

Why Do Ghosts Wear Clothes? — Examining the Role of Memory and Emotion in Anomalous Experiences

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Abstract

The likely involvement of memory in mediating the anomalous information of psychic experiences into consciousness was first recognized by early psychical researchers. Later models by Roll (1966) and Irwin (1979) strengthened the case that the experiential component of a psychic experience was based on visual memory images. Recent research on the emotional system has revealed the close links between that and memory, especially the role of feelings in determining the memory images that occupy conscious attention, particularly when making decisions or planning action. The integration of the fight-or-flight capabilities of the emotional system with cognition and the large data storage capabilities of memory has conveyed enormous evolutionary advantage and it is argued that if evolution has developed a means of capitalizing on anomalous information, it is likely to have incorporated this within the emotional system. Examples from the three main classes of spontaneous cases (dreams, intuitive experiences, and hallucinations) are used to illustrate the joint role of emotion and memory in “naturally occurring” psychic experiences

Introduction

If I were to say that I had seen a ghost, I think most people could imagine what my experience was like. I would have encountered an entity that was not a living human being, but might have been at one time.

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But what did that entity look like? Does the pale, shapeless, shroud-draped figure of illustrations and cartoons spring to mind? If it does, that would be far from what most people who claim to have seen a ghost typically report.

Consider this example from a Canon Phillips in 1963. Shortly after the death of C.S. Lewis, he had this experience:

“But the late C.S. Lewis, whom I did not know very well, and had only seen in the flesh once, but with whom I had corresponded a fair amount, gave me an unusual experience. A few days after his death, while I was watching television, he ‘appeared’ sitting in a chair within a few feet of me, and spoke a few words which were particularly relevant to the difficult circumstances through which I was passing. He was ruddier in complexion than ever, grinning all over his face and, as the old-fashioned saying has it, positively glowing with health.”

Canon Phillips had a second similar encounter with the ghost of C. S. Lewis, and later he was asked by two investigators from the Society for Psychological Research to describe the scene in more detail. He reported:

“On both occasions C.S. Lewis was dressed in rather rough, well-worn tweeds, brown in colour. This did not strike me as remarkable at the time until I realized some weeks later that I had never seen him in ordinary clothes.”

(MacKenzie & Goldney, 1970)

The fact is that in most cases the “ghost” is clearly recognizable as a person, and in many cases it is a person who is known to the one who sees the ghost. Often the ghost is a loved one, but sometimes they represent historical figures, or complete strangers.

The popular interpretation of ghosts has traditionally been that the ghost is the spirit of a dead person who has returned for a visit, and many still believe that today. Almost as soon as the study of these experiences became systematized with the formation of the Society for Psychological Research in the late 19th century investigators began to see problems with this interpretation. The possibility of an immaterial soul or spirit continuing beyond bodily death was not a problem and, in fact, was in keeping with prevailing religious belief. The problem was that the ghosts were wearing clothes, and sometimes bearing objects. The

idea that one's very material clothing also passed on to the afterlife did not give way to any convincing explanation within the traditional religious concept of survival. Often the clothing that the ghost appeared in was what the deceased customarily wore, not necessarily those in which the person died. Are there "valet angels" in heaven who will fetch one's favourite clothes?

A more serious problem arose as the early investigators began to amass a large collection of reports of ghostly apparitions that were, for all practical purposes, like other ghost experiences, except that the person in the apparition was not dead. This led early SPR researchers such as Edmund Gurney to conclude that these experiences were hallucinations mediated by telepathy (Gurney, Myers, & Podmore, 1886). F.W.H. Myers largely agreed with the idea that the experience was hallucinatory, but he proposed that the departed spirit interacted with the mind of the person experiencing the apparition in order to bring it about (Myers, 1903).

Thus from the earliest days of psychical research there was an awareness, if not a consensus, that classic ghost experiences were essentially a product of the mind of the percipient — an hallucination composed of images taken or constructed from the experiencer's memory. How the hallucination was triggered remained a mystery, and, of course, a subject of much discussion to this day.

It is not primarily my intention to discuss ghosts and apparitions beyond using them to illustrate that very quickly the psychic experience was being deconstructed into its constituent parts, and one of those parts was our memory store of images. What makes psychic experiences interesting for science is that they involve an apparently anomalous transfer of information. Hallucinations are of psychological interest of themselves, but when an hallucination carries information that alerts a person of a tragedy or provides other information that we are confident was neither sensed or deduced, then it presents a different challenge to science.

