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*Aquém e Além do Cérebro: Relações Interpessoais Excepcionais.*

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### TELEPATHY: REVISITING ITS ROOTS

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The topic of this year's Bial Foundation symposium is "Exceptional Interpersonal Interactions," and just as communication is part of ordinary interpersonal interactions, so, too, is exceptional communication part of exceptional human interactions. Reports of exceptional human communication are, of course, as old as recorded history, but in antiquity this communication was thought to be between gods or other divine beings and humans. It was not until much later that the possibility of exceptional communication between individuals was recognized, and it was only with the advent of psychical research in the late 19<sup>th</sup> century that investigators gave us the terms that we still use today. One of those terms is telepathy, which I have been asked to introduce in this symposium. Since that will not take much time, I should also like to spend some time sharing with you some of my own thoughts about how that very old term may just capture the essence of some of the most recent research developments in parapsychology.

Psychical research emerged as an attempt to understand scientifically the phenomena associated with Spiritualism, a new religion that was centered on communicating with the dead. What initially interested these investigators were the communications with those who had "passed to the other side" as the Spiritualists would say. Very quickly they realized that exceptional communication also occurs between living individuals, and many of the early researchers saw this as a more plausible hypothesis than communication with dead people. In the late 1800s Frederic W. H. Myers introduced the term "telepathy" to describe "The communication of impressions of any kind from one mind to another, independently of the recognized channels of sense" (Myers, 1903). The type of case that Myers would describe with this term would be the type found in the early research collections of the Society for Psychical Research in which a person might see an hallucination, or have an impression, or just "know" suddenly that a distant loved one had fallen

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ill, suffered some serious misfortune, or even died. Myers and many of his colleagues considered these cases to represent telepathy from the mind of the person in distress to the mind of the recipient. Telepathy, then, was direct mind-to-mind communication.

### **Telepathy versus Clairvoyance**

I suspect Myers invented the term telepathy as an appropriate and convenient description of what investigators were observing, but it did not remain long as simply a neutral descriptor. Matters soon became complicated as early psychical researchers began to conduct experiments in telepathy (or “thought-transference” as they often called it). They would do this by having one person look at a card with a picture of symbol while another person, separated from the first, would try to reproduce what the former was looking at. These experiments provided evidence for thought transference, but similar experiments in which there was no one looking at the picture were also successful. These latter experiments provided evidence of another psychic phenomenon, clairvoyance. Clairvoyance, literally “clear seeing,” can be defined as “the knowledge of objects or states gained without the use of the known senses” (Myers, 1903). Clairvoyance does not require another mind to be involved. This caused scientists to question whether the previous experiments really were telepathy, or whether they were clairvoyance and the other mind (that of the sender) was superfluous.

The situation was further complicated by a third type of psychic phenomena, precognition. Precognition can be defined as knowledge of some future event or state of affairs that could not be known or inferred through normal means. Because precognition seems to violate our conventional notions of causality, i.e., some future event appears to cause an awareness in the present, philosophers have crafted more precise definitions of precognition, but our colloquial one will suffice for the present discussion.

Precognition, which is one of the best-attested psychic phenomena, raised the question of whether it is a separate third class of psychic phenomena, or a simply mode in which telepathy or clairvoyance can operate. In other words, can clairvoyance or telepathy operate in present time as well as extend to events yet to occur?

All of this made for lively academic debates among philosophers and scientists. Were telepathy and clairvoyance separate phenomena, or were they simply two forms of the same phenomenon? If they were essentially the same phenomenon, then which was the more accurate description?

To give you an example of the difficulties, let us briefly consider some typical cases. From the case collection of Louisa Rhine, we have the report of a woman whose husband was away in the Navy, and circumstances required him to be away and out of touch for long periods. During one of those periods when the woman had not heard from him for several weeks and had no idea of her husband's whereabouts she had the following experience:

“During the early hours of the morning of May fifteenth I awakened suddenly from sound sleep with the strange feeling that my husband was in the room; and, although the room was actually in the pre-dawn darkness, it appeared to me as daylight, and I saw my husband come through the door, come to my bedside, smile, pass on into the next room where our little son lay in his crib, then return to my bedside. Then he vanished and the room became dark.”

