Journal of Parapsychology

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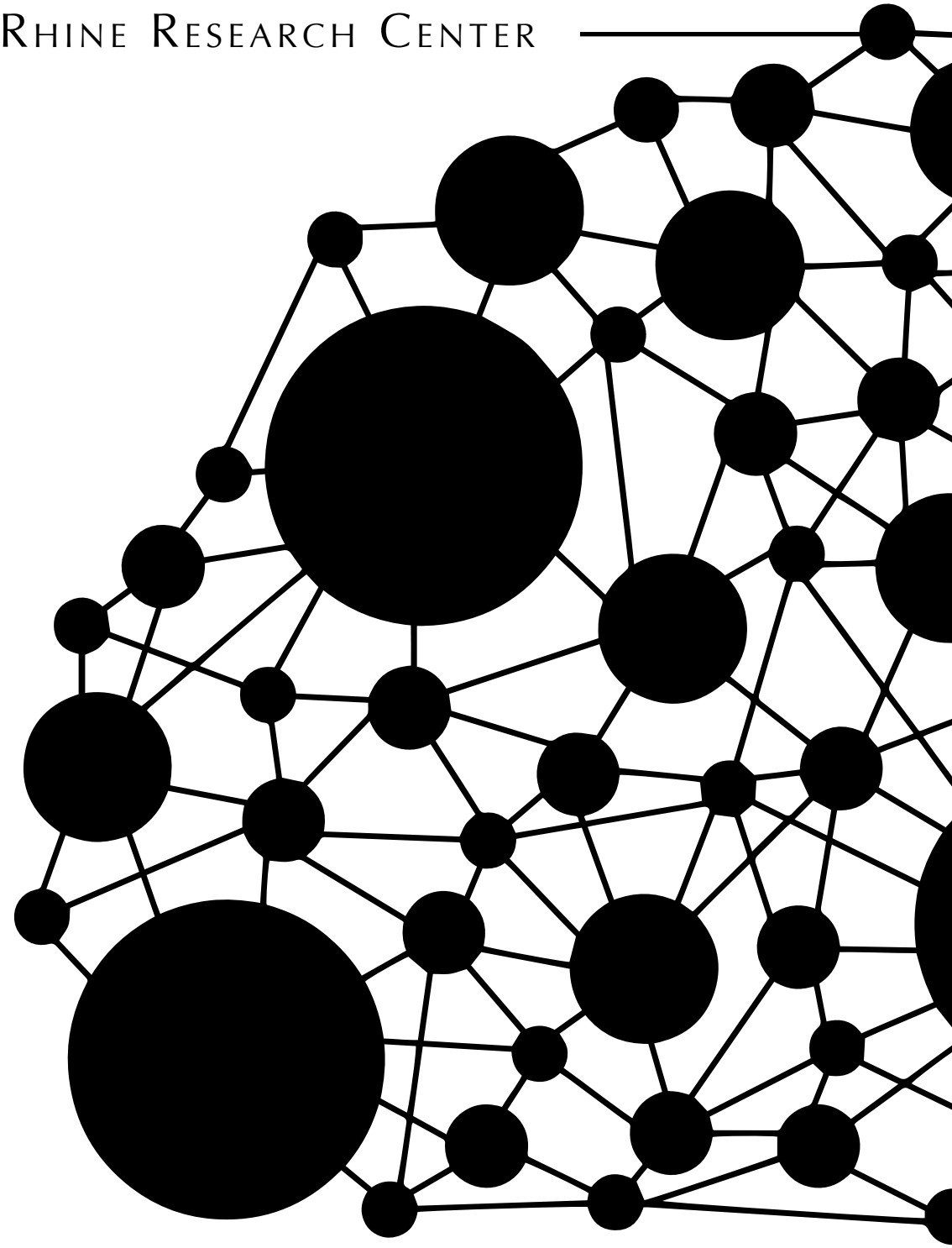

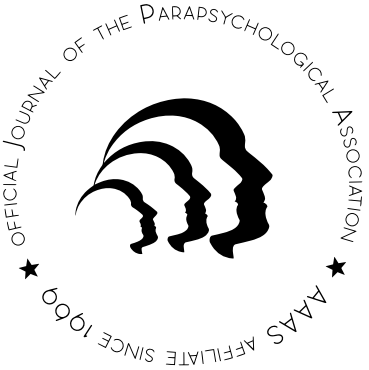

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A Note from the Publisher

Graham Watkins

Publisher, the Parapsychology Press

As the *Journal of Parapsychology* has been both improved and modernized during Dr. Etzel Cardeña's tenure, we would like to thank him for his services.

Dr. Cardeña assumed the position of editor of the *Journal of Parapsychology* beginning with the Spring issue of 2017. Changes in the *Journal* followed as the publication moved to a position much more in line with other academic journals. In that first issue, Dr. Cardeña defined a number of goals he was setting for the *Journal*; to "mainstream" psi research by creating a multidisciplinary editorial board, to open the *Journal* to research methods other than experimental, such as the study of anomalous experiences, to encourage submissions from other disciplines, to add reviews of books in languages other than English, to bring the *Journal* up to date by using modern techniques such as DOIs (digital object identifiers) and to allow open access, and to maintain the standards the *Journal* has adhered to in the eight decades of it existence (Cardeña, 2017).

In these, Dr. Cardeña has had notable success. Beginning in 2018, DOIs were established for all articles published in the *Journal*. Open access has now been established for the *Journal*, and special banners now mark the articles that are open access or which have been preregistered—and there is no question that the standards of the *Journal* have been scrupulously maintained.

The editor and the members of the editorial board listed in this issue reflect the editor (Dr. Etzel Cardeña) and editorial board that were in place when this issue was being prepared. The next issue will reflect the editor and editorial board in place at that time.

Going forward, we plan to maintain many of the innovations that have been established, and of course to maintain the integrity and reputation of the *Journal* as the premiere journal in the field. Until a permanent editorial staff is in place, submissions and inquiries can be sent to the interim editor, Dr. Sally Ann Drucker, at sally.drucker@rhine.org, or to the publisher at publisher@rhine.org. Books for review should be sent to the Rhine Research Center, 2741 Campus Walk Avenue, Building 500, Durham, NC, 27705.

References

Cardeña, E. (2017). Whither Parapsychology? *Journal of Parapsychology*, 81, 6-8.