A simple way of looking at psychic experiences involves three main components:

1. A trigger event. Usually this is of personal significance to the experiencer, but not always.
2. A method of "transmission". I put the word transmission in quotes because I do not want to suggest a radio model. It is precisely this

point that makes the paranormal just that. What could possibly carry information from great distances with no apparent medium, or, worse yet, bring information from the future? My opinion is that this is a problem to be solved by physics, but at this point we can say little more than that this is an unknown linkage between the event and the experience.¹

3. The recipient. This, of course, is the person who receives the information about the event. I use the term recipient rather than percipient to avoid pre-judging the issue on whether something is being perceived in a manner analogous to sense perception. In the recipient, the process probably involves two stages: (1) How the anomalous information enters the system, and (2) How the human system turns the input into useful information that can change behaviour or the content of conscious awareness.²

It is with this third component — the recipient — that some glimmer of understanding is beginning to emerge. Irwin (Irwin, 1999) refers to this as the experiential phase of psi, and he draws a distinction between two different approaches to understanding this phase. One approach is a sensory-like approach (or “pseudo-sensory” in Irwin’s terminology) which is embodied in the popular notion of a “sixth sense”. In contrast to this are models of psychic experience based on memory. Although some investigators have proposed models based on sensory processing (e.g. Schmeidler, 1991) Irwin’s thorough analysis of spontaneous psychic experiences and laboratory research (Irwin, 1979) lead him to the conclusion that “...the available evidence does not encourage a view that extrasensory information receives the same sorts of processing as sensory input” (Irwin, 1999, p. 166). The typical characteristics of sensory stimuli, e.g., its discriminability, have no systematic effect on performance in ESP tests. In the cases of spontaneous ESP, apart from waking hallucinations, which are the least common and have only an apparent sensory input, the anomalous information enters consciousness without any clues to how it got there. In all cases of normal sensory experience one can reflect upon the process by which the information arrived through the senses, but one cannot for psychic information.

¹This is not to suggest that there are no theories of what might be happening. Indeed there are several (see Stokes, 1987) but all remain speculative.

²Parapsychological researchers commonly speak of a generally accepted “two-stage” model for receptive psychic experiences (extrasensory perception or ESP) which is simply the second and third items in this list.

While sensory models are not ruled out, Irwin believes that the weight of the evidence points toward memory-based models that involve what he calls “ideational” processing. In these models, the bulk of the information processed in a psychic experience comes *not* from a source external to the receiver, but from within the receiver.

I am in general agreement with Irwin’s assessment, but I take a slightly different perspective on the input issue. While I agree that the pseudo-sensory model has not been helpful, we still have to recognize that there is an input of some sort. I think a better way of characterizing the issue is to consider whether the anomalous input is a high bandwidth channel that can convey a great quantity of new information, or a low bandwidth channel that carries only a very little information, but sufficient information to activate the memory systems needed to “get the job done”. Although we have no way of measuring the channel capacity, the evidence suggests that component images and ideas of a psychic experience arise from within the system.

Memory models of Extra Sensory Perception.

The role of memory in the psychic process was recognized to a greater or lesser degree by the earliest investigators, first in the case of hallucinations, and then more broadly across the entire range of psychic experiences. In the 1930s René Warcollier observed, “We must admit... that the images which appear to the mind of the percipient under the form of hallucinations, dreams, or more or less well-formed images, spring exclusively from *his own mind*, from his own conscious or subconscious memory. *There is no carrying of visual impressions from the agent to the percipient...*” (Warcollier, 1939, p. 133, italics in original).

William Roll (1966) was the first to develop a comprehensive memory theory of extrasensory perception. Drawing on observations of spontaneous case researchers Roll argued that psychic experiences of extrasensory perception (ESP) consist of *revived* memories. In Roll’s model there is an anomalous input or trigger, but after that the psychic experience is based on the contents of existing memory. Roll draws a contrast between ordinary sensory input, in which new input is processed by comparing it against existing memory data, and the extrasensory experience, which arises solely from memory. Once evoked, the ESP-triggered memories are subject to the same mental processing that ordinary memories are (Roll, 1966).

