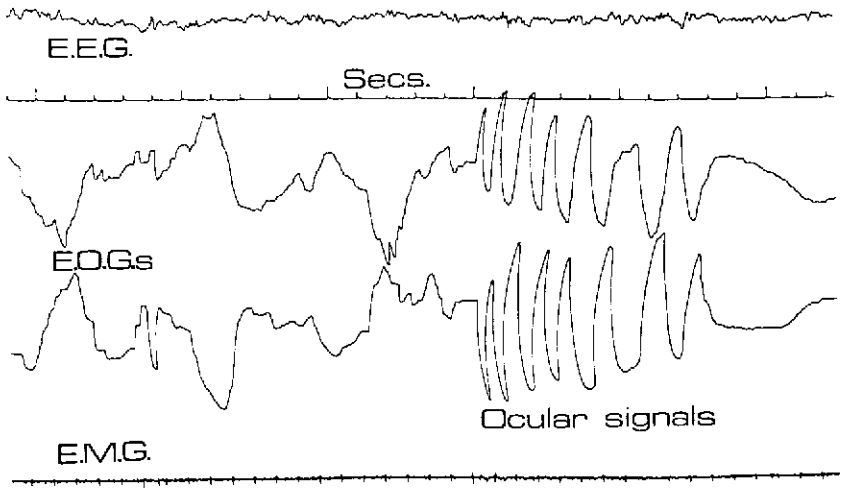

Figure 1.

At a few minutes after eight on the morning of April 12th, 1975, the subject became lucid and signaled accordingly. It was the first time that such a message had been received from the "inner universe" of REM sleep (the micro-switch was not operated although the subject dreamed of pressing it and even hearing the mechanism "click"). It was immediately apparent that a vast new field of research had been discovered (Figs. 1 and 2).

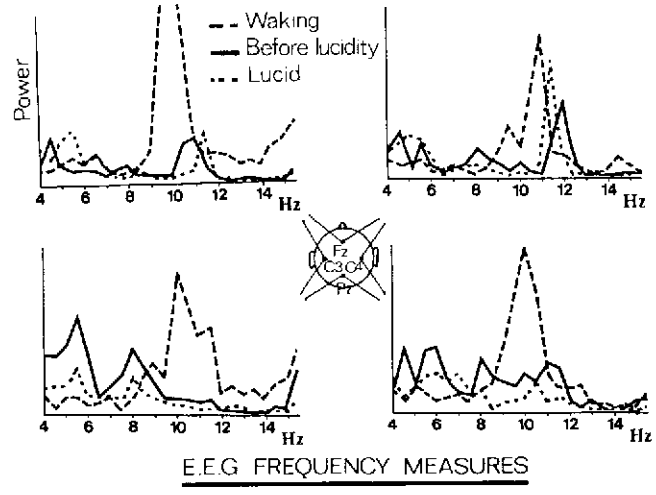

Figure 2.

In the first study with this subject, covering 45 non-consecutive nights of polygraphic monitoring, eight lucid dreams were recorded and marked by the subject. Sleep record measures were compared with those from eight similar control nights when there were no lucid dreams.

All the lucid dreams were in indubitable stage-REM sleep. That is, they were definite dreams rather than waking imagery. Lucidity invariably followed a burst of REM activity that lasted an average of 22 seconds. A reasonable explanation of this effect is that perhaps the spontaneous neurophysiological activity that causes REMs also stimulates the cortex to the level where consciousness is reached within the dream. This stimulation presumably operates via the activating reticular formation.

The period of lucidity (measured from the ocular signals to spontaneous waking) varied from one to six minutes, with an average of 2½ minutes. They mostly occurred in the latter part of sleep, some 24 minutes after the start of a REM period. The various sleep measures, concerning time spent in each of the stages, did not differ significantly from control nights, showing that sleep was no more or less disturbed on a lucid dream night than a non-lucid dream night.

