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Volume 33, Number 4 2019

EDITORIAL

RESEARCH ARTICLES

COMMENTARIES

HISTORICAL PERSPECTIVE

BOOK REVIEWS

SSE NEWS

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EDITORIAL

Science Doesn't Dictate What's "Impossible"

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In this issue we present Commentaries on a remarkably simplistic critique of psi research published recently by Arthur Reber and James Alcock—hereafter R&A (Reber & Alcock, 2019a, 2019b). I believe the Commentary rebuttals that follow in this issue, from Cardeña and others, effectively demolish R&A's critique. But I also believe a few additional points are worth making. These highlight not only R&A's ignorance of—indeed, refusal to consider—relevant data, but also their general conceptual naivete. And I'll focus primarily on R&A's assertion that alleged psi phenomena are impossible.

Note, R&A aren't merely making the likewise inadequate but at least superficially more sophisticated claim that psi phenomena are initially improbable relative to some well-supported background theory. But even if we were to concede that the phenomena (including small-scale ESP and PK) are initially improbable relative to an accepted background theory, we're still not compelled to deny their reality. We need only show that the direct evidence in their favor overrides their initial and conditional improbability. That, I believe, is easy to do, but of course R&A are fortified by their refusal to consider the data. Moreover (as some of the Commentaries note), R&A greatly overestimate the level of support for what they take to be the background physical theory.

In any case, the more relevant points for now are these. First, there are serious reasons for thinking that no well-supported broad scientific theory (e.g., quantum physics, or the general or special theories of relativity) precludes the existence of any specific *mental* phenomenon, normal or paranormal. Arguably (I think persuasively), those phenomena are simply outside the domain of physics. I'll return to this point shortly. For that matter, the existence of ESP is compatible even with theories of perception

in psychology. Of course, those theories are much more limited in scope than the grand theories of physics or (say) evolutionary theory. So even if theories of perception did prohibit the existence of ESP, the failure of that prediction would matter little to science as a whole. But in fact, those theories merely *describe* the operation of the familiar or known sense modalities. It's simply not their business to legislate the full range of possible forms of information acquisition or organic interaction. So if evidence leads us to accept the existence of previously unacknowledged perceptual modalities, psychology would simply find its domain expanded.

Moreover, according to one plausible and influential view in the philosophy of science, initially advanced (I think) by Michael Scriven (Scriven, 1961) and then later Nancy Cartwright (Cartwright, 1983, 1999), many (if not most) scientific laws are approximations based on ideal cases and oversimplified boundary conditions (including single causes), and as such they don't strictly apply to real-life situations, which at the very least usually include multiple causes. But even if we concede that physical laws might still be approximately true of real-life situations (including those in which intentions or other mental states are causes), in the case of paranormal phenomena we have no decent idea what the relevant and possibly countervailing boundary conditions might be. That's one reason why psi researchers are dogged by the notorious "source of psi" problem. Therefore, we have no decent idea whether an apparently violated law should be abandoned or whether the law is still useful but only with respect to a different set of boundary conditions. Besides (as I mention in more detail below), insofar as mental processes play a causal role in ESP and PK, the laws of physics may not apply to them at all, and the phenomena would pose no more of a threat to the laws of physics than would the facts of ordinary memory or volition. (For example, see Braude [2014, Chapter 1] for an account of why a reductive analysis of memory is untenable.)

Nevertheless, at least as far as PK is concerned, some facts concerning physical mediumship (and poltergeist phenomena) suggest that, insofar as PK is a physical process, fundamental physical laws—including conservation laws—may actually be obeyed. For example, the literature contains many reports of cold breezes preceding physical phenomena (Adare, 1871/1976, pp. 1, 2, 7; Cox, 2004; Crookes, 1874, p. 86; Price, 1924; Randall, 1982, pp. 145–146; Theobald, 1887, pp. 45, 48, 62), and some researchers have reported a measured increase in a medium's weight by the amount of force needed to raise a levitated table (Courtier, 1908; Crawford, 1918).[1]

As far as ESP is concerned, there's no reason to suppose (as many have claimed) that its apparent insensitivity to distance suggests a violation of Maxwell's equations, even if the phenomenon is mediated by a form of radiation. As Dobbs long ago observed (Dobbs, 1967), conventional forms of radiation (e.g., short-wave signals) sometimes display similarly anomalous behavior with distance, and typically these anomalies are explained relative to exceptional sorts of boundary conditions, such as ducting. In principle, one would think that ESP's apparent insensitivity to distance might be accommodated along similar lines. (For more on the problems plaguing brain-radio or energy-transfer theories of ESP, see Braude [2002].)

Of course, psi phenomena *do* seem to be proscribed by various philosophical theses—for example, Broad's basic limiting principles (Braude, 2002; Broad, 1962). But no principle entailing the impossibility of psi is universally accepted, even among the scientifically sophisticated. Even more important, the basic limiting principles (and their ilk) are neither presupposed nor implied by any fundamental scientific theory. For example, if scientists were to agree that consciousness survives bodily death, the main body of scientific theories, and certainly the global theories of physics, would remain largely unaffected. Relativity and quantum physics (say) are mute on the topic of survival. In fact, if we established the reality of postmortem survival, most areas of science would continue to operate as they had all along. For instance, neither geology nor astronomy would have to find new approaches to their respective domains. Nor would physiology (at least apart from untenably reductionist elements of the brain sciences) be forced to describe bodily functions in novel ways. And, for the most part, the social sciences could preserve their approaches to the study of human behavior.

Some scientists are both open to the possibility of psi and don't see it as posing a threat either to fundamental scientific principles or to good science generally (as our other commentators in this journal issue also observe). They take the attitude that if evidence shows the phenomena to be genuine, we'll eventually figure out how to explain them either in terms of current scientific theory or an extension or evolution thereof. In fact, scientists who actually accept psi phenomena often analyze them in conventional scientific terms—that is, in terms of the background theory (usually physics). For reasons discussed below, I would say that's not a particularly good idea. But the important point is that competent, practicing scientists don't all believe that positing the existence of psi is somehow anti-scientific and thus can be safely ignored. Apparently, then, the impossibility of psi (or improbability

of psi relative to the background theory) is not as conspicuous as R&A glibly suggest.

Therefore, it's certainly not obvious that psi phenomena violate fundamental laws or theories of physics, even to the extent that the phenomena are physical. Moreover, it's not clear that physics *should* have anything of great interest to say regarding psi phenomena, because it's unclear why physics should have anything of great interest to say about organic activities generally and psychological processes in particular. For one thing, the laws of physics (including conservation laws) strictly speaking apply only to impersonal or mechanical forces—that is, to physical systems and interactions abstracted from the realm of intention. There's no reason to think that physics must have anything at all to say about the ranges of phenomena ignored in, or simply not susceptible to, that particular process of abstraction. But those limitations reveal no defect in physics. They merely illustrate the obvious point that the process of abstraction and the associated activity of theory construction at best yield only part of a more complex picture.

In fact, it's frequently the case that we don't consider formal laws to be violated or false just because we discover that they have exceptions. In fact, these apparent violations are what we should expect if (as noted above) scientific laws are approximations and "there are no rigorous solutions for real life problems" (Cartwright, 1983, p. 13). Moreover, in some cases the exceptions show only that the domain of the laws is limited.

For example, in logic, "if___, then___" constructions unanalyzable in terms of the material conditional (such as subjunctive conditionals) don't falsify the standard laws of sentential logic. They demonstrate merely that standard systems of logic are not properly interpreted as applying to those expressions. Indeed, logicians have devised various alternative logics to apply precisely to linguistic domains resistant to otherwise valuable sentential and predicate logic (e.g., deontic, epistemic, temporal, and other modal logics). Similarly, although the addition of 7cc of water to 5cc of alcohol yields less than 12cc of liquid, that fact reveals no defect in arithmetic. It shows merely that the formal system of arithmetic doesn't apply straightforwardly to the addition of water to alcohol. And again, the properties of objects in curved space don't violate or falsify the principles of Euclidean geometry. They reveal merely that the Euclidean system applies, strictly speaking, only to plane surfaces. Analogously, I suggest, the principles of physics are bound to have their limitations. More specifically, they're not threatened by their failure to apply exactly to non-ideal conditions or by phenomena falling outside their domain.

Moreover, even if humans are physical systems that don't survive bodily death, they and their activities may be characterized and analyzed on many different levels of description, at least some of which may not be translatable without residue into any other. For example, humans may be described on levels at which their intentional or vital properties are ignored. Thus, they may be described as if they were inert or nonliving systems like sticks and stones. Here, physics may indeed have something to say about us, although what it describes won't be anything distinctively human. After all, both humans and rocks, if thrown from a building, will obey the laws of gravitation. But people may also be described with respect to psychological regularities, such as manipulativeness, optimism, immaturity, the tendency to be intimidated by intellectuals, the inability to sustain a meaningful relationship, and fatigue with shallow and snarky parapsychological skeptics. In these cases, there are totally persuasive reasons for thinking that the associated levels of description have no further analysis or underlying structure and that the regularities lie beyond the domain of physics (I discuss that issue in more detail elsewhere [Braude, 2014, especially Chapter 3]). But since it seems as if a great deal of psi functioning involves processes or regularities that must be characterized in psychological terms, it's moot (to say the least) whether psi phenomena pose any threat to physics. Physics may be as irrelevant to parapsychology as it is to psychology (see also Fodor, 1981).

The only way I can see a psi phenomenon threatening the fabric of science is the way in which practically any psychological process or regularity poses a threat—namely, by undermining the view that physics is the fundamental branch of science or at least prime contender for that position. In fact, if clear thinking were to reign, we'd witness the abandonment of the view that *any* branch of science is fundamental. Physics would be regarded as neither more nor less fundamental than biology or psychology, at least some of whose laws and descriptive categories will be absorbed by no other branch of science. Granted, to concede this would be a major step for many people. But it needn't shatter one's faith in the theoretical integrity of physics. All that needs to change is the belief in the reducibility of all other sciences to physics—that is, a certain general conception of the structure of science as a whole. The laws of physics can remain intact (although as anyone with even a modest grasp of history realizes, those principles continue to evolve). So neither volition and memory on the one hand, nor ESP and PK on the other, should force the rejection of (say) the theory of relativity or undermine the accuracy and utility of the mathematics of quantum physics. Instead, global

physical theories could simply be embedded within a different philosophical and scientific nexus.

To put it mildly, then, it hardly looks promising to claim that psi phenomena are empirically impossible. To say that a phenomenon *P* is empirically impossible is to claim that *P* is incompatible with the laws of this world (though there may be possible worlds in which *P* occurs). But what are the laws of this world? All we ever have to go on are the scientific theories of the day. But of course (and as is noted as well in the Commentaries later in this issue), science may undergo minor or substantial theoretical revision (as it has in the past), and some future scientific theory may countenance phenomena not embraced by current science. So the claim that psi is empirically impossible presumably means that psi phenomena violate principles, not just of current scientific theory, but also of any successful evolution of current science. The claim, therefore, seems to rest on a personal intuition about the future course of scientific development—specifically, that future science will never countenance psi phenomena. But there's little reason for according much respect to that intuition. Indeed, the history of science cautions us against treating it as anything more than one of many competing intuitions, or perhaps as a parochial or undernourished belief concerning the limits of the empirically possible.

Not surprisingly, parapsychologists have long been wary of this kind of metaphysical smugness. F. W. H. Myers, lamenting the lack of dispassionate scientific curiosity among critics of parapsychology, remarked,

> . . . let certain of our correspondents note that "intuitions and deep perceptions" can cut both ways, and that while their own intuitions as to the truth of certain tenets may be so cogent that they deem it superfluous to aid our plodding inquiry, other people's intuitions may make for just the opposite view; and where is the intuitive umpire who shall settle it between them? (Myers, 1890, p. 250)

And Ducasse, paraphrasing C. D. Broad, once wrote,

> . . . scientists who regard the phenomena investigated by psychical researchers as impossible seem . . . to confuse the Author of Nature with the Editor of the scientific periodical *Nature*; or at any rate they seem to suppose that there can be no productions of the former which would not be accepted for publication by the latter! (Ducasse, 1956, p. 147)

Note

[1] I'm grateful to Carlos Alvarado for help with the references in this paragraph.

—**Stephen E. Braude**

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RESEARCH ARTICLE

Tricking the Trickster: Evidence for Predicted Sequential Structure in a 19-Year Online Psi Experiment

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Abstract—From August 2000 to December 2018, two online psi experiments based on a five-target, forced-choice protocol together collected 114 million trials from an estimated 200,000 people around the world. The hit rate combined across both experiments was consistent with a null effect. However, a planned secondary analysis, designed to detect a predicted sequential pattern in the data, resulted in a small magnitude but statistically unambiguous outcome. With a chance expected rate of $p_o = 0.32$, the combined observed $p_1 = 0.320502 \pm 0.000044$, $z = 11.28$, $p = 1.7 \times 10^{-29}$. Control tests found no evidence that this small deviation, independently observed in two separate experiments, was due to human behavior such as optional stopping or response biases, nor to computational or randomization errors that might have provided participants with subtle cues. If analysis of other forced-choice psi tests replicates this effect, it would suggest the existence of an unconscious process that tends to obscure accuracy in psychic perception. Gaining a better understanding of that process might lead to more robust results in psi experiments.

Introduction

One of the most puzzling aspects of psi is its apparently capricious nature (Beloff, 1994; Hansen, 2001; Kennedy 2003). This refers to the oft-reported difficulty of repeating successful pilot studies in formal replications, or, worse, finding that positive effects obtained in pilot studies significantly reverse in followup attempts. These fickle effects are sometimes half-seriously attributed to the "trickster," i.e. a mischievous mythological character found across cultures and throughout history (Radin, 1969).

Some propose that the evasive nature of psi is an inherent aspect of the phenomenon, dashing the hopes of experimentalists who hope to develop

easily replicated psi effects (von Lucadou, 1995). But there is another possibility: If one imagines that a "trickster" is responsible for hiding psi effects, then with clues about how the trickster operates—assuming some regularity rather than completely unpredictable methods—we may be able to trick the trickster and reveal what was hidden. The present paper explores this theme in a simple psi task.

One of the earliest and simplest designs for a psi experiment is the forced-choice task, such as the ESP card test popularized by J. B. Rhine in the 1930s. Meta-analysis of 145 reports of ESP card tests published from 1882 to 1939 indicates that those studies produced a small but significant and repeatable effect (Pratt & Rhine, 1967). Selective reporting was only beginning to be recognized as a problem during that early era, so it is difficult today to provide an accurate estimate of the effect size obtained in those studies. A more recent meta-analysis of 309 forced-choice studies conducted after Rhine's heyday, published from 1935 to 1987, again showed a small but non-chance repeatable effect (Honorton & Ferrari 1989). A meta-analysis of 72 even more recent forced-choice tests, published from 1987 to 2010, confirms that the forced-choice design continues to be a simple but effective way to study psi effects (Storm, Tressoldi, & Di Risio 2010). In sum, hundreds of forced-choice psi experiments indicate that the technique works, but it is also highly inefficient because the effect size is minuscule.

Experimental protocols yielding very small effect sizes require substantial statistical power to reliably detect signal from noise. Historically, the three primary ways researchers have sought to achieve large sample sizes have involved long-term, single-lab efforts (Jahn, 1982), tests held over the radio or in magazines (Brier, 1969; Rhine, 1962), or combining studies with meta-analysis. A fourth approach, increasingly popular since the rise of the Internet, has been use of online psi experiments.

Online Experiments

While helping to solve the statistical power problem, publicly accessible online experiments are not immune to their own design challenges. Of particular relevance to the issue of statistical power, "big data" collected under unsupervised conditions can easily amplify tiny human and computational biases. In addition, because data collected in the real world never exactly conform to the theoretical null hypothesis, if enough data are collected it is possible, at least in principle, to obtain a p-value as small as one wishes (Kaplan, Chambers, & Glasgow, 2014, Sullivan & Feinn, 2012). As Cohen (Cohen, 1990, p. 1306) put it,

> A little thought reveals a fact widely understood among statisticians: The null hypothesis, taken literally (and that's the only way you can take it in formal hypothesis testing), is always false in the real world. It can only be true in the bowels of a computer processor running a Monte Carlo study (and even then, a stray electron may make it false). If it is false, even to a tiny degree, it must be the case that a large enough sample will produce a significant result and lead to its rejection.

Another problem with unsupervised online experiments is optional stopping, which can occur when a participant receives trial-by-trial feedback and is performing poorly. Online attention is often measured in seconds, so those who become dissatisfied with their ongoing test score are likely to quit before the pre-defined run- or session-length. Others who perform well may be motivated to continue to the end of the planned session or beyond. Such biases affect the interpretation of experimental results, depending on which portions of the data are examined. Such biases can be avoided by including tasks with no feedback, such as implicit or hidden tasks.

Origin of the Present Approach

The purpose of the present analysis was to study an unusual hit pattern predicted to arise in forced-choice psi experiments. The predicted pattern was investigated in data generated in online tests written by the author starting in August 2000. As of December 2018, two of those tests, both using similar forced-choice designs, had accumulated 114 million trials contributed by more than 200,000 individuals around the world. For the first 17 years of these experiments, the analyses discussed here were long forgotten and were not part of the original analytical plan. Then, in August 2017, while reviewing some old files, the author ran across an unpublished paper describing an experiment he conducted decades earlier with a colleague (Radin & Cross, 1990). The present study was motivated by re-reading that paper and realizing that the effect found in that earlier experiment could be tested with the present set of "big data."

The pattern of interest was proposed by an empirically oriented group of Christian Scientists, known as Spindrift, who were active from the 1970s to 1990s (Sweet, 2007). The Spindrift researchers proposed that the mind has three components, all simultaneously engaged in modulating psi performance. They called these an *ordering force*, a *perceptive ability*, and a *defense mechanism*. The ordering force was described as an ego-less, "thy will be done" state of consciousness. This was said to induce equilibrium, coherence, negentropy, or similar concepts associated with production of order, into any labile system capable of expressing degrees of order.

Spindrift's concept of a perceptive ability was what parapsychologists call psi, and their notion of a defense mechanism was an unconscious mental effect that served to hide psi effects.

Spindrift researchers tested their ideas in many ways, often reporting highly positive effects. One such experiment, which they called "visual image, unconscious response," was a simple binary ESP card test. The test involved a deck consisting of 12 copies each of two images. To begin the test, a participant would select one image that they liked from a pool of images, and then a second image they did not like. Cards containing copies of these images were placed into separate opaque envelopes, shuffled, and then the participant guessed what they thought each envelope contained. Later, the participant or an independent experimenter would record the resulting sequence of hits and misses, and the test was repeated.

To evaluate the results, it was assumed that perceptual psi would accurately perceive the images, but that unconscious defense mechanisms would mask that accuracy by intentionally causing the number of hits and misses to be about the same. It was also assumed that attention focused on the task would evoke the ordering effect and cause the hits and misses to be distributed in an orderly way. A sequence of 12 hits in a row followed by 12 misses would represent one form of order, but that might be too obvious, and as such it would defeat the purported masking action of the unconscious defense mechanism. Another type of order, one hidden from casual inspection, would be to alternate hits and misses within each response type (this is explained in more detail below).

In 1990, the author and a colleague attempted to replicate the Spindrift protocol and method of analysis (Radin & Cross, 1990). We invited eight individuals to guess images in a 22-card binary deck and to repeat that task five times. Given the binary design, the chance hit rate for the direct task was $p_o = 0.50$, and our final direct hit rate was non-significantly below that. However, application of Spindrift's sequential analysis resulted in $p_1 = 0.525$, which was close to what Spindrift had reported in their tests. A 2.5% effect over chance is not especially impressive, but after being amplified with more than 10,000 trials, as was common in Spindrift's experiments, they were able to report consistently large positive z scores.

In the analyses reported here, the sequential hit rate effect was much smaller than 2.5%. But it was also based on a five-choice task, which requires a more complex scheme for "hiding the results" as compared to a binary task. In addition, the data were contributed online in an unsupervised context, so it is to be expected that the magnitude of the resulting effect size would be much smaller.

Most parapsychologists ignored Spindrift's experiments, partially due

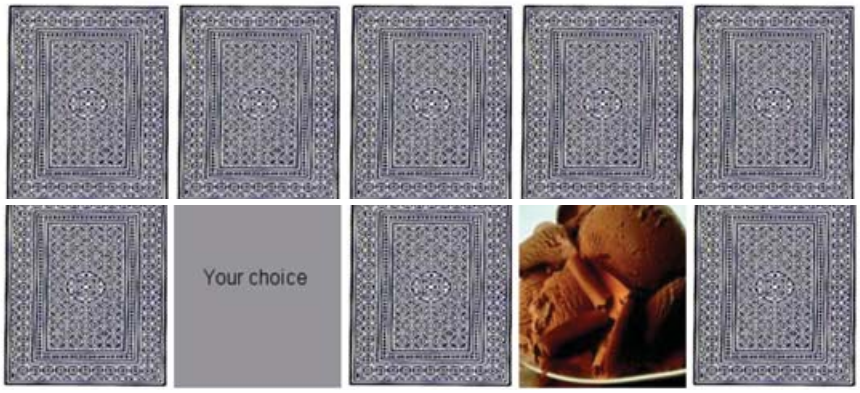

Figure 1. (Top) Five "cards" displayed in the browser. (Bottom) Participant's choice indicated along with the randomly selected target. This trial would be recorded as a miss.

to suspicions about Spindrift's religious affiliation, but also because the reported results seemed to be too good to be true. It was also problematic that their analytical methods were not described well and hence were difficult to understand. These discomforts contributed to an assumption that the results were possibly due to sloppy methods or one or more analytical artifacts. After we obtained results similar to what Spindrift had reported, we were less sure that such dismissals were valid. But we did continue to worry about analytical artifacts because, among other things, their test design used a closed deck, which complicates calculation of the chance-expected hit rate. Based on these concerns, we placed our study in the file drawer, where it sat patiently for nearly three decades. The large forced-choice database from our online psi experiments provided motivation to revisit the Spindrift hypothesis.

Method

Tasks

The two forced-choice tests are part of a suite of psi tests located at GotPsi.org. The first, referred to as the *Card* test, consists of five card images displayed on a web browser screen (Figure 1, top). A participant selects one of the cards, then the web server randomly selects and displays one card, along with the participant's choice (Figure 1, bottom). A correct choice is recorded as a hit, otherwise it is a miss. The chance-expected hit rate is thus 1 in 5, or $p_o = 0.20$. The experiment was originally coded in Perl

Figure 2. Quick remote viewing test, showing the participant's choice below (the eagle) and the computer-selected target above. This trial would be recorded as a hit.

(https://www.perl.org/about.html), hosted on several different web servers over the years, and the Perl *rand* and *srand* functions were used to pseudo-randomly generate the targets. No pseudo-random generator (PRNG) can provide perfectly random sequences (Ferrenberg, Landau, & Wong, 1992), although to detect nonrandom patterns requires analysis of very long sequences, and in the present case only a few random numbers were used in each successive trial, and then the PRNG was reseeded with the current clock time, thus adding an effectively truly random element to the target generation process.

The second experiment, described as a "quick remote viewing" test, and referred to here as *QRV*, used a design similar to the card test except that instead of displaying cards, five photos were selected at random from a large pool of photos, and newly random images were used as targets in each successive trial (Figure 2). The task was the same as the card test, thus the chance-expected hit rate was again, $p_o = 0.20$.

Analyses

Data produced in these tests were stored as one line of information per trial per person, and all trials contributed per day were stored in a single file in chronological order. A "day" was defined according to local time in the time zone of the web server that hosted the tests. The information of interest for the present analysis was the response (R) and target (T) in each trial, along with the username of the individual who contributed the trial. Direct *hits*

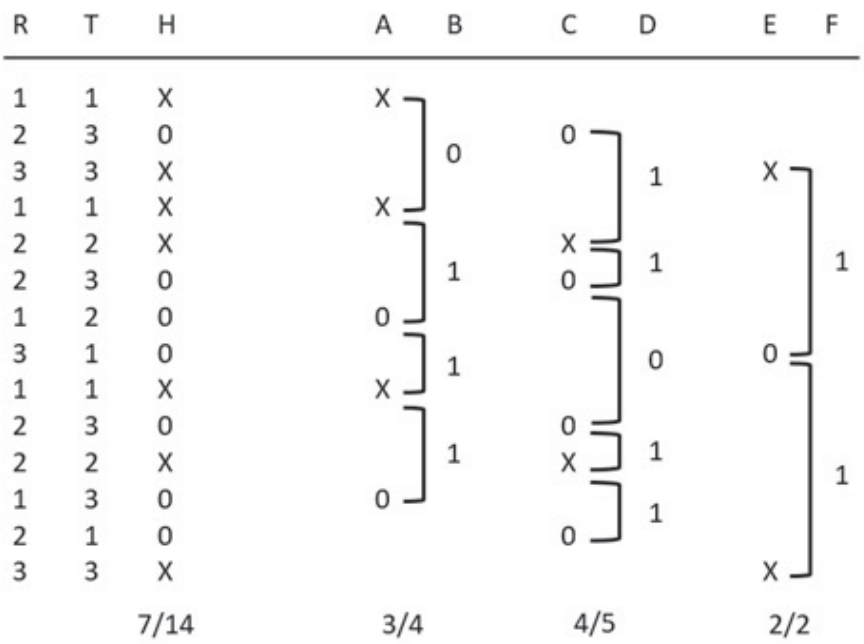

Figure 3. Example of direct hit and sequential analyses for a 3-target, forced-choice task. See text for explanation.

referred to the number of trials where R = T, and the resulting *hit rate* was simply $p_1 = hits/N$, where N was the number of trials contributed by that user. A z-test was used to find the p-value for a test of the null hypothesis, namely that the probability of a hit was $p_1 = 0.2$ versus the alternative that p_1 was not equal to 0.2, with $z = (p_1 - p_o) / \sqrt{p_o q_o / N}$, where $p_o = 0.2$ and $q_o = 1 - p_o$. This analysis reflected performance on what might be called the "surface" or explicit task, and it is the conventional way of analyzing the hit rate in a forced-choice psi experiment.

The analysis of interest here was not about overall hits and misses, but a certain *sequence* of hits and misses. Figure 3 illustrates this analysis for one person's hypothetical data in a three-target, forced-choice design. The illustration is intentionally simplified for the sake of expediency. Once the analytical process is understood, it is a simple matter to expand it to a five-target, forced-choice design.

The first three columns of Figure 3 show 14 trials, labeled response R,

target T, and hit H. In the H column, X refers to a hit and O to a miss. An ordinary hit/miss analysis with a null hypothesis (in this case p_o = ⅓) would compare p_o against the observed 7 hits in 14 trials, or p_1 = ½. But what we are interested in is column A, which is formed by extracting only those trials where the participant's response was R = 1. There are 5 such cases in the example. The values in column A consist of either an X or an O, taken from the associated lines in H. Column C is where R = 2, and the contents of C are again either an X or O taken from column H. Likewise for column E where R = 3.

Now to form column B, we take overlapping pairs of values in column A. If a pair consists of XX or OO, it is assigned a 0. If a pair consists of XO or OX it is assigned a 1. In this way, based on the values in column B, we see a total of 4 values, of which 3 are 1s and one is 0. To create columns D and F we follow the same procedure. Now we count the total number of pairs and 1s. This example has a total of 11 pairs tested, of which 9 are 1s, for a hit rate of p_1 = 9/11. This is the hit rate of interest in this analysis; we refer to it as hr_{seq}. It is a measure of the number of alternating pairs of hits and misses *with respect to each type of response.*

One may wonder why the sequence of hits and misses are measured within each response type, rather than the more straightforward sequence independent of the response. There is no obvious reason; it was simply postulated by the Spindrift researchers as a way that the unconscious might act to sabotage perceptual psi.

To determine how much p_1 deviates from chance expectation, note that the probability of obtaining the paired-sequence [0 1] or [1 0] in a three-target test is $[(1 - p_o) \times p_o] + [p_o \times (1 - p_o)] = [0.67 \times 0.33] \times 2 = 0.44$. This is the case because the targets are randomly selected, so each sequential pair of hits or misses can be considered an independent event.

For the five-target test of interest in the present analysis, where p_o = 0.20, the expected hr_{seq} over the long term is $[0.8 \times 0.2] + [0.2 \times 0.8] =$ 0.32. The appropriate statistical test is $z = (p_1 - p_o) / \sqrt{p_o q_o / N}$ where p_o = 0.32 and N is the number of hit-pairs examined. In these tests, note that R corresponds to the position of the target on the computer screen, i.e. in Figure 1 the value 1 refers to the left-most target and R = 5 to the right-most target.

Results

Card Test

From August 2000 to December 2018, 87.4 million trials were contributed in the Card test over 6,472 days by 234,000 unique usernames (of which

an estimated 90% were different individuals; this estimate was based on a limited number of cases where it was known that the same individual had used multiple usernames). Of these trials, 83.9 million were contributed where the participant provided at least 2 trials in one session. A "session" refers to all trials contributed by a unique individual over the course of a day, and a minimum of two trials was required because the measure of interest involved pairs of trials.

Of the 83.9 million trials of interest, the direct hit rate was $hr = 0.199949 \pm 0.000050$, associated with $z = -1.19$, $p = 0.24$ (all p-values reported are two-tailed). By contrast, the sequential analysis resulted in $hr_{seq} = 0.320411 \pm 0.000051$, $z = 8.07$, $p = 6.9 \times 10^{-16}$.

We might note here that the Card test was not as simple as it appeared to be. In a typical, forced-choice test, the participant assumes that each card has the same likelihood of being selected for the future target. This was not the case in this experiment. On each successive trial the cards were assigned different probabilities of being selected. This feature was hidden from the user, so it could not bias their choice, but it may have been responsible for the overall negative hit rate, and it may also have suppressed the magnitude of the sequential effect. These possibilities will be explored in a future publication.

QRV Test

From April 2005 (when this test was first launched) to December 2018, a total of 26.8 million QRV trials were contributed on 4,769 days by more than 60,000 unique usernames (again, roughly 90% were estimated to be unique individuals). The direct hit rate was a modest $hr = 0.200169 \pm 0.000092$, $z = 2.188$, $p = 0.03$. By contrast the sequential analysis resulted in $hr_{seq} = 0.320825 \pm 0.000092$, associated with an impressive $z = 8.70$ ($p = 3.2 \times 10^{-18}$).

Combined Results

Because the Card and QRV tests both used the same five-target, forced-choice design, their databases could be combined. With a total of more than 114 million trials, the direct hit rate was $hr = 0.200001 \pm 0.000044$, $z = 0.025$, $p = 0.98$. Thus, from a direct-hit perspective the combined results were almost exactly as expected by chance. However, the combined $hr_{seq} = 0.320503 \pm 0.000044$, $z = 11.28$, $p = 1.7 \times 10^{-29}$. This unambiguously indicates either the presence of a genuine sequential pattern, or one or more artifacts. To explore the alternative possibilities, a variety of control tests were conducted.

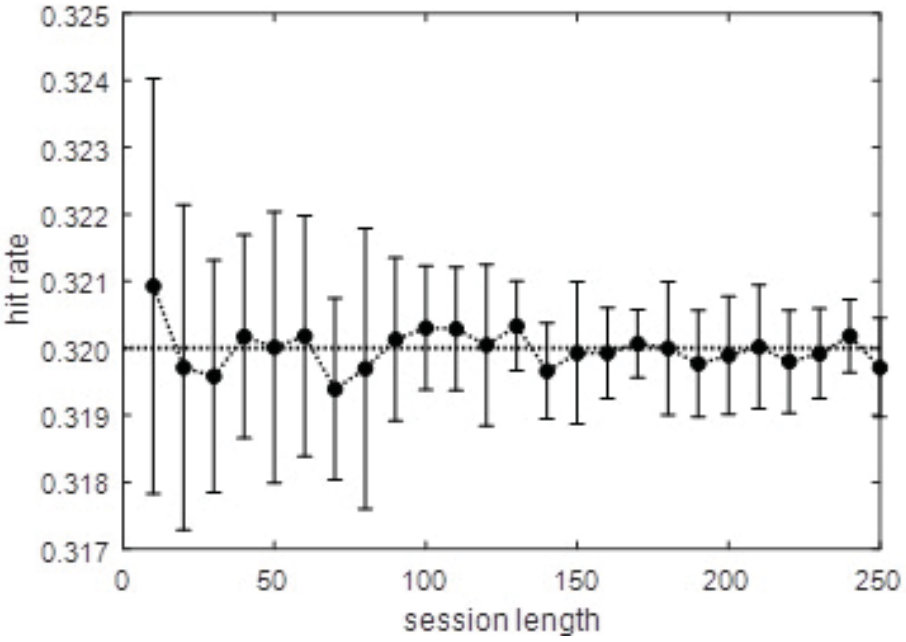

Figure 4. Means and 95% confidence limits of simulated five-target, forced-choice experiment with users contributing from 10 to 250 trials per user per session, with each session repeated 100,000 times. The calculated chance hit rate of 0.32 is shown as a dotted horizontal line.

Simulation

The first item to check was if the calculated chance sequential hit rate of $p_o = 0.32$ was correct. To do this, I programmed a simulated five-target, forced-choice experiment (in Matlab, 2018b) to generate 100,000 repetitions of 10 trials per session, and then repeated this process by incrementing by 10 trials up to 250 trials per session. The result, shown in Figure 4, with mean hit rates and 95% confidence intervals, indicates that the theoretically expected hit rate of 32% is indeed valid.

Target Frequency Distribution and Sequential Runs

To test if the targets were distributed uniformly at random, a chi-square test was performed on each day's distribution of targets, and then the distribution of resulting *p*-values was tested using a second chi-square test for uniform distribution across 10 bins. The result of the second chi-square test for the

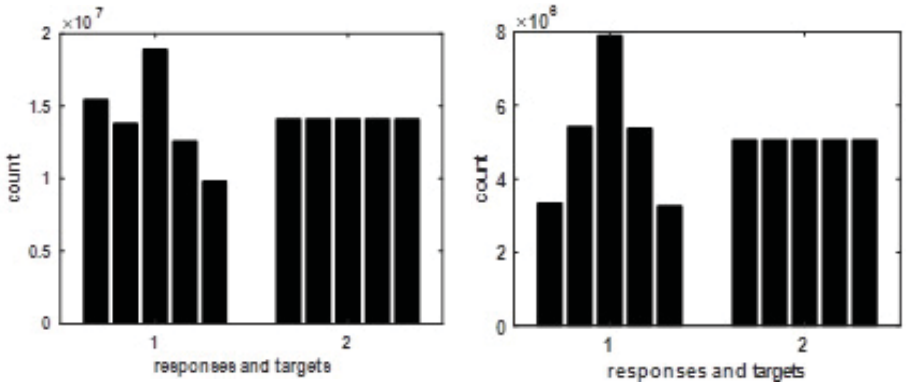

Figure 5. Distribution of responses and targets for the Card test (left) and QRV tests (right).

Card test was $p = 0.58$, and for the QRV test $p = 0.45$. To test for sequential randomness of the targets, a runs test was performed on each day's target data using the Matlab (R2017b) function, *runstest*. The *p*-values resulting from the runs tests were then tested for uniform distribution of *p*-values across 10 bins. The result for the Card test was $p = 0.97$, and for the QRV test $p = 0.94$. In sum, no obvious non-random structure was detected in the targets.

Response Biases

One might imagine that the sequential analysis result was biased by the non-random distribution of users' selection of the targets, i.e. by their responses. Figure 5 shows the distribution of responses and targets in the two databases, indicating as expected that the middle target was the most frequently favored choice. Figure 6 shows the results of the sequential analysis per response choice (i.e. R = 1, 2, 3, …) in the two databases. Out of 10 tests, we see that in 9 of 10 cases the results were substantially above chance expectation of $p_o = 0.32$. This consistency suggests that the sequential analysis result was not due to response biases.

Optional Stopping

Optional stopping behavior was clearly evident in each of the two databases (see Figure 7). As expected, participants tended to quit the test if they were performing poorly, but they continued to contribute trials up to the predefined

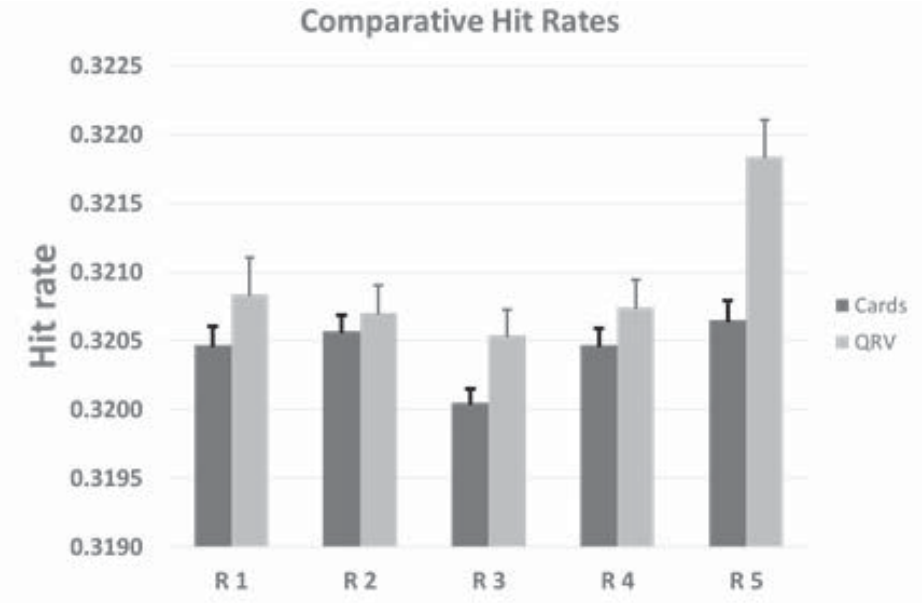

Figure 6. Mean sequential hit rates in the Card and QRV databases, with one standard-error bar; the chance-expected hit rate is 0.32. This result indicates that above-chance deviations were observed in 9 of 10 responses.

session length (typically 20 trials) when they were performing well. This was reflected in below-chance direct hit rates for users contributing fewer than 20 trials and above-chance hit rates for users who contributed exactly 20 trials. Could optional stopping have been responsible for the sequential hit rate? To study this question, further control tests were performed.

Note the positive correlation between the direct hit rate and hr_{seq}. This relationship is not surprising because when the direct hit rate is low compared to chance expectation, the imbalance between hits and misses permits fewer hit/miss alterations than would be expected by chance, and vice versa. Thus, given that the overall direct-hit rate for the Card test was negative, that might lead us to expect that the overall sequential hit rate would also be negative. But instead, as observed, it was highly positive (in statistical terms), suggesting that the sequential hit rate was not due to optional stopping.

Sequential Dependencies

In this test, the transitions from target T_n to target T_{n+1} were determined for all trials performed by each individual, *a*nd in the o*r*der that the trials were

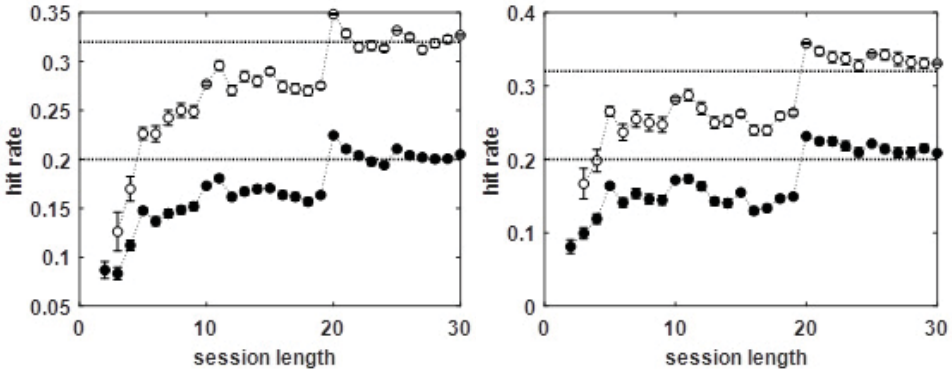

Figure 7. (Left) Card test direct hit rate (±1 standard error, which is so small that the error bars are obscured by the black dots) and similarly for the sequential hit rate (white dots), for session lengths ranging from 2 to 30 trials. The negative hit rates prior to 20 trials are due to optional stopping behavior. Sessions of 20 trials were the most common predefined run-length and show a positive bias, also due to optional stopping.
(Right) Same for QRV data.

contributed. The same transitions were also determined for the sequence of responses. A chi-square (χ^2) contingency test for uniform distribution was performed on these matrices. For the targets, the analysis resulted in χ^2 = 22.5, df = 16, p = 0.13. For the responses, χ^2 = 10.9 million, $p \approx 0$. The nonsignificant χ^2 for targets indicates that successive pairs of targets occurred in a random order, and the extremely large χ^2 for responses indicates, as expected, that people did not respond at random. Similar analyses, examining the transitions T_n to $T_{n+2,\,3,4}$, also resulted in nonsignificant effects: χ^2 = 15.7 (p = 0.47), χ^2 = 9.7 (p = 0.88), and χ^2 = 14.39 (p = 0.57), respectively. Analyses of the responses all resulted in probabilities of essentially zero.

These analyses suggest that over the entire database there were no obvious dependencies in the target sequence that a participant might have exploited to produce an inflated hr_{seq}. But on a day-to-day basis, involving smaller numbers of trials, perhaps fluctuations in target dependencies did occur that provided clues. If that were the case, then perhaps daily variations in target sequence dependencies might have been correlated with the daily hr_{seq}.

To test this possibility, for each day's data we determined the χ^2 associated with target transitions T_n to T_{n+1}, as well as hr_{seq}, and then we examined the correlation between those two arrays over the total of 10,372 days of data

across the combined Card and QRV datasets. A positive correlation for a one-step dependency (i.e. r_{+1}), would suggest that deviant target sequences might have provided clues, resulting in higher hr_{seq}; we refer to this idea as a "sequential clue hypothesis."

No such relationship was found: $r_{+1} = 0.0099$, $p = 0.313$. The same analysis was then performed for dependencies T_n to $T_{n+2,3,4}$, resulting in $r_{+2} = -0.026$ ($p = 0.009$), $r_{+3} = -0.0040$ ($p = 0.681$), and $r_{+4} = 0.012$ ($p = 0.237$). The same correlations run for z scores associated with hr_{seq}, which took into account the different sample sizes obtained per day, resulted in $r_{+1} = 0.004$ ($p = 0.68$), $r_{+2} = -0.02$ ($p = 0.04$), $r_{+3} = -0.004$ ($p = 0.68$), $r_{+4} = 0.01$ ($p = 0.24$). Note that the r_{+2} correlation was significant in both tests, but *negative*, suggesting that as target dependencies were more deviant, hr_{seq} and their associated z scores were *lower*. This is opposite to the sequential clue hypothesis.

Following the Target

The above analysis found, as expected, that people do not respond at random, but it also found that those biases cannot account for the hr_{seq} result. This analysis examined in more detail why user responses are biased. Figure 8 shows that users tended to follow the targets, that is, R on trial N+1 tended to be the same as the randomly generated T on trial N. Could this following dependency have contributed to the inflated value of hr_{seq}? The answer should be no, because no matter how the user responds, as long as the target sequences are adequately random, the user cannot generate an inflated score (barring genuine precognition).

To test this assumption, a simulation was implemented whereby each successive R was forced to be exactly the same as the previous T, i.e. a perfectly uniform following-the-target response bias. The simulation, run for 10 million trials, showed that $hr = 0.199874 \pm 0.000126$ ($z = -0.995$) and $hr_{seq} = 0.31979 \pm 0.000126$ ($z = -1.43$). In other words, even a highly exaggerated nonrandom response strategy that mimicked how people tended to respond did not produce inflated values for hr or for hr_{seq}.

Unconscious Learning

Perhaps subtle patterns were unconsciously noticed by participants who contributed many repeated trials. To explore this possibility, we determined the correlation between the number of trials contributed per person per day, versus the hr_{seq} calculated for that individual. A learning artifact predicts that this correlation should be positive.

To evaluate this hypothesis, we formed an array of trials per person per

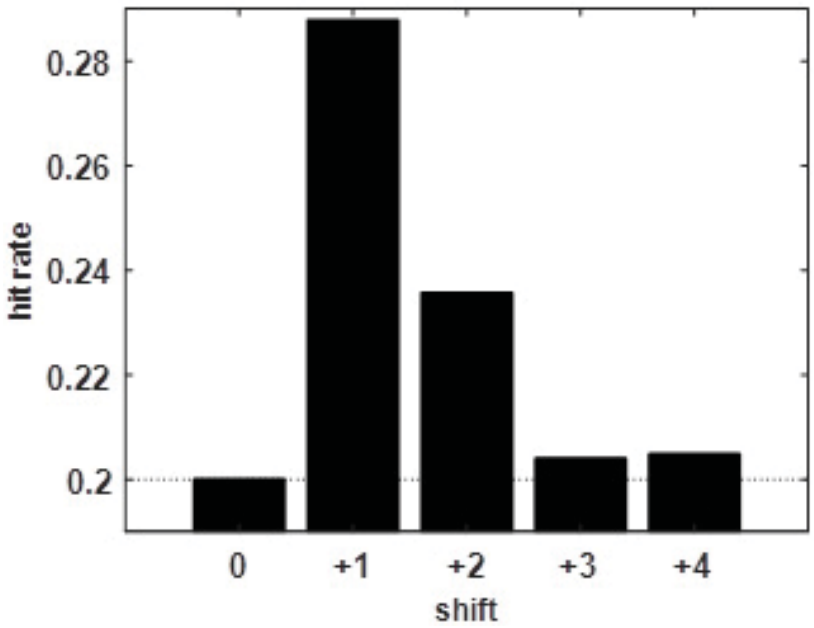

Figure 8. Direct hit rate for lags 0 to +4, indicating that people tended to respond on trial N_{+1} using the target that was presented on the previous trial, i.e. their responses followed the targets. This tendency was especially strong for N_{+1} and N_{+2} and to a limited extent for N_{+3} and N_{+4}.

day, another array of hr_{seq} per person per day, then calculated the correlation between those two arrays per day. This daily correlation was converted into a z score using a Fisher z transform, and this process was repeated for each day. Then the resulting mean z score was compared to 0 (the null hypothesis). The result was $\bar{z} = -0.0119$, $t = -2.53$, $p = 0.012$. This modestly significant *negative* outcome suggests that to a small extent the more trials an individual contributed, the *smaller* their resulting hr_{seq}. This is opposite to the prediction of a learning hypothesis.

Permutation Analysis

We return to the possibility that the sequential effect was an artifact of optional stopping. This is an important factor to consider because both optional stopping and hr_{seq} are positively correlated with the direct hit rate. Thus, to test if optional stopping may have been responsible for the observed hr_{seq}, we re-ran the original analysis but randomly permuted the

sequence of hits obtained by each person in each session. This maintained the same number of hits originally obtained per person, so the psychological motivations underlying optional stopping were also the same. Thus, if optional stopping were responsible for the inflated hr_{seq} results, then randomly permuting the hit sequence should not alter the original value of hr_{seq}.

The results showed that for the Card data, the randomly permuted hit analysis resulted in a nonsignificant $hr_{seq} = 0.319941 \pm 0.000051$, $z = -1.152$, $p = 0.249$; for the QRV data, again we obtained a nonsignificant $hr_{seq} = 0.320052 \pm 0.000092$, $z = 0.561$, $p = 0.57$. Overall the results were $hr_{seq} = 0.319967 \pm 0.000045$, $z = -0.737$, $p = 0.461$. In sum, optional stopping does not explain the observed sequential hit rate.

Another question that may arise is whether an alternating hit/miss analysis based on the original order of the trials, that is *without* regard to the type of response, also shows an anomalous positive bias. For the Card test, this analysis resulted in $p_1 = 0.320009 \pm 000050$, $z = 0.197$, $p = 0.84$. For the QRV test, $p_1 = 0.320302 \pm 0.000090$, $z = 3.336$, $p = 0.0009$. And combined, $p_1 = 0.\ 320078 \pm 0.\ 000044$, $z = 1.789$, $p = 0.074$. Thus, while the QRV test shows an intriguingly positive result, overall there is no evidence that an alternating hit/miss order was beyond chance (especially in light of the statistical power provided by 109 million trials). This again suggests that the sequential hit rate is indeed linked in some way with the participant's response on each trial, and it is not simply due to hits and misses alternating on successive trials.

Discussion

The sequential effect hr_{seq} does not appear to be due to nonrandomness in the frequency or sequence of targets, nonrandom transitions of targets from T_{i+1} to T_{i+4}, or optional stopping behavior. This suggests that hr_{seq} requires a very clever unconscious process, one that keeps track of the alternating sequence of hits and misses within each response type. That such a process might exist is not entirely unreasonable; the relevant literature has long suggested that psi effects bubble up out of the unconscious, and that they are modulated by a host of psychological filters and defense mechanisms (Carpenter, 2015; Carpenter, 1967, Crumbaugh, 1968; Eisenbud, 1983; Johnson & Haraldsson, 1984; Rogers & Carpenter, 1966). Analyzing psi data for sequential patterns is also not a new idea (Burdick & Kelly, 1977; Pratt & Soal, 1952; Timm, 1970; Zenker, Leslie, Port, & Kosloff, 1982) nor is the notion that psi effects are not simply difficult to detect but may be actively evasive (Kennedy, 2003).