The most fully elaborated memory model of ESP has been developed by Harvey Irwin (1979). Building upon Roll's work, Irwin acknowledges that while neither the spontaneous cases nor the experimental research establishes it conclusively, the case for ESP being wholly based on memory is very strong.

One of the obvious characteristics of ESP information is that it is new to the recipient. Irwin notes, however, that this does not mean that memory not is involved. A psychic experience that informs you that a good friend has just died obviously could not activate a memory of your friend dead, but would likely activate networks of memories involved with your friend, and death in general, and perhaps the manner in which he died. ESP activates and links the discrete components that give rise to new information by their conjunction. This sort of experience is often accompanied by the distinct awareness that the ESP-triggered memory images are suddenly intruding in mental activity that was directed elsewhere.

If this conjecture is correct, then it can account for the fact that ESP information is often frustratingly incomplete. The recipient simply may not have the memories needed to complete the picture, or perhaps for whatever reason, the ESP trigger is unable to cause some links to be made.

Investigators who have used the experimental technique known as the ganzfeld have often seen this memory process in action. In a ganzfeld experiment the subject is placed in a state of mild sensory isolation and asked to describe the images that parade across consciousness while someone in another location attempts to "send" an image. Afterwards the subject judges a set of pictures to identify the one that was most like his or her imagery. Often the technique produces very striking hits, but the actual images that the participant reports are drawn from his or her past experience. When those memory images approximate the target picture reasonably well the subject can correctly identify it as the target. It is probably no coincidence that two of the most successful targets in one well-known series of ganzfeld experiments conducted by Charles Honorton and his colleagues were a short segment of a Bugs Bunny cartoon and a static picture of Santa Claus in a Coca-Cola advertisement. These would be well-established memory images for his American participants.

Another issue for Irwin was what type of memory is involved in ESP. It seems clear that the type of memory involved in the ESP process

is long-term declarative memory. The spontaneous cases suggest that the memories are primarily visual and generally concrete rather than abstract. Irwin observes that in a number of experimental and quasi-experimental studies it is the *structure* of the target that seems to come through. Semantic memories do not seem to be activated. If any semantic information emerges it is usually at a later stage when the subject attempts to interpret the images he or she has experienced. Warcollier's extensive naturalistic telepathy experiments led him to conclude, "It is not the *meaning* which is transmitted, but the *image*" (Warcollier, 1939, p. 131). Upton Sinclair's experiments with his wife as subject (Sinclair, 1962) repeatedly produced examples of strikingly close reproductions of the target material, but which Mrs. Sinclair could not identify at all. More contemporary examples come from the research on remote viewing that supported America's psychic spying programme. Early in that project the scientists realized that the sketches and drawings the remote viewers made were likely to be more useful and accurate than the viewer's effort to interpret his or her impressions verbally. This led to the standard operating procedure to remind the remote viewers to just draw their images, not to try to interpret them.

While I agree with Irwin that semantic memory seems to play little or no part in ESP, I think more than mere structural elements are involved. I think the evidence, particularly from the dream research and the ganzfeld experiments, indicates that complete images of objects or individuals are often activated. I am inclined to think that the basic memories that underlie the ESP process when it arises into consciousness are primarily *visual* images, but I don't think this is far from Irwin's notion.

Having focused on the structural memories as the vehicle for ESP, Irwin goes on to develop a model of how the known features of human information processing will determine how the ESP information eventually emerges into consciousness. Although I think we are dealing with more than just structural memories, I think the idea that once activated, ESP-triggered memories will be subject to the same sort of cognitive processing that ordinary memories are makes sense. One simple example is that issue of cognitive processing capacity. Spontaneous case investigations reveal that a large proportion of the waking psychic impressions come when the recipient is relaxing or engaged in a more-or-less "mindless" activity such as washing dishes. Spontaneous experiences are rarely reported during periods of intense cognitive activity.

In the most successful laboratory ESP experiments an effort is made to make the subjects relaxed and undistracted by sensory or cognitive activities.

Revisiting spontaneous psychic experiences

Irwin's model, and Roll's which preceded it, offer an important framework within which to understand how psi works in the brain. Surprisingly, there has been very little research to explore Irwin's model, and no research at all studying possible connections between memory function and ESP using experimental techniques that produce better psi combined with appropriate sample sizes based on power analyses. In the years since Irwin's work, neuroscience has moved on, and I shall argue that today there are even more compelling reasons for suspecting the involvement of memory systems in psychic experiences, and that other systems of the brain and body are likely to be involved as well.