There was evidence to suggest that the emotional level in the lucid dream may be pre-determined by whatever neurophysiological processes accompany bursts of REMs. Heart rate during lucidity correlated .87 with the length of the pre-lucid REM burst. It was also discovered that in the lucid dream the subject could alter his breathing rate by volition.

Apart from these basic physiological discoveries, a number of important psychological and philosophical matters concerning lucid dreaming were tackled for the first time. A basic problem with all dream accounts given on waking is that there is no evidence that the sequence of events described on waking corresponds to the sequence, or even the events, in the dream. Various psychological or physiological factors might distort the process of recollection of the dream material. The subject signaled in coded ocular movements at other places than just the start in some dreams, for example, before and after specific activities. The results strongly suggested that the temporal order of reported events is accurate within the ordinary limitations of short term memory.

We can see too that the dream is not over "in a flash," the greatest popular misconception about dreams in England in the author's experience. The lucid dreamer could think coherently and recall instructions given a few hours previously. Long term memories, permitting

a knowledge of one's identity and background, were available during lucidity.

One very brief experiment (involving two lucid dreams) constituted the first sleep laboratory study of psi and lucid dreaming.[30] The author attempted to "transmit" by thought a 4-digit random number (using numbers 1–5 only, to avoid lengthy signaling). The subject was told to scan the dream scenery for any such number, or make guesses and signal by making the same number of ocular movements, with a pause between each digit. The 4-digit random numbers were selected after the subject had entered sleep. The experimenter was in a control room close to the subject's bedroom, so conditions in this pilot study were not satisfactory from a strict experimental viewpoint.

In the first lucid dream, no number was signaled, but on waking the subject had in mind the number 156. This did not correspond with that which was randomly selected (2444). In the subject's second lucid dream, after much confusion and aborted signaling, the 3-digit number 253 was communicated. The randomly selected target was 3352. The purpose was to determine whether psi experiments were feasible using lucid dreams and an "interactive" subject. Certainly, the subject can remember the nature of the experiment on becoming lucid and convey information by ocular movements. Confusion over which numbers in the dream scenery to observe could be reduced by more specific instructions. The fact that the number corresponded slightly, in reverse, with the target in the second test is mildly encouraging.

The "Light-Switch" Phenomenon

One of the instantly obvious advantages of the lucid condition to the experimenter is that lucid dreamers can be given specific tasks to perform while lucid and any consistencies in reported results observed. On the basis of such repeated effects between subjects, realistic theorizing on the true nature of the dream can at last begin.

This massively powerful and yet simple tool enables the lucid dream, and (one might reasonably assume) the dream state generally, to be examined and tested "from within." It has already proved to be a very useful technique and has led to the discovery of the first ever consistent effect in dreams—the "light-switch" effect.

This author had noticed that in several dream reports over the years, there had been a reference to an inability to switch on a light in the dream scenery. The thought occurred that this might be an important and potentially revealing "flaw" of the dream state. Accordingly, a group of eight lucid dreamers (five females, three males) were given that task and requested to report what happened.[31] They were of course

naive as to the purpose of the experiment and they reported back in complete isolation from each other.

Here is a typical account: "I went to the bedroom light-switch and turned it on. To my surprise, a light came on behind me in a room to the side, but not in the bedroom. Then I tried the kitchen light-switch. Nothing happened. Quite annoyed and frustrated that I couldn't get the lights to turn on, I went back to the bedroom and said to the young man 'What's with the lights? They won't turn on.' "

Seven subjects had problems when they attempted to turn on the light. In the case of one subject, the light did come on, but this was after she had "covered her eyes" and abolished the dream imagery. One subject reported, interestingly, that a light could be switched off and then on again, but not the other way around.

The observations of these "oneironauts" tend to suggest that there is a ceiling limit on "brightness" in the dream imagery at any point. The ceiling limit may vary over time, though. Thus, any attempt using dream control, to violate that level in a large way, results in rationalized avoidance of the intended situation. If this is so, it would suggest that an autonomous dream-producing process operates, which has to maneuver the dream within such limitations of imagery.