What is new is a description of a way that a forced-choice psi test can result in a chance-expected direct hit rate, while at the same time producing a highly significant sequential hit rate. If the hr_{seq} effect had been discovered after extensive data snooping, it would still be somewhat surprising given the final $z > 11$. However, this effect was definitively not the result of data snooping. What was described here is the result of a *single, planned analysis* employed for the sole purpose of checking a prediction, and that prediction was significantly replicated to very high levels of confidence in two separate databases.

A Model

Imagine that the act of selecting a response R places a probabilistic bias on that response, such that the first time R is selected it "pulls" the subsequent target T so that it matches R. The next time the user selects R, that bias is reversed, "pushing" T away so it mismatches R. That is, on successive selections of R, the bias is reversed. This pull/push scheme suggests a tension between creation and destruction, an effect we can imagine as woven into the fabric of reality, or as a dynamic balance constantly attempting to sustain equilibrium between chaos and order. The tendency for psi effects to tweak probabilities of desired events, followed shortly afterwards by "anti-tweaks," or by apparently influencing control series to produce results opposite to those observed in experimental series, has been noted in the parapsychological literature for many years (Cox, 1954; Jahn, Dunne, & Nelson, 1987; Palmer & Kramer, 1984; Radin, 1993; Schmeidler 1973).

To simulate this model, a five-item, forced-choice model was programmed with a hit bias of 20.00001% and a miss bias of 80.00001%. That is, the model simulated a user selecting response *R*, which resulted in a *hit* with a slightly greater probability than chance, and then after selecting the same *R* again, it resulted in a *miss* with a slightly greater probability than chance. After running a total of 10,000 repetitions of this scheme, with each repetition consisting of 1,000 trials, the resulting $hr = 0.199842$ (a *t*-test comparing this mean hit rate against the expected $hr = 0.20$ resulted in $t = -1.379$), and $hr_{seq} = 0.33013$ ($t = 57.178$). Thus, even an extremely small bias applied in a systematically alternating fashion (within each response type) can produce a null effect for the direct hit rate and a very significant positive sequential effect. It is not claimed that this model accurately reflects the unconscious processes actually used by participants in the online tests, only that it is possible to construct a rather simple model that mimics the observed results.

Conclusion

This study suggests two possibilities. The first is that the sequential pattern identified in this analysis is an illusion due to an undiscovered artifact. The various controls tests argued against this possibility, but with the statistical power afforded by more than 100 million trials, even tiny systematic artifacts could become visible above the noise. If further control tests do uncover such artifacts, they will be reported in a subsequent article.

The second possibility is that deeper analysis of simple psi experiments may reveal subtle but genuine patterns in data that previously were overlooked. Understanding those patterns, should they exist, may be useful in better understanding how unconscious strategies mask explicit psi effects, and that in turn may allow experimenters to figure out how to overcome difficulties in repeating psi effects. Finding such patterns may also reveal that the supposed capricious nature of psi may not be an intrinsic property that is impossible to overcome, but rather just a reminder of our ignorance about psi and the modulating effects of the human unconscious. As psi tests continue to generate increasingly larger datasets, we may eventually figure out how to detect subtle patterns that can reveal clever ways of out-tricking the trickster.

Acknowledgment

I am indebted to the late Richard Shoup, who co-founded the nonprofit Boundary Institute with me in 2000. I wrote several of the gotpsi.org psi tests while I was with the Boundary Institute, including the tests mentioned in this paper, and when I left the Boundary Institute in 2001 to join the staff of the Institute of Noetic Sciences, Shoup continued to develop and maintain that website for many years. When Shoup passed away in 2015, the Institute of Noetic Sciences adopted gotpsi.org and continues to administer and develop the site.

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RESEARCH ARTICLE

What Do We Know about Psi? The First Decade of Remote-Viewing Research and Operations at Stanford Research Institute

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Abstract—Beginning in 1972, three physicists at Stanford Research Institute (now known as SRI International)—Harold Puthoff, Edwin May, and Russell Targ—initiated free-response, remote-viewing experiments with psi-gifted participants. The percipients were asked to describe their mental images with regard to some person or event distant in space and time. Many of our experimental series were statistically significant at four standard deviations from chance expectation, with effect sizes greater than 0.6. From these highly efficient experiments, we concluded that the accuracy and reliability of remote viewing is independent of distance up to 10,000 km, and of time up to several days into the future. Psi ability clearly violates our ordinary ideas of causality, since future events are seen to be the cause or trigger for experiences at an earlier time. We also learned that feedback to the viewer is helpful, but it is not necessary. Remote viewing is a nonanalytic ability; describing a distant shape, form, or location on the planet is easier than guessing a number from 1 to 10. The purpose of this paper is to correct the misconception that psi is weak and unreliable. On the contrary, in our laboratory experiments and classified operational tasks, psi was found to be surprisingly reliable and useful.

Keywords: SRI—remote viewing—psi ability—psi results

A Personal Note

In 1958, I started my career in the budding area of laser research. My very poor vision compelled me to leave my atomic physics research assistantship with C. S. Wu at Columbia University, and shift to research in optics and then to psi research. At Columbia all the professors were much too smart to use textbooks. In those days, everything was taught from the mind of the professor directly to the blackboard in the lecture theater. My very poor

eyesight made this form of classroom learning quite difficult for me. As an undergraduate in physics with a minor in psychology, I loved Carl Rogers who taught his students to be kind to their patients and treat them with "unconditional positive regard," not like lab rats. I became a student of parapsychology ever since the day that my fellow student in high school biology, Robert Rosenthal (now a distinguished professor), introduced the class to the Zener cards that were used in Rhine's laboratory to test for psi. I made a beeline for the American Society for Psychical Research (ASPR) just off Central Park West in New York City. For me, the rest is history. A decade of Indian Kundalini meditation practice at the New York Theosophical Society was also an important part of my life.

By the time I was in college at the age of sixteen, I was an amateur magician doing mental magic on stage for small events. I found that I could occasionally supplement my act with useful bits of visual information that would appear in my awareness. These often were appropriate for the person whose mind I was pretending to read. Since then, I have learned from famous magicians such as the Amazing Kreskin and Milbourne Christopher, that useful bits of stray information often come to them on stage anomalously.

By 1965, I had built an electronic ESP teaching machine which was instrumental in getting the first psi research contract at Stanford Research Institute (SRI). I had been exploring the possibility of such a program at a NASA conference on Speculative Technology. Wernher von Braun, the famous aerospace engineer, tried his hand at the ESP machine and was exceptionally successful. He recommended to James Fletcher, the director of NASA, that they could help support a program to 'teach astronauts how to mentally become in touch with the spacecraft.' This led to a meeting with Hal Puthoff, astronaut Edgar Mitchell, Charles Anderson (President of SRI), and me in 1972. Mitchell confirmed that NASA would support research with an ESP teaching machine, and we all agreed to keep the project on a low profile. This was the inception of psi research at SRI that eventually culminated in 1995 at Science Applications International Corporation (SAIC). This project is now widely known as the Stargate Project.

After spending ten years at SRI on the psi research program, in July 1982 I decided to pursue my earlier laser work at Lockheed Missiles and Space Company. However, my interest in psi persisted. One of the questions that psi researchers are always faced with is 'if psi is real why can't you make money from it on the stock market?' In 1982 I created Delphi Associates with an investor and an experienced psychic to forecast changes in the silver commodity market. All nine forecasts were correct, and we made $120,000. The event was reported in *The Wall Street Journal* (Larson, 1984; Harary & Targ, 1985).

Remote Viewing at SRI

Remote viewing is a methodological approach for the investigation and application of precognition and real-time psi. Psi is an inherent ability that enables us to describe and experience non-inferential objects and events in the distance and in the future. While some may not have this inherent ability, others may have it at varying degrees of proficiency—from a once-in-a-lifetime experience to giftedness that enables psi on demand.

This ability is not a "new age" discovery. Psi experiences are described in detail by the Hindu sage Patañjali in about the fourth century BCE in the *Yoga Sūtras* (Taimni & Patañjali, 2010). The eight-stage yoga practice consists of restraints, disciplines, physical posture, breath control, withdrawal of the senses, concentration, meditation, and samādhi, a state of super-consciousness. According to Patañjali, siddhis or supernormal powers are obtained by saṃyama, or perfect meditation, leading to clarity of insight. This enables the practitioner to gain knowledge of the past, the distant, and the future; diagnose illnesses; and heal the sick. In Part III of the *Yoga Sūtras* (Powers), Patañjali describes a wide variety of the siddhis (psi abilities). Siddhis are also described in the Buddhist treatise *The Flower Ornament Scripture* (Avataṃsaka Sūtra, about the first century CE), that describe many of miraculous aspects of Buddhist life (Cleary, 1993). This 1600-page treatise also describes the ten kinds of super knowledge that enlightened beings have, including knowledge of other's minds (telepathy), knowledge of the celestial eye (clairvoyance), the spiritual faculty of knowing past lives, and the power of knowing the future (precognition). These revered scriptures expect their practitioners to follow the instructions, and in the process attain highly significant paranormal abilities. However, the attainment of psi abilities is not the goal of meditation. Focusing on the experience of siddhis is considered an impediment to attaining the ultimate goal of yoga—enlightenment and self-realization. But there is no doubt that these teachers consider the abilities to be available, though ego attachment is a stumbling block in the path of enlightenment.

We undertook several basic research experiments in the first decade at SRI, including psychokinesis, development of the remote-viewing method, remote viewing in an electronically shielded room (no degradation in psi performance), methods for identification and selection of psi-gifted persons (remote viewing tests were found to be best predictors of psi ability), training psi-gifted persons to utilize the remote-viewing methods, and applications of remote viewing to problems of national security. A 1973–1988 meta-analysis of the SRI data concluded that:

> Remote viewing (RV) can provide useful intelligence information.
> Laboratory and operational remote viewing show the greatest potential for practical applications.
> Experienced viewers are significantly better than the general population.
> Remote-viewing ability does not degrade over time.
> At this time, there is no quantitative evidence to support a training hypothesis, apart from basic instructions.
> Natural scenes are significantly better than symbols as targets for remote viewing.
> Remote-viewing quality is independent of target distance, size, or time, up to a few weeks.
>
> (May, Utts, Trask, Luke, Frivold, & Humphrey, 1989, p. 495)

It has been my great privilege to have worked with the greatest psychics of this era, learning from them, and contributing to the advancement of psi research. In this article, I briefly narrate my experiences with Ingo Swann, Pat Price, Hella Hammid, and Joe McMoneagle.

Ingo Swann

Following the initial funding from NASA, Ingo Swann, the noted New York visionary artist, was invited to SRI to demonstrate his psi abilities that were earlier investigated by Gertrude Schmeidler at the American Society for Psychical Research. Swann was not satisfied with the simplistic laboratory experiments to demonstrate his psi skills, as he felt these methods were a "trivialization of his abilities." Since he could focus his awareness "anywhere in the galaxy," his complaint was why were we asking him to describe stuff in the next room? He proposed that Hal and I go and stand anywhere in Palo Alto, a half hour's drive away from SRI, and he would make a drawing of where we were located. In one instance, we randomly chose Palo Alto City Hall, which he described as a "quad or quadrangle, a fountain with no water, and interlocking circles on the pavement." All correct. This launched us on a protocol of remote viewing of geographic locations, with an outbound person acting as a beacon, and the remote viewer in the laboratory with the interviewer. For the next decade, that interviewer was generally me, sitting in a darkened room, trying to gently help a viewer describe his mental pictures pertaining to where someone or something was located somewhere in the world. My job as an interviewer was to help people get out of their own way and not overthink the task.

Ingo was a lifelong, natural psychic who had no need for nor interest in an interviewer; for him, his description of us standing at City Hall was garden-variety remote viewing. After this early series of trials over several months, we were ready for a far more rigorous series of tests. Following the instructions of Swann, in the first formal experimental series we did at

SRI, the viewer and I (as monitor) were sequestered in a shielded room, and Hal was the outbound experimenter to one of 60 randomly selected sites in the San Francisco Bay Area. Since I don't drive, I was the interviewer for most of the SRI remote-viewing experiments during the first decade. The protocol can be found in Puthoff, Targ, and May (1979).

In early 1973, our CIA contract monitor, Kit Green, sent us coordinates that we could use for our first formal test. Ingo was pleased with this targeting method as he had been pitching for the challenge of this approach. In May 1973, Ingo worked on the first set of coordinates provided, without any accompanying maps, giving an immediate response to the target coordinates. From Menlo Park, California, at SRI, Ingo provided the response of the West Virginia site (Figure 1). As we, at SRI, were all blind to these targets, the analysis of these responses was done by the clients. While the details of the analysis were not given to us, we were informed that in each of the experiments "the data exceed any possible bounds of coincidental correlation, and exceed any possible bounds of acquisition by known means." The target described by Swann was a top-secret (crypto) NSA microwave listening post. It has also been reported that some of the data possibly constitute "noise" in the signal, "but it has been difficult to negate totally any information given by the subjects" (Puthoff & Targ, 1973, p. 72). The great psychic policeman Pat Price, whom we describe later, also penetrated the site to read top-secret code words in an underground safe. The details Price provided far exceeded what we and the clients anticipated or thought possible. Details of this can be found in *The Reality of ESP* (Targ, 2012, p. 49). As the target was not under the control of anyone at SRI, this exciting remote viewing generated a lot of interest and possibly concern in the intelligence community, and provided a great financial boost to our program. There was quite a dustup, with the NSA very angry with the CIA for targeting California psychics on their secret facility. No one was amused, except perhaps the psychics.

In other tasks, Ingo described, using only their geographic coordinates, targets such as an active volcano in Iceland and a French island called Kerguelen in the South Indian Ocean (see Figure 2). At this time, only the CIA had maps that could corroborate the exact location of the airport that Ingo drew on the tiny island, shown as parallel lines in the upper right part of the drawing.

Ingo had come to SRI with a well-annotated copy of René Warcollier's 1948 seminal book on telepathy called *Mind to Mind* (Warcollier, 1948). Swann later wrote an Introduction to the 2001 edition of that book, which I co-published with Hampton Roads, in my *Studies in Consciousness* series. In his Introduction, Ingo identified three ideas of Warcollier that had not yet

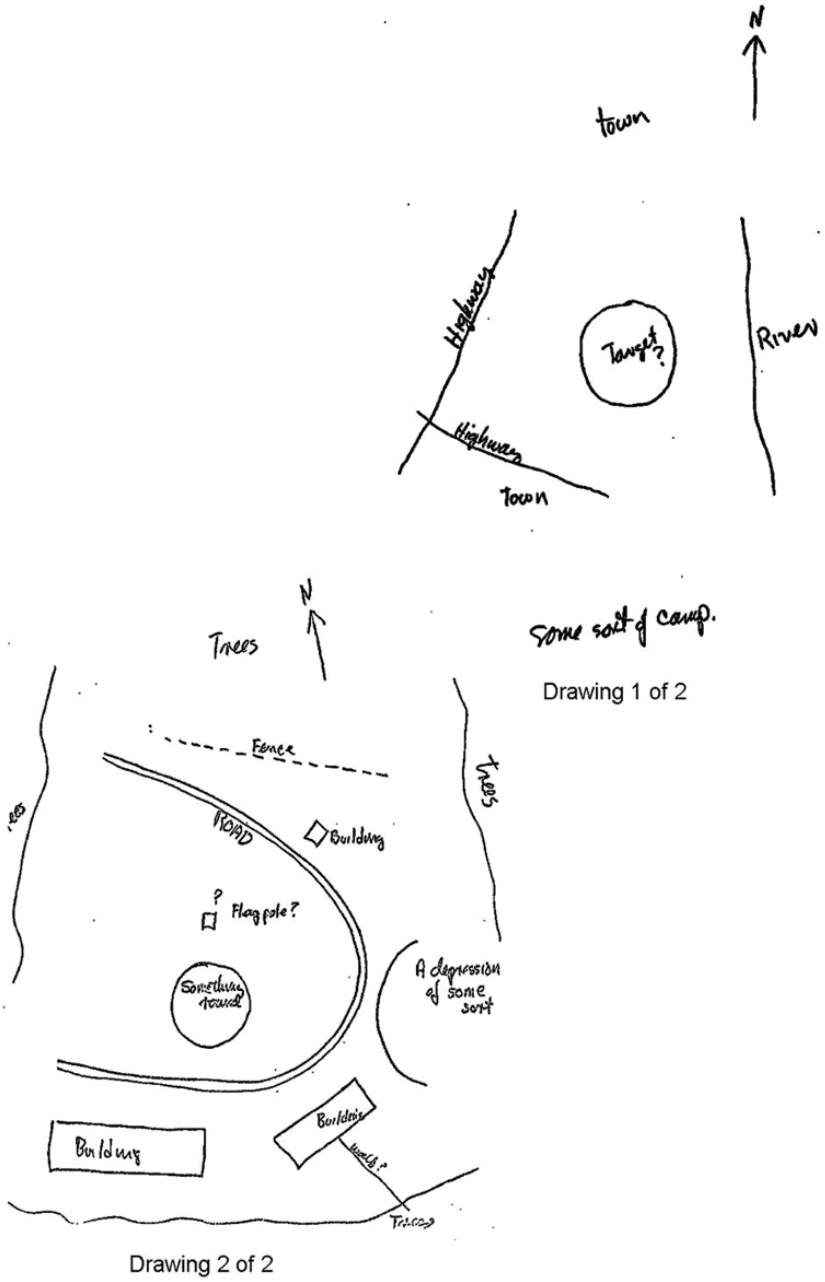


Figure 1. Ingo Swann's Map #1 and #2, West Virginia Site.

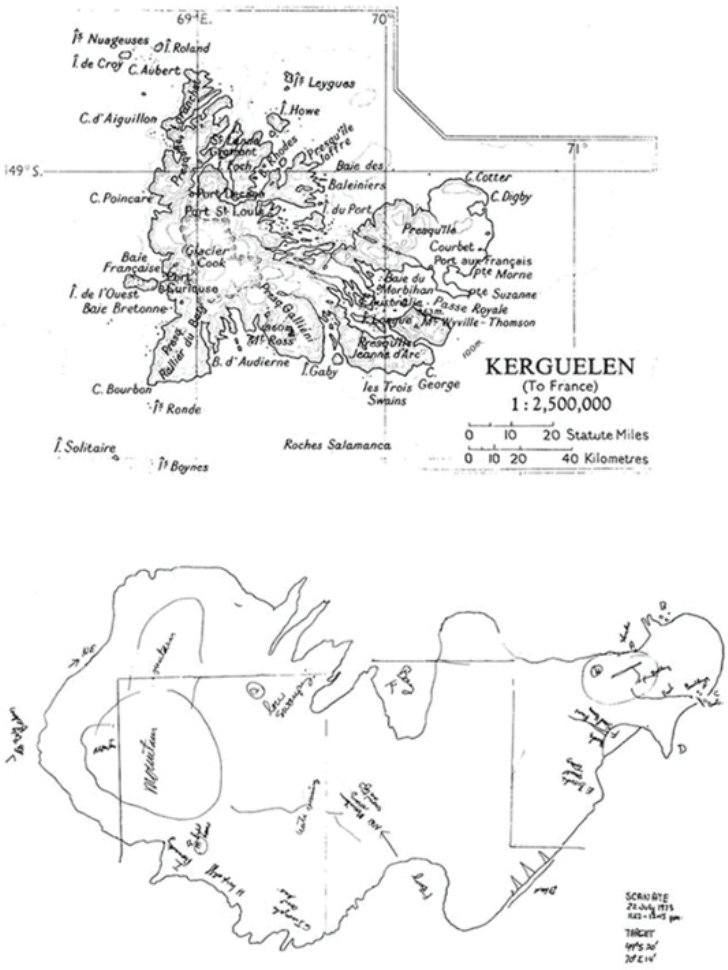


Figure 2. Kerguelen Island map and Swann's remote viewing sketch.

come into clear existence at the time of the 1948 edition. These concepts are models of mind, information transfer, and signal-to-noise ratio.

Models of Mind. From my conversations with Ingo, I am assuming that by "models of mind" he is referring to the bicameral nature of the brain, based on Julian Jaynes' work (Jaynes, 1976). One cerebral hemisphere is predominately associated with analytic function such as naming, while the other hemisphere works more holistically, as in drawing. I always ask a viewer to tell me, "What are you experiencing? What is the shape, or form?

Tell me about the surprising image that appears in your awareness." This approach has been very successful. Asking the viewer "where do you think Hal is located" always fails. It is easier to visualize someone's location anywhere in the world, than to guess a number from 1 to 10, an ESP card, or a playing card. This is because naming the card is an analytic task and does not correspond to how psi works. This is not a new idea. It is found in the eighth century Tibetan Buddhist text by the great dharma master Padmasambhava, also known as Guru Rinpoche; *Self-Liberation through Seeing with Naked Awareness* is a translation of this text (Karma-gliṅ-pa & Reynolds, 2010). The idea here is that our nature is timeless awareness, and to move awareness into the timeless realm, one "must give up all desire for naming and grasping. Naming and grasping is the enemy of timeless awareness." You might say that the remote-viewing monitor/interviewer plays the part of the viewer's analytical hemisphere.

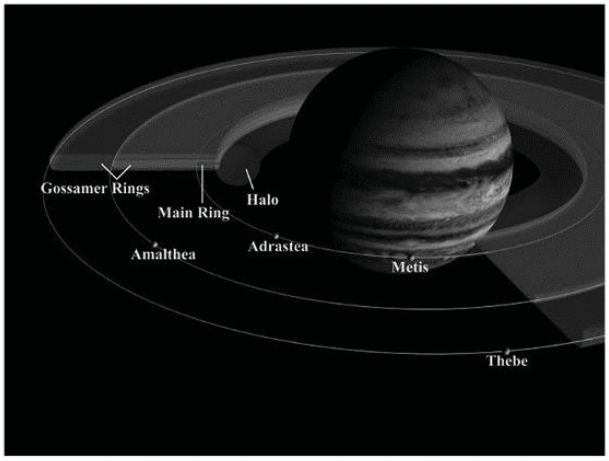
Information Transfer. As an artist, Ingo believed in the wisdom of the hand. He always asked a viewer to begin any session by relaxing his hand and making a little sketch, formless or not. He felt that these "glyphs" were the first and truest link with the image being processed by the psychic mind. Warcollier's book is filled with these little glyphs. I think drawings are very important. Since I am a good visualizer and not an artist, my first question as a monitor to a viewer almost always is, "Tell me what shows up surprising in your awareness. Good. Now draw that." I give them a piece of paper and a marker to concretize their visual imagery. In my experience, many people feel hesitant in trying to draw something that doesn't make any sense, but a good session monitor can encourage a person to put his imagery on paper either as drawings or words. I am not teaching remote viewing. I am giving people permission to use an ability they already have.

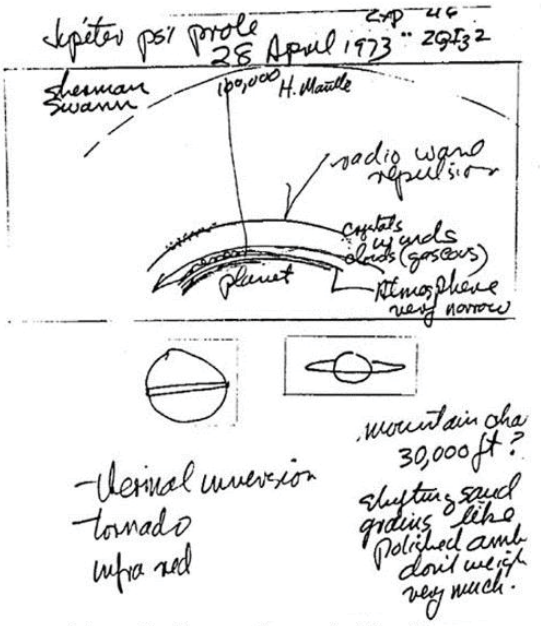
Signal-to-Noise Ratio. Ingo's focus was always on helping the viewer to separate "the psychic signal from the mental noise." While we don't know a lot about the psychic signal, we do have a good understanding of mental noise, which Ingo termed as analytical overlay (AOL), a very important concept. AOL is naming, guessing, grasping, memory, analysis, and imagination that interfere with the expression of psi-enabled information. Anything the viewer does in the way of processing his images introduces noise. This is why targets such as Zener cards and playing cards are psi-destructive targets. In the forced-choice, card-guessing paradigm, the signal-to-noise ratio is a huge problem, since you already have a perfect, crystal-clear memory of all the cards. In the free-response approach, the diaphanous psi image does not have to compete with memory and imagination.

In the free-response, remote-viewing tasks, an interviewer/monitor can be very helpful in guiding a viewer away from guessing targets. An interviewer can also become sensitive to the tone of voice that a viewer expresses during a remote-viewing session. Since the interviewer is blind to the target and the target pool, he has no information to contribute, and hence can say whatever he thinks might be helpful to encourage the viewer to elaborate on his response; even suggesting that he look into awareness for his future feedback. And above all, never lie to your subjects.

Precognitive dreams also are subject to mental noise, the same as ordinary remote viewing. But we can learn, and must learn, to recognize a true precognitive dream by its freedom from the previous day's residue, no anxiety about possible future events, or wish fulfillment of desired future events. While these three are the basis of most ordinary, non-precognitive dreams, future-oriented dreams are recognizable by their frequent bizarre content, or unusual crystal clarity. This separation is very important if precognitive dreams are to be trusted and put to work. For example, if you have an anxiety dream about failing a math test for which you have not studied, we would not call that precognitive. It's just what you would expect. But one can become skillful in discerning whether a dream is ordinary or is indeed precognitive. Although I personally have not found it necessary, maintaining a dream diary can be of great help.

In April 1973, we finally received our NASA contract to test my ESP teaching machine (Targ, Cole, & Puthoff, 1974). This ESP Trainer is now available as a free application from the Apple App store. It is a four-choice, random-number-generator device that chooses the targets; it has a PASS button, to avoid guessing. Our contract monitor, George Pezdirtz, was a distinguished NASA chemist. He was an early associate for our team in getting governmental support for our program. As we sat with Ingo in my office in early April 1973, George mentioned that NASA was about to launch the Pioneer 11 spacecraft to Jupiter. Could Ingo take a look at Jupiter now, and tell us if there was anything especially interesting that the mission might find? Ingo took a puff on his cigar and grabbed my ruled note pad and said "yes, I see a ring around the planet." George said to Ingo, "You must be thinking of Saturn." Ingo replied in his inimitable style that he had been looking at the solar system his entire life, and that he knows the difference between Jupiter and Saturn. He said that "Jupiter has mainly one fat ring. And you will see it when you get there." The following year, NASA sent back photos greatly resembling Ingo's instant drawings of the ring 365 million miles away (see Figure 3).





The subject incorrectly recorded the date.
The date was 27 April 1973.

Figure 3. NASA illustration of Jupiter's rings, and Swann's remote viewing sketch of Jupiter's rings.

Pat Price

Pat Price was a retired police commissioner from the city of Burbank, California. He told us that he had heard of our ESP research at SRI, and that he would like to help us. I have no idea where he heard about our classified program. Pat was an amiable, mid-fifties, broad-shouldered Irishman, liked by everyone. In our first remote-viewing trial, Price and I sat in a small, shielded room with cups of coffee and a lined pad on which to draw or write notes. After allowing half an hour travel time, I announced that Hal and Kit Green, our contract monitor from the CIA, had reached their destination. Price said, 'I don't see anything.' Since this was my first remote-viewing trial with him, I found his announcement alarming. But I was familiar with the feeling of the remote-viewing experience from my own explorations. So I had no hesitation telling Price, "That's OK. Just follow Hal's green car as it leaves the SRI parking lot and tell me what you see." He said, "I see them heading south. They are arriving at some sort of large water purification plant. . . . There is a circular pool about 80 feet in diameter and a rectangular pool about 75 by 100. And there are two very tall water storage tanks. That's what I get." The target was a public swimming pool complex in Rinconada Park about five miles south of SRI. The dimensions of the two pools that he described were correct. While there were no water tanks presently at the site, 75 years ago there used to be water tanks in the exact spot Price had indicated. Further, at an earlier time, the site was indeed a water purification plant. We learned those two facts ten years later. Figure 4 illustrates the existing pools, and the water towers from an earlier time.

Our plan called for accomplishing a total of nine trials with Pat, and with Hal as the outbound experimenter to a randomly selected site within half an hour's drive from SRI. We accomplished the nine trials with about two or three sessions a week. In double-blind, rank-order matching, the session judge was able to correctly match seven of the nine trials as first-place matches, with respect to where the outbound experimenter had been. There are 60 targets in the pool. The judging is against the nine targets used in a 9×9 matrix. The judge was Arthur Hastings, then a linguistics professor at Stanford University.

The statistical odds of such success is approximately 1-in-100,000. Another way to gain perspective on this series would be to realize that if Hal had been kidnapped on nine occasions, Pat would have found him the first place he remote-viewed in seven of the nine times. No correlation between distance and accuracy was found. In one trial, our division director wanted to assure security and hence drove himself and Hal to his own randomly chosen site. Pat and I were unaware of this change in protocol. Shortly after

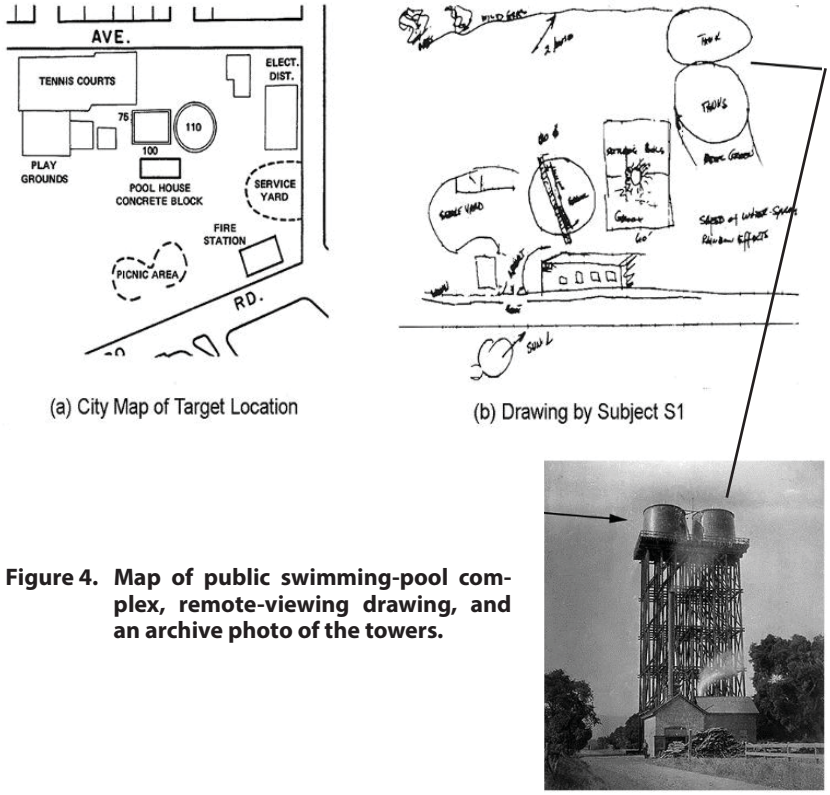


Figure 4. Map of public swimming-pool complex, remote-viewing drawing, and an archive photo of the towers.

the travelers left, Pat said, "why don't I just tell you right now where they are going, and we can go and get our coffee." This turned out to be one of his most accurate descriptions. It was a boat dock and restaurant complex 10 miles north of SRI. After our *Nature* paper (Targ & Puthoff, 1974) was published, there was a criticism of our judging protocol, based on the idea that some of the transcripts had internal clues, from the subject, as to the order of the trials. We asked Professor Charles Tart, at the University of California, Davis, to have the trials re-judged in his laboratory. His judge came up with exactly the same results as Professor Hastings did.

Kidnapping of Patty Hearst. In January 1974, Patricia Hearst, the heiress to the Hearst fortune, was kidnapped from her Berkeley home. The next day, local police called SRI to see if we could help. Hal, Pat Price, and I drove to the Berkeley police station to see what Pat could do. The police detective told Pat, "'Boy do we have a lot of questions to ask you!" Pat said, "Let me show you how we do this. Give me your mug book." The detective

brought out a large, loose-leaf binder and laid it on a large oak table. We all crowded around Pat as he turned the pages, each with six square photos. After perhaps a dozen pages, Pat put his finger on the face of a man and read out loud "Donald Defreeze, he's the ring leader." The detective said "We know who he is. He walked away from a minimum security jail last year." A week later, Defreeze identified himself as the leader of the Symbionese Liberation Army, an American far-left militia group. In her autobiography, *Every Secret Thing*, Patty Hearst states that they knew psychics were looking for them (Hearst, 1982). She was captured September 19, 1975, by the FBI, in a San Francisco apartment.

Giant Sphere of Semipalatinsk. In June 1974, there was Pat Price's final event at SRI, a few months before his death. He described a Soviet weapons factory in Siberia. Using targets in Siberia overcomes the "memorized-the-globe hypothesis," which we sometimes heard from skeptics. Price and I were given geographical coordinates of a Russian R&D facility. Price began by saying, "I am lying on top of a building, and the sun feels good. There is a giant gantry crane rolling back above my body. I need to draw this." And he made what turned out to be an extremely detailed drawing of an eight-wheeled gantry crane, with a little man half the height of a wheel. It was a shockingly accurate match with the secret drawing that the CIA brought to show us after the session. Ken Kress, the contracting office's technical representative, then asked Pat to describe what were they doing in the building underneath the crane. Price and I went back to our little room to continue the session, and Pat began to describe the construction of a giant steel sphere about 60 feet in diameter. He said, 'They're trying to weld it together out of steel gores (orange slices) but they are having problems because the steel is so thick." While at that time the CIA couldn't confirm anything about the sphere, *Aviation Week* published a story on May 2, 1977, describing satellite images of the Semipalatinsk site. Figure 5 shows the photo from *Aviation Week* illustrating Russian tanks made of gores, and Pat Price's drawing of the 60-foot gores making up the spheres. As stated in the *Aviation Week* article: "The building has been removed. The large steel segments were parts of a steel sphere estimated to be 18 meters (57 feet) in diameter. Enough gores for two complete spheres were constructed. The spheres are the first clue as to what is being done at the facility." In our film *Third Eye Spies*, Kit Green reiterates that they had no information about the spheres, even for us with our top-secret, SI-TK (Sensitive Intelligence Talent Keyhole) clearances.

Price was lauded for his excellent description of the spheres. It is interesting to note here that Price died the following year, before anyone in the West had information about the spheres. Thus, there was no feedback

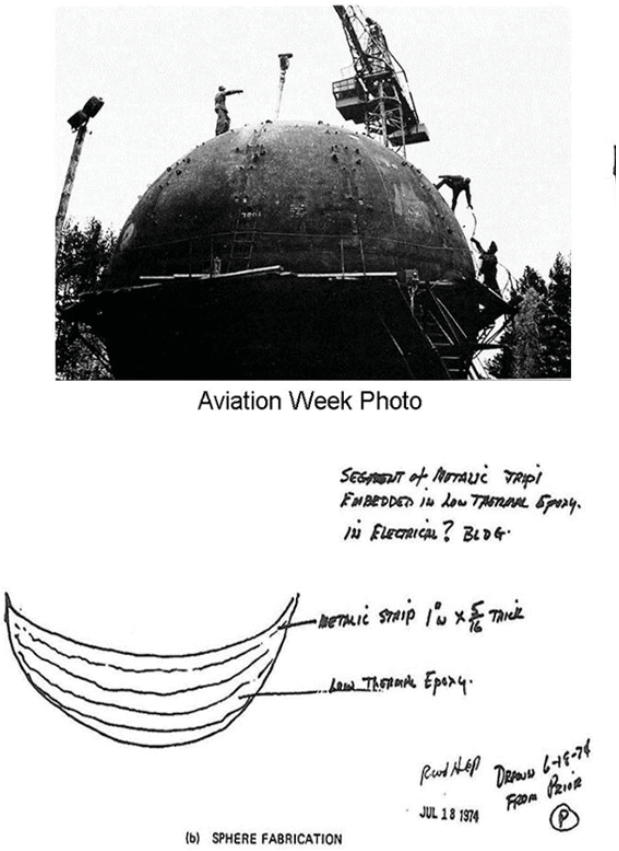


Figure 5. Semipalatinsk site: 1977 *Aviation Week* photo and 1974 Pat Price's drawing.

available to him after the session to serve as the source of psi information. In my view, this example settles the issue that feedback provided to the viewer is not necessary for remote viewing. Published laboratory experiments have also been done where feedback to the viewer had been carefully excluded, and psi was significantly evident (Schmeidler, 1964; Targ & Tart, 1985; Targ, Targ, & Lichtarge, 1985; May, Lantz, & Piantineda, 1996/2014).

Hal and I worked together on the organization of all these projects. But just before we received the tasking for Semipalatinsk, Hal was invited to take a vacation trip to South America. This provided us an opportunity for

a long-distance, remote-viewing series with Pat. Each day at noon, Pat and I would meet at our little shielded room in SRI, and he would describe his impressions of where Hal was in South America. He described for example, a church, a market, a harbor, and a volcano. Then on day five, he didn't show up. So, in the spirit that the show must go on, I decided to stand in for Pat. Since I had been facilitating this work for two years, I thought I would give it a try. At noon, I closed my eyes and took a couple of deep breaths. I saw an airport on an island, which I drew. I saw ocean at the end of the runway, sand and grass on the right, and an airport building on the left. I signed and dated my drawing. When Hal returned, he showed me his photos of the island airport he visited for a change of scene, or, as he said "to try and fool the viewer." My drawing closely matched what he saw at the airport (Figure 6). Shortly after that, we had an offer from a newspaper to fly their Florida-based airplane to the airport at San Andres to see if my drawing was as good as Hal claimed.

Hella Hammid

After two years of remote-viewing research at SRI and the publication of our first paper in *Nature* (Targ & Puthoff, 1974), the CIA asked us to find a control subject who had no previous experience with psychic abilities. Kit Green, the CIA physician, wanted to determine how widely distributed psi ability was in the general population. Since Price and Swann were lifelong psi practitioners, and demonstrated prodigious abilities, could I find a control subject? I invited Hella Hammid—a family friend, renowned photographer, highly intelligent, with an enthusiastic sense of humor—to participate as a control subject. She had no prior experience of being psychic, and thought it would be very entertaining to be a part of a government ESP project. We carried out nine, formal, remote-viewing experiments with her, just as we had done with Price. We followed the outbound, remote-viewing protocol, with me as the monitor and Hal as the outbound experimenter. In double-blind matching, a judge successfully matched five of her descriptions in first place and four in second place. In two of these sessions, there was a bridge in each of two targets, and two courtyards also appeared in her target pool; she described all of these quite accurately. But the judge was unable to determine which steel bridge drawing should be associated with the actual steel bridge. Figure 7 illustrates her first remote-viewing trial in the series with her drawing of a pedestrian overpass. She correctly characterized it as some kind of "trough, up in the air . . . I see squares, within squares, within squares."

Her overall score was statistically significant at odds of 1 in 1,000,000; the overpass was given only a second-place match by the judge, who

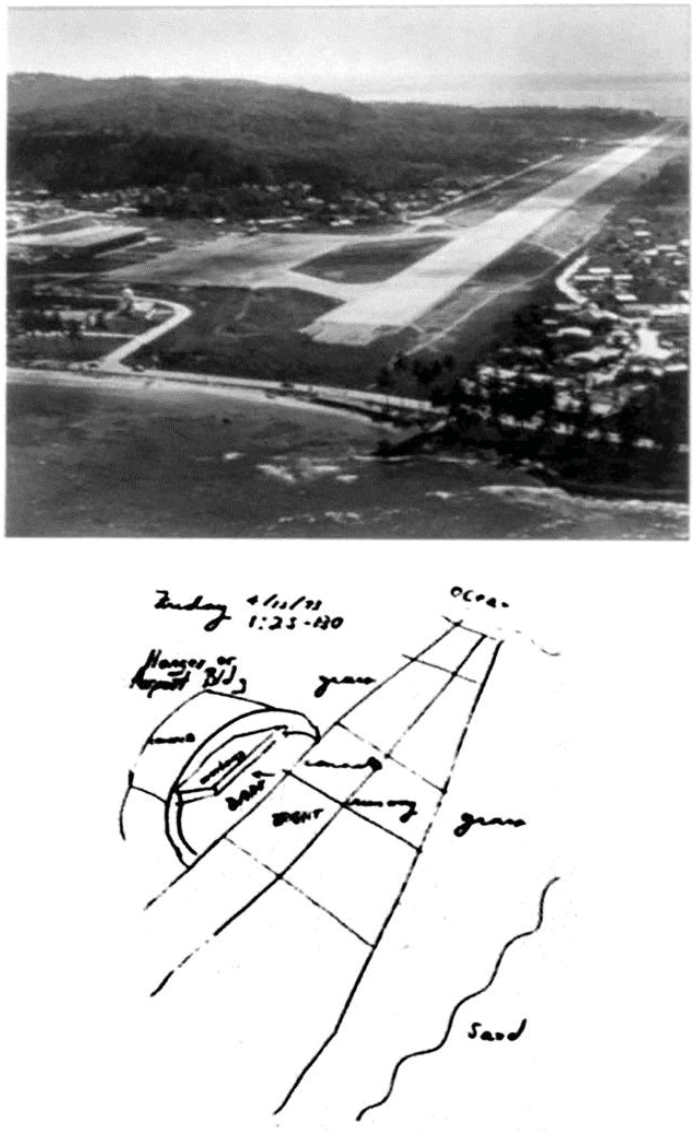


Figure 6. San Andrea's airport and Targ's remote-viewing drawing.

reasonably preferred a very similar railroad trestle.[1] These formal studies were published in the *Proceedings of the IEEE* (Puthoff & Targ, 1976). In trials such as we report here for Pat Price and Hella Hammid, the deviation from chance expectation is greater than 4σ. The effect size is calculated as

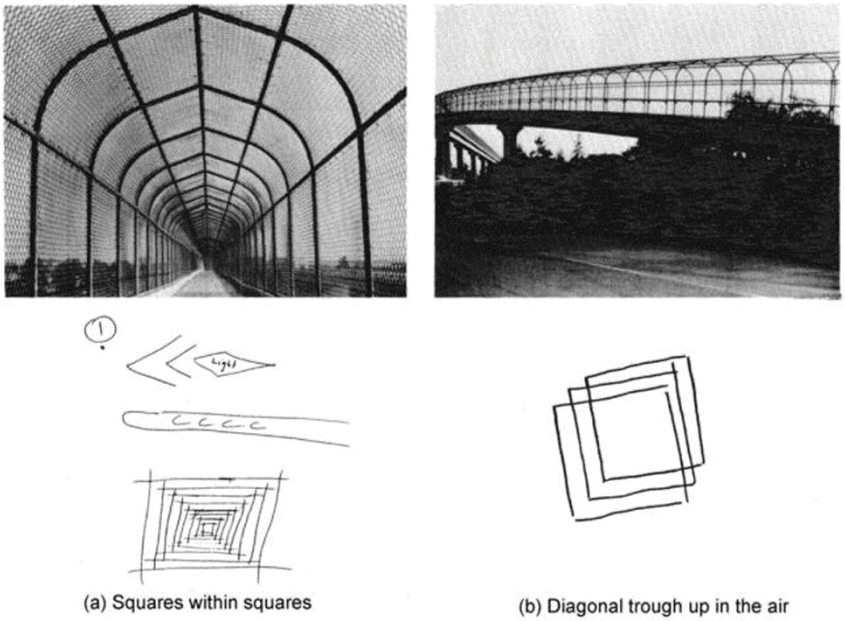


Figure 7. Pedestrian overpass target, and Hella Hammid's drawing, described as "some kind of diagonal trough up in the air."

the *z*-score (the number of standard deviations from chance) divided by the square root of the number of trials. For these two series of nine trials each, the effect size is greater than unity. From my work on this program, I would say that all creative people are psychic, even scientists—they have just learned to keep quiet about it.

It wasn't lost on the CIA that our control subject appeared to be psi-gifted at a level of proficiency that matched that of Pat Price—our best psychic. Hella became a highly successful partner in our program for the next six years. She described objects near and far, big and small, all with great success. In one trial, we were concerned about the meaning of the result, when Hella made an exceptionally accurate drawing of an artist's representation of the Berkeley Bevatron particle accelerator which differed greatly from the aerial photograph of the actual structure. She had been shown both images for feedback. Figure 8 illustrates her drawing in response to the geographical coordinates of the Berkeley Bevatron building. Her sketch of the Bevatron "target area structure" was considered an anomalously accurate response to the geographic coordinates. It suggested to us that she might be responding to her feedback picture of the artist's drawing, rather

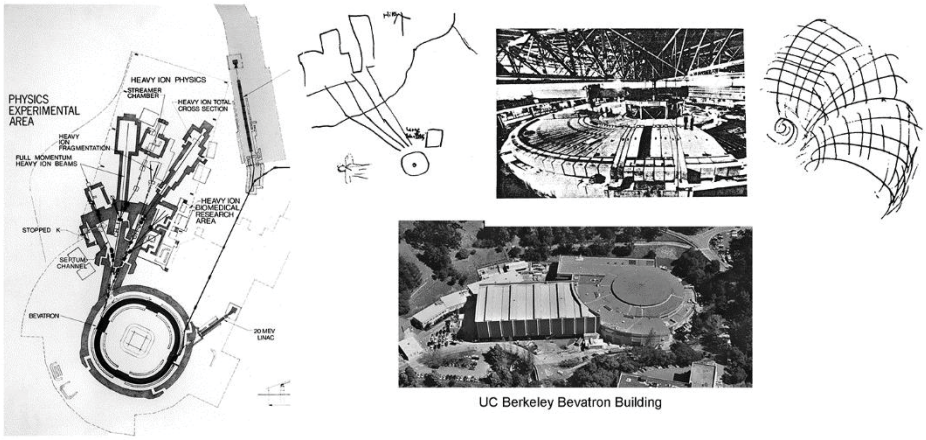


Figure 8. Berkeley Bevatron building, and sketch by Hella Hammid. She described these as "highly illuminated rays shooting out of a bellybutton type of roundness."

than to her remote viewing of the building itself (Figure 8, left).

As I have been saying, we consider remote viewing to be a nonlocal ability, that is, independent of space and time, because it is no more difficult to see into the far distance than it is to see across the street or to see into the future. In fact, Hella Hammid demonstrated perfect precognitive accuracy in her descriptions of four Bay Area targets, an hour before they were each chosen (Puthoff & Targ, 1976).

Joe McMoneagle and the Army Psychic Corps at Fort Meade, MD

After six years of operational requests to SRI, from the CIA, and the Army Intelligence and Security Command (INSCOM), the Army asked us to train a group of intelligence officers on the East Coast. It was becoming cumbersome and embarrassing for them to have to come to SRI in California for tasking remote viewers to help them find a downed bomber or a kidnapped general. Hal and I went to Fort Meade in Maryland, and in a large meeting room interviewed 30 officers who were willing to risk their careers for an opportunity to learn remote viewing. Following the screening procedure, the selected six from this group, five men and one woman, came to SRI (Targ, 2014; Targ, Puthoff, Humphrey, & May, 1980). We spent a week with each of them, instructing them on the remote-viewing protocol that we had been using for the past six years. We would conduct one trial each day and two on Friday.

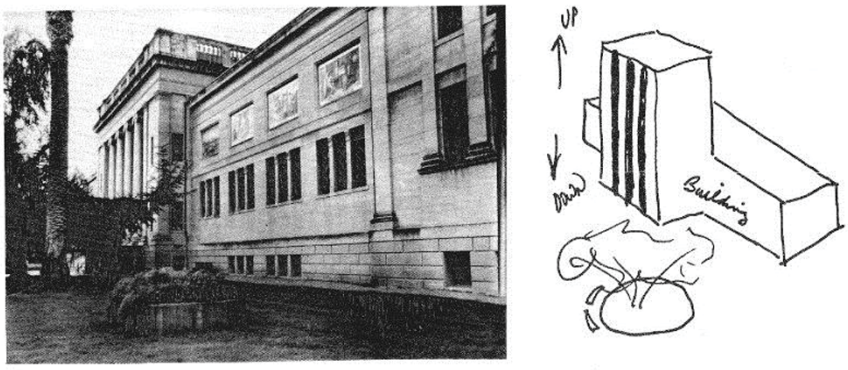


Figure 9. Stanford University Museum of Art building and Joe McMoneagle's remote-viewing drawing.

The first person I worked with was Joe McMoneagle, who was an Army chief warrant officer. In our first trial, Joe had several images show up in his awareness. One of these he drew in great detail. He made an almost architectural drawing of a building, which turned out to be the Stanford University Museum of Art (see Figure 9). The protocol for these sessions was to conduct a remote-viewing session first thing in the morning at SRI and then drive to the actual target site for feedback. The afternoons were free, as our practice has always been to have no more than one session per day with an individual viewer. Thus, we did six trials a week with each of the six visitors, for a total of thirty-six trials. The viewer's performance was evaluated individually. The results showed that four of our six army officers obtained statistically significant results, each less than 0.03. Overall, in 36 trials, they achieved 19 first-place matches, where only six would be expected by chance. This is an outstanding result for a formal series with inexperienced viewers. This gave better than 1-in-a-1,000,000 probability for the group as a whole. The effect size for the study was greater than 0.67.