First a brief review of the salient characteristics of extrasensory psychic experiences as they occur in life is needed. However much we may learn in the laboratory, the natural occurrence of psi in daily life remains the touchstone against which our understanding must be tested.

Spontaneous cases naturally fall within three main categories. Because the various case collections have used different criteria and have had different emphases, it is not wise to rely on them for exact proportions, but we draw some general conclusions. By far, the most common vehicle for psychic experiences is the dream. Dreams form between one third and nearly two-thirds (in the massive L.E. Rhine collection) of all spontaneous cases reported (Stokes, 1997).

It has long been recognized that the images that play across our dreams are from memory sources. The dreaming state seems particularly designed to facilitate the re-arranging and combining of memory images in new patterns and episodes. Of course, this is fundamental to psychoanalytic theory and is a well known feature of creativity and problem-solving. It is not a big step to expect that dreams might form an ideal workspace in which the yet unknown psychic influence can assemble the various memory images to present new information to consciousness.

Louisa Rhine, who specialized in the analysis of spontaneous cases, divided the dream experiences into two categories: realistic and symbolic. Two examples from the thousands of dream cases will serve to

illustrate how memory underlies the ESP process.

The first case comes from a streetcar (tram) driver in Los Angeles. He reported an extremely realistic and detailed dream in which he was driving a streetcar on the W line loaded with passengers. "All the things in the dream were as they actually were; I mean the streets, stores, traffic conditions. Everything was in the dream just as they were in real life." Crossing an intersection he saw a northbound number 5 streetcar and waved to the motorman as he passed. "Suddenly, without warning a big truck, painted a solid bright red, cut in front of me . . . and the truck making the illegal turn could not see my car because of the other streetcar. There was a terrific crash. People were thrown from their seats and the truck overturned." Two men from the truck lay dead on the pavement and the driver walked up to a woman from the truck who was screaming in pain. She looked at the driver with what he described as the "largest, bluest eyes I had ever seen" and repeatedly shouted, "You could have avoided this."

The driver awoke from his dream soaked in sweat and very shaken. Later when he arrived at work he was assigned to the W line and had forgotten about the dream. On his second trip of the day he was at the intersection from his dream with a full load of passengers.

"I was waiting for the signal to change, still not thinking of the dream, when suddenly I became sick to my stomach. I was actually nauseated. I felt provoked at myself and hoped it would go away. As I left the intersection on the signal change, I saw, just as in my dream, a Number 5 car, northbound. Now I was definitely sick. Everything seemed to have happened before, and my mind seemed to be shouting at me about something. When I waved to the motorman on the '5' car, the dream came to me. I immediately shut off the power and applied the brakes, stopping the car. A truck, not a big truck completely red as in my dream, but a panel delivery truck, with the space for the advertising on the side painted over with bright red, shot directly in my path. Had I been moving at all, I would have hit it as surely as I did in the dream."

"There were three people on the truck, two men and a woman. As the truck passed in front of me, the woman leaned out of the window and looked up at me with the same startled, large blue eyes I had seen in my dream, and . . . waved her arm

and hand, thumb and forefinger circled in the familiar 'okay' gesture."³

This is an example of a realistic case and it is easy to see that the dream consisted of the driver's well-established memories of the streetcar route and the situations he normally encountered, plus apparently new information assembled from his memories of other vehicles, people and possible scenarios. Although he may not have had the memory of a streetcar collision as such, it would be a simple matter to construct a plausible scenario from existing memory images just as anyone could imagine an auto accident happening. It is interesting to note that the dream images of what had not yet happened were not entirely accurate (e.g., the truck), but they were enough to get the message across.

The second illustration is a symbolic dream from a woman whose son was in the Navy in the South Pacific Theatre during the Second World War. "I dreamed that my young son, an only child . . . came to me while I was busy in the kitchen and handed me his uniform which was sodden, soaking, and dripping wet. He had a most distressed expression on his young face. . ." The woman's dream continued with her wringing the water out of her son's uniform but her son took it from her and dropped into the laundry tub and took her into his arms and said, "Isn't this terrible! Oh, Mom — it's all so terrible!" In the dream the woman reminded her son that nothing was so terrible that they could sit down and talk it through, and the two of them went into the living room and the woman sat down and her son sat in her lap, and, as these things happen in dreams, the son turned into an infant as she rocked him and the dream soon ended. In due course the woman learned that her son's ship had been torpedoed on the very night that she had the dream and that her son and 250 others had been killed in the massive explosion of ordnance that resulted (Rhine, 1961, p. 49).

