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Current Research and Insights

**Hamlet: The Tragedy
of a Parapsychologist**

Poetic Confluence

Extraordinary Claims

Predicting Longevity



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Why EdgeScience? Because, contrary to public perception, scientific knowledge is still full of unknowns. What remains to be discovered—what we don't know—very likely dwarfs what we do know. And what we think we know may not be entirely correct or fully understood. Anomalies, which researchers tend to sweep under the rug, should be actively pursued as clues to potential breakthroughs and new directions in science.

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Extraordinary Claims

In his 1980 TV series *Cosmos*, Carl Sagan famously said of UFOs that “extraordinary claims require extraordinary evidence.” The phrase has become something of a mantra for skeptics everywhere. That bastion of the status quo, *Wikipedia*, which handily refers to it by the acronym ECREE, has even elevated it to a fundamental philosophical principle called the “Sagan Standard.”¹ As a five-word soundbite, however, it’s pretty meaningless. In its original context it simply expresses Sagan’s view that UFOs don’t exist.



Carl Sagan

But if you read the words carefully, you can see that ECREE is really a two-edged sword. Yes, it can mean “don’t make an extraordinary claim in the absence of sufficient evidence,” but it can also mean “don’t dismiss an extraordinary claim *without looking* for sufficient evidence.” If we trace the concept back to its roots, we find that it was first used in this latter sense—to oppose dogmatic skepticism rather than support it. Moreover, it can be formulated in a precise mathematical way that is far more meaningful than Sagan’s trite platitude.

Whether Sagan knew it or not, he was paraphrasing a passage in *A Philosophical Essay on Probabilities*, published in 1814 by the brilliant polymath Pierre-Simon Laplace. Often referred to as the “French Newton,” Laplace was years ahead of his time, speculating on everything from black holes to the idea that mass extinctions are caused by cometary impacts. One discovery of his even attracted the attention of the Emperor Napoleon, when his calculations showed that—contrary to what Newton himself had asserted—the solar system is mechanically stable even without the intervention of an all-powerful deity. “I had no need of that hypothesis,” Laplace is reputed to have told the emperor.

The *Essay on Probabilities* was ahead of its time too, dealing with the now-trendy topic of Bayesian inference.² This takes its name from the Reverend Thomas Bayes, an English clergyman who originally formulated the technique in the mid-1700s. Laplace was one of the first people to recognize its tremendous potential, but the rest of the world

took a long time to catch up. It wasn’t until the age of digital computers that Bayesian inference became a common tool in scientific circles.

Bayes’ theorem shows how the odds of a hypothesis being correct shorten as evidence is accumulated in its favor, or lengthen as evidence mounts up against it. In this context, Laplace’s essay refers to two of the most hotly contested “paranormal” hypotheses of his day: animal magnetism (a reiki-like healing therapy) and dowsing for metals or running water. While he acknowledges that the evidence for such phenomena may be equivocal, he has no time for knee-jerk skeptics who dismiss them out of hand:

It is natural to think that the action of these causes is very feeble, and that it may be easily disturbed by accidental circumstances; thus because in some cases it is not manifested at all its existence ought not to be denied. We are so far from recognizing all the agents of nature and their diverse modes of action that it would be unphilosophical to deny the phenomena solely because they are inexplicable in the present state of our knowledge.

This is where Laplace’s version of ECREE comes in: “We ought to examine them with an attention as much the more scrupulous as it appears the more difficult to admit them.” But unlike Carl Sagan (or *Wikipedia*), he doesn’t simply offer this as a blunt, take-it-or-leave-it aphorism. He proposes a rational, mathematical way to deal with such situations: “The calculation of probabilities becomes indispensable in determining to just what point it is necessary to multiply the observations, or the experiences, in order to obtain in favor of the agents which they indicate.”

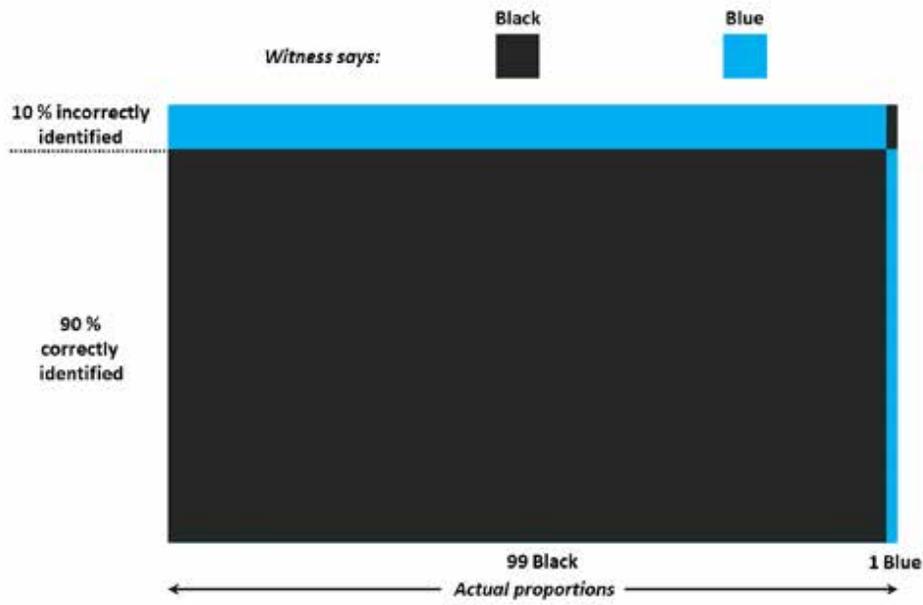
In other words, Bayes’ theorem tells you how much evidence you need to accumulate before an “extraordinary claim” becomes the most viable explanation. Here’s a simple textbook example that shows how the principle works.³ A witness sees a nighttime hit-and-run accident involving a taxicab, which they say is blue. But there’s only one blue taxi in the city, the other 99 cabs being black. Without the witness statement, the odds against the guilty cab being blue are 99 to 1, making it an “extraordinary claim.”

Extraordinary or not, the witness insists the cab was blue. Tests show they can correctly identify the color of a car, under similar lighting conditions, nine times out of ten. Does this mean there’s a 90% chance the cab really was blue, and only 10% that it was black? That’s what many people would assume, but it ignores the original 99/1 odds against blue. Bayes’ theorem says you have to take both things into account: the witness testimony and the original, very long odds. Specifically, you have to multiply those odds by the ratio of 10% (the chance



Pierre-Simon de Laplace

Johann Ernst Heinisius



The horizontal axis shows the underlying odds of a black or blue cab. The vertical axis shows the chance of the witness being correct or mistaken. The colored areas show the resultant odds taking both into account. The blue rectangle at the top (witness misidentifies a black cab as blue) is larger than the one on the right (witness is correct that the cab was blue).

the witness is mistaken) to 90% (the probability they are right). This still gives relatively long odds of 11/1.

So a single witness statement isn't enough to confirm the "extraordinary claim" of a blue cab. But this doesn't mean it can be dismissed once and for all. If two further witnesses come forward, just as reliable as the first and independently asserting that the cab was blue, it would swing things the other way. Plugging the numbers into Bayes' formula,⁴ blue now comes out as the 11/81 odds-on favorite. As far as Laplace was concerned, this would be sufficient "extraordinary evidence" to clinch the matter.

Unfortunately, there's a catch. While the taxi example is rigorously correct, that's only true because we can put an exact figure on the underlying probabilities of black versus blue. We know for a fact that there are 99 of the first and just one of the second. On the other hand, all this mathematical rigor disappears if we try to apply the same logic to the extraterrestrial visitors Carl Sagan was talking about. If a witness claims to have seen a UFO, we can't define clear-cut odds pro and con in the same way as in the taxicab example. It would simply degenerate into the shouting match between believers and skeptics that we're already familiar with.

But even in this situation we can learn something from Bayes' theorem. It's designed to show how our understanding of a subject changes as we gather evidence about it. The only way to break it is by insisting that something is impossible—or that it's a certainty—before the evidence is even looked at. There's an important message here for skeptics and believers alike—never lose sight of the possibility that the other side might be right. *Wikipedia*⁵ has a name for that, too. It's called Cromwell's rule—after the English leader Oliver Cromwell, who wrote to the Scottish church in 1650: "I beseech you, in the bowels of Christ, think it possible that you may be mistaken."

This is an expanded version of an article that originally ran in Fortean Times #404, April 2021.

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NOTES

1. "Sagan standard," *Wikipedia*. https://en.wikipedia.org/wiki/Sagan_standard
2. Marquis de Pierre Simon Laplace, *A Philosophical Essay on Probabilities*. <http://www.gutenberg.org/ebooks/58881>
3. Adapted from "Representativeness heuristic," *Wikipedia*. https://en.wikipedia.org/wiki/Representativeness_heuristic#The_taxicab_problem
4. Effectively this means doing the same multiplication as before, three times in succession.
5. "Cromwell's rule" *Wikipedia*. https://en.wikipedia.org/wiki/Cromwell%27s_rule

Richard Reichbart

Hamlet: The Tragedy of a Parapsychologist



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Hamlet, the Shakespearean play, is central to Western sensibility. It is emblematic of how Western culture thinks about issues of life, death and existence, and has come to symbolize modern man's existential dilemma. And thus, it has always struck me as passing strange that countless commentaries on this great play provide little insight into the extent to which Shakespeare anticipated in it the discoveries made by psychic researchers four centuries later.¹

Perhaps it is not surprising that Shakespeare intuitively knew about psychic phenomena and depicted them in a way far superior to most dramatists of his time or for that matter

subsequent times. What renders Shakespearean drama great in general and *Hamlet* in particular, aside from stagecraft and poetry, is its incredibly cogent depiction of human nature—and psi phenomena after all are an integral part of human nature. It has been my contention and those of many parapsychological investigators that psi phenomena are a common occurrence with everyone (a fact which becomes most apparent in the examination of the dreams that patients relate during in-depth psychoanalytic treatment) but that in general such phenomena are either overlooked or resisted. Certain talented individuals possess greater control of psi processes—or have greater access

¹ Two valuable and underappreciated exceptions to the tendency to treat the psychic phenomena in Shakespeare as metaphor or “poetic license” rather than reality are Sherman Yellen’s article “The Psychic World of William Shakespeare” (Yellen, [1962] 1970) and L.W. Rogers’ “The Ghosts in Shakespeare” (Rogers, undated). This article draws much upon their work, particularly that of the unheralded Yellen.

to them—than others do, for reasons that we do not understand and which defy any characterological category, but these individuals (whom we often refer to as “psychics”) do not play a part in *Hamlet*—although they do in other Shakespearean dramas such as *Macbeth*, *Richard III*, and *Julius Caesar*. But in *Hamlet* the psi phenomena that take place occur to “ordinary” people of various stripes and various degrees of experience and education. Unerring as Shakespeare is in portraying human personality and these personalities in particular, he is unerring in portraying the manner in which an attribute of human personality, psi phenomenon, functions.