A follow-up study[32] dealt with the "light-switch" task and some others. Here too, similar difficulties were encountered by most subjects. Of 11 persons who performed the task, seven could not switch the light on; dramatic events happened in three other cases (the light did seem to come on in one of these); and one subject reported being able to switch on lights, but in four out of five tests it was as if the switch was reversed. The two apparent exceptions to "Hearne's law" were unusual cases. In the first, the dreamer turned the switch and an "explosion" happened. Whether there was an actual increase in "brightness" is perhaps open to doubt. In the other case, where the person tried several switches, the level of imagery brightness beforehand was not certain. An increase in level from a deliberate decrease is acceptable within the concept of a ceiling on "brightness." Alternatively, the exceptions may coincide with sudden alterations of the ceiling limit, perhaps linked to phasic activity.

The significance of this small, but consistent effect is enormous. Other limitations appear to apply, too, and are being investigated. The dream appears to be produced by a process which has to function within changing physiological limitations (perhaps hence much bizarreness) in order to "fool" the observing dreamer. It is disturbing to consider that no school of dream interpretation has ever taken into account the fact that there might be natural limitations and responses in dreams.

It is through this type of investigation of the lucid dream that the real "stuff" of dreams generally will be revealed.

Uses of Lucid Dreams

In several ways, lucid dreams can be of great practical utility. Scientifically, the state can tell us much about the dreaming process, psi phenomena and the nature of our very consciousness. The vast untapped resources of dream creativity await exploitation and the sheer recreational aspect of lucid dreams could be of great interest to people.

The sudden "switching on" of consciousness at the moment of lucidity provides a most important natural experiment concerning the nature of our awareness of things. The person remains in REM sleep throughout the transition, but something happens somewhere in the brain at that point which is of vital significance for an understanding of consciousness. Sophisticated brain monitoring equipment could perhaps provide us with the first definite data on the physiological basis of awareness.

Numerous major artistic works and scientific insights have sprung from the ordinary dream state. Mozart, Beethoven, Schumann and Saint-Saëns are just a few composers who heard music in dreams and immortalized it by transcription on waking. The ability of the lucid dreamer to set up situations in dreams, such as listening to a new piece of music, could lead to a spate of new concepts, art forms and innovations, as more people develop lucid dreaming.

The phenomenon of finding oneself having full consciousness in a dream is of immense interest in itself. Simply looking around the environment at the sometimes intricate details (which can be more vivid than in waking life) is quite fascinating. When dream control is exercised, an unearthly dimension is added to the situation. Clearly, lucid dreams can also be a source of pleasure and enjoyment for people.

The Dream Machine

Sitting up night after night in a lonely sleep laboratory waiting for a subject to have a lucid dream (which was, perhaps, on one out of every six nights spent in the sleep laboratory, on average) produced a very large amount of the proverbial antecedent of invention. Lucidity appeared to be initiated in ordinary dreams by the perception of some outstanding fault in the imagery, so perhaps the intrusion of an external stimulus into the dream could artificially induce lucidity.

Several sensory stimuli were tried in early experimentation, e.g., auditory, olfactory, visual, but with little practical success. Then, a

technique previously employed by Koulack[33] was used, where subjects received electrical stimulation to the wrist (affecting the median nerve). Koulack had found this to be the best way of incorporating an external stimulus into the dream, but he did not consider any applications for lucidity. The crucial addition to the experiment, however, was that the subject was instructed before sleep to expect four pulses, to interpret each as a word ("This Is A Dream") and then to recognize what was happening as a dream. After some semi-success, where the method induced false-awakenings (i.e., dreaming of having awakened), a study was performed on 12 females who each spent one night in the sleep laboratory.[34] Six of them entered lucidity when the pulses were administered during REM and signaled that fact by making ocular movements (Fig. 3). For example, one subject was dreaming of being on a railway platform. On receiving the pulses the scene shifted to being on a train and she was aware of being in a sleep laboratory with an old boy friend. A girl in underwear was also there saying "Why I came from Florida to this place I will never know!" At that point she felt the pulses and became lucid.