Again, the dream images are all drawn from memory images or the plausible manipulation of image components. It is classified as a symbolic dream because it is far from a representation of the related event. One can only speculate as to why some psychic dreams are symbolic, but it could be that for this woman the images needed to construct a scenario of the carnage of a torpedoed munitions ship were simply not available and the "message" was carried through other images. This was before television, of course, and the images that the public saw in

³From the LE Rhine collection, quoted in Broughton (1991, pp. 20-21).

theatres and elsewhere were carefully controlled during the war.

The second largest type of spontaneous ESP in most of the collections is the intuitive impression, representing a little more than a quarter of the cases. The intuitive impressions often amount to a sudden hunch or an unexpected awareness that something of consequence has happened (usually to someone connected to the person who has the experience). The cases are often described as “just knowing” and are unaccompanied by any imagery or reasoning process. A typical example of an impression case would be when a mother suddenly “knows” that something has happened to her child and drives to the school where she learns that her child had just had an accident in the playground. Many of these impressions are accompanied by strong emotional feelings, often anxiety or dread. A significant number of cases involve *only* the feelings, with no cognitive content to explain them. Consider this case from a young man in California.

“One night in July of 1951 we had just finished supper, and my brother-in-law was getting ready to go to a meeting in San Jose, which is twenty-five miles from our house. For no reason I started crying, me, crying, twenty-five years old! I *begged* him not to go. Well there was quite a fuss and I got everyone upset. Mom kept saying, “He will be all right.” You know, the usual soft soap you give an upset person. This went on for about fifteen minutes. Then the feeling left me, and I said, “It’s all right for Bob to go now.”

“By this time the fellow he was to ride with had waited at their meeting place, but left before Bob got there, so Bob had to drive his own car down. He got as far as Bayshore and Charter Streets, when the traffic began to back up. A wreck, which is nothing unusual around here, but when Bob got to the corner, he said he almost passed out. There spread out on the highway was the man he was to have ridden with; his head was half gone. The car was a total loss. They found later that his brakes had locked on one side, and he flipped up in the air and came down on the other side of the road to be hit head-on by another car.”

(Rhine, 1961, p. 127)

This is a striking example of a case where the unexpected onset of

strong feelings — with no images or other information — managed to prevent a family tragedy.

The final type of spontaneous case is that of the waking hallucination or quasi-sensory image. This is where we find our clothed ghosts, but most of the hallucinations involve living individuals. Sometimes the hallucinations can be relatively trivial, but frequently they convey important information. In another Second World War example, an American soldier had been driving a car with several officers on an inspection tour of the front lines. Just before starting the return journey, another soldier told him of a short cut back to the base. He found the short-cut and began driving down the road when suddenly he saw a friend waving him to stop, telling him to go back the way he came. Without thinking much of it, he reversed the car, taking care to avoid a truck full of marines waiting to go down the same road. Only when he was nearly back at the base did he realize that the friend who had just directed him back to the main road had, in fact, been killed a couple of weeks earlier. The next day when the casualty reports came in, the driver learned that the truckload of marines that he had taken care to avoid had hit a mine on the road he almost went down, and all were killed.

Those are the main types of psychic experiences when we recognize them to be sufficiently different from our ordinary experience that we take note of them. But if psi can affect behaviour rather dramatically, as we seen in spontaneous cases, might it not operate at more subtle and less noticeable ways. This brings us to a fundamental question that we often loose sight of, “What is psi for?” Surely it is more than a curious freak show on the margins of consciousness. At an operational level, it seems that the chief function of psi is to provide information that we use, consciously or unconsciously, to make better decisions about future courses of action or to otherwise guide our behaviour. At a more general level, at least for me, the answer is simple: psi is meant to be useful, and it is meant to be useful in the same way as all our other abilities — to contribute to our survival and our ability to pass on our genetic heritage (Broughton, 1988).