We first presented our experimental data from Pat and Hella in 1975 at a Santa Barbara meeting of the Parapsychology Association. Many of the attending scientists, who grew up with card-guessing ESP tests, thought we must be either lying or stupid. We were reporting effects substantially greater than was customarily (or ever) seen in psi research. The Fort Meade study made it seem more real. At the same time, some replications began to come in from Professor Robert Jahn's laboratory at Princeton University. Up until the mid-1960s, the most-common psi experiments were of the card-guessing variety. These forced-choice trials typically had effect sizes of 0.02 (Honorton & Ferrari, 1989). In the 1960s and early 1970s, the most

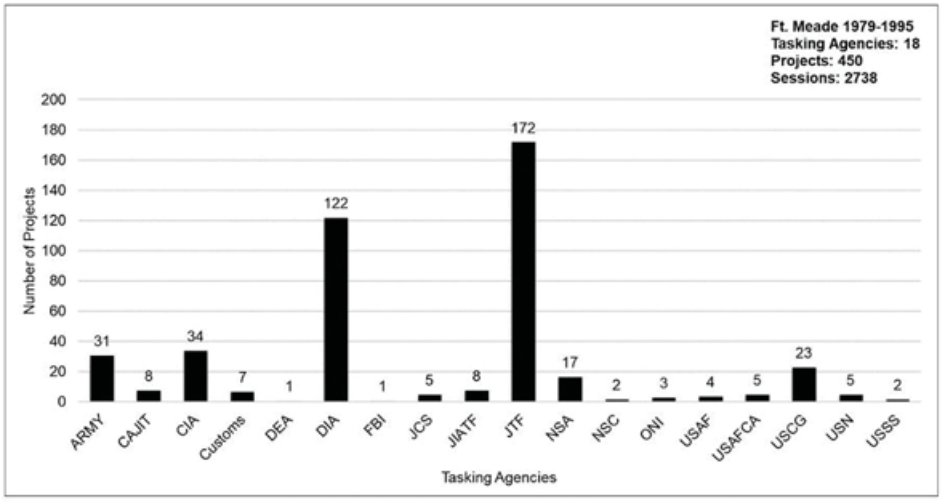


Figure 10. Client base for the Fort Meade RV-HUMINT program (1979–1995): Army—US Army Intelligence and Security Command; CAJIT—Central America Joint Intelligence Team; CIA—Central Intelligence Agency; Customs—US Customs; DEA—Drug Enforcement Agency; DIA—Defense Intelligence Agency; FBI—Federal Bureau of Investigation; JCS—Joint Chiefs of Staff; JIATF—Joint Interagency Task Force; JTF—Joint Task Force; NSA—National Security Agency; NSC—National Security Council; ONI—Office of Naval Intelligence; USAF—US Air Force; USAFCA—United States Army Foreign Counterintelligence Activity; USCG—US Coast Guard; USN—US Navy; USSS—US Secret Service (May & Marwaha, 2019b, p. 18).

successful experiments were carried out in the free-response ganzfeld. This change made a great improvement in effect size, to 0.2 (Honorton et al., 1990).

Over time, the Fort Meade group comprised more than a dozen army and civilian viewers. They were in the business of doing operational remote viewing for fifteen years, from 1979 to 1995, for an assortment of US intelligence agencies including the CIA. The word on the street (Secretary of Defense Robert Gates on *Nightline*) was that the SRI–Fort Meade remote-viewing program never provided any useful information. That is simply not true. Figure 10 summarizes the client base for the remote-viewing, human intelligence program. In its 15 years of operation, the Fort Meade remote-viewing program received 450 requests for services from various US Government intelligence agencies. Despite the CIA's denial of the utility of remote viewing, they referred 34 missions to the remote-viewing human

intelligence group at Fort Meade for their intelligence needs; with 122 from the Defense Intelligence Agency (DIA) and 172 from the Joint Task Force (JTF). This kind of repeat business strongly indicates that the customer was finding the information useful enough to keep coming back for more, thus lending support to the validity of psi and the utility of remote viewing. All the SRI–SAIC and government reports and reviews have now been published in four volumes as the Star Gate Archives by Edwin May, the former research director of the SRI–SAIC remote-viewing program (May & Marwaha, 2018a, 2018b, 2019a, 2018b).

In several formal studies from the final decade of the Star Gate program at SRI–SAIC, Ed May found effect sizes of 0.4–0.5, mainly with talented and experienced remote viewers.

In 1978, a Soviet, Tpolev Tu-22 Backfire bomber went down in northern Africa. It was full of code books; and both the Russians and the CIA were eager to find it. However, since it crashed into the jungle, US satellite photography couldn't locate it. We were asked by our CIA customer to try to locate the plane by remote viewing. Both a talented SRI viewer and an experienced female remote viewer from the Wright-Patterson Air Force Base made contact with the plane. They both described the locale and drew a circle on a map. When the CIA landed a helicopter in that circle, the first thing they saw was a group of natives dragging pieces of the plane from the river to the village, just as the SRI viewer described. This whole event is narated by President Jimmy Carter in the opening scene of my 2018 documentary film *Third Eye Spies*.

Final Thoughts

One of the issues I have dealt with here is the question of whether feedback is necessary for psi functioning. The Fort Meade viewer often received no feedback about the target, or his success or failure, because he was not cleared at that level. Some researchers trying to make psi data compatible with quantum physics ideas have proposed that psi does not involve information transfer across space in present time, but that instead the remote viewer accomplishes her or his task by precognizing the sensory feedback about the target to be received later. Jacques Vallée, the well-known researcher and writer, told us at a recent Parapsychology Association conference that "psi doesn't have to be a slave to physics. We have the data." What that means to me is that, although "entanglement" cannot be a vehicle for message-sending, the remote-viewing data offering evidence for psi from many labs over forty years is clearly nonlocal in space and time.

The great Buddhist dharma masters taught from their experience that

separation of consciousness is an illusion. I think it is interesting to consider some of the ideas from Buddhism, because of their great density in Buddhist writing, and their close agreement with much that we see in the laboratory. There is no separation between the tasker and the viewer. In conclusion, I propose that in our interconnected nonlocal space–time, feedback about the target to a viewer is not necessary. If a viewer's consciousness has direct access to any point in space–time, we do not have to invoke any kind of separate retrocausation. The viewer doesn't have to ever physically see or experience the feedback. That is to say, he is not, in general, reading his own future mind as some, such as physicist Gerald Feinberg, conjectured. Many of these issues are discussed in Eric Wargo's excellent new book *Time Loops* (2018). Feedback to a new viewer is indeed helpful as a confidence-building measure; for an experienced viewer, the universe appears to provide all the connections to the target that is required to make psi possible. Erwin Schrödinger (1964), the physicist who perfected quantum mechanics, wrote, "I would not call entanglement one, but rather the, characteristic trait of quantum mechanics." He said that, "Consciousness is a singular of which there is no plural." And finally, since precognition and retrocausality are within the light cone, there is no contradiction with special relativity. That is, the ordinary causal ordering principle (COP), of physics, is not a limiting factor for consciousness.

Note

[1] In later developments, the target pools were developed such that there were no target similarities in a target set. That is, a target set would contain, for instance, bridge, park, water tower, waterfall, pond. This ensured that there would be no confusion regarding which target was sketched by the remote viewer (see Humphrey, Trask, May, & Thomson, 1986; May, Marwaha, & Chaganti, 2011, p. 201).

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COMMENTARY

"The Data Are Irrelevant": Response to Reber and Alcock (2019)

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Abstract—The rebuttal by Reber and Alcock (2019a,b) to an umbrella review of multiple meta-analyses on the evidence for parapsychological (psi) phenomena (Cardeña, 2018) did not engage deliberately with its data or analyses. Instead, the authors proposed that because they and some physicists consider psi phenomena to be impossible, "the data are irrelevant" (Reber & Alcock, 2019b). After presenting some background information, this Commentary discusses how: 1) Reber and Alcock's disregard for the data goes against a core tenet of science, 2) eminent physicists have not considered psi phenomena to be incompatible with their discipline and some have even proposed theories to explain it, so no definitive conclusion can be advanced with regard to the possibility or impossibility of psi phenomena based on physics, and 3) Reber and Alcock misrepresent the history and current status of psi research.

Keywords: parapsychology—psi—physics—philosophy of science

Background

In August of 2018, the flagship journal of the American Psychological Association (APA), *American Psychologist* (*AP*), published an umbrella review of meta-analysis of the experimental evidence for parapsychological (psi) phenomena (Cardeña, 2018). Because in that article I concluded that the evidence across time and research paradigms was comparable to that for accepted phenomena in psychology, medicine, and other disciplines, it was a given that some anti-psi authors (I do not call them skeptics because their position is not one of doubt but of certainty) would cry "foul" at the audacity of *AP.* After all, this "bastion of psi propaganda" had already published an outrageous number of papers on psi: one by a past APA President (Murphy,

1958) giving an overview of the field at that time, and another by the then Chair of the Psychology Department at Yale University (Child, 1985) providing a meta-analysis supportive of a series of dream-psi studies.

Although I do not believe that *AP* published any correspondence about my article, it accepted a paper by Reber and Alcock (2019a), in which they criticized the field and my article (see also their non–peer-reviewed paper for *Skeptical Inquirer* [Reber & Alcock, 2019b]).

After reading their contributions, I submitted a commentary to *AP* arguing that I had the right to respond to what was essentially a rebuttal of my paper. *AP* disagreed and rejected my commentary partly because they did not think that their paper was a rebuttal, and partly because they thought that my commentary was of the nature of "he said, she said." Although I disagree with the *AP*'s rationale for rejecting my commentary, it must be said that in the process of editing my 2018 article the associate editor and reviewers were very demanding but fair, and that they helped me raise its level of quality. What follows is a slightly longer version of the commentary I sent to *AP*, although I think that the best argument I have is simply to ask the reader to go through my original paper and Reber and Alcock's (2019a, 2019b) responses, and compare the levels of evidence, argumentation, and professional respect.

Commentary

In a sense, parapsychologists should welcome a paper by Professors Arthur S. Reber and James E. Alcock (2019a) rebutting an umbrella review of meta-analyses showing longitudinal and cross-research support for parapsychological (psi) phenomena (Cardeña 2018). They might have scrutinized the data, analyses, and methods, debated their strengths and weakness, and proposed an alternative, non-psi hypothesis or re-analysis to account for the data. They did neither, but offered instead their assertion that psi is impossible and "the data are irrelevant" (Reber & Alcock, 2019b). This Commentary focuses on three major problems with their position:

First, Reber and Alcock's (2019a, 2019b) refusal to consider the target paper's data and analyses, and their a priori conclusion that psi is impossible, run counter to the scientific method, which involves an open but critical inquiry, based on data derived from empirical testing of hypotheses derived from observations and/or theoretical predictions. The great attribute of the scientific method is that, at least aspirationally, its claim to knowledge does not depend on authority, a sacred text, or authors' metaphysical preferences. Furthermore, Reber and Alcock's opinion is a minority one among scientists. In five surveys conducted to that point, only 14%, 10%, 3%, 4%, and 8.5% of scientists stated that psi was impossible (McClenon, 1984:139–140).

Had science followed Reber and Alcock's logic, it would not have accepted relativity, quantum mechanics, or other new discoveries because some scientists at the time probably thought that they were impossible and the new data "irrelevant". In contrast, the history of science shows that all of the sciences, including physics, periodically undergo conceptual shifts that account for previously unexplained observations, and this has not made "the entire scientific enterprise . . . fatally compromised" (Reber & Alcock, 2019a, p. 3; for information on other catastrophizing statements see Cardeña, 2015b). What Reber and Alcock offer instead of the critical openness of the scientific enterprise is a "Catch-22" (see Joseph Heller's novel of that title), an oxymoronic stance in which they conclude that "parapsychological research has failed to yield evidence to support [it]" while simultaneously refusing to look at that evidence. Even a psi-skeptic has criticized Reber and Alcock for their view of science as a closed system, and provided other examples of "definitive" physical pronouncements that turned out not to be so (http://www.skeptophilia.com/2019/08/the-realm-of-impossible.html). Child (1987, pp. 222–223) described another Catch-22 by psi critic Hyman, who required that before considering an anomalous result there should already be a very developed scientific context for it, which of course cannot happen unless there is prior research on the topic. . . . And even a psi-skeptic has criticized Reber and Alcock for their view of science as a closed system, and provided other examples of "definitive" physical pronouncements that turned out not to be so (http://www.skeptophilia.com/2019/08/the-realm-of-impossible.html).

Second, Reber and Alcock (2019a), despite not being physicists, disregarded those physicists cited in Cardeña (2018) who have advanced theories of psi. They concluded instead that psi is impossible because it would violate the principles of physics. They wrote (2019b) that two unnamed "experts in quantum mechanics" vetted their commentary and they cited a blog entry by a physicist to bolster their case. The Cardeña (2018) paper was also vetted, in his case by three experts (Professors at Cambridge, Queen Mary University of London, and UC Berkeley, one of them a Nobelist in physics), as mentioned in a footnote of the article. These physicists and other scientists do not believe that psi phenomena are necessarily incompatible with physics (or, specifically, with causality, the arrow of time, thermodynamics, or the inverse square law), either in its current form or in an expansion into a more general paradigm that would encompass phenomena in the natural world such as meaning and consciousness. Eminent scientists who have at least been open to the possibility of psi include Nobelists Marie and Pierre Curie, Einstein, Josephson, Planck, Wigner, Lord Rayleigh, and J. J. Thomson, and quantum physicists of very considerable stature: Bell, Bohm,

and Costa de Beauregard. The last one, basing his conclusion on Einsteinian and QM physics, concluded that "today's physics allows for the existence of the so-called 'paranormal' phenomena of telepathy, precognition, and psychokinesis" (Costa de Beauregard, 1998, p. 315; see also his 2001 paper on this issue). There is also a very long list of mainstream illustrious scientists and other authors who have supported psi research in the past and today (Cardeña, 2014, 2015a).

This does not mean necessarily that the physicists who endorse psi phenomena are right, but it shows that the plausibility of psi given current physics is very much in contention, and that definitive statements by psychologists (but also by physicists) should be taken with great reservation. Even within mainstream hard science, what was once considered to be "impossible" has turned out to be very real. For instance, although at one point "Violating Dalton's dicta [about the atom immutability] . . . became a scientific high crime" (Gensler, 1987, p. 86), the discovery of radiation by Becquerel, Marie Curie, and Pierre Currie (the last two, incidentally, took part in psychical research) showed that elements could be transformed into other elements.

Third, Reber and Alcock consistently misrepresent the psi field and its findings. Here are two examples of many: a) "A novel methodology is introduced but, when findings are not replicated, is discarded" (Reber & Alcock, 2019b). In contrast, the Cardeña (2018) paper showed that the same psi methods have been used and replicated for decades and to a similar degree as in psychology and medicine. Psi research has also revealed significant patterns, for instance that techniques to alter consciousness produce larger and more significant effects than testing participants in the ordinary state; b) Reber and Alcock (2019a, p. 6) discard Daryl Bem's data because he used RAs (research assistants) and conclude that "one can give little credence to findings . . . that came from Bem's lab," but fail to mention that even excluding them there is a significant effect for independent replications ($z = 4.16$, $p = 1.1 \times 10^{-5}$; Bem, Tressoldi, Rabeyron, & Duggan, 2016), not to mention the insubstantiality of their contention that because a researcher had RAs collect data those data are untrustworthy. If this criterion were to be applied across the board, many studies in various disciplines would have to be considered invalid, but Reber and Alcock fail to mention this inconvenient implication of their criticism. Alcock has a long history of basing his pronouncements on secondary sources and misrepresenting the facts in psi studies (cf. Child, 1985).

Reber and Alcock (2019b) also write "Why, we wondered, are researchers still running experiments, using ever more sophisticated statistical analyses,"

even though one of them had concluded earlier (but apparently forgotten): "[Psi researchers] should [not] abandon parapsychological research, but . . . they should take seriously the methodological critiques provided by knowledgeable critics" (Alcock, 2010, p. 32), a position that psi research adopted from its inception. What Reber, Alcock, and other (but not all) critics of psi do is repeat the same tropes that have been used for decades, and which have been effective mostly because of the "illusory truth effect," in which statements become believed not for their merits but because they are repeated often enough (cf. Hertwig, Gigerenzer, & Hoffrage, 1997). Or as Lewis Carroll remarked in *The Hunt of the Snark*: "What I tell you three times is true."

As for Reber and Alcock's (2019a, 2019b) use of an adynaton (a rhetorical hyperbole to express impossibility), phrased by them as "pigs cannot fly," they got it wrong on two accounts. First, the adynaton would be "pigs can fly," not its opposite (by the way, mathematician Lewis Carroll also referred to this image in his *Through the Looking Glass:* "And whether pigs have wings"). But far more important is that whereas no one I know or have read has mentioned witnessing flying pigs, majorities in general surveys for more than a century (for a review see Watt & Tierney, 2014) have testified to having experienced ostensible psi phenomena. In a recent paper, 48% of scientists endorsed the item: "Known something about the future that you had no normal way to know," similar to the percentage of the general population sample (Wahbeh, Radin, Mossbridge, Vieten, & Delorme, 2018). That these are not delusional beliefs is supported by the meta-analyses I reviewed and the general lack of relation between anomalous or extraordinary experiences and poor mental health (for a review see Cardeña, Lynn, & Krippner. 2017). Instead of discussing the relevant research, Reber and Alcock borrow from the critics' till the strategy of using a snarky phrase to evoke ridicule, rather than engaging in serious and respectful scientific dialogue.

Informed readers can reasonably disagree as to how persuasive they find the evidence for psi. Honest difference of opinion on the interpretation of research findings does not damage but strengthens the scientific process, but a refusal to consider data because they run counter to a scientist's belief system does damage science, no matter the belief system held. In the words of William James (1920, p. 248): "there is no source of deception in the investigation of nature which can compare with a fixed belief that certain kinds of phenomena are *impossible* (emphasis in the original)."

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COMMENTARY

Reassessing the "Impossible": A Critical Commentary on Reber and Alcock's "Why Parapsychological Claims Cannot Be True"

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Abstract—A critical commentary is offered on a skeptical rebuttal made by Arthur Reber and James Alcock in the July/August 2019 issue of *Skeptical Inquirer*, which came in response to an article by Etzel Cardeña (published in the mainstream journal *American Psychologist* in 2018) that reviewed the extensive evidence from parapsychological experiments which collectively seems to offer support for the existence of psychic (or psi) phenomena. At the heart of their rebuttal, Reber and Alcock seek to make the counterargument that this evidence cannot be meaningful because psi phenomena are "impossible," appearing to violate four fundamental principles of physics. It is shown here that rather than being based on any kind of substantial evidence, the criticisms that Reber and Alcock put forth in support of this counterargument are instead based on a combination of narrow personal opinion, unfounded assumption, and superficial rhetoric, leaving their claims unsound and ultimately unconvincing.
Keywords: parapsychology—psychic phenomena—psi—skepticism

In the July/August 2019 issue of *Skeptical Inquirer* (the magazine of the Committee for Skeptical Inquiry, an organization previously known as the Committee for the Scientific Investigation of Claims of the Paranormal), a special report appeared in which Arthur S. Reber and James E. Alcock attempted to offer a critical rebuttal to a 2018 review article published in *American Psychologist* (the flagship journal of the American Psychological Association—APA) which examined the various claims of ostensible psychic (or psi) phenomena that have long been the subject of empirical study within the field of parapsychology. In that particular article, Etzel Cardeña (2018) had summarized the extensive amount of data that

parapsychologists have managed to gather over the course of roughly eight decades in experiments designed to test for extrasensory perception (ESP) and psychokinesis (PK, or ostensible mind–matter interaction). His review ultimately led to the conclusion that when these data are collectively evaluated by meta-analysis, they seem to offer considerable support for the existence of psi, resulting in statistical outcomes that are highly significant.

Reber and Alcock (2019) take issue with Cardeña's conclusion, arguing that claims of psychic phenomena should not be given any serious consideration, regardless of what these experimental data would seem to indicate. The reason, they maintain, is that such phenomena are "impossible," and thus any claims made about them simply "cannot be true" (p. 8; see also Alcock, 2010a). This naturally raises the question: Is the rebuttal offered by Reber and Alcock (2019) a sound one? The objective of this paper is to show that when one examines it carefully, it is very likely not to be. To maintain sequential consistency, the critical arguments that Reber and Alcock raise in their rebuttal will be summarized and addressed here in the order that they are presented in their *Skeptical Inquirer* article.

Previous Coverage of Parapsychology in APA Journals

Reber and Alcock (2019) open their rebuttal by initially pointing out that Cardeña's review was not "the first time the APA had entered this controversial domain of psychology" (p. 8). In 2011, the editors of the *Journal of Personality and Social Psychology* (another of the APA's journals) had decided to publish a study by Daryl Bem (2011a) that seemed to offer experimental evidence favoring the possible existence of precognition (psychic perception of future events). Apart from the high-profile controversy that it drew in both academic and public media circles, Reber and Alcock (2019) noted that Bem's study ". . . was immediately subjected to efforts at replication by other labs (which almost uniformly failed) and well-honed criticisms" (p. 8), which included a critique by Alcock (2011) that also appeared in *Skeptical Inquirer*.

While it is indeed true that various attempts were made by a number of laboratories to independently replicate the findings of Bem's (2011a) nine original experiments, is it also true that these replication attempts "almost uniformly failed?" By 2016, a total of 33 laboratories had conducted 90 experiments related to Bem's work; 69 of these experiments were replications conducted by independent researchers. As is typical with a series of psychological studies on a given topic, their outcomes did vary across the individual experiments, with some successfully replicating Bem's findings, and others not doing so. But one particularly important thing to recognize, which Reber and Alcock (2019) fail to do, is that when the data

from these 69 independent replication attempts are statistically evaluated by meta-analysis, they collectively result in a highly significant outcome, with a Stouffer's Z of 4.16 and a p-value of 1.2×10^{-5} (Bem, Tressoldi, Rabeyron, & Duggan, 2016). This would seem to indicate that Bem's results were in fact successfully replicated on the whole, contrary to what Reber and Alcock (2019) claim. Careful consideration should also be taken of Bem's (2011b) outlining of the various ways in which Alcock (2011) seemed to misconstrue some of the procedural details of the nine original experiments, in judging whether Alcock's criticisms of those experiments were particularly "well-honed."

Apart from Cardeña (2018) and Bem (2011a), Reber and Alcock (2019) fail to mention other notable occasions of fairly recent memory in which the APA addressed the topic of psi in the pages of its journals: In the mid-1980s, another review article was published in *American Psychologist* by Irvin Child (1985), which reexamined the statistical results from a series of dream ESP experiments that were conducted at the Maimonides Medical Center in Brooklyn, New York, during the late 1960s and early 1970s (Ullman, Krippner, with Vaughan, 1973). From his reexamination, Child (1985) found that:

> Several segments of the data, considered separately, yield significant evidence that dreams (and associations to them) tended do resemble the picture chosen randomly as target more than they resembled other pictures in the pool (p. 1223),

with those rated for correspondence by independent judges having p-values of less than 0.005. Child's review article drew a small round of additional comments and critiques (Child, 1986; Clemmer, 1986; Hill, 1986; Vitulli, 1986), only one of which was clearly oriented toward skepticism (Clemmer, 1986).

Bem had also co-authored an earlier psi-related article with the late Charles Honorton that appeared in the APA journal *Psychological Bulletin* in the mid-1990s. This article (Bem & Honorton, 1994) reported a meta-analysis of 11 experiments on telepathy using the ganzfeld technique that were conducted at the Psychophysical Research Laboratories in New Jersey throughout the 1980s. When collectively analyzed, these 11 experiments produced a significant overall result ($z = 2.89$, $p = 0.002$). This meta-analysis did stir further debate (Bem, 1994; Hyman, 1994) and encouraged additional analyses and critiques of the ganzfeld telepathy database (Hyman, 2010; Milton & Wiseman, 1999, 2001; Storm & Ertel, 2001; Storm, Tressoldi, & Di Risio, 2010a, 2010b) in later issues of the journal, as well.

The ganzfeld telepathy database also ties into the two most recent

meta-analytical evaluations of ESP experiments to appear in *Psychological Bulletin* (Rouder, Morey, & Province, 2013; Storm, Tressoldi, & Utts, 2013). While the results of these two recent meta-analyses were each interpreted in different ways by the two teams of collaborating researchers involved, perhaps the most important thing to note about them is that each of these teams had ultimately found a significant positive result in their respective analysis of the ESP database, with Bayes factors ranging from 330 to 1 (Rouder et al., 2013) to more than 14,000 to 1 (Storm et al., 2013). At the very least, these latest results would seem to indicate that something of interest is occurring in these ESP experiments.

Why do Reber and Alcock not mention these other occasions? While it could have perhaps been a simple oversight, one might also wonder whether it was because most of the results were not in line with their preferred viewpoint that there is nothing to psi.

Effect Size in Psi Experiments

Reber and Alcock (2019) go on to minimally acknowledge Cardeña's (2018) review as being "an impressive effort," but then it seems that they try to subtly downplay the findings it presents by stating that the review was focused ". . . mainly on meta-analyses of published papers that showed small or marginal effects" (p. 8). This statement is notable because it is reminiscent of a common skeptical tactic in which descriptive terms like *small* and *marginal* are often used in a manner that is meant to subtly imply that the mean effect sizes observed in psi experiments are, in essence, "too minuscule to be worthy of notice." Although they do tend to be relatively small, are psi effects really so incredibly minute that they do not deserve any serious attention?

When one compares them to the effect sizes found in experiments conducted in more conventional areas of psychology, it would appear that they actually are not. For instance, a large-scale meta-analysis of one hundred years of experiments in social psychology by Richard, Bond, and Stokes-Zoota (2003) had yielded an overall mean effect size of 0.21. Similarly, a large-scale attempt by the Open Science Collaboration (2015) to directly replicate one hundred original experiments reported in three psychology journals had resulted in a mean effect size of 0.197 for the data from these experimental replications. A slightly higher (but still relatively comparable) mean effect size of 0.249 was found in a second, large-scale attempt by Camerer et al. (2018) to directly replicate 21 original social psychology experiments that were published in *Nature* and *Science*. When these three values are combined (simply for purposes of relative comparison), they would seem to indicate that the mean overall effect size across these

TABLE 1
Mean Effect Sizes Observed in Various ESP Experiments

Experimental Area	Source	Effect Size
Ganzfeld Telepathy	Storm, Tressoldi, & Di Risio (2010a)	0.14
SRI Remote Viewing	Utts (1996)	0.21
SAIC Remote Viewing	Utts (1996)	0.23
PEAR Remote Viewing	Dunne & Jahn (2003)	0.21
General Free-Response ESP	Milton (1997)	0.16
Forced-Choice Precognition	Honorton & Ferrari (1989)	0.02
Implicit Precognition—D. Bem	Bem et al. (2016)	0.09
Presentiment (1978–2010)	Mossbridge, Tressoldi, & Utts (2012)	0.21
Presentiment (2008–2018 Update)	Duggan & Tressoldi (2018)	0.28
Dream ESP (1966–2016)	Storm et al. (2017)	0.18

conventional psychological experiments is around **0.22**. When this value is compared with the mean effect sizes obtained in various experiments designed to test for ESP (Table 1), it can be seen that several of the ESP effect sizes either tend to be quite near, or come fairly close to approaching, that value.

This would seem to suggest that: 1) effect sizes in conventional psychological research tend to be relatively small, as well; and 2) the effect sizes in parapsychological experiments tend to be nearly on par with them. Thus, psi effects should not be discounted or ignored on the basis of their relatively small size.

Are Psi Phenomena Incompatible with the Established Laws and Principles of Science?

Reber and Alcock (2019) criticize Cardeña's (2018) efforts to explore some of the ways in which one might begin to conceptualize psi phenomena in terms of what is currently known in physics, and in doing so they reveal the crux of their rebuttal:

> [P]arapsychology's claims cannot be true. The entire field is bankrupt—and has been from the beginning. Each and every claim made by psi researchers violates fundamental principles of science, and, hence, can have no ontological status. (p. 8)

With having made such a bold claim, one might figure that Reber and Alcock would be able to cite ample amounts of empirical evidence from parapsychological studies to support it. But further examination reveals that their argument is not based on any such evidence; instead, it is based purely upon their own personal opinions and unfounded assumptions about psi. *And that is the ultimate flaw in their rebuttal*.

In formulating their argument, Reber and Alcock (2019) openly admit: "We did not examine the data for psi. . . . Our reason was simple: the data are irrelevant" (p. 8).[1] They then try to justify this by further adding that: "Examining the data may be useful if the goal is to challenge the veracity of the findings but has no role in the kinds of criticism we were mounting" (p. 8). But then one may reasonably ask: If Reber and Alcock did not examine any part of the vast parapsychological database that is currently available, then how might they know whether the conceptualizations they have formed about psi are correct? Arguably, without actually testing their concepts against the existing data, they *would not* have any way of knowing this. (And as will be discussed below, it is even likely that they are not correct.)

Instead of evidence, Reber and Alcock (2019) simply choose to base their argument upon a piece of superficial rhetoric ("pigs cannot fly," p. 8) and make the sweeping generalization that "[any] data that show they can are the result of flawed methodology, weak controls, inappropriate data analysis, or fraud" (p. 8). Yet, they cite no general findings or outline any empirically identified deficiencies that would serve to substantiate this claim on a wide scale across the field of parapsychology. Moreover, a careful examination of the studies contained in the parapsychological database would reveal that parapsychological experiments are specifically intended (by the way in which they are methodologically designed) to address and exclude ordinary factors such as those listed by Reber and Alcock. But since they admit that they did not actually examine the database, one can only figure that Reber and Alcock are simply making a totally unsubstantiated assumption that such factors are indeed present and confounding the data.

Reber and Alcock (2019) then proceed to identify "four fundamental principles of science that psi effects, were they true, would violate: causality, time's arrow, thermodynamics, and the inverse square law" (p. 8). One thing that is particularly important to realize about the arguments that Reber and Alcock make with regard to each of these principles is that they would seem to be reasonable *only if the assumptions they make about psi are valid* (in the sense that they have been formulated based on what has been learned about psi functioning from empirical results and observations). However, there is reason to think in each instance that their assumptions are not valid.

Causality

Reber and Alcock (2019) firstly argue:

> Within the study of psi, there are no causal mechanisms, and none have been hypothesized. Worse, there is virtually no discussion over whether the claimed effects have singular or multiple causal mechanisms or why the purported findings lack coherency. (p. 9)

But without having consulted the parapsychological database, how can Reber and Alcock know whether this claim has any merit? Had they actually consulted the database, they would have learned that it is without merit: Consideration of these issues would largely fall into the area of theoretical development within parapsychology, and even a casual survey of the parapsychological literature would reveal that there has most certainly been an ongoing effort to consider them and subsequently develop theories with testable hypotheses (see, e.g., Evrard & Ventola, 2018, 2019; May & Marwaha, 2015; Stokes, 1987).

And as Cardeña (2018) and Tressoldi (2012) both point out, one possible reason why the findings seem to lack coherency is because some of the experiments may not have initially had sufficient statistical power to be able to adequately detect the fairly small effects associated with psi (considering the relatively low magnitude of the effect sizes listed in Table 1).

Being mindful of the low magnitude of psi effects is especially pertinent in the case of psychokinesis (Bösch, Steinkamp, & Boller, 2006; Radin & Ferrari, 1991), where the effects are typically found to reflect only small fractions of a meanshift, on average. Consideration of this finding would offer an answer to a question that Reber and Alcock (2019, p. 9) ask about this phenomenon: "If psychokinesis affects the roll of dice in a psi lab, why not at craps tables?" Given how small PK effects tend to be, it is likely that they would be too weak and intermittent to be able to regularly overcome the much larger odds that are shifted in favor of the house (which is what keeps casinos in business). Thus, a casino craps table would likely be a poor testing ground for PK; such an illustrative display of "psi in everyday life" would only seem plausible if one does not take the findings of the parapsychological database into adequate account.

Reber and Alcock (2019) further claim that "[t]here are no patterns" in parapsychological findings (p. 9). But again, how can they know whether this claim has merit, without consulting the parapsychological database? Upon consulting it, they would have again learned that this also has no merit: Parapsychologists have actually found a fair number of significant correlations between psi and certain psychological variables, which have

exhibited enough consistency so far to suggest that an underlying pattern may be involved. One of them (often referred to as the "sheep–goat" effect; Schmeidler & McConnell, 1958) involves the apparent correlation between an individual's own personal beliefs regarding ESP and their subsequent performance on an ESP test (Lawrence, 1993; Palmer, 1977, pp. 193–195; Storm & Tressoldi, 2017). Another involves the correlation between extroversion and ESP test performance (Honorton, Ferrari, & Bem, 1998; Palmer, 1977, pp. 185–188; Palmer & Carpenter, 1998; Zdrenka & Wilson, 2017).

One aspect of psi performance also seems to exhibit a notable parallel with the serial position effect, a pattern observed in psychological studies of memory and recall (Reed, 2004, pp.102 –103; Thompson, 1994). When tasked with reciting words from a memorized list, participants in these studies have often been found to accurately recall many of the words at the beginning and at the end of the list, with relatively few in the middle—a pattern that takes the form of a widened U-shaped parabola. In a similar fashion, psi test performance has been found in several studies to initially start off high, exhibit a decline, and then modestly increase again at the end; this pattern also follows a widened U-shaped parabolic trend (Bierman, 2001; Dunne, Dobyns, Jahn, & Nelson, 1994; Pratt, 1949; Rhine, 1969; Storm et al., 2010a, p. 478). This similarity is one of the things that seems to suggest that psi may not be so different from more ordinary forms of human behavior.

Time's Arrow

Reber and Alcock (2019) next point out: "Within parapsychology, time is turned upon itself, most glaringly in precognition" (p. 9). While a reversal of the arrow of time would seemingly pose a potential explanatory problem, two considerations should be made in this regard: First, as some physicists have previously pointed out (Feinberg, 1975; Sheehan & Ibison, 2011; Targ, 1974), a number of theoretical equations in physics are time-symmetric, allowing for both forward and backward temporal solutions. Thus, time reversal would seem to be posited mathematically, although it remains uncertain whether the backward solutions (which are typically disregarded) might have any meaningful significance apart from this.

This leads to the second consideration: The issue of retrocausality still remains an open issue of debate in physics, as evidenced by the fact that at least three conferences sponsored by the American Institute of Physics have recently been held on this topic within a ten-year period (Sheehan, 2006, 2011, 2017). Thus, the matter of whether some form of time reversal is possible or not would still seem to be open and unresolved as of yet.

Thermodynamics

Again referring to precognition, Reber and Alcock (2019) then argue: "If the future affected the present, it would violate the thermodynamic principle that energy cannot be created or destroyed in an isolated system" (p. 9). This argument seems to be inherently based on an assumption that precognition necessarily operates by a mode involving the transfer of some type of energy-based "signal" through space and across time. But does the evidence tend to indicate that such a mode is operating in ESP? Quite to the contrary, it would seem that when the parapsychological database is examined, there actually is not much clear evidence for that possibility at all.

As one example, there have been studies that have found that remote viewing continues to function well even when the participants have been electrically shielded by sitting inside a Faraday cage (Puthoff & Targ, 1976), or have been taken down in a diving submersible to ocean depths of several hundred meters—depths that are quite effective at attenuating signals in the extremely-low frequency range of the electromagnetic spectrum (Puthoff, Targ, & May, 1981; Schwartz, 2015, pp. 189–194). Arguably, a corresponding attenuation in the accuracy of the participants' impressions of the ESP target would be expected under these conditions if the functioning of ESP was being mediated by some type of "signal," and the apparent lack of ESP attenuation observed in these results would suggest that such a "signal" process is not operating here. But since they did not consult the parapsychological database, Reber and Alcock have likely not taken this (or any other related findings and observations that seem to hint against a signal transfer process[2]) into account. From this, it can be argued that if precognition and the other forms of ESP do not operate via a signal transfer process, then there may not be a reason to necessarily assume that they involve the spontaneous generation and transfer of some type of energy, and thus, it is not readily apparent that they would necessarily violate the first law of thermodynamics.

Inverse Square Law

Perhaps containing the one (and only) point they make about psi in their rebuttal that is actually consistent with the findings of the parapsychological database, Reber and Alcock (2019) lastly argue: "In telepathy, the distance between the two linked persons is never reported to be a factor, a claim that violates the principle that signal strength falls off with the square of the distance traveled" (p. 9). Here again, their use of the phrase "signal strength" would imply that Reber and Alcock are inherently assuming that ESP operates by a process involving the transfer of an information-

or energy-based "signal." But as with the case for thermodynamics, this claimed violation of the inverse square law would pose a serious issue *only if the evidence did seem to clearly indicate that such a process is involved in telepathy and the other forms of ESP.*

One might also note that, on the surface, the lack of attenuation with spatial distance in telepathy would appear to be akin to the kind of nonlocal correlation that two entangled particles seem to exhibit, regardless of the spatial distance at which they are separated—an observation that would hint at a possible conceptual analogy with quantum mechanics (Atmanspacher, Römer, & Walach, 2002; Josephson & Pallikari-Viras, 1991; Radin, 2006; Tressoldi, Storm, & Radin, 2010). Reber and Alcock (2019) take issue with such a possibility, stating that such an analogy ". . . won't work. In QM [quantum mechanics], there is no transmission of energy between the separated particles; it is only that they are 'entangled'" (p. 9). They do make a valid point in one respect, in that physical findings tend to indicate that it is highly unlikely that nonlocal correlations can be accounted for by some form of information or energy transmission between entangled particles (Salart, Baas, Branchard, Gisin, & Zbinden, 2008). But if the parapsychological evidence also does not clearly indicate that such a transmission process is involved in telepathy and the other forms of ESP, then this would not necessarily rule out an analogy with quantum entanglement and nonlocality.

In addition, it could be argued that such an analogy would seem to provide a useful means of conceptualizing ESP in terms of known physics, thereby making it seem less "paranormal." It would also offer a possible answer to a question that Reber and Alcock pose: "If telepathy exists, why are our brains not constantly abuzz with the thoughts of those around us?" (p. 9) This would indeed be an issue if it were clear that ESP operated by signal transmission, as one might expect in such a case that the supposed ESP "signal" would propagate outward from the telepathic agent in all directions, and could potentially be "received" by others in addition to the (presumably intended) percipient. But this is not what is often found in anecdotal accounts of telepathy (Feather & Schmicker, 2005; Rhine, 1981; Stevenson, 1970); instead, the telepathic connection often seems to be limited largely to the agent and the percipient. In a notable parallel, nonlocal correlations *extend only to particles that are entangled with each other.*

A potential issue that arises with such an analogy is that quantum nonlocality represents a known aspect of physics that is still not too well understood and seems to go against all common sense. As Reber and Alcock (2019) rightfully point out, "QM is a physical theory but not in the ordinary, Newtonian sense that we confront in daily life" (p. 9). Yet in spite of that, quantum mechanics has been extensively tested and found to be a valid

physical theory: There is now a good amount of experimental evidence to indicate that nonlocal correlations can (and do) take place between entangled particles at a distance (e.g., Giustina et al., 2015; Moreau et al., 2019; and references cited therein). Arguably, the very existence of such a seemingly strange phenomenon chould offer reason as to why one should not always rely strictly and solely upon superficial rhetoric (as Reber and Alcock do) when it comes to trying to determine what is possible and what is not. Common sense (upon which this kind of rhetoric is often reliant) would dictate that this kind of phenomenon should not happen. But there is now ample physical evidence that it does. Perhaps a similar consideration can now be made with regard to psychic phenomena on this basis, in light of the considerable amount of evidence for psi that has accumulated (Cardeña, 2018).

Implications

Is it then the case that "parapsychology cannot be true unless the rest of science isn't," as Reber and Alcock (2019, p. 9) contend? Perhaps not: An analogy with quantum mechanics would seem to offer a way to place psi within the conceptual realm of presently known physics, without grossly violating or relinquishing any of its established principles. There are also a number of parapsychological findings that seem to offer preliminary indication that psi exhibits correlations with known aspects of brain functioning, such as alpha wave activity, event-related potentials, and cerebral lateralization (Alexander, 2002; Broughton, 2015; Krippner & Friedman, 2010; Williams, 2015), suggesting that psi would not be inconsistent with what is known in neuroscience. These initial findings might eventually prove helpful in highlighting certain promising avenues that, with further development, could pave the way toward ultimately achieving an understanding of psi that is actually compatible with mainstream science.

And when one again considers how relatively small the effects tend to be (Table 1; Bösch et al., 2006; Radin & Ferrari, 1991), it may be realized that Reber and Alcock's (2019) claim that "if psi effects were real, they would have already fatally disrupted the rest of the body of science" (p. 9) is not likely to be valid at all. To a large extent, psi effects simply are not as strong and pronounced as Reber and Alcock seem to think they are. In being relatively small, it is unlikely that psi effects would pose much of a serious problem (if any at all) in affecting the findings of scientists on a broad scale.

Ultimately, Reber and Alcock (2019) wonder "why parapsychology still exists as a field of study. Why are some scientists still focused on the impossible?" (p. 9) The answer they try to offer relates to an impression received by Alcock that parapsychologists are motivated by a predisposed

and persisting belief in psi, which

> . . . is likely linked with a vague sense that science, hard-nosed and physicalist, lacks that mysterianist element found in religious or spiritual realms. The lure of the "para"-normal emerges, it seems, from the belief that there is more to our existence than can be accounted for in terms of flesh, blood, atoms, and molecules. A century and a half of parapsychological research has failed to yield evidence to support that belief. (p. 9)

This claim raises two questions: First, are the majority of parapsychologists really motivated by some type of religious or spiritual belief? One online survey conducted among the members of the Parapsychological Association in 2001 seems to indicate that the likely answer is "no" (Tart, 2003): Approximately half of the responding members had indicated that spiritual motivation *was not* a central influencing factor in their pursuit of the study of psi, and only about a third of them had indicated that spiritual interests were of some importance in their current parapsychological work. This would seem to suggest that Alcock's impression is not backed by much clear evidence.

Second, after a century and a half of research, could parapsychology be considered a "failed" science? It would seem that such a claim can only be maintained if one completely ignores the accumulated data in the parapsychological database (Cardeña, 2018). Moreover, in pondering this very question just over a quarter of a century ago, the late Charles Honorton (1993) had made the following observation, which should be carefully considered even now:

> If we were to apply the "century of failure" arguments . . . to academic psychology, we might as well conclude that psychology has failed in its mission: After a hundred years of relatively well-funded research, vigorous controversies continue over such basic phenomena as memory, learning, and perception. . . . And while it is widely assumed that consciousness is a by-product of brain activity, neither psychology nor physiology has produced, over the past 100 years, even an intelligible model of how biochemical processes could be transformed into conscious experience. Are psychology and physiology failed sciences? Of course not. The most successful sciences such as physics deal with relatively simple and invariant processes: electrons, for example, are interchangeable; they do not have individual personalities, intentions, emotional states, or motivations. The behavioral sciences must contend with extremely complex and variable biological systems that possess these and many other individual attributes. Nevertheless, these sciences have produced many achievements, and so has parapsychology, even though it has been forced to exist on the outskirts of established science with marginal resources. (p. 193)

Lastly, there is one answer to Reber and Alcock's question that they do not consider themselves, which is really quite simple: Perhaps parapsychology persists because there may actually be something to its empirical findings (Cardeña, 2018), and once their unfounded assumptions are set aside, maybe—just *maybe*—the phenomena seemingly implied by those findings are not as "impossible" as Reber and Alcock (2019; Alcock, 2010a) might think.

Conclusion

All of the points made here should make it amply clear that, in the end, Reber and Alcock's (2019) rebuttal is not particularly sound, containing many of the same unsubstantiated (and ultimately flawed) arguments that staunch skeptics have continued to echo about parapsychology throughout the years (Roe, 2017; Schwartz, 2011; Zingrone, 2004). Rather than parapsychology (as Reber and Alcock maintain, p. 9), it would seem that it is staunchly closed-minded skepticism which has learned nothing over time and "shows little evidence of progress" (Roe, 2017, p. 143). In light of this, an observation made by Zingrone (2004) would seem to be quite apt in the case of critical arguments made by staunch skeptics such as Reber and Alcock:

> Armchair criticism is not useful. Blind criticism—which sees neither its own flaws nor any consequences—is not useful. If critics wish to be heard they will have to progress methodologically, they will have to evolve. It is no longer enough merely to raise a dissenting voice. There must be substantive content in that dissent and a consciousness of the context in which that dissent is raised.

One should especially keep this in mind, when ultimately assessing the value of Reber and Alcock's (2019) rebuttal to Cardeña's (2018) article.

Notes

[1] This choice to not examine the parapsychological data carries a bit of irony in Alcock's case, because not so long ago he had actually urged others to focus on those data, as part of a claim he made that the data are weak and unreliable (Alcock, 2010b). Yet now, when Cardeña (2018) does focus on those data and science is seemingly responding to them (as one might infer from the publication of Cardeña's review in *American Psychologist*), Alcock chooses to willfully ignore his own advice.

[2] Detailed review of the other findings that hint against a signal transfer process in ESP is beyond the scope of this paper, although additional

discussion can be found in a separate paper by the author that is available through the Academia online preprint repository: https://www.academia.edu/37157173/Towards_Normalizing_the_Paranormal_On_the_Seeming_Incompatibility_of_Science_and_Psychic_Phenomena

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COMMENTARY

I Do Not Think That Word Means What You Think It Means: A Response to Reber and Alcock's "Searching for the Impossible: Parapsychology's Elusive Quest"

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Abstract—This paper presents a simple, neutral, unbiased framework for assessing scientific methodologies that serves as both a positive contribution to the literature and an implicit critique of Reber and Alcock's recent paper in the *American Psychologist* (2019). This is followed by an explicit critique of some of their key claims.

How Can We Distinguish Genuine Science from Pseudoscience?

Pretend for a moment that the vast literature on science versus pseudoscience[1] never existed, and ask yourself how we might clarify this distinction. The first step, of course, would be to clarify the meaning of *pseudoscience*.

One possible meaning that we can rule out straight away is that pseudosciences make false claims about the world. They may in fact do so, but so do legitimate sciences. The history of science is the history of discarded hypotheses, so to adopt this interpretation of "pseudoscience" would amount to an assertion that every superseded theory was pseudoscientific, and furthermore prompt the suspicion that much of contemporary science will, in time, likewise be shown to be pseudoscientific.

If there is to be a meaningful distinction between science and pseudoscience, it must focus on *methods* rather than on the conclusions that result from those methods. There is of course a literature that attempts to describe and define the scientific method; it, too, is quite vast and interrelated with the literature on the demarcation problem.

Earlier generations of theorists dreamed of developing a *prescriptive* account of the scientific method. Follow this recipe, and you're doing objective, clear-eyed science. The apogee of such attempts was associated

with the so-called "Vienna Circle" in the early 20th century, with later theorists gradually retreating from the grand verificationist ambitions of the logical positivists (Oldroyd, 1989). Contemporary positive accounts of science tend to be more descriptive rather than prescriptive,[2] in recognition of the diversity of the sciences and the relative lack of universal methodological features (Laudan, 1983).

So far, so vague. In the absence of a precise universal recipe for conducting science, I propose that we can shed light on the distinction between science and pseudoscience by means of a possible worlds analysis applied to specific instances. Allow me to elaborate.

A "Possible Worlds" Analysis of the Demarcation Problem

Let me propose a couple of working definitions to allow this analysis to proceed.

- *In any possible world, a particular method is "scientific" if it is well suited to establishing the truth or falsehood of a particular empirical claim about that world.*
- *Conversely, in any possible world, a particular method is "pseudoscientific" if it is not well suited to establishing the truth or falsehood of a particular empirical claim about that world.*

Note the neutrality of these definitions. There is no prior judgment about the truth of any empirical matter, just a pragmatic question as to whether the proposed method could plausibly establish the truth or falsity of particular claim.

The classic example in such discussions is astrology, so let's see how this analysis would treat it. Consider two superficially identical possible worlds, wherein the general tenets of astrology are true in one world (call it A_T) and false in the other (call it A_F) (Table 1).

As is readily apparent from Table 1, the only approach that fares well in this analysis is an objective, unbiased examination of the data. Hardly surprising, and yet it needed to be said. I leave it to the reader as an exercise to analyze other contentious domains in a similar fashion.

Before we move on, it should be acknowledged that I have made little attempt to justify this analysis, hoping that the clarity and non-dogmatic nature of this approach should require little justification. These are, after all, the professed values of both science and philosophy, and yet the contrast between the approach described here and the extant skeptical literature is stark.