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We thank the following for their translations of the abstracts: *Eberhard Bauer* (German), *Etzel Cardeña* (Spanish), and *Renaud Evrard* (French)

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Editorial: Art, PK, and a Farewell

Etzel Cardeña

Lund University

The previous number of *JP* emphasized anomalous cognition, particularly in research using the ganzfeld, with an Editorial, an Invited Editorial, and three papers comprising 5 studies. This issue of *JP* will balance matters by focusing on two other aspects. The issue starts with three papers on proposed relations between psi and art. Nicola Holt and coauthors continue their programmatic work on figuring out what specific cognitive aspects may make artists more likely to succeed in controlled psi tasks. They report on two studies on latent inhibition, creativity, positive schizotypy, and anomalous cognition. The first one did not result in a psi effect, whereas the second one showed a significant effect that seemed to be attenuated by high attentional load. This is a very good example of research on *processes* that may help clarify how and why psi is manifested.

From the laboratory we move to galleries and museums and the thorough study of Susan Hiller, a celebrated artist of the last few decades. Ana Iribas's scholarly paper shows how Hiller employed ostensible psi phenomena and anomalous experiences as a central trope of her art. In the following paper, I show how Hiller's case is by no means unique, but an example of the various theoretical and practical interconnections between the visual arts, science, and psi, particularly from the beginning of the 20th century. The following paper, by Damien Broderick, shifts from the visual arts to literature, specifically science fiction, and its interpenetration by psi, especially during its "golden age," under the aegis of the editor John W. Campbell Jr. The book reviews section continues the topic of psi and art in two contributions. Carlos Alvarado discusses two books dealing with mediumistic art and I review Broderick's book on psi and science fiction, along with another book of his on consciousness and science fiction.

Psychokinesis research is well served by three very different contributions. Marissa-Julia Jakob and co-authors present two process studies that evaluated whether affectively laden subconscious beliefs might affect the output of a quantum RNG, finding non-random deviation for a high incongruence group. Eric Dullin and David Jamet describe in images and words a portable bench to study macro-PK, and present preliminary observations. I hope that their article will trigger studies to evaluate the potential of this new technology. Finally, Ian Tierney proposes that the psychological state of cognitive/emotional dissonance can help explain the lack of consistency in psi research, particularly for PK experiments.

And now to the farewell part of the title. This is my last issue as editor of *JP*. My intent in taking over as Editor of the *JP* was to make it as strong as a first-tier mainstream journal, including tightening

editorial, statistical, and analytical procedures. To achieve this, I relied on the largest and most diverse, discipline-wise and internationally, editorial board in the history of the journal, along with additional reviewers, some of them world experts in other areas. To my Associate Editors, particularly Chris Roe and Caroline Watt who took as Action Editors for my submissions, as well as to all other members of the Editorial Board and reviewers, my heartfelt gratitude. My thanks also to Nikolaos Koumartzis who became the layout designer after an issue or two and was very responsive to my various requests, as well as to Robert Gebelein for journal administration, and to Eberhard Bauer and Renaud Evrard for their timely translation of the abstracts.

And, naturally, thank you to the authors who submitted their work to the *JP*.

Goodbye, adiós, hej då, au revoir, auf Wiedersehen.

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Does Latent Inhibition Underpin Creativity, Positive Schizotypy, and Anomalous Cognition? [1] [2]

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Liverpool Hope University

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Abstract: This paper presents two experiments in which an experimental paradigm developed to examine the efficacy of filtering mechanisms of attention, Latent Inhibition (LI), was adapted to include a psi component. LI assesses the processing of irrelevant stimuli, thus we tested whether a psi-stimulus might be processed akin to the irrelevant stimulus. Because the processing of the irrelevant stimulus has been shown to be moderated by creativity and positive schizotypy, we hypothesized that these same variables would also moderate the processing of any psi effect. In Experiment 1, a significant LI effect was observed but no psi effect. However, non-linear cognition in the creative process (NLCC) (e.g., intuition and hypnagogia) was significantly associated with a psi-LI-like effect. In Experiment 2 there was a significant psi effect that seemed to operate under the same conditions as LI (being attenuated with a high attentional load). However, creativity and positive schizotypy did not moderate the strength of this psi-LI-like effect. The LI effect was significantly enhanced by NLCC and attenuated by originality.

Keywords: Latent inhibition; implicit psi; creativity; positive schizotypy; paranormal belief; cognitive complexity

This research explored the links between creativity, unusual experiences (such as pseudo-hallucinations), weak filters of attention, and ostensible psi-performance. Weak stimulus barriers have been suggested to underpin creativity and unusual experiences, where irrelevant, creative or anomalous stimuli are not filtered from attention (Gianottiet al., 2001; Gray et al., 2002; Hartmann et al., 2001;). We tested whether psi information might be processed in the same way as weak (or irrelevant) perceptual information using a latent inhibition protocol – and whether people who score highly on creativity, unusual experiences, and belief in the paranormal are more likely to attend to irrelevant and anomalous stimuli.

Latent Inhibition

Latent inhibition (LI) has been defined as: "the capacity to screen from conscious awareness stim-

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2 The authors gratefully acknowledge a bursary from the Bial Foundation (155/04) and would like to thank Serena-Roney Dougal for her assistance with Experiment 2.

uli previously experienced as irrelevant" (Carson et al., 2003, p. 499), an unconscious process that adaptively reduces the load on working memory, selecting relevant stimuli, and ignoring irrelevant stimuli (Wuthrich & Bates, 2001). The term latent inhibition was introduced over 60 years ago (Lubow & Moore, 1959) to describe an effect, found in animal research, where the repeated presentation of a stimulus without consequence would reduce the ability of an animal to form new associations to that stimulus. This effect was later shown to be robust in human children and adults (for a review see Lubow, 1989). LI is usually assessed in a learning paradigm, testing the effect of exposure to an inconsequential stimulus on the future ability to learn an association between this stimulus and another (Gray & Snowden, 2005). In a typical LI experiment with humans there are two stages. Stage one consists of what is called a "masking task", a distracting task in which participants engage, the nature of which is not directly relevant to the overall experiment. This is immediately followed by stage two, the experimental task, in which participants are required to solve a problem. There are two experimental conditions in which, during the masking task, participants are either: 1) repeatedly exposed to an irrelevant stimulus, such as a geometric shape or bursts of white noise (the pre-exposure [PE] condition); or 2) not exposed to this stimulus (the non-pre-exposure [NPE] condition). The stimulus is irrelevant to this masking task and serves no function. However, in the subsequent experimental task, this stimulus assumes relevant status; it must be attended to in order to solve the problem, that is, it must enter into cognitive associations. Typically, participants in the NPE condition, for whom the stimulus is novel, solve the problem faster, while participants who have been pre-exposed to the stimulus, without focusing on it, take longer to solve the problem. This is presumed to be because the "irrelevant stimulus" has been inhibited from awareness (Gray et al., 2002). The term latent inhibition refers to the fact that any "learning decrement" (i.e., an inability to learn an association with the inconsequential stimulus) is not visible until subsequent testing occurs (Lubow, 1989).