From this perspective we would expect ESP (or receptive psi) to have certain characteristics. As something that is likely to have co-evolved with consciousness we should expect ESP to be tightly integrated with all the other components of human behaviour. The “normal” operation of ESP (in contrast with the more exceptional instances that attract our attention) might be to bias our decision-making process

and influence our behaviour in such a way that serves our needs. The most thoroughly developed model of receptive psi as a need serving component of human behaviour has been developed by Stanford (Stanford, 1990). In Stanford's model, ESP information can unconsciously initiate a wide range need-relevant "responses", including behaviours, feelings, images and associations or even desires.

One of evolution's distinguishing characteristics is that makes remarkably economical use of an organism's resources. Evolution tends not to devise entirely new systems but rather adapts and extends existing systems to serve new needs and confer new advantages. Our own brains are build on the substrate of a reptilian brain which remains a crucial part of what it means to be human, and to survive. New functions are typically "piggybacked" onto existing systems that they might enhance.

What system or systems of the human brain might we speculate that psi is piggybacked upon? If I were to place a bet, it would be on the emotional system, working in conjunction with memory. The emotional system is, of course, the underpinning of that most fundamental survival adaptation, the fight or flight response, and, through the operations of the amygdala, is designed the detect threats and danger and to initiate responses automatically. This is a system that we share with virtually all vertebrates. LeDoux (1996) argues that it is precisely the merging of the emotional and cognitive systems that conveys our immense evolutionary advantage because it allows us to shift from simple automatic reactions to planned actions. Damasio (1994) has further shown that the emotional system plays a major role in the action phase by constraining the available options by biasing the selection of memory images that present to us our options for action.

Elsewhere I have argued that Damasio's somatic marker hypothesis offers a very promising framework in which to see the possible operation of anomalous information in consciousness (Broughton, 2002). In that paper I drew attention to the emotional components of psychic experience, but Damasio's somatic marker hypothesis involves both the emotional system *and* memory working in close harmony.

In this context, let us turn again to the spontaneous cases. The special relationship between sleep and dreaming, and memory is an area of much research and considerable debate today (Hobson, Pace-Schott, & Stickgold, 2000; Stickgold, Hobson, Fosse, & Fosse, 2001). Sleeping and dreaming seems to enjoy a two-way relationship with memory. Mem-

ory is obviously the source of the content of dreams, but dreams, and more generally, sleep, plays a role in the consolidation and strengthening of long-term memory.

Precisely what the sources of the memories for dreaming are and how they are selected remains uncertain. Some researchers now see dreams not simply the result of more-or-less random brain activity, but a form of meaningful memory processing (Paller & Voss, 2004; Revonsuo, 2000). There is growing evidence that the emotional system plays an important role. Recent research shows that during REM sleep the central nucleus of the amygdala and the limbic forebrain structures are activated, contributing substantial input from the emotional system into the dreaming process. Braun and colleagues have shown that the limbic system and visual association areas are active in REM sleep, but not the primary visual area of the brain, suggesting that dreaming may represent a closed system that operates without the brain systems that mediate sensory information (Braun et al., 1998). Interestingly, Stickgold and colleagues note, "... although emotions appear to play an important role in the selection of memories for incorporation into dreams, the dreams themselves often show little or no emotional content." (Stickgold, Hobson, Fosse, & Fosse, 2001, p. 1056). The particular combination of brain activity that occurs during dreams may be suited to the creative and problem solving activity associated with sleep and dreams (Wagner, Gais, Haider, Verleger, & Born, 2004), and it may provide a suitable canvas upon which the memory images needed to convey anomalous information can be painted.

Intuitions, which form the second most common type of psychic experience, might, on first inspection, present problems since they seem to involve neither memory nor images, but that would be misleading. The momentary contents of consciousness are images, some sensory, others drawn from memory. During periods of low sensory input, memory images will dominate. These images are held in working memory for periods from a fraction of a second to several seconds. The mechanism of basic attention holds a particular image in working memory more or less to the exclusion of other images. As part of his somatic marker hypothesis Damasio (1994) argues that the emotional system, working in concert with the prefrontal structures of the brain, plays a major role in the generation of the particular images that play across consciousness and in determining which images receive the focus of our attention. When this unconscious process leads to sudden conclusions or de-

cisions, it will feel like *intuition* because the solution or the decision will seem to have just “popped” into mind. In fact, a very subtle interplay of learned emotional experience and memory will have been behind the process, but that will all be hidden from conscious awareness. My speculation is that this would be a convenient process on to which a system for using anomalous information might be grafted.