Shakespeare’s insightful embrace of psi in *Hamlet* is ignored by the best of commentators. For example, no less a contemporary authority on Shakespeare than the Pulitzer Prize winning scholar Stephen Greenblatt proceeds to minimize Shakespeare’s depiction of ghostly presences and psi phenomena, by contending that Shakespeare employed the ghost in *Hamlet* mostly as a form of stagecraft—designed to exist only in the theater—rather than as a depiction of reality. Shakespeare’s ghosts, according to Greenblatt, are “staged ghosts in a spirit of self-conscious theatricality. That is, his ghosts are figures who exist in and as theater; figures in whom it is possible to believe precisely because they appear and speak only onstage.” (Greenblatt, 2001, p. 295). In this regard, Greenblatt is in good company. Earlier, Freud himself stated that Shakespeare can take us into a “purely fantastic” world of his own creation and if he chooses to “stage his action in a world peopled with spirits, demons and ghosts” as he does in *Hamlet*, we must “bow to his decision and treat his setting as though it were real for as long as we put ourselves into his hands” (Freud, 1919, p. 230). For that matter, subsequent psychoanalytic writers on *Hamlet*, such as Lacan (Lacan, 1977) and Eissler in a monumental book (Eissler, 1971) followed in the footsteps of Freud in their complete disregard of parapsychology.

In his detailed exploration of the relationship of *Hamlet* to the religious beliefs concerning Purgatory at the time Shakespeare was writing, Greenblatt simply leaves out the unique characteristics of psi phenomena—of reality—that adhere to Shakespeare’s ghostly depictions. In a later work, he is somewhat gentler, suggesting that Shakespeare—while not outwardly religious—tapped into the concepts of death that the Reformation and Protestantism forbade. “The official Protestant line in Shakespeare’s time,” remarks Greenblatt, “was that there were no ghosts at all” (2004, p. 320) but in which the public although now deprived of ritual still passionately believed and with which he too struggled at the time of the death of his son, Hamnet. As another commentator, Jean-Christophe Mayer, challenging Greenblatt’s invocation of secularism, has said: “. . . belief in apparitions was common at almost every social level” in the 16th century. (Mayer, 2006, p. 50).

But what commentators such as Greenblatt tend to overlook—even if they acknowledge that Shakespeare appealed to a general public’s belief in ghosts of his time—is that throughout

the play, the character Hamlet fulfills the role of a parapsychologist, although of course that scientific occupation did not exist at the time.² He is a sixteenth century psychical researcher looking for data and devising parapsychological experiments. Admittedly ambivalent and tortured, nonetheless he is driven by what can only be called scientific desire. In other words, in this respect too he is a poignant representative of contemporary man. In fact, his scientific nature contributes to the indecisiveness so often laid at his doorstep. What Hamlet and the play itself really do is present a series of hypotheses concerning the phenomena of an apparition—Whence does it come? What does it represent? Is it “real”? Is the information it imparts accurate? Is it evidence of a departed soul that still exists somewhere? These are the questions that have attended any serious investigation of an apparition. Although in *Hamlet* they are explored within an historical framework that is not accessible to the public today, the timelessness of the questions is quite striking.

I mentioned here the “indecisiveness” which is so often attributed to Hamlet. Often it has been overemphasized because modern commentators tend to not take seriously the exploration of psychic phenomena so central to the play. If one does not treat the ghost of Hamlet’s father seriously, and prefers to think of the ghost as conceit or metaphor or sign of psychic distress, then Hamlet’s indecision seems more pronounced. But when we take the phenomena themselves more seriously, then part of Hamlet’s hesitation seems more in the nature of a scientific quest that has occupied parapsychologists since the beginning: to pin down the psi data, which unfortunately by its very nature so often defies certainty or clarity.

For Hamlet, the question is not only whether the ghost which sets in motion the action of the play is “real” (and the meaning of the term “real” is explored in a variety of ways in the drama) or—even if Hamlet grants that the ghost is “real”—whether it is the “spirit” of his father. The equally crucial question is *whether the data which the ghost imparts—which it is solely the ghost’s to impart, as no one present (other than his murderer, the present King) knows the data—are accurate*. And the data are very specific, as so often happens when psi phenomena occur in reality. In fact, data of exactly this sort has often been sought by people when deceased personalities seem to appear in séances or when ghosts appear—that is, veridical data that supposedly only the deceased personality could know and others present could not. If the data are found to be accurate, some people conclude that the ghostly manifestation really must be a spirit, although in fact there are other psi hypotheses to explain this.

Put differently, Hamlet is struggling with two separate hypotheses in the play—the first, whether the ghost is in some way a spirit of his father and the second, whether the information the ghost imparts about his father’s death is accurate information, information that clearly could not be acquired through sensorimotor means. These two questions are the same questions that have occurred in the history of parapsychological

2 Fifty years ago as an undergraduate and English major, I shared English classes (although not about Shakespeare) with Stephen Greenblatt, who was already a talented commentator.

research whenever there have been ghostly manifestations or spirit manifestations accompanied by seeming veridical information imparted by the “spirit.” However, despite the fact that historically the two questions have often been linked, it is not true that the answer to the second question proves the answer to the first, although this is generally Hamlet’s assumption. That is, if the phenomenon—the ghost—does indeed appear to communicate some secret information seemingly known only to the deceased person and not to those present, that does not necessarily confirm that the ghost must be a fragment of a deceased soul. There are more economical, some would say more probable explanations, invoking unconscious telepathy between living persons rather than manifestations of deceased personalities, to explain such phenomena (which I explore later on).

As to Shakespeare’s personal need to explore these phenomena in *Hamlet*, it is understandable. Numerous authorities point out that Shakespeare was struggling with what happens after death because three years prior to the composition of *Hamlet*, he lost his eleven-year-old son. Revealingly, his son’s name was Hamnet. In addition, at the time of the writing this drama, Shakespeare’s father, John Shakespeare, was dying. These facts add poignancy to the evidentiary search that Shakespeare’s hero undertakes to ascertain whether a ghost is related to a deceased person’s spirit. The importance of the ghost to Shakespeare receives further confirmation from the additional historical circumstance that Shakespeare himself is believed to have played the ghost in the production of the play. Thus, *Hamlet* the play is none other than a musing and a cogitation about the nature of death, so much so that one scene takes place in a graveyard during which the poor dead Yorick is questioned. However, in sharp and ironic contrast to the more loquacious King’s ghost, Yorick refuses to speak to Hamlet at all.

As I have suggested, the play proceeds very much like a scientific research report, in which a series of hypotheses (not just the two key ones I have mentioned) are invoked concerning the phenomena of the ghost, and then each one is carefully examined, until Hamlet finally arrives at a fatal “scientific” conclusion. Here, in somewhat didactic form (which while emphasizing the structure does not focus on the wonderful poetry of the play), I outline the different hypotheses as they appear.

Hypothesis One: The Ghost Is a Shared Hallucination

Initially, the ghost is a shared phenomenon, seen by others before Hamlet is summoned to see him and not a phenomenon seen by only one person, as for example in the case of the ghost of Banquo in *Macbeth* (for this reason the ghost of Banquo is more easily thought of as the product of a guilty and unstable mind, rather than as a shared apparition as here). In fact, the first person summoned to see the ghost is not Hamlet but Horatio. When the play opens, the guards Bernardo and Marcellus have seen the apparition twice, and have now requested the more learned Horatio to share their watch in the hope that he too will see it and will understand it. At this point, the ghost has not communicated anything; it

has only appeared and has not spoken. Thus, the first hypothesis introduced concerning this phenomenon is that the ghost is a visual hallucination, albeit a shared one, in other words a “folie à deux” of the two guards. Marcellus introduces this hypothesis: “Horatio says ‘tis but our fantasy/And will not let belief take hold of him.” And then when the ghost in fact does appear briefly to all three of them, Bernardo challenges this initial hypothesis, saying to the now trembling and pale Horatio: “Is now this something more than fantasy?” To which Horatio revealingly responds, as so often happens with psi phenomena, about the evidence: “I might not this believe/Without the sensible and true avouch/Of mine own eyes.” (*Hamlet*, Act I. Sc.1, lines 67–69).

And so the first hypothesis introduced by Shakespeare is dismissed in this scene. In addition, during the scene the first active investigation of the phenomenon—the attempt to intervene in some way to ascertain the nature of the phenomenon—begins. It takes place when Marcellus beseeches Horatio to speak to the ghost “Thou art a scholar; speak to it, Horatio,” he implores. As one commentator says, “we are given a bit of that Elizabethan belief that conversation with a spirit was the proper occupation of a learned man” (Yellen, 1970, p. 279). Of course, Horatio has no success in his attempt.