Although there are competing theories of LI (Escobar et al., 2002; Gray & Snowden, 2005; Lubow & Kaplan, 2005), attentional theories predominate. For instance, in Lubow's (1989) conditioned attention theory (CAT) repeated stimulus pre-exposure leads to the latent learning of a "stimulus-no-consequence" rule, thus reducing the amount of attention subsequently given to that stimulus, i.e., conditioned inattention. This model distinguishes between automatic (rapid, effortless, and unconscious) and controlled (slow, effortful, voluntary, and conscious) information processing. It proposes that the masking task is attended to with the controlled mode, and the stimulus-no-consequence rule is acquired through automatic processing. Conditioned inattention is explained by a stimulus specific bias against the transfer from processing this stimulus, from the automatic to controlled mode in the test phase, making it unavailable to conscious awareness.

The LI effect is sensitive to the attentional load of the masking task (Braunstein-Bercovitz et al., 2004). For example, when the masking task is complex, requiring all attentional resources to focus on it, the LI effect is abolished (Braunstein-Bercovitz et al., 2004). This is thought to be because, in this case, the inconsequential stimulus is not processed automatically, and consequently, conditioned inattention is not learnt (Braunstein-Bercovitz & Lubow, 1998). Thus, LI is "an index of the ability to ignore irrelevant stimuli" (Lubow & Kaplan, 2005, p. 231). However, automatic attentional capacity is thought to be required for this to work effectively.

Anomalous Cognition and Attention

Anomalous cognition ("psi"), consciousness of information thought to have been gained without the use of the five senses or logical inference, has been considered in terms of "weak filters of awareness," analogous to reduced LI (e.g., Bergson, 1913; Hartmann et al., 2001; Thalbourne et al., 1997). For instance, it has been proposed that psi-mediated information may register in the cognitive-perceptual system (i.e., be present below the level of conscious awareness), but be filtered out of conscious awareness by attentional mechanisms (e.g., Honorton, 1977; Stanford, 1990). This could potentially explain why psi-performance is associated with altered states of consciousness (Alvarado, 1998; Luke, 2015; Storm et al., 2010), where inhibitory (filter) mechanisms are weaker; and why some authors have argued for implicit (e.g., psychophysiological) measurements of psi-performance (Beloff, 1974; Bem et al., 2016; Palmer, 2015). Previous research has examined whether psi operates in a similar way to awareness of subliminal stimuli or perception without awareness (e.g., Hitchman et al., 2015; Roney-Dougal, 1986; Wilson, 2002), providing some evidence for parallels between them. However, the current research corresponds more closely to theoretical work by Schmeidler (1986), who questioned whether psi-mediated information might be processed like incidental stimuli that do not directly reach the focus of attention because attention is directed elsewhere. This notion, where awareness of the stimulus is a function of its relevance, has clear parallels with LI, which assesses the degree to which attention is unconsciously directed away from irrelevant information, irrespective of its liminal status. Carpenter (2004) has suggested that psi preconsciously alerts the mind in terms of potential meaning that may help interpret the sensory events which will follow and notes that: "If something elected to be an ESP target does not pass this test of 'probably most useful' in a given instant, it will pass on only a sense of avoidance in favor of the other thing being selected instead" (p. 231). This sounds like the irrelevant stimulus in LI, in which something inconsequential ends up being inhibited.

Shared Correlates of Latent Inhibition and Anomalous Cognition

An important aim of our research was to examine whether LI and psi effects share common correlates, focusing on creativity (Dalton, 1997; Holt, 2013; 2015; Holt et al., 2004), the unusual experiences dimension of schizotypy (Mason et al., 2005) and belief in the paranormal (Thalbourne & Delin, 1993). These three factors correlate moderately with each other, especially with creative involvement in the arts (Holt, 2019). Further, all constructs have been modelled in terms of cognitive disinhibition (e.g., Eysenck, 1995; Gianotti et al., 2001; Lindeman et al., 2011). For example, Gianotti et al. (2001) propose a continuum of associative processing, from creative thinking, through paranormal ideation in healthy individuals, to psychopathological delusion, disordered thought processes, and apophenia. It is therefore of interest to examine whether creativity, unusual experiences, and paranormal beliefs correlate with both latent disinhibition and any LI-like-psi-effect.

Eysenck (1995) argued that both creative cognition and psychoticism are underpinned by over-inclusive thinking, where the boundaries of concepts overextend so that they are vague, broad, and associated with remote or irrelevant items, and suggested latent disinhibition as a mechanism for this. Studies have subsequently tested this model but have met with mixed success. Psychology undergradu-

ates with high levels of creative achievement and professional actors have demonstrated attenuated LI, suggesting that they are more likely to attend to the irrelevant stimulus in the testing phase (Carson et al., 2003; Fink et al., 2012; Kéri, 2011). This effect has been associated with the originality component of divergent thinking and with creative personality scales (Carson et al., 2003; Fink et al., 2012). However, cognitive and trait predictors of creativity have not correlated with attenuated LI in some studies (e.g., Burch et al., 2004; Burch et al., 2006; Wuthrich & Bates, 2001). Similarly, despite artistic populations performing well in free-response ESP studies (e.g., Dalton, 1997; Schlitz & Honorton, 1992) divergent thinking and creative personality have been unreliable predictors of psi-performance (Dalton, 1997; Holt, 2007; McGuire, Percy, & Carpenter, 1973; Schmeidler, 1963, 1964).

Holt, Delanoy, and Roe (2004) found that only the reported use of cognitive styles that involve intrapersonal openness in the creative process (e.g., the use of dreams and intuition – "non-linear creative cognition" [NLCC]) and emotional creativity (Averill, 1999) significantly predicted the reporting of paranormal experiences. This concurs with the idea that people with "internal sensitivity" are more likely to have psi experiences (Honorton, 1977). Such non-linear creative styles might be more likely than cognitive and trait measures to be associated with reduced LI and any psi-LI-like effect. Holt (2013) reported that NLCC significantly predicted psi-missing, in a free response study that required the conscious reporting of and elaboration on inner experience. In such cases, creativity might have produced "cognitive noise", masking weak stimuli (Schlitz & Honorton, 1992). An implicit psi task, assessing behavior in response to unconscious or unattended psi-mediated information, may be a more efficient paradigm for assessing the relation between creativity and psi, without the need to introspect or deliberately encourage an overly fertile up-rush of ideas.