One other subject, expecting the pulses (which were not in fact given), dreamed of receiving them, became lucid and signaled! The same girl, who had not experienced lucidity before, earlier had a dream that the experimenter and another man came into the bedroom and sexually manipulated her. The event made her lucid, she reported.

This satisfactory method of inducing lucidity in some people was linked to a portable REM sleep detector component consisting of a nasal thermistor unit monitoring respiratory rate—which increases at periods during REM sleep. The result was a simple portable bedside

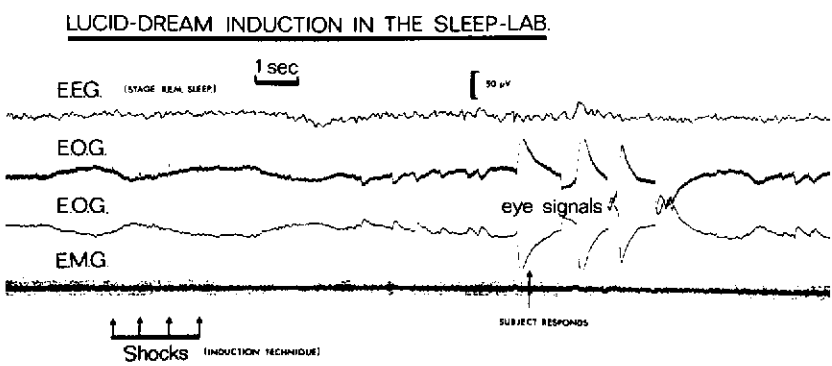

Figure 3.

device, controlled by an internal microprocessor, and which anyone could use—the "dream machine."

The device (Fig. 4) has been patented and has many other uses, including early interruption of nightmares, interruption of ordinary dreams at points of affect (of interest to dream analysts) and monitoring of respiratory difficulties in asthmatic and other patients.

Suggested Experiments Involving Lucid Dreaming and Psi

Dream-telepathy experiments can be transformed using "lucid" dreams. The subject, being a free agent, and knowing full well the situation of being in a dream, can perform behaviors designed to test for telepathy or precognition. Subjects might be either natural lucid dreamers, or "induced."

Sleep laboratory work: A sleep laboratory investigation of psi in lucid dreaming is necessary to test the full scientific criteria of a properly conducted and recorded experiment. The subject should be monitored polygraphically in accordance with established practice in order to determine the stage of sleep and to record any signals from the dream to the outside world. The agent should be situated at a substantial distance from the subject in order to avoid any possible sensory transference of information and of course the target material must be suitably selected and randomized.

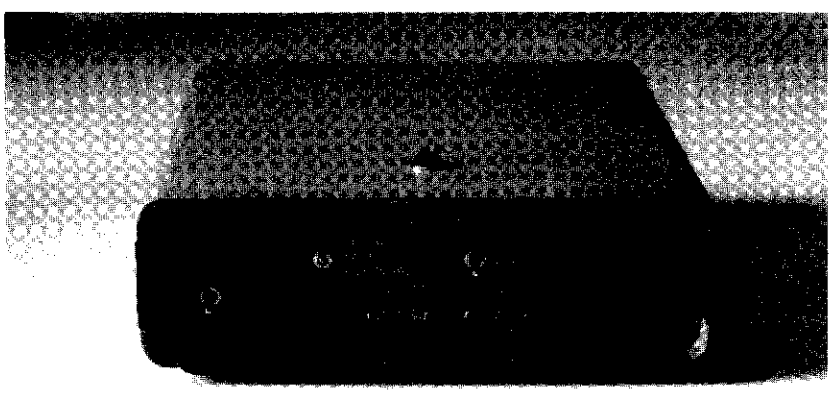

Figure 4.