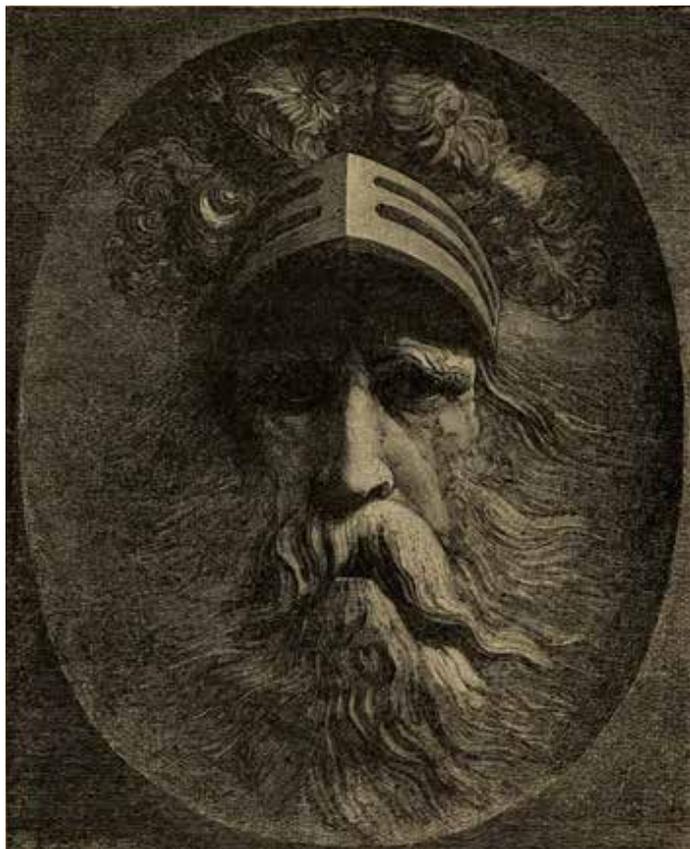
Hypothesis Two: It Is a Ghost with Motivation to Appear

The second hypothesis that Horatio, Marcellus and Bernardo entertain is that the phenomenon is a ghost, the soul of a dead person. But in addition, enlisting the beliefs of his time concerning apparitions, Horatio hypothesizes that the ghost has a specific motivation to appear before them which the ghost can be compelled to communicate to them. He suggests a number of possible reasons for a ghost to appear: it can appear to warn people, as a harbinger of calamity (and here Horatio uses the example of omens that occurred when Julius Caesar died—an interesting reference as Shakespeare’s play on Julius Caesar [the play which immediately preceded *Hamlet*] is replete with omens including the ghost of Caesar which appears to Brutus); it can appear because it is troubled by an extorted and hidden treasure of which only the deceased knew; it can appear with the desire for the living to do something to comfort it. In effect, they hypothesize that the ghost may be a troubled soul in a Christian Purgatory which must needs communicate to the living to assuage its self-torture. Regardless, their concerted attempt to address the ghost in the hope that it will speak to them, which it does not do, is an intervention to explore the ghost’s motivation.

Hypotheses Three and Four: The Ghost Is a Spirit, Evil or Good in Nature, or the Deceased King Who Desires to Speak to His Son

The third hypothesis, stated by Hamlet when he first sees the ghost and is astonished, is that the ghost is either a “spirit of health or goblin damn’d” which comes either from heaven or from hell. As becomes clear, this hypothesis—particularly the ghost as a devil from hell—remains in Hamlet’s mind

throughout much of the play. Closely following this is the fourth hypothesis: that the ghost is indeed the spirit of his father the King. Hamlet tries to get the ghost to speak and thereby to state his purpose, but the ghost is silent initially, beckoning Hamlet to follow him.



T. R. Gould

Hypothesis Five: The Ghost Is in a Purgatory and Asks Revenge for His Death, the Circumstances of Which Only He and His Murderer Know

The fifth, and of course the crucial hypothesis of the play, is that the King's ghost is in torment and has appeared so that his murder, of which only he and his murderer know, may be avenged. But this hypothesis can only be entertained by Hamlet and Hamlet alone, because the ghost now speaks only to him. And Hamlet at this time does not even tell Horatio what the ghost has said to him, keeping the knowledge entirely to himself (he does tell him later). The ghost describes his Purgatory vividly as a harrowing "prison-house" where he is confined for a "certain term" in the day time to "fast in fires" and in the evening "to walk the night." But the most important aspect of what he tells Hamlet is his death at the hand of Hamlet's uncle and the method of that death. He was not stung by a serpent when sleeping in his orchard, as everyone believes. Instead, when he was asleep, as was his custom in the afternoon in the orchard, "thy uncle stole, with juice of cursed hebona in a vial, and in the porches of my ears did pour the leperous distilment." (*Hamlet*, Act I, Sc. 4, lines 67–70).

(To add another element, although the ghost is a shared visual phenomenon for all four men, the visual is linked with an auditory phenomenon only for Hamlet, to whom the ghost speaks his story; the other three men, also experience an auditory phenomenon [the stage directions say "Ghost cries under the stage"] but they do so separate from the visual, when the visually departed Ghost tells them repeatedly to "Swear" to keep their experience secret.)

Now for the moment, let us pause. Imagine that the vision of the ghost is an actual and shared experience of Hamlet and the three men accompanying him, not a metaphor, but an experience which would test anyone's credulity. And that the crucial aspect of that experience, reserved for Hamlet alone, is the information about how his father actually died and the admonition to exact revenge which the ghost imparts to Hamlet.

For a good part of the rest of the play, Hamlet—the tortured parapsychologist— attempts in various ways to test this last hypothesis. He could, of course, just believe the apparition and wreck revenge on his uncle as the ghost demands. Clearly, he is emotionally distraught by the whole thing, but it is not just emotional distress that leads him to hold off. What he wants to do is to institute a "scientific" experiment to determine whether the ghost is speaking the truth. Further, he is driven nearly mad and rendered unsure of what is "reality" not just by the injunction of the ghost to exact revenge, not just by the enormity of what the ghost has imparted to him, but by the fear that he is out of touch with reality because he has seen and communicated with a ghost. He is having the reaction which in one form or another occurs to many people who experience an apparition or a mediumistic communication in Western culture.

A Scientific Experiment: The Play Within the Play

Of course, the carefully devised scientific experiment is the "Mousetrap," the play within the play that Hamlet orchestrates, with which he hopes, in one fell swoop, to prove that the ghost is indeed the soul of his father and that, on top of that, the information the ghost has imparted about how Hamlet's father died is true. And the proof will reside in the reaction that the King has to the play, whereby his guilty conscience will give rise to some action that will give him away. However, Hamlet has not forgotten his prior hypothesis that the ghost may be the devil. Thus, in his first long soliloquy before the play, he specifically states: "The spirit that I have seen/May be a de'l, and the de'il hath power/T' assume a pleasing shape" (*Hamlet*, Act II, Sc. 2, lines 586–588).

In addition, Hamlet sets out in detail how his hypothesis will be proven, very much as a scientist might do, listing a series of events, which if they take place, will prove his cause. In that soliloquy, he states:

I have heard
That guilty creatures sitting at a play
Have by the very cunning of the scene
Been struck so to the soul that presently
They have proclaim'd their malefactions

... ..I'll have these players
 Play something like the murder of my father
 Before mine uncle. I'll observe his looks;
 I'll tent him to the quick. If 'a do blench,
 I know my course.

—*Hamlet*, Act II, Sc. 2, lines 576–586

In setting up the experiment later on, he enlists Horatio's aid as a fellow experimenter and observer, telling him what he is looking for as proof. Thus, he says to Horatio:

There is a play to-night before the king. One scene of it comes near the circumstance Which I have told thee of my father's death. I prithee, when thou seest that act afoot, Even with the very comment of thy soul Observe my uncle.

...

Give him heedful note,
 For I mine eyes will rivet to his face,
 And after we will both our judgments join In censure of his seeming.

—*Hamlet*, Act. III, Sc. 2, lines 75–83

That is, like a good scientist, he asks that there be an independent observer, beside himself, and that after the experiment, they compare notes.

In the midst of his careful instruction to Horatio, he states alternatively that the other hypothesis, the ghost as an evil entity, would be proven if the King has no reaction:

... If his [the uncle's] occulted guilt
 Do not itself unkennel in one speech,
 It is a damned ghost that we have seen...

—*Hamlet*, Act. III, Sc. 2, lines 75–77

And now the denouement: at the crucial point, when the nephew of the player King pours the poison in the player King's ear, the real King suddenly rises up, calls for lights, and departs precipitously. Hamlet and Horatio now do compare notes, and the first thing Hamlet says is: "I'll take the ghost's word for a thousand pounds. Dids't perceive?" To which Horatio agrees, and Hamlet adds: "Upon the talk of the poisoning?" To which Horatio also agrees, saying: "I did very well note him" (*Hamlet*, Act III, Sc. 2, lines 292–296). Thus, Hamlet, the tortured parapsychologist and his assistant Horatio have successfully completed their experiment.

Or have they? For Shakespeare is too wily a playwright and too insightful a human observer to make matters so simple for us or for Hamlet. What he does next is brilliant and even more truthful to psi phenomena than what has proceeded it. Hamlet takes the information he has learned from the ghost—and confirmed experimentally—to his mother; and he confronts her with that information: what his uncle has done, and by extension what his mother unwittingly has done in marrying the man who killed her husband. He verbally attacks his uncle the King to his mother and then accuses her as well with the

most violent words, such as: "to live in the rank sweat of an enseamed bed, stewed in corruption, honeying and making love over the nasty sty" (*Hamlet*, Act III, Sc. 4, lines 101–104). Over and over, his mother—now realizing she has married her husband's murderer—entreats her son to accuse her "no more": "O Hamlet, speak no more! Thou turn'st mine eyes into my very soul: And there I see such black and grained spots as will not leave their tinct" (*Hamlet*, Act III, Sc. 4, lines 97–100).