Schizotypy has been defined as a set of traits analogous to symptoms of schizophrenia (Mason & Claridge, 2015). The trait that most consistently relates to creativity and belief in the paranormal is "unusual experiences," analogous to the positive symptoms of schizophrenia (and hence, sometimes termed "positive schizotypy"). This includes the reporting of magical or religious beliefs, altered sensations and perceptions of one's own body and the world, hypersensitivity to sounds and smells, déjà vu, and pseudo-hallucinations (Holt, 2019; Mason et al., 2005).

These experiences are thought to be underpinned by a dysfunction at the interface of automatic/preconscious processes and controlled/conscious processes (Frith, 1979), characterized by weak gating (at the sensory or cognitive level) (Claridge & Davis, 2003), which may lead to flooding of the contents of consciousness. Decreased latent inhibition (or attenuated LI), the less efficient filtering of irrelevant information from awareness, has been found among the highly schizotypal (Gray et al., 2002) and people with acute schizophrenia (Gray, Hemsley, & Gray, 1992). Gray et al. (2002) reported that most of the variance in reduced LI among high schizotypes was explained by unusual experiences; and reduced LI has been associated with unusual experiences in subsequent studies (Burch et al., 2004, 2006; Evans et al., 2007; Granger et al., 2012; Schmidt-Hansen et al., 2009), although null outcomes have also been reported (Haselgrove et al., 2016; Kéri, 2011; Shrira & Kaplan, 2009). Investigations considering psi and positive schizotypy have had mixed outcomes, some studies finding it to correlate with above chance psi-performance (e.g., Parker, 2000; Parker et al., 1998) and others not (e.g., Simmonds, 2003; Simmonds & Holt, 2007).

Belief in the paranormal has not previously been considered in relation to LI. However, such belief has been consistently related to creativity (Thalbourne, 2005), unusual experiences (e.g., Dagnall et al., 2010; Goulding, 2005) and psi-performance (Lawrence, 1993; Luke & Zychowicz, 2014). So, it is of interest to examine whether, like creativity and positive schizotypy, it may be associated with latent inhibition.

The Current Research

Given the theoretical overlaps between the attentional models of LI and psi, the current research aimed to test, for the first time, whether a psi-stimulus may be processed in the same way as the unattended stimulus in the LI paradigm. Two studies were planned. In Experiment 1 a standard visual LI protocol was used, but two conditions were added: 1) psi-pre-exposure (ψPE), where a sender attempted to transmit the stimulus telepathically during the initial masking task; and 2) non-psi-pre-exposure (NψPE). Hence, we assessed whether psi-mediated information might be inhibited from awareness when it is irrelevant, by testing whether subsequent cognitive performance requiring the associability of this stimulus was affected.

In Experiment 2, this design was repeated and an additional factor was added – complexity of the masking task – with: 1) a complex masking task; and 2) an ordinary masking task (Braunstein-Bercovitz, Hen, & Lubow, 2004). We tested whether, if psi does operate like LI, it is limited by the same attentional constraints. If this is the case, with a complex masking task any inhibition effects should be abolished, presumably because allocating all attentional resources to the masking task would prevent automatic processing of, and subsequent inhibition of, both the psi and LI stimulus. In both studies, we evaluated whether the same individual difference variables moderated any LI and psi effect, including measures of positive schizotypy, belief in the paranormal, and creativity (trait, cognitive, behavioral, affective, and reports of non-linear creative cognition).

Experiment 1

In Experiment 1 a standard LI paradigm was employed, but in half of the trials a sender attempted to transmit the stimulus telepathically during the initial masking task. We hypothesized that: 1) performance on the experimental task would be impaired in the PE condition compared to the NPE condition; 2) there would be a significant difference in performance on the experimental task between the ψPE and the NψPE conditions. We hypothesized that, if psi-mediated information is processed in the same way as irrelevant stimuli, then, similar patterns across respective conditions would be obtained, i.e., an LI effect and a psi-LI-like effect. Because with insufficient pre-exposures in the LI paradigm a facilitation effect has been found (Burch, Hemsley, & Joseph, 2004), the direction of the psi-effect was not hypothesized, because a weak effect might facilitate performance, while a stronger effect, as found in the classic LI research, might inhibit performance. Further hypotheses predicted that creativity characterized by NLCC, unusual experiences (UE) and belief in the paranormal would all: 3) correlate significantly with enhanced performance on the experimental task in the PE condition; and 4) correlate significantly with performance in the ψPE condition; and that these correlations would differ significantly from those in the NPE and NψPE conditions respectively.

Method

Design.

The experiment had a 2 x 2 design, with two independent factors: 1) pre-exposure (with two levels: PE and NPE; and 2) psi-pre-exposure (with two levels: ψPE and NψPE). Participants were randomly allocated to one of these conditions. The dependent variable was the "learning score," the number of exposures of the stimulus (a white equilateral triangle in this study) on the experimental task that were required to solve the problem.

Participants.

Participants were recruited through opportunity sampling with psychology and sociology undergraduate and graduate students at three universities in the UK: Northampton, Liverpool Hope, and York (26 males, 54 females; median age = 28 [range = 18 to 60]). Participants were remunerated with £10. NH and SM acted as experimenters, running 40 trials each; and acted as senders when not an experimenter. Both experimenters were in their early 30s with a friendly and professional demeanor. SM rated belief in demonstrating psi in this study as a 4 (moderate belief) and NH as a 3 (neutral).

Materials and measures.

Latent inhibition program. The LI task was based on that used by Gray et al. (2002) and written in E-prime by SM. Stage one (the initial task) consisted of a series of trigrams (three unrelated letters, e.g., WQL), in black capitals measuring 1cm^2, separated by 1mm, and displayed in the center of the computer screen against a solid grey background. In the PE condition these trigrams were surrounded by the outline of a white equilateral triangle (with sides measuring 7.5 cm). In the NPE condition the triangle did not appear. The trigrams were shown for 1.5 seconds, with a .25s delay between exposures. There were 40 different trigrams. All 40 were presented in a pseudo-random order, twice, so that there were 80 presentations, each trigram appearing two times. Stage two was the experimental task. The same trigrams were presented again, with up to 160 exposures (40 trigrams four times each). The trigrams were surrounded by the outline of an inverted white equilateral pentagon (with sides measuring 4.5 cm) on up to 140 presentations, and by the triangle (as described above) on 20 presentations (pseudo-randomly interspersed). The trigrams were shown for 2 seconds, with intervals of .25 seconds between exposures. In stage two a counter stimulus (in a white typeface, measuring 1cm^2) was continually present in the top right corner of the computer screen. The number constituting the counter began at 50 and incremented concurrent to the onset of the .25 second interval that followed the presentation of a triangle. The program registered a press of a spacebar as a prediction of the counter incrementing before the next presentation.

