Dreams and ESP

Dreams are of interest to psi researchers because of the frequency of reports of ESP said to occur in the dream state. The most common form is the precognitive dream, which reveals information of the future: something that is not currently known to the dreamer and is later found to be true (or in parapsychological terminology, *veridical*). Content suggestive of telepathy is also commonly reported to occur in dreams.

History of Dreams and ESP

Historical cultures such as the Assyrians, Babylonians, Egyptians and early Grecians all regarded dreams as a source of communication with the divine. Dreams offered guidance and warnings, or conveyed the will of the gods, making them of great importance,[1] even to the point of influencing affairs of state.[2] Two ancient Egyptian Papyri, the 'Deral-Madineh' and the 'Chester Beatty' – created around 2000 BC and 1300 BC respectively[3] – describe divine revelation being given by seemingly telepathic influence, with examples of dreams and interpretations as good or bad omens. Oneiromancy – the practice of attempting communication through dreams[4] – was common within these ancient cultures, suggesting that their peoples possessed a conceptual belief in ESP dreams. Oriental beliefs during this period differed in attributing dreams not to a divine source, but to the soul of the dreamer. In Vedic literature of around 1500-1200 BCE, dreams are described as an intermediate state between this world and the world of spirit, when the sleeping soul leaves the body and observes both worlds simultaneously.[5]

The Naturalization of the Supernatural Dream

The oriental interpretation of dreams was introduced to Greece as early as 500 BC.[6] Soon afterwards, Democritus (460-370 BCE) began what has been referred to as 'the naturalization of the supernatural dream',[7] arguing that dreams were not divine, and that dreams, in common with everything in existence, were made-up entirely of minute 'atoms'. In what has been seen as the first physical theory of telepathy,[8]Democritus suggested that these atoms emitted images of themselves, comprised likewise of more atoms, that could be projected from one individual to another through the pores of the skin, particularly when in a heightened emotional state. The greater the degree of emotional excitation, the higher the level of the atom's vibration, and the more clear and vivid the images experienced by the dreamer.

Aristotle (384-322 BCE) likewise rejected the divine interpretation of dreams but did not agree with Democritus's atom-based theory. Discussing veridical dreams (those that gave true information about events unknown to the dreamer), he argued that telepathic communication reflects the ripple effect of a stone cast into a body of still water, with information travelling as waves through the air to the mind of a dreamer. A wave can occur at any time, Aristotle thought, but is noticed more often at night, being a more tranquil time when there is less environmental interference

to stop it reaching another person's mind; there is also less internal interference, the dreamer's attention being focused inwards. Elements of these ideas anticipate the 'noise-reduction model' of ESP functioning held by today's experimental parapsychologist to a startling degree.9

The thinking of Democritus and Aristotle would have enabled objective tests, but little was done to build on it, and by 200 CE, it was largely discounted. At this time, Artimedorus of Ephesus wrote his famous five-volume treatise named the *Oneirocritica,* 'the interpretation of dreams', the most comprehensive early attempt to provide interpretative guidelines,10 and one that predates Freud's masterwork of the same name by many centuries. Artimedorus did not ascribe to the belief that dreams were from the divine, arguing instead that they were generated by the dreamer. But he considered that they could nevertheless function as a means to see into different locations and different times, though he proposed no detailed theory to explain the underlying process.

The Middle Ages

In the Middle Ages the Jeudo-Christian religions returned to the ancient belief that dreams originated from a divine source. Thinkers such as Synesius of Cyrene, Saint Augustine, Gregory of Nyssa and Saint Thomas Aquinas, among many others, considered dreams to be an important source of information, but with regard to extra-sensory dreams differed over their source and meaning. Over the following centuries, dreams were increasingly seen to be the dominion of demons, who could enter into them in order to manipulate people (Martin Luther implored God to not speak to him in his dreams, as he could not be sure if the messages were from Himself or the Devil). This was a 'dark age' for philosophical and scientific efforts towards understanding dreams.11

Dream ESP Spontaneous Case Collections

The aversion to academic consideration of dreaming began to change with the Enlightenment. As people no longer looked to the church to explain reality, and the role of demons diminished, there was a new willingness to investigate the nature of extra-sensory dreams. This was aided by newly developed scientific tools: experiments, systematic observation and measurement, along with the formulation, testing and modification of hypotheses, all offered a new strategy for those wishing to unlock the secrets of dreams. The first step was to identify the phenomenon in its natural environment through the creation of spontaneous case collections. Spontaneous cases, though non-repeatable and prone to reporting and observational biases, reveal common characteristics that help to inform experimental design and the formulation of testable hypotheses.

Symonds's Criteria for Assessing Prophetic Dreams

In his book *Sleep and Dreams* (1851),12 the poet and literary critic John Symonds defined the 'precognitive' dream (as psychical researchers later referred to it) as 'prophetic', supporting the earlier view of a divine source. His criteria for evidentiality were that the content accurately portrays a future event and can best

be trusted if confirmation of it comes from a source other than the dreamer. Symonds warned about the tendency for details to become distorted in second-hand accounts; he also considered alternative explanations such as chance coincidence and the incorporation of information that had previously been picked up unconsciously.

Phantasms of the Living

Paranormal dreams became an object of genuine scientific enquiry with the founding of the Society for Psychical Research (SPR) in 1882. At the outset its members needed to define and classify a wide range of reported anomalous phenomena, and to develop empirical standards with regards to the reporting and observation of cases.