And it is now that the ghost enters once again and for the last time, entreating Hamlet to be less cruel to his mother. But this time, it is different, because this time the ghost is not a shared apparition. Whereas before, when there were three or four people present, the ghost was seen by everyone and thus was taken not to be the product of a hallucinating mind but to be "real" (just because it was a shared apparition); this time with two people present only Hamlet sees it. His mother neither sees nor hears it. And so she concludes that the original hypothesis suggested in the play does apply to the ghost: it is an hallucination and not even a shared one. Even further, she concludes that the ghost is a symptom of Hamlet's madness. This is the exchange in which Hamlet, again like a scientist, explores both the verbal and visual aspects of the experience he is having:

The Queen: To whom do you speak this?

Hamlet: Do you see nothing there?

The Queen: Nothing at all; yet all that is I see.

Hamlet: Nor did you nothing hear?

The Queen: No, nothing but ourselves.

—*Hamlet*, Act III, Sc. 4, lines 148–149

The ghost, to Hamlet's anguish, then departs while Hamlet implores his mother to see it as it leaves. And the Queen can only conclude: "This is the very coinage of your brain: This bodiless creation ecstasy is very cunning in" (*Hamlet*, Act. III, Sc. 4, lines 153–155).

How ironic and for two reasons. The first is that the interchange that precedes her conclusion about Hamlet's madness is all about "seeing." In trying to persuade his mother of her perfidy and her unwillingness to see what the King, his uncle, has done and what she has done, Hamlet asks her repeatedly: "Have you eyes?" He says it has been as if she is playing blind man's bluff or "hoodman-blind." He elaborates further that she has "Eyes without feeling, feeling without sight." And in emotional torment, she finally does confess to her son that she has been unseeing and in denial. And then, all of a sudden, the ghost appears. And this, this she truly cannot see.

And how ironic again because up until this point, Shakespeare has built an argument in which Hamlet scientifically explores the phenomenon of the ghost and learns information from the ghost in the process. The ghost and the information the ghost imparts to Hamlet drive the drama. And it is with this ghostly communicated information, verified by the play-within-a-play experiment, that Hamlet confronts his mother and does so in such a manner that she believes the information, although unaware that it was imparted to Hamlet by the ghost. And then Hamlet finds to his distress that the

phenomenon that drove him and the drama forward changes at the penultimate moment: the ghost appears once again but now no longer a shared phenomenon! His mother does not perceive it. Worse, his mother accuses him of being mad for seeing it, whereas at the beginning the shared apparition was accepted by Horatio and the two soldiers. One is reminded here of how elusive psi phenomena can be, how it defies the repeatable experiment. For example, the Serios phenomena—the psychic photography of a wonderfully talented psychic—suddenly changed and ceased to take place after being accepted by many observers and explored scientifically.

As previously stated, one can understand why Hamlet would wonder about his sanity, even as he plays with the concept of being mad—wonder about it not only because of the emotional distress that comes from realizing that his uncle has killed his father and bedded his mother—but because the ghostly phenomena (phenomena which lead Hamlet as it would anyone to question what he sees, not knowing whence they come) seem at one minute true and capable of being shared with others, and the next minute seemingly unsharable and therefore unverifiable, and more in the nature of an hallucination that emanates solely from his distraught imagination.

Hamlet, 19th-Century Psychic Research and Tyrell

In 1882, the Society for Psychical Research proposed a massive “census of hallucinations” which was conducted years later. The number of collectors involved in the census was 410 and 17,000 people answered the census. Each person was asked “Have you ever, when believing yourself to be completely awake, had a vivid impression of seeing or being touched by a living being or inanimate object, or of hearing a voice; which impression, as far as you could discover, was not due to any external physical cause.” Roughly 10 percent of those questioned (1,684) replied “yes.” Details of each of these cases was acquired. For example, there were 1,087 cases of visual hallucinations; in only 95 of these cases however was the visual hallucination collectively perceived (out of a total of 283 cases in which the visual hallucination was perceived while someone else was present). Each case was then examined. The amount of effort that took place to garner this information was formidable and has never been equaled.

As a consequence of this effort, three seminal works on hallucinations have been published. The voluminous *Phantasms of the Living* by Gurney, Myers and Podmore; the equally voluminous *Human Personality and Its Survival of Bodily Death*, by F.W.H. Myers; and a small gem of a study (using the data from the census and the two books) by G.N.M. Tyrrell—with an introduction by the psychologist Gardner Murphy—and entitled very simply *Apparitions*. The first of these works deals—as its title suggests—with telepathy and apparitions of the living (there are many examples of these as ghosts are not actually just of the dead); the second deals with apparitions of the dead.

The hypotheses concerning the nature of these hallucinations in these three works were various (just as Hamlet’s hypotheses were various). But there is one hypothesis concerning apparitions of the dead which does not appear in *Hamlet*,

but which is crucial and that is (for want of a better word) the “super-telepathy” hypothesis, favored by Tyrell but not by F.W.H. Myers. In *Hamlet*, one could apply the “super-telepathy” hypothesis in a number of ways. The most obvious would be that the uncle who killed his brother felt guilty for the deed and that as a consequence he unconsciously communicated to the King’s son, Hamlet, through an unconscious orchestration that involved others as well, that he had murdered his father. The ghost was the result. Or one could hypothesize that Hamlet’s father at the point of being murdered communicated unconsciously to his son through a similar orchestration, and that subsequently a “deferred” apparition of the father appeared to Hamlet. These hypotheses obviate the need to think of the ghost as an actual “spirit” entity. It may be that there is something unsatisfying from the point of view of a dynamic story-line about the two variants of these hypotheses (although there is something dramatically compelling to think that the King, out of guilt, manages to communicate his crime unconsciously to Hamlet). Certainly, it is more compelling in some ways to suggest that there is at the very least a remnant of personality that survives death, what Tyrell refers to as an “idea pattern.” But the most economical explanation, since telepathy appears to exist under many circumstances, is that of “super-telepathy” and the two variants of it that I have suggested. This is why it is not necessary to presume that the ghost is a spirit at all.

The Modern Day Parapsychologists

One wonders: why would not modern parapsychologists in general take as one of their references Shakespeare’s *Hamlet* and even claim Hamlet as one of their own? Why would they not plumb the depths of this singular and great drama, that represents modern man, for its parapsychological aspects, and shout from the proverbial rooftop that their science is represented in this great work? Perhaps it is because such references are outside of the experimental investigations that modern day parapsychologists favor in which psychics or ordinary people seek to influence meaningless micro events. In fact, it is one of the failures of modern day parapsychology that it too often chooses to ignore what has been referred to as macro psi phenomenon in favor of the minor; and to concentrate on the small experiment for which there is little motivation to succeed on the part of the participant, whether talented psychic or ordinary person. *Hamlet*, on the other hand, is about macro-psi—a drama of passion in which the desire to find out the truth, on the part of the hero, is palpable and compelling, which may explain in the first place why the ghost does appear bearing its terrible and psi-mediated secret. Thus *Hamlet*, one of the central dramas of Western culture, speaks to all of us of parapsychological phenomena, but all too often we have chosen not to hear the voice of the Stratford bard.

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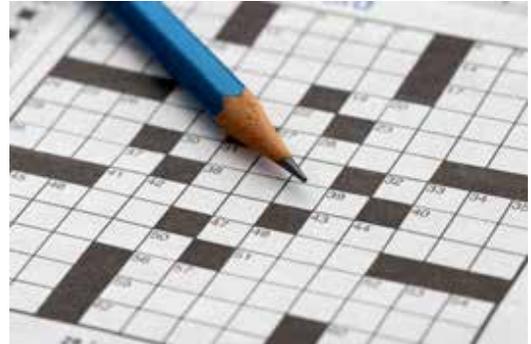
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Why do I know more than I think I know?



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Some time ago I asked a colleague whether he happened to know of any discussions suggesting that psychic sensitivities might increase with age. The impetus for the inquiry was my experience with crossword puzzles, where increasingly I find myself jotting correct answers—words or names—that I was not consciously aware of knowing. That type of experience has persisted.

It seems to me that there are broadly two possible explanations: Some aspect of extrasensory perception, or increasing access to my subconscious. In either case a contributing factor would be subconsciously learning about the particular styles of the crosswords, but my strong impression is that this cannot be the whole story.

This sort of change with age would be plausible under both scenarios. It is surely a fairly common experience that access to one’s subconscious knowledge and capabilities is not available on demand but often follows relaxation or sleep; for instance, when one wakes up with the answer to something one had wondered about before going to sleep. The practice of free association in psychoanalysis is similarly suggestive, and there is also ample evidence that our subconscious body of knowledge is far more extensive than we usually realize: consider the Bridey Murphy story (for which the Wikipedia entry seems accurate); or what I observed first hand when my father was approaching 90 years of age: he began to quote phrases in Czech (a language he was not familiar with) that he had heard in his youth from his own father but had forgotten during the subsequent half-a-century.

That sensitivity to extrasensory perception might also be increased by something like a relaxed mental attitude has been suggested by Jahn & Dunne (“Sensors, Filters, and the Source of Reality,” Robert G. Jahn and Brenda J. Dunne, *Journal of Scientific Exploration*, 18 [2004] 547–70).

However, speculating about mechanisms seems pointless if the claimed phenomenon remains a personal experience of mine. The purpose of this letter is it to discover whether other people have had similar experiences in their golden years. Email me via edgescience@scientificexploration.org.