Randomization envelopes. CSM prepared two sealed envelopes for each trial, containing a note delineating either: 1) sender condition; or 2) LI condition, based on an algorithmic random sequence.

The Emotional Creativity Inventory (Averill, 1999). A 30-item inventory scale that assesses emotional awareness and manipulation of cognitive content concerning affect, which may be used to solve interpersonal and intrapersonal problems. Good reliability and construct validity have been established (Averill, 1999; Ivcevic et al., 2007).

The Creative Cognition Inventory, CCI (Holt, 2007). A 29-item measure with a 5-point Likert response scale to assess the use of different cognitive styles in the creative process, including five scales that assess non-linear cognition: internal awareness (attending to affect, bodily feelings, and meditative states); playful cognition (imagistic, associative, absorbed cognition); oneiric cognition (ideas arising in states along the dream-wake continuum); intuition (hunches, instincts, and moments of inspiration); and beyond the self (a sense of ideas coming from "something other"). The CCI has demonstrated good internal consistency and a stable factor structure, and it has adequate construct, convergent, and discriminant validity (Holt, 2007).

Creative Personality Scale **(CPS,** Gough, 1979). A 30-item measure, consisting of 12 adjectives that are antithetical to, and 18 that are associated positively with, creative personality. The CPS has good internal reliability, test-retest reliability, concurrent, and construct validity (Gough, 1979; Gough & Heilbrun, 1983). Gough and Heilbrun (1983, p. 18) describe a higher scorer as: "venturesome, aesthetically reactive, clever, and quick to respond" with a "breadth of interests, cognitive ability, and ideational fluency".

Shapes (Holt, 2007). A divergent figural transformation task, similar to the Repeated Figures and Picture Completion tasks of the Torrance Tests of Creative Thinking (Torrance, 2000). It consists of three simple shapes (a curve, an open square, and a triangular cross), each repeated three times on a sheet of paper. Participants are asked to draw on these shapes, transforming them into something else (e.g. the curved shape is commonly transformed into a bird's wing). Following Torrance (2000) responses are scored by: flexibility, the total number of different ideas produced; and originality, the unusualness of the object made, according to normative responses (Holt, 2007). It has good concurrent and discriminant validity (Holt, 2007).

The Creative Activities and Interests Checklist **(**Griffin & McDermott, 1998; Hocevar, 1981). A 54-item checklist that focuses on writing and the visual, performance, and domestic arts, with a dichotomy between an active interest in these activities and recent experience of these activities. This checklist was based on the 90-item Creative Behavior Inventory (Hocevar, 1981), and has good concurrent and construct validity (Griffin & McDermott, 1998; Holt, 2007). A 14-item scientific activities subscale was added by the current authors, based on Hocevar (1981).

The Australian Sheep-Goat Scale **(**Thalbourne & Delin, 1993). This 18-item scale was developed to assess degree of belief in paranormal phenomena, including extrasensory perception (e.g., believing in precognitive dreams), psychokinesis, belief in an afterlife and the possibility of contact with spirits. The scale has adequate concurrent validity, test-retest reliability, and internal consistency (Thalbourne & Delin, 1993).

The Short Oxford-Liverpool Inventory of Feelings and Experiences **(O-LIFE,** Mason et al., 2005)**.** This 43-item scale assesses four dimensions of the schizotypal personality trait: unusual experiences; cognitive disorganization; introvertive anhedonia; and impulsive non-conformity. Good reliability and concurrent validity with the long version of the O-LIFE has been demonstrated (Mason et al., 1995).

Procedure.

Potential participants were given an information sheet, or emailed a link to a website, describing

the study and explaining that the authors were investigating the relation between belief in the paranormal/anomalous experiences and different types of creativity and problem-solving. If they wished to participate, they completed the above questionnaires in their own time. An appointment was then made for the completion of a series of problem-solving tasks, typically in a quiet room at one of the universities.

At the start of the experimental session, the stages of the protocol were described to the participant. These consisted of the LI task (described as two computerized problem-solving tasks) and the figural divergent-thinking task. After being so informed and being made aware of participant rights (in accordance with British Psychological Society ethical guidelines), the participant read a written version of this introductory information and signed a consent form.

Meanwhile the experimenter opened a randomization envelope for the trial which allocated the participant to either the PE or NPE condition. They then opened the appropriate program on the laptop and, when the participant was ready, instructed them on how to perform the two tasks.

In the first task the participant was asked to choose one trigram and count how many times it appeared. At the end of this task there was a one-minute break, in which the participant was asked to record their answer on a piece of paper and prepare for the next task. In the second task, the participant was asked to discern the rule that caused the counter on the screen to increment. The experimenter explained that the rule could be deduced from the information presented on the screen. The solution was that the counter incremented after the stimulus (triangle) appeared. The participant was asked to press the spacebar every time that they predicted that the counter would increment. The counter also incremented if the spacebar was pressed at an incorrect time (i.e., at any time other than when a triangle was present on the screen) and decremented if the spacebar was pressed at the correct time (while a triangle was presented). Thus, participants were told that the aim was to try to make the counter's number as low as possible. When they correctly predicted the increment five times in a row the program stopped and thanked them for completing the task. Otherwise, the program ran through all 160 presentations of the trigrams before thanking them for completing the task.

The participant initiated each task by pressing the spacebar, after reading written instructions for it on the screen. The experimenter left the room when the participant was ready to begin the first task. The experimenter (NH/SM) had already arranged with the sender-experimenter (SM/NH) to be prepared to "send" or "not send." The experimenter immediately phoned the waiting sender to notify them that the participant was reading the instructions for the initial task. The "sender" opened the randomization envelope informing them whether to send or not send. In the sending (ψPE) condition the sender opened a computerized image of the white equilateral triangle and focused on sending this telepathically to the participant for three minutes (the length of the initial task plus the one-minute break in-between the tasks). They also opened a text, sent to them by the experimenter, containing the name of the participant. In the NψPE condition the sender read the *New York Times* for three minutes and deleted the text concerning the participant without opening it. The experimenter read the *New York Times* during this period irrespective of the sending condition. After a further 30 minutes (the estimated time to complete the remaining tasks) the sender texted the experimenter to inform them of the sending condition.