In 1886, the SPR published a two-volume work entitled *Phantasms of the Living,* authored by Edmund Gurney, Frederic Myers and Frank Podmore,13 which describes and analyses 149 individual cases of reported telepathic dream experiences. A typical example is as follows:

> In 1874, when reading for college, I frequently visited a man named William Edwards (of Llanrhidian, near Swansea), who was then seriously ill; he often professed pleasure at, and benefit from, my ministrations. He at length recovered so far as to resume work. I left the neighbourhood, and amid new scenes and hard work, I cannot say that I ever thought of him. I had been at college some 12 months, when one night, or rather early morning between 12 at midnight and 3 in the morning, I had a most vivid dream. I seemed to hear the voice of the above-named William Edwards calling me in earnest tones. In my dream I seemed to go to him, and saw him quite distinctly. I prayed with him and saw him die. When I awoke the dream seemed intensely real, so much that I remarked the time, 3 a.m. in the morning. I could not forget it and told some college friends all particulars. The next day I received a letter from my mother, with this P.S.: 'The bell is tolling; I fear poor William Edwards is dead.' On inquiry I found that he did die between 12 and 3; that he frequently expressed the wish that I were with him. I had no idea that he was ill.14

The book's authors were erudite, competent investigators, and they devoted considerable resources to corroborating this kind of testimony. While a more recent understanding of the processes at work in dreams weakens the evidentiality of some cases, the collection continues to provide useful source material for the phenomenon of telepathic dreams. The percipients tended to deny possessing any psychic sensitivity or to have experienced similar dreams in the past, which magnified their impact. In the great majority of cases, agent and percipient pairings were friends or related in some way.

Some 79 of the cases, just over half, concerned the theme of death. Since dreams of death constitute a tiny fraction of all dreams, it is to be expected that those that coincide with an actual death should amount to a similarly minute proportion of all reported dreams that come true by mere chance. The authors pointed out that the actual total was far above what would be expected by coincidence, and therefore argued for the operation of a telepathic agency. Their reasoning was as follows:

Dreams so definite in content as dreams of death afford an opportunity of ascertaining what their actual frequency is, and so of estimating whether the specimens which have coincided with reality are or are not more numerous than chance would fairly allow. With a view to such an estimate, a specimen group of 5,360 persons, taken at random, have been asked as to their personal experiences; and, according to the result, the persons who have had a vividly distressful dream of the death of a relative or acquaintance, within the twelve years 1874–1885, amount to about 1 in 26 of the population. Taking this datum, it is shown that the number of coincidences of the sort in question that, according to the law of chances, ought to have occurred in the twelve years, among a section of the population even larger than that from which we can suppose our telepathic evidence to be drawn, is only one. Now, (taking account only of cases where nothing had occurred to suggest the dream in a normal way,) we have encountered 24 such coincidences, i.e., a number 24 times as large as would have been expected on the hypothesis that the coincidence is due to chance alone.

Another large group of such dreams were found to concern a general emergency rather than an actual death, while a smaller group concerned trivial matters. Overall, the authors concluded that while the evidence did not provide conclusive proof, it was strongly suggestive of a telepathic agency, pointing to a need for further investigation. They also recommended a greater collection of cases to clarify their evidential value. Since that time, the common features they observed have been reflected in major surveys of spontaneous phenomena, which at the very least indicates a high degree of consistency in the characteristics of experiences.15

Eleanor Sidgwick

Eleanor Sidgwick was principal of Newnham College, University of Cambridge, and wife of the first SPR president Henry Sidgwick, the utilitarian philosopher and economist. Sidgwick carried out an analysis similar to *Phantasms of the Living*, focusing on evidence of dream premonition.16 From a pool of 240 reported premonition cases she selected 38 of the best evidential quality, of which 24 were dreams, concluding that the evidence they provided for dream premonitions was suggestive but far from conclusive, and weaker than the evidence hitherto collected in support of telepathy (her analysis also reiterates the weaknesses of this type of data that are described in greater detail in *Phantasms*).17

JW Dunne

In 1927, JW Dunne, a British aeronautics engineer, became the first investigator to publish a systematic study about precognition.18 Dunne was intrigued by precognitive content in some of his own dreams and kept a comprehensive record in order to identify links with real-world occurrences. An important feature of Dunne's dreams was that the correspondence was not with the actual event, but with his subjective experience of it, for instance reading about it in the newspapers the following day. In one case of this kind, he dreamed that a group of ragged and sunburnt soldiers informed him that they had just successfully crossed the continent of Africa; the following morning he read in the *Daily Telegraph* about Lionel Decle's successful Cape to Cairo expedition. In another dream, he attempted

to save thousands of people from an erupting island volcano; in the morning he read a report about the eruption of Mont Pelée in Martinique. From a careful analysis of such dream experiences, Dunne eventually formulated a 'serial time' theory.

Louisa Rhine

An active investigator of spontaneous psi phenomena was Louisa Rhine, wife and colleague of Joseph Banks Rhine, the founder of modern experimental parapsychology. Over several decades Louisa Rhine collected more than ten thousand spontaneous cases suggestive of psi, mostly mailed to her by percipients responding to press articles; these became the basis of a number of books and articles.19 In her final review, Rhine concluded that 65% of all ESP experiences occurred within dreams, a figure which has been confirmed by many other smaller studies, most of which come with the range of 60-70%.20

Rhine also observed that most precognitive experiences occur in dreams: of the 1,324 accounts suggestive of a precognition, she identified 60% as 'realistic dreams'(that is, dreams corresponding closely to the confirming event21); 15% as 'unrealistic dreams' (those informed partly by imagination, fantasy or symbolism22); 20% intuitions; and 5% hallucinations (auditory, tactile, olfactory or visual, the latter being the most common).