TABLE 1
Possible Worlds Analysis of Astrological Methodologies

Proposed Method	Possible World	Fit for Purpose?
Broad acceptance of astrological doctrines, coupled with intuitive exploration of individual application (i.e. typical astrological practice).	A_T	May yield valid insights, depending on the efficacy of intuitive assessments.
	A_F	Prior acceptance of false doctrines hopelessly undermines subsequent intuitive assessments, which are easily confounded by confirmation bias and similar factors.
A priori rejection of astrology based on a disbelief in the possibility of celestial influences on human behavior.	A_T	Prior commitment to the falsehood of astrology curtails examination of valid phenomena.
	A_F	Rejection of false, outmoded superstitions avoids wasting time and energy that could be directed to productive pursuits.
Large-scale studies comparing standardized personality assessments with birth data.	A_T	Independent verification of astrological tenets expands our scope of knowledge and suggests entirely new avenues of research.
	A_F	Authoritative falsification of astrological superstitions confirms the irrationality of such beliefs.

Is Parapsychology Impossible?

Reber and Alcock (2019) allege that parapsychological claims are impossible, remarking:

> Paranormal effects violate basic scientific principles in a host of nontrivial ways, ways that paranormalists either do not consider or, when they do, seemingly fail to grasp the magnitude of the problems. Four of the most egregious are violations of *causality, time–causality reversal, thermodynamics,* and *the inverse square law.*

At the outset, it is unclear whether they understand the logical meaning of impossibility, or are merely indulging in hyperbole, because "impossibility" and "violations of basic scientific principles" are two very different things. Genuine impossibility means direct contradiction, not merely something that is weird or hard to explain.

More tellingly, historically speaking, *every major paradigm shift in science was literally a violation of the basic scientific principles of the time.*

Heliocentric theory violated the basic scientific principle of geocentrism. Evolution by natural selection violated the basic scientific principle of the immutability of species. And so on.

But perhaps this is just an unfortunate turn of phrase on their part, so let us examine these claims in a little more detail, starting with the last two. Are there possible worlds with different laws of thermodynamics, or none at all? Undoubtedly. Are there possible worlds that violate the inverse square law? Certainly. For all we know, our actual world might be among these worlds. It is entirely possible that future scientists will discover violations of thermodynamics and the inverse square law, either here on Earth, or perhaps in a strange world orbiting a distant star.

Now let's turn to the first two alleged problems, the lack of a causal mechanism and time reversal/flipping of cause and effect. The lack of a causal mechanism in contemporary parapsychological theories could simply be attributed to the immaturity of our current understanding, and does not even fall within the category of violating scientific principles, let alone genuine impossibility. Moreover, time reversal/flipping of cause and effect are not just logically possible, but actively discussed in contemporary physics (for example, Brukner, 2018).

Of course, if Reber and Alcock have the courage of their convictions, we can look forward to a blistering attack on modern theoretical physics on these grounds, not to mention violations of a laundry list of "basic scientific principles," defined as principles that domains other than modern theoretical physics have in common at present. That would really be something to see!

Moreover, and somewhat astonishingly, Reber and Alcock go on to insist that parapsychological claims should not be held to the same standards as those of other sciences:

> Statistician Joel Greenhouse (1991) maintained that "parapsychologists should not be held to a different standard of evidence to support their findings than other scientists" (p. 388). We dispute this proposition in the strongest of terms. When confronted with "miraculous" claims, standard procedure is precisely the opposite. Claims that contradict, dispute, or even gently call into question accepted and empirically established findings and models are, and must be, held to a higher standard.[3]

Findings and models[4] are very different things, so let's treat them separately. In the first place, evidence is evidence: It is either reliable in the sense of accurately representing reality or it is not. The standards of gathering evidence have absolutely nothing to do with any associated theories or models. And different instances of evidence do not contradict each other: The experience of having seen black swans does not contradict the experience of having seen white swans.

Moreover, it is well understood by philosophers of science that theories are underdetermined by data.[5] Logically, any finite collection of data can be explained by an indefinite number of theories. And this is no mere technicality: The evidence that supported Newton's mechanics also supported Special and General Relativity.

A Final, and Somewhat Personal, Word

I have consciously borrowed this heading from Reber and Alcock's paper to conclude on a more inclusive and conciliatory note. We live in strange times, in which the concept of truth itself has come under attack in the political sphere, and the open, unbiased discussion of some sciences has become all but impossible thanks to the propaganda and political lobbying of certain business and religious groups.

It is tempting in such trying circumstances to retreat into tribalism, to perceive unfamiliar voices as threats, to close our minds to different perspectives and new ideas. But this is not how science and society can progress and evolve.

I like to think that the neutral, possible worlds–driven approach that I outlined earlier in this paper may, with suitable adaptations, be of value not just in addressing alleged instances of pseudoscience, but any set of rival claims. Through adopting a neutral framework for assessing and resolving rival claims, open dialogue becomes possible, with mutual understanding following in its wake.

Notes

[1] Frequently referred to as the "demarcation problem". My purpose in putting aside this literature is to avoid being drawn into familiar frameworks and disputes, and to undertake this discussion with as few encumbrances as possible.

[2] See, for example: https://undsci.berkeley.edu/article/scienceflowchart

[3] In other words, Reber and Alcock would have us believe that extraordinary claims require extraordinary evidence. For a commentary on this notion, see Deming, D. (2016). Do Extraordinary Claims Require Extraordinary Evidence?, *Philosophia, 44*, 1319–1331.

[4] I prefer the language of "evidence and theories" to connect more directly with the philosophical literature.

[5] The *Stanford Encyclopedia of Philosophy*, as usual, provides a capable overview: https://plato.stanford.edu/entries/scientific-underdetermination/

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COMMENTARY

Should We Accept Arguments from Skeptics to Ignore the Psi Data? A Comment on Reber and Alcock's "Searching for the Impossible"

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Abstract—Reber and Alcock have recently made a sharp attack on the entire psi literature, and in particular a recent overview by Cardeña of the meta-analyses across various categories of psi. They claim the data are inherently flawed because of their disconnect with our current understanding of the world. As a result, they ignore the data and identify key scientific principles that they argue clash with psi. In this Commentary, I argue that these key principles are difficult to apply in areas where our understanding remains poor, especially quantum mechanics and consciousness. I also explore how the psi data may fit within these two domains.

Introduction

Recently, the journal *American Psychologist* published a paper by Etzel Cardeña that summarized the meta-analyses on various modes of psi and provided as well historical and theoretical background (Cardeña, 2018). Cardeña's paper is most notable with its comprehensive approach. The presented meta-analyses give us perhaps the best bird's-eye view of psi research to date. The combined studies include various modes or categories of psi, as well as different experimental designs for each one. In the paper, Cardeña claims that the overall evidence "provides cumulative support for the reality of psi, which cannot be readily explained away by the quality of the studies, fraud, selective reporting, experimental or analytical incompetence, or other frequent criticisms" (Cardeña, 2018, p. 1). He also notes that the rigor of the psi experimental methodology has increased with time, often including analyses for possible publication bias as well as the quality of the studies.

Possibly because psi remains very controversial, *American Psychologist* followed with another paper, by Arthur Reber and James Alcock, that sharply criticized Cardeña's paper, as well as the field as a whole (Reber & Alcock, 2019a). However, it would probably be more accurate to say that they dismissed all of the psi research that has been performed and published to date. In their critique, Reber and Alcock ignore the data Cardeña presents and instead argue why real psi effects simply cannot exist. Although they do not explicitly acknowledge that they ignored the data in their paper for *American Psychologist*, they do make this clear in a companion essay:

> We did not examine the data for psi, to the consternation of the parapsychologist who was one of the reviewers. Our reason was simple: The data are irrelevant. We used a classic, rhetorical device, adynaton, a form of hyperbole so extreme it is, in effect, impossible. Ours was "pigs cannot fly"—hence data that show they can are the result of flawed methodology, weak controls, inappropriate data analysis, or fraud. (Reber & Alcock, 2019b, p. 8)

Let's at least give them this: It's not every day we encounter an argument that invokes scientific principles to make the case for ignoring the data. Of course, this strategy of argument might worry anyone familiar with the history of science (or just about any aspect of science). But Reber and Alcock are unworried. They hinge their argument on what they view as the conflict between the psi data and four key scientific principles: causal mechanism, time's arrow, thermodynamics, and the inverse square law. The authors then proceed to discuss each of these areas of physics and how the psi data clash with it.

In my paper, I will focus on Reber and Alcock's (2019a) attack on psi, rather than on Cardeña's summary overview. In the next section, I'll take a closer look at their claims on the ways that psi conflicts with established scientific principles. I'll follow that section with more discussion of quantum mechanics. After that, I'll take a critical look at some of the ways that Reber and Alcock characterize the psi research. Next, I'll examine their argument that psi cannot be real on the basis of David Hume's argument against miracles. I'll follow this with a section on the persistent mystery of consciousness. A brief conclusion is provided at the end.

Psi versus Four Scientific Principles

Reber and Alcock (2019a) list four crucial ways that psi conflicts with our scientific understanding: 1) lack of a causal mechanism, 2) time reversal and the flipping of cause and effect, 3) violation the laws of thermodynamics, and 4) violations of the inverse square law. One red flag right off the bat is that Reber and Alcock do not justify any of these criteria from the

philosophy of science literature that concerns the demarcation question. Perhaps they think these four principles are obvious and that everyone should agree on them. But the fact that Reber and Alcock make no attempt to fit it within the relevant literature raises the possibility that their list is an ad hoc construction designed only to attack psi, and has no relevance for science in general. If so, their justification for ignoring the psi data would seem precarious. And suppose there are non-psi theories that clashed with one or more of their selected scientific principles? Would they be prepared to attack them as well? In any case, let's consider each of these principles in turn.

Lack of causal mechanism. With regard to this first principle, the authors boldly declare: "Science is mechanistic; reliable phenomena are viewed in the context of bridging principles that allow for the identification of causal links for observed effects" (Reber & Alcock, 2019a, p. 2). But one might wonder about cases where the mechanisms or causal links are not yet uncovered. That is, perhaps today we observe something that we cannot account for with a mechanism, but perhaps later we will. Can't we develop something preliminary or speculative, that eventually gets us toward a more developed theory? Reber and Alcock apparently rule this out, at least for psi. Unless the mechanism can be specified, or analyzed in the context of mechanisms we currently understand, the data must be faulty.

But strangely, just a few words later, Reber and Alcock pivot and recount the example of Newton's law of gravity and its apparent action at a distance. This was considered suspect, they explain, until Einstein's richer theory of general relativity came on the scene. So, on one hand, they argue that the psi data cannot be true because no causal mechanism has been identified. But their argument proceeds to include a famous example of a useful theory that did not specify a mechanism for a very long time. They go on to list other examples of preliminary theories that went on to be better developed and accepted over time. But because no causal mechanisms have been identified with parapsychology (at least so far), the experimental findings must be wrong. So, with this inconsistency right out of the gate, Reber and Alcock make a bit of a stumble.

But is it the case that all scientific theories simply must identify a causal mechanism? Perhaps this is a reasonable characterization for classical physics, but this is not the case with quantum mechanics. In the standard interpretation of quantum mechanics, you have a wave function that is described by the Schrödinger equation, until a measurement is taken, and then the wave function "collapses" into the experimental observations.[1] No one has as yet suggested a mechanism for this wave function collapse. There are in fact so many unresolved questions (such as what counts as

a measurement) around this notion of collapse that finding a mechanism might be the least pressing issue among quantum physicists.

Of course, there have been efforts to move away from the standard or Copenhagen interpretation. There are, for example, objective collapse theories, but these don't identify mechanisms of collapse either. There is also the hidden variables approach, which is usually associated with David Bohm's guidance equation. And as a matter of fact, Bohm opposed the idea that quantum systems could be understood in mechanistic terms. Consider his (along with his colleague Basil Hiley) description of a quantum system:

> The relationship between parts of a system . . . implies a new quality of *wholeness* [italics in original] of the entire system going beyond anything that can be specified solely in terms of the actual spatial relationships of all the particles. This is indeed the feature which makes the quantum theory go beyond mechanism of any kind. (Bohm & Hiley, 1993, p. 58)

Another interesting area obviously relevant to the psi data is the area of consciousness. Currently there is no known mechanism for generating consciousness. As I'll discuss later, some philosophers of mind consider the possibility that consciousness is fundamental in some sense. Thus, there are at least two interesting areas of inquiry that apparently do not lend themselves to mechanistic frameworks: quantum mechanics and consciousness. And it so happens that the psi data appear to fall into the domains of both of these.

Time reversal and the flipping of cause and effect. Next, Reber and Alcock argue that the mode of psi known as precognition requires a sort of time reversal that turns around the essential order of cause and effect. With regard to precognition, the authors are quite categorical. "Nowhere in the rest of science," they claim, "not even quantum mechanics, where a host of strange effects like quantum entanglement are accepted as real, is such a notion even considered" (Reber & Alcock, 2019a, p. 3).

But this is quite wrong. Cardeña mentions two influential quantum physicists who have considered exactly that: David Bohm and Henry Stapp. The physicist Bohm has proposed that quantum systems might be governed by an underlying nonlocal field, characterized by potentialities. Further, he has suggested that precognition may involve an ability to perceive these potentialities (Bohm, 1996, pp.131–132). That is, instead of information traveling backward in time, Bohm suggests we are simply aware of current probabilities of future events. Also, Henry Stapp (2017) makes a similar conjecture. However, Stapp proposes that precognition might reflect an ability to slightly bias the Born probabilities so that events unfold according to (perhaps unconscious) mental intention (Stapp, 2017, p. 77).

It is also the case that Roger Penrose, a rather famous physicist and mathematician whom Reber and Alcock cite in their paper, has collaborated with Stuart Hameroff on a framework where conscious experience is generated through quantum processes within the brain. In their proposed model, conscious experience emerges from a sort of quantum computing within the brain's microtubules. But especially important for our purposes here is that Penrose and Hameroff have suggested that their model may be consistent with temporal anomalies of the sort reported by Bem (Hameroff & Penrose, 2014, p. 63).

Reber and Alcock simply dismiss Sheehan's (2015) exploration of the possibilities of retrocausality. However, as Sheehan (2015) notes, there is currently no consensus on the right interpretation of quantum mechanics, and some interpretations do seem consistent with some notion of retrocausality. He specifically discusses Cramer's (1986) framework inspired from earlier work between John Wheeler and Richard Feynman. Cramer's transactional interpretation obviates the necessity of measurement to "collapse the wave function." According to his theory, observable quantum results are the result of a "handshake" of two waves of differing temporal orientation, one moving forward in time and the other one backward. Kastner (2012) proposes that these waves actually exist as possibilities outside of physical spacetime.

The violation of the laws of thermodynamics. Next, Reber and Alcock claim that psi violates the laws of thermodynamics in two broad classes of experiments. In the case of precognition, they argue that this class of experiment presumes "a substanceless future has an impact on choices made by a material human in the present." They note that this would require creating matter or energy out of a world "lacking ontological status and having no existential reality" (Reber & Alcock, 2019a, p. 4). To my knowledge, no psi advocate (or anyone else) has proposed anything like this. (Reber and Alcock provide no citations on this.) I don't see how precognition entails that kind of story. In any case, I've already touched on a number of ways theories in quantum mechanics might support precognition.

These authors also claim that psychokenisis conflicts with the laws of thermodynamics. But they don't explain how. Instead, they move on to argue that the small effects require meta-analysis, which apparently for them makes it inherently suspect.[2] They next argue that if psychokinesis were indeed real, it should be exploitable in casinos. This is a fair point, but not a compelling one. Casinos have drastically different environments from the laboratories producing the experimental results. And it seems reasonable to me that psychokinesis is sensitive to changes in the environment. Also, the evidence on psychokinesis appears largely attributable to especially

talented participants. Further, the reported effects sizes are so small, using such anomalous perturbation would likely require sitting for a relatively long time. But casinos are not hospitable environments for maintaining calm and concentration over relatively long periods.

Violations of inverse square laws. Reber and Alcock also argue that the invariance of psi effects with respect to distance is also disqualifying. Of course, it is the case that an inverse square relationship generally characterizes all physical forces. However, quantum entanglement is not subject to such a constraint, and this fact has intrigued psi researchers. Could this be an important clue on the nature of psi? The skeptics are quick to dismiss the possibility. In their words: "There is no claim of a transmission of energy between the separated particles, only that they are 'entangled'" (Reber & Alcock, 2019a, p. 4).

It is true that quantum entanglement as most physicists understand it does not allow for a novel form of information or energy transmission. But energy or information transmission might not be required for some forms of psi. Telepathy or remote viewing, for example, perhaps only involves nonlocal correlations between processes in our unconsciousness and the environment. And as I've noted above, quantum physicists such as Bohm and Stapp have considered that precognition and presentiment might reflect the ability to sense probabilities of future events. This more probabilistic aspect of reality would likely have nonlocal features. Thus, possible interpretations currently on the table could support some forms of psi despite such violations of the inverse square relationships.

In addition, Bohm (1986) explores a framework that would support nonlocal features in anomalous perturbation. In Bohm's implicate order framework, mental intention might influence the underlying quantum field, characterized by potentialities and "active information," and could in turn influence the behavior of the particles governed by that field. All in all, the nonlocal behavior of quantum systems appears to keep the door open for phenomena that do not follow inverse square relationships.

As I've noted, by choosing to simply ignore the data, Reber and Alcock are choosing a route that runs counter to the lessons that the history of science has shown us. Blocking out the data using a constructed set of principles seems highly problematic, given that our understanding of the world is incomplete. There are indeed good reasons to think that their preferred list cannot completely characterize the behavior of all facets of our reality. Further, their additional tendency to make odd or unnecessary assumptions around a given psi category in order to generate a clash with their principles doesn't inspire confidence.

On Quantum Mechanics

A chief problem that Reber and Alcock face is that the psi data arguably fall into areas that we continue to struggle to understand, such as quantum mechanics and consciousness. As they apply their list of principles in ways that conflict with psi, they appear to rely on a rather narrow reading of quantum mechanics. But the underlying ontology of quantum mechanics remains murky. As I noted above, some interpretations of quantum mechanics might be quite friendly to the psi data.

Also, the authors appear excessively willing to impose constraints on the theory that have little grounding in what we currently understand. Consider this line of argument (Reber & Alcock, 2019a, p. 5):

> Quantum mechanics is a theory about processes that occur at the microphysical level of individual particles *based on mathematical models* [italics original]. It can be understood only from the point of view of the mathematics; its coherence is in the formulae, not in everyday macroreality. Physicist Richard Feynman famously noted on more than one occasion, "It is safe to say that nobody understands quantum mechanics" (1965, p. 129), and mathematical physicist Roger Penrose, who argued that consciousness emerges in quantum mechanical processes in microtubules in neural tissue, put it succinctly: "Quantum mechanics makes absolutely no sense" (Penrose, 1989).

Notice the weak support the above quotes provide for their arguments. While it's true that our current understanding of quantum mechanics is based on the formalism of the Schrödinger equation, the quotes from Feynman and Penrose emphasize what we don't understand rather than what we do. Then Reber and Alcock follow with this:

> What both are expressing is that the axiomatic structure of quantum mechanics is grounded in the formalisms of logic and their representations are independent of any particular macroreality. (Reber & Alcock, 2019a, p. 5)

I can't find anything like that in the quotes from Feynman and Penrose. In any case, this statement is simply wrong. The wave function within the Schrödinger equation is highly context-dependent on all aspects of the quantum system, including the experimental apparatus. Any decision on how we design an experiment or what item of interest to observe has significant effects on the structure of the wave function.[3]

The problem Reber and Alcock have with trying to pin down quantum mechanics in ways that rule out experimental evidence they dislike can be illustrated in a related debate regarding the role of quantum mechanics

in biology, explored in McFadden and Al-Khalili (2014). They describe how a group of physicists at MIT, experts in quantum mechanics, became incredulous at research conducted at Berkeley on quantum behavior being found in conjunction with photosynthesis in plants. They believed the results to be impossible and quite hilarious, because the relatively warm and noisy environments within plants should be hostile to quantum behavior. However, they sent a colleague to investigate and he determined that the reports were accurate. Quantum coherence was key for transferring captured photon energy through such a relatively warm but highly organized interior of the leaf. In their book, McFadden and Al-Khalili (2016) describe how quantum behavior is expanding in other areas relevant to biological processes.

So, to characterize all of this, we have two non-physicists shouting from the hilltops that some things are absolutely impossible, while at the same time some well-regarded quantum physicists are exploring the possibility of those very things. Their refusal to examine the data is uncomfortably similar to the priests who refused to look through Galileo's telescope.[4] It's not really clear they understand what the physicists they cite are saying. And among their cited physicists, I find only one who explicitly argues that psi is inconsistent with known science and what we are likely to know: the cosmologist Sean Carroll. But Carroll is an odd choice for advising us on distinguishing science and pseudoscience.

The authors note that Carroll (2008) has "shown that no physical force could account for the results supposedly found in studies of psychokinesis." Not exactly. Carroll (2008) argued in an essay for online *Discovery* Magazine (and his blog) that our current understanding of physics is not consistent with the spoon bending form of psychokinesis. But while he didn't address the forms of psychokinesis presented by Cardeña, Carroll appears to be a card-carrying psi skeptic, and it's more than likely he would generalize his argument to apply toward other forms of psychokinesis. In response to Damien Broderick's challenge to look at the psi evidence, Carroll replied:

> Direct investigations into parapsychology are not completely irrelevant; however, given the fact that the phenomena are incompatible with the laws of physics that have been tested to exquisite precision in an enormous variety of circumstances, I think their relevance is pretty darn minuscule. [If] the choice is between believing in sloppy research/confirmation bias, etc., and believing that quantum field theory is violated in some tangible macroscopic way that has never been noticed in any physical experiment, I will surely choose the former. It's not really a close call. . . . I gave an argument—which nobody has refuted, or seemingly even tried to—that telekinesis is incompatible with what we know about how nature works. Given that, I'm not going to waste my time looking into the claims to the contrary. Life is too short to take every claim seriously. (Broderick & Goertzel, 2014, p. 26)

Essentially, Carroll's (2008) argument is that "in the modern framework of fundamental physics, not only do we know certain things, but we have a very precise understanding of the limits of our reliable knowledge." He proceeds with a summary of what we now know about particles and forces and on the extreme unlikelihood of a new force arising due to the copious experiments we've conducted. After arguing the impossibility that current known forces might be responsible for psychokinesis, Carroll reasons that it also is extremely unlikely that any new force might exist to account for psychokinesis.

However, in other work, Carroll recognizes that we remain fundamentally ignorant on a great deal that happens in the domain of quantum mechanics, as well as how our consciousness might interact with it. Consider a recent essay by Carroll published in *The New York Times* (Carroll, 2019). There, Carroll acknowledged: "Physicists don't understand their own theory any better than a typical smartphone user understands what's going on inside the device." He goes on to characterize the mystery in the following way:

> When we're not looking, they [quantum objects] exist in "superpositions" of different possibilities, such as being at any one of various locations in space. But when we look they suddenly snap into just a single location, and that's where we see them. We can't predict exactly what that location will be; the best we can do is calculate the probability of different outcomes.
>
> The whole thing is preposterous. Why are observations special? What counts as an "observation," anyway? When exactly does it happen? Does it need to be performed by a person? Is *consciousness* [italics original] somehow involved in the basic rules of reality? Together these questions are known as the "measurement problem" of quantum theory.

Carroll here appears to acknowledge not only that we remain ignorant at a deep level about quantum mechanics, but that our consciousness might be involved in a subtle way. This view is rather difficult to reconcile with his hostility to looking at the psi data.

And Carroll is a controversial choice to cite on the nature of pseudoscience for another reason: He is a strong and well-known advocate of Everett's many worlds theory. Briefly, Everett argued thata we should not go beyond the Schrödinger equation in explaining quantum behavior. And according to his view, each possible observation is instantiated. We should interpret quantum mechanics therefore as a continuous branching of our universe into countless other universes.[5] However, because these are separate, they cannot be observed or tested. One might think that this presents a falsification problem. Many physicists do think this, but not Carroll. He has argued that falsification is likely an overrated virtue for theories of a certain class (Carroll, 2018).[6]

Carroll has also explored some very interesting possibilities within the Everett framework. In an interview, Carroll discussed joint work with Alan Guth, where different universes might co-exist with different arrows of time (Sokol, 2016). Carroll reveals in the interview that an important motivation was the question of why time's arrow points in one direction. "There's no such thing, at a very deep level, that causes [must] precede effects," says Carroll (apparently demoting one of Reber and Alcock's key principles). The work is highly speculative, yet nevertheless explores how different pocket universes manifest time moving forward or backward.[7]

My aim here is not to criticize the many worlds interpretation, although it is true that I'm not an advocate. I do believe there is value in putting radical ideas on the table, especially in areas that resist our efforts to explain. That said, my view is that the weight we assign to likely explanations should be proportional to the evidence provided, and in that respect many worlds falls short. But here I am mainly curious how Carroll, an advocate with a radical theory with no evidence and who brushes aside issues of falsifiability, somehow manages to play a role as an authority on pseudoscience and psi, the latter for which he has little knowledge.

But now I'd like to consider how some of Carroll's theories might fare with the scientific principles that Reber and Alcock used to dismiss the psi data. Would they insist that Carroll identify a mechanism through which the universe continues to split? (I am unaware of any mechanism being introduced.) How would their arrow of time criteria work in a theory that posits different universes with time moving in different directions? (I've already noted that Carroll doesn't seem to hold the "arrow of time" at the same level of esteem as Reber and Alcock.) Also, I would very much like to know: Given the rather extraordinary claims of the multiverse theory, would Reber and Alcock insist on extraordinary evidence?

A Poor Characterization of the Psi Literature

We've seen that Reber and Alccok will likely have difficulty applying their key scientific principles in other areas of science we currently understand poorly. With that in mind, let's return to their characterization of the psi literature. As I've noted, they simply dismiss it in its entirety.

> Claims of evidence for psi are announced, only to later fall into disregard. Theories are enunciated and later abandoned. Methodologies are introduced, found wanting, discarded, and sometimes recycled. Each new procedure is introduced with claims of success, followed by failures to replicate, followed in turn by the publication of meta-analyses that are claimed to rescue the effect of interest. As excitement about each new procedure wanes, a resurgence of interest develops when another, apparently successful procedure is reported. (Reber & Alcock, 2019a, p. 1)

There isn't much justification for this sweeping claim apart from a controversial report from the National Research Council (Druckman & Swets, 1988).[8] We also can note that this report precedes all of the meta-analyses that Cardeña presents. Just a little further, these psi skeptics press their case and assert:

> The single feature that marks this extended period of research involving literally thousands of published papers, hundreds of conferences and meetings, and dozens of review volumes . . . is that *nothing has been learned.*

By their telling, the whole enterprise has been a waste of time. But no citation is offered to substantiate the claim.

But later in the paper, they note that Greenhouse (1991), a statistician and psi critic, acknowledges that parapsychologists should not be held to a higher standard than other scientists. However, Reber and Alcock strongly disagree. They "dispute this proposition in the strongest of terms. When confronted with 'miraculous' claims, standard procedure is precisely the opposite" (Reber & Alcock, 2019a, p. 6). But then what do we make of their claims that the psi results are ephemeral and unrepeatable? If their characterizations of psi being riddled by failures to replicate are accurate, why is it necessary to abandon normal standards of evaluation? Science depends crucially on a "let the chips fall where they may" attitude toward the evidence. Apparently, Reber and Alcock are not prepared to accept such terms here. But then how can science progress if we are allowed to shift the standards for evaluation whenever it suits us? Naturally, such a position raises troubling implications for scientific inquiry much broader than psi. Can such a position be defended by those seeking some authoritative role in scientific discourse?

This sort of rhetorical back-flip illustrates the nature of how these authors inaccurately characterize the literature. I'll focus on another troubling example regarding their treatment of Daryl Bem.

We should note that Bem's (2011) precognition experiments were unusually innovative in a number of respects. Bem specified nine different experiments that time reversed various well-known psychological functions. In one example, participants were asked to choose between two curtains which one would reveal an erotic picture. Unknown to the participants, the picture was selected randomly by the computer after participants made their selection. In another case, Bem reversed a psychological priming effect in order to investigate the effect of a subminal message on participants—but after a selection was made by each participant (p. 633). Bem found statistical significance with eight of the nine time-reversed experiments. However, Bem also took the unusual step of making all of his software publicly available so that researchers could very quickly and easily get to

work on replication. Eventually, 90 different studies were performed on Bem's precognition experiments. While Bem's findings were not replicated in every case, the overall meta-analysis showed small but very statistically significant effects.[9]

The meta-analysis also revealed an intriguing pattern: Experiments associated with what Kahneman terms "thinking fast" modes of cognition were statistically significant, while those associated with "thinking slow" weren't. "Thinking fast" modes of cognition are generally unconscious processes, while more conscious mediated modes are associated with "thinking slow." This suggests possible links with recently developed theories, such as first-sight and psi-mediated instrumental response, that integrate psi with unconscious cognitive processes.

Reber and Alcock paint a different story. They acknowledge that Bem's (2011) findings generated a great deal of attention, which they attribute in large part to his relatively strong stature from previous work. But they cast some doubt on his results by noting that replications were hard to come by. But this is immediately followed by acknowledging that the meta-analysis demonstrated real (albeit small) effects confirming Bem. They don't bother discussing the apparent contradiction.[10]

Rather than Bem's original study or the meta-analysis that followed, Reber and Alcock focus their attention on a short extract of an interview with Bem taken from Engber (2017), an article on Bem's research as well as its greater impact for psychology in general. I found Engber mildly critical of Bem's findings, but in a relatively even-handed and honest way. Reber and Alcock remove this extract from a short interview with Bem:

> I'm all for rigor, but I prefer other people do it. I see its importance—it's fun for some people—but I don't have the patience for it. If you looked at all my past experiments, they were always rhetorical devices. I gathered data to show how my point would be made. I used data as a point of persuasion, and I never really worried about, "Will this replicate or will this not?"

But Reber and Alcock edited out a short sentence from the extract, as well as failed to provide some necessary context.

> "I'm all for rigor," he continued, "but I prefer other people do it. I see its importance—it's fun for some people—but I don't have the patience for it." It's been hard for him, he said, to move into a field where the data count for so much. "If you looked at all my past experiments, they were always rhetorical devices. I gathered data to show how my point would be made. I used data as a point of persuasion, and I never really worried about, 'Will this replicate or will this not?'"

As you can see, the original includes a sentence clarifying that Bem was adjusting to the difficulties of changing into a field where more attention is

paid to the underlying methods and data. His "past experiments," where his focus was not so much on replication, were those of his previous mainstream work. This point is reinforced in the original text as Engber adds immediately following the extract, "When Bem started investigating ESP, he realized the details of his research methods would be scrutinized with far more care than they had before." This is also an important recognition that psi studies typically receive more scrutiny than more conventional ones. And a mere three paragraphs down, Engber offered an illuminating exchange from a colleague of Bem:

> "Credit to Daryl Bem himself," Leif Nelson told me. "He's such a smart, interesting man. . . . In that paper, he [Bem] actively encouraged replication in a way that no one ever does. He [Bem] said, 'This is an extraordinary claim, so we need to be open with our procedures.' . . . It was a prompt for skepticism and action."

But Reber and Alcock leave out this admission that Bem acted aggressively to encourage replication. Thus, Reber and Alcock attempt to discredit Bem and the meta-analysis confirming his findings, not by finding flaws in the method or data, but through extracting an excerpt from an interview in such a way that suggests the opposite meaning from what was intended in the original text. We might ask, if psi is genuinely as bogus as these critics claim, why are such mischaracterizations necessary?

Is Psi a Miracle?

Let's recall Reber and Alcock's core argument against using conventional standards to test for psi: Psi should be seen as something miraculous. But what exactly is the basis for this claim? It is difficult to say, beyond their argument that the psi data are inconsistent with more conventional theories and frameworks. As I've noted, quantum mechanics and consciousness also deviate in fundamental ways from established frameworks, but these are seldom classified as miracles. So, what exactly constitutes a miracle and does psi qualify?

To clarify the problem, consider the following possibility in alternate history.[11] Recall that Einstein famously attacked the nonlocal implications of quantum mechanics, which he referred to as "spooky action at a distance." Consider Einstein using the same tactics as Reber and Alcock, insisting that the nonlocal behavior of quantum entanglement was impossible (violated relativity) and was therefore miraculous. (It seems plausible that many could have considered the violation of locality to be a violation of an established scientific principle in the same sense that Reber and Alcock try to establish in their paper.) Let's further suppose that Einstein simply dismissed any possible evidence supporting quantum entanglement. After all, he might

argue, Hume advises us that the likelihood of fraud or poor methodology is greater than the violation of a miracle. So apparently, labeling something 'miraculous,' according to Reber and Alcock's interpretation of Hume, gives one license to dismiss the data, no matter how much has accumulated and no matter how many different tests are devised. Clearly, we need to take a closer look at what Hume meant by 'miracle.'

For Reber and Alcock, and other psi critics, David Hume's argument against miracles is a dependable weapon in the war against psi.[12] I believe Hume's argument is indeed very formidable; however, I also believe the psi critics have used it carelessly. Hume's argument is aimed primarily at religious miracles, described in religious texts. These include such marvelous events as the dead rising from the grave, severed limbs growing back, the blind being cured of their blindness. The few non-religious miracles Hume mentions include lead floating in the air and sea monsters.

The heart of Hume's argument is the fallibility of human testimony. Hume lists the attributes of testimony that can be taken as credible and authoritative. These include testimony that agrees uniformly with other similar accounts, the manner of the delivered testimony, and the character providing the testimony. He puts great focus on the types of testimony that are uniform across many reports and that also agree with our own experiences. Hume then lists the ways that that testimony found in religious texts are found wanting. These typically arise in relatively remote areas where there are few witnesses. Testimony of a religious marvel often inspires a love of wonder or a kind of excited passion, and these he judges detrimental to more sober reasoning. Of course, he notes that dishonesty in testimony has occurred throughout history as well. Then Hume notes that religious miracles, such as raising the dead, clash strongly with the much more reasonable testimonies that we possess in much higher numbers and don't clash with our own experiences. Thus, the fallibility of human testimony leads one side to be much more lacking in evidence than the other.

But Hume wasn't addressing careful experimentation derived under laboratory conditions and ultimately evaluated through statistical techniques. This is something unacknowledged by the psi critics who borrow from Hume's argument. It is by no means clear how or why Hume's argument transfers to the laboratory, which employs methods to avoid the problems Hume describes, as well as sources of bias he doesn't.

However, while his argument is applied to the fallibility of testimony, Hume does provide us with something that does indeed have relevance for modern statistical evaluation:

> A wise man, therefore, proportions his belief to the evidence. In such conclusions as are founded on an infallible experience, he expects the event with the last degree of assurance, and regards his past experience as a full *proof* of the future existence of that event. In other cases, he proceeds with more caution: He weighs the opposite experiments: He considers which side is supported by the greater number of experiments: To that side he inclines, with doubt and hesitation; and when at last he fixes his judgement, the evidence exceeds not what we properly call *probability*. All probability, then, supposes an opposition of experiments and observations, where the one side is found to overbalance the other, and to produce a degree of evidence, proportioned to the superiority. A hundred instances or experiments on one side, and fifty on another, afford a doubtful expectation of any event; though a hundred uniform experiments, with only one that is contradictory, reasonably beget a pretty strong degree of assurance. In all cases, we must balance the opposite experiments, where they are opposite, and deduct the smaller number from the greater, in order to know the exact force of the superior evidence. (Hume, 1902, p. 50)

How is this inconsistent with the methods used to investigate psi? Cardeña summarizes more than 1,000 studies, which cover various modes of psi such as remote viewing and precognition. In some cases, the data are broken down into subsets to improve homogeneity. Combining the data of individual studies improves our ability to evaluate the probabilities that an effect might be real or spurious. The psi data, evaluated this way, escape the problems of fallible testimony that Hume describes.

But critics of psi would argue that Hume's argument implies that fraud is a greater likely explanation than some real effect. That is, psi skeptics tend to think that Hume's argument, which focused on the fallibility of testimony of a religious nature, can simply be transferred to the modern lab to account for findings that surprise them by invoking fraud.[13] But such a step requires greater justification. How can we simply extend the notion of false witness regarding religious miracles that occurred hundreds or thousands of years ago toward modern scientists and statisticians exploring in an unconventional direction? Of course, fraud in parapsychology has occurred, although no more than in other fields. But it's important to note that such fraud was uncovered by other parapsychologists, peers of psi researchers reporting suspicious results. The results that Cardeña reports, involving more than 1,000 studies accumulated over decades in different laboratories, would require an unprecedented vast conspiracy among researchers. Scientists generally are wary of conspiracy theories for good reason. Obviously, it would be impossible to maintain such a conspiracy on this scale, with peers of psi researchers peeking over their shoulders.

But perhaps Reber and Alcock simply hold that psi phenomenon

must be miraculous by definition. On the first page of their critique, they casually lump various modes of psi, such as precognition and ganzfeld, with non-laboratory examples of paranormal phenomenon, such as ghosts and tarot card readings. The authors make no effort to avoid conflating results obtained under controlled laboratory conditions, cumulated over decades, with other types of ostensible paranormal phenomena not addressed in Cardeña's overview. Perhaps Reber and Alcock are deliberately trying to muddy the picture. Or perhaps they simply view all of these phenomenon as the same kind of thing. Perhaps in their view, the laboratory data suggesting modest degrees of precognition or remote viewing can simply be lumped together with the sort of religious miracles that Hume dismissed. I would argue that the data Cardeña summarizes should stand on their own, without conflation with phenomena that are absent from the meta-analyses.

If we cast the notion of religious miracles aside, as well as other extraneous phenomenon not covered in the meta-analyses, what are we left with? Apparently, we have modes of anomalous cognition and perturbation with small effect sizes that are roughly in the ballpark with other psychological functions. Is there justification for placing these outside the boundary of what's possible? Or do we instead recognize these data, accumulated over decades under careful conditions, as simply something our current theories can't yet account for? I've already noted how the paradoxical behavior of quantum mechanics suggests interpretations that appear quite hospitable to psi. In the next section, I'll take up the problem of consciousness.

The Persistent Mystery of Consciousness

I've noted earlier that there is no known mechanism for how collections of non-conscious particles become conscious. This suggests consciousness would present a problem for at least one of Reber and Alcock's principles. In fact, the philosopher David Chalmers uses the notion of mechanism to help characterize what he terms the "hard problem of consciousness." According to Chalmers, the easy problems of consciousness are those that can be explained in terms of computational or neuronal mechanisms. The hard problem, on the other hand, is the problem of experience itself. Most philosophers of mind use a phrase suggested by Nagel (1974) to characterize this purely subjective aspect: there is *something it is like* to be a conscious organism.

This difficulty of putting subjective consciousness into some kind of analytical framework presents another problem for psi critics. Reber and Alcock consider it problematic that psi effects cannot be properly defined (p. 7). This is a critique that has come up before. As Alcock put it: ". . .

unlike the various domains of mainstream science, it deals exclusively with phenomena that are only negatively defined" (Alcock, 2010, p. 33). But consciousness doesn't fare any better on this score if Nagel's characterization is the closest we can come to a definition. The phrase "there is something it is like to be a conscious organism" obviously doesn't identify anything we can objectively test. And that is indeed the chief problem of consciousness: Its inherently subjective nature makes it very difficult (perhaps impossible) to fit it into our objective understanding of the world.

Chalmers, Nagel, and others go so far as to argue that a purely physicalist or materialist framework cannot account for consciousness. They have deployed a number of philosophical arguments to make their case, which we don't have space for here. We can note, however, that there is nothing in all of the mathematical equations that comprise our understanding of physics that even remotely hint toward how consciousness arises from non-conscious particles. Philosophers of mind such as Chalmers and Nagel argue that consciousness most likely is fundamental in some sense, not emergent from matter. They see this move as necessary because they see consciousness as essentially anomalous with respect to our conventional, physicalist understanding. But such philosophers of mind typically have little interest in religion (or psi for that matter). They are simply putting alternatives on the table that might be better able to account for consciousness. The upshot apparently is that we must accept our subjective experiences as real, but recognize the difficulty accounting for them in a purely physical framework.

The grounds that Reber and Alcock use to characterize psi as a miracle—based on its difficulty of being integrated into our scientific worldview—likely applies to consciousness. But if we accept our phenomenal experiences as real, the better choice would be to view consciousness as anomalous with respect to our conventional understanding. If we accept consciousness as anomalous, we are obviously on weak ground to dismiss other sorts of anomalous data closely linked to consciousness. And I see no reason to classify psi phenomenon as any more miraculous than our conscious experience. I submit that Reber and Alcock's characterization of psi as miraculous is unfounded. And a key component of their argument for dismissing the psi data collapses.

On the other hand, accepting the psi data may help us move forward in areas that we continue to struggle to understand. We might place less weight on interpretations of quantum mechanics that are inconsistent with psi. And our understanding of consciousness could be immeasurably deepened as well. While the psi data remain anomalous, the history of science suggests that this is simply not a good reason to ignore it.

Conclusion

Reber and Alcock (2019a,b) take what must be considered an extreme position: Dismiss the psi data presented by Cardeña (2018) and others on the grounds that they run afoul of key scientific facts. However, their extreme position can't be justified, primarily because current theories in such areas as quantum mechanics and consciousness do not appear to be constrained by such facts. The fields of quantum mechanics and consciousness are not well-characterized through mechanistic approaches, which have been used so successfully in classical mechanics. And arguably, the psi data capture phenomenon relevant to both consciousness and quantum mechanics.

Also, I submit that psi skeptics should consider more carefully the problem of consciousness. Our consciousness appears to be anomalous with respect to our conventional understanding of the world. It also appears to be the kind of thing that would also fare poorly with a number of key criticisms aimed at psi. If we take our subjective experiences as anomalous, as many influential philosophers of mind suggest, are we truly in a position to dismiss the psi data?

Notes

[1] The wave function consists of a large vector of possible observations for something of interest, such as the spin or position of a particle. And these possible observations are entangled with other possible observations of the quantum system.

[2] In a later section, they criticize combining individual studies into meta-analysis on the grounds that such meta-analysis, based on flawed individual studies, must remain flawed. However, they fail to identify what flaws the original individual studies have.

[3] Some have argued that the warm and noisy nature of our macro world likely rules out quantum effects. However, recent research in quantum biology challenges this view.

[4] This may be an unfair comparison to the priests, who were not themselves claiming to be scientists.

[5] There are various versions of Everett's interpretation, which I won't go into here. However, I believe I am capturing in broad strokes the rather straightforward version advocated by Carroll.

[6] This has led Baggott (2019) in a recent essay to note that Carroll and other advocates of the multiverse practice "post-empirical science," which Baggott suggests can hardly be distinguished from pseudoscience. See Woit (2018) for another critical look at Carroll at https://www.math.columbia.edu/~woit/wordpress/?p=9938

[7] So while Carroll notes that life is too short to take every claim seriously, it is presumably not so short that he can't explore extravagant theories that we have no way of testing.

[8] Skeptical bias and other limitations of the report have been documented by Palmer, Honorton, and Utts (1989), Bem and Honorton (1994), and Carter (2012).

[9] The combined 90 studies of the meta-analysis in Bem et al. (2015) reported a Z value of 6.40 and a p value of 1.2×10^{-10}. By combining only those experiments associated with "thinking fast," the results were a Z value of 7.11 and a p value of 5.8×10^{-13}.

[10] It is of course possible that individual studies could show little or only marginal statistical significance, yet would still contribute toward a very significant effect overall when combined into a meta-analysis, due to the relatively large statistical power that psi studies require. This is also the case with conventional psychology studies where effect sizes are relatively small or are influenced by a large number of factors.

[11] I am indebted to Julia Mossbridge for suggesting this comparison.

[12] Price (1955) was one of the first psi-skeptics to attack psi using Hume's argument. Hume's argument has also found its way into Wagenmakers et al.'s (2011) attack on Bem's (2011) findings of precognition.

[13] I do not find in Reber and Alcock (2019a, 2019b) this argument explicitly; however. arguments of this sort can be found in Price (1955) and Wagenmakers et al. (2011).

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COMMENTARY

Blind Watchers of Psi: A Rebuttal of Reber and Alcock

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Abstract—Parapsychology will only be accepted as part of mainstream science if physics can be extended to accommodate at least some so-called psychic phenomena. This paper disagrees with the argument of Reber and Alcock that these phenomena can be excluded a priori because they are incompatible with physics. On the other hand, it agrees with their claim that the phenomena cannot be explained in terms of *current* physics (e.g., relativity theory and quantum theory). Rather one needs an extension of physics which amalgamates these theories, this being an aim of mainstream physics anyway, with the new theory also linking to consciousness if this is regarded as a fundamental rather than incidental feature of the universe. One possible extension involves the idea that phenomenal space and physical space are amalgamated as part of a single 5-dimensional structure, the extra dimension being associated with mental (rather than physical) time. Such a model may be required to accommodate even *normal* mind, and incorporating further dimensions might then allow some *paranormal* phenomena. This could also relate to the extra dimensions invoked in some models of particle physics.

Introduction

During an evening walk in 1572, the astronomer Tycho Brahe noticed a bright light in the sky and his subsequent observations showed that its apparent position did not change as the Earth moved around the Sun. It therefore had to be at a great distance (outside the solar system) and it turned out to be an exploding star (a supernova). However, his claim was dismissed at the time because it contradicted the prevailing Aristotelian view that the heavenly spheres were the unchanging domain of the divine. Frustrated by those who had eyes but would not see, Brahe wrote: "O crassa ingenia. O coecos coeli spectators" [Oh thick wits. Oh blind watchers of the sky].

I thought of this story when I read the paper by Reber and Alcock (2019),

henceforth RA—indeed it inspired my title. I would not describe these gentlemen as "thick wits," and it is good that they are at least "watchers," in the sense that they follow the literature of the field, but they seem to be blinded by their commitment to an outdated view of physics. Actually their paper should be compulsory reading for all students of psychical research—not because of its conclusion (which is flawed in my opinion) but because it illustrates how reasoning can be befuddled by preconceptions. Of course, I have my own preconceptions and may also be befuddled but at least I have studied the evidence and appreciate the need to act like a judge (who is impartial) rather than a barrister (who presents only one side of an issue).

Of course, there are numerous papers attacking parapsychology, but this one is of particular interest because it purports to reject psi on the basis of *physics*. Since I am myself a physicist who has been interested in parapsychology for more than 50 years, I disagree strongly with this claim. Indeed, the purpose of this article is not to argue for the reality of psychic phenomena, since that can be found in the original article by Etzel Cardeña (2018), but to rebut the assertion that they can be excluded a priori on the grounds indicated by RA. On the other hand, I agree with some of their points, and it must be stressed that some parapsychologists are equally keen to sever any connection between psi and physics.

Even though I disagree with RA's conclusion, the fact remains that many of my physics colleagues (including some much more eminent than I) share their opinion and this has always bothered me. There are well-known exceptions, Cardeña mentioning some of them, but they are a minority. For example, my friend and (very smart) Ph.D. supervisor Stephen Hawking was skeptical of psi, even though he had read J. B. Rhine's books as a teenager. Of course, being smart is no guarantee of being correct and I console myself with the thought that I have studied the evidence more deeply and had experiences that my skeptical colleagues lack. Nevertheless, belief is a complicated process and spending half my time with people who take the existence of psi for granted and the other half with people of the opposite conviction (some even within the parapsychological community) can be perplexing. It is therefore important to understand the antipathy of physicists (even when it is represented by non-physicists like RA) and react to it respectfully, because I don't believe parapsychology will become part of mainstream science until it has been embraced by physics.

In this context, I should explain that I have my own model of how to expand physics to accommodate at least some phenomena labeled "psychic," and I will briefly touch on this later. Of course, the model is very speculative and may be wrong but at least it shows how physics might in principle be extended. And it is really no more speculative than some of the

ideas I have studied in my professional field of cosmology. However, while I can publish papers on the latter in mainstream physics journals, I doubt that I could ever publish my ideas about psi there. This does not mean that my cosmological ideas have been exempt from criticism. When I published one of the first papers on the anthropic principle in *Nature* with Martin Rees 40 years ago (Carr & Rees, 1979), it was dismissed by many colleagues as mere philosophy. However, with the growing popularity of the multiverse proposal (Carr, 2007), it has now become almost mainstream, so perhaps a similar change may happen in psychical research. The context is different but the sociological factors are the same.

To end this Introduction on a positive note, I should point out that there is evidence that physicists may be more open to the existence of psi than psychologists: A survey of U.S. and Canadian academics some decades ago found that 55% of physical scientists thought psi was possible, compared with 34% of psychologists (McClenon, 1982). Another welcome development is that, in addition to the specialist parapsychological journals, there are now a number of more general science journals that include articles about parapsychology. These include the *Journal of Consciousness Studies* (which in 2003 and 2005 devoted entire issues to parapsychology) and the *Journal of Scientific Exploration*.

The plan of this paper is as follows. The next section gives a historical overview of the antipathy of physicists to psychical research. The section following that analyzes the basis of this antipathy, and then "Reasons for Connecting Psi and Physics" argues that a link between psi and physics must nevertheless be forged. The following section addresses some of RA's criticisms, and the one after that, "Hyperspatial Models as a Possible Exension of Physics," provides a brief overview of my own attempt to extend physics using the "hyperspatial" approach. The last section concludes with some final thoughts.