A particularly interesting feature of many of the intuitive cases is that they involve strong emotional feelings (Stevenson, 1970). LeDoux (1996) and Damasio (1994) and others have shown that in addition to declarative memory a person has emotional memory. These are memories that can set our bodies in the physical states — the feelings — associated with past experiences. These memories of feelings are the somatic markers that underpin decision making and planning in Damasio’s somatic marker theory. Cases such as the young man whose teary outburst delayed his brother-in-law’s departure provide a most important clue to the process in that they seem to represent a direct activation of feelings with no cognitive content at all.

The third and least common type of psychic experience — hallucinations — also involve memory images, but now masquerading as sensory input. The images are most commonly visual, but also can be auditory or involve other senses. The hallucinations of spontaneous cases are also quite unlike the recurrent hallucinations associated with clinical and neurological conditions. They usually are isolated events in normal individuals.

The aetiology of hallucinations in clinical and non-clinical populations is also the subject of much research and debate (see Collerton, Perry, & McKeith, 2005, and accompanying commentaries). The prevailing models for hallucination generally involve deficiencies or malfunctions in attributing the source of images in short term memory (Bentall, 2000; Collerton, Perry, & McKeith, 2005). In these models, images from internal sources are incorrectly attributed to external sensory input. More recently, speculation has grown that waking hallucinations may have their origins in the same mechanisms that underlie dreaming (Gottesmann, 2005; Ingle, 2005; Mahowald, Woods, & Schenck, 1998; Pace-Schott, 2005).

However hallucinations are triggered, there is little doubt that the images are drawn from, or constructed from schema held in, long-term memory. In psychic hallucinations, what is it that selects the particular memory images that convey the message? At this stage the an-

answer to that question can only be speculative, but, again, Damasio's somatic marker hypothesis provides some intriguing clues. A fundamental component of his model is the role of the emotional system in selecting the images to which we attend, and the evolutionary roots of this system are in that part of the brain concerned with threat detection and survival reactions. That system has evolved mechanisms to bias and influence the attentional resources we deploy to the images that represent our options for action (Damasio, 1994, 1996). Again, if we have a system designed for fast automatic processing of survival-related information, would it not make sense for it to incorporate *psychic* information if and when it is available? Evolution may simply have found that the way to present psi information during ordinary waking consciousness may to "superimpose" suitable memory information on ongoing sensory processing.

A final intriguing suggestion linking our use of psychic information and the emotional system lies in what we often think of as one of the great problems with research in this area — our inability to control consciously the use of psychic information. Spontaneous cases are just that — spontaneous. They come of their own accord — one does not make them happen. In the laboratory psi is described as "elusive" and that its operation is unconscious. In my evolutionary view of psi I argued that one of the characteristics we could expect of evolved psychic abilities might be that they are not subject to conscious control, because if they were they would be too easy to misuse in a way that was not conducive to survival in evolutionary terms (Broughton, 1988). At the time I could not think of a mechanism, but recently Dolan has noted that emotions "...are less susceptible to our intentions than other psychological states insofar as they are often triggered, in the words of James, 'in advance of, and often in direct opposition of our deliberate reason concerning them'" (Dolan, 2002, p. 1191). Indeed, it seems the very nature of the emotional system's operation as a survival response system is that it is unconscious and independent of our intentions.

In conclusion, it seems clear, perhaps even obvious, that memory mediates the appearance of psychic information into consciousness. How those memories are triggered remains a mystery, but I am convinced that the evidence from our growing understanding of the emotional systems suggests that we should look there for the origins of the psychic influence on behaviour. The substantial number of spontaneous cases that seem to consist solely of emotional feelings further suggests

that we may be dealing with a system that affords multiple paths for psi to achieve its goals. One might involve the interaction of the emotional system and memory, as we have been examining, and another may be a direct triggering of the feeling component of emotions.

Ultimately there is a need for new and innovative experimental approaches if there is any hope of translating my speculations into hypotheses. Recent years have seen the emergence of exciting new experiments exploring more directly the link between psi and the emotional system in the work of Dean Radin (Radin, 1997, 2004) and Dick Bierman (Bierman, 2004; Bierman & Radin, 1997). But this is just the beginning, and more than ever there is a need for parapsychologists to join with neuroscientists in the quest for understanding psychic experiences.

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