Criticisms and Conclusions

The early investigators were cautious about the extent to which subjective dream testimony might be considered to be evidence of psi functioning. Symonds was among the first to point out that the sheer number of dreams that are dreamed each night necessarily means that, from time to time, a dream will coincide by pure chance with a future real-world event. 23 However, Sidgwick argued that this objection becomes less persuasive if the correspondence between the dream content and the event occurs in a short time-span. 24 Also, the more details that match, the less likely it is that the correspondence is purely a matter of chance coincidence.25

Gurney, Myers and Podmore, the authors of *Phantasms of the Living,* agreed that dream testimony could be relied on less than a report of a waking hallucination with the same properties, the memory of dreams being qualitatively less vivid and accurate than our memory for waking experiences.26 When a person judges the correspondence of a dream with an actual event, the generally fragmentary memories of the dream experience means there may be a tendency to unconsciously import other associated memories in an attempt to formulate a coherent narrative. This phenomenon of false memory and confabulation is well documented within social and cognitive psychology27 and it is to be expected that dreams, with their more fragmentary nature than waking memories, are especially prone to this type of error. Nor is it completely alleviated by corroborating testimony, since details said by a second person to have been described prior to the correspondence becoming known might actually have been recounted afterwards – a detail falsely remembered.28

The extent to which such natural weaknesses can be held to invalidate the sizeable spontaneous case collections of extra-sensory dreams varies from one person to another. Most psi researchers find in the strong consistency of characteristics support for the notion that the dream state is psi-conducive. Spontaneous cases therefore continue to play an important role in directing scientific enquiry, offering insights into the real-life context of those who experience them, and providing vital guidance for future theoretical and experimental work.

Early Experimental Research

HM Weserman

The earliest recorded experiment in telepathically induced dream experiences was conducted in 1819 by HM Weserman, a German government inspector.[29] Weserman was interested in the concepts of Mesmerism (the forerunner of hypnotism), and conducted informal studies. Taking the role of agent, he tried to use 'animal magnetism' to influence the dreams of friends, who later described to him what they had experienced. In one such study, conducted at a distance of three miles, Weserman reports: 'Madame W., in her sleep, was to hear a conversation between me and two other persons, relating to a certain secret; and when I visited her on the third day she told me all that had been said, and showed her astonishment at this remarkable dream'.Weserman claimed success in five experiments. However, the scientific community was dismissive and no attempts were made to replicate the findings.

Ermacora's Experiments

In 1895 an Italian named GB Ermacora, whose training was in physics, attempted to induce telepathic dreams, but employing a somewhat questionable experimental design.[30] His main participant, a medium known as Signorina Maria Manzini, had a trance control called Elvira. With Manzini in a state of trance, Ermacora described to Elvira a narrative she was to telepathically induce in Angelina, the medium's four-year-old cousin. Angelina later related her dream experience to the medium, who in turn informed Ermacora. The correspondences were impressive, but the experiments were designed in such a way that might have enabled the medium to cheat, and thus remain of historical interest only.

Ullman & Dale

During the early 1950s, Montague Ullman, a psychiatrist, psychoanalyst and parapsychologist, worked with parapsychologist Laura Dale in a series of exploratory experiments. Ullman generally acted as the agent, attempting to influence the dreams of the sleeping Dale. They used a dormiphone, an apparatus designed to awaken the sleeper at intervals and play a recorded message that might stimulate dreaming (they experimented with different sounds, tones and phrases to see if any were especially effective). On trial nights, comprehensive dream diaries were recorded. Ullman reports that the results were encouraging enough for them

to continue for several years, though no statistical analysis were ever conducted on the data.

The discovery in 1953 by Aserinsky and Kleitman of rapid eye movement (REM) sleep allowed scientists for the first time to objectively identify when precisely an individual is dreaming. 31 This prompted Ullman to ponder whether a sleeping person might produce telepathic dreams relating to a preselected target object being 'sent' by an experimenter, at a time corresponding to the sleeper entering a dream state. This technique had the added benefit of helping ensure that as much dream mentation as possible was reported, since the researcher would know when a dream period had ended and could immediately wake the participant.

In 1959, Ullman met the medium Eileen Garrett, president and founder of the Parapsychology Foundation, an organization dedicated to finding a scientific explanation for psi phenomena. Garrett provided two rooms for the use of Ullman and colleagues Karlis Osis and Douglas Dean, along with funds for a technician to run nightly trials. She also paid for the purchase of polysomnographic equipment, which measures brain-waves, eye movements and respiration, as a means to classify stages of sleep. Garrett took part in some early studies and achieved striking hits.32 Other participants were students, friends and colleagues of the researchers. Subjects were found to differ widely in their ability to incorporate telepathic stimuli into their dreams. For Ullman, these studies demonstrated the usefulness of the methodology in finding explanations for apparently extra-sensory dreams.33

Maimonides

Encouraged by these successes, in 1962 Ullman set up the Dream Laboratory at Maimonides Medical Center, Brooklyn,34 where he and his colleagues went on to perform what would become one of the best-known investigations into the existence of psi. The existing methodology was refined to eliminate any possibility of sensory cues regarding the target reaching the percipient. To ensure that the judging of correspondences between dream-mentation and target was completely independent, arrangements were made for individuals blind to the experiment to carry out the judging externally at different institutions.

The core methodology followed Ullman and Dale's initial concept, the receiver sleeping in a sound-attenuated room and connected to the monitoring equipment. Once the receiver was asleep, a target was selected at random from a pool of images that were semantically and visually distinct, and possessed colour, vividness and emotional intensity. The target, inside a sealed enveloped, was handed to the sender, who was locked in a second room, also sound-attenuated, fifty yards away from the room occupied by the receiver. When the monitoring apparatus showed the sleeper entering REM activity, a buzzer signalled the sender to open the envelope and begin focusing his or her intention to send the image into the mind of the receiver. Towards the end of the REM period, the experimenter woke the receiver and asked for a description of any dream mentation. The receiver then went back to sleep and the process was repeated, using the same target.