Henry Bauer
Blacksburg, VA

LETTERS, continued from page 11

On “Lightning Imprints” by Chidambaram Ramesh, *EdgeScience* 47

My interest was piqued by Chidambaram Ramesh’s article and his catalog of historical and contemporary accounts of lightning burning figures and images upon surfaces and flesh alike. Kudos to Mr. Ramesh for his diligent research in finding examples like these.

On the surface I was reminded of Wilhelm Kühne’s inquiry into optography, a method for viewing an image “burned” onto the back of the retina of a dead person’s eye in hopes of catching the last thing they saw. It derives from Franz Ball’s discovery that pigments on the back of the eye would turn white when exposed to light but that image would soon darken via photobleaching. Now if the subject was dead, as Kühne posited, there would be no reason for the pigments to change back. There have been many modern inquiries into optography with mixed results. Because of this, the technique is widely derided by skeptics as the images are not distinct enough to warrant validating the process as useful to criminal investigations. Yet there could be something to optography if death wasn’t a gradual process, vis-à-vis post-mortem lividity, etc. potentially affecting the quality of image derived from a decedent’s retina, in addition to the gruesome process required to acquire a potential image from the retina.

Yet unlike the lightning imprints recounted by Mr. Ramesh, optographic images (if they exist) would be long exposures. Lightning imprints are short exposures thanks to the brilliance of these bolts, literally burning-in images. Which puts me in mind of a similar phenomenon, known as Hibakusha, observed and recorded by the National Archives and Records Administration in the wake of the atomic bombs dropped on Hiroshima and Nagasaki. Hibakusha refers to the person whose skin showed nuclear burns with the pattern of their clothing at the moment of death.

Which brings me to the phenomenon of “dark lightning.” Back in 1899 William Lockyer submitted “Dark Lightning Flashes” to *Nature* (vol. 60, no. 1563, page 570) concerning apparent “dark” lightning bolts being captured on film. Lockyer determined the captured “dark lightning” was an artifact of the cameras and developing techniques used at the time, rather than a literal bolt of energy with tenebrous characteristics.

If the lens of the camera be covered the moment after a flash has occurred the developed image will always come out bright, feebly or strongly, according to circumstances. If, however, the plate be exposed after a flash has acted upon it, either to the continued action of a feeble diffused light or to the powerful glare arising from one or more subsequent flashes, then on development the image of the original flash will probably come out black. The effect is therefore not a meteorological or physical one, but purely



“Dark lightning” photographed at Westgate-on-Sea, England, August 5, 1899.

chemical. It can be obtained, not only with a lightning flash, but also with a machine spark, or even with an ordinary flame. It is merely necessary that the plate should be exposed to the action of a certain amount of light after it has received the impression and before development.

Aligning with this at an oblique angle are reports of true dark lightning. Back in 2013 Nikolai Østgaard submitted a paper to *Geophysical Research Letters* describing true dark lightning, which are terrestrial gamma ray bursts. Dark lightning often precedes a flash of bright lightning during thunderstorms, based upon satellite observations of Catatumbo lightning in Venezuela. Catatumbo lightning is a near-perpetual storm over the mouth of the Catatumbo River.

Lockyer wasn’t aware of true dark lightning since it wasn’t detected until the early 1990s. But flashes of light and radiation can, and do, impress durable marks upon skin, whether patterns from clothing or Lichtenberg figures.

*Chris Savia
Neptune, NJ*

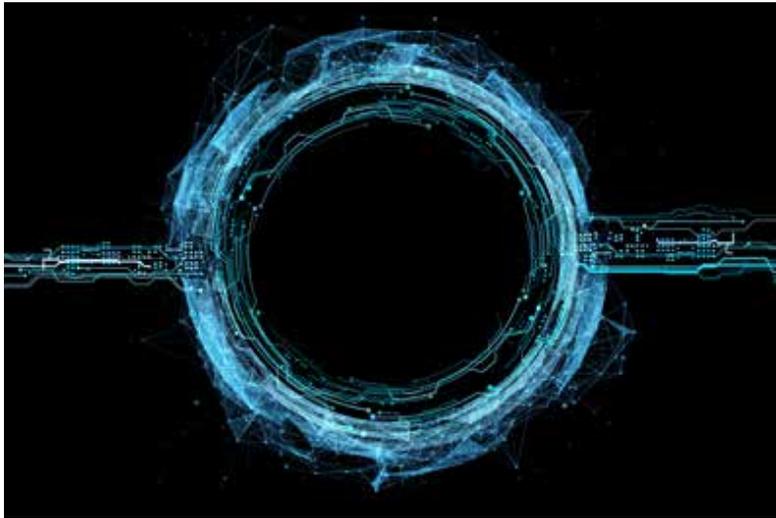
Robin Wooffitt

The Anomaly That Isn't: Poetic Confluence, Social Interaction, and Psi

There is an odd phenomenon that occurs naturally in social interaction: it involves a speech event in which one participant says something that exhibits a relationship to the other's unspoken thoughts or unarticulated mental imagery. As far as I am aware, this phenomenon has not been examined in parapsychology. It has, however, come to the attention of researchers in the sociology of language and social interaction. This phenomenon begins to answer a question I have been wondering about for a long time: I take it that, if psi is real, it represents a form of anomalous communication between people; if so, how does this form of anomalous communication relate to other forms of non-anomalous communication, such as ordinary conversation?¹

This is an approach to the sociology of psi rooted in the technical analysis of what is called the social organization of talk-in-interaction, a form of sociology that has emerged since the 1960s, and which now influences researchers across many social science disciplines. A key assumption of this approach (and one based on empirical analysis) is that talk is a form of social action: we use it to do things in concert with each other.

This action-oriented view of how we use language was initially proposed by the British philosopher J.L. Austin in his 1962 book *How to do Things with Words*. But it developed as a distinct empirical perspective in sociology through the pioneering work of the American scholar Harvey Sacks, working in conjunction with colleagues Emanuel Schegloff and Gail Jefferson. This field of research has come to be known as Conversation Analysis (CA), although much research is focused on interaction in institutional or work settings. A key focus of CA research is to identify robustly patterned sequences of turns through which people manage activities such as turn-taking, correction and repair, person reference, affiliation and alignment, and storytelling, amongst many other features of everyday talk.²



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Phenomenon Identified

The phenomenon in question was first noticed by Schegloff and described in his 2003 account.³ He begins by acknowledging that, like many scholars of communication, he tends to notice in his everyday conversation instances of phenomena in which he also has an analytic interest. One such phenomenon is puns. One day he was working in his office with

colleague Gail Jefferson. Jefferson was making notes with a pencil with one hand and smoking a cigarette with the other. At one point, instead of the cigarette, she raised the pencil to her mouth. This immediately reminded him of an event from his own student days. He attended lectures by a very distinguished sociologist, who had the habit of using chalk to scratch his ear. On one occasion, he absentmindedly left the chalk in his ear while continuing to address the class. Here is Schegloff's description of what happened next.

The recollection of [this] incident apparently brought a smile to my face, a smile which Jefferson noticed and understood to be responsive to her miscue in bringing the pencil rather than the cigarette to her mouth. Displaying her grasp of my smile's source, she remarked, "Oh, that's an earmark of mine."

I registered the pun-like character of her remark, the interest in vernacular poetics being one shared by the two of us... I was about to comment on the one I had just heard from Jefferson when I realized that the comment "Oh that's an earmark of mine" constituted a pun on *something which had not been said but had only been 'thought' or 'recollected' or 'flashed'*. It was, in that sense, an ESP pun, however absurd that appeared to be to someone who did not believe in parapsychological phenomena. (Schegloff, 2003:531-2. Original emphasis.)



Emanuel Schegloff

In this case, Jefferson produces the word "earmark" to capture the kind of recurrent trait or characteristic which would

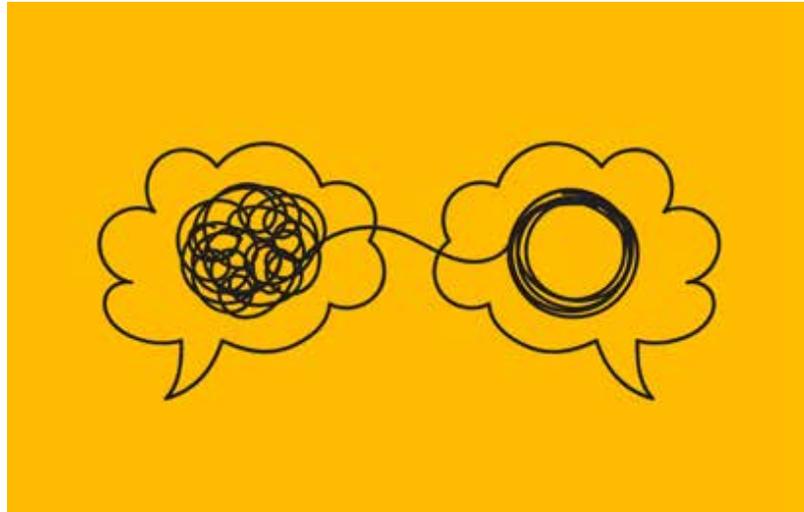
normally be described as a “trademark.” or “hallmark.” Though not right for the occasion “earmark” does seem to reflect a key feature of Schegloff’s sudden recollection of his lecturer’s idiosyncratic behaviour. This, then, is the anomalous phenomenon: a playfully realised confluence of one person’s interiority and another’s talk, seemingly unmediated by everyday communicative processes.

Having noticed it once, Schegloff experienced other cases, and he began to build a collection of these instances. He also mentioned them to colleagues and friends, and they began to pass on to him accounts of experiences they too had. As the collection developed, he noted that a key feature of this phenomenon is that the turns that seem to embody telepathic insight to a co-participant’s mental world are in various ways conspicuous: they may contain a word selection error, or are clumsy or inelegant formulations given the context of the talk in which they occur. Here is an example that happened to Schegloff during a conversation with a friend.