The woman thought that her vision was probably some sort of message from her distant husband and, comforted by it, she went back to sleep. Later she awoke somewhat earlier than usual and arose to tell her mother-in-law (with whom she was staying in Florida) about the experience. Suddenly her husband walked through the door just as she had seen in her vision. It happened that his ship had put in at New Orleans the previous evening and he had taken the night train home. Knowing that he would be arriving before his wife awoke, the husband had been turning over in his mind just how he would make his entrance. As they compared their experiences, it was clear that the woman awoke with her vision at the same time her husband was in his planning reverie on the train (Rhine, 1961).

This would seem to be a clear case of telepathy. The husband's happy thoughts went directly to his wife's mind. However, if we admit precognitive clairvoyance, perhaps what happened was that the woman

precognitively saw the happy events that would unfold in her bedroom several hours in the future.

A case from the files of the Society for Psychical Research collection presents us with the opposite situation. A woman in Washington, D.C. stumbled on the steps of her home, with her papers and hat flying in different directions. About the same time a friend of the woman, who was sitting in her sewing room a mile away, had a waking vision in which she saw her friend sprawled on the steps of her home. So striking and amusing was this image that she immediately wrote a note to her friend (this was before the days of the telephone) describing the details of her vision, including the position of the friend, the clothes she was wearing, and where her hat and papers lay. The vision proved to be extremely accurate.

This would appear to be clairvoyance—seeing a distant event unfold from the perspective of an observer. Nonetheless, telepathy is also quite plausible in that the woman who fell, in the embarrassment of the moment, may have envisioned what she might have looked like to an observer (perhaps hoping there was none there), and it was this content of her mind that was communicated to her friend. This would also be the basis for her memory that would permit a comparison with her friend's vision later.

It soon became evident that if precognitive modes of telepathy and clairvoyance were admitted then it was impossible to classify spontaneous cases as either telepathy or clairvoyance with any degree of confidence. That did not stop the academics from trying, and the discussions on the relative merits of one or the other continued for decades. In general, British psychical researchers preferred telepathy while their continental colleagues, particularly the French, preferred clairvoyance. Eventually they could make common cause against the upstart Americans who, in the form of J. B. Rhine of Duke University, argued that it really was not possible to make firm distinctions between telepathy and clairvoyance, so we should all use the new term “extrasensory perception” (ESP) to cover all the phenomena (including precognition).

Indeed, as experimental parapsychology evolved from and replaced psychical research it became clear that even the experimental

approach to the phenomena would not easily permit us to distinguish telepathy from clairvoyance. To investigate pure telepathy, it is necessary to create conditions that preclude clairvoyance, including precognitive clairvoyance. The targets in such an experiment can never be written or spoken during the experiment or at any time afterwards. The target must exist only in a person's thoughts. That is not an easy protocol to implement. A few experimenters have made clever attempts to utilize suitable designs but the results were not particularly conclusive. (See, for example, McMahan, 1946.)

To investigate pure clairvoyance it is necessary to eliminate telepathy, including precognitive telepathy, by ensuring that the targets are used in such a way that no one, including the experimenter, ever knows what they are. This, too, is more of a challenge than it appears. You might think machines, would make it easy to conduct this type of experiment, but then you would be overlooking the possibility of precognitive telepathy—suppose the subject in the present time is getting the information by telepathy from what will be in the experimenter's mind in the future. Computers, of course, make it possible to conduct pure clairvoyance experiments since they can compare and score results without human intervention, but by the time they were available no one was interested in making fine distinctions between telepathy and clairvoyance.

By the middle of the last century, both telepathy and clairvoyance had been replaced in the technical literature by extrasensory perception (ESP) or sometimes, GESP for general ESP. The simple fact is that there is virtually no experimental evidence to support the existence of telepathy as a distinct phenomenon. That is not to say there is no evidence, but what exists is largely anecdotal and suggestive at best.