Ingenuity may be used as to how the lucid dreamer should attempt to gain access to the psi information. Possible methods are:

(1) "Telepathizing" with the agent;
(2) Inspecting the dream for the psi material (perhaps numbers on things);
(3) Making a deliberate scene-shift (by covering or closing the eyes) and willing oneself to a location where the target material might be seen (a good technique in possible remote viewing studies);
(4) Creating a dream situation similar to an experimental situation (e.g., card-guessing).

In all these methods, the subject could signal-out information in a coded form so as not to rely on short-term memory on waking. Independent judges should rate correspondences between target material and dream information, as in the Maimonides work, where that is an appropriate method. Control data should be obtained from an awake condition where the subject imagines being in a lucid dream.

Home experimentation: In these experiments, the more natural home environment might enhance any psi effect. While not as rigorous as sleep-laboratory work (there could be no evidence of the subject being lucid), they could give useful results and could have an important function in screening subjects. Two types of possible study are described:

Using the "dream machine"

This author's discovery that respiration may be altered by volition in the lucid dream, is the basis of this technique, which is meant for natural lucid dreamers.

The subject would be linked to the "dream machine." On becoming lucid, a few rapid breaths would be made which would automatically "trigger" the device (having a high respiratory-rate setting). Instead of sounding an alarm or administering pulses, the device (linked to the telephone) would automatically send out dialing-pulses of a number stored in its memory. The agent would thus be contacted, on demand, and start to transmit or receive psi information. This experimental technique has been fully tested in England and found to work very well.

A second method for non-habitual lucid dreamers is for the device to function in its lucidity-induction mode, then to switch to detection of rapid breathing, so as to obtain confirmation of lucidity before the dialing pulses are given. It is even possible to envisage experiments where both subject and agent are lucid simultaneously, using coincident lucidity induction.

Using dream control to seek psi information, for individuals

Individual lucid dreamers may conduct various informal psi experiments on their own. A technique reported to this author by one woman is of some interest. She had a doctor friend who had returned to India for some weeks. In a lucid dream, she decided to "telephone" him and ask him his news. He stated in the dream that he was ill, with a high temperature, and described his symptoms. On his return (there had been no actual contact between the two on his trip), the facts of his illness turned out to be quite correct. This simple expedient of using the dream "telephone" gave access to someone in a distant location and the information may have had a psi content. Consistently accurate cases like this would provide much back-up data for psi theorists. Other methods of traveling to locations in lucid dreams are feasible, including covering the eyes and willing oneself to a place, or simply "flying" to a location.

Conclusion

In recent years, the enormous potential, to both science and the arts, of the lucid dream has begun to be appreciated. In the field of psi research, the legendary power of the dream to reveal information about the future, or the present elsewhere, may now be more fully investigated than was possible before, using the unique conditions of the lucid dream.

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DISCUSSION

PALMER: I have a question about one of the studies that you referred to in your paper, the one where you have subjects signal through their eye movements that they are in a lucid dream. From that you concluded that lucid dreams occurred during REM periods. Is it possible that

there may have been dreams occurring in other stages of sleep that you missed because the physiological mechanisms were not appropriate? Is it possible that subjects were in fact able to have lucid dreams in other states, but were not in a physiologically optimal state to respond through eye movements?

HEARNE: No, I think in slow wave sleep the musculature has full activation and you get sleep walking, sleep talking, bed wetting, a lot of phenomena associated with slow wave sleep. There would be no difficulty in receiving movements, I think, during that condition. The problem always was that in REM sleep people are paralyzed. People do not appreciate this. They say, well I talk in my sleep or someone talks, but it is not so. If you are talking in your sleep you are not in REM sleep. You may come out of it briefly and then go back in. It was a massive problem, but then eye movement signaling came into it. Some say there is dreaming in slow wave sleep. You get thoughts, but I have got a lot of experience of the sleep laboratory and I have awakened people from all sorts of stages and REM sleep is definitely different. It is associated with proper REMs. It depends on what sort of questions you ask. Certainly I think lucidity is associated absolutely with REM sleep. The difficulties of musculature were associated with REM sleep and not with slow wave sleep.