Historical Overview of Antipathy from Physics

From the earliest days of psychical research, physicists who took the paranormal seriously and tried to link it to their professional field attracted hostility from their mainstream colleagues. William Crookes's publications on the subject were ridiculed, even though he was a most distinguished physicist and later became President of the Royal Society. His observations of materializations during experiments with Florence Cook were even attributed to poisoning by thallium—the element he had discovered! Oliver Lodge received a lot of criticism for publishing a paper on telepathy in *Nature*, and William Barrett's attempts to set up a committee of the British Association to investigate the subject were rejected outright.

Many physicists are antagonistic toward parapsychology in modern times. When the AAAS (American Association for the Advancement of Science) hosted a symposium on psi and physics in 1979, this attracted intense opposition from John Wheeler, who attempted to eject the Parapsychological Association from the AAAS with the battle-cry "Drive the pseudos out of science. . . . Where there's smoke, there's smoke" (Wheeler, 1979). At the time I happened to be his guest (in my cosmological capacity) in the Department of Physics at the University of Texas in Austin, but discretion got the better part of valor and I did not voice my disagreement too strongly!

More recently, Gerard 't Hooft, who won the Nobel prize for physics in 1999 and runs an anti-parapsychology website, has stated ('t Hooft, 2000):

> Modern physics seems to offer leeway to the paranormal. As a theoretical physicist, I must assert most emphatically that this leeway is only apparent. There is absolutely no way one can explain the paranormal in this fashion.

The aversion of some physicists to parapsychology was vividly illustrated some years ago by a furor involving the Society for Psychical Research's Nobel Laureate Brian Josephson. In October 2001 the UK Post Office issued a set of stamps commemorating the centenary of the Nobel Prize. This was accompanied by the publication of a brochure in which various UK laureates—including Josephson—were asked to provide a brief commentary on the area involved in their discovery. Josephson's suggested that quantum theory may one day lead to an understanding of telepathy and the paranormal:

> Quantum theory is now being combined with theories of information and computation. These developments may lead to an explanation of processes still not understood within conventional science, such as telepathy, an area where Britain is at the forefront of research.

This provoked some hostile responses. An article in the *Observer* contained an onslaught from the renowned quantum physicist David Deutsch, who dismissed Josephson's claims outright:

> Telepathy simply does not exist. . . . The evidence for its existence is appalling. . . . The Royal Mail has let itself be hoodwinked into supporting ideas that are complete nonsense.

Other skeptics soon joined the fray. In the same *Observer* article, the previous year's physics Nobel Laureate, Herbert Kroemer, declared: "Few of us believe telepathy exists, nor do we think physics can explain it."

Another prominent critic is Sean Carroll, influential because of his many excellent popular books on physics. RA cite a blog in which he rejects psi on the grounds that there are only two long-range forces strong enough to influence macroscopic objects—electromagnetism and gravity—and these could not possibly explain phenomena such as spoon-bending, telepathy, and telekinesis (Carroll, 2008). I agree with that conclusion but disagree with the assumption that psi is an ordinary force. Whatever form of extended physics is required, and some may not even want to call it "physics," it is surely radically different from current physics. George Williams, another contributor to this *JSE* issue, discusses Carroll's criticisms in more detail.

Some prominent psychical researchers have been equally uncomfortable with the attempts to link psi and physics. To quote the late John Beloff (1988):

> The attempt to reconcile physics and parapsychology is misguided. Asking for an explanation of the mind–matter interaction could only lead to an endless and profitless regress.

This view is supported by Carroll Nash (1986):

> In the sense of being independent of space, time, and physical causality, psi is non-physical. Physical causality presumes transmission of energy over time and space between the interacting bodies . . . . psi's apparent independence of physical causality suggests that, for it, cause and effect may be simultaneous. That psi is not a physical force in the classical sense is indicated by the failure of metal chambers and Faraday cages to prevent its occurrence.

J. B. Rhine was skeptical of a physical theory of ESP for similar reasons, and the evidence that psi is space-independent has become stronger since these pronouncements. However, I will argue later that these arguments derive from a misunderstanding of what is entailed in the term "physics." Although the current "materialistic" physics could not accommodate psi, a new type of "extended" physics might still do so.

Note that Beloff goes even further and suggests that psi may be completely anarchic, in the sense that it obeys no laws at all, which would exclude it from the domain of science altogether. That the existence of psi is fundamentally at odds with the natural sciences is also advocated by MacKenzie and MacKenzie (1980). However, the purpose of psychical research has always been to demonstrate that natural law can be extended to include psi and not to throw the ball back into the court of the "supernatural." Also, chaos theory and non-linear dynamics have taught us that what appears

anarchic at one level may turn out to have a discernible pattern at another level. Since the scientific enterprise—and more specifically physics—has been so successful hitherto, it surely behooves us to try to push its limits as far as possible.

Reasons for Physicists' Aversion to Psychical Research

In this section, I will discuss some reasons for physicists' antipathy to psychical research, since any rapprochement will require that these issues be addressed.

(1) One obvious factor is doubts about the strength of the evidence and the fact that—according to an influential paper by Irwin Langmuir (1989)—parapsychology shares many features of pathological science. He lists these as follows: (i) the maximum effect is barely detectable; (ii) many measurements are necessary because of the low statistical significance of the results; (iii) fantastic theories are constructed contrary to experience; (iv) criticisms are met by ad hoc excuses; and (v) the ratio of supporters to critics rises to near 50% and then gradually falls to zero. Perhaps some episodes in the history of parapsychology provide examples of this, but Cardeña's article demolishes the view that the whole field can be characterized in this way. In fact, most areas of science exhibit Langmuir episodes, and there is a particularly severe reproducibility crisis in the psychological sciences (Pashler & Wagenmakers, 2012).

(2) Many physicists reject psi because they feel it would be incompatible with physics. Thus, after his brief foray into metal-bending, John Taylor (1975) remarked:

> There is a clear contradiction between science and most supernatural phenomena. . . . The entire edifice of physics would have to be reconstructed from the ground up if it had to embrace psi phenomena.

This view is clearly shared by RA. However, as emphasized by Stephen Braude's Editorial in this issue, one must distinguish between what is *compatible* with physics and what is *explicable* by it. Many psi phenomena may be irrelevant to physics, and even telepathy might be if one adopted a dualist philosophy in which mind/mind interactions do not reduce to brain/brain interactions. The problem is that many psychic phenomena *do* apparently involve an interaction with the physical world and at first sight appear to violate the cherished notions to which RA allude. I will address their specific concerns later but the general point is that physics regularly undergoes paradigm shifts, and that many physical laws, once assumed to be sacrosanct, are now known to be violated. For example, parity and

baryon conservation need not always pertain, and some classical laws are routinely broken in quantum theory. RA are clearly enamored of the materialist mechanistic view of physics, but that was abandoned long ago, even by physicists who are completely skeptical of psi.

(3) Some critics claim that psi cannot be real because standard physics seems to work so well, both relativity theory and quantum theory—the cornerstones of modern physics—having been confirmed with extraordinary precision. However, even mainstream physics accepts that both relativity theory and quantum theory must be modified in any final theory of quantum gravity, so the current paradigm is indisputably incomplete, and precision tests in the standard context may be irrelevant. But if our current model is incomplete, how we can be sure that the final one will not accommodate psi? For example, it is not inconceivable that the marriage of quantum theory and relativity theory (i.e. quantum gravity) will describe modes of interaction or information transfer that are currently unexplained. However, the other side of the coin—and here I agree with RA—is that one cannot expect a theory of psi to be based on relativity or quantum theory alone. Note that quantum gravity effects are likely to involve energies on the order of Planck scale 10^{19} GeV, which is very large relative to elementary particles. However, it corresponds to a rest mass of only 10^{-5}g (viz. a grain of sand), so it is not large in comparison to macroscopic laboratory effects.

(4) The fact that physical psi effects (i.e. psychokinesis) are expected to be very small is important in the context of another criticism of psi: If consciousness really can affect the physical world directly, why does it not show up in ordinary physics experiments, where the sought effects are often tiny? This point is justifiably emphasized by RA and it is also stressed by Bunge (2008). For example, the detection of gravitational waves by the LIGO (Laser Interferometer Gravitational-Wave Observatory) experiment involves displacements of a thousandth the size of a proton (Abbott et al., 2016). So if consciousness can exert forces sufficient to levitate a table or bend a spoon, why does it not influence a host of physical experiments? Although the energy involved in the displacement of the LIGO mirrors is quite large (Grote, private communication), this argument is a genuine concern and certainly precludes explaining psi through the sort of field or particle interactions familiar to current physics. Rather one would need some type of field that transcends the usual space–time description. This is not inconceivable, since there are several physical theories of this kind. This criticism is also important because it suggests that there could be experimenter effects in physics similar to those claimed in parapsychology (cf. the Pauli effect on laboratory equipment).

(5) A deeper reason for antipathy is that many psychic phenomena

involve *consciousness* and physicists have long between uncomfortable with attempts to incorporate even normal aspects of consciousness (let alone paranormal ones) into physics. This is because the contents of consciousness are intrinsically private, whereas physics deals with what is in the public domain. Brian Pippard, for example, even though he was open to the possibility of psi, argued that consciousness will be forever outside the domain of physics (Pippard, 1988):

> If the existence of these phenomena is doubtful, it is because the evidence is scanty and often of dubious provenance, it is not because they cannot be invoked in physical terms. They involve after all, a class of system beyond the scope of physical theory—that is to say, conscious human beings. I do not say consciousness is not at this time understood from the laws of physics—I say it cannot be so understood.

Certainly physics in its *classical* mechanistic form cannot incorporate consciousness. However, the classical picture of physics has now been replaced by a quantum one and there are some indications—albeit controversial—that this *can* include consciousness. Also many physicists are uncomfortable with attempts to formulate a Theory of Everthing (TOE) without any reference to this. Thus Roger Penrose (1989) anticipates that "our present picture of physical reality is due for a grand shake-up, even greater perhaps than that provided by present-day relativity and quantum mechanics," while the linguist Noam Chomsky (1975) asserts that "physics must expand to explain mental experiences." It is certainly conceivable that some future paradigm of physics will make an explicit link with mind and this might well come in at the level of quantum gravity (Penrose 1997). We cannot be sure that such a paradigm would accommodate paranormal phenomena—certainly neither Penrose nor Chomsky would advocate this—but one cannot exclude this possibility. Indeed, it is possible that any extension of physics that includes consciousness will be the thin edge of a wedge that also accommodates psi.

Reasons for Connecting Psi and Physics

Having tried to refute some of the objections to linking psi and physics, in this section, I will present arguments for why one should try to forge such a link.

(1) Incorporating psi into physics would be good for psychical research. An essential feature of any branch of science is that it must involve some *theory* to explain the observations, so if psychical research is to qualify one needs a theory for psi. This is why understanding its properties is

more important than just accumulating statistical proof of its existence. In particular, Henry Margenau (1985) urged:

> No amount of empirical evidence, no mere collection of facts, will convince all scientists of the veracity and the significance of your reports. You must provide some sort of model: You must advance bold constructs . . . in terms of which ESP can be theoretically understood.

There are several historical precedents for this. For example, Alfred Wegener's idea of continental drift was not accepted for several decades because there was no theory to explain it. Although it is not inevitable that a theory for psi has to come from physics (rather than from biology, say), it would seem most natural to use the model of the world that already exists and has proved so successful. Also, most scientists adopt a reductionist view, in which the sciences form a hierarchy with physics at the base, so—regardless of whether this is correct—it seems unlikely from a sociological perspective that psi will ever be accepted by mainstream science until it is founded on a theory that connects with physics. Certainly physicists themselves will not accept psi until this happens.

(2) Incorporating psi into physics may be good for physics. Dean Radin (1997) makes this point forcefully:

> Physicists who have retained some humility in the face of nature's mysteries are interested in psi because it implies that we have completely overlooked fundamental properties of space, time, energy, and information. Specifically, psi suggests that the conventional boundaries of space and time can be transcended by the ephemeral concept of the 'mind'.

Indeed, one reason physicists figured so prominently among the early membership of the Society for Psychical Research (SPR) was that they saw in psychic phenomena evidence for some new type of physics. An excellent historical account of this can be found in the recent book by Noakes (2019). Barrett was one of the founders of the SPR and four of the first eight presidents were physicists. For the history of physics is full of the inexplicable becoming explicable, and studying anomalous effects nearly always leads to useful insights. Thus, new phenomena should be welcome to physicists, even if they are not at first explicable theoretically. For example, it was only several years after its discovery that superconductivity could be explained. Nevertheless, history shows that phenomena which occur only rarely are often received skeptically at first. A good example of this is ball lightning, which was studied by Lord Rayleigh in the 1890s but not acknowledged to be a real phenomenon until the 1960s. On the other hand,

new phenomena do sometimes turn out to be spurious (e.g., N-rays).

(3) A final theory of physics must accommodate consciousness. There can be no doubting the success of physics within its own terms and many people have proclaimed that the end of physics is in sight, in the sense that our knowledge of the fundamental laws and principles governing the Universe is nearly complete. They argue that we are on the verge of obtaining a TOE. However, this description may seem pretentious, because one is really only purporting to have a final theory of particle physics, and previous claims to be close to a final theory have always proved premature. One feature of the Universe that would seem to refute the expectation that physics is close to a TOE is the existence of consciousness, and many physicists have argued that a consistent model of physics must incorporate this (e.g., Wigner, 1979). But if physics expands to accommodate consciousness, perhaps it can also accommodate psi.

(4) Perhaps the most important reason for wanting to incorporate psi into physics is that many people claim that recent developments in physics already make this possible. The fact that the physical world has turned out to be much weirder than common sense would suggest has led some people to argue that there might well be room for the sort of phenomena studied by parapsychology. To quote Arthur Koestler (1972):

> The unthinkable phenomena of extra-sensory perception appear somewhat less preposterous in the light of the unthinkable propositions of modern physics.

Certainly many of the ideas I have studied in my professional field—black holes, time travel, dark matter, the anthropic principle, parallel universes, etc.—are just as speculative as those arising in psychical research. Nevertheless, this suggestion antagonizes many of my physics colleagues, and in my opinion current physics is still not weird *enough* to accommodate psi.

Response to Reber and Alcock's Specific Criticisms

RA have four specific arguments for why psi and physics are incompatible: (1) the lack of a causal mechanism; (2) the implausibility of time reversal; (3) an inconsistency with thermodynamics; (4) a violation of the inverse-square law. Bryan Williams and George Williams have already addressed these criticisms very thoroughly in this *JSE* issue, but I will add a few points. With regard to (1), one can have an extended concept of causality in higher-dimensional models (discussed later). With regard to (2), it is not only parapsychologists who have advocated retrocausal models but also physicists (Cramer, 2006) and philosophers (Price, 2012) who are

just as skeptical of psi as RA. With regard to (3), one possible model of psychokinesis invokes transfer of information rather than energy (Mattuck, 1976), although not all paraphysicists favor that. With regard to (4), the inverse-square law is irrelevant even in some physical contexts (e.g., the intensity of a laser beam and quantum entanglement) and even more so in the context of higher-dimensional models.

Here I prefer to focus on some points raised by RA with which I concur, although I doubt they would be happy with my reasons for doing so. Of course, I side with Cardeña on most points, since I'm one of his physicist supporters, but there are some issues that are less clear-cut than he indicates and where he does not go far enough.

(1) I agree with RA that there is currently no coherent physical (as opposed to psychological) theory that accommodates *all* psi phenomena, both micro and macro. There are numerous theories that describe a subset of phenomena, as described in the recent book of May and Marwaha (2015), but no unified model. However, I would like to believe that my own theory (described later) comes close!

(2) I agree with RA that a full explanation of psi cannot come from quantum theory. The long-standing emphasis on this possibility—ever since the 1974 AAAS meeting on *Quantum Physics and Parapsychology*—is unsurprising, since quantum theory already exhibits a host of weird effects (non-locality, entanglement, etc.), and it has even been claimed that consciousness is involved in the collapse of the quantum wave function (Stapp, 1993). This is not the mainstream view but it is not excluded and might be supported by recent studies of the effect of consciousness on the double-slit experiments (Radin et al., 2012). However, despite the impression given in some popular books, standard quantum theory *cannot* explain psi. One would need some non-standard version, such as "post-quantum theory," which bears a similar relationship to quantum theory as general relativity does to special relativity (Sarfatti, 1998), or "generalised quantum theory" (Atmanspacher, Römer, & Walach, 2002). Even such extensions of quantum theory cannot describe the full range of psi phenomena, so while they may play some role in the final theory, they surely cannot be the full story. Rather one needs a deeper paradigm of physics which underlies both mind and quantum theory and illuminates them both.

(3) I agree with RA that standard relativity theory cannot provide a theory of psi, but for different reasons. They criticize the (standard) "block universe" interpretation of special relativity, but this cannot explain psi anyway since it does not describe even normal consciousness. This is because it not does not explain the passage of time, the most basic feature of conscious experience. For that, one needs an "evolving block universe"

(Ellis, 2014), where the future is not yet formed. One may also need a second time dimension (Carr, 2017), certainly if one wishes to describe precognition (Broad, 1923), and this is distinct from Cardeña's argument about the lack of simultaneity in special relativity.

So the existence of consciousness requires that one goes beyond *both* quantum theory and relativity theory and finds a deeper theory that amalgamates them in some way. But that is precisely what physicists are trying to do in seeking a theory of quantum gravity. Therefore, if consciousness is a fundamental feature of the universe, it is not inconceivable that it will appear at the level of quantum gravity. Indeed, this is the view advocated by Penrose (1994), although he is certainly not a proponent of psi.

Hyperspatial Models as a Possible Exension of Physics

I have argued that one needs a deeper paradigm of physics which underlies both mind and quantum and relativity theories. So what form would this paradigm take? It must transcend the usual description of space and time—which is a feature of some theories of physics anyway—and it must involve mentality at some fundamental level. Also one needs a theory that accommodates *all* mental phenomena and not just the ones labeled "paranormal." After all, there is already a big problem extending physics to accommodate "normal" mind (sensory perception, memory, dreams, etc). Ultimately, one needs a theory of consciousness itself, this underlying all mental experiences, and there is some indication from physics itself that this may be a fundamental rather than incidental feature of the world. I agree with George Williams in this respect.

One such approach involves hyperspatial models, in which paranormal mental phenomena are interpreted as influences or intrusions from higher dimensions (i.e. those going beyond the four dimensions of classical space–time). Such models have a long history (Carr, 2008). The possibility of an extra spatial dimension was especially popular in the late 19th century, as a result of the work of Abbott (1983), Hinton (1980), and Zöllner (1880). With the advent of relativity theory, it became clear that there really is a 4th dimension but that it is time rather than space. Nevertheless, it was still possible to attribute esoteric significance to this (Carrington, 1920; Ouspensky, 1931) or to contemplate 5-dimensional models with a 4th spatial dimension.

More sophisticated physical models invoked extra dimensions by complexifying the space and time coordinates of relativity theory (Rauscher, 1978; Targ, Puthoff, & May, 1979; Ramon & Rauscher, 1980) or introducing extra time dimensions (Whiteman, 1977). The basic idea is that points can be contiguous in the higher dimensional space even if separated

in 4-dimensional space–time. Subsequently, other higher-dimensional models were proposed by Heim (1988) and Sirag (1993) and myself.

A rather different approach—and one that involves mind explicitly—has come from philosophers rather than physicists and involves the relationship between physical space and perceptual space. That the physical space of objects and the phenomenal space of percepts are ontologically different was first stressed by philosophers such as Freddie Ayer (1940) and Bertrand Russell (1948). More radical was the proposal by C. D. Broad (1953) that these two spaces could be merged into a single space of more than three dimensions in which sensations of all kinds exist. H. H. Price (1953) also held this view, arguing that these spaces must be connected by a new type of causal relation that connects events in parallel universes.

John Smythies (who, sadly, died last January) took this idea further by exploring the relationship between these spaces implied by developments in neurology and introspectionist psychology. In *Analysis of Perception* (Smythies, 1956), he pointed out fundamental flaws in the orthodox mind–brain identity theory and presented his own model, which entailed a sort of extended materialism. He argued that physical and phenomenal space–times should be regarded as different cross-sections of a single higher dimensional space, sharing a common time dimension but described by a different system of 3-dimensional space coordinates. We experience only phenomenal events but some of these represent physical events and there is then a causal relationship via the brain, like the causal relationship between events in a TV studio and on a TV screen. These ideas were developed further by Hart (1965), Dobbs (1965), Whiteman (1967), and Smythies himself (Smythies, 1994, 2003, 2012).

In my own model—motivated by developments in cosmology and particle physics—physical and phenomenal space–times are regarded as projections of a 5-dimensional reality structure. The extra dimension is related to mental time (as distinct from physical time), so I have two time dimensions but the same spatial dimensions, whereas Smythies' model invokes different spatial dimensions but a common time dimension. My model also accommodates experience of non-physical origin (NDEs, etc.) by extending the reality structure to more than five dimensions. The key point is that many psychic experiences (e.g., telepathy, clairvoyance, apparitions, OBEs, NDEs) seem to require the existence of some form of communal space. This is not the same as physical space but hypothesized to be a higher-dimensional space of which physical space and ordinary perceptual space (including memories and dreams) are just lower-dimensional projections (Carr, 2015a, 2015b). This space is termed the "Universal Structure" and can be viewed as a sort of extended reality—an information space that goes

beyond physical space but subtly interacts with it. The extra dimensions of the Universal Structure comprise a hierarchy of experiential times, these being distinct from physical time.

The crucial step is the identification of the Universal Structure with the higher-dimensional space already invoked by modern physics in models such as M-theory (Witten, 1995), in one version of which the physical world is regarded as a 4-dimensional "brane" in a higher-dimensional "bulk" (Randall & Sundrum, 1999). This identification allows an amalgamated description of physical, psychical, and even some mystical phenomena, these forming a natural continuum. It should be stressed that not all physicists are enamored with higher-dimensional theories, since they are currently untestable and might be regarded as mathematics rather than physics, but they are at least respectable in the sense that eminent physicists work on them.

Although the hyperspatial approach is speculative and prone to the criticism that it could explain anything with a sufficient number of dimensions, it shows that an extension of physics which accommodates mind is at least possible in principle. It also raises a number of important questions that might eventually be answerable: Will the final theory of quantum gravity involve consciousness in some way? Is there a deeper theory of physics that underlies both quantum theory and mentality? Will there ever be direct experimental evidence for higher dimensions from particle physics—for example, from the Large Hadron Collider—and, if so, how could one persuade mainstream physicists to contemplate the possibility that these might have some connection with mind?

Final Thoughts

One of the most striking developments in recent decades has been the extent to which parapsychology has attained academic acceptability within UK Psychology Departments. Currently 100 (?) people in the UK are either studying for or have already obtained a Ph.D. in parapsychology, 37 (?) of whom have gone on to obtain permanent academic appointments in Psychology Departments, where they give lecture courses and continue to pursue their research in the subject (Carr & Watt, 2016). There are currently 17 (?) such departments in the UK. To a large extent this remarkable state of affairs is due to the pioneering efforts of the late Robert Morris, who—as Koestler Professor at Edinburgh University—supervised 32 of the Ph.D.s. The cautious approach that characterized his school won the subject newfound respect, as emphasized by the fact that in 1996–1997 he served as President of the Psychology Section of the British Association for the Advancement of Science.

Unfortunately, the study of the paranormal has not gained academic acceptability within Physics Departments. The only professional physicist who has worked on the subject in a UK university is Professor Brian Josephson at Cambridge University and no Ph.D.s have been obtained in the subject in UK physics departments. Of course, many physicists are *interested* in the subject, at least to the extent of publishing articles about it. They number several dozen in the UK and about 100 worldwide. But they represent only a tiny fraction of the total physics community, and their paraphysical work is usually conducted in their spare time. The few professional physicists who are paid to work in the subject are generally not university-based. In any case, physicists who speculate in this area—whether or not they have a university affiliation—are liable to be regarded with suspicion by their peers.

If the hope of finding a theory of physics that accommodates psi is fulfilled, an important semantic issue will be whether we should call this sort of approach "physics," since doing so will certainly antagonize an appreciable fraction of both physicists (who are skeptical of psi) and parapsychologists (who see psi as an escape from the confines of physicalism). It is certainly not the sort of physics that describes material objects, so I prefer to call it "hyperphysics," the formal distinction in my own model being that one might associate normal physics with the brane and hyperphysics with the bulk. However, the important point is that it is the same sort of physics that derives from studying the material world. It emerges naturally from normal (albeit ultra-speculative) physics and its focus is not psi alone.

I started this article with a reference to Tycho Brahe's observation of a supernova and the skeptical reaction of the "blind watchers of the sky." It was not until the 1930s—350 years later—that observations of supernovae became commonplace, not until the 1950s that we began to understand the physical mechanism behind them, and not until the 1990s that supernova observations revealed that the expansion of the Universe is accelerating. This indicates that 70% of its density is in the form of "dark energy," whose identity is still a mystery. There are several similar examples in the history of physics: It took 50 years for the existence of black holes to be confirmed, 50 years for the Higgs particle to be discovered, and 100 years for gravitational waves to be detected. So perhaps we should not be surprised if the timescale on which psi is confirmed experimentally or understood theoretically is also long, and we should not be too disheartened at the apparently slow progress since the founding of the Society for Psychical Research 137 years ago. Contrary to the view of RA, one should not infer that the phenomena are nonexistent, merely that the scientific path to truth is a long one.

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HISTORICAL PERSPECTIVE

Out of Thin Air? Apport Studies Performed between 1928 and 1938 by Elemér Chengery Pap

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Abstract— Physical mediumship is characterized by the occurrence of phenomena that seem to defy currently prevailing standard theories of physics, such as inexplicable movements of objects (macro-psychokinesis) and the seemingly unexplained materialization of objects, sometimes in closed spaces (apports). Nevertheless, systematic investigations into apport phenomena have barely been performed. The present article introduces one of the few exceptions. The studies were conducted by Elemér Chengery Pap from 1928 to 1938 in Budapest. He summarized his research in a voluminous but little-known Hungarian treatise that ranks among the largest monographs of experimental parapsychology written by a single investigator. His book contains descriptions of some the most spectacular occurrences recorded in physical mediumship. One medium in particular, Lajos Pap, allegedly produced apports that ranged from solid objects, various liquids, snow, plants, ensembles of living insects, crawfish, to living vertebrates up to the size of a sparrow hawk. After presenting an overview on the book's contents and some of the most remarkable phenomena described therein, I summarize the results of an experimental series performed with Lajos Pap by another Hungarian-born researcher, Nandor Fodor. Drawing from Fodor's and also others' observations, I demonstrate that Chengery Pap's research approach contained remarkable loopholes that devalue his effort to leave a supposedly objective report to posterity. The authenticity of Lajos Pap's phenomena thus remains questionable. Nevertheless, Chengery Pap's extensive treatise remains of historical significance in parapsychology and provides an instructive example highlighting difficulties in studying physical mediums.

Keywords: Physical mediumship—apports—Elemér Chengery Pap—Lajos Pap—Tibor Molnar— Nandor Fodor—Maria Silbert

Introduction

Just as in other research disciplines, parapsychological treatises published in languages other than English are often little-known among the main community of experts. Additionally, the more specific the field of research, and the more unfamiliar the language, the more likely the work stays little-known or becomes practically forgotten. Still, such publications can represent important research contributions that deserve wider attention. In the context of physical mediumship, this is exemplified by translations of Icelandic sources on the medium Indridi Indridasson (Gissurarson & Haraldsson, 1989; Haraldsson 2011, 2012; Haraldsson & Gissurarson, 2015), by Polish sources on Franek Kluski (Weaver, 2015) and Eusapia Palladino (Ochorowicz, 2018a, 2018b), by Portuguese, Italian, and German sources on Carlos Mirabelli (Nahm, 2017), by Italian sources on Palladino (Bottazzi, 2011); or, regarding macro-physical phenomena in the context of a mystic, by the translations of old Italian sources on Joseph of Copertino (Grosso, 2016, 2017). In the present article, I present an overview of one of the most voluminous monographs on physical mediumship published, the Hungarian treatise *Új Látóhatárok Felé* [Toward New Horizons] authored by Elemér Chengery Pap (1938). This amply illustrated book contains a summary of the author's investigations performed between 1928 and 1938 on phenomena of physical mediumship that focused on psychokinetic phenomena (inexplicable movements of objects) and apport phenomena (physical objects and even living organisms that appear in an inexplicable manner, often inside a room or a locked location).

Elemér Chengery Pap (1869–?)

Chengery Pap was born on July 29, 1869. He held the office of the chief chemist of the Hungarian Civil Service in Budapest before retiring. Among other duties, he was responsible for the quality control of wine. However, he had been born into a family with a religious and spiritualistic attitude, and he came to know many of the leading personalities of the spiritualistic scene in Hungary, including one of the founding fathers of Hungarian spiritualism, Adolf Grünhut, with whom he became acquainted in 1898 (Gyimesi, 2016). Owing to his scientific background, Chengery Pap intended to study mediumistic phenomena by applying scientific methods, and from 1928 onward the opportunity arose due to his personal contact with two Hungarian physical mediums, Tibor Molnar (presumably 1900–?) and Lajos Pap (1883–1938), to whom he was not related. In 1932, he even established a "metapsychical laboratory" that was specifically designed to ensure optimal control conditions for his investigations. It also contained

a museum in which all apported objects were exhibited in show cases. In addition to his magnum opus (Chengery Pap 1938), numerous articles in Hungarian newspapers and a few other Hungarian articles, Chengery Pap also published several reports about his work especially with Lajos Pap in German (Chengery Pap, 1930–1931, 1933a, 1934, 1935, 1935–1936; Chengery Pap & Blacher, 1936) and one in English (Chengery Pap, 1933b). Unfortunately, I was unable to find out much about Chengery Pap's activities after 1938, or about how and when he died. Nevertheless, he published a small Hungarian booklet on mediumistic matters in 1941 (Chengery Pap, 1941), and according to Cornelius Tabori he was "still going strong" in 1942, "editing the monthly of the Hungarian Metapsychical Society though for a while it had to be suspended" (Tabori, 1951:242). The apport museum, in any case, was destroyed during the communist regime after the Second World War (Kürthy, 1999).

In the following sections of this article, I will first present an outline of the contents of Chengery Pap's book. Then, I will summarize noteworthy passages, beginning with reports of two sittings with Austrian medium Maria Silbert (1866–1936) that Chengery Pap attended, and continue with general overviews on the life and the phenomena reported from Molnar and Lajos Pap, drawing also from the German literature and other authors who wrote about their mediumship. Thereafter, I will describe the experimental laboratory that Chengery Pap established to study physical mediumship, and some of the most remarkable phenomena Chengery Pap reported from Lajos Pap, particularly apports. Finally, as is recommended in writings on the fraud-loaded field of physical mediumship, I will discuss the limitations of Chengery Pap's experimental approach, and comment especially on an unfavorable appraisal of Lajos Pap's mediumship advanced by another Hungarian-born psychical researcher, Nandor Fodor (1895–1964).[1] A comparison of their investigative approaches and their reports on obtained results demonstrates that Chengery Pap's proceedings contained considerable loopholes that ultimately devalue his attempt to compile a supposedly objective research document. Nevertheless, his voluminous treatise remains of historical significance in parapsychology and offers methodological lessons highlighting difficulties in studying physical mediums.

Új Látóhatárok Felé [Toward New Horizons] — An Outline of the Book

In total, Chengery Pap's book encompasses 573 pages of small print and 86 images and photographs. In addition, it includes 32 plates with even more photographs. The book's first parts comprise several introductory sections

on mediumship that end on page 129. They include a translated chapter written by Sir Oliver Lodge (1851–1940) on the "spirit hypothesis," and a preface written by Latvian/German Carl Blacher (1867–1939), a professor of chemistry in Riga (Latvia) with whom Chengery Pap corresponded because of the latter's own studies into apport phenomena (e.g., Blacher, 1926, 1931–1932, 1933, 1937). Other sections provide general introductions into different forms of trance and mediumship, such as talking, writing, painting, and especially physical mediumship. Regarding the latter, Chengery Pap described typical developments of physical mediums, their phenomena, how séances are held, and possible ways to produce fraudulent phenomena. He introduced other ostensible apport mediums, including the ones Blacher worked with, and Mr. Wolf (a pseudonym for Prokop Vlček), a young man with whom physician Dr. Jan Šimsa experimented in Prague (e.g., Šimsa, 1931, 1934). Moreover, Chengery Pap reported on the sittings with Maria Silbert that he attended in 1928 and 1932 in Graz, Austria.

From pages 130 to 160, Chengery Pap provided an outline of the development of Lajos Pap's mediumship, the control measures performed before and during sittings, the séance rules, and the "laboratory" in which the sittings were held starting in 1932. On pages 160 to 350, Chengery Pap described in detail 35 sittings in which remarkable phenomena occurred. They are based on notes that were taken down immediately after or during the séances. Starting in September 1936, the events during the séances were dictated to a shorthand writer who sat outside of the experimental room. Pages 351 to 372 contain considerations about apports of previously destroyed objects that seemed to reappear intact at sittings. In the section from page 373 to 540, short descriptions of all sittings and of all spontaneous phenomena Chengery Pap observed with mediums Molnar and Lajos Pap are given in chronological sequence; some of the more interesting occurrences are presented more extensively (in addition to the sittings that were already described in the preceding sections). In total, this section contains 266 reports. Of these, 57 relate to spontaneous apport phenomena that were attributed to Molnar in 43 cases, to Lajos Pap in 7 cases, and in 7 other cases both mediums were present but it remained unclear who had been responsible for producing the apports. Regarding the 209 séances held between 1928 and 1938, both mediums were present at 70, Lajos Pap as the sole medium at 124, and Molnar as the sole medium on 15 occasions. From page 541 onward, the book contains several overview sections. For example, the names of all (guest-) visitors at each séance are given, and a list of articles about Chengery Pap's research that were published in Hungary and elsewhere is provided. The book concludes with a detailed table of contents and the errata.

Elemér Chengery Pap's Sittings with Maria Silbert

Maria Silbert (1866–1936) was a widely known Austrian physical medium. On the one hand, she was known for eliciting large-scale physical anomalies in full light. On the other hand, she and her sittings were hardly controlled in terms of scientific standards.[2] Typical phenomena reported from Silbert's sittings include raps, powerful psychokinetic movements of tables and other objects, the latter's dematerialization and rematerialization (allegedly, even from within a locked safe) (Evian, 1937?), and their being inexplicably engraved with signs and letters, especially with the name "Nell," as her control personality called herself. When the lights were dimmed and it was relatively dark, bright flashes and other mysterious lights were regularly observed. The summaries of the two sittings with Silbert provided below illustrate typical séances of hers.

Chengery Pap's first sitting with Silbert took place on May 4, 1928. He arrived at Mrs. Silbert's home at 5:30 in the afternoon together with Tibor Molnar and two other women from Graz, Mrs. Felix and Mrs. Dettelbach. They sat around a table of about 1 × 1.3 m size in the bright light of late afternoon; Chengery Pap sat opposite Mrs. Silbert. While the sitters conversed about psychical matters, faint raps on the table and a cupboard behind Silbert were heard, and first touches of their legs were reported. Then, Chengery Pap placed his watch on the wooden boards that connected the table legs at about 15 cm height above the floor, hoping it would be engraved by "Nell" in the characteristic manner. For the same purpose, Molnar placed his silver cigarette etui (a small case) on these boards, and Mrs. Dettelbach her golden wristwatch. The touches became stronger, and they felt like their legs beneath the table were being squeezed by a strong hand. Likewise, the raps became louder. At 6:15, Mrs. Felix, who sat at the long end of the table between Chengery Pap and Mrs. Silbert, shouted out in surprise that her chair was being pulled from behind, and she was afraid that she would fall down. Chengery Pap reported that he saw the chair moving about 20–25 cm toward the back. Molnar claimed that his neck was squeezed from behind by something that felt like a hand, although he sat in front of a closed window. Thereafter, the objects from the wooden boards repeatedly fell down from it, seemingly without being touched, and the sitters placed them onto the board again. At one point, the sitters found that the inside of Molnar's cigarette etui was engraved with the word "Nel" and two triangles (Figure 1A). Furthermore, when Mrs. Silbert conversed, gesticulating with both hands with her elbows resting on the table, Mrs. Dettelbach's wristwatch suddenly dangled from Mrs. Silbert's forefinger. Even though Chengery Pap was looking directly at Mrs. Silbert at that moment, he didn't see how the watch appeared on her hand. It just seemed

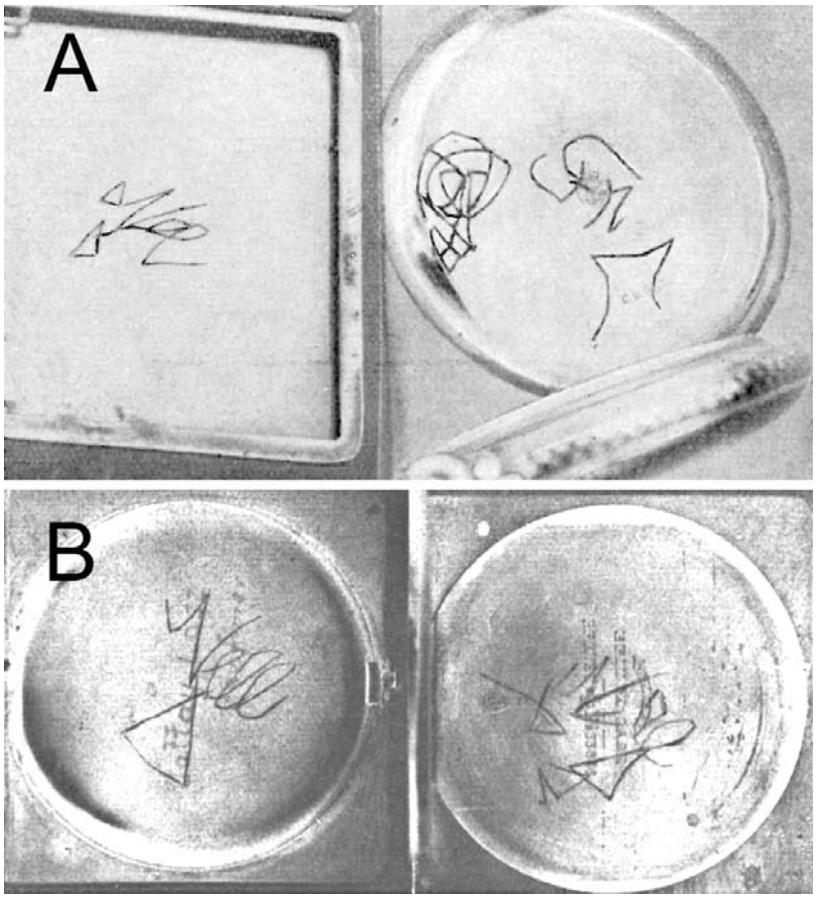

Figure 1. (A) Engravings obtained during a sitting with Maria Silbert on May 4, 1928, on Tibor Molnar's cigarette etui (left) and Elemér Chengery Pap's watch (right) (Chengery Pap, 1938:119).
(B) Engravings obtained during a sitting with Maria Silbert on May 18, 1932, on Laszlo Vattay's watch (Chengery Pap, 1938:123).

to be there from one moment to the next, although immediately before it had still lain on the wooden board below the tabletop and above the floor. The word "Nel" was engraved on the outside of the wristwatch. The distinct touches on the legs continued, and when Chengery Pap held his hand beneath the table, it felt as if it was pressed by several fingers. Meanwhile, dusk had set in, but it was still light enough to observe everything in the room well.

During their ongoing conversation, Mrs. Silbert suddenly closed her right hand into a fist, and when she opened her fingers again Chengery Pap's watch lay on her palm. He stressed that Mrs. Silbert's hands had always remained on or above the table. The inside of the watch's lid was engraved with the letters "F. N." (for "Fredericus Nell") with two other scribblings (Figure 1A). Thereafter, Chengery Pap reported hammer-like strokes on the table surface, and he mentioned table levitations, but he didn't describe them further.

Chengery Pap visited Mrs. Silbert a second time on May 18, 1932. This time he was accompanied by both mediums Tibor Molnar and Lajos Pap, and by a friend of his, Laszlo Vattay. In addition, an acquaintance of Mrs. Silbert, Mr. Reich, participated in the sitting. Again, they sat around the wooden table in the dining room at 5:30 in the afternoon. However, Chengery Pap did not report his experiences of the sitting in person, but he reprinted the report by Vattay who had already published his own account in the Hungarian journal *Metapsychikai Folyóirat* [Metapsychical Journal] in 1933. Vattay stressed that he moved back from the table with his chair after he felt the first touches on his legs to have a better view of what was happening under the table. When his left knee was touched twice, he didn't see anything that might have caused these touches. As in the séance described before, many raps and touches were reported by the sitters, and they placed various objects on to the wooden boards under the table above the floor in order to receive engravings or writings on them. Vattay observed these objects closely. On one occasion, he saw a postcard fall down from the boards seemingly by itself, and at 7:15 he even saw his watch, which had already fallen to the floor from the board, suddenly vanish in an inexplicable manner. Three-quarters of an hour later, this watch fell unexpectedly down on his left knee and onto the floor. It contained several scribblings, including two engravings of the name "Nell" (Figure 1B). At about 8 o'clock, Mrs. Silbert stood up from her chair, and held her hands open toward the ceiling. Lajos Pap's watch suddenly fell into her hands from above, and then farther to the floor. Shortly thereafter, she turned in another direction, and Molnar's cigarette etui fell into her hands, seemingly out of the air. Loud raps continued to be heard, at times from two different locations in perfect unison. This was supposed to show that these raps were caused by one and the same agency. Vattay concluded his report with theoretical considerations about the observed phenomena, which he considered genuine. In contrast to Chengery Pap, however, he didn't believe that they were caused by a spirit of a deceased person.

In the following section, I'll provide some background information on the physical mediums Tibor Molnar and Lajos Pap, beginning with Molnar.

Tibor Molnar (Presumably 1900–?)

Chengery Pap began to experiment with Tibor Molnar systematically in July 1928 (Chengery Pap, 1930–1931). However, readers of his book don't learn much about him, and, without explaining why, Chengery Pap stopped working with him in 1932. In a conversation with Fodor, he stated that he broke relations with Molnar because the latter had an undesirable effect on Lajos Pap (Fodor, 1936?). Somehow, it seems that Molnar must have fallen from grace with Chengery Pap. In former publications, Chengery Pap typically used Molnar's full name and described his character in positive terms (Chengery Pap, 1930–1931, 1932a), but he only referred to him as "M.T." throughout his 1938 book, as if trying to avoid mentioning his full name (M.T. stands for "Molnar Tibor" because in Hungarian, the Christian name is typically given after the family name). According to Chengery Pap (1930–1931), Molnar was a lanky man of only 1.59 m size and 47 kg weight. In 1930, he was 30 years old. According to Chengery Pap, he was battered by a mob during the communist riots in the late 1910s. Since then, he had been ailing constantly, and his mediumistic abilities were strong only when he was in good health. Allegedly, the first spontaneous anomalous phenomena started to occur in 1921 or 1922. Molnar stated he was frightened by them and consulted a physician who, nevertheless, considered him insane. Later, another physician familiar with psychical phenomena, a Dr. Lebök, acquainted Molnar with spiritualism, and he thus became a medium (Chengery Pap, 1930–1931).

By profession, Molnar was a painter, but he didn't seem to earn much. As a medium, Molnar was particularly known for physical phenomena and producing apports, often spontaneously and in bright light. At the beginning of séances, he typically fell into a trance and a personality named "Consuelo" spoke through him. An author who visited about 50 séances with Molnar between 1926 and 1928, Karl Röthy, described how in red light, raps and drumming sounds were heard from the table around which they sat, and how it frequently moved and levitated, even without anybody touching it (Röthy, 1928a,b,c). Molnar's hands including his thumbs were held by his neighbors, and his feet were controlled as well via body contact. When the levitated table remained suspended in a stable position, sitters sometimes tried to move it, but it seemed impossible. Similarly, János Toronyi sat with Molnar from 1925 until 1934, usually in the afternoon (Toronyi, 1951).[3] The sitters would form a chain with their hands and step two meters back from the table, with nobody touching the table. Still, the table would move vividly in the space between them, and powerful raps and drumming sounds were heard that seemed to correspond to movements of the entranced Molnar's controlled hands. These phenomena endured for

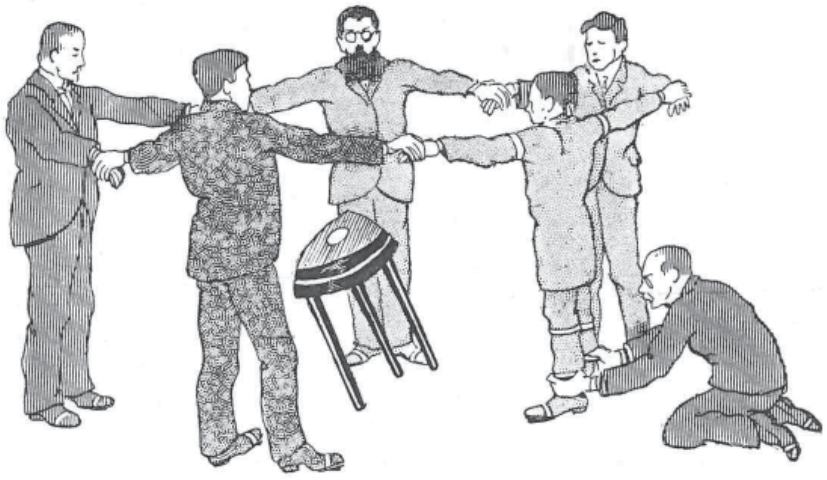

Figure 2. Illustration of supposed telekinetic table phenomena without touch mediated in 1930 by Tibor Molnar in the dark, whose ankles are controlled by Elemér Chengery Pap. The man with the beard is supposed to be Lajos Pap. The white parts of the table depict phosphorescent parts that would glow in the dark and make the table's movements visible (Chengery Pap, 1938:168).

20 minutes, and sittings were held each week for more than half a year (Toronyi, 1951, compare Figure 2). Chengery Pap (1938) reported similar experiences with Molnar. In darkness, numerous kinds of apports were brought by "Consuelo," sometimes from different rooms of the house the séance was held in, or even from surrounding houses. Apports allegedly also occurred when Molnar lay on a sofa, tightly sewn into a blanket that covered his body from his feet to his neck. In dim light, larger objects could sometimes be seen traveling through the air in inexplicable ways (Röthy, 1928a, Toronyi 1951).

When Chengery Pap began to work with Molnar in 1928, he knew him already from previous sittings. For his studies of table phenomena, Chengery Pap used two tables that were specifically designed. One table had broad and slanted side boards to hamper sitters lifting it with their fingers. Still, it levitated and produced hammer-like raps, even when nobody seemed to touch it (Chengery Pap, 1930–1931, 1938) (see Figure 2). The second table had no top, but long boards on each side (Figure 3). Therefore, thumbs and other fingers could not easily be stuck under it to lift it. The tabletop was replaced by a box that fit exactly into the hollow construction of the table's side boards, which overtopped the surface of the box by 3 mm. It was not

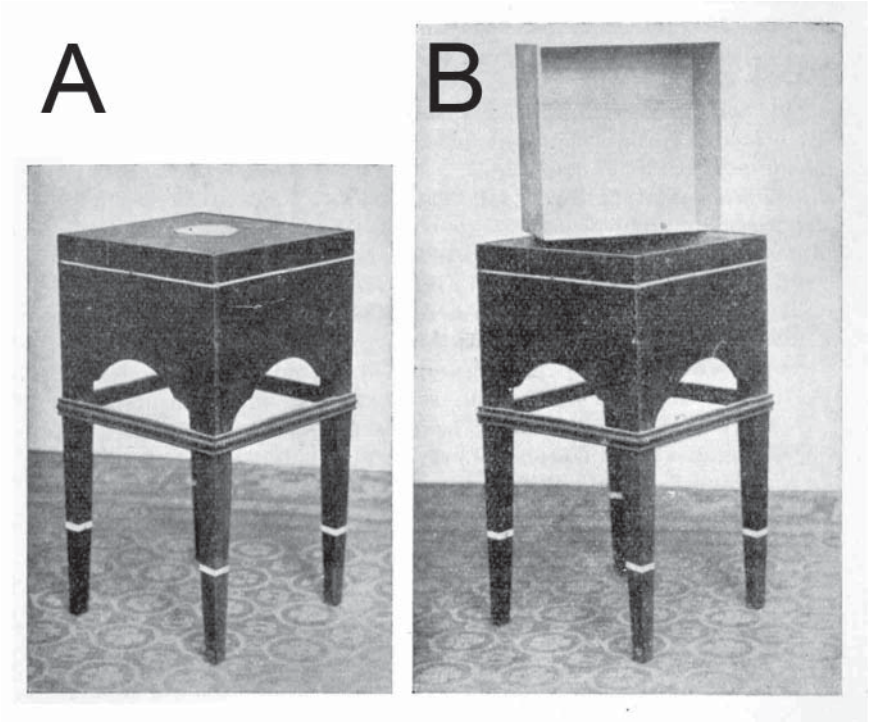

Figure 3. (A) One of Elemér Chengery Pap's experimental tables used for obtaining telekinetic phenomena.
(B) Shows the special inset of the table that was constructed instead of a tabletop. It supposedly levitated frequently out of its framing during séances (Chengery Pap, 1938:405).

possible to lift the box out of this construction with fingers when the table stood on its legs—but still it frequently levitated out of the table's scaffold during séances (Chengery Pap, 1930–1931,1938; Röthy, 1928c).