One source for the suggestive evidence is the spontaneous cases that gave rise to the term in the first place. For some, like the case of the woman whose husband in the navy came home unexpectedly, telepathy just seems to fit the circumstances better. One can carp about the possibility of clairvoyance, but telepathy remains a better description of what happened. As with this, for a large proportion of the spontaneous cases, telepathy simply remains a better description of the events.

Additional evidence comes indirectly from certain kinds of research. The famous dream ESP experiments conducted at the Maimonides Medical Center are an example. In these experiments a person—called the agent—was instructed to try to communicate a content-rich target, such as an art picture, while the subject was dreaming in a distant sleep laboratory. After each dream the subject was awakened and asked to describe the dream into a tape recorder. Eventually the subject's description and the target material were compared and the results evaluated statistically. These experiments were very successful overall, and there were some observations relevant to telepathy. On several occasions the dreamer included distinctive material about which the agent had been thinking around the time of the time of the trial, but which was not at all part of the target material (Ullman, Krippner, & Vaughan, 1989). Similar examples arise in contemporary ganzfeld experiments, which utilize a similar experimental design (but without the sleep).

Let me stress that these examples are essentially anecdotes and they are, at best, suggestive that telepathy is a valid description of a type of exceptional interpersonal interaction. This evidence would not stand up to a determined clairvoyance analysis but it may be sufficient, perhaps with a dose of sentimentality or nostalgia, to keep the concept of telepathy alive.

The philosopher Stephen Braude has noted that the debate between telepathy and clairvoyance is simply a function of our ignorance about the phenomena we study (Braude, 1979). I should like to think that our ignorance is somewhat less than it was over 100 years ago when those terms were introduced, but, alas, it is not much less. In the remainder of this paper I propose to do a reexamination of just what we are trying to explain with the terms telepathy and clairvoyance.

### **Deconstructing the Phenomena**

All too common in the study of exceptional communication is the tendency to consider the human mind simply as a mysterious black box. We assume that somehow a thought from another person “gets into” that black box (telepathy), or a distant or future scenario somehow finds itself playing out inside the black box (clairvoyance). No doubt

this is in large part due to the dualistic philosophy that has been part of parapsychology for so long, but it is not helpful for understanding how telepathy and clairvoyance works. We need to break open that black box. (Certainly I am not the first parapsychologist to do this, but I think a fresh look may be warranted.)

If we reduce ESP to its basic observable phenomena, what do we have? We have a process that is not very different from, yet not the same as, our better understood sensory systems. We have a “stimulus”—the distant or future event—and we have a response, which is some behavior that we can observe or have reported to us. What remains a complete mystery, of course, is the medium by which the information is carried. In all of our sensory systems we have identified the different media. Light waves and sound waves carry large amounts of information for vision and hearing. Molecular interactions convey the information for smell and taste, and physical pressure conveys information to touch.

But what could carry information across distances or barriers that block the sensory media? Even more perplexing, what can carry information apparently backwards in time? This is no small problem, but it is essentially a problem for physics. Humans were quite happily using vision and hearing long before we understood the physics of optics or acoustics. We are probably in a similar situation with ESP. There is nothing in physics that forbids what we find in ESP and, indeed, a number of eminent physicists regard ESP, including precognition, as quite compatible with contemporary physics. (See, for example, Costa de Beauregard, 1975; Stapp, 2001.) Obviously, physics has no explanation for ESP at present, but that does not mean that it cannot rise to the challenge.

It is often claimed that psychic phenomena are “non-physical,” but that is a perspective based on old Newtonian physics. Often that claim is made as if to exclude psychic phenomena from examination by physics, but that is premature in the extreme. The simple fact is that physics is only now beginning to look at the problem and we should give that science some time.

While the big problem remains somewhat intractable, we should return our attention to what we can observe and study since the more

we understand about how exceptional information is processed in the brain, the sooner we shall be able to contribute to the scientific understanding of psychic phenomena.