I am visiting with friends in England, talking about the behavior of fans at sporting events. He is comparing cricket and football (soccer) in England. I am thinking of telling, when the turn is mine, about the soccer game my wife and I attended in Campinas, Brazil, after which the fans set fire to newspapers in the stands. My friend is telling me that families go together to cricket matches but not to football, and says “They’ve burnt off families going.” Subsequently he says that he “flashed on” the phrase “burnt off” a few moments before using it, which would be just as I was forming up my next tellable. And, it turns out, this is not an ordinary usage of his, and is unidiomatic in context. (Schegloff, p. 538)

“Burnt off” is not a phrase conventionally used to describe how people might be deterred from attending sporting events, or indeed, any event. It does, however, seem to reflect the experience that Schegloff was planning to report in his next turn.

In his account of this phenomenon, Schegloff is aware that the examples he describes can only stand as a *prima facie* case that there is a robust phenomenon. He concludes: “If there is a real phenomenon here, and if the exemplars [the candidate instances described in his paper] are apt and well chosen, it is their cumulative effect which will render the phenomenon visible, and by no means unthinkable.” (Schegloff, p. 539) In



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his 2003 paper, Schegloff reports that his collection stands at 20 cases. (He has not written on this phenomenon again, so we do not know if his collection increased.)

Another Collection of Cases

Since first coming across Schegloff’s paper in the mid 2000s, I have been building my own collection of what seems to be the same phenomenon.

At the time of writing, I have 62 cases. I am a participant in about a third of these, but most have been provided to me by my students, colleagues, and friends who know of my interest. There are instances that occurred between relative strangers, professionals and their clients, close friends, acquaintances, domestic partners, work colleagues, and family members. There is no common topic in the on-going conversation into which the apparently telepathic turn intrudes. Here is an example provided by one of my students, which occurred between her partner and his friend.

N and B used to work together until B moved to a different job to become a manager, they now frequently meet in the pub in which B works to catch up. N had just been fired from his job and was in the pub telling B about how it had happened, however, B was preoccupied thinking about a rat he had seen earlier in the day and how disgusting it had been. N then announced that the whole situation that led to him being fired had really ‘ratted’ him, going on to correct himself to ‘rattled’, which directly articulated the thoughts that B was having regarding the rat.

Here, the curious or incorrect word selection is explicitly addressed by the person whose turn seems to capture the interior concerns of the other: he self-corrects his talk, substituting the incorrect word, “ratted,” with the intended word, “rattled.”

Characteristics of Poetic Confluence

There is, then, a robust pattern emerging.

- The phenomenon is a confluence of public talk and unarticulated conscious experience.
- The turn which seems to allude to the other’s private thoughts contains a speech error, or an infelicitous or unusual phrase.
- It is this incorrect or unusual word or phrase selection that constitutes that utterance’s ostensibly telepathic relation to the other person’s imagery or thoughts.

- The turn that appears to capture the other’s imagery or thoughts has poetic, sometimes playful qualities.

- That turn is concerned the business at hand—the conversational topic at that moment—and is not produced as an attempt to guess or mimic what the other is thinking about.

- The imagery or thoughts which are captured by the spoken turn seem to concern unusual events, evocative imagery or emotional themes. In the cases so far: an esteemed lecturer leaving chalk in his ear; recollection of people starting fires in a sports stadium, and a rat in a pub. In other cases from my collection, the thoughts/imagery relate to sex, emotional distress, intimate body parts, personal injury, vulgar homophobic slang, anxieties about finances, annoyance that a person failed to keep an appointment, professional anxieties, and formulating a bad taste joke about a missing woman (presumably murdered). Not all cases revolve around such evocative imagery or themes, but it is a very strong pattern.

- Where it can be determined, in each of these cases, the utterance that constitutes the poetic confluence is not an idiosyncrasy of the speaker.

- Where it can be determined, in the majority of cases, the confluence of the poetic turn and the unarticulated thought is not explained by reference to shared circumstances, the topic of the talk, intimate knowledge of one another, and so on.

Schegloff identified the phenomenon as an ESP pun to reflect the apparent operation of some form of parapsychological connection between the person whose imagery is the source of the subsequent pun and the person whose turn then articulates a punning relation with that imagery. However, there are arguments for abandoning this term. There are grounds for focusing on the more general term poetics, rather than puns. This is because puns are one class of everyday poetics. The use of the term “ESP” is also problematic: it presumes an explanation, in that it frames the phenomenon in terms of (unspecified) parapsychological operations. It seems premature to adopt nomenclature that implicitly adopts a particular intellectual framework prior its sustained investigation. It is for these reasons that I have adopted the term *poetic confluence*. Admittedly, this is not as elegant as ESP puns. But it does capture the way in which the private experience of consciousness and the public utterances of participants in interaction appear, on occasion, to come together and find expression in poetic forms.

Confluence in Psychoanalysis

The common features of the cases in both collections constitute the “cumulative effect” which Schegloff felt would establish the robustness and recurrence of this phenomenon. However, a serendipitous discovery has further added to the cumulative weight of evidence. While conducting a literature review of telepathy in psychoanalysis and



István Hollós

psychotherapy, I came across a reference to an academic paper written in German by the Hungarian psychoanalyst, István Hollós, and published in 1933 the journal *Imago*.⁴ Hollós had been noticing telepathy-like events in his clinical practice for a period of 20 years and had been taking notes for over a decade. As a result, he had a corpus of approximately 500 cases by the time he wrote his article.

I obtained a copy of this article and one of my PhD students, a German national, translated it for me. I was surprised to see that the kinds of patterns Schegloff had described, and which I had confirmed in my data, were reported in the cases Hollós used to illustrate his clinical experiences. Here is an example from his paper.

I was agitated because the next patient, who had pointed a revolver at me during the last session, was already in the waiting room. He was a hot-headed young man. Worried, I thought that he could shoot his gun in the other room in this very moment; in my imagination I already heard the shot. The female patient talked about her mother who does not leave her in peace and who walks around the flat furiously:

“Then she shoots around in the flat”, she says in Hungarian. However she uses the German word but in a butchered Hungarian phrase—“schiesszol ide—oda.” In correct Hungarian one can only say: she ran back and forth.

The analyst is thinking about what the next patient might do, anxious about—and indeed even anticipating—the possibility of a shooting. At that point in the current patient’s free association she describes the behaviour of her mother using a phrase that seems to connect with the analyst’s concerns about his next patient. “Shoots around” seems conspicuously to chime with anxieties about gun violence; indeed, the analyst’s anxiety stems from his knowledge of the next patient’s volatile nature (he is described as hot headed), and “shoots around” captures his fear of indiscriminate violence. Hollós notes a peculiar feature of the patient’s utterance, in that the phrase she uses to refer to her mother’s ambulation contains a form of linguistic error. It is “butchered Hungarian” with (presumably unexpected or inappropriate) elements of German contaminating a conventional Hungarian figure of speech. In many of the cases Hollós presents, there is the same pattern found in other cases: unarticulated evocative imagery or thoughts somehow “called out” by another’s conspicuously worded turn. Not only do the Hollós instances provide further examples of the phenomenon, they establish that it is not limited to British and American English, and that it occurs in contexts other than ordinary conversation.

Poetic confluence, then, is a robust phenomenon, a pattern in interaction in which anomalous communication seems to occur. However, in many respects, this phenomenon is not anomalous at all, as it is just another example of the way that our interactions with each other are designed to ensure interpersonal harmony and minimise circumstances than can

destabilize interaction or cause interpersonal friction, such as embarrassment or inappropriate behaviour.

Interpersonal Dynamics

The sociologist Erving Goffman was perhaps the first systematically to focus on the subtle interpersonal dynamics of everyday face to face conduct (and was a key influence on the emergence of Conversation Analysis). He illuminated the way that even the most apparently mundane social moments can be charged with a rich dynamic of situationally specific evaluation, inference, impropriety, embarrassment, and so on. In his essay on face work, he refers to the kinds of interpersonal sensitivities that can destabilize an encounter—the “judgemental contingencies of the situation”⁵ (Goffman, 1967: 31)—and in response to which we use various interpersonal strategies of avoidance, resistance, or management. The phenomenon of poetic confluence resonates closely with this domain of interpersonal dynamics. This is because the poetic turns perform work on the imagery they capture or refer to. Some aspects of the source material are deleted or preserved; other components are transformed. Broadly: the poetic articulations address emotional, personal, or inferentially sensitive properties of the target imagery or private thought; and in various ways, the poetic turns offer less sensitive or evocative versions or allusions. *The sensitivities associated with the thoughts or imagery are thereby minimized.* Consider the cases we have considered so far.

Imagery of an esteemed lecturer with chalk in his
ear / “earmark”
Fires in a stadium / “burnt off”
A rat in a pub / “rattled”
Anxieties about the discharge of a weapon / “shoots
around”

Poetic confluence is, therefore, a mechanism for what looks like face work to preserve the other’s situational propriety, but face work addressed not to the other’s normative slips in *public* behaviour, but to the other’s sensitive or personal *private* thoughts. It is a preventative, or remedial practice,⁶ but done on behalf of the other. In this sense, the phenomenon of poetic confluence seems to exhibit precisely the kinds of interpersonal sensitivities and delicate interactional activities that we know to be characteristic of everyday communication generally. While it may be an anomaly in the sense that we cannot yet identify the mechanisms by which it occurs, poetic confluence is just one of the practices we have for managing potential disruptions to interaction that may arise from minor behavioural improprieties.

While poetic confluence suggests the operation of communicative mechanisms that are *scientifically* controversial, its recurrent sociological properties resonate with familiar, everyday interpersonal concerns. In that sense, it is both baffling and mundane; an anomaly which is not anomalous.