In the morning the receiver was presented with eight to twelve art prints, one of which was the actual target, and asked to provide a confidence rating for each one, also to rank them in terms of the correspondence with the dream mentation. Copies of the dream transcripts and the pool of images were also sent to independent judges, who completed the same task. Their ratings were combined. A trial was considered a 'binary hit' if the target was ranked in the top half and a 'binary miss' if ranked in the bottom half, enabling statistical analysis to compare the hit rates against mean chance expectancy.

Before the laboratory closed in 1978, Ullman's research team had conducted three pilot studies, investigating telepathy, precognition and clairvoyance respectively and a further thirteen formal studies,[35] of which eleven were designed to investigate telepathy and the remaining two precognition.

Findings

Success was especially evident in the case of highly-motivated individuals with excellent dream recall. One was Robert Van de Castle, who took part in eight trials over a period of weeks. On the basis of his own judging, Van de Castle scored direct hits on six out of the eight trials: that is, on the basis of what he had dreamed, he accurately identified which of eight images the sender had attempted to convey to him while he was asleep. The odds of this happening by chance were rated at ten thousand to one. An independent judge, working with Van de Castle's transcript of his dream mentation, correctly scored direct hits with five of the eight trials.

One of the direct hits involved an art print titled 'Man with arrows and companion' by the seventeenth century Indian painter Bichitir. The painting shows three men seated on the bare ground outside a house, one of them holding a bow and arrow; a stake with rope tied around it is visible in the background; other strands of rope can be seen in the foreground. The man seated in front is holding a stake over his shoulder. Van de Castle reported six dreams throughout the night, the first follows:

> The first image seems to be a sort of bed roll, and that made me think of 'western' .... That faded out for a minute and then the next image seemed to be as if I were walking through some doors and standing straight ahead of me were three men. They were standing equally distant apart, maybe about six feet apart from each other. They were dressed in short-sleeved blue shirts and berets and they looked very tough. I believe they were holding rifles, but the rifles were down at their sides as if the rifle butt were resting on the ground. Then it seems as if the word 'gunslinger' came through ... A setting that's foreign or rural or western and in which there's implied violence.[36]

His later dreams were shorter in content but continued a Western-type theme; rope appeared significantly in each of them.[37]

In a 1985 review of the Maimonides studies, Child[38] considered the results on the basis of the number of binary hits and misses. He concluded that when several segments of the data were considered separately, they yielded significant evidence that receiver's dreams resembled the actual randomly chosen target more than they resembled other pictures within the pool.

A later meta-analysis of 450 Maimonides trials, based on the judges' blind ratings, found the overall success rate to be 63%, with a mean chance expectancy of 50%. The associated odds of this are 75 million to 1.[39]

Statistical significance demonstrates the likelihood of a result occurring by chance, but does not provide an indication of the size of the effect for what is being observed. To remedy this two parapsychologists, Sherwood and Roe, conducted a review of the Maimonides studies [40] and calculated the overall effect size to be 0.33. Here, a positive effect size would indicate the results are above chance expectations, a negative effect size below chance expectations. In terms of scale, a small effect is generally considered 0.1, a medium effect 0.3 and a large effect 0.5.[41] The authors conclude that the results of the Maimonides studies not only provide performance way above chance expectation, but also provide evidence of an effect of the size comparable to effects considered to be significant in mainstream psychological research.

Criticisms

Child reports that evaluation of the research findings was made problematic by the initial data analysis having been passed to several consultants, and the original data being no longer obtainable for scrutiny.[42] Clemmer has argued that in some of the earlier studies, the blinded judge ratings may not have been entirely independent, as there was the potential to derive clues about the targets' identities from other transcripts.[43] However, Krippner argues this does not account for the accuracy of the participants themselves, nor could it be held to apply to later studies where potential clues were edited out of transcripts, which in addition were presented to the blind judges in a random order.[44]

Clemmer further suggests that fraud may be a potential explanation, though a plausible explanation of how that would be achieved in practice has not yet been presented.[45]

The most significant of criticism concerns a relative paucity of independent replication, which sceptics have claimed negates the Maimonides dream experiments as evidence of telepathy. [46] [47] To date, seven replication studies have been reported by researchers at other laboratories. The results were significant in only two cases,[48] non-significant in four cases;[49] and ambiguous in one case.[50]

However, as is often the case in experimental parapsychology, it is unclear exactly what conclusion should be drawn from this, since departures from the original protocol means that several can be considered no more than conceptual replications. [51] Krippner argues that if longitudinal studies were to be attempted, the same variables being investigated over an extended period, the outcomes would be more insightful.[52]

Dream ESP Out of the Lab

A prime reason for the paucity of genuine replication attempts is the high cost of conducting sleep laboratory research. However some researchers, encouraged by the Maimonides findings, sought less costly and labour intensive experimental

protocols. This led to a shift towards using the participant's own home as a sleep laboratory.

Although home dream ESP studies vary, they share common characteristics in their methodology. The use of a bespoke software program to carry out the randomization and selection of the target, and the basis upon which potential targets are selected, are generally unchanged from the original Maimonides studies. The target having been selected, in a telepathy study it is then shown to the sender on the computer screen. After waking, the receiver writes down as much of the dream content as can be remembered and sends a copy of the mentation to the researcher before the judging trial begins (thus ensuring that no details of the dream mentation can be changed). The judging period takes place later the same day, where the participant will view a group of potential targets, that contains the actual target, and rate them for correspondence to their dream accounts.

A disadvantage against laboratory based research is the loss of a considerable degree of control, for instance in the ability to wake participants after each dream session. Participants have to record what fragments they can recall upon awakening in the morning, which means a greatly reduced pool of dream information. An advantage is that the participant does not have to acclimatize to the artificial environment of the sleep laboratory. But the principle benefit of a home-based study is the reduced costs and labour, which makes them easier to carry out.