Other physical phenomena of Molnar's reported by Chengery Pap include levitations of little baskets, the stopping of the pendulum of a clock from a distance, setting it in motion again, and, most notably, numerous spontaneous apports that frequently occurred in full light. The most drastic example might have been the ostensible apport of a fragment of a gravestone that fell down next to Molnar when he entered a room Chengery Pap sat in with Lajos Pap and a regular circle member, Sándor Schürtz, at 7:15 p.m. on August 8, 1931 (Chengery Pap, 1938:425–427). This stone weighed 9.2 kg. Perhaps the most astonishing apport reported from Molnar was the re-creation of a sealed envelope that was burned by Chengery Pap and another sitter during a séance on February 16, 1929. Chengery Pap

specifically created three envelopes for experimental purposes in October 1928, and marked them individually in various ways, also using seals. Then the medium prompted the sitters to choose one of these envelopes, and to burn it in the oven. Consequently, the two men switched a lamp on, and chose envelope Number 2, which had additionally been marked just prior to the séance, as witnessed by several sitters. Chengery Pap and his companion thoroughly inspected it, put it into the oven, and watched it burn. Thereafter, they were supposed to collect the ashes from the oven, put it on a shovel and put the shovel on the séance table. In darkness again, Molnar spasmodically pressed the hands of the controllers next to him for some time, and eventually claimed the envelope would be present again. The light was switched on, and indeed the envelope lay on the ashes in the shovel on the table, and it was recognized by the sitters as the specimen burnt previously. Apparently, even the most minute idiosyncratic marks were present exactly where they had been before, including the mark just added before the sitting (Chengery Pap, 1938:351–368,386f; see also Chengery Pap & Blacher, 1936; Blacher, 1937).[4]

However, Molnar's ability to produce physical phenomena eventually declined. The last sitting Chengery Pap held with Molnar dates to June 8, 1932. During the earlier sittings, Molnar produced only small apports such as a single coin, small pieces of plants, or even no apports at all; whereas Lajos Pap's ability to generate apports seemed to develop considerably and included more and more living animals. But, as mentioned before, Chengery Pap didn't state why he terminated his work with Molnar. Toronyi sat with Molnar until 1934 (Toronyi, 1951), and I was not able to find further information about Molnar's mediumistic activities and his life after 1934.

Lajos Pap (1883–1938)

The medium whom Chengery Pap worked with most intensively, Lajos Pap, was born on February 26, 1883. He was married, had two sons and one daughter, and worked as a carpenter. Chengery Pap (1938, pp. 130–152) described in detail how the mediumship of Lajos Pap was discovered and how it developed. Apparently, his mediumistic abilities were first noted when he participated in table séances organized by Toronyi in autumn 1922. Although Lajos Pap held a materialistic position and didn't believe in mediumistic phenomena at that time, Toronyi convinced him to join a sitting, and in his presence the table moved most violently. Lajos Pap attended more sittings, and slowly he became interested in the phenomena. In 1924, Chengery Pap first visited sittings with Lajos Pap. From autumn 1925 on, Lajos Pap entered trance states and the strength of the table phenomena increased, and the first full levitations of the table were reported. According

to Toronyi (1951), he even moved a sofa on which three persons sat 3 m across the room without touching it. The first apports were noticed during a sitting held in 1927. At that time, Lajos Pap's control spirits didn't speak through him. Communication with them had to be performed via typtology, i.e. via the tilting table knocking its legs on the floor. From 1927 onward, Chengery Pap aimed at introducing more and more control conditions into the séances, and he visited Graz, London, Paris, and Munich to study physical mediums (such as Mrs. Silbert) and the methods applied by their researchers. Thereafter, he frequently invited Molnar, Lajos Pap, and 4 to 6 selected sitters to séances to be held in his own facilities, and he began to write protocols for the sittings. The phenomena of Lajos Pap were similar to that of Molnar. They included levitations of little baskets painted with phosphorescent color, the stopping of the pendulum of a clock from a distance and setting it in motion again, various luminous phenomena, and of course the production of apports.

From July 1928 on, the sittings with Molnar and Lajos Pap were held in a special room that belonged to a facility Chengery Pap rented in Budapest, where Molnar also had his atelier. The mediums and all circle members had to empty their pockets before the séances and wore luminous strips on their wrists and around their ankles to render it possible to locate their positions in the dark, especially that of their limbs. The mediums' clothes were searched, and then they slipped into a special jacket to be worn above their usual clothes. From November 29, 1930, on, Lajos Pap wore a special experimental robe without pockets during the sittings, buttoned at the back, and which was pasted with many more luminous straps. Chengery Pap aimed at creating a better-suited environment for his experimental sittings. Hence, he established a "metapsychical laboratory" on the second floor of a building at 62 Mészaros Street in Budapest; the building still exists today. On May 7, 1932, the first sitting was held in this location with both mediums (see the next section). And, finally, since a séance held in Graz on May 19, 1932 (the day after the sitting with Mrs. Silbert), the supposed control spirits of Lajos Pap—most often "Rabbi Isaac"—spoke verbally through the entranced medium, which greatly eased the communication.

In the new laboratory, Chengery Pap focused his research on studying apport phenomena. Telekinetic phenomena were also performed with small baskets painted with phosphorescent color, but the study of table phenomena was hardly attempted anymore. Still, the sitters would typically sit around a table. It bore a self-luminous plate in the middle of the tabletop, onto which apported objects would often be placed to render their shapes visible. In 1932 and 1933, Lajos Pap's ability to produce apports seemed at its best, and I will introduce some of the most remarkable incidents

later. In 1934, Lajos Pap was invited to hold a few sittings in Sweden, and allegedly he caught a severe illness in the cold that rendered his health delicate throughout the following years, and caused recurrent outbursts of painful rheumatic symptoms (Anonymous, 1934a; Chengery Pap, 1934, 1938; Hellberg & Kassal, 1934). Nevertheless, in 1935 Lajos and Chengery Pap responded to an invitation from the journalist, psychical researcher, and psychologist Nandor Fodor and traveled to London to hold a number of séances. Fodor had visited a séance in Budapest in 1933, and was intrigued by what he experienced (see below). At that time, the phenomena reported from Chengery Pap's laboratory had already raised the interest of numerous spiritualists and parapsychologists, and thus Lajos Pap's scheduled trip to London was eagerly awaited and announced in England (Anonymous, 1935a, 1935b, 1935c [these articles were presumably written by Fodor; see Pap, 1938, p. 550]), and the results of the first sittings were briefly commented upon (Anonymous, 1935d, 1935e). Likewise, parapsychologists in continental Europe were intrigued by the prospect that Lajos Pap would hold sittings under controlled conditions that were guided by an independent researcher. Karl Röthy, for instance, who continued to report on Chengery Pap's experiments with Lajos Pap in an Austrian journal (e.g., Röthy, 1930, 1933b, 1934b), also announced (Röthy, 1935a) and commented (Röthy, 1935b) on the course of the London sittings. In France, an announcement of the test in London was published as well (Anonymous, 1935f). However, the results achieved during the sittings in London did not convince Fodor of the genuineness of the displayed phenomena (see below).

The last séance described in Chengery Pap's book dates to January 29, 1938. In this month, typical séance phenomena with Lajos Pap were still reported, but to a diminished degree. They comprised supposed levitations of the little basket and apports of dozens of small objects, including thumbtacks, nails, and small stones. However, Lajos Pap died in 1938 (Tabori, 1951; Toronyi, 1951), but I was not able to find out more about the circumstances of his death. There is an entry about him in the *Encyclopedia of Occultism and Parapsychology* (Melton, 2001), but it is short and only partially correct. In any case, Lajos Pap died in the year Chengery Pap's book was published, most likely at the age of 55.

The "Metapsychical Laboratory" of Chengery Pap and the Control Measures Applied

As mentioned, Chengery Pap established his "metapsychical laboratory" on the first floor of a building in Budapest, and held the first sitting there on May 7, 1932 (Figure 4). The main experimental room was joined to the anteroom for examining the mediums and the sitters' clothes and bodies,

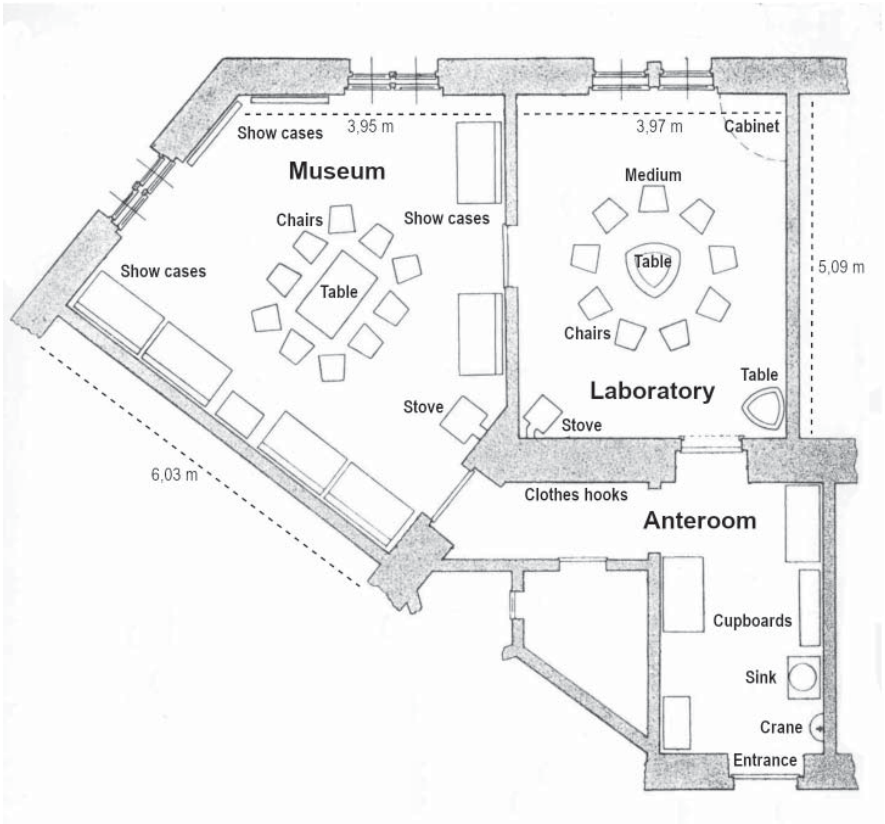

Figure 4. Floor plan of Elemér Chengery Pap's Metapsychical Laboratory in Budapest with its museum and anteroom (after Chengery Pap, 1938, p. 153, see also Chengery Pap, 1938, p. 205).

and by a room in which an "apport museum" was installed to show all the objects that were ostensibly apported by the two mediums during séances as well as spontaneously since 1928 (Figure 4, Figure 5). However, Molnar participated in only the first three sittings in the new laboratory. After June 18, 1932, all sittings were held with Lajos Pap as the only medium present.

The sittings in this laboratory were usually held in the evening and in intervals of every two weeks. Prior to the sittings, everybody had to empty their pockets. Only a handkerchief was allowed into the séance room and that needed to be inspected beforehand. Then two sitters whose pockets had already been checked, usually the guests, entered the laboratory to inspect its interior. They locked the wooden door leading to the museum, and locked a wire mesh door that was mounted in front of the solid wooden

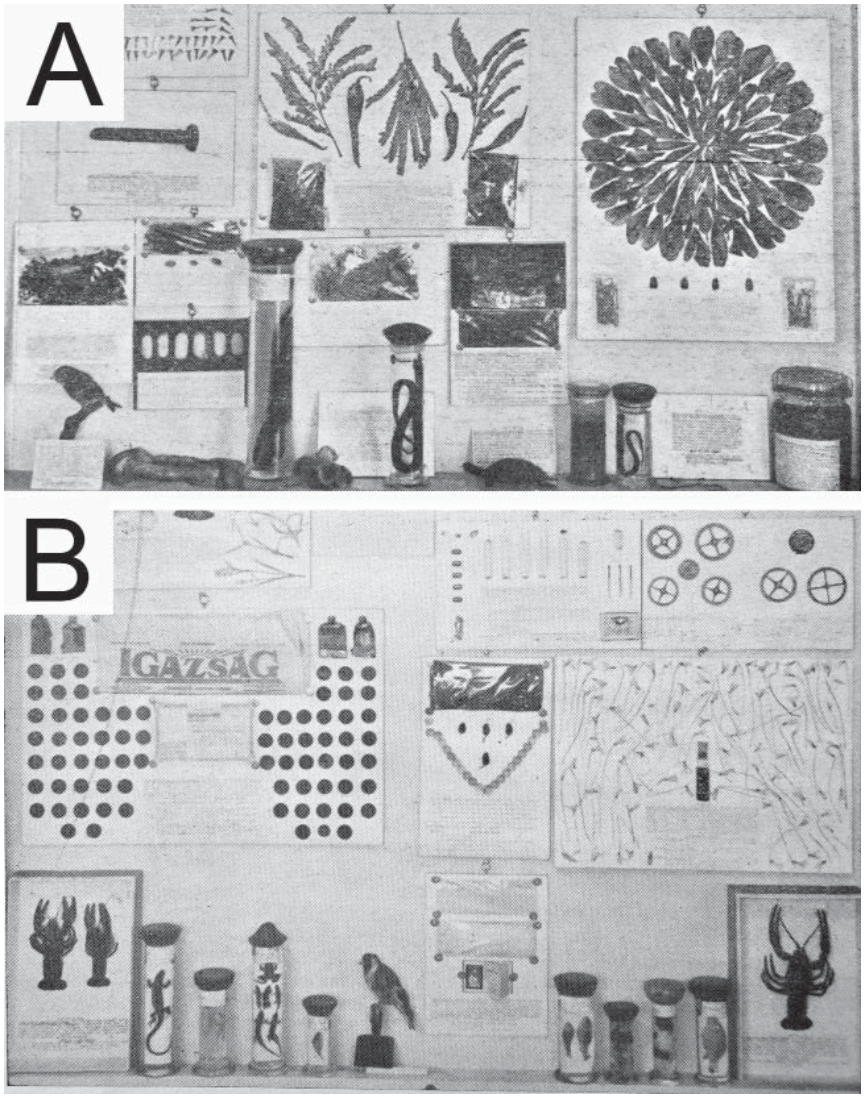

Figure 5. Examples of the apports exhibited in show cases in Elemér Chengery Pap's apport museum.

(A) Some apports received via Lajos Pap in 1933 and 1934 (Chengery Pap, 1938, excerpt of Plate XXIX).

(B) Some apports received via Lajos Pap in 1934 and 1935 (Chengery Pap, 1938, excerpt of Plate XXX).

At the bottom of Figure 5A and Figure 5B, larger animals, such as birds, fish, reptiles, amphibians, crayfish, etc., are displayed.

door that led from the laboratory to the anteroom. The mesh width of this door was 2 × 6 mm, and it could be locked and unlocked only from inside the laboratory. At times, the controllers were accompanied by Chengery Pap who assisted their controls and searches. After entering the main room, they first controlled each other, and thereafter, they carefully examined the floor, the walls, and the ceiling of the laboratory which were painted a whitish color and had no interstices. All objects in the relatively empty room needed to be scrutinized as well: There were two tables (one in the corner was for reserve), several chairs, the cabinet curtains (nobody ever sat in the cabinet), lamps on the walls and one on the ceiling, a clock on the wall, and a few smaller items such as a small basket and phosphorescent plates, the séance dresses of the circle members, etc. The other sitters observed the controllers' activities from behind the locked wire mesh door.

Next, Lajos Pap was let into the room and was carefully searched. He typically undressed the upper part of his body, and the controllers felt his lower body parts down to his shoes. Sometimes, he also lowered his trousers and underpants down to his knees to be inspected in the groin area. In case women watched the control procedure from behind the mesh door, they were asked to leave their place at the door for this part of the examination. Lajos Pap's clothes, pockets, hair, beard, mouth, ears, etc., were searched as well. Chengery Pap often stressed that he was searched from "tip to toe." Thereafter, he was dressed in his scrutinized, one-piece experimental robe, which needed to be closed with buttons at its back. From December 1936 on, this robe was additionally closed with a zip fastener at the back, and he wore spats at his feet that girded the trouser ends of this dress.

When the examination of Lajos Pap was finished, the other séance participants entered the laboratory one after the other, always being checked and patted down. The women were controlled by one of their number. All participants had to wear luminous strips around their wrists and ankles. From October 7, 1933, on, all regular sitters wore séance robes similar to that of Lajos Pap on which the luminous strips were sewn—with the curious exception of Lajos Pap's wife, who often participated in the séances (Chengery Pap, 1935; see also Figure 6). From December 1936 onward, their dresses were furnished with an additional zip fastener on the back as well. The keys of the locked doors were usually kept in the pocket of the guests who locked the doors. Only when all sitters were satisfied with the performed controls was the sitting allowed to begin. Chengery Pap appointed the persons who were supposed to control Lajos Pap, as well as the order of the sitters. All sitters were instructed to form a chain with their hands that was never to be broken, and in case somebody needed to break the chain for whatever purpose (for example, to control the medium in the

Figure 6. Group photograph of the regular circle members in October 1933.
Front row, left to right: Reszö Groh (physician), Lajos Pap (medium), Elemér Chengery Pap (circle leader), and Sándor Schürtz (bank director).
Back row, left to right: The wife of Lajos Pap, Piroska Janovitz (physician), and Erzsébet Schürtz (student of philosophy).
The photo was taken in the séance room; on the right side in the background, the cabinet curtain is visible (Chengery Pap, 1938, p. 139).

course of the sitting), the hands of the neighbors needed to be closed by this person before the chain was opened. After the light was switched off, the room was still dimly lit by a number of phosphorescent items that glowed in the dark. Most importantly, Chengery Pap mounted 10 luminous boards of about 25 × 30 cm to the walls and doors of the séance room. Other luminous items included the lampshade above the experimental table, boards on the two tables in the room, the little luminous basket, and the luminous straps on the clothes and bodies of the sitters. Allegedly, all these phosphorescent items allowed for perceiving the outlines of the sitters in the dark quite distinctively, comparable to sitting in moonlight—at least at the beginning

of the séance. The postures of the sitters were indicated by the luminous bands anyway. From October 3, 1936, on, several infrared photographs were taken during the séances as well.

The composition of the few circle members who regularly sat with Chengery and Lajos Pap from 1928 on was relatively stable. In 1932, they consisted of physicians Dr. Rezsö Groh and Dr. Piroska Janovitz, the director of the Hungarian Central Savings Bank Sándor Schürtz, and Erzsébet Schürtz, a student of philosophy (most likely the daughter of Sándor Schürtz, whose wife also attended four sittings). In addition, the wife of Lajos Pap frequently joined the sittings. Of the 194 séances held with her husband between 1928 and 1938, she was present on 91 occasions. These circle members are shown in Figure 6. In the summer of 1934, Piroska Janovitz and Erzsébet Schürtz ceased visiting the séances, but a retired chief financial auditor of Budapest, Dömötör Kornya, who had already frequently sat with the circle as a guest, became a regular member. However, not all members were present at each sitting. In addition to the regular circle members, Chengery Pap invited one to three guests per sitting to demonstrate the occurring phenomena—similar to the demonstration sittings that Albert von Schrenck-Notzing held in Munich with medium Willi Schneider (Schrenck-Notzing, 1924a). According to a list included in his book, 210 different guests of predominantly the higher social strata visited séances headed by Chengery Pap between 1928 and 1938.

Until 1931, a gramophone was often operated during the sittings by grammar school pupil János Kürtös. Thereafter, Kürtös, who later attended a business school, only participated in a few sittings until 1936. In the new laboratory, he operated a gramophone on only a few occasions. It was either mounted in the locked museum or in the anteroom. In the latter case, the main door that lead from the anteroom to the laboratory was left open, but the wire mesh door was locked. In the later years, music was hardly employed. From September 1936, Kürtös wrote real-time, shorthand protocols describing the events that occurred during the séances in the anteroom, again sitting behind the locked mesh door. The main door was left open to better understand the dictates of Chengery Pap from within the laboratory. Previously, notes of the occurring phenomena and events were taken down in shorthand following verbal descriptions, but I was unable to find more information about how precisely this was achieved.

In the next section, I summarize some of the most astonishing phenomena reported from Lajos Pap. Since apport phenomena were his specialty, I will focus on them. The reported telekinetic and luminous phenomena also were impressive, but didn't differ much from those of other physical mediums. Moreover, I will focus on sittings held in the metapsychical laboratory.

Remarkable Apport Phenomena Reported on Lajos Pap

Although most of the apports from Molnar and Lajos Pap were received during sittings, numerous objects also seemed to appear spontaneously during ordinary circumstances of daily life. Spontaneous phenomena with Lajos Pap were not as frequent as with Molnar, but Chengery Pap was obviously impressed by some of them. For example, when he and Lajos Pap were walking in the middle of an empty area in front of a depot in Budapest on the afternoon of January 1, 1933, five snowballs hit Lajos Pap's coat from behind. However, nobody else was to be seen at this location, and the windows of the nearest houses were at a considerable distance and closed. Moreover, these balls were not compacted like those formed by hand, but were scoops of snow that looked like the nearby snow that was perhaps "thrown" (Chengery Pap, 1938, p. 141).

Apports from Distant Locations and from within Locked Containers

Some of the apports received during séances in the laboratory concerned objects that appeared to originate from locked spaces. For example, during a sitting in the laboratory on May 16, 1936, Lajos Pap seemingly snatched a paper sheet in the air with his right hand and gave it to Chengery Pap, the séance leader. In the following break from the sitting, this paper was identified as a document that belonged to Chengery Pap and was usually stored inside a locked cupboard in the latter's home (Chengery Pap, 1938, pp. 145, 504). On occasion, Lajos Pap also apported objects from the anteroom or the museum into the locked séance room of the laboratory. For instance, toward the end of a sitting held on October 3, 1936, two rectangular pieces of cardboard fell onto the phosphorescent and luminous disc on the experimental table in the séance room when Lajos Pap held his hands above it while controlled by neighboring sitters. The entranced medium switched the light above the table on, and these two pieces of cardboard turned out to be specimens that were originally created by Chengery Pap for experimental purposes in 1930. One was green and one was cream-colored, and both were signed with Chengery Pap's private seal and his handwriting. They originated unmistakably from an envelope that was usually stored in a locked cupboard in the anteroom. However, "Rabbi Isaac" informed the sitters that this envelope was to be found in a pocket of the coat of a guest sitter, Mr. Verubek, left in the anteroom. He turned the light out again, and ended the séance several minutes later. Indeed, the uniquely marked envelope was later found in Mr. Verubek's coat's pocket. It seemed untouched, but the two cardboard pieces were not inside it any more (Chengery Pap, 1938, pp. 334–341, 512). On January 27,

1934, Lajos Pap even apported a living turtle from the anteroom into the séance room. At one point, he asked his controlling neighbors to squeeze his wrists as hard as possible, "breaking" his bones. Thereafter, he covered the luminous plate on the tabletop with both hands, the wrists still being held by the controllers. When he removed them again shortly after, a small living turtle sat on the plate. The sitters knew that a turtle of this size lived in a terrarium in the anteroom, and indeed it turned out that it was missing from there. Since the initial controls of the séance room were performed and all the participants entered it about two hours before, the doors to the séance room had constantly been locked from the inside, the keys being in the possession of two guest sitters (Chengery Pap, 1938, pp. 145, 299–302, 481). The turtle, by the way, had initially been apported in a comparable manner during a séance on July 29, 1933. After performing a number of "automatic" movements (see below), Lajos Pap approached the luminous plate with both hands, and after he removed them the turtle sat on it. It weighed 41 grams.

Wish Apports and Announced Apports

Sometimes, Lajos Pap also reacted to requests from Chengery Pap and provided "wish-apports." For example, he once apported 197 maize kernels after Chengery Pap asked him to bring maize kernels for one of the guests into the séance room (sitting on November 19, 1932). On another occasion, he asked Lajos Pap to bring some bell pepper. "Rabbi Isaac" agreed, but jokingly added that he would rather put it into the upper pocket of Schürtz's coat in the anteroom, because he feared that the vegetarian Kornya would immediately eat it if brought into the séance room. Indeed, Schürtz found bell pepper in the appointed pocket of his coat after the séance (sitting on October 6, 1934).

Sometimes, and at the request of Chengery Pap, "Rabbi Isaac" also announced days or weeks in advance what kinds of apports he would bring at a given séance to prepare the controllers for what they should look for during their examinations and to allow Chengery Pap to prepare the appropriate containers for living animals. For example, he announced he would bring apports of a mouse, birds, and other animals at certain future séances, also liquids, and these creatures and substances were duly apported.

Apports of Liquids

One of Lajos Pap's specialties was apporting liquids of various kinds. They included evil-smelling hydrosulfide, but also drips and small amounts of fragrant perfumes as well as larger amounts of water, wine, beer, apricot

liquor, coffee, cream, or honey that were usually collected in empty bottles during the séances. The mode in which the liquids were received was always similar. For example, at a sitting during the night of New Year's Eve 1932/1933, Lajos Pap apported about half a liter of wine. After he fell into a trance, "Rabbi Isaac" announced he would bring some red wine, asked for an empty bottle, took it in both hands, performed various movements with his hands (which were controlled at the wrists), turned around and stepped on his chair (the controlling neighbors also got on their chairs), and held the bottle above his head. He began to swing it up and down with both hands, and the smell of wine was perceived in the room. After a few minutes, he handed the bottle to Chengery Pap, claiming that it already contained wine. When the latter held the bottle above the luminous disc on the table, about 20–30 cm^3 of wine seemed indeed to be inside the bottle. "Rabbi Isaac" asked for the bottle again, held it up again with both controlled hands, and a few seconds later repeated milking sounds were heard, and the smell of wine increased. After some minutes, the medium carefully passed the bottle back to Chengery Pap, stating that it would be full. Indeed, it was filled to the brim. The wine apport lasted for about ten minutes. When the light was switched on, the wine turned out to be a kind of rosé (Chengery Pap, 1938, pp. 221–224, 461).

On December 16, 1933, Lajos Pap apported among other objects numerous very cold drops of water—and even snow. Chengery Pap considered the snow apport one of the most evidential apports received, as it occurred about 2 hours after the séance begun, and at a rather constant room temperature of about 22 °C. Prior to the sitting and before Lajos Pap had entered the trance state, Chengery Pap asked him to bring some snow from outside into the séance room. After a break that lasted from 9 to 9:25, the locked laboratory was inspected again, and the medium and sitters searched when they entered the room one by one. A few minutes later, Lajos Pap stood up from his chair, turned around, and stood on his chair; his neighbors climbed on their chairs, holding his wrists. He moved his arms up and down and asked his controllers to fiercely press his wrists. At 9:40, he snatched something out of the air with his right hand, and gave it to Chengery Pap. It was a compressed piece of snow of the size of a hazelnut. The séance leader put it into an empty bottle. Within the next ten minutes, this procedure was repeated eight times. Thereafter, the medium announced that he would sprinkle the sitters with cold water, and indeed the sitters, the table, and the floor were splattered with numerous ice-cold drops of water. When the snow in the bottle thawed, the sitters noted a peculiar smell and pieces of horse dung in the muddy water inside the bottle. "Rabbi Isaac" triumphantly remarked that he would hardly be able to swallow and regurgitate snow, in

particular snow of this kind. Given the seemingly rigid controls of the sitters and the laboratory, regurgitation was apparently deemed the only possibility left for producing fraudulent apports. After the sitting, a small puddle of this dirty water was also found on the floor behind Lajos Pap's chair (Chengery Pap, 1938, pp. 290–293, 476f; see also Chengery Pap, 1935). Similarly, when he apported 140 cm^3 of honey into a bottle on December 2, 1933, honey was also found on the floor where the medium stood.

On three different occasions the medium even apported considerable amounts of water and living goldfish. At the first two séances, they were received in the typical manner of apporting liquids. Lajos Pap would stand on his chair in the dark, hold the bottle in the air with both hands, ask his neighbors to tightly squeeze his wrists and "break" his bones, and liquids would then be poured into the bottle. On July 7, 1933, he apported several living caterpillars, 12 dead dragonflies, and two small goldfish. On August 26, 1933, he apported 7 pebbles, 16 living locusts, 12 living butterflies, and two more goldfish. Lastly, after he apported several other objects on December 2, 1933, he first apported water that contained pieces of algae into a bottle. Then, he seemed to snatch a 8-cm long, fidgeting goldfish from the air and gave it to Chengery Pap who then put it into the bottle with the apported water.

Apports of Animals

As stated previously, Lajos Pap's most celebrated mediumistic ability was the apport of animals, and, like the already-mentioned turtle and fish, they were often still alive. Yet, this was not always the case, and occasionally "Rabbi Isaac" apported dead animals on purpose. For example, at a sitting on November 4, 1933, he apported among other items 21 locusts that had obviously been dead for some time before they were apported. Chengery Pap suggested that they constituted an allusion to the military relations of one of the guest sitters. On June 16, 1934, he snatched something from the air and put it into Chengery Pap's hand. The object smelled dreadfully and turned out to be the decomposing cadaver of a little bird. The medium claimed he apported it to demonstrate that he didn't regurgitate the apported objects. Apart from living beetles and flowers, a dead and a living bird were apported on April 22, 1933. Such larger animals were often apported in the small basket. After the break for this séance, Lajos Pap was carefully searched again by a circle member, and he let the little basket be searched as well. He then took the basket in his hand, stepped on his chair, as usual followed by the controllers, and waved the basket up and down. The medium began to whistle and stated that he would attract a bird now. After a while, he asked the controllers to squeeze his wrists, then moved back to the table

(it was 8:34 p.m.), and emptied the basket carefully above the luminous disc. A seemingly dead songbird fell from the basket. It was already cold. Chengery Pap complained that he promised to bring a living bird, to which "Rabbi Isaac" replied that he would revive it. He grabbed the bird from the table and threw it against the opposite wall, where a muffled impact was heard. He took the basket again, performed the usual movements on his chair while his wrists were held, and at 8:44 he returned to the table. He covered the opening of the basket with one hand, passed it to Chengery Pap and asked him to carefully fetch the bird from it. The latter cautiously reached into the basket between its rim and the medium's hand, and indeed he was able to grab a living bird that clutched to one side of basket. It was put in a box and turned out to be a goldfinch (*Carduelis carduelis*). The dead bird that was seemingly apported before was not found during the post-sitting searches (Chengery Pap, 1938, pp. 231–237, 466f). A second goldfinch was apported on May 20 of the same year. This time, Lajos Pap held it directly in his hand and gave it to Chengery Pap. It was in a torpid state, but it recovered soon. The first finch lived in the museum until April 24, 1934; the second until January 13, 1936.

The other animals apported by Lajos Pap were usually received in a similar manner. Either they appeared inside the basket, or they were directly handed over to Chengery Pap and others from out of Lajos Pap's hands while he appeared to snatch them from the air. Living vertebrate animals apported in these ways included three more turtles (one weighing 215 grams), songbirds, snakes, lizards, frogs, a newt, mice, and, most notably, a living sparrow hawk. Toward the end of a sitting held on December 30, 1933, "Rabbi Isaac" announced that he was about to bring an eagle. He stood on his chair, was controlled at his arms as usual, asked his neighbors repeatedly to firmly squeeze them, and moved them up and down with the basket in his hands. Several times, he turned around and seemed to put something into Chengery Pap's hands, but they remained empty. At one point, however, Lajos Pap grabbed something in the air, gave it to Chengery Pap who put the object onto the luminous cardboard on the table. It was an apparently lifeless bird of considerable size. Yet soon it began to move, and was put into a parrot's cage that Chengery Pap had brought into the laboratory as Lajos Pap had already announced that he would apport a large bird one day. The bird came fully to itself. It turned out to be a sparrow hawk, and it lived three more days (Chengery Pap, 1938, pp. 293–299, 477). Yet, not all vertebrates were apported alive, or survived the process of being apported. Lajos Pap also apported a dead squirrel that was still warm and had live fleas on its body, and two dead snakes.

Similarly, some of the invertebrates that decorated Chengery Pap's

apport museum were apported alive, some dead. The most remarkable apported living invertebrates include seven crayfish that appeared during six séances between 1933 and 1937. The largest specimen measured 12.7 cm from the tips of its tail and head, excluding the considerably protruding claws and antennae. In other noteworthy séances, astounding amounts of insects were apported in addition to other objects and plant pieces such as flowers, leaves, fruits, or entire twigs. For example, at a séance on August 27, 1932, Lajos Pap apported 30 butterflies, tipping the basket over the luminous cardboard on the table. Four of them were still alive. Moreover, he apported six live and four dead locusts, one living dragon fly, and three other insects. During a sitting on July 15, 1933, Lajos Pap apported six living and nine dead butterflies from out of the basket, as well as seven living and six dead other kinds of insects such as different beetle species and a locust. Most notably, he also apported 15 male stag beetles. As usual, he stood on his chair with the back to the circle, moved his arms up and down, asked the controllers to press his wrists and "break" his bones, and snatched the stag beetles from the air, one after the other, carefully handing the protesting individuals down to Chengery Pap who collected them in a container on the table. The apport of the 15 stag beetles took place within seven minutes (Chengery Pap, 1938, pp. 251–253, 741f; see Figure 7). At the previous séance briefly summarized here, the already-mentioned Hungarian psychical researcher Nandor Fodor participated as a guest sitter. Although he needed to leave the sitting held on June 3, 1933, during the second break, the phenomena he witnessed during the first two parts of the sitting greatly impressed him. The first part chiefly consisted of telekinetic phenomena during which the little luminous basket moved in various ways through the séance room, seemingly by itself and while Lajos Pap was controlled at his arms. After the first break was over, Fodor and another guest searched and controlled the laboratory as well as the medium and the other sitters as they entered the room. The doors were locked from the inside. Shortly after, Lajos Pap fell into trance again in the darkened room. In the dim light of the many phosphorescent plates and objects, "Rabbi Isaac" asked Fodor again to examine the medium. He didn't find anything suspicious, and thereafter the medium announced he would bring in 30 animals that would most likely be rose chafer beetles. At 9:34, he turned around, stepped on his chair, asked his controlling neighbors and also Fodor to examine his hands (they found nothing), and immediately after that he asked them to press his wrists so hard that his bones would "break." At 9:35, he snatched something from the air, and passed a small fidgeting animal to Chengery Pap. It was a rose chafer. These activities went on until 9:45; Fodor and the other sitters also received rose chafers directly from Lajos Pap. They collected them in a

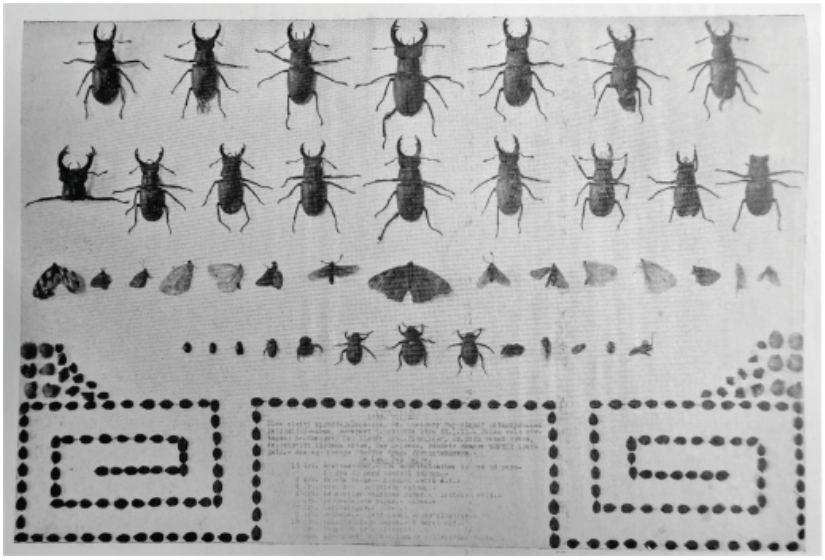

Figure 7. The apports received via Lajos Pap at the sitting on June 15, 1933, as they were exhibited in a show case in Elemér Chengery Pap's apport museum. In addition to 31 berries, 201 plant seeds, and several other insects, Lajos Pap apported 15 living stag beetles. The original measurements of this collage are 50 × 33 cm (Chengery Pap, 1938, Plate XVI).

bottle that stood on the luminous plate on the table, and indeed they were 30 individuals. Thereafter, Lajos Pap picked up the basket, performed different kinds of movements with it, and in total, poured 29 more living beetles of a smaller species into a transparent box. Moreover, he apported three small butterflies. Finally, before the second break, he also snatched four fragrant inflorescences of acacia flowers from the air. During the third part of the sitting, after Fodor had already left, the medium furthermore apported various parts of dog roses and a stingy, 10-cm long cactus with roots, as well as bits of earth to plant it in (Chengery Pap, 1938, pp. 237–246, 469; Fodor, 1933, 1936?).

As shown in this section, some of the most remarkable phenomena attributed to Lajos Pap's mediumship apparently seemed to occur under rather strict conditions of control, and some of them, such as the wish apports, apports of snow, living crayfish, a living sparrow hawk, and more than 60 insects, flowers, and a cactus during one séance, etc., appear difficult to stage under the prevailing conditions. Not surprisingly, the reported phenomena attracted the attention of numerous people interested in

psychical matters, and outside Hungary articles about them were published in spiritual or parapsychological journals in Austria (Röthy, 1930, 1933a, 1934a), Germany (Margittai, 1933; Sünner, 1934), France (Anonymous, 1934b), The Netherlands (van Gorcum, 1936a, 1936b), and of course England (Anonymous 1934a, 1934c; Fodor, 1933, 1934). However, these articles were unduly short, written in a popular style, and provided not enough details for forming an appropriate opinion on the control measures applied. The only source that provided these details was Chengery Pap's book (1938). Consequently, its publication was welcomed in Austria (Röthy, 1938; Walther 1938), Germany (Anonymous, 1938a), and France (Anonymous, 1938b), but it was typically also regretted that its Hungarian language rendered it practically inaccessible. Be that as it may, Chengery Pap's (1938) treatise constitutes an impressive piece of work, parts of which seem almost "too good to be true." Hence, a consideration of the opinions of other researchers regarding the mediumship of Lajos Pap and a more critical look at Chengery Pap's experiments with him seem apt.

A Critical Perspective on Chengery Pap's Experimental Approach

Apart from some of Chengery Pap's treatises, especially his book, I am aware of only one other source that contains detailed reports of a number of sittings held with Lajos Pap. It is written by the already-mentioned, Hungarian-born Nandor Fodor, who moved to London in 1929. Fodor was very impressed by the reports about Lajos Pap's mediumship, especially by the phenomena he witnessed in person during the séance he visited in the laboratory of Chengery Pap in 1933 (see above section). After his return to London, Fodor approached people who might potentially be interested in inviting Lajos Pap to London to witness and test his mediumship. However, due to the Swedish adventure of Lajos Pap in 1934, the resulting health trouble, and other obstacles, this project was only realized in May 1935. In an announcement of this visit, it was stated that the main purpose of the experimental sittings was two-fold: "(1) to establish apports as facts, if phenomena are forthcoming; (2) to determine the origin of the apported objects" (Anonymous, 1935b). Lajos Pap was accompanied by Chengery Pap. They arrived in London on May 3, and between May 7 and June 7 the medium gave ten sittings for a varying group of guest sitters under the auspices of Fodor's International Institute for Psychical Research. The experimental room in London was prepared to resemble the laboratory in Budapest as closely as possible; also, séance robes that mirrored those in Budapest were fabricated and provided. Yet, the obtained results were

disappointing. Lajos Pap's conduct proved to be suspicious in several respects, and regarding certain phenomena Fodor even discovered outright fraud. Fodor's report of the séances is also little-known, but it constitutes an illustrative masterpiece of meticulous research into physical mediumship. It is intriguing how he uncovered more and more astonishing loopholes in Chengery Pap's approach that are not apparent in the latter's publications, including his 1938 book. I highlight some of the most peculiar issues in the following.

Lajos Pap's Kidney Belt

Fodor's (1936?) report of the sittings conveys several details that relativize some of the seemingly well-conducted experiments of Chengery Pap. This is particularly true for the latter's frequent assertion that Lajos Pap was routinely searched "from tip to toe" before each sitting and after the breaks. Fodor's most important finding was that Lajos Pap wore a kidney belt made of soft cloth beneath his shirt and séance robe. Curiously, Chengery Pap and other members of his circle didn't even inform their guest sitters about the presence of this kidney belt. It was merely discovered by chance. For example, when Fodor felt Lajos Pap all over the body in Budapest in 1933, he didn't feel the kidney belt, and was thus not aware of its existence. Similarly, the examiners who searched Lajos Pap in his clothes before the first three sittings in London were not aware of the presence of this belt. Before the first sitting, it was deliberately planned to allow the medium to wear his clothes during a cursory body examination to make him feel as comfortable as possible. Yet, no apports appeared. Before the second sitting, however, Lajos Pap complained about a bronchial cold, and refused to take his clothes off. Now, a thin dead snake of a South-Eastern European species and a pebble were apported. Fodor, assuming that the snake might have been hidden in Lajos Pap's clothes, recommended that the examiners should perform more thorough controls in future. Nevertheless, when Lajos Pap was to be searched more carefully before the third sitting, he refused the request to take off his clothes again, even though it was agreed upon during the arrangements for the sittings that he must take them off when requested. Yet, he allegedly feared that he would catch a cold in the 17 °C, warm séance room if he would briefly undress himself—but because this excuse was not acceptable, he then defended himself by purporting that his undergarments were not clean and that he was ashamed of exposing them. In that sitting, 44 rose petals and two small green leaves were apported.

Only before the fourth sitting did Fodor discover that Lajos Pap wore a kidney belt, when he undressed Lajos Pap to let him be scanned with an

X-ray machine to rule out the possibility that Lajos Pap swallowed objects he might regurgitate during the séances (Fodor, 1936?, 1959). Lajos Pap freely admitted that he wore this belt all the time since 1932, also during séances, as he had lowered kidneys that required this external support to keep them in their position. Nevertheless, Fodor considered Lajos Pap's kidney belt highly suspicious, and he didn't even consider it as being a proper medical kidney belt. Moreover, after the X-ray examination was performed, Fodor stated the scans showed that Lajos Pap's kidneys were not lowered. This suggested that in reality, Lajos Pap didn't have kidney problems, and that the belt might serve different purposes, such as providing a hiding place for supposed apports (Fodor, 1936?).

Because of these suspicions and the further disappointing development of the London sittings, Chengery Pap (1938) went into considerable detail to describe the reasons for the kidney belt and the circumstances under which it was obtained. Allegedly, Lajos Pap complained about pain in the kidney region first in March 1932, and following the advice of Chengery Pap he was examined at the urological department of the (New) Saint John's Hospital in Budapest. The physician diagnosed a lowered kidney on the right side, and asked him to let himself be examined again in two to three months in case the pain hadn't ceased by then. The pain didn't cease, and consequently Lajos Pap visited the hospital again on June 15, 1932, accompanied by Chengery Pap. This time, the examination included an X-ray scan that confirmed the diagnosis: lowered right and left kidneys, blood in the urine, and especially the right kidney was sensitive to pressure. Thus, the physician now prescribed Lajos Pap a kidney belt that was to be worn constantly. The next day he bought such a belt and began to wear it. After two weeks, the pain had considerably decreased. Chengery Pap reprinted the written diagnoses by the hospital physicians who examined Lajos Pap. He also described how Lajos Pap was examined again in the (New) Saint John's Hospital on August 26, 1936. In contrast to the X-ray examination performed in London, when Lajos Pap removed the belt immediately before being scanned, he had to remove the belt 48 hr prior to the scan to let his kidneys move to their natural position. As a result, physician Dr. László Hencz found that the right kidney was still lowered, enlarged, and pressure-sensitive, and he recommended that Lajos Pap should continue to wear the belt.

But, even if all this were true, it is obvious that contrary to Chengery Pap's claims, Lajos Pap's clothes and kidney belt were not properly searched before each sitting. Rather, the medium often left at least a shirt on for the search, and neither Chengery Pap, Lajos Pap, nor any other circle members informed the examiners and guests that there was a belt beneath the medium's

shirt. It seemed to remain unnoticed by them. Yet, the wearing of such a belt is obviously so important that a routine examination of it should have been absolutely obligatory. It is especially suspicious that Lajos Pap didn't take it off even briefly. Apparently, this must have been feasible, since he took it off briefly in London for the X-ray examination. Moreover, Chengery Pap claimed that it needed hours to let Lajos Pap's kidney sink to its lowered pathological condition, so it really should have been no problem to take the belt off for, let's say, one or two minutes. It is difficult to understand why Chengery Pap didn't insist on such a belt control.

Moreover, it is suspect that Lajos Pap began to wear the kidney belt almost at the same time as the new metapsychical laboratory was opened in May 1932 and the control conditions were tightened. The first living animals were apported by Lajos Pap at the second sitting in the laboratory, when Molnar was also present. The third sitting held in the new laboratory dated to June 18, 1932, and on this occasion Lajos Pap must have worn his kidney belt for the first time. It was also the last sitting that Molnar attended. Was all this just a coincidence? Chengery Pap didn't say a word about it. He didn't even mention the kidney belt before Fodor drew attention to it, and, as mentioned, he also didn't explain why he broke relations with Molnar.

"Automatic" and Other Movements of Lajos Pap during Séances

Furthermore, Lajos Pap's mediumship was peculiar in that when he was in trance he performed all sorts of large-scale movements with his limbs and body. Until June 1932, he used to walk a lot around the séance room, dragging the neighbors who held his wrists and consequently the entire circle with him. This was fatiguing, and of course it impeded the controls (Chengery Pap, 1938, p. 149). Hence, in the new laboratory, Chengery Pap insisted that this walking habit was to cease. He succeeded—but now Lajos Pap performed numerous "automatic movements," as Chengery Pap termed them. Specifically, he waved and swung his arms to and fro, up and down, and performed scooping or gathering movements on the floor, often holding the little luminous basket in his hands. Moreover, he frequently stepped up and down from his chair, turned around, facing the wall instead of the circle and its members. Quite peculiarly, at the end of sittings, Lajos typically left the chain of sitters, turned his back to the sitters, and "demagnetized" himself in this position all by himself. In his protocols, Chengery Pap duly mentioned these movements when they occurred. Moreover, he usually conveyed the notion that Lajos Pap was easy to control when he moved, and that the controls of his wrists were continuous and uninterrupted throughout the séances. In his first brief report, Fodor (1933) supported this notion. However, according to other authors and also Fodor's (1936?) report on

the London sittings, this was apparently not always the case. In a report of a sitting that Theodore Besterman visited in the flat of Toronyi in 1928, he described vividly how Lajos Pap, who had allegedly been a wrestler in his youth, tried to free his arm from Besterman's controlling grip around his left wrist:

> After he had repeatedly tried and failed to pass off my left hand on the left controller as his own (the medium's) left hand, he began, and continued for about five minutes, a series of most violent contortions and constrictions of his massive hands. The controller of the medium's left hand simply let it go, and I myself, in order to retain control, had to rise and circle around the medium. On this Papp [sic] redoubled his extraordinary convulsions. [. . .] My own hand, at any rate, was stiff and sore for two days afterward. (Besterman, 1929, p. 462)

Mrs. Eira Hellberg, who organized Lajos Pap's journey to Sweden in 1934, described his behavior during the sittings as follows (my translation):

> Papp [sic] has the bad custom of standing up during the séance, turning himself around in circles with his whole body, bending and fidgeting, waving with a small and empty chip basket in the air, lowering himself suddenly and sweeping across the floor with extensive movements of his arms—and the two controllers need to hold onto his arms all the time, i.e. they need to follow all his movements whilst simultaneously holding with the other hand that of the other circle member next to them. The whole circle gets into motion, and this is what is so exhausting. During the sittings, Papp [sic] even has fierce and wild fits that knock the entire long and heavy figure over and roll it on the floor. [. . .] The man squirmed and hit his head, shoulders, and forehead against the floor and the table legs; the chairs were thrown to the floor, and he screamed and groaned in trance. (Hellberg & Kassal, 1934, p. 180)

These violent fits typically occurred when a trance personality named "Saol," an alleged opponent of the usual "Rabbi Isaac," appeared to take over Lajos Pap's body. During the sittings in London, Fodor (1936?) witnessed several manifestations of "Saol," and he also stated that the controls of Lajos Pap's body got lost during such fits. The most drastic of those attacks resulted in a concussion as a result of Pap's persistent hammering of his head against the wall, and was supplemented by the tearing and destroying of his séance robe.