Author’s Note: It may be the case that, having read this article, readers may themselves experience instances of poetic confluence. If so, the author would be exceptionally grateful to receive an account at: robin.wooffitt@york.ac.uk. All accounts will be stored on a secure computer, and if used in publications or presentations, any identifying details will be removed or anonymized.

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ENDNOTES

1. This article draws from, and uses extracts from, the following papers on poetic confluence:
 - Wooffitt, R. (2018) “Poetic confluence and the public formulation of others’ private matters.” *Sociological Research Online*, 23(3): 687–704.
 - Wooffitt, R. (2018) “Shared subjectivities: Enigmatic moments and mundane intimacies.” *Subjectivity*, 11(1): 40–56.
 - Wooffitt, R. (2019) “Poetic confluence: A sociological analysis of an enigmatic moment.” *Psychoanalytic Dialogues: The International Journal of Relational Perspectives*. 29(3): 328–345,
2. An introduction to this form of sociology can be found in Hutchby, I. and Wooffitt, R. (2008) *Conversation Analysis: Principles, Practices and Applications*. Oxford: Polity Press.
3. Schegloff, E.A. (2003) “On ESP puns.” In Glenn, P., LeBaron, C. D., and Mandelbaum, J. (Eds.) *Studies in Language and Social Interaction: In Honour of Robert Hopper*. Mahwah, NJ: Lawrence Erlbaum, pp. 452–460.
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Patrick Huyghe

Event Horizon: Predicting Longevity

Great ideas flower in strange places. For J. Richard Gott III, an astrophysicist at Princeton University, the brainstorm occurred while standing at the Berlin Wall. Gott was 22; the year was 1969. At that time, everyone wondered how long the Berlin Wall would stay up. Some people believed it was a temporary aberration and would be gone soon. Others were convinced it was a permanent fixture of modern Europe. Gott thought about the wall's longevity while getting his picture taken in front of it, and he realized that there actually was a way of reliably estimating how much longer it would be around. It was possible, in fact, to accurately predict the future longevity of just about anything you were observing, be it the Berlin Wall, Broadway plays, the space program—even human existence.



Gott's formula for predicting the proposed longevity of things is surprisingly simple. It's based entirely on the idea that the longer something has been around, the longer it's likely to survive. All you need to know to predict how long something will last is its track record. And you have to make one standard assumption—that there is nothing special about your location in making the observation. This assumption is called the Copernican Principle, after the 16th century Polish astronomer who proved that the Earth was not at a privileged location at the center of the universe.

“The Earth's location,” notes Gott, with typical good humor, “looks less and less special. We have found that the Earth is going around an ordinary star in an ordinary galaxy in an ordinary supercluster. The more we learn, the less and less special the Earth's location appears to be. So the Copernican Principle is simply the idea that your location is not likely to be special.”

The Copernican Principle happens to be one of the most successful scientific hypotheses in the history of science. Christiaan Huygens used it to estimate the distance to the stars. Einstein used it in developing special relativity. And it was used to develop the theory of the Big Bang. In fact, says Gott, “a day doesn't go by when a cosmologist isn't using the Copernican Principle. When we look at a certain piece of the sky, we assume it's typical.” He should know. Gott's primary interests are cosmology and general relativity. And why does the Copernican Principle work? “Simple,” says Gott. “Out of all the many places for intelligent observers to be, there are, by definition, only a few special places and many non-special places. So yours is likely to be one of the non-special places. And you can use this to make predictions.”

Here is the way Gott applied the Copernican Principle to calculate the longevity of the Berlin Wall. “I'm in Berlin

visiting the wall, and it's 1969. There is nothing special about me. There is nothing special about my visit. If I'm not special, I should be located somewhere randomly between the beginning and the end of the wall's existence. There is a 50 percent chance that I'm in the middle half of the wall's existence. Now suppose I'm at the very beginning of that middle half. Then one quarter of the wall's existence has already passed, and three quarters are left in the future. So the future is three times as long as the past. On the other hand, if I'm in the final stage of its existence, then three quarters have already passed, and there is one quarter left in the future. So the future is one third as long as the past. I reasoned then that the wall's longevity would be between one third as long as the past and three times as long as the past.”

The Berlin Wall was eight years old in 1969. So Gott predicted that there was a 50 percent chance that the wall's future would be longer than 2.66 years (one-third of eight years) but less than 24 years (three times eight years), and repeated it to a friend, Charles Allen, a lawyer and amateur astronomer. Now fast-forward 20 years. Gott is watching TV and the wall is being torn down. “So I called up my friend,” says Gott, “and said ‘Hey, Chuck, do you remember the prediction I made in 1969?’ ‘Oh yes,’ he says. So I said to him, ‘Turn on the TV, they're tearing down the wall.’”

This was not a fluke. Gott did a lot of traveling in the summer of 1969. He also visited Stonehenge, which it should be noted, has not been torn down. The difference between Stonehenge and the Berlin Wall is that Stonehenge was then 3,900 years old and it's still around today. The Berlin Wall was only eight years old, and today it's gone. Their track records, obviously, are the key to calculating their longevity. The success of Gott's Berlin Wall prediction—those 20 years were within the 24 years he called for in his prediction—led him to think that maybe he should write this up.

But first, Gott's remarkable thought experiment required a little tinkering. Scientists like to make predictions that are right more often than 50 percent of the time. They must be 95 percent confident that their results are correct. So Gott revised his formula slightly, but his reasoning remained the same. To be in the middle 95 percent of something means that you are not in the first 2.5 percent or the last 2.5 percent. And if you are at the very beginning of the middle 95 percent, then you're exactly 2.5 percent, or 1/40th, from the beginning. This means that 39/40ths remain and the future is 39 times as long as the past. Conversely, if you're at the end of the 95 percent interval, if there is just 1/40th left in other words, then the future is just 1/39th as long as the past. And so Gott's little formula was



born. Ninety five percent of the time you would be correct in saying that the future longevity of some observable is between $1/39$ th as long as its past and 39 times as long as its past.

The details of Gott's agile mental gymnastics appeared in the prestigious journal *Nature* on May 27, 1993.

One need not know exactly how something is going to end to make the kind of rough estimate of its lifespan that Gott does. In 1977, Gott went to the Soviet Union and walked around Red Square. The Communist regime had been around for 50 years, but it was gone 14 years later. No one could have forecast in detail the fall of the Soviet Union, but Gott's formula would have worked just fine to predict its longevity.

The same can be said for the Seven Wonders of the World, chosen circa 130 BC. Two of the seven, the Colossus of Rhodes and the Hanging Gardens of Babylon, were already gone when the list was made, and of the remaining five, four are now gone—all were only 400 years old or less at the time. One was destroyed by fire, another by the Goths, one by earthquakes, and another just fell into ruin. Each one went with a different cause that you could not have predicted. But one of those seven wonders, the pyramids, was 2,500 years old at that time, and they are still around today.

Gott is not the first, nor the last, to discover the crucial importance of track record in making predictions. When his paper came out, he received a letter from Henry Bienen, the Dean of the Woodrow Wilson School at Princeton. Bienen had just finished a book with N. Van de Walle called *Of Time and Power*, a statistical study of the longevity of 2,256 world leaders. After 200 pages of detailed analysis trying every which way to predict the future longevity of world leaders, the authors concluded: "The length of time that a leader has been in power is a very good predictor of how long that leader will continue to hold power."

And that, of course, is the very heart of Gott's predictive formula. After Bienen's letter, Gott decided to look up all the world leaders that were in power when he was born, February 8, 1947. "Not a special time," he says, thick with the accent of his Kentucky birthplace, "but one I can't fiddle with." There were 115 leaders in power when he was born, and Gott's formula correctly predicts the longevity of 108 of them, a success rate of 94 per cent. He then did the same for his father, who was born January 27, 1906, and of the 84 leaders alive at the time of his father's birth, Gott's formula correctly predicts the longevity of 79 of them—also a success rate of 94 per cent. "So it certainly performs as advertised," notes Gott.

The Berlin Wall was obviously just a starting point for Gott, who prefers to wrap his mind around much bigger questions. One he decided to tackle with his newfound prediction tool was: How long is the human race going to last. "I can't think of anything that would be of more immediate interest to us," he notes. Our track record is about 200,000 years; that's how long our species has been around, according to the best estimates from mitochondrial DNA and the fossil record. If the future is more than $1/39$ th but less than 39 times as long as the past, then from the vantage point in time he made the calculation, the human race has somewhere between another 5,128 years and 7.8 million years to go.

Add the 200,000 years we've been around and Gott's estimate of a quarter-million to eight-million-year longevity for our species makes a lot of sense when compared to other time-scales. For instance, this estimate is nowhere near the age of the universe, 13 billion years, or the main sequence lifetime of the sun, 10 billion years, nor should it be. But it's worth noting that the Neanderthals lasted 300,000 years, and *Homo erectus*, our direct ancestor, lasted about 1.7 million years. The mean lifetime for all mammal species is two million years, and the longevity for all species ranges from one million to 11 million years. It's no coincidence that our projected longevity should so closely match the longevity of other species. It merely suggests that Gott's estimate is probably on target.

Even worse however is that some species are clearly on their way out. The horse is one example. There used to be several different species of horse, but now there is only the one left. So in terms of species, its heading toward extinction. "And unfortunately," adds Gott, "we are in exactly the same situation. There used to be a number of different hominid species, Neanderthal, *Homo erectus*—but now we are the only one left. So our family is dwindling in the number of species, while others, like the rodents, are doing very well. There is a family with 1,500 species. So they have a lot of evolutionary chances. They have a bright future whatever catastrophe does one in, might not do in the others. Not so for us. The world could go on quite nicely without us, as it did millions of years before we were around."