MORRIS: It may be best to avoid numbers as targets. They have been notoriously poor in the past because of all of the response biases connected with them. With regard to the notion of incongruity in lucid dreams as a keying element for people, I am reminded that Bob Van de Castle, one of the best Maimonides sleep and dream subjects, said that incongruity in his dreams was one of the key elements that would inform him of when something psychic seemed to be going on. The incongruous element would contain the psi information. I was wondering whether these elements of incongruity may be especially meaningful to lucid dreamers, if in fact they may tend to have fairly non-incongruous dreams normally. A lot of the elements you suggested occur in dreams quite frequently. Is it possible that lucid dreamers have usually well ordered dreams so that incongruity is especially salient for them? My last point is with regard to the light switch phenomenon. Can you comment on the possible relevance of suggestibility and demand characteristics in producing differential responsiveness?

HEARNE: On the light switch phenomenon, it is essential to make sure that subjects do not know the purpose of this particular task. Unfortunately, we are getting to the stage now where quite a lot of people know about this, so you can never be sure now that you have got a naive population. When I first did my studies no one knew about

this whatsoever. So it is an increasing problem with time. You do get a lot of psychological factors and suggestion is rampant in dream research. In the field of hypnosis there is a paper by Stoyva published in 1966. He did a hypnosis experiment still cited in the literature. He used no controls whatsoever, he just told his subjects to dream various things. And they did. He found a REM shortening effect which he said must be due to the special condition of hypnosis. It is a state, you see. But at Liverpool we were demolishing these things one by one and this seemed to be an outstanding one. So what we did was simply to run the control condition. We told subjects to dream they were up a tree. With no hypnosis, just a friendly suggestion. We got 70 percent of our subjects dreaming of being up a tree. We also got a REM shortening effect, which we could attribute to the subject's anxiety when trying to remember what they were dreaming about, because this can reduce REM. That just highlights the matter of suggestion. It could potentially be very damaging to any research on similar effects. This is why it is important to get this research done as quickly as possible, before it becomes generally known.

I have not thought too much about incongruities. But what you said has made me consider it more. I shall in the future look for possible psi components of these strange incongruities. And it is a matter that I shall certainly get subjects to look out for and report back on.

AUSTIN: Is there anything that we would call PK in the dreams that you have worked with or any healing in a lucid dream?

HEARNE: My mind is flipping through all sorts of reports. I remember one subject said that she could switch a radio on or off at a distance, using will-power. That is all I can say about PK.

GIESLER: First a comment and then a question. In one form of shamanism, that which we would distinguish as having trance states, but no belief that possession is involved, it is very often reported that in these trance states the shaman has to communicate with an assistant as to what is going on in this altered state. They distinguish various types of trances, some of which have some similarity with the descriptions of lucidity. There may be a whole line of research there at the anecdotal level or the ethnographic level, from which we could develop techniques or methods for communicating from trance states to the normal everyday awake states of observers. You might be able to then model comparable techniques of communicating from lucid dream states to awake observers, and thereby enhance your physiological signaling methods. Also, I have encountered shamans who have discussed a sudden lucidity in their dreams that they interpret as the arrival of certain deities from their pantheons. They have developed methodologies for

increasing this "lucidity" or "deity contact" in their dreams via hypnotic-like initiatory procedures. So there is a line there that I think would be interesting to pursue.

Now the questions. What is the connection between lucidity and OBEs and how have you addressed that? Consider the subjective accounts versus your physiological signaling business. In a superficial way subjective accounts of lucidity and OBEs seem to be fairly similar. You have a sudden awareness in a dream that is like waking consciousness. You intend to do something, perhaps something very specific, and then you proceed to do it. But, in the case of lucidity, you know you are *in a dream.* In the case of OBE you feel as though you are *awake.* So I wonder if you could make a comment on these subjective accounts? In regard to the physiological data, I wonder if there has been any work with OBEs and signaling?