But, according to Fodor, even the more usual "automatic" movements proved to be suspicious. In several instances, they seemed to provide the opportunity to retrieve a hidden object from potential concealments such as Lajos Pap's kidney belt or his shoes. During the sittings, Fodor dictated

all noteworthy occurrences including precise descriptions of Lajos Pap's "automatic" movements into a microphone connected to an adjacent room where a minutes writer took notes down. Fodor was thus able to critically relate all occurrences of the sittings to the behavior of Lajos Pap, the controls exerted, and the occurring phenomena. For example, he recorded when Lajos Pap asked the controllers to move their hands from his wrists farther upward to the elbow or the upper arm (which he did several times), and which (arm) movements and phenomena then succeeded these requests. This is interesting by itself, because even in his 1938 book Chengery Pap never explicitly mentioned that the controls were often slipped upward on Lajos Pap's arms—let alone that this happened at the medium's request. Still, on the four infrared photographs included in Chengery Pap's book that show Lajos Pap in action during séances, his right arm seems to be "controlled" at or above the elbow, not at the wrist (e.g., Figure 8A, 8B). According to the séance protocols, Lajos Pap's right arm was usually controlled by regular circle member Kornya at that time, and judging by the photographs one might suspect that the medium's arm was always more or less free during the occurrence of phenomena.[5] In London, however, Fodor dictated so many details of the sittings for the protocols that Chengery Pap became annoyed and complained about this behavior. Hence, although Chengery Pap and Fodor took detailed notes of their sittings with Lajos Pap, those from Fodor seemed to be much more thorough. Most importantly, Fodor reasoned about possible agendas behind these movements, especially after it seemed to become clearer and clearer that there was something fishy about Lajos Pap's behavior and mediumship. Chengery Pap, by contrast, listed the details of the séance proceedings including the movements of Lajos Pap almost mechanically and vacuously in his protocols, and he appeared incapable of critically relating them to the development of supposed telekinetic and apport phenomena, or to question their nature and purpose. Yet, Fodor discovered even more dubious aspects of Lajos Pap's mediumship in London.

Other Suspicious Aspects of Lajos Pap's Sittings in London

- In later sittings, Lajos Pap agreed to take off his trousers. In the fourth sitting, however, only a small solid object was apported. "Rabbi Isaac" claimed that it was a glass object, and he pointed to the direction in which it was to be found. Still, it was nowhere to be found in the séance room, seemingly having vanished again. During the fifth sitting, two days later, he claimed that the sitters had not looked properly for the apport. He pointed again toward the place where it was to be found, but curiously he now stated that the object was made of iron not of glass. This time, Fodor

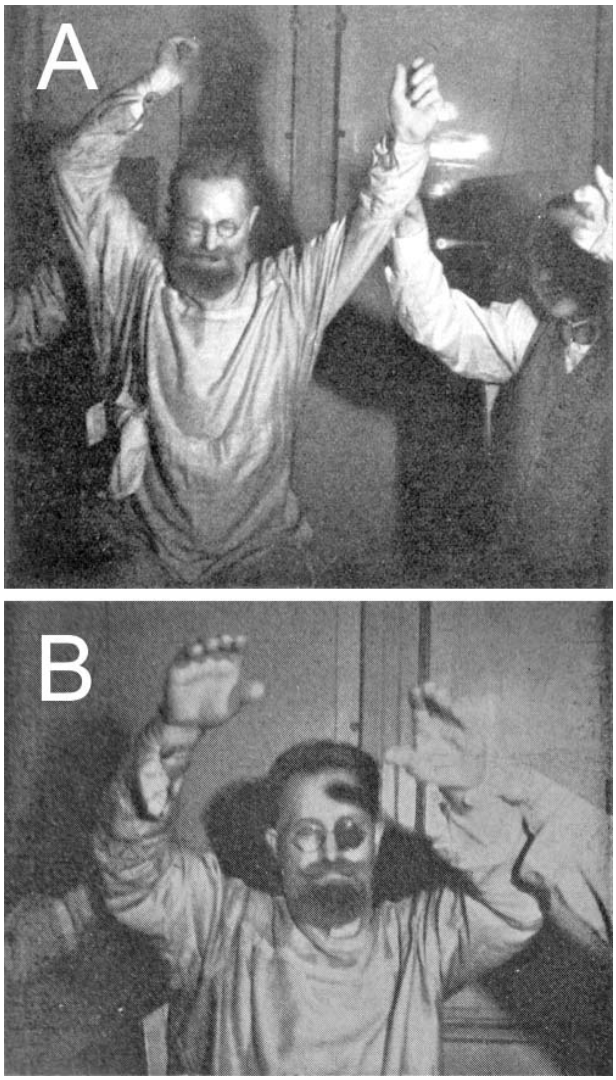

Figure 8. Infra-red photographs of Lajos Pap taken during sittings in 1937. The séance protocols read that the "hand controls" of Lajos Pap's hands were performed as usual, but the photographs clearly show that his right hand and wrist are not controlled at all. Obviously, the controller of Lajos Pap's right hand (it must be Dömötör Kornya) touches his arm somewhere above his elbow (Chengery Pap, 1938, pp. 516, 518).
(A) Lajos Pap is about to slam an apported cable on the séance table.
(B) A black unidentified object materialized and was stuck behind Lajos Pap's left spectacles glass.

indeed found the alleged apport on a shelf. It was an old metal nut. During the sixth sitting, "Rabbi Isaac" even claimed that the nut originated from the X-ray machine that he had been examined with. These claims were wrong, however. It turned out that the cleaner of the room had found the nut in a different part of the room and placed it on the shelf so that it could easily be seen and found by anybody who entered the séance room in case it was missed. In addition, the X-ray machine had no nuts of that size, and in contrast to this unplated nut all of its nuts were nickel-plated. It became obvious that "Rabbi Isaac" was not telling the truth.

- When Lajos Pap was asked to also take off his shoes before the fifth sitting, he again flatly refused. He argued that he wore elastic laces that would render the shoes difficult to put on again, and that he could not remove his shoes anyway because he wore spats. These weak claims of defense were later replaced by saying that he was ashamed of exposing his sweaty feet. Wearing elastic shoelaces is curious conduct, especially for an apport medium, because such laces make it easier, not more difficult, to remove shoes and to slip into them again. In this sitting, a small amount of gravel stones appeared, as well as two official documents belonging to a Hungarian citizen of Budapest named "Janos Lajos Pap" (see also Chengery Pap, 1935–1936, 1938). These documents were already known to be missing in Budapest since 1930 (Anonymous, 1935g). In that year, they were accidentally lost, presumably having been delivered to a wrong address. According to Fodor, they were folded several times to a size of 5 × 10 cm, and looked very much as if they could have been worn inside a shoe. Immediately prior to the showers of gravel, Fodor always noted a jerking movement of Lajos Pap's arm that he controlled. When Fodor filled the collected gravel into his own shoe for a test, he found he could still walk without problems. Quite astonishingly, Chengery Pap told Fodor that the shoes (and feet) of Lajos Pap were never searched or controlled in his laboratory in Budapest prior to sittings.
- In contrast to Lajos Pap's claims, Fodor found out that his shoes could easily be removed from the luminous spats that were supposed to secure the medium's shoes and indicate their positions. Chengery Pap seemed surprised, but agreed to find a better solution for their fastening.
- During the fifth sitting, Lajos Pap claimed he produced some ectoplasm (which he sometimes did). An infrared photograph was taken, and it clearly revealed that the white substance he held in his hands was the handkerchief that he usually wore on the outside of his séance robe, and that was missing from its usual place. Chengery Pap (1938) later claimed that "Rabbi Isaac" was only making a joke when he stated that the handkerchief was ectoplasm.

- Apart from the apport of a small gold coin in the ninth sitting, no events of potential significance occurred in the remaining sittings, before and during which Lajos Pap was controlled "from tip to toe" in a more proper way. Chengery Pap recognized the apported gold coin, and stated it belonged to a secret cache in his own suitcase which was deposited in Lajos Pap's (!) hotel room (see also Fodor, 1959). As the hotel was located very close to the séance room, Chengery Pap and Lajos Pap led Fodor, his wife, and another sitter, Mr. Becker, to the hotel to check this cache. Fodor, his wife, and Mr. Becker noted that the linen cover of the suitcase was loose and fastened again with glue that was still wet. Allegedly, it was plain that the suitcase's cache had been opened just recently. According to Fodor, Lajos Pap tried to distract their attention and pushed Mrs. Fodor's hand away, while Chengery Pap was almost "jumping around with suppressed excitement" because indeed, the gold coin in question was missing from the cache (Fodor, 1936?, p. 48). Yet, quite peculiarly and without explaining why, Fodor decided not to confront the medium and Chengery Pap about their discovery. Regarding the appearance of the gold coin in the séance room, Fodor mused that it might well have been hidden in Lajos Pap's nose. The tenth and final sitting, when his nose was properly controlled, was completely blank.

In sum, Fodor concluded that Lajos Pap's ability to produce apports was not supported by the results obtained during the sittings in London. This opinion was shaped by his observation that "the manifestations appeared to be rooted in the loopholes only, and petered out as the loopholes were stopped" (Fodor, 1936?, p. 50). Chengery Pap (1938), on the other hand, complained vigorously about the bad behavior of Fodor, the unfavorable conditions of the sittings, the mistrustful atmosphere, and attributed his medium's failure to produce satisfying results to these allegedly hostile circumstances—but without citing Fodor's findings and report in his book (admittedly, it seems that Fodor's report was and is not widely known in continental Europe; and perhaps even Chengery Pap didn't know about it). However, Fodor was initially positively intrigued by the possibility that Lajos Pap's phenomena might be genuine, and he cannot be blamed for radiating an inappropriate skepticism or negativism. In any case, Lajos Pap did not feel inclined to hold further sittings in the months following his return from London in 1935. The first séance in Chengery Pap's laboratory after the London debacle dates to January 27, 1936.

More Dubious Aspects of Lajos Pap's Mediumship and of Chengery Pap's Presentation of It

Apart from the suspicious aspects of Lajos Pap's mediumship described above, I'd like to add a few more considerations regarding its presentation in Chengery Pap's book. In general, it is apparent that on several occasions the author aimed at eliminating doubts regarding Lajos Pap's phenomena in rather naïve and unconvincing ways. For example, when discussing the possibilities of fraud, he presented photographs of the right hands of Lajos Pap and an amateur magician held next to each other (Chengery Pap, 1938, p. 53). This comparison is supposed to show that the large hands of carpenter Pap were "entirely unusable" to perform sleight of hand and magician's tricks. Indeed, the hand of Pap looks a little broader on close inspection, and its fingers minimally thicker than that of the magician. Yet, the purportedly decisive difference in their size is mainly achieved by the effect of positioning their fingers differently: The magician's fingers are held together, whereas Lajos Pap's fingers are spread apart. The manner in which these pictures are presented and the accompanying lack of critical reasoning by Chengery Pap, who often stressed his critical approach, are irritating. But even if the latter's hands were considerably more massive, it simply cannot be inferred that he would be incapable of producing tricks in the dark. The fact that Chengery Pap was not an appropriately objective and critical séance leader is, apart from Fodor's experiences with him, also evidenced by the following considerations:

- Although Chengery Pap was the formal leader of the séances, their course was almost exclusively determined by the different personalities manifesting through Lajos Pap. All critical steps were only undertaken after the medium's consent or at his demand. For example, he instructed the sitters about how and when his body was to be controlled, and when the luminous basket and other objects were to be controlled during the séances. Also, he was the one who switched the bright light on and off during the sittings, gave the signals for taking infrared photographs, etc. In the cases where there was even a slight distrust or tighter controls seemed desirable, such as in Sweden or London, large parts of the séances were dominated by "Saol" who was practically uncontrollable.
- Chengery Pap frequently stressed that the light conditions in his laboratory were very good, especially because of the numerous phosphorescent plates on the walls. It is curious, however, that before large-scale phenomena or apports occurred, "Rabbi Isaac" almost always demanded that a considerable number of these luminous plates needed to be turned around. For example, "Rabbi Isaac" demanded that 8 of

the 10 plates in the laboratory be turned around before the snow apport and other remarkable apports occurred—which must have rendered the room considerably darker. But, while repeatedly stressing the good light conditions during the séances, Chengery Pap never described the light conditions when almost all the luminous plates on the walls were turned around. He only mentioned these quite important changes of the light conditions in the séance room casually and never discussed their potential significance. In addition, and as described already earlier, Lajos Pap usually turned his back toward the circle center whenever he apported objects or liquids, and he even left the circle and turned his back to it in the dark at the end of each sitting to "demagnetize" himself—an odd custom not known from any other physical medium. Was there something he needed to hide or fix before the lights were finally turned on? Still, Chengery Pap didn't note anything suspicious in these behaviors.

- It is furthermore obvious that the liquids were not apported directly into the bottles. Rather, the liquids were always poured into the open bottles from outside, which was indicated by the respective milking and dripping noises, and by the honey that apparently missed the bottle and fell to the floor. But of course, apporting objects directly into the bottles would have been much more evidential, especially if they had been closed and sealed, or if the opening was too small to pass them through. Also, the dirty snow was seemingly apported as one piece, as indicated by the puddle on the floor precisely at the spot where Lajos Pap stood when he snatched tiny snowballs out of the air one after the other over several minutes.
- Also with regard to physical objects, it remains unclear why Chengery Pap didn't guide the mediums to deport objects from locked containments, or let them materialize them inside a sealed container or even bottles with a small neck, instead of using an entire laboratory or séance room. The smaller the experimental setup is, the better it can be controlled. The reader only learns very casually that such stricter experiments typically didn't work, and no further information is given. Nevertheless, there were a few exceptions such as the marked cardboard pieces that were supposedly deported from their envelope that had lain in a locked cupboard.
- A close look at the phenomenology of insect apports received in Budapest indicates that they were exposed to some kind of physical manipulation. Whereas the more solid and sturdy insects like beetles were usually alive after the apport, many of the more fragile insects like butterflies and small dragonflies were dead upon arriving, even when they "materialized" inside the basket and were carefully poured onto the luminous plate on the table. Supposing that all insects were somehow "materialized" in the air in pretty much the same manner, this difference

in their survival rate should not be expected. Moreover, it is noteworthy that stone and metal objects apported by Lajos Pap were never warm or hot (Chengery Pap, 1938, p. 150), as sometimes reported from poltergeist cases (Gauld & Cornell, 1979) and a few other apport mediums (e.g., Ludwiger & Nahm, 2016).

- It is peculiar that Lajos Pap not only wore a kidney belt but also elastic laces in his shoes, and that these shoes were never searched. Perhaps Chengery Pap wasn't even aware that Lajos Pap wore elastic laces—just as he wasn't aware that the medium could easily slip out of the "secure" spats around his feet. It took Fodor only a few sittings to find all this out—whereas Chengery Pap had already experimented with Lajos Pap for years without noticing such drastic loopholes in his protocols and their potential significance. Yet, Chengery Pap should have been warned. As Besterman (1929) described, he noted that Molnar had slipped out of the luminous strap around his feet during a table session, and he informed Chengery Pap about it. He then suggested that he fasten the straps above the ankle, and he predicted that Molnar would either protest against this innovation or that drastically reduced phenomena would occur. He was right in both regards: Molnar first protested fervently against applying the new fastening technique, but when he was persuaded to still give it a try, there were no phenomena and Molnar claimed to be sick. Nevertheless, Chengery Pap returned to the former method of fastening the straps after this affair, and the table then moved as it did before (Chengery Pap, 1938, p. 383). However, Chengery Pap didn't explicitly mention this peculiar episode with Besterman in his book.
- On several occasions, Lajos Pap apported objects from seemingly locked places, including Chengery Pap's own flat. However, the latter never explained these occurrences in desirable detail. When were these objects seen for the last time in their normal places, when was the last time Lajos Pap visited the locations in question, where and how were the keys needed to reach these objects hidden, and was there a possibility of secretly reproducing a second key? Impressive as these apports from locked places seem at first sight, the episode of the apported gold coin in London shows that much more care should have been applied, and also with regard to reporting these apports. In many regards, crucial information about the precise circumstances of the described phenomena are lacking in Chengery Pap's book, even in the 35 more detailed descriptions of remarkable séances. As mentioned, I was not even able to find out how the notes for the protocols were taken down during the sittings in the laboratory until 1936, nor who took them down. Given that the chain of hands was never to be broken by all circle members apart from brief exceptions, a short

explanation would have been desirable—also with regard to how the wrists of Lajos Pap continued to be controlled uninterruptedly by his neighbors when he rotated around his axis.

- Fodor (1936?. p. 11) stated that Lajos Pap's carpenter business didn't run well, and that he was often dependent on the financial support of Chengery Pap. The latter didn't explicitly write about the professional aspects of Lajos Pap's life, and he rather tried to raise the impression that his mediums gave their séances for free. But obviously, such a dependency between researcher and medium is important to know, as it might provide a strong motivation for the medium to satisfy his mentor by any means. Obviously, Chengery Pap omitted mentioning such potentially problematic aspects of his mediums and research on purpose. At least, Chengery Pap informed readers casually that Molnar used to live in an apartment belonging to him (Chengery Pap), and that the séances prior to the establishment of the metapsychical laboratory were held in Molnar's atelier in this apartment. This suggests that he also helped Molnar financially at that time. Omitting such information from his book prompts one to wonder what else Chengery Pap might have omitted or euphemized regarding the presentation of his research.

Conclusion: Evaluating Chengery Pap's Investigations

Given these shortcomings and omissions in Chengery Pap's investigation and its presentation, and several others not mentioned here, uncomfortable questions arise: What can we believe from him? How thoroughly were the controls of the men, women, and the laboratory really performed, especially after the breaks in the sittings? It seems not unlikely that the long-term circle members firmly believed in the genuineness of the phenomena as well as the honesty of the medium(s), the honesty of each other, and that they took the mutual body and dress controls increasingly laxly—a development that is well-known among researchers into physical mediumship, and which I have witnessed myself. The guest sitters, on the other hand, often visited only one séance and might not have had the courage and expertise to perform in-depth body and dress controls on people they had never met before. In a later publication, Fodor (1959) suggested that much of the larger and seemingly inexplicable apports might have been smuggled into the séance room by the wife of Lajos Pap, who might have brought an unnoticed container with her. From this container, she might have provided her husband with the objects to be apported. The opportunity might have arisen when he was performing the different large-scale movements with and without the little basket. In the case of the snow apport, Fodor suggested she might have used a thermos flask. I mentioned already that, curiously, Lajos Pap's wife was the only

circle member who didn't wear the usual séance dress.

However, always assuming that Chengery Pap was not contributing to a potential fraud himself, it remains difficult to find reasonable explanations for a number of Lajos Pap's phenomena. The following items must be considered in this regard. As mentioned earlier, Lajos Pap's wife participated in not even half of the sittings held by her husband. Of the 194 sittings covered in Chengery Pap's book, she attended only 91 sittings. Most of them took place in the new laboratory, when Molnar was not present. Of the 117 sittings Lajos Pap held without Molnar in the new laboratory, she attended 71 sittings. Indeed, she often participated in sittings with quite remarkable apports. For example, naming only some of the important apports, she was present when 59 beetles, 15 stag beetles, river crayfish, goldfinches, turtles, mice, and also the sparrow hawk appeared; similarly, when the mixture of snow and horse manure and several liquids such as 0.5 l wine appeared. Nevertheless, comparable apports also occurred in her *absence*. For example, she was *not* present when the two largest river crayfish, 30 butterflies, the squirrel, and other liquids such as coffee and cream appeared, or when documents from a locked cupboard seemed to be transported into the laboratory. And although she didn't wear the typical séance robe, she wore luminous straps on her body that rendered her movements traceable, and she was (purportedly) always controlled by her neighbors who never included her husband. Supposing that Lajos Pap faked all his apports, he must have been able to do so without the help of his wife.

Did he have other confederates in the circle who helped him to dupe Chengery Pap in a similar manner to that pursued by the fraudulent medium Ladislaus Laszlo, who duped his principal investigator Vilmos Tordai with the help of conspiring circle members (Schrenck-Notzing, 1924b; Tabori 1951, 1968)?[6] Or was he able to accomplish everything by himself? How did he produce nine small snowballs in the 22 °C, warm séance room, two hours after the beginning of the séance? Admittedly, Lajos Pap snatched the nine snowballs from the air from 10 to 20 minutes after a break—but his body and clothes were allegedly searched in the usual way when he entered the laboratory after this break, as were those of the other séance participants; and although Chengery Pap doesn't explicitly touch upon this question, one might assume that nobody had left or entered the building during that break. How did Lajos Pap anesthetize invertebrates and vertebrates of different kinds and sizes prior to the séances, and free them in the séance room, often after the breaks, shortly before they came to life again and started to move? How did he manage to apport an envelope out of a locked cupboard, and to free the objects contained therein—apparently without opening the envelope? On some occasions, the sitters even claimed that they saw

apported objects grow and then shrink again on the luminous plate on the table. It seems difficult (although not impossible) to find mundane answers to these questions, especially following the séance descriptions contained in Chengery Pap's book. But as demonstrated, these descriptions are biased, and most likely the supposed observations on which these descriptions were based had already been biased and misleading. On the other hand, the purposefully fraudulent production of apport phenomena on the part of Lajos Pap has never been proven—apart, perhaps, form the gold coin apport in London. Yet, we only have Fodor's word regarding this episode, and curiously he missed the opportunity to confront Chengery Pap and his medium with his finding.

Many aspects of Lajos Pap's mediumship are utterly suspicious. This may not mean much by itself, but Chengery Pap purposefully diminished or disregarded the significance of these crucially important aspects, or worse he wasn't even aware of them. This approach was fatal; especially as he knew about the fiasco with Ladislaus Laszlo that occurred in Budapest not long before he began with his own studies into physical mediumship. Ultimately, Chengery Pap discredited his own work, both as a researcher and as an author, and his voluminous monograph cannot be regarded as a trustworthy source that contains objective descriptions of what really happened in his laboratory, let alone in Molnar's atelier. Despite its impressive volume, Chengery Pap's magnum opus remained superficial, and considerations of the essential questions are lacking. Given the remarkable degree of creativity, technical skills, and unscrupulousness of fraudulent physical mediums, who sometimes even betrayed "friends" and close family members for years (Braude, 2016; Gulat-Wellenburg, Klinkowstroem, & Rosenbusch, 1925; Moser, 1974; Nahm, 2014, 2016, 2018; Podmore, 1902; Tabori, 1951, 1968), one must consequently consider the possibility that Chengery Pap also was duped for years by his mediums and perhaps also by other circle members. Taking the conduct of many previous fraudulent mediums and my own experiences with alleged physical mediums into account, and comparing them to Lajos Pap's conduct and peculiar habits during séances, my personal perspective on the genuineness of particularly Lajos Pap's apport phenomena is, like Fodor's, pessimistic. Chengery Pap's (1938) monograph nevertheless remains a significant contribution in the history of parapsychology. Not so much because of the phenomena reported therein, however, but because it provides an illustrative example that demonstrates some of the numerous pitfalls and difficulties for investigating and reporting physical mediumship phenomena. Fodor's (1936?) report, on the other hand, represents a recommendable and instructive counter-example that demonstrates how to avoid these pitfalls.

Notes

[1] Fodor was very knowledgeable and active in the field of psychical research. For example, he founded the International Institute for Psychical Research in London in 1934 and was its research officer until 1938. He also published a highly esteemed *Encyclopaedia of Psychical Science* (Fodor, 1934).

[2] The English literature on Maria Silbert is comparably scarce. While some psychical researchers came to a negative or, at best, a critical appraisal regarding the observed phenomena (Besterman, 1929; Prince, 1928), others seemed more impressed and recommended systematic studies (Price 1926), or were convinced of their genuineness (McKenzie, 1923, 1926). Other English sources on Silbert include Winterstein (1926) and Evian (1937?). Much more literature about this medium was written by Austrian and German authors. Most of it is quite positive, at times bordering on hagiography, but accusations of fraud also were advanced. An overview on Silbert and her life was provided by Sekanek (1959), who included many witness reports by different authors in his book. It also contains an extensive list of publications about Silbert.

[3] János Toronyi was the president of the second Hungarian Metapsychical Scientific Society from its foundation in 1932 (Chengery Pap, 1932a, 1932b) to 1944 (Toronyi, 1951). Chengery Pap was its vice-president. The first Hungarian Metapsychical Society was disbanded after the scandalous affair surrounding fraudulent medium Ladislaus Laszlo in 1924; see also Note 6 (Schrenck-Notzing, 1924b; Tabori, 1951, 1968).

[4] The re-creation of burned objects from ashes was an important part of alchemistic practices, then often termed "palingenesis." In the context of mediumship, such phenomena are only rarely reported. An early example concerns the alleged restoration of burnt books written by John Dee (e.g., Smith, 1909). Other anecdotes include the re-creation of a broken glass through Maria Silbert (Kasnacich, 1937), or that of a small burnt bag by medium Heinrich Melzer (Hess, 1935). A case that occurred under close observation of a critical scientist was described by Chengery Pap's colleague Blacher (1933), who also discussed the occurrence together with Chengery Pap (Chengery Pap & Blacher, 1936; Blacher, 1937). Similarly, physician Erich Kindborg of Breslau (Wroclaw) suggested to a medium he knew for 10 years that she try palingenesis experiments as well, and the small circle allegedly succeeded (Huth, 1937, 1938; Kindborg, 1938).

[5] This lapse of Chengery Pap is reminiscent of Gustave Geley's lapse when he claimed that the hands of physical medium Eva C. were consistently held and controlled during séances while the photographs accompanying the text show that this wasn't the case (Geley, 1927).

[6] Laszlo produced the typical phenomena of physical mediums of that time such as telekinesis, apports, and ectoplasm. He soon became an internationally known medium because he produced these phenomena even under seemingly strict control conditions. However, it turned out that members of the Hungarian Metapsychical Society acted as confederates. For example, one of them prepared the "ectoplasm" together with Laszlo, and also helped him to introduce supposed apports into the séance room. The unmasking of Laszlo caused quite a stir in Hungary; in particular, Tordai as chief investigator of the medium and president of the Hungarian Metapsychical Society was harshly blamed and ridiculed in public.

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BOOK REVIEW

The Great Silence: Science and Philosophy of Fermi's Paradox by Milan M. Ćirković. Oxford, UK: Oxford University Press, 2018. 395 pp. $33.95 (hardcover). ISBN 978-019-9646-30-2.

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SETI, the Search for Extraterrestrial Intelligence, used to seem to be the cutting edge of available mystery. The Milky Way galaxy is immense, perhaps 400 billion stars, and the entire visible universe holds perhaps hundreds of billions of similar galaxies. If life on Earth is a product of evolution, there must be billions of billions of worlds inhabited by creatures ranging from bacteria to intelligent, conscious, alien people, all distinct in form but converging on civilizations capable of listening for radio evidence of others near or preposterously far in space and time, and peppering the heavens with their own messages. If they are there, some nearby will have been able to pick up a century and more of electronic signals tearing out from our world at the speed of light.

Yet we hear not the faintest answer, no trace of them Out There. Why? *Where are they?* asked Nobelist Enrico Fermi in 1950, lunching with colleagues, toying with the mid-century hysteria over flying saucers. If our understanding of science is correct, "they" *must* be there, in profusion if not in UFOs. With this confidence in mind, SETI was established 35 years ago, nearly half a human lifetime, to listen and look for them. After the intervening decades, though, with ever-improving equipment, we still do not detect them. It's a paradox! It's "Fermi's Paradox."

A Serbian astrobiophysicist and astronomer, Milan M. Ćirković, Ph.D., is a research professor at the Astronomical Observatory of Belgrade and a research associate of the Future of Humanity Institute at Oxford University On the evidence of this remarkable book, he is an ingenious polymath who shows little patience with SETI researchers who (he claims) fail to keep up with new data, displaying a kind of privileged narrow vision, or perhaps self-protection, in clinging to defunct theories of galaxies and their improbably absent inhabitants. Again, then: *Where are they?*

In 2015, Stephen Webb published an updated edition of his 2006 lucid if simplified book on this topic, *Where is Everybody? Seventy-Five Solutions to the Fermi Paradox and the Problem of Extraterrestrial Life*

(Webb, 2015). His tally of feasible solutions ranged from the obvious—life is extremely rare, it gets snuffed out wherever conscious beings discover nuclear weapons and other devices of mass extinction, all the aliens are terrified of Berserker death machines so they shut down every sign of their existence—to more arcane ways and motives to be hidden. Ćirković acknowledges Webb's efforts but trims his own taxonomic framework down to four general classes of explanation, each class showing family resemblances in certain distinct ways.

These are: Solipsist Hypotheses; Rare-Earth Hypotheses; Neo-catastrophic Hypotheses; and Logistic Hypotheses. Each of the 36 individual hypotheses discussed is given an often whimsical name, and a rather subjective grade, from A to F. Nine of them earn a Failing F, while only one gets as high as an A-minus (the "Gaian Window," in which "only a few Earth-like planets can develop a stable biotic feedback," constrained by "stellar, atmospheric, and tectonic evolution" that creates "narrow, near-lethal bottlenecks"). Some of these fairly distinct reasons for *not* witnessing such civilizations include many where there ought to be demonstrable "manifestations and artefacts." One such is a Dyson swarm, where much of a planetary system is broken apart and repurposed to spin around its sun, capturing as an energy source much of the radiated solar energy.

In terms of hiding from far observers, though, this turns out to be a fairly decisive Fail. An improved version devised by the late, brilliant Robert Bradbury, a collaborator with Dr. Ćirković, is dubbed the Matrioshka Brain, shell within shell within shell, each consecutively drawing on the waste heat dribbled in from the shells closer to the star. The outermost shell would be almost undetectable from galactic space. (Bradbury's astonishing speculations featured in my anthology *Year Million* [Broderick, 2008].)

Perhaps the most radical attempted explanation, *The New Cosmogony,* borrows from the brilliant Polish writer Stanislaw Lem (1983):

> Very early cosmic civilizations ("the Players;" billions of years older than humanity) have advanced so much that their artefacts and their very existence are indistinguishable from "natural" processes observed in the universe. Their information processing is distributed in the environment on so low a level that we perceive it as operations of the laws of physics. Their long-term plans include manipulation of these very laws in order to create new stages of cosmological evolution. Since the whole of the observable reality is, thus, partly artificial, there is no Fermi's paradox. (p. 134)

The philosophical aspect of the book's analysis investigates conventional elements dubious and otherwise. Typical of these are philosophical naturalism (nothing preternatural or superscientific, please),

scientific realism (airports and quarks are real, unicorns and UFOs aren't), Copernicanism (we humans are typical, the galactic average, so ignore all those planets producing intelligence in the billions of years before life began on Earth), gradualism (ignore those immense catastrophic punctuations in equilibrium), and the non-exclusivity principle (diversity will prevail unless something enforces Fermi uniformity on a galactic scale). Much of the book is a swift ballet around these difficult problematics.

Ćirković provides a table, trimmed below, in recapitulation of his detailed discussions of attempts to resolve the Fermi conundrum. Some headings are self-evident (the "Zoo Hypothesis" suggests we are somehow shut out of the rest of the universe, perhaps for our protection, by aliens with vastly superior technology), while some are less so ("Galactic Stomachache" seriously posits that universal utopian lazy ease, lacking any stress, will end by destroying such cultures).

SOLIPSIST HYPOTHESES

1. Fermi's Flying Saucers
2. Ancient Flying Saucers
3. Special Creation
4. Zoo Hypothesis
5. Interdict Hypothesis
6. Leaky Interdict
7. Planetarium Hypothesis
8. Peer Hypothesis
9. Simulation Hypothesis
10. The Paranoid Style in Galactic Politics
11. Directed Panspermia
12. Bit-String Invaders
13. **New Cosmogony**

RARE-EARTH HYPOTHESES

14. Early Great Filter
15. Horizon to the Rescue
16. Gaian Window
17. Permanence
18. Thoughtfood Exhaustion

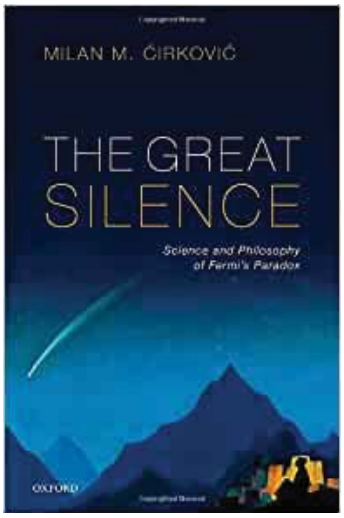
NEOCATASTROPHIC HYPOTHESES

19. The Gigayear of Living Dangerously
20. Astrobiological Phase Transition
21. Stop Worrying and Love the Bomb
22. Self-Destruction, Advanced Version

23. Introvert Big Brother
24. Resource Exhaustion
25. Deadly Probes
26. Interstellar Containment
27. Transcendence (General)
28. Transcension Hypothesis

LOGISTIC HYPOTHESES

29. Red Empire
30. Brown Empire
31. Persistence
32. Living on the Rim
33. Eternal Wanderers
34. Great Old Ones
35. Sustainability
36. Galactic Stomachache



Of these, I favor the Transcension account (although the New Cosmogony has its appeal). Here, progression of both organic and machine people converge almost inevitably on a kind of transcendental (but non-religious) condition of connectivity, perhaps beyond spacetime as quantum theory and general relativity currently model our testable universe. I admit that my preference for this exotic history is reflected in the title and storyline of my 2002 novel *Transcension* (Broderick, 2002), not mentioned by Ćirković.

If runaway technology keeps heading with exponential speed up the ever-rising curve of the Singularity without necessarily ascending into a transcendent state, one might expect that our solar system and others will eventually become what is known as Kardashev civilizations. These were characterized in 1964 by the quantity of energy they can extract safely from their suns (Kardashev, 1964). Type 1 lays hold of all of a world's spare output, channeling it into (for example) hypercomputation. Type 2 will mobilize *all* the untapped energy of its star, perhaps using a Dyson or Matrioshka surround. Type 3, beyond the grasp of a human mind, would gain and control the resources of an entire galaxy. If a Type 4 can be conceived, it might corral the entire free energy of the cosmos.

In any event, Type 2 can be analyzed and taken seriously for a highly advanced civilized culture, leaving traces of its astroengineering for us to observe if we look for the right sort of evidence. Nikolai Kardashev pointed out brusquely in 1985, just as SETI was founded: "Extraterrestrial civilizations have not yet been found, because in effect they have not yet been searched for" (Kardashev, 1985:497). Ćirković notes that this

complaint still has considerable force, despite the wealth of information newly available during the last twenty years and especially the last five. For example, it turns out that the optimum place for a sophisticated and powerful culture to reside might be the cold, dim, outer edge of a galaxy. By contrast, SETI looks mostly for Earth-like worlds in a privileged habitable zone of its star, and evidently (if Ćirković is correct) is disdainful of the "sci-fi" suggestions pointing in other directions.

For this bracing attitude, and others, *The Great Silence* abounds in both well-selected and up-to-date information as well as inventive, insightful analyses of the many suggested explanations for that Silence, as it was dubbed by the astronomer and science fiction writer (G.) David Brin in 1983 (Brin, 1983:283) (and acknowledged for its excellence by Dr. Ćirković). Despite the density of the argument, and some occasional minor skirmishes with the English language, this is a marvelous book. One can only hope that the mavens at SETI and related bio and astro specialists will pay the argument its due.

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BOOK REVIEW

Medjugorje and the Supernatural: Science, Mysticism, and Extraordinary Religious Experience by Daniel Maria Klimek. Oxford University Press, 2018. 392 pp. with bibliography and index. $82.80 (hardcover), $78.39 (Kindle). ISBN 978-0-19-067920-0.

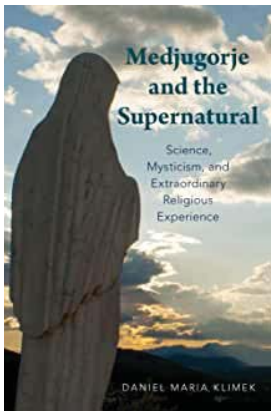
DOI: https://doi.org/10.31275/2019/1599

The author of this well-considered and finely argued book is a Franciscan friar and an assistant professor of theology. This book is a much later and revised draft of his postgraduate thesis. With nearly a hundred pages of notes, references, and index, it has been written by an academic for others in his field. I am neither a philosopher nor a theologian, so my, of necessity brief, review is that of a lay person for other lay people.

Klimek, according to the blurb, is an authority on the phenomena experienced at Medjugorje, Croatia, where several young people claimed to have had visions of the Blessed Virgin Mary (BVM) in the early 1980s. More than thirty years later, some of them are still claiming to have daily visions, so this is a long-running phenomenon. BVM visions have occurred at several places in Europe, most notably Lourdes, all of them to people who follow the Roman Catholic religion.

In a Marian vision, the experiencers claim that they are seeing the BVM and that she is conversing with them. Only the visionaries see her. Usually these are people in their late teens or early twenties. Others who attend do not have the same trance ecstasy experience and rely on the reporting of the visionaries. Klimek relates some of the conversations the Medjugorje visionaries have had with the BVM, all consistent with Catholic doctrine.

As far as I understand it, Klimek is arguing that these visions are not the result of cultural associations, hallucinations, imaginations, etc., but are divinely inspired and part of what he calls the perennial tradition. This tradition considers that visionary experiences are worldwide and have a universal basis independent of the culture in which they appear. The other stream of opinion he calls the constructivist, where people argue that we construct our visionary experiences out of our cultural associations, imagination, etc. As far as I know Marian visions have only been experienced in countries where there are Roman Catholics, so he is having to argue pretty hard to align these visionaries with the perennial rather than the constructivist opinions. He uses the words epistemology and hermeneutics repeatedly, often several times within the same page. I am not familiar with these words, and though



I think I understand them, and I most certainly recognize that they are necessary for his fellow theological academics, for myself as a lay person they didn't help me understand his argument, and made for very slow and careful reading.

Klimek devotes one chapter to two studies by physicians and other scientists in the 1980s, and he refers back to these studies repeatedly, contending that the evidence of science is that the visionaries were in genuine trance and therefore experiencing something that was not a cultural hallucination. I was not convinced. Either Klimek does not understand the limits of EEG studies, or I didn't understand what he reported had been found, but the EEG data did not seem to make sense, and what he claimed from it did not seem to me to be accurate. I have not looked up the original studies to ascertain the actual data. Brain studies were at a very early stage in the 1980s. Since then the technology has moved on enormously and far more can be ascertained with the modern techniques, so it feels insubstantial to rely so heavily on "scientific" studies that are so out-of-date. As some of the original visionaries are still having visions, more than 30 years later, I would heartily recommend a new investigation using modern equipment, which may well tell us something about the brain states of the visionaries while in their trance ecstasy. This would be very interesting indeed. As for not responding to loud noises, bright lights, and punches, this is an acknowledged universal aspect of a trance state of any description, from dreaming through to mediumistic trances. But as to actually seeing and conversing with a divine being without being affected by any cultural overlay, that argument was insufficient for this lay person.

Most of the book is concerned with theological and philosophical arguments concerning religious visionary experiences. I shall not go into the details of these arguments as I am not a philosopher. I did, however, find it very interesting and see parallels with arguments that go on in parapsychology, anthropology, psychology, consciousness studies, sociology, etc., between what Klimek calls William James' something "more" and mainstream academic establishment opinion that reduces everything to materialistic brain functioning. I am sympathetic with the James approach and hence with Klimek's argument. I am just unconvinced that these visionaries are unaffected by their Catholic upbringing.

I would heartily recommend this book to readers of a philosophical bent who are interested in religious and visionary experiences. I am not sure, though, of how wide its appeal is to others.

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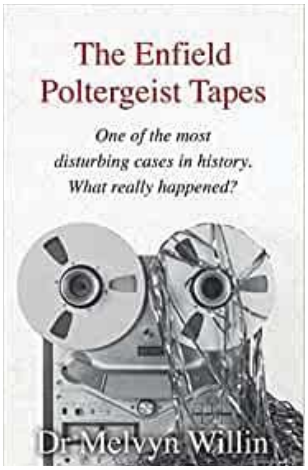
BOOK REVIEW

The Enfield Poltergeist Tapes: One of the Most Disturbing Cases in History. What Really Happened? by Melvyn J. Willin. Milton Keynes, UK: White Crow Books, 2019. 180 pp. $17.99 (paperback). ISBN: 978-1-78677-073-8.

DOI: https://doi.org/10.31275/2019/1613

The present book provides valuable background information on a controversial poltergeist case that was investigated by members of the Society for Psychical Research (SPR) from September 1977 to summer 1979. One of its chief investigators, Guy Lyon Playfair (1935–2018), publicized the Enfield case in a remarkable book about the reported phenomena in 1980, and second and third editions followed in 2007 and 2011 (Playfair, 2011). While Playfair always admitted that some of the phenomena were staged by the children living in the house, he held the general opinion that the gross majority of the phenomena including the peculiar voices the children spoke with represented genuine poltergeist disturbances. Nevertheless, several other visitors to the Enfield house were much more pessimistic and believed that, most likely, all the phenomena were staged. Willin's book plunges straight into the controversies and quarrels that members of the SPR engaged in during the investigation of the case. In this context, he presents excerpts from previously unpublished material. The most peculiar source is the collection of the hundreds of hours of tape recordings taken by Maurice Grosse, the second chief investigator of the case. Willin listened to all of them and provided a summary of their contents and the most interesting sections. He also presented excerpts from a previously unpublished report written by members of the SPR's "Enfield Poltergeist Investigation Committee" (EPIC), which contains numerous witness testimonies. Furthermore, he asked several people involved in the case to comment on their experiences from today's perspective, and included the received responses in his book as well. In addition, Willin compared the phenomenology of the Enfield case with similar occurrences reported from the "Mount Rainier Case."

Overall, the numerous witness testimonies contained in Willin's book provide a lively overview that highlights different experiences and



interpretations of phenomena from the perspectives of various people involved in its investigation. While some testimonies seem to leave little doubt that the children living in the supposedly haunted house indeed feigned numerous phenomena, other quite intriguing first-hand descriptions of inappropriate behavior of furniture and other physical objects in bright light seem to leave little doubt that genuine anomalies did occur. This latter appraisal is supported by the finding that the rapping and knocking sounds recorded at Enfield displayed unusual acoustic characteristics compared with intentionally produced raps (Colvin, 2010). Hence, the recorded tapes constitute a valuable body of evidence, and also provide an excellent source of documentation with regard to what happened at which time.

Now, what about the claim contained in the blurb of the book that it would enable readers to "know what really happened" at Enfield? Willin deliberately avoided presenting an analysis and interpretation of the occurrences from his perspective. For my part, I am afraid I still don't know what "really happened." Naturally, the acoustic information contained on the tapes alone cannot provide a full picture of the recorded occurrences, and during my studies of alleged physical mediums, I have learned that witness testimonies—both of skeptics and believers—need to be treated with caution, as they don't necessarily match the facts. Nevertheless, I do know in much more detail what was factually reported and recorded at Enfield, and that most likely the fraudulent production of phenomena played a greater role than one might assume from reading only Playfair's book. In sum, Willin's book constitutes an objective and laudable contribution to the controversial field of studies into hauntings and poltergeist cases. It vividly illustrates the difficulties in researching and documenting such anomalous occurrences—thus fitting nicely with a number of other recently published treatises reviewing past cases and their social concomitant circumstances (Evrard, 2019; Mayer, 2019a, 2019b; Nahm, 2019).

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BOOK REVIEW

The UFO People: A Curious Culture by MJ Banias. White Crow Productions/August Night Books www.augustnightpress.com, 2019. 202 pp. $17.99 (paperback). ISBN: 978-1-78677-092-9.

DOI: https://doi.org/10.31275/2019/1615

The UFO People has the rare distinction of being a UFO book that is not about UFOs. Author MJ Banias relegates the flying objects to the background along with the usual questions of whether they are, what they are, and where they come from. The title signals where his interests lie, and he joins a growing band of scholars with humanistic approaches to the UFO subject. Jodi Dean, Brenda Denzler, Jeffrey Kripal, D. W. Pasulka, and the contributors to Robbie Graham's anthology, *UFOs: Reframing the Debate*, have broadened the inquiry past radar analysis or psychometrics to philosophical, cultural, and religious issues. It is in this spirit that Banias looks at the people attracted to UFOs and the culture they form.

Banias declares from the outset that he does not know what UFOs are. He has earned his credentials, having investigated for MUFON, worked with noted ufologists, interviewed both ordinary experiencers and ufological celebrities. He acknowledges that UFOs are real enough for people to see and be affected, stricken, fascinated by them, to have lives and outlooks altered. The experiences of thousands of people are undeniable, but the nature of those sights in the sky remains open to question and the evidence ambiguous. Anyone, proponent or skeptic, who claims to know all the answers is guilty of overreach.

If uncertainty surrounds the objects, we can learn much about the collective relationship of people with the subject and the rest of society. Most people have heard of UFOs and many believe they are real, making UFOs perhaps the most popular paranormal belief today. Here's a story worth a closer look. It leads into the intellectual living rooms of UFO followers, into a gap between the life of going to work and mowing the lawn, and a life of experiences that should not happen and possibilities that should not be thought, much less believed. This gap is a haunted place at the cultural fringe where heresies thrive and subvert established norms, where ordinary people turn against the ordinary and become the Other, in a sense alien themselves.

All people aware of UFOs are "UFO people" in the widest sense. Those who see, study, and discuss UFOs; those who join organizations, read books, scan websites, and watch UFO-themed TV shows; those who believe and speak out or keep their thoughts to themselves make up the UFO community in its usual sense. But skeptics, scoffers, and deniers interact with proponents and participate in disputes. People who go to movies like *Independence Day* or *Predator*, who laugh at a little green man advertisement or Halloween costume, have their opinions shaped by UFOs in popular culture. These, too, belong. Banias adopts "UFO subculture" as a more meaningful collective term, one that encompasses multiple viewpoints, interests, experiences, narratives, and beliefs. A subculture suggests some level of collective identity and some differences from mainstream society, issues of key importance throughout the book.

The collective consists of individuals, and each one arrives in the subculture by a personal route. The first part of the book takes a glimpse at some of these people. Amy, a Manitoba farm wife, had recurrent UFO sightings, experienced an abduction, encountered a ghost, and dreamed of coming disasters. Few people knew of her UFO connection. The encounters brought fear, but she gained clarity, insight, and possible psychic ability from them. Roy reported multiple and unpleasant abduction events. Unlike Amy, who was centered, reliable, and at peace, Roy was not truthful. He had lost his family, his personal life had fallen apart, and he filled the emptiness with stories that were objectively false yet purposeful to him. UFOs also benefitted Roy, albeit in a sad way.

Richard Doty has the opposite of a quiet and private relationship with UFOs. He stands out larger than life within the subculture, lauded by some for spilling secrets of government interaction with aliens, condemned by others as an agent of disinformation and spreader of tall tales. He has certainly added mightily to UFO mythology. His yarns stoked the "Dark Side" of 1980s ufology and rewrote human history as a story of alien intervention on earth. No matter how often discredited, this alternative history remains gospel for some parts of the subculture. Doty both created UFO mythology and was created by it, having become the symbolic, if not the actual, author of extreme lore that drags the group's image toward the far shores of Otherness.

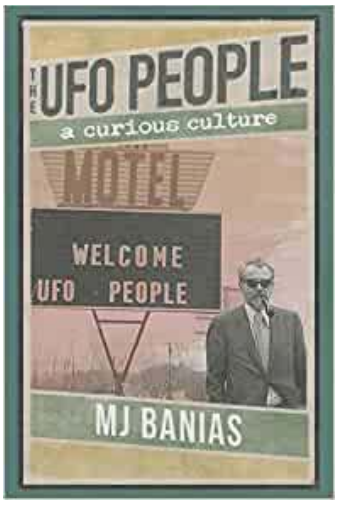
Christopher Green, Hal Puthoff, and Gary Nolan are distinguished research scientists with government connections. They have a lower public profile than Doty, and gladly keep it that way. They belong to an informal network of scientists, academics, and professionals who research topics such as physical effects of UFOs and exotic energy sources, often on their own time and dime. Members of this "invisible college" risk reputations

and jobs out of commitment to study a stigmatized subject. Experiencers, mythmakers, and scientific researchers vary in interpretations but unite in common interest, each participating in the subculture and adding to its vibrant milieu of accounts, beliefs, and theories.

Passing on to the collective as his primary interest, Banias devotes the book's second part to the UFO subculture. Individuals compose it as cells make up a body. He wants to define the full organism, what it is, how it works, where it lives in the cultural environment, and its effects on the intellectual ecosystem of modern life. Banias draws his theoretical structure from Jacques Derrida, the philosopher famous—or notorious—for deconstruction. Derrida questions how we know what is real. An objective reality exists, but no human has the godlike power to access it directly. Everything we know is mediated by language, layer upon layer of it. How we perceive and conceive of experiences is shaped by language-based expectations, how we communicate, think about, and remember takes place through language. In this view, the description of a UFO is not a fixed reality but a work in progress, its image building, changing with every added adjective or altered verb. Words themselves bear no set relationship with an object. They take meanings and nuances from the ways they relate to other words. The claim of science to objective truth is false because all knowledge clings to the slippery slopes of language.