These predictions about the longevity of the human species have such important consequences that Gott wanted to test his prediction formula on smaller scales, where it was not necessary to wait 5,000 or a million years to get an answer. So on the day his paper appeared in *Nature*, he decided to predict the future longevities of Broadway and off-Broadway plays in New York. "Nothing is so difficult to predict," says Gott. "Broadway plays have all the chaotic unpredictableness that species show. Your star could die tomorrow. The theater could burn down. Or a new star could come in tomorrow and extend the run greatly. But since most Broadway plays have not been around that long you might expect to get some answers in a few years and not have to wait hundreds of years." So he called each theater and asked how long each production had been open. And then he waited, patiently, to see when they would close.

Many eventually did. *Kiss of the Spider Woman* had been open for 24 days when he conducted his survey, and he predicted it would close somewhere between the next day ($1/39$ th of 24) and 936 days. It closed after another 765 days. *Cats* had been open for 3,885 days at the time, and he predicted that it would remain open for another 99.5 days to 415 years. *Cats*, in fact, closed in September 2000. Of the plays that have been around for a long time when he made his prediction, 36 of 44 had closed and every last one of them did so within Gott's estimate of longevity.

Unfortunately, as a civilization, we find ourselves in the same fix as *Cats*, Gott points out. If *Cats* lasted forever, most people who went to see the play would observe that *Cats* was nearly as old as the universe itself. This is not what we observe. Similarly, if intelligent civilizations lasted forever, if some finite time after the Big Bang one formed and it lasted forever,

then almost all the intelligent observers in the universe would observe that their civilization had been around almost as long as the universe itself. But again, this is not the case. We see that we have been around a tiny fraction of time (200,000 years) relative to the Big Bang (13 billion years ago). “This is the clue,” says Gott, “that we are not likely to be around forever.”

From this moment on, human population will likely take one of three possible paths, according to models developed by biologists Paul and Anne Ehrlich of Stanford University in California. One shows a crash after a population increase, followed by a quick die-out. Another shows that a population may stabilize at some low number after a crash but that this weakened population would eventually become extinct as well. The third, and clearly the most optimistic, scenario shows following the usual ramp-up in population size—a long and stable plateau.

Suppose this last model were the case for us, notes Gott. Suppose we became environmentally conscious and our population leveled out. If this were the case, we would expect to be on that long, extended population plateau today, because very few people live on the exponential ramp-up compared to all those who live on the long plateau. “But we do not observe that,” Gott says. “We observe that we live on an exponential ramp-up.”

It’s also unlikely, according to Gott, that we will ever colonize the galaxy. If this were to happen, then we should now be living in a space colony, but we obviously are not. If galactic colonization were to be a reality, it would be very rare for anyone to be on their home planet, on the exponential ramp-up phase of galactic colonization, in other words. “But we are on the ramp-up, and this is a very improbable place to be,” says Gott. “It’s very improbable for us to be there at the very beginning of galactic colonization. This is like finding that you were born on the very tip of Tierra del Fuego and everybody lived north of you.”

For confirmation of the unlikelihood of galactic colonization, notes Gott, you don’t have to look any further than the current state of the human space program. In 1993, he used his statistical formula to predict the future longevity of the human space-flight program, which was then only 32 years old. He predicted, with 95 percent confidence, that it would last at least 10 more months, but less than 1,250 years. The 10 months have gone by obviously, so the first half of his prediction has already turned out to be true. “If the second half turns out to be true as well,” he notes, “this is a very short time. It shows that there is a danger that we’ll quit the space program before we should.”

If the easy-going, logic-driven Gott has an agenda, then clearly this is it. “This is the situation we are in,” he says. “The space program has been very brief and there is a danger that it will go away. Budgetary problems put it most at risk. But people do not realize why the space program is important. People think the space program is just there for fun, or for intellectual interests, or something like that. But the space program could have a profound effect on our survival prospects. I would say that the goal of the human space-flight program should be



to improve our survival prospects by colonizing space. We know that the Earth is full of fossils of dead species, we know that catastrophes occur on the Earth every few million years, and we know the lifespans of those other species. So as long as we stay on the Earth, we are subject to pretty much the same risks they were subject to. A virus might get us, a war might do us in, an ecological disaster might destroy us, or something totally unexpected might happen.”

“But if we went and colonized other places,” Gott continues, “we would simply be giving ourselves more chances. And colonies plant other colonies. It’s very interesting that the first words spoken on the Moon were in English. Not because England sent astronauts to the Moon, but because it planted a colony in North America that did. So if we would plant a colony on Mars, we would probably double our survival prospects. Having colonies that plant other colonies is a wonderful life insurance policy. Remember the Alexandrian library. The Ptolemies put all their books in this one library and they protected it very well, but eventually the library burned down. It’s lucky that we have some of Sophocles plays that were copied and stored elsewhere, because those are the only copies we’ve got. We’ve got seven plays out of 120. But this shows that the strategy of making copies of yourself and planting them at distant locations is a good one.”

The Copernican Principle seems to have infused every thought, every moment of Gott’s life. Naturally, he used it to forecast his own longevity, when his paper appeared in *Nature*, at the age of 46. “It forecast that I had another year or so to go,” says Gott, “but less than another 800 years or so. It’s been more than that year, so anytime I go now, I’m okay within the 95 per cent confidence limits.” Gott also applies the principle to the day-to-day decisions he has to make, even on vacation. For instance, when he was in Hong Kong, he wanted to go to the top of Victoria Peak. The only way up was on a little rickety tram or cable car that looked rather unsafe. So he asked the man running it, “How long has it been running without an accident?” And the man replied, “Sir, we’ve been running this cable car for 90 years and there has never been an accident.” Gott got on.

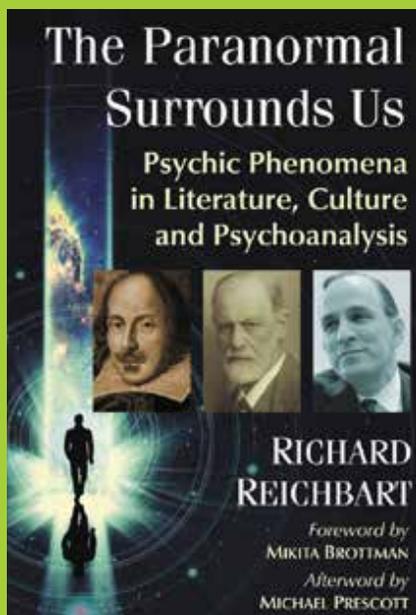
“But,” he warns quickly, “I would have not gotten on the *Titanic*. If you go to the dock and ask them how many times the ship has been back and forth, and it hasn’t been back and forth 39 times, I would wait for another ship. It did not have a long track record. This was its maiden voyage. The *Bismarck* went down on its maiden voyage. The *Hindenburg* went down on the 13th flight across the Atlantic. The tragedy of the *Titanic*, of course, was that it didn’t have enough lifeboats. Staying on the Earth and abandoning our space program is sort of like sailing on the *Titanic* with a short track record and no lifeboats at all.”

We can hope that Gott is wrong, but hope won’t insure our survival.

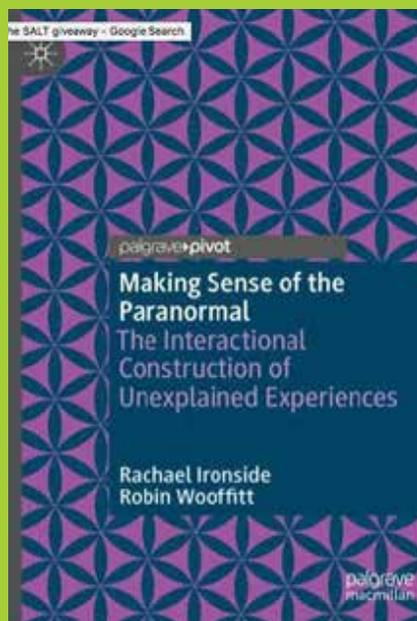
Adapted from an article originally published in 1997 in the Australian magazine 21C.

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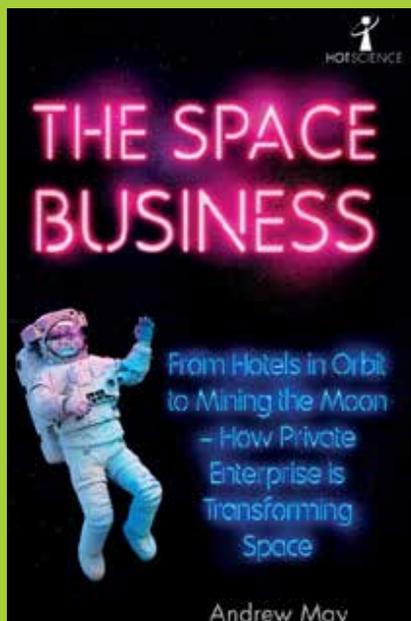
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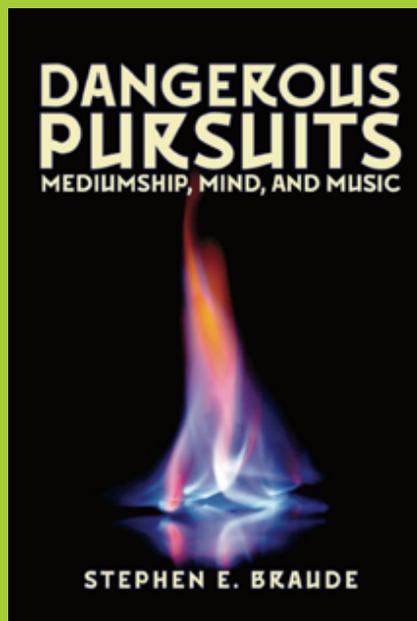
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