HEARNE: There is a tremendous link between lucid dreams and OBEs. But of course, the term OBE is an umbrella term. It covers a whole multitude of different forms of imagery. That is the problem with it. But it depends very much on the situation at the time. If you have a dream where you are walking along the road (it is amazing, by the way, how many lucid dreams start off with that) and you become lucid, you are going to describe that as a lucid dream. But if you have a lucid dream where you are in your bedroom and you look around and see yourself in the bed, you are perhaps more likely to say that that is an OBE. So it depends on how you classify according to the situation at the time. I have done some electrophysiological work on people reporting OBEs and basically these are people who say that they can have an OBE just by lying down and concentrating. I had some subjects wired up and basically they were in stage one sleep. This is very typical of anyone in stage one sleep. This is a consistent finding. They do not report that they are asleep. They are quite adamant that they are awake. This is very typical of anyone in stage one sleep. So the imagery process is starting then and the OBE develops, but in no way are they fully awake. I did a M.Sc. study on visual imagery and evoked responses and I sorted out some very good images there. It is a difficult area. The link between a lucid dream and an OBE depends very much on your situation at the time. The OBE is in my experience stage one sleep.

GIESLER: I thank you. I wonder if you would comment on Bob Morris' study with Harary and Osis' study with Tanous, where they were ostensibly able to get subjects in OBEs to do certain things, physical kinds of influences, that would be comparable to you getting your subjects to do certain things in lucid dreams, although in your work

the physical influences are physiological. I wonder if there could be a tie in there for getting the kinds of effects you obtain in lucid dreaming with OBE subjects?

HEARNE: Can you clarify this?

MORRIS: In a study with Keith Harary we asked him, during his OBE, to visit a pet kitten, which was sequestered in a small container. Then we monitored the kitten's performance and found a selective difference in its quietness between visitation periods and non-visitation periods, with the observer blind to which period.

HEARNE: That is a very good experiment. I have not actually done that sort of work, but obviously it is a sensible thing to do.

BENOR: Sometimes people have difficulty in reaching a stage where they are satisfied that they are actually imaging something completely. Then we take little steps at a time to get a person to that stage. Could the light switch phenomenon also be altered, such as by suggesting a solenoid instead of an all or nothing switch? I am skeptical about the assumption that lucid dreams and non-lucid dreams are equivalent and that by studying one, one can extrapolate to the other. On the element of time distortion, certainly in daydreams there are both condensations and expansions of the time element. The subjective experience of REM dreams that are not lucid is certainly very frequently an expansion or contraction of time.

HEARNE: There is someone in Germany, Paul Tholey, who has done some work on the light switch effect. I have a paper of his. He found that he could get subjects to gradually increase the level step by step, but the basic phenomenon is certainly there. Sue Blackmore, who has been much mentioned in this conference, has been doing some research recently and she has also replicated the light switch effect. The step-by-step process has to be taken into account. I think that we do not necessarily have a different imaging system in all these different states, such as when you are awake or when you are asleep. I think we are probably using the very same imaging process. Charles Tart expressed some slight skepticism some time ago about the light switch. I said "Well, why don't you try just on good visualizers, because I am pretty sure that the effect applies to the imaging process anyway?" I don't know if he is going to take it up or not, but it is a possibility and I think it does need to be done. I would not be surprised if the light switch effect is found in good visualizers.

About lucid dreams and non-lucid dreams not being equivalent, I think there are vast similarities there, really. That the imaging process is probably the same I think is a reasonable assumption. Certainly the light switch effect is reported not only in lucid dreams, but in ordinary

dreams as well. People in nightmares go to switch on the light by the bed and it does not work. Then the nightmares start. There are all sorts of accounts of that.