I think one of the tasks that would profit those of us who are interested in psychic phenomena is to reexamine our large collections of reports on naturally occurring psychic phenomena—what we call our spontaneous cases—in the light of modern neuroscience. The spontaneous cases are our best examples of how ESP occurs in concert with the normal workings of human consciousness and enormous advances have been made in recent decades in our efforts to understand the neural underpinnings of human consciousness. Obviously, what I am suggesting is a major undertaking, but permit me to offer some hints as to what we might learn.

Louisa Rhine has provided us with some of the most comprehensive analyses of cases from her large collection amounting to many thousands of reports (Rhine, 1961; Rhine, 1962; Rhine, 1969). As those of you who are familiar with this work know, her purpose was not to adduce proof of psychic phenomena, but rather to see if patterns emerge in the ways that people experience psychic phenomena that might provide clues to the process.

#### *Psychic experiences in dreams*

Rhine's analyses reveal that, by far, most credible psychic experiences happen during dreams. About 60 percent of all her cases come from dreams. Psychic experiences during dreams were generally of two types—realistic or symbolic.

An example of a realistic dream is the following from Rhine's collection (Rhine, 1961):

One night a California grandmother awoke from a frighteningly vivid and very realistic dream. In it she thought she saw her baby grandson struggling and smothering in his blankets. His movements were getting weaker and weaker. It was almost the end. She awoke. It was 3:45 a.m. Her daughter and husband lived across town. Should she call them?



As she said, "After all, it was only a dream. I thought, if I call and wake them they'll think I'm crazy. But if I don't and anything happens..." So she phoned and got a surprised son-in-law on the line.

"What on earth are you calling for at this hour?" he cried.

"Go to the baby at once," she said, "he's smothering."

"Yes, he was. We're up. We heard him."

In this case the images that played out for the grandmother in her dream were quite realistic, informed, most likely, by the grandmother's familiarity with her grandson's bedroom. Although this dream did not emphasize it, another fascinating aspect of realistic dreams is that they often appear from a particular perspective, with parts of the scene obscured as if the psychic dreamer was watching from a certain viewpoint.

Symbolic psychic dreams also attempt to convey important information, but the scenario is not a realistic representation of events (even if the images that make up the scenario are more or less realistic in themselves). An example from the Rhine collection came from a woman whose son was in the Navy in the South Pacific Theater during the Second World War. She had a strikingly unusual dream in which her son came to her while she was busy in her kitchen. He handed her his uniform, which was soaking wet. The son appeared most distressed. The woman, feeling very confused, began to wring the water out of the uniform, which came out mixed with the blue dye. In this extended dream the woman went on to ask her son what was wrong, but all he could say was, "It is so terrible. Oh, mom, its so terrible." They went into the living room and the son sat on his mother's lap with his arms around her neck, gently sobbing. Abruptly the son appeared as a little infant again, and the woman was rocking him as she did when he was a baby. As the child's sobbing ceased the woman awoke with a strong memory of the vivid dream. 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 a massive explosion of ordnance that resulted.

Researchers have speculated that the symbolic type of psychic dream may be the mind's attempt to soften the blow of bad news, but I think it is more plausible to think of it as the brain's attempt to bring

an important message to consciousness using the most appropriate memory traces that it can muster. For the woman in this example—remember, this is before television—there may have been no memory images available to describe the scene of an exploding and sinking warship.

Given the preponderance of dream cases, one can only wonder what is so special about the brain's state during dreams that makes it so amenable to "receiving" psychic information. It seems more than coincidence that such psychic experiences should occur during the period when normal sensory input to the brain is sharply curtailed. This is the time when the brain is not busy processing the welter of sensory information, nor is it busy manipulating memory images for future activities. Is there something about the brain's activity during REM that facilitates the expression of ESP?

*Psychic experiences as intuitions*

After dreams, the next largest source of psychic experiences is what Rhine calls intuitive experiences. These are cases where the person suddenly "just knows" something, be that a fact or a choice of a particular course of action. As a rule, intuitive experiences involve little or no imagery, and certainly the experience must go far beyond what might be inferred or deduced from normal sources. This example comes 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 Char-

ter 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.