To date, 29 formal studies have been published since the Maimonides era.[53]

Unlike the Maimonides studies, which mainly focused on telepathy, most subsequent studies focused on clairvoyance, largely because this precludes the need for a sender, eliminating the need to guard against sensory leakage. An example is a 1999 study carried out by Dalton, Steinkamp and Sherwood, who acted as participants in their own experiments across thirty-two trials. The three kept detailed dream diaries, which they completed at the end of each trial night. In the morning at the laboratory, the software automatically selected four targets at random and presented them on the screen. Targets were ranked by their correspondence with the dream mentation, individually and then as a group consensus. It was found that participants were more successful with highly emotional targets. The direct hit rate was significant for the consensus judgements, fifteen out of thirty-two trials correct (46.8%) where 25% would be expected by chance.[54]

All twenty-nine studies are detailed in Sherwood and Roe's meta-analysis. This also calculates an overall effect size of 0.11 for the combined studies, smaller than the Maimonides effect but still significantly higher what would be expected to occur by chance.[55] Possible causes for the disparity might be the methodological differences, leading to less dream mentation and fewer dreams remembered overall; also, differences in applied psi measurements, and the general focus on differing forms of ESP. Another possible factor is choice of participants: the most successful Maimonides studies were provided by psychically adept individuals such as Van de Castle. By contrast, the post-Maimonides studies utilized university students, the experiments themselves, or others with no previously claimed psychic ability.

Aside from the overall effect, these studies employed a range of methodological and 'process orientated' factors in an effort to develop more successful testing protocols. These elements were participant expectancy,56 emotional content of the target or emotional link between sender-receiver pairings,57 group consensus judgement,58 participant personality characteristics,59 and comparing dream ESP performance to other common experimental methods such as the ganzfeld.60

In later studies, new communication technology reduced the need for physical proximity, enabling the selection of participants from wider sample bases. Alarms could be set to wake sleepers, and a set of potential targets could be sent to the participant's smart phone so that they might make immediate judgements upon waking.61

Sherwood and Roe conclude that dream ESP research remains a promising although somewhat neglected avenue of parapsychological enquiry. They outline several methodological improvements for future studies, including a focus on potential process-orientated factors to determine the role these may play on successful dream-ESP performance. James Alcock, a psychology professor and a critic of parapsychology, criticised Sherwood and Roe's review for being based on data that was, by its nature, too messy to be appropriate for analysis.62 The authors concede that if more detailed analysis were undertaken this would be a considerable issue and argue that their findings are beneficial for informing future research. Meanwhile recent advancements in physiological monitoring equipment – in terms of complexity, size and functionality – open the prospect of accurate polysomnographic recordings being conducted as a significantly lower cost, making true replications of Maimonides more likely in the future.

David Saunders

Literature

Note: The SPR research archives contain a number of articles on dream ESP, including anecdotal reports of precognitive and telepathic dreams, surveys and analysis. Summaries can be read here. Subscribers to the SPR and/or the online library Lexscien can read the articles in full (see the summaries list for references). Many Parapsychological Assocation conference proceedings are available from the PA Archives.

Alcock, J. (2003). Give the null hypothesis a chance: Reasons to remain doubtful about the existence of psi. *Journal of Consciousness Studies* 10/6-7, 29-50.

Aserinsky, E., & Kleitman, N. (1953). Regularly occurring periods of eye motility and concomitant phenomena during sleep. *Science* 118/3062 (Sep 4), 273-74.

Belvedere, E., & Foulkes, I. (1971). Telepathy and dreams: A failure to replicate. *Perceptual and Motor Skills* 33/3.1, 783-89

Braud, W.G. (1974). Relaxation as a psi-conducive state. *Bulletin of the Psychonomic Society* 3/2, 116-18.

Braud, W.G. (1975). Psi-conducive states. *Journal of Communication* 25/1, 142-52.

Braud, W.G. (1977). Long-distance dream and presleep telepathy. in *Research in Parapsychology 1976*, ed. by J.D. Morris, W.G. Roll, & R.L. Morris, 154-55. Metuchen, New Jersey, USA: Scarecrow Press,

Brockhaus, E. (1968). Possibilities and limits for research in paranormal phenomena in West Africa. *Proceedings of the Parapsychological Association, No. 5,* 9-10.

Child, I.L., Kanthamani, H., & Sweeney, V.M. (1977). A simplified experiment in dream telepathy. In *Research in Parapsychology 1976,* ed. by J.D. Morris, W.G. Roll, & R.L. Morris, 91-93. Metuchen, New Jersey, USA Scarecrow Press.

Child, I.L. (1985). Psychology and anomalous observations: The question of ESP in dreams. *American Psychologist* 40, 1219-30.

Clemmer, E.J. (1986). Not so anomalous observations question ESP in dreams. *American Psychologist* 41, 1173-74.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Lawrence Erlbaum Associates.

Dale, L.A. (1951). A series of spontaneous cases in the tradition of *Phantasms of the Living*. *Journal of the American Society for Psychical Research*

Dale, L.A., White, R., & Murphy, G. (1962). A selection of cases from a recent survey of spontaneous ESP phenomena. *Journal of the American Society for Psychical Research.*

Dalton, K., Steinkamp, F., & Sherwood, S.J. (1999). A dream GESP experiment using dynamic targets and consensus vote. *Journal of the American Society for Psychical Research* 93/2, 142-66.

Dalton, K., Utts, J., Novotny, G., Sickafoose, L., Burrone, J., & Phillips, C. (2000). Dream GESP and consensus vote: A replication. In *Proceedings of the 43rd Annual Convention of the Parapsychology Association* (Freiburg, Germany, 17–20 August), 74-85.