ROLL: I have myself had OBEs and lucid dreams (not many of either) and certainly the experiences have been very vivid in both cases and very different. The phenomenology is very, very different, which may or may not mean anything. This brings me to the question of a possible physiological distinction between the two psychological conditions. I could only find four REM studies of OBEs: Tart with Monroe and with Miss X, our study with Keith Harary and then another study by Osis with Tanous. In these four studies there seems to be an absence or reduction of REM in OBEs as compared with dreaming. This might be suggestive of something. Charley Tart suggested that with respect to Monroe, OBEs had replaced his dreaming activity. It has been suggested that the muscular movements of the REM process help a person to retain the experience of being in the body, of dreaming. You mentioned that this whole research is very promising in understanding the physiological basis of consciousness. Is there a picture in your mind as to what these physiological characteristics might be?

HEARNE: The muscular problem of bodily paralysis in dreams has an adaptive function, presumably evolutionary. When we were living in the trees, it was a good thing that we did not act out our dreams, otherwise we probably would not have survived as a species. I think that is a reason for the paralysis. What I said about consciousness is very important I think, because it gives us a toe in the door. How on earth can you study consciousness? As you know, under the doctrine of behaviorism, which stunted psychology for many decades, words like "consciousness" and "imagery" disappeared from the literature. If it did not move, it did not exist. So here at last we have got a foot in the door, I think. With the sudden switching on of consciousness, there is apparently no different activity in the brain. Modern equipment is very good, but it is expensive to use. It is crying out for study. We might know where consciousness is located in the brain. But there is very little interest in that on the part of funding authorities in England. I do not know what the situation is over here. I think a lot of people would presume that some sort of cortical activity would correlate with consciousness on a one-to-one relationship, but I do not know. I rather like the Penfield idea that consciousness is very basic indeed in the brain. Endomorphins are present in lowly things like earthworms. Presumably they are dealing with pain and there is no greater consciousness than in pain. You cannot have a bit of consciousness. It is either there

or not. I think that consciousness is very, very low in the animal kingdom. You see, we are so egocentric as a species we just will not have this. We go around treading on earthworms or anything without thinking about it, but I should think the pain experienced there is as much as could be experienced by any human. It would help if we could get some idea of what is going on. I think the study of consciousness is going to take off pretty soon and in the next century we will have some interesting ideas about that. At this point, I would like, if I may, to put on record a method of inducing OBEs.

Now, I have referred to this in a little known publication. I call it the FAST technique, which is an acronym for False Awakening with State Testing. In the sleep laboratory, it is a very common experience for the subject to dream of being awakened by the experimenter for a dream report, before it actually happens. This is purely expectation and anticipation on the part of the subject. If you think about it, what has been induced so to speak is a false awakening. A false awakening can really fool you. You can really be convinced that you have awakened until you look out the window and you find it is just not your street. That can be a very amazing phenomenon. False awakening is only half a step away from an OBE or a lucid dream. The categorization depends on your situation at the time. Now, the OBE should be attainable by automatically testing one's state of consciousness whenever one thinks one has awakened. In practice I suggest that an assistant enters the bedroom of the subject, every half hour, say, after 6 AM when there is much dreaming sleep, says something, clatters around and then leaves the room. Now, on some occasions it is likely that the expectation of this event will cause the subject to dream of being awakened prematurely. The subject does not respond to anything, but whenever waking seems to happen a set of tests for state assessment should be run through. For instance, listen carefully for any incongruities; is there supposed to be an alarm clock ticking away by the bed? Can you hear it? Various things like that. If the eyes are open, is the light level correct for that time? Can you manage to float or push your hand through the bed, like Monroe? It may be that an incongruity will be recognized to show the subject that he or she is dreaming. At that point the subject should rise from the bed or transfer to another location by will-power, for instance, by covering his eyes. It is highly likely that the experience would be classified as an OBE by the subject. Incidently, I have invented an electronic aid for state testing and hope to perform some experiments soon.