When the participant had finished the LI task the experimenter returned and guided them through the completion of the divergent thinking task. Participants were asked to "Please see how many objects or pictures you can make from the shapes below, drawing on them to transform them. Within five minutes try to think of as many things as you can that no one else will think of and give names or titles to the objects you create." Volunteers were left alone for five minutes to work on this task. Once the task was completed, participants were thanked for taking part. They were informed of the experimental conditions and which one they were allocated to and of hypotheses concerning filters of attention. The ψPE and NψPE conditions were described to them in terms of being either "remotely helped" or "not helped" to solve the experimental task by one of the authors from a different university via telepathy. Participants were encouraged to ask any questions about the study before being given £10 in appreciation of their time and effort. The research received ethical approval from both the University of Northampton and Liverpool Hope University Ethics Committees.

Pre-planned statistical analyses.

In LI research the distribution of learning-scores is typically bimodal, with many participants solving the problem either very quickly (after a minimum of two exposures of the triangle) or obtaining the maximum score of 20, so we planned to conduct between group comparisons using non-parametric Mann-Whitney U tests. Following previous research (e.g., Gray et al., 2002), in order to assess whether individual differences moderate performance, we measured the correlations between learning-scores in the exposure and non-exposure conditions separately and with Spearman rank correlations because this test makes no assumptions about the distribution of data. The locus of any attentional effect should be in the exposure conditions in contrast to the non-exposure conditions. This would indicate that the psychometric variable modulates attention given to the irrelevant/psi stimulus, rather than with faster associative learning (indicated by changes in the baseline, non-exposure condition). Thus, we evaluated statistical differences between the correlation coefficients in exposure and non-exposure conditions (computed using the method described in Howell [1992]) as the main criterion for a moderation effect.

Results

Latent inhibition and sender effects.

As expected, the distribution of learning scores was bimodal, hence analyses proceeded as planned. Figure 1 shows the median learning-scores in each experimental condition. There was a significant latent inhibition effect ($z = -1.70$, $p = .045$, one-tailed, $d = .39$), in which participants who were pre-exposed to the triangle during the masking task took longer to learn the association between the triangle and the incrementing counter (median LI score = 6.5; range = 18) than participants in the non-pre-exposure condition (median = 4; range = 18). Learning scores were also higher in the ψPE condition (median = 6; range = 18) than the NψPE condition (median = 5; range = 18), however, this was not statistically significant ($z = -1.33$, $p = .18$, $d = .30$). Hypothesis one, that performance on the experimental task would be impaired in the PE condition compared to the NPE condition was supported, but hypothesis two, that there would be a significant difference between the ψPE and the NψPE conditions was not.

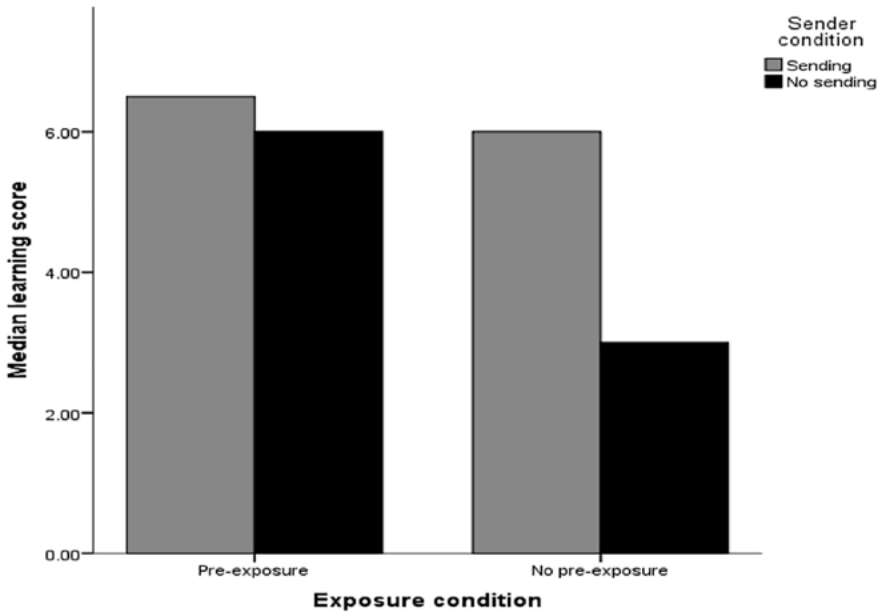

Figure 1: Median learning-scores in PE and NPE conditions for both Sending and No-sending trials

Psychometric correlates of performance.

Correlation coefficients and associated probabilities between psychometric measures and learning-scores are delineated in Table 1. These are presented for NPE and PE conditions and for sending and no-sending conditions separately. Effect sizes (*z*) and probabilities for the differences between the pairs of correlations are displayed in the adjacent columns.

In the LI conditions, learning-scores were not significantly moderated by any of the creativity measures. Hence, the hypothesis that non-linear creative cognition would be associated with enhanced LI was not supported. However, as hypothesized, non-linear cognition did appear to moderate performance across the sending conditions (z = -2.30, p = .02). Being more likely to use playful thinking and anomalous experiences in the creative process was associated with a psi-LI-like effect. No other aspects of creativity were significantly associated with performance across the sending conditions.

The hypothesis that UE would correlate significantly with faster learning in the PE condition in contrast to the NPE condition was not met (z = 1.09, p = .28), nor was the hypothesis that UE would moderate scoring across the sending conditions (z = .70, p = .48).

The final hypothesis was that being open to the existence of paranormal phenomena would be associated with reduced LI and a psi-LI-like effect. This hypothesis was not supported (see Table 1 for the relevant statistics).

Table 1

Correlation coefficients and associated probabilities for the relationship between scores on psychometric measures and learning-scores in PE versus NPE conditions and sending versus no-sending conditions.