Dement, W. (1974). *Some Must Watch While Some Must Seep.* San Fransisco: Freeman.

Dodds, E.R. (1971). Supernormal phenomena in classical antiquity. *Proceedings of the Society for Psychical Research* 55/ 203, 189-272.

Dunne, J.W. (1927). *An Experiment with Time.* New York: Macmillan.

Eppinger, R. (2001). *A Comparative Examination of Ganzfeld and Dream Reports in Free response ESP studies.* [PhD thesis, University of .Edinburgh.]

Ermacora, G.B. (1895). Telepathic dreams experimentally induced. *Proceedings of the Society for Psychical Research* 11, 235-308.

Flammarion, C. (1900). *The Unknown.* New York: Harper.

Foulkes, D., Belvedere, E., Masters, R.E.C., Houston, J., Krippner, S., Honorton, C., & Ullman, M. (1972). Long-distance "sensory bombardment" ESP in dreams: A failure to replicate. *Perceptual and Motor Skills* 35/3, 731-34.

Globus, G.S., Knapp, P. H., Skinner, J. C., & Healy, G. (1968). An appraisal of telepathic communication in dreams. *Psychophysiology* 4/3, 365.

Green, C.E. (ed.) (1960). Report (1959) on enquiry into spontaneous cases. *Proceedings of the Society for Psychical Research* 53/191, 83-194.

Gurney, E., Myers, F.W.H., & Podmore, F. (1886). *Phantasms of the Living* (2 vols). London: Trubner Co.

Hall, C.E. (1967). *Experimente zur telepathischen beeinflussung von traumen*. *Zeitschrift fur Parapsychologie und Grenzgebeite der Psychologie* 10.

Hanefeld, F. (1968). Content analysis of spontaneous cases. *Proceedings of the Parapsychological Association, No 5,* 7-8.

Harley, T.A. (1989). Psi missing in a dream clairvoyance experiment. *Journal of the Society for Psychical Research* 56, 1-7.

Hearne, K.M.T. (1980). Lucid dreams and "ESP": An initial experiment using one subject. *Journal of Social and Psychological Research* 51/787, 7-11.

Hearne, K.M.T. (1981). The effect on the subject (in waking, SWS and REM states) of electric shocks to the agent: An “ESP” experiment. *Journal of the Society for Psychical Research*, 51, 87-92.

Hearne, K.M.T. (1987). A dream-telepathy experiment using a home “dream machine". *Journal of the Society for Psychical Research* 54, 139-42.

Hearne, K.M.T. (1989). A nationwide mass dream-telepathy experiment. *Journal of the Society for Psychical Research* 55, 271-74.

Hearne, K.M.T., & Worsley, A. (1977). An experiment in “telepathic” phobic fear and REM sleep. *Journal of the Society for Psychical Research* 49, 434-39.

Hobson, J.A. (2002). *Dreaming: An Introduction to the Science of Sleep.* Oxford: Oxford University Press.

Honorton, C. (1977). Psi and internal attention states. in *Handbook of Parapsychology,* ed. by B. B. Wolman, 435-72. New York: Van Nostrand Reinhold.

Honorton, C. (1981). Psi, internal attention states, and the Yoga Sutras of Patanjali. In *Concepts and Theories of Parapsychology*, ed. by B. Shapin & L.Coly, 55-68. New York: Parapsychology Foundation.

Hyman, R. (1986). Maimonides dream-telepathy experiments. *Skeptical Inquirer* 11.

Johnson, M.K., & Raye, C L. (1998). False memories and vonfabulation. *Trends in Cognitive Sciences* 2/4, 137-45

Kanthamani, H., Khilji, A., & Rustomji-Kerns, R. (1988). An experiment in ganzfeld and dreams with a clairvoyance technique. In *Proceedings of the 31st Annual Convention of the Parapsychological Association* (Montreal, Quebec, Canada), 17–21 August.

Kanthamani, H., & Khilji, A. (1990). An experiment in ganzfeld and dreams: A confirmatory study. In *Proceedings of the 33rd Annual Convention of the Parapsychological Association (*Chevy Chase, Maryland, USA), 16–20 August.

Kanthamani, H., & Broughton, R.S. (1992). An experiment in ganzfeld and dreams: A further confirmation. In *Proceedings of the 35th Annual Convention of the Parapsychological Association* (Las Vegas, Nevada, USA)*, 9*–13 August.

Krippner, S. (1975). Dreams and other altered conscious states. *Journal of Communication* 25/1, 173-82.

Krippner, S. (1991). An experimental approach to the anomalous dream in *Dream Images: A Call to Mental Arms*, ed. by J. Gackenbach & A. A. Sheikh, 31-54. Amityville, New York, USA: Baywood.

Luke, D. (2002). A further exploratory investigation of dream precognition using consensus judging, dynamic targets and post judging target dramas. Paper presented at the 26th International Conference of the Society for Psychical Research, Manchester, UK, September.

Luke, D., Zycowicz, K., Richterova, O., Tjurina, I., & Polonnikova, J. (2010). An indirect approach to the neurobiology of psi: Precognition and circadian rhythms. In *Proceedings of Presented Papers to the 6th Psi Meeting: Neuroscience & Parapsychology* (Curitiba, Brazil), 106-8.

Luke, D., & Zychowicz, K. (2011). Working the graveyard shift at the witching hour: Further exploration of dreams, psi and circadian rhythms. Paper presented at the 54th Annual Convention of the Parapsychological Association, Curitiba, Brazil, 18–21 August.

McLaren, I., & Sargent, C.L. (1982). Awareness of success in free-response dream ESP testing with a single subject. In *Research in Parapsychology 1981,* ed. by W.G. Roll, R.L. Morris, & R.A. White, 195-96. Metuchen, New Jersey, USA: Scarecrow Press.