How UFOs and the UFO subculture fit Derrida's scheme is best understood through his metaphor of the ghost. A ghost exemplifies dualities. It is dead yet moves as though alive. Senses detect it, imagination turns it into stories true and false. Official science says there's no such thing; ordinary people insist they are eyewitnesses. UFOs, too, come and go like phantoms, elusive and unpredictable yet seemingly a material presence. People see them, believe in them, tell stories about them. UFOs haunt the skies, haunt individuals, haunt an ideological gap between things forbidden to exist and things people experience, nonetheless. UFO people themselves are ghosts, their alternative reality bringing a chill in the night to mainstream folk who waken to the possibility that their familiar reality has been illusory all along.

One idea inseparable from UFOs is the extraterrestrial hypothesis (ETH). Flying saucers soon acquired popular synonymy with alien spaceships, and the association has stuck. What else could they be? Such machines seem trite, a product of pulp fiction, and Banias wishes for an explanation more in keeping with the numinous quality of UFO experiences. He hints at the paranormal, the deep psyche, or the *mundus imaginalis*; some members of the subculture prefer experimental technology or unknown natural phenomena. Others commit to no explanation. Yet the ETH makes sense to many people, at least as a possibility. Though narrow and materialistic, it opens a dynamic



environment for creativity, fantasy, and speculation to build a rich UFO mythology. A symbiotic interplay of event and idea, experience and interpretation, history and mythology flourishes in the hothouse climate of the subculture's ideological terrarium, where the UFO narrative grows and mutates to create a unique version of reality. Meanwhile the ETH provides the expansive tie that binds the group together.

Other consequences of the ETH prove less positive. Popular culture portrays aliens as monstrous or cute, more often hostile than friendly, but nothing to take seriously. Outsiders in the mainstream stereotype UFO people as nothing more than science fiction groupies who forgot the fiction clause. These misrepresentations reduce a subculture of diverse experiences, different understandings, and lively discussions to a single-issue, single-idea band of fanatics who says the answer to every question is aliens. This caricature does the complexity of the subculture an injustice and delegitimizes the experiences of witnesses. By making a joke of UFOs, the mainstream asserts control-by-ridicule over the narrative and banishes the subject to the fringe.

Official science issues the strongest warrant for rejection. Scientists proclaim time and again that UFOs do not exist yet lend support to SETI. Banias argues that faraway aliens are acceptable while aliens at the front door pose a danger, not with ray guns drawn, but with a challenge to social and intellectual structures of power and authority. The alien come to earth represents a superior Other that threatens the human position as center and apex of the universe, an extraterrestrial Copernicus to boot our achievements and egos off to the sidelines. The deep-down reason that science rejects UFOs lies in their threat to the power of science as arbiter of truth about the physical world.

Any suggestion that they challenge science would come as a shock to members of the UFO community. Far from wanting to overthrow scientific authority, they crave its approval. Eighteen of 49 annual MUFON symposia include science or technology in their title themes. Ufology does not decry science, only scientists' failure to study UFOs scientifically. Proponents never doubt the significance of UFOs but take a largely passive view of their roles, waiting and watching but relying on the government and UFOs

themselves to take the lead. Anything as drastic as dethroning scientific authority seems entirely outside the ufological agenda.

Banias takes quite the opposite view. He sees the UFO subculture as a source of world-changing effects and believes a revolution is already under way. How do people different only in their devotion to a seemingly harmless belief share in a heresy that rattles the bars of mainstream orthodoxy? As individuals, they do not. The particulars of UFO belief do not. The real agent of change is the subculture itself. It does not have the unified voice of an advocacy group, or guidance by deliberate intent, but effects change by its collective example.

What is "normal" are the everyday norms we take for granted. These ideas and practices get a free pass, no questions asked. The way things are is the way things should be, and we sink into acceptance like a comfortable easy chair. We know what's real and what's not as a matter of common sense, and for most of us UFOs fall into the "not" category. Science sides with this same judgment. Charles Fort and the Fortean Society doubted and poked fun at scientific authority, but they were exiled to the lunatic fringe. The UFO field looks to the casual observer as equally fringe-worthy, a collection of preposterous claims and extravagant beliefs taken seriously by people who cannot be taken seriously, who carry on a gaudy, noisy, multi-ring circus that Barnum himself would envy.

Still, most UFO people live day by day as card-carrying loyalists to convention. They appear normal and ordinary except for one deviation. If they are reliable most of the time, can they be rejected out of hand for UFO beliefs? Ufologists accused military and political leaders of cover-ups years before Vietnam and Watergate made such distrust the new norm. UFO people were ahead of their time. Science denies the reality of UFOs, but countless first-hand testimonies refute the verdict of science. Maybe there's more "out there" than our received wisdom allows. Maybe the reality passed to us is wrong and UFO people once again have a jump on the truth. The UFO subculture raises such doubts, gives a knock to the pillars of mainstream reality. Our easy chair feels less comfortable now that we have questions buzzing around our heads.

Banias recognizes that the UFO subculture is more than a subculture. It is a counterculture, an opponent to established norms that does not allow reconciliation and therefore serves as an active irritant abrading the mainstream's confidence in its reality. UFO people reject the official taboo on UFOs, immune to argument or persuasion, resistant to ridicule and rejection, content within their own culture to participate in mainstream culture even as they defy its authority and control. This irreconcilable difference makes the subculture, by its very existence, a source of transformative pressure

on the paradigms of thought, social structures, ideologies, identities, and norms that the mainstream takes for granted. It forces the rest of us to question what is real, and how do we know? The idea of aliens coincides with a broader range of fears and anxieties—of invasion and violation, of a world increasingly unknowable and out of our control—to symbolize our insecurities as well as unsettle securities we've not yet questioned.

The UFO subculture seethes with dissent. Even when the content is some nonsensical conspiracy theory or phony alien autopsy film, the effect is countercultural, a constant rejection of official truth, an ongoing series of small cuts to injure trust in the norm. With the Internet as its platform, UFO people disconnect from the mainstream construct of reality to build their own channels of communication and alternate truth—or rather, each his or her own truth. A democratization of power is under way, an anarchy of opinion. The subculture has no rules, no authority, no arbiters of truth. Each voice is equal, each has its unrestricted and uncontrolled say, while much of what is said about UFOs, true or false, loses even the authority of a specific author as it echoes back and forth across the Internet in perpetuity.

In final consideration, the UFO subculture is not about belief in UFOs or the ETH. Its real unifying force lies in a shared state of not knowing, a location in the gap between object and subject with no certainty which is which. This culture is not so much its myths and ideologies as it is a role, that of a living mirror held up to official and mainstream culture. As a counterculture, it erodes certainties, blurs boundaries, and breaks down categorical boxes. This group is the Other to normal thinking, full of taboo ideology and intellectual anarchy, but it reflects a message that you the mainstream are Others as well, bound by truths that are not true and norms that are not inevitable. Your culture is no truer or better than ours. The UFO subculture is not a classic subculture that deviates from the norm; rather, it exposes mainstream culture as arbitrary and illusory. Banias proposes exoculture as a more fitting term, a group that exists in its otherness without need to measure itself against another. This exoculture is exemplary of difference—ideologically independent, without structures, rules, and standards, free to create its own reality and recreate it time and again. The UFO exoculture is an alien living in plain sight on earth, to the wonder, bewilderment, and dread of those committed to the status quo.

UFO people who read the book will have some objections. Derrida's deconstructionist theory denies objective knowledge and permanence of experience in favor of uncertain and shifting representations in language. These ideas suggest people do not know what happened to them and eyewitness testimony is worthless. This sounds like skeptical talk, yet it should be no cause for alarm. His principles apply to all knowledge rather

than singling out UFOs, leaving the relationship between language and ufological truth no better or worse than it ever was. UFO history testifies to the power of language: "Flying saucer" evoked an image, and newspapers repeated the term even when it did not fit witness descriptions. Thousands of reports have described disk-shaped UFOs that turned out to be conventional objects, demonstrating that language influences how UFOs should look, how to describe them, and how communication determines public knowledge. Witnesses to the 1965 "Incident at Exeter" UFO described it and subsequent illustrators pictured it. These depictions vary from a glaring blob of light to a metal disk with portholes, chrome, and closed hatch, looking so much like the product of a Detroit auto factory that turn it around and it would carry a license plate. Between these extremes are varying discoidal objects with different arrangements of lights. The same descriptive words had different meanings for each reader.

Terms like *myth* and *ideology*, implications of a reality that is not "the" reality, also are suspect. Mythology suggests falsehoods, yarns, UFOs that do not consist of nuts and bolts. These are, too, the words of skeptics, of anyone who regards UFOs as delusions, errors, and jokes. Such sensitivity is understandable considering mainstream treatment, but so much uncertainty surrounds UFOs that speculation necessarily fills in the gaps, while continued reworking rationalizes fact and fiction into a coherent understanding. The results make sense whether they are true, false, or somewhere in between. They join the parts into a working narrative, in short, a mythology that serves as the subculture's best guess at truth. Banias, like thoughtful ufologists, simply recognizes the undeniably indefinite character of much UFO knowledge and discourse.

The biggest question is whether a subculture based on UFOs really drives culture change. UFOs carry some useful properties for a counterculture. They allow for—even invite—personal experience, and participation keeps up interest and involvement. They foster storytelling and nourish a rich history, mythology, and ideology with connections that branch into government, the military, conspiracies, the ancient past, and other anomalies such as crop circles. And they are out of this world. But what obvious leverage derives from 70 years of UFO reports, even impressive ones? Individual contributions, whether from modest witnesses or flamboyant public figures or credentialled professionals, have counted for little. Banias argues that the subculture rather than the UFO is the transformative agent and describes how it might push the levers of change; but has it? Again, more than 70 years have passed without clear evidence that the UFO subculture has moved the needle a single degree.

To be fair, Banias never insists that the UFO subculture revolutionizes the

world single-handedly. This one subculture offers a hypothetical example of processes afoot throughout the modern world, activities and ideologies that converge to undermine established authority, norms of belief, and standards of truth. The trends that demonstrably shake the old order are social and political—populism, nationalism, tribalism, and a long list of other "isms" that reshape the landscape. Major instruments of change are the Internet and social media. Like so many others, the UFO community embraces the Internet as its preferred forum. Here is the modern Wild West, free, wide-open, lawless, anarchic, a platform that levels all voices, usually downward. Facts, expertise, authority, even distinctions between truth and fiction no longer apply. Quality UFO websites and sound information exist, if you can find them, but shadowy sources ply the ether with rumors, hearsay, lies, cons, distortions, and endless repetitions that do not distinguish viable sightings and claims from those already dead and ought-to-stay buried. Cyberspace has become the realm of choice for "other" realities with no solid footing on the ground.

Perhaps the author's most controversial argument regards the place of science in this culture conflict. The "science wars" debate has gone many rounds over the years. Derrida is right that science is conducted in language and only the gods know absolute truth, but science deals with more than words. There is a reality outside our heads—a hot stove burns every hand that touches it, whatever we think or say. Objectivity may be out of reach, but not all propositions are equally true. Inventors learned there are many ways for a flying machine to sit on the ground or crash but only a few consistent principles by which it will fly. Scientific truths are only relative truths, but scientists recognize the provisional nature of their knowledge and discard—not gladly or quickly—even a beloved theory when evidence requires it. Disease may be due to evil spirits, divine punishment, maleficent witchcraft, miasma, or humors out of balance, but germ theory displaced the rest because it explains more observables and is better able to effect cures. Evil spirits may be to blame after all, but pending new evidence vaccines work better than exorcism. Scientific knowledge is not absolute, but science delivers the most reliable, successful, and useful truths we can achieve. We stake our lives on them every day.

A rejection of UFOs because they threaten scientific power and authority is a proposition that may contain a grain of truth. Science is a human enterprise and equally subject to human jealousies and self-interests, but concern for status and position hardly tells the whole story. Scientific consensus sets the usual standard for scientific truth. A consensus may look like the closed ranks of an elite fraternity to those who find their beliefs rejected, but when contradictory theories contend, the collective wisdom

of informed judges is most likely to choose the best. Consensus is not groupthink but a form of peer review. It closes the door on the occasional truth, but far more often it bars junk data and pseudoscience, error and faulty reasoning, quackery and propaganda. The mantle of scientific authority comes with responsibility to defend the best truths we have, defined by the concurrence of genuine experts and more likely to capture the truth than pet theories of outliers or preferences of know-nothing politicians.

Banias foresees a coming democracy of knowledge where everyone is equal; where authorities, experts, and hierarchies are gone; and where presently accepted facts, truths, and norms are exposed as illusory. Such prophecies are coming true before our eyes. The Internet has become the go-to source of news and information, and not just for UFO people. Anyone with a website or social media account can now create "truth," spread it around the world, and gather followers. National leaders make up truths as they go along and distinguish genuine news from fake news according to what they want it to be, with inconvenient facts and investigations dismissed or disparaged. Scientific evidence is suppressed or ignored if it interferes with political and business interests. The gatekeeping duty of science against fraud and nonsense is under attack, journalists suffer abuse or demonization simply for doing their jobs.

To couch these trends in terms of democracy, equality, and freedom lends them an appeal they hardly deserve. This version of democracy recalls the Athenian disaster where freedom degenerated into mob rule, demagogues manipulated the public to serve their own ends, and democratic governance got a bad name that lasted two thousand years. Everyone can have his or her opinion, but useful knowledge to serve the common good requires a commitment to factual evidence, a meritocracy of experts, and a social structure to promote education, research, and application. We need science and reason to police against wrong or harmful beliefs such as anti-vaccination and climate-change denial. Otherwise, this new freedom may prove less a leap into a blissful tomorrow than free fall back to the Dark Ages. Banias is right about where we may be headed, but a note of alarm at what we stand to lose might also be appropriate.

Of course, one book has room only for so much, and we can be grateful for what Banias has given us. Whether or not the UFO subculture can break the status quo and reshape modern culture remains to be seen, but who would have imagined that interest in UFOs could have effects that ripple across the breadth of modern culture? He breaks free of the usual "yes they are" / "no they aren't" range of UFO discourse for a refreshing new perspective on the UFO community as a subculture, counterculture, and exoculture. From awareness of these unsuspected depths, members may

gain a new sense of their own potential significance. The philosophical and cultural theories that inform his argument could have made for hard going, but the author has proved a lucid and helpful guide. For that, too, he earns our thanks—and a reading.

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BOOK REVIEW

Spiritual Science: Why Science Needs Spirituality to Make Sense of the World by Steve Taylor. London: Watkins, 2018. 273 pp. $11.52 (paperback). ISBN 978-1-78678-158-1.

DOI: https://doi.org/10.31275/2019/1555

Ever since the rise of modern science in 17th-century Europe, science and spirituality have been estranged. This has been worse than unfortunate because science and spirituality are major parts of human experience, and it won't do to have them perennially at odds with each other. So one of the mega thought-memes of modern history has been trying to harmonize these two dimensions of experience that so powerfully influence our lives. The challenge is how to integrate them and do justice to the best they have to offer while being wary of the worst as well.

Much of modern thought has struggled to make the divided soul of Western humanity whole and to reintegrate a broken human identity. The task becomes more urgent today when the fractures and conflicts of human society are growing, alongside looming climate catastrophe, with secular scientists and public intellectuals such as Noam Chomsky and Helen Caldicott talking about doomsday and apocalypse (Caldicott, 2017). Fortunately, there are those anxious to make the case for the marriage of science and spirituality.

Dr. Steve Taylor, a senior lecturer in psychology at Leeds Beckett University, UK, offers readers an informed guidebook to that possible marriage, *Spiritual Science: Why Science Needs Spirituality to Make Sense of the World.* The title is clear and to the point, as is the writing throughout. Taylor is fully aware of the unorthodox nature of his views, given that the word *spiritual* is a pariah in today's mainstream intellectual world. Worse, to use *spiritual* to modify *science* is clearly heretical. But Taylor is not apologetic: ". . . our culture is in thrall to a particular paradigm or belief system that in its own way is just as dogmatic and irrational as a religious paradigm" (p. 2). We should resist being forced into a "false dichotomy" between dogmatic religion and reductive materialism when in fact both stances need to yield to a new paradigm that transcends their limitations.

Taylor states that the main idea of his "spiritual approach is very

simple: The essence of reality (which is also the essence of our being) is a quality that might be called spirit, or consciousness" (p. 3). This clearly is opposed to materialism, but also to religion. In the religious paradigm, God is the fundamental premise; in Taylor's paradigm, spirit or consciousness is fundamental. The difference is major: The notion of God is something we generally take on faith; whereas consciousness is self-evident and pervades human experience. The new paradigm in this way gains a more solid foothold in reality; it provides a starting-point impossible to deny, unlike the old paradigm in which it is possible, even easy, to deny the existence of God. But it is not possible to consciously deny that one is conscious. So, willy-nilly, we are all immersed in spirituality, however shallow and limited our awareness of its potential depths and multiplex meanings.

In framing the structure and intent of the book, Taylor speaks of the explanatory power of spiritual consciousness. Mainstream materialists ensure their identity by denying the reality of anything they can't explain. Taylor's book takes the reader on a "tour" (p. 7) of experiences typically glossed over by materialists that need to be explained but cannot be by known physical principles.[1] Explanation becomes possible only by invoking mental and spiritual causes.

The most dramatic challenge to physicalism is consciousness itself, which materialist science has failed to explain. The assumption is that the brain produces consciousness, but "there is no evidence for this at all—despite decades of intensive investigation and theorizing, no scientist has even come close to suggesting how the brain might give rise to consciousness" (p. 5). This ought to be decisive, and the only honest conclusion possible today is that materialism is dead.

But some myths die hard. It has to be said here that the irrational denial of certain phenomena is instructive to observe; the inability to confront certain factual truths may be carried to bizarre extremes. Examples abound; for example, Joe Nickell's review of a book about the most famous case of levitation on record (Grosso, 2016). The review is published in the *Skeptical Inquirer* (Nickell, 2018). A review of Nickell's 'review' may be found online (Grosso, 2018). Nickell nowhere addresses *any* of the evidence marshalled in the book and instead argues that the saint developed such strong legs from praying on his knees for 35 years, that he was able to jump in the air and fool all of Europe into thinking he could levitate. Nickell's pseudo-review is a bizarre symptom of the irrational resistance to anything that questions totalitarian materialism.

Taylor is clear about a point often played down or not even mentioned in this type of discussion. The falsehood of materialism is not just an academic issue. On the contrary, materialism "has very serious consequences" (p. 8),

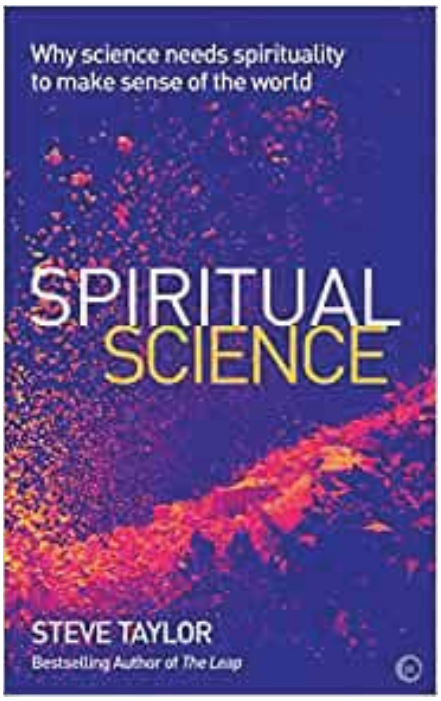
especially evident in our age of looming climate catastrophe, epidemic arms sales, and unprecedented inequity between the rich power-holders and everyone else on Earth. Far from a merely abstract concern, Taylor would have us proceed full-speed ahead toward a new age of "post-materialism," an age in which spiritual values play a key role.

Chapter by chapter, Taylor lays out the many reasons that prove the failure of materialism while in each case also opening vistas of human potential that materialism automatically would reject. So, for example, Chapter 6 covers "The Puzzle of Near-Death Experiences" (NDEs), evidence for life after death that materialists are duty-bound to reject or, more likely, resolutely ignore. It turns out that there are many puzzles about this experience. We have cases where a clinically dead person is revived and correctly reports observations made of the physical environment in an out-of-body state. Taylor is impressed by the profound spiritual transformation that results from many NDEs, and concludes the phenomenon is authentic and evidence of the emergent post-materialism.

One chapter focuses on the puzzle—puzzling to the materialist—of evidence showing how the mind can change the brain and affect the body, which ought not to occur if materialism is true. The determined materialist, like Daniel Dennett, can insist that our ideas of mentality are illusions. But on the other hand illusions are examples of mental not physical phenomena. In my opinion, if materialism were true, how anyway could we know it was true? If materialism is true, my opinions must be strictly determined by physical not rational forces. I'm not sure how reason can be 'rational' in a phsyical universe totally devoid of mind. Another chapter reviews the puzzle of "awakening experiences," sudden influxes of heightened awareness, mystical forms of consciousness that transcend what we can imagine the brain producing. These phenomena point dramatically toward the need for a post-materialist paradigm. Any paradigm, economic or philosophical, hostile to "awakening experiences," as Taylor defines them, is no friend to humanity. A more fully evolved human consciousness is needed at this juncture of history where the end of civilized life is not just an abstract possibility but a looming probability.

Chapters 8 and 10 discuss what Taylor calls the "puzzles" of psychic phenomena and altruism. Again, these are only puzzles to folks who are committed to reductive physicalism; they are relatively rare, and strange, and often inspiring to normal people with open minds.

Surely, materialism falls to pieces in light of the reality of extrasensory perception and psychokinesis. We have only to spell out what is implied by these terms to see how so. Whether it be telepathy, clairvoyance, pre- and retro-cognition, or psychokinesis, we confront alleged human activities



that occur but bypass physical mediation, events wholly at odds with the 'scientifically' dominant worldview. The sprawling body of "puzzles" that Taylor reviews under the heading of psychic phenomena is in fact a hammer-blow to materialism, which, when combined with evidence of NDEs (Greyson, 2021 forthcoming) and other forms of survival evidence, spell death for materialism.

We are looking at some of the consequences of lifting the iron curtain of materialism from our view of human performance. Chapter 10 attempts to palliate another blindspot inflicted on our collective vision by materialism. Afflicted by what Raymond Tallis calls Darwinitus (Tallis, 2011), science struggles to see the value and reality of altruism, in other words, the values and rights of *other* centers of sentience. When the Darwinian "struggle for existence" and Hobbes' "war of all on all" merge, we have the basis of the modern world that is ruled by material power and only faintly and sporadically by the forces of altruism.

Chapters 9 and 11 deal with two puzzling ideas of central importance—evolution and quantum mechanics. In line with the premise and title of his book, which is about spiritual science, Chapter 9 questions the neo-Darwinian account of evolution, which relies on random mutation and natural selection as explanatory, and instead offers a tentative model of spiritual evolution that posits a drive in nature toward increasing complexity and intensity of consciousness. Also, rejecting the all-dominant role of competition in neo-Darwinism, Taylor argues for the efficacy of empathy and co-operation in evolutionary advance. While not offering absolute certainty of anything, Taylor's expansive (fact-based) worldview is far more optimistic than the brutal prospects of reductionist physicalism or the (often criminal) simplicities of religious fundamentalism.

It seems that some of our sacred intellectual cows are being turned out to pasture. My early impressions about the limits and mortality of neurons

have all been recently upended. Recent research, Taylor reminds us, shows that the brain is more elastic and creative than previously supposed; so that by directed mental effort it is possible to rewire our own brains—another step toward establishing the primacy of mind (see especially Chapter 5). It is true that the materialist can say that the efforts of my will are simply brain states, despite my feeling that a *mental* effort is going on. But this seems no more than a speculative choice, one you would expect a materialist to make. More generally yet, the neo-Darwinian creed is by no means impregnable to doubt, argues Taylor, so we are free to posit a spiritual force driving the evolutionary arc of life, and even perhaps the evolution of the entire universe.[2]

Taylor devotes Chapter 11 to the question of quantum mechanics. The rise of 17th-century mechanistic science led to the triumph of metaphysical materialism; but the new physics of relativity and especially quantum mechanics have served to restore the primacy of consciousness in nature. For one thing, he quotes Max Planck who flatly declares: "There is no matter as such" (p. 208). In Newtonian physics, consciousness plays no role; in quantum physics, consciousness becomes central. The observer and the observed physical event become inseparable (p. 209), while other quantum effects like entanglement and non-locality also serve to break down the gulf between mind and matter, with mind in the end becoming the key player in the metaphysical play of the universe.

The concluding chapter sums up the arguments for the reality of a spiritual universe and describes how the author sees our endangered species "moving beyond materialism" (p. 219). The first step is to get clear on our vision of reality, so Steve Taylor lays out his "tenets of panspiritism",[3] which are radically at odds with mainline materialism: For example, that life is not an accident of mindless matter but a key part of the evolution of the universe toward ever-greater consciousness and complexity; that our spiritual consciousness can shape our bodies and our brains and transcend both at death, which follows from the fact that consciousness is not a product of the brain but is part of an antecedent universal consciousness; that human beings are not isolated egos but psyches inwardly open to the entire community of being; that human beings possess paranormal and mystical potentials of consciousness that represent the evolutionary direction of the human race; and that the great spiritual purpose of our lives is "self-evolution" (p. 230).

Let me end with what seems the essence of Taylor's message, which revolves around a revolution of perception. In his own words:

> Moving beyond materialism means becoming able to perceive the vividness and sacredness of the world around us, so that we can experience our connectedness with nature and other living beings. (p. 232)

The great challenge then becomes how to institute a revolution in the way we sense, feel, and perceive the world, a transformation of consciousness, and thus a transformation of the world. This might well serve to define one of the great aims of a new spiritual science. There is both an empirical basis and significant human need for the kind of spiritual science Taylor argues for, and the idea of creating a new spiritual science may seem to some a thing whose time has come.

My own sense is that—short of a miracle—the momentum of history is too powerful to stop; the thing must play itself out to the end. The new paradigm will most likely begin to flourish *after* the total physical and cultural dénouement (i.e. self-destruction) of Western materialism. What that picture might look like in any detail is an open question.

Notes

[1] The author himself singles out as one of his sources E. Kelly (2007).

[2] See an account both mind-blowing and authoritative by Rees (1998).

[3] Other terms the author uses or might use are *panpsychism*, *panentheism*, *idealism*. There are nuances here but the central idea is the primacy of mind and consciousness—the opposite of materialism or physicalism.

—**Michael Grosso**

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BOOK REVIEW

Diabolical Possession and the Case Behind *The Exorcist*: An Overview of Scientific Research with Interviews with Witnesses and Experts by Sergio A. Rueda. Jefferson, NC: McFarland, 2018. 255 pp. $35.00 (paperback). ISBN 978-1-4766-7384-4.

DOI: https://doi.org/10.31275/2019/1643

Outside of Washington, D.C., in the town of Mount Rainier, Maryland, an episode of potential demonic possession was investigated by the Catholic Church and the Duke Parapsychology Lab, including the famous scientist J. B. Rhine. The episode, which involved a 14-year-old boy, was reported in *The Washington Post* in 1949. As is the case with most claims of possession, in order to protect the identity of the family involved, the church maintained a wall of secrecy around the specific events and the activities of the clergy who investigated this case. Twenty years later, William Peter Blatty (1971) produced a fictionalized novel featuring a young girl who was possessed by a demon and had to undergo the religious ritual of exorcism to be cleansed and to stop a horrifying series of events. The book was called *The Exorcist*.

In 1973, the novel was produced as the film *The Exorcist* which won the screenwriter William Peter Blatty an Academy Award for Best Adapted Screenplay. The film horrified audiences, caused many viewers to walk out of the theater in disgust, and elicited worldwide protests from religious leaders. Many years later, it is still considered one of the most terrifying horror movies ever made despite its antiquated special effects.

But, the real questions on the mind of nearly every person who saw the film were, "Has anyone really been possessed by the devil?" and "Is this based on a true story?" Sergio Rueda explores these questions and attempts to uncover the actual facts and observations of the 1949 case that appear to be the story behind *The Exorcist*.

Finding His Way

Rueda begins by describing the process that led him to initiate his investigation of this story. In an interesting synchronistic event, Rueda discovered a document that had never been released to the public about the 1949 case. While he was researching poltergeist activity at the Foundation

for Research on the Nature of Man (now the Rhine Research Center) in Durham, North Carolina, a file folder fell to the floor and caught his attention. The folder contained correspondence between a Lutheran Minister and Rhine, who was then the director of the Duke Parapsychology Lab. Though some of these letters were reviewed previously and summarized in articles and books such as *The Enchanted Voyager* (Brian, 1982), one document had never been revealed to the public before.

The Jesuit Report, as it is now known, is a detailed report of all the observations and events of the case including the procedures used by the priests involved in the sessions. This report was delivered to church officials for their records but was never released to the public. A second copy of the report was sent to Rhine at the Duke Parapsychology Lab, and it was kept in their archives until Rueda discovered it by accident at Rhine's Foundation for Research on the Nature of Man.

The Mount Rainier Case

The author provides very detailed descriptions of activity observed around a 14-year-old boy in Mount Rainier, Maryland, who was originally considered to have been experiencing poltergeist disturbances. By reviewing the Jesuit Report in detail, interviewing witnesses and participants in the case, and digging into previous articles and books written about it, Rueda paints a picture of phenomenal events that include chairs and beds moving on their own, scratches and writing spontaneously appearing on the boy's body, and strange sounds and voices heard near the boy. The result is an engaging story leading from some simple activity in a family home to a trip across the country to St. Louis, Missouri, and finally back to Washington, D.C., where a series of priests became involved in the investigation and declared it a case of demonic possession.

In the earliest phases of this investigation, Dr. J. B. Rhine of Duke University and his wife, Dr. Louisa Rhine, were contacted by a minister for their opinion and evaluation of poltergeist activity in the family's home. J. B. Rhine described the theories of the time which proposed that activity of this sort was the result of unconscious psychokinesis originating from a living person. Since the activity appeared to occur only when the boy was present, Rhine considered that he was most likely the source of the activity. As a conservative scientist, Rhine also suggested that the minister be extremely cautious of fraud or trickery by the boy. Finally, Rhine mentioned that discussions of demonic possession could have a strong influence on the beliefs and behavior of a suggestible child, and that statements of this sort should be carefully avoided in his presence.

Despite Rhine's advice, the priests in the case continued to explore the possibility of demonic possession and pursued other avenues to resolve these issues.

Personal Note

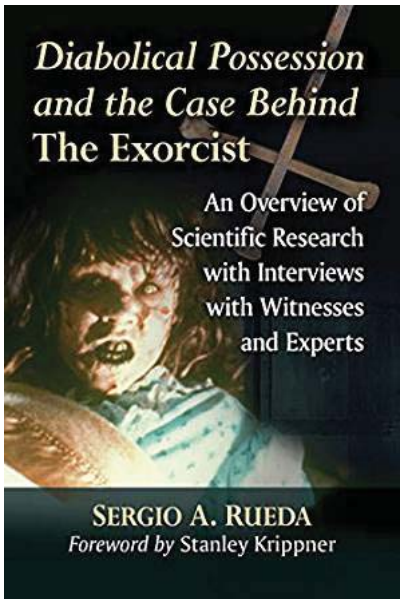
To be fully transparent in this review, it is important to disclose that I have no interest or predisposition toward a demonic interpretation of these or any events. Though I have a great appreciation of and fascination with science fiction and interesting paranormal storytelling, the subtle bias that underlies my scientific perspective prevents me from attributing events that are interpreted as *evil* to a demonic entity or the devil. In fact, my natural inclination is to consider all events in context which makes it difficult for me to implicitly identify any event as *good* or *evil*.

Nonetheless, I applaud Rueda's storytelling and review of the events included in the Mount Rainier case. His description of the activities related by witnesses and extracted from the Jesuit Report is thoroughly engaging. Rueda produces an enthralling vision of the events, and though there is a great deal of repetition and duplication from chapter to chapter in the earliest pages of the book, by the time the story is completed I found myself excited and cheering for the boy finally to be rid of the demon that was said to have possessed him. Demonic possession or not, Rueda tells a wonderful story and produces a great foundation for the next section of the book.

Interpreting the Activity

Until this point, this review may seem to be a discussion of great storytelling and an engaging series of events that formed the foundation for a popular horror film, but this book is much more complex than a simple review of the facts. In the second half of the book, Rueda provides a detailed and insightful evaluation of the original source material in the context of four different interpretations.

The evaluation begins by considering the possibility of deception or fraud on the part of the boy and/or his family members. Rueda examines the psychology of each individual involved and is rigorous in exploring the possibility or absurdity of fraud in the context of every paranormal observation. For example, could the husband be motivated to deceive his wife or might the observing priest have professional ambitions that could lead him to emphasize certain factors while ignoring others? Rueda's analysis fairly explores even the most absurd skeptical explanations and leaves the reader questioning whether the writer is being overly critical of each event due to his zealous attempt to find a fraudulent explanation. These



examples of extreme skepticism add credibility to the full analysis that follows.

Next, Rueda explores the possibility of a natural, scientific explanation for each observation using the reductionist principles of Occam's Razor. By specifically focusing on the psychology surrounding the young boy and his family relationships, the boy's subtle motivations are revealed to support possible claims of trickery or fraud. In addition, the author explores the psychological concept of a *conversion reaction*—a physical reaction, like dermal irritations, produced by strong, unconscious needs or fears—as a possible mechanism for the spontaneous appearance of words or rashes on the child's body. These proposals are interesting by themselves, but also they provide support for the next area considered by Rueda—the parapsychological hypothesis.

In a thorough review of the parapsychological literature, Rueda cites descriptions of poltergeist activity from experts such as Alan Gauld and Tony Cornell (1979), Scott Rogo (1979), and William Roll (1977), among others. Rueda manages to capture the investigative spirit of poltergeist researchers as he provides parapsychological explanations for each of the observed phenomena. Rueda produces an excellent review of how the poltergeist is interpreted in the most modern terms while applying the parapsychological explanations to each of the phenomena described in the 1949 case. This is the most extensive portion of the case evaluation, revealing the scientific nature of the author's position and giving the reader the promised scientific foundation for exploring the case of possession.

Finally, as if it were an afterthought, Rueda discusses characteristics of the case that might indicate that the activity resulted from demonic possession or a disruptive spirit. By describing factors used by religious leaders to determine if a case is appropriate for an exorcism, the discussion becomes a lesson on the beliefs and procedures that must be established in order for a priest to be granted permission to perform an exorcism. Significant signs must be present and specific activity must be observed including the four stages leading to a diagnosis of spirit possession: Manifestation (inviting

a spirit to enter a host body), Infestation (the appearance of apparitions, shadows, or other physical factors representing spirit activity), Oppression (psychological, psychic, and emotional disturbances to an individual), and finally Possession (a fully manifested replacement of the human spirit with a demonic presence).

Rueda discusses the activity necessary to indicate that each stage has occurred including an expression of knowledge beyond the capabilities of the host/agent, xenoglossy or speaking unknown languages, and exceptional or sometimes superhuman strength demonstrated by the host.

Spoiler Alert

Rueda concludes that the priests involved in the case were overly enthusiastic to label the events as the result of demonic possession. He proposes that the PK-like activity was more likely produced by poltergeist effects and the rashes on the boy's body arose from both fraud and a conversion reaction due to his suppressed emotions and desires.

Additional Resources

The book contains nearly 80 pages of appendices which provide supporting information and detailed resources. These additional documents include ten letters of correspondence between Rev. Luther Miles Schulze, the minister initially called in to evaluate the Mount Rainier case, and Dr. J. B. Rhine, who directed the Duke Parapsychology Lab in 1949 when the events originally occurred. There is also a detailed interview with two primary witnesses in the case, the Rev. Luther Miles Schulze and his wife, Ruth, who had the young boy stay at their home so they could personally observe the claimed phenomena.

There is an additional interview with Ida Mae, a friend of the boy's family and the leader of the church group that organized a circle of prayers for the boy during the strange events in 1949. This interview was conducted in 1993 and includes a transcript of a brief phone call to the boy who experienced the strange activity in 1949, now a grown man. He had no memory of the events and was not interested in speaking about the situation.

Finally, there are complete interviews with experts on demonic possession. All of these experts on demonology and possession were included in the documentary *In the Grip of Evil* (1997), which the author considers the most accurate and reliable information ever produced on the Mount Rainier case.

Each appendix is annotated with comments, clarifications, and additional context to help the reader recognize the importance of each

interview or collection of documents. The comments give the reference materials a personal perspective that makes the information much more accessible and meaningful to the reader.

Summary

For those who are fascinated with demonic possession and the story of *The Exorcist*, this book provides all of the details and specific events that appear to have influenced William Peter Blatty in writing the novel which led to the popular film. Though this book begins with a lingering sense of repetition and continuous thematic messages through the first few chapters, it quickly matures into a riveting story of a troubled family that is battling with unexplainable phenomena. When the ministers and priests get involved in the situation, the activity appears to increase and take the form of a demonic possession which is resolved with a dramatic exorcism.

Though this story is engaging and provides a sense of suspenseful entertainment, the author clearly illustrates where the fictional account of *The Exorcist* strays from the documented activity, and he provides a firm connection between the Mount Rainier case and events described by Blatty in his novel.

Rueda then provides a fair evaluation of the phenomena following a well-defined scientific approach. He covers potential fraud, psychological contributions to the activities, parapsychological explanations, and, finally, the possibility of demonic possession. In his final evaluation, he clearly describes his reasons for concluding that it is very unlikely the events were the result of a spirit or demonic possession and how the priests involved in the investigation followed the wrong path in their evaluation of the phenomena.

Though some readers who are fixated on finding a demonic element in this story may disagree with the author's conclusions, he provides a firm foundation for his position. Even the most critically thinking scientist will leave the final chapter with questions. If these events were clearly described and documented by all witnesses involved, the results provide very strong evidence for poltergeist activity, a topic still being questioned by many scientists tied to a materialistic and reductionist foundation. Could this case be one of the strongest examples of a poltergeist ever formally investigated?

—**John G. Kruth**
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The Society for Scientific Exploration and the Parapsychological Association are joining forces for a four-day event at the Hilton Durham Hotel, hosted by the Rhine Research Center. Subscribe to our social media networks to get the latest news about the call for papers, registration, and program information.

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The SSE has established Aspiring Explorers Awards for meritorious student research projects judged to be the most original and well-executed submissions in subject areas of interest to the SSE. A committee is in place to review all entries and determine the winners, who will receive awards of $500 each. One award winner will have the opportunity to present a talk describing the project at the SSE Annual Meeting, for which the Society will cover the registration fee. The other award winner will have the opportunity to present a talk describing their project at the SSE Euro Meeting, for which the Society will cover her/his registration fee. Submissions must be made per the guidelines and deadline as stated on the SSE website "Call for Papers" for the conference you are considering attending in order to be eligible for that year's prize for that conference.

If your paper is selected for the Aspiring Explorer Award, you will be either invited to present your talk at the meeting or able to submit your paper as a poster session. We are very excited about the recent poster sessions at annual SSE meeting, so please let your fellow student colleagues and professors know about this.
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C. M. Chantal Toporow, Ph.D., SSE Education Officer
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Institut für Grenzgebiete der Psychologie
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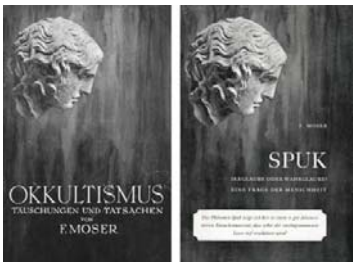
Fanny Moser Award

Description: Dr. Fanny Moser (1872–1953) was one of the first women to study medicine and natural sciences in Freiburg Zurich and Munich. She received her doctorate in 1902 with a zoological thesis. In 1914, she took part in a mediumistic séance and witnessed a spectacular table levitation that shattered her scientific world view. In the following decades, supported by a unique source collection and research library, Fanny Moser undertook a critical examination and reappraisal of the entire field of Mesmerism, Hypnotism, Spiritism, Occultism and early parapsychological research up to the 1930s, which led to the publication of her opus magnum *Okkultismus – Täuschungen und Tatsachen* (München 1935, Reprint 1977). Together with her second major volume *Spuk - Irrglaube oder Wahrglaube? Eine Frage der Menschheit* (Zürich, 1950 Reprint 1977), published in 1950, Fanny Moser bequeathed – from a historical point of view – two groundbreaking works on German-language parapsychological research.



In her will, Fanny Moser decided to create a foundation to establish and secure research in the tradition of her two works. She assigned this task to the pioneer of academic parapsychological research after the Second World War, the Freiburg professor of psychology Hans Bender (1907–1991), and to the Institut für Grenzgebiete der Psychologie und Psychohygiene e.V (IGPP) founded by him in 1950. Fanny Moser thus became the IGPP's first patron, and her legacy enabled a part of the Institute's research and counseling work to be carried out in a modest way for decades. The testamentary decree also stipulated that a prize should be awarded regularly for the "best work" on the research topics she herself had studied. This prize was awarded for the first time in 1982; Eberhard Bauer (IGPP Freiburg) is the only winner to date. On the occasion of the 70th anniversary of the IGPP in 2020, the testamentary decree is to be fully enacted. The Fanny Moser Award is endowed with 3,000 euros and is to be awarded regularly every three years.

Requirement: The prize is to be awarded to a scientifically published work (including outstanding qualification work). The publication must be explicitly related to Fanny Moser's research on paranormal and anomalistic experiences and phenomena. The subject can be empirical-experimental, theoretical-conceptual, clinical-therapeutic, natural scientific, art historical, cultural scientific, social scientific or historical. The publication of the work should not have taken place more than three years ago and should document an outstanding academic achievement.

Modalities: Proposals and applications must be sent to the jury by email by **15 January 2020**. They should contain the following documents: a copy of the scientific work to be considered, a letter of application and a curriculum vitae. The award ceremony is expected to take place in Freiburg in May 2020.

Email: Fanny-Moser-Preis@igpp.de
Internet: http://www.igpp.de
Institut für Grenzgebiete der Psychologie und Psychohygiene e.V. (IGPP) · Wilhelmstr. 3a · D-79098 Freiburg i. Br

The *Psychic News* (PN) digital archive for years 1932 to 1967 is now available online, for free full-text searching through the University of Manitoba digital collections website. It is anticipated that years 1968 to 2010 will be added in Fall 2020. Here is an overview of the newspaper's content:

The UK-based *Psychic News* regularly features articles about evidence of life after death obtained through mediumship and various forms of spirit communication, as well as spiritual healing, the psychic gifts of clairvoyance, clairaudience, and clairsentience, automatic writing and drawing, psychic and spirit art, psychokinesis, ectoplasm, materialization, reincarnation and other paranormal topics. The newspaper's pages celebrate the successes of the Spiritualist movement; they also document the controversy and disappointment when séance-room fraud was uncovered. Biographers will discover tributes to Spiritualist mediums, healers, and church leaders, many of whom were previously difficult to trace, as well as well-known figures associated with psychical research experiments.

Today, *Psychic News* is a full-color monthly magazine, available both through print and digital subscriptions: https://www.psychicnews.org.

The University of Manitoba *Psychic News* landing page shows the cover page of the first *Psychic News* issue (28 May 1932), provides a history of the newspaper, the scope of the digitization project, and acknowledgement of this unique international collaboration between Senate House Library (University of London), Psychic Press Ltd., University of Manitoba Libraries, and other partners: https://libguides.lib.umanitoba.ca/psychicnews

Psychic News

No. 1] SATURDAY, MAY 28, 1932 [Price TWOPENCE

"I CHALLENGE THE 'DAILY MAIL'"

By HANNEN SWAFFER

To the Editor of the "Daily Mail."

You have recently performed such a great service to Spiritualism that I want you to go on with your good work.

Because you said of Mrs. Meurig Morris, on a poster, "Trance Medium Found Out," there was a long trial which gave great publicity to the claims of proved survival. These claims, these proofs, usually obtain little notice in the Press unless somebody is accused of fraud or trickery.

You published an article "exposing" Mrs. Meurig Morris.

I Challenge You to expose Mrs' Champion de Crespigny, the honorary principal of the British College of Psychic Science, of 15 Queen's Gate, London, S.W.7. Her telephone number is Western 3081.

Mrs. de Crespigny appeared as a witness for Mrs. Meurig Morris, with the result that law journals which, cannot be accused of a Spiritualistic

Writes Weekly

and all of whose accounts are thoroughly analysed.

Some of these churches have been going on for forty years or more. All of them carry on mediumship, in spite of the fact that mediumship is illegal in this country. Not one of them has ever been prosecuted. No one would dare to prosecute them.

They spread from the north of Scotland to the south of England, and from Southend to the most westerly town. You will find them all over Wales. In some Welsh towns, the miners have built the churches themselves, in their spare time, being too poor to pay for labour.

I Challenge You to expose Mrs. St. Clair Stobart, the head of the Spiritualist Community, who at the Sunday services at the Grotrian Hall, and all the week, has mediums comforting mourners. Healing, too, goes on.

Mrs. St. Clair Stobart is famous as the Woman on the Black Horse, who saved part of the Serbian Army in its great retreat during the war, and who is known as an authoress, poe-

SCEPTIC CONVINCES HIMSELF

MAKES OWN CONDITIONS

After laughing, as people often do, at spirit photography, A. W. Palfrey, a parcels officer at the South-Western District Post Office, London, took six photographs of himself in the presence of J. Myers, a medium. He made the challenge and fixed his own conditions. The sitting took place in a front room at 37 Warwick Street, on Monday evening. The room was illuminated with a 230-volt electric lamp. There were eight people present besides myself.

At the beginning my own camera was focused on the sitters. I went into the dark room, broke the seals, and loaded six dark slides. I then returned, inserted a slide, withdrew the shield, and retired to the door where everyone in the room was visible. The medium released the shutter. I closed the slide and withdrew it, this was kept in my possession, and the same operation performed each time.

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Index of Previous Articles in the *Journal of Scientific Exploration*

Vol: No.	Article	Author(s)
1:1	A Brief History of the Society for Scientific Exploration	P. Sturrock
	Aterations in Recollection of Unusual and Unexpected Events	D. Hall et al.
	Toward a Quantitative Theory of Intellectual Discovery (Esp. in Phys.)	R. Fowler
	Engineering Anomalies Research	R. Jahn et al.
	Common Knowledge about the Loch Ness Monster	H. Bauer
	An Analysis of the Condon Report on the Colorado UFO Project	P. Sturrock
1:2	The Strange Properties of Psychokinesis	H. Schmidt
	What Do We Mean by "Scientific?"	H. Bauer
	Analysis of a UFO Photograph	R. Haines
	Periodically Flashing Lights Filmed off the Coast of New Zealand	B. Maccabee
2:1	Commonalities in Arguments over Anomalies	H. Bauer
	Remote Viewing and Computer Communications—An Experiment	J. Vallee
	Is There a Mars Effect?	M. Gauquelin
	Raising the Hurdle for the Athletes' Mars Effect	S. Ertel
2:2	UFOs and NASA	R. Henry
	The Nature of Time	Y. Terzian
	Operator-Related Anomalies in a Random Mechanical Cascade	B. Dunne et al.
	Evidence for a Short-Period Internal Clock in Humans	T. Slanger
	Three New Cases of Reincarnation Types in Sri Lanka with Written Records	I. Stevenson et al.
3:1	Arguments Over Anomalies: H. \?Polemics	H. Bauer
	Anomalies: Analysis and Aesthetics	R. Jahn
	Trends in the Study of Out-of-Body Experiences	C. Alvarado
	A Methodology for the Objective Study of Transpersonal Imagery	W. Braud/ M. Schlitz
	The Influence of Intention on Random and Pseudorandom Events	D. Radin/J. Utts
	Case of Possession Type in India with Evidence of Paranormal Knowledge	I. Stevenson et al.
3:2	New Ideas in Science	T. Gold
	Photo Analysis of an Aerial Disc Over Costa Rica	R. Haines/J. Vallee
	Three Cases of Children in Northern India Who Remember a Previous Life	A. Mills
	"Signatures" in Anomalous Human–Machine Interaction Data	D. Radin
	A Case of Severe Birth Defects Possibly Due to Cursing	I. Stevenson
4:1	Biochemical Traumatology/Plant Metabolic Disorders in a UFO Landing	M. Bounias
	Return to Trans-en-Provence	J. Vallee
	Analysis of Anomalous Physical Traces: 1981 Trans-en-Provence UFO Case	J. Velasco
	Physical Interpretation of Very Small Concentrations	H. Bauer
	Luminous Phenomena and Seismic Energy in the Central United States	J. Derr/ M. Persinger
	Photo Analysis of an Aerial Disc Over Costa Rica: New Evidence	R. Haines/J. Vallee
	A Scientific Inquiry into the Validity of Astrology	J. McGrew/ R. McFall
	Planetary Influences on Human Behavior: Absurd for a Scientific Explanation?	A. Müller
	Five Arguments against Extraterrestrial Origin of Unidentified Flying Objects	J. Vallee
4:2	Using the Study of Anomalies To Enhance Critical Thinking in the Classroom	M. Swords
	Observations of Electromagnetic Signals Prior to California Earthquakes	M. Adams
	Bayesian Analysis of Random Event Generator Data	W. Jefferys
	Moslem Case of Reincarnation Type in Northern India: Analysis of 26 Cases	A. Mills

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