Predictors	LI conditions			Sending conditions		
	PE	NPE	Difference between correlations z (p)	ψPE	NψPE	Difference between correlations z (p)
Unusual Experiences	.05 (.78)	-.15 (.37)	.87 (.38)	-.07 (.68)	.02 (.91)	-.39 (.70)
Emotional creativity	.17 (.29)	-.12 (.48)	1.26 (.21)	.07 (.64)	.01 (.96)	.26 (.79)
Non-linear cognition	.01 (.96)	-.04 (.80)	.21 (.83)	.26 (.12)	-.27 (.09)	2.3* (.02)
Originality (divergent thinking)	-.11 (.48)	.03 (.87)	-.60 (.55)	-.15 (.36)	.13 (.43)	-1.20 (.23)
Creative personality	-.05 (.75)	-.16 (.33)	.48 (.63)	-.21 (.20)	-.03 (.85)	-.78 (.44)
Creative activities	-.11 (.52)	-.28 (.08)	.76 (.44)	-.13 (.44)	-.21 (.20)	.35 (.73)
Paranormal belief	.02 (.92)	.03 (.84)	-.04 (.97)	.05 (.77)	-.01 (.95)	.26 (.79)

Note. * indicates statistical significance where $p < .05$. All *p*-values are two-tailed.

Discussion

In Experiment 1, a significant LI effect was obtained, but no significant LI-like-psi-effect. Neither creativity, unusual experiences, nor belief in the paranormal were associated with attenuated LI as hypothesized. However, scoring highly on non-linear cognition in the creative process was associated with taking significantly longer to solve the problem in the ψPE condition. These results suggest that if creative, paranormal, and schizotypal ideation do lie along a continuum of loose associative thinking (Gianotti et al., 2001), attentional processes underlying LI do not underpin this continuum. LI was not attenuated by unusual experiences, originality, creative behavior, or creative personality, as has been reported previously (Carson et al., 2003; Fink et al., 2012; Gray et al., 2002; Kéri, 2011). Various reasons may be postulated for this, including sample characteristics and masking task complexity. The overall sample may have had limited variance, representing "medium" schizotypes, with insufficient numbers of high schizotypes to find a relation with attenuated LI (Wuthrich & Bates, 2001). The current sample had mean scores on UE that were within 1SD of published norms (Mason et al., 2005), supporting this interpretation. Similar arguments could apply to creativity, where attenuated LI may be a characteristic of particular samples such as high creative achievers or professional artists (Carson et al., 2003). Further, differential LI-schizotypy interactions have been found according to gender (Lubow & De la Casa, 2002), hence in the current experiment gender/LI/trait interactions could have masked any significant effects. Alternatively, the nature of the LI task itself might have affected outcomes. With high masking task com-

plexity high schizotypes have demonstrated intact (rather than attenuated) LI (Braunstein-Bercovitz & Lubow, 1998). In the current experiment a standard visual LI masking task was used, which is considered to be low load in Lubow's model, and yet, Wuthrow and Bates (2001) describe a similar task as high load in order to explain curvilinear effects in their data. The LI effect appears to be complex with differential outcomes emerging from the interaction of trait dependent (creativity and schizotypy) attentional resources and attentional demands of the masking task.

Although there was no overall psi effect, non-linear creative cognition, associated with attending to inner experience and reporting anomalous experiences, and altered states in the creative process, was associated with a psi-LI-like effect. For high scorers on this dimension, pre-exposure to the psi-stimulus appeared to affect subsequent performance on the learning task in the same way as visual pre-exposure. In terms of Lubow's conditioned attention model, this suggests that the masking task was processed with controlled attention and the psi-stimulus was unconsciously processed with automatic attention, enabling repeated exposure of a psi-stimulus to condition attention, with a "psi-stimulus-no-consequence rule." Extending this interpretation further would suggest that representation of the psi-stimulus (presumably sufficiently similar to the pictorial version of the stimulus) would be inhibited from entering conscious awareness in the subsequent learning task, thus inhibiting solution of the problem. This interpretation suggests that certain profiles (i.e., those with internal sensitivity, Honorton, 1977) may be more likely to be unconsciously affected by psi-mediated information, and that this processing relates to the relevance of the information, for in this case irrelevant psi-mediated information appears to have been inhibited.

Experiment 2

Experiment 2 sought to replicate the findings of Experiment 1 and test whether processing of both the psi- and the perceptual-stimulus were moderated by the complexity of the masking task. An optimal LI-effect occurs when the masking task requires controlled processing but is not too demanding, thus enabling automatic processing of the inconsequential-stimulus (Lubow & Gewirtz, 1995). When the masking task is complex, it is theorized that all attentional resources are allocated to it, preventing the inconsequential-stimulus from being processed automatically, so that it does not need to be inhibited in order to facilitate selective attention – thus LI does not occur. Experiment 2 examined whether a psi-effect would likewise be attenuated by a complex masking task, which would suggest that psi-mediated information is processed with automatic attention in the same way. Thus, an extra condition was added: Masking Task Load, with two levels: Ordinary Load (as in Experiment 1) and High Load (following Braunstein-Bercovitz & Lubow, 1998). Further, based on feedback following a conference presentation of Experiment 1 (Etzel Cardeña, personal communication, August 2007), we employed an experienced meditator as the sender in the ψPE condition with the expectation that she would be better able to better attend to the stimuli/sending task.

Because previous research has reported that schizotypy has differential implications for performance based on the complexity of the masking task load (Braunstein-Bercovitz et al., 2004), Experiment 2 examined whether similar effects would be observed for unusual experiences (UE), creativity, and belief in the paranormal. When attentional demands are increased, Braunstein-Bercovitz et al. (1998; 2004)

argue, high schizotypes are no longer distracted during the masking task and give no controlled attention to the irrelevant stimulus. Rather, they allocate all controlled attention to the complex task, allowing the irrelevant stimulus to be processed automatically, filtering it from attention. In this experiment we examined whether this effect would be replicated with UE alone, and whether those scoring high on creativity (in particular, non-linear cognitive styles) would show similar attentional patterns, across both LI and psi conditions. It has not previously been examined whether creativity has differential implications for LI according to masking task complexity. If the same patterns were obtained for schizotypy and creativity, the hypothesis that both are underpinned by latent inhibition would be supported. Due to gender being a potential confound, Experiment 2 only included female participants (Lubow & De la Casa, 2002).

We hypothesized that, with an ordinary masking task load: 1) performance on the experimental task would be impaired in the PE compared to the NPE condition; 2) there would be a significant difference in performance on the experimental task between the ψPE and the NψPE conditions; and 3) both the LI and psi-LI-like effects would be attenuated in the high masking task load conditions. Additional hypotheses predicted that with an ordinary masking task load, creativity, non-linear cognition, UE and belief in the paranormal would all: 4) correlate significantly with enhanced performance on the experimental task in the PE condition; and 5) correlate significantly with performance in the ψPE condition; and that these correlations would differ significantly from those in the NPE and NψPE conditions respectively. We further hypothesized that with a complex masking task load, non-linear cognition, UE and belief in the paranormal would be associated with a stronger LI/psi effect (taking longer to solve the problem in the PE and ψPE conditions than the NPE and NψPE conditions).