Palmer, J., & Dennis, M. (1974). A community mail survey of psychic experiences. In *Research in Parapsychology 1974*, ed. by J.D. Morris, W.G. Roll, & R.L. Morris, 130-33. Metuchen, New Jersey, USA: Scarecrow Press.

Parker, A. (1975). *States of Mind: Altered States of Consciousness and ESP.* New York: Taplinger.

Parkinson, R.B., & Quirke, S. (1995). *Papyrus.* Texas: University of Texas Press.

Prasad, J., & Stevenson, I. (1968). A survey of spontaneous psychical experiences in school children of Uttar Pradesh, India. *International Journal of Parapsychology* 10/3, 241-61.

Prince, W.F. (1931). Human experiences: Being a report on the results of a questionnaire and a discussion of them. *Bulletin of the Boston Society for Psychic Research* 14, 5-331.

Priestley, J.B. (1964). *Man and Time.* Garden City: New York: Doubleday.

Radin, D. (1997). *The Conscious Universe: The Scientific Ttruth of Psychic Phenomena.* New York: HarperCollins.

Rhine, L.E. (1951). Conviction and associated conditions in spontaneous cases. *Journal of Parapsychology* 15, 164-91.

Rhine, L.E. (1962). Psychological processes in ESP experiences. Part II. Dreams. *Journal of Parapsychology* 26, 172-99.

Rhine, L.E. (1967). *ESP in Life and Lab.* New York: Macmillan.

Rhine, L.E. (1977). Research methods with spontaneous cases. in *Handbook of Parapsychology*, ed. by B. B. Wolman, 59-80. New York: Van Nostrand Reinhold.

Rhine, L.E. (1981). *The Invisible Pcture: A Study of Psychic Experiences.* Jefferson, North Carolina, USA: McFarland.

Robinson, E. (2009). Student brief: Examining the case for dream precognition.'*European Journal of Parapsychology* 24, 93-110.

Roe, C.A., Jones, L., & Maddern, C. (2007). Assessing the role of the 'four factor model' using a dream ESP protocol. *Journal of the Society for Psychical Research* 71, 35-42.

Roe, C.A., Sherwood, S.J., & Farrel, L.M. (2007). Assessing the role of personality and the provision of feedback in ESP dream research. In *Proceedings of the 50th Annual Convention of the Parapsychological Association* (Halifax, Nova Scotia, Canada, 2–5 August), 195-97.

Roe, C.A., Sherwood, S.J., Farrell, L.M., Savva, L., & Baker, I. (2007). Assessing the roles of the sender and experimenter in dream ESP research. *European Journal of Parapsychology* 22, 175-92.

Roe, C.A., Sherwood, S.J., Luke, D.P., & Farrell, L.M. (2002). An exploratory investigation of dream GESP using consensus judging and dynamic targets. *Journal of the Society for Psychical Research* 66, 225-38.

Ross, C. (1972). *Telepathy and Dreams: An Attempt at Replication.* Princeton, New Jersey: Princeton University.

Sannwald, G. (1959a). Statistische Untersuchungen an Spontanphänomenen. *Zeitschrift fur Para-psychologie and Grenzgebiete der Psychologie* 3.

Sannwald, G. (1959b). Zur Psychologie Paranormaler Spontanphänomene: Motivation, Thematik and Bezugspersonen "okkulter" Erlebnisse. *Zeitschrift für*

Parapsychologie und Grenzgebiete der Psychologie 3.

Sargent, C.L., & Harley, T.A. (1982). Precognition testing with free-response techniques in the Ganzfeld and dream state. *European Journal of Parapsychology* 4.

Sherwood, S.J., Dalton, K., Steinkamp, F., & Watt, C. (2000). Dream clairvoyance study II using dynamic video-clips: Investigation of consensus voting judging procedures and target emotionality. *Dreaming* 10, 221-36.

Sherwood, S.J., & Roe, C.A. (2013). An updated review of dream ESP studies conducted since the Maimonides dream ESP program. In *Advances in Parapsychological Research 9*, ed. by S. Krippner, A.J. Rock., J. Beischel, & H.L. Friedman, 38-81. Jefferson, North Carolina, USA: McFarland.

Sherwood, S.J., Roe, C.A., Simmonds, C. A., & Biles, C. (2002). An exploratory investigation of dream precognition usig consensus judging and static targets. *Journal of the Society for Psychical Research* 66, 22-28.

Sidgwick, E.M. (1888). On the evidence for premonitions. *Proceedings of the Society for Psychical Research* 5, 288-357.

Stevens, W.O. (1949). *The Mystery of Dreams.* New York: Dodd & Mead.

Stevenson, A. (ed.) (2010). *Oxford English Dictionary* (3rd ed.). Oxford, UK: Oxford University Press.

Stokes, D.M. (1997). Spontaneous psi phenomena. In *Advances in Parapsychological Research 8*, ed. by S. Krippner, 6-87. Jefferson, North Carolina, USA: McFarland.

Storm, L., Sherwood, S.J., Roe, C.A., Tressoldi, P.E., Rock, A.J., & Di Risio, L. (2017). On the correspondence between dream content and target material under laboratory conditions: A meta-analysis of dream-ESP studies, 1966-2016. *International Journal of Dream Research* 10/2, 120-40.

Strauch, I. (1970). Dreams and psi in the laboratory. In *Psi Favorable States of Consciousness*, ed. by R. Cavanna, 46-54. New York: Parapsychology Foundation.

Symonds, J.A. (1851). *Sleep and Dreams: Two Lectures Delivered at the Bristol lLiterary and Philosophical Society.* London: John Murray.