Note that this involved a very uncharacteristic emotional outburst for a 25-year old man. Often such intuitive psychic experiences of this sort are accompanied by inexplicable feelings of sadness or dread that turn out to coincide with the death or injury of a loved one.

Intuition cases are especially interesting because they are apparently non-cognitive. There are no images or interpretations. Some appear to spring from feelings or emotions that well up and influence behavior. Stevenson (1970) has made a detailed study of set of intuitive cases (which he termed "telepathic impressions") and found that they often involved profound and appropriate emotional responses by the percipient, often resulting in behavioral changes (e.g., suddenly changing an itinerary or making a an unexpected trip to visit a loved one, who proves to be in need). In many of Stevenson's cases, it was the feeling that came first, before any cognitive details emerged (if they ever did).

#### *Psychic experiences as hallucinations*

The smallest group of spontaneous cases is the hallucinatory cases. These range from seeing or hearing people or things that could not possibly have been present, to experiencing hallucinated pains sufficiently serious to cause concern. Many cases involve "seeing" a person, often someone they recognize, warning them away from danger. Numerous cases are of the type in which the person reporting the case had his or her life saved by a warning given (via an hallucination) by someone who turned out to be far away at the time (or dead, or sometimes a religious figure).

Hallucinated pains are surprisingly common in the collection. Often these involve a person feeling what seem like the very real symptoms of a heart attack or some other sudden health crisis at the very moment a loved one is suffering the real thing. One striking example was related to me only a few months ago by one of the participants in my experiments. When she was a child in England, she had attended a girls school run by nuns of a Belgian order. She was sitting in class one day while her teacher, one of the sisters, was giving the lesson. Suddenly sister clutched her chest and seemed to have difficulty breathing. My participant said she still recalls vividly her teacher's deep straining gasps for air. As some girls helped the teacher lie down on the floor others ran for aid. Eventually the teacher was moved to a couch in a nearby office to await an ambulance. By the time the ambulance arrived, the teacher was already somewhat recovered and the visit to the hospital revealed no cause for her sudden shortness of breath. The following day the sister learned that her father in Paris had been killed at the very time she had experienced her attack. A lorry had jumped the pavement where he was walking and crushed her father against a building.

What is particularly intriguing about these cases of somatic hallucinations is that they not only are non-cognitive, but they suggest that the *body* knows something tragic has happened before the mind has any idea of it. (In many cases, the body seems to "know" enough detail about the tragedy to mimic the real event in the hallucination.) On the evidence we have, it is not possible to tell whether it was actually the muscles and organs of the body that "sensed" the tragedy, or if it was the body's representation in the somatosensory cortices, but it is nonetheless an interesting clue.

### **Making Sense of Diversity: The Emotional Connection**

What sort of sense can we make of this rather diverse collection of responses? We have images, both in dreams and hallucinations (and I mean images in a broad sense). We have sudden unreasoned, and sometimes emotional, convictions or decisions, and we have perceived pain, as in bodily trauma, as well as more subtle feelings of sudden

inexplicable depression or sadness. All this begs an important question: Just what is it that is communicated in ESP?

I first began puzzling over this question because of observations from experimental work with ESP. The bulk of ESP experiments in the earlier days amounted to guessing tests—guessing card symbols, for example. Subjects in these experiments almost never report “receiving” images of a star or a cross. They just guess—and generally that is how they describe it—but guessing is a type of decision-making. For the subjects who are consistently good at this, it does not seem like someone is communicating little images of card symbols but rather something is causing the subject to bias his or her decision-making in a way that results in more correct choices.

In another experimental design, known as the ganzfeld/ESP experiment, subjects are placed in a mild state of sensory isolation and asked to describe a picture or a brief video scene that another person is watching. Overall, this has been a reasonably successful type of experiment by the usual statistical analyses but I have always been intrigued by the nature of the better quality “hits,” when the subject describes the target sufficiently accurately to enable him or her to select the target from among the decoys. It has been my observation that the subjects describe images from their own memories that are more or less similar to the target, but they do not seem to describe the target itself. For example, if the target were to be Wyeth’s painting “Christina’s world” (a young woman lying in a field looking up at a farmhouse on a hill), a subject may start describing memories of childhood visits to an uncle’s farm. Admittedly, I am engaging in “impressionistic science” since I can quote no numbers to back up my observations, but having seen that sort of response repeatedly I began to think that, whatever ESP is, it does not appear to be a broadband communication channel. It is not communicating the many bits of detail that make up the visual image but rather it seems that it communicates just enough information to facilitate the subject’s own memory recall to bring forth memories or visual images that closely approximate the target.