Tolaas, J., & Ullman, M. (1979). Extrasensory communication and dreams. In *Handbook of Dreams: Research, Theories and Applications*, ed. by Van Nostrand Reinhold.

Ullman, M., & Krippner, S., with Vaughan, A. (1973). *Dream Telepathy.* New York: Macmillan. [Reprinted 1989 as *Dream Telepathy: Experiments in Nocturnal ESP (2nd)*. Jefferson, North Carolina, USA: McFarland.

Van de Castle, R. (1971). *The Psychology of Dreaming.* Morristown, New Jersey, USA: General Learning Press.

Weiner, D.H., & McCain, D.L. (1981). The use of majority-vote technique in dream ESP: A pilot study. *Journal of Parapsychology* 45, 156-57.

Weserman, H.M. (1819). *Versuche willkürlicher Traumbildung. Archives f. d. Tierischen Magnetismus* 6.

White, R.J. (ed.). (1975). *Oneirocritica: Interpretation of Dreams.* Park Ridge, New Jersey, USA: Noyes Press.

Wiseman, R. (2011). *Paranormality: Why we Believe the Impossible.* London: Spin Solutions Ltd.

Woods, R.K. (eds.) (1947). *The World of Dreams*. New York: Random House.

Endnotes

Footnotes

- 1. Van de Castle (1971).
- 2. Woods (1947).
- 3. Parkinson & Quirke (1995).
- 4. Woods (1947).
- 5. Van de Castle (1971).
- 6. Van de Castle (1971).
- 7. Tolaas & Ullman (1979).
- 8. Dodds (1971).
- 9. Braud (1974, 1975); Honorton (1977); Honorton (1981).
- 10. White (1975).
- 11. Van de Castle (1971).
- 12. Symonds (1851).
- 13. Gurney, Myers, & Podmore (1886).
- 14. Gurney, Myers, & Podmore (1886), vol. 1, 346.
- 15. Brockhaus (1968); Dale (1951); Dale, White & Murphy (1962); Flammarion (1900); Green (1960); Hanefeld (1968); Palmer & Dennis (1974); Prasad & Stevenson (1968); Prince (1931); Priestley (1964); L.E. Rhine (1962, 1967); Sannwald (1959a, 1959b); Stevens (1949).
- 16. Sidgwick (1888).
- 17. Gurney, Myers, & Podmore (1886).
- 18. Dunne (1927).
- 19. Rhine (1951, 1962, 1967, 1977, 1981).
- 20. Rhine (1981).
- 21. Stokes (1997).
- 22. Rhine (1977).
- 23. Symonds (1851).
- 24. Sidgwick (1888).
- 25. Hobson (2002).
- 26. Gurney, Myers, & Podmore (1886).
- 27. Johnson & Raye (1998).
- 28. Sidgwick (1888).
- 29. Weserman (1819).

- 30. Ermacora (1895).
- 31. Aserinsky & Kleitman (1953).
- 32. Ullman & Krippner, with Vaughan (1973).
- 33. Tolaas & Ullman (1979).
- 34. Krippner (1991).
- 35. Ullman & Krippner, with Vaughan (1973, 1989).
- 36. Ullman & Krippner, with Vaughan (1973).
- 37. Ullman & Krippner, with Vaughan (1989).
- 38. Child (1985).
- 39. Radin (1997).
- 40. Sherwood & Roe (2013).
- 41. Cohen (1988).
- 42. Child (1985).
- 43. Clemmer (1986)
- 44. Krippner (1991).
- 45. Clemmer (1986).
- 46. Hyman (1986); Parker (1975).
- 47. Alcock (2003).
- 48. Hall (1967); Ross. (1972).
- 49. Foulkes et al (1972); Belvedere & Foulkes (1971); Strauch (1970); Dement (1974).
- 50. Globus et al (1968).
- 51. Foulkes et al. (1972).
- 52. Krippner (1975).
- 53. Hearne (1980); Child et al (1976); Kanthamani et al (1988); Kanthamani & Khilji (1990); Kanthamani & Broughton (1992); Braud (1977); McLaren & Sargent (1982); Sargent & Harley (1982); Harley (1989); Hearne & Worsley (1977); Hearne (1981, 1987, 1989); Dalton, Steinkamp, & Sherwood (1999); Dalton et al (2000); Sherwood, Dalton, Steinkamp &, Watt (2000); Eppinger (2001); Roe, Sherwood, Luke, & Farrell, (2002); Sherwood, Roe, Simmonds, & Biles (2002); Weiner & McCain (1981); Roe, Sherwood, Farrell, Savva, & Baker (2007); Roe, Sherwood, & Farrel (2007); Roe, Jones, & Maddern (2007); Luke (2002); Luke, Zycowicz, Richterova, Tjurina, & Polonnikova (2010); Luke & Zychowicz (2011); Robinson (2009).
- 54. Dalton, Steinkamp, & Sherwood (1999).
- 55. Sherwood & Roe (2013).
- 56. Roe, Sherwood, Farrell, Savva, & Baker (2007).
- 57. Hearne & Worsley (1977); Hearne (1981); Roe, Sherwood, Luke, & Farrell (2002).
- 58. Braud (1977); Dalton, Steinkamp, & Sherwood (1999); Dalton et al. (2000); Sherwood, Roe, Simmonds, & Biles (2002); Weiner & McCain (1981); Luke (2002).
- 59. Roe, Sherwood, & Farrel (2007); Roe, Jones, & Maddern (2007).
- 60. Kanthamani, Khilji, & Rustomji-Kerns (1988); Kanthaman & Khilji (1990); Kanthamani & Broughton (1992); Sargent & Harley (1982); Eppinger (2001).
- 61. Luke, Zycowicz, Richterova, Tjurina, & Polonnikova (2010); Luke & Zychowicz (2011).

- 62. Alcock (2003).