It has long been claimed by parapsychologists that telepathy, clairvoyance, precognition are non-sensory. Naturally, proper data collection rules out the conventional five senses as channels. When we look

at the range of responses in spontaneous cases, with or without my observations of experimental responses, it is difficult to conceive of anything in the brain that would serve as a reception center for ESP if it were to be sense-like, as if a sixth sense. Although at times, ESP seems to have sense-like characteristics, in general it simply does not seem to fit the model of a sensory information process as we understand it from five other examples.

Yet, ESP has consequences in the brain. We observe behaviors (or infer them from reports); we see decisions made, expressions of pain or emotion. We are observing brain output, so ESP must be working through the brain at some level. Whatever sort of signal ESP is, the brain is responding to that signal with a diverse repertoire of activities.

It was difficult to get past this basic position until a few years ago when, at least for me, Antonio Damasio radically expanded our understanding of the role our emotional system plays in the rational decision-making activities that are fundamental to planning our futures. It is not simply the fact that our emotional system shapes and aids decision-making, but the manner in which it accomplishes that task strikes me as being very relevant to the problem of trying to understand how ESP works.

In his book, *Descartes' Error* (Damasio, 1994), Damasio draws upon clinical observations and experimental neuroscience to show that the emotional system, far from being only our soft, "touchy-feely" side and the seat of our more primitive appetites, is an important component of our "higher," rational selves and a critical component of effective decision making, especially in social and personal planning contexts. Patients with damage to the brain structures that comprise the emotional system are often rendered incapable of making appropriate, adaptive decisions about their own futures.

The somatic-marker hypothesis is Damasio's model of how various components of our emotional system interact with memory and other brain systems to produce a highly efficient, rapid-responding decision-making system ideally suited to evolutionary survival of humans. He begins by drawing a distinction between primary and secondary emotions. Primary emotions are those that we first experience very early in life (fear, rage, etc.). They are probably innate and they

work principally through the limbic system and amygdala. A particular stimulus (sight of a snake, for example) may trigger a fear emotion, which causes both a defensive bodily reaction and an emotional body state (racing heart, queasy stomach, sweaty palms, etc.). The *feeling* of the body state associated with that emotional response is fed back to the somatosensory cortices establishing a connection between the *feeling* of fear and the object that provoked it. This association helps us build the relationships that allow us both to generalize that knowledge to similar situations as well as to predict the probability of encountering that object in a given environment.

Secondary or “adult” emotions are essentially learned emotions, built up from primary emotions. They involve a complex interplay between the mechanisms of the primary emotional system (amygdala) and the cognitive evaluation of the stimulus that is communicated back to the amygdala via the ventromedial areas of the prefrontal cortices. If, for example, you were suddenly to hear from a long-lost friend, you would (among other things) consciously process images of the good times with that person. Those images would cause the prefrontal cortex to respond, automatically and involuntarily, with acquired programmed responses (dispositional responses) that trigger a bodily response, primarily via the amygdala, which, in turn, dispatches the myriad autonomic signals to the body so that the viscera are placed in the state most often associated with the images. In return, the body state is sensed by the somatosensory cortices resulting in *feelings*, a term Damasio reserves for experiences of the emotional state of the body.

When feelings are associated with different stimuli they become somatic markers that mark recalled memory images of the stimuli. As an example, consider what it would feel like if you found yourself short of cash when eating at a particular restaurant and you could not leave the customary gratuity. This, no doubt, would cause some embarrassment as you sneaked out. Weeks later, as you are planning where to take a friend for dinner, the image of that particular restaurant is one of those that comes to mind. Chances are you will quite literally feel a slight flush of embarrassment as the images of your last visit play across your consciousness. That is a somatic marker at work. You probably

would rank that restaurant rather low on your mental list of possible choices.

Somatic markers function primarily in planning our future. They force attention to the negative outcomes that may result from a given action. (They can function positively as well.) The somatic markers attached to the various images that might represent the choices in a given situation will serve to reject automatically the most unsuitable options leaving the person to choose more efficiently from among fewer alternatives. Damasio states, “In short, *somatic markers are a special instance of feelings generated from secondary emotions. Those emotions and feelings have been connected, by learning, to predicted future outcomes of certain scenarios.* When a negative somatic marker is juxtaposed to a particular future outcome the combination functions as an alarm bell. When a positive marker is juxtaposed instead, it becomes a beacon of incentive.” (Damasio, 1994, page 174, original emphasis).

Damasio elaborates his hypothesis to show how somatic markers can serve as a way of generating order even in more subtle reasoning processes by biasing the amount of attention we pay to the various contents of the images that we hold in memory for fleeting instants in the process. It is possible that the entire decision process could happen unconsciously, with the somatic markers playing their role, and this would feel very much like intuition.

I do not mean to suggest that the somatic-marker hypothesis in some way explains ESP, or that ESP is part of the process. It is, after all, only a hypothesis, but it does focus our attention on certain brain systems that may help us understand *our* problem.

The emotional system, as outlined by Damasio, is an integrated system that happens to cover most of the ESP responses we considered earlier. It is capable of generating emotional body states, such as the feelings that play a part in psychic intuitive experiences or perhaps even the hallucinated body states. The emotional system plays an important role in selecting the images that play across our consciousness, which may be related to psychic visions or hallucinations, or experimental expressions of ESP. The recent work of Damasio and colleagues shows us how the emotional system plays a crucial role in decision making by ranking alternatives and eliminating unsuitable options, which could



pertain to the many ESP-based intuitive decisions that are reported, not to mention decades of ESP testing. Finally, in dreams—that most fertile brain state for ESP—recent research by Braun and colleagues (Braun et al., 1998) using positron emission tomography (PET) has shown that the limbic system and visual association areas are active in REM sleep, but not the primary visual area of the brain. Also, the prefrontal cortices show decreased activity suggesting to the authors that dreaming may represent a closed system that operates without input from the brain systems that mediate information from the outside world.

Let me reiterate, I am not suggesting that we should expect to find the ESP “reception area” in the amygdala, or the limbic system, or the prefrontal cortices. We should recognize, however, that there is something about how they go about their business that suggests some important parallels for ESP processing. If we consider ESP as a product of human evolution—as I certainly do—then we must remember that evolution is an extremely economical process. Evolution is not inclined to build entirely new systems, but instead it adapts existing systems to serve new functions. The way ESP gets its job done is likely to be in the form of an “add on” to some existing system.

In recent years, parapsychologists have taken the first steps toward investigating possible links between the emotional system and ESP. The basic design of these experiments, called “presentiment” or, more recently, pre-stimulus resonance studies is based on a common experimental design used in psychology to investigate emotional responses. Subjects view a random series of pictures of varying degrees of emotionality, usually from the International Affective Picture System, (Lang & Greenwald, 1993), while their skin conductance is monitored. Highly emotional pictures usually elicit a marked increase in skin conductance several seconds after the stimulus is seen. Radin (1997) observed that the skin conductance response began to rise several seconds before highly emotional pictures were displayed, but not before neutral pictures. Subsequent experiments by Radin and others have confirmed these effects (Bierman & Radin, 1997; Radin, 1998; Radin, 2000).

These experiments suggest that a person’s emotional system can detect when it is about to be shocked several seconds before the com-

puter even decides (randomly) that the next stimulus will be a shocking one. The most recent experiments of this type are reported in the poster session of this symposium.

If our emotional systems are shown to play a role in the processing of ESP information then Myers' coining of the term telepathy may have been more prescient than he realized. The Greek roots of the English word telepathy are *τῆλε* and *πάθεια*, which literally translated mean *feeling* at a distance.

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