Method

Design.

The experiment had a 2 x 2 x 2 design, with three independent factors: 1) pre-exposure (with two levels: PE and NPE); 2) psi-pre-exposure (with two levels: ψPE and NψPE); and 3) masking task complexity (High and Low). Participants were randomly allocated to one of these conditions. The dependent variable was the number of exposures of the stimulus on the experimental task that were required to solve the problem.

Participants.

Eighty female participants were recruited through opportunity sampling with undergraduate and graduate students at the universities of Northampton, Liverpool Hope and York (median age = 20 (range = 18 to 82). Participants were each remunerated with £10. Serena Roney-Dougal acted as a sender for all trials, invited due to her long-term experience of both meditation and research in parapsychology. NH and SM acted as experimenters, running 40 trials each.

Materials.

Latent inhibition program. The LI program described in Experiment 1 was modified, using an algorithm, to randomly allocate participants to an experimental condition for exposure (NPE or PE) and

complexity (high/low). Further, in the High Load conditions each trigram during the masking task appeared at one of four angles, according to a pseudo-random sequence: 0°, 90°, 180° or 270° (following Braunstein-Bercovitz, & Lubow, 1998).

Psychometric measures. Please refer to those described in Experiment 1.

Procedure.

The procedure was identical to that of Experiment 1, except for a few minor amendments. First, after being informed that the trial was about to start, SRD opened a word document indicating whether or not she should "send" in this trial or not (based on a randomized sequence prepared in advance by CSM and emailed to the sender, so that the experimenters were masked to all trial conditions). If she was sending, SRD opened a document with the participant's name, e-mailed in advance by the experimenter. Finally, on half of the NPE trials and half of the PE trials the trigrams in the masking task appeared at different angles, as if rotating.

Results

Latent inhibition and sender effects.

Figure 2 shows the median learning scores in each of the experimental conditions, according to masking task load. The LI-effect was present with an ordinary masking task load (PE: median = 8, range = 18; NPE: median = 4, range = 17), a difference that was significant (z = 1.77, p = .038, d = .58). However, the LI-effect was attenuated in the high masking task load condition (z = -.55, p = .22, d = .17). Participants solved the problem more quickly in the PE condition (PE: median = 6, range = 18; NPE: median = 10, range = 19).

An apparent sending effect was obtained in the ordinary masking task load condition (ψPE: median = 17, range = 17; NψPE: median = 4, range = 18), where z = -3.06, p = .002, d = 1.105. The sending effect also approached significance in the high masking task load condition, where z = -1.95, p =.051, d = .65 (ψPE: median = 12.5, range = 19; NψPE: median = 3, range = 18). Increased attentional demands appeared to reduce the strength of any psi-LI-like effect. All hypotheses were supported: 1) an LI effect was obtained with an ordinary masking task load; 2) an LI-like-psi effect was obtained with an ordinary masking task load; and 3) both effects were attenuated with a high masking task load.

Psychometric correlates of performance.

Correlation coefficients and associated probabilities and effect sizes between psychometric measures and learning-scores are delineated in Table 2. These are presented for NPE and PE conditions and for sending and no-sending conditions separately, across both High and Low masking task complexity conditions.

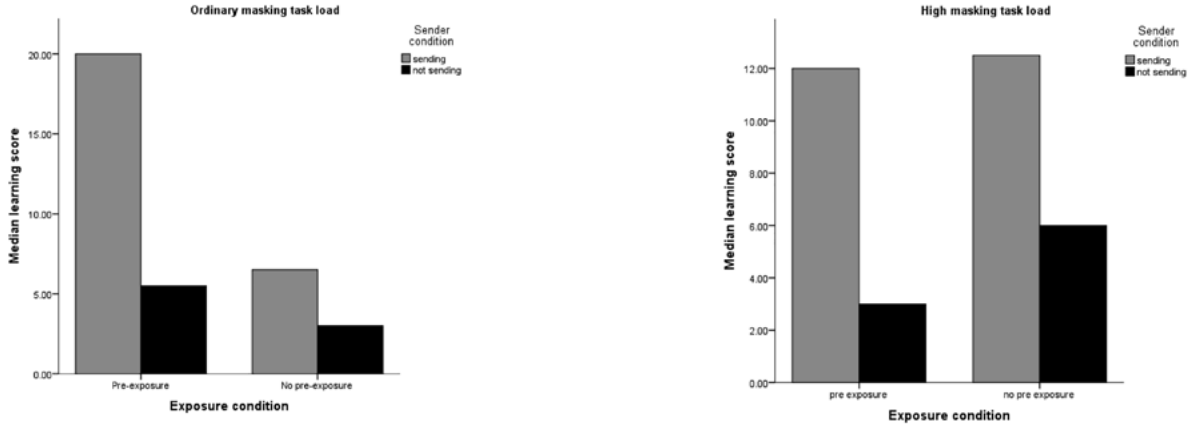

Figure 2: *Median learning-scores in PE and NPE conditions for both sending and no-sending trials, across low and high masking task load conditions*

Ordinary masking task load.

We hypothesized that with an ordinary masking task load, creativity, UE and belief in the paranormal would be associated with enhanced performance in both the LI and psi conditions (solving the problem more quickly when pre-exposed to the stimulus). As can be seen in Table 2, for the LI condition this was the case for the originality component of divergent thinking, which was associated with solving the problem more quickly in the PE than the NPE condition (z = -2.91, p =.004), as reported in previous studies (e.g., Carson et al., 2003). However, for other variables (UE, NLCC and belief in the paranormal), the opposite effect was found, where it took longer to solve the problem in the PE exposure condition. This was significant, however, only for non-linear creative cognition (NLCC) (z = 4.07, p < .001). It appears, then, that creativity dimensions related differentially to LI. However, none of the psychometric predictors were associated with performance across the psi conditions. Overall, the hypothesis was not supported, LI and psi conditions were not associated with creativity, schizotypy, or belief in the paranormal as predicted.

Complex masking task load.

We hypothesized that with a complex masking task, creativity, UE, and belief in the paranormal would be associated with a stronger LI and LI-like-psi effect, taking longer to solve the problem when pre-exposed to the stimulus. As can be seen in Table 2, none of the psychometric variables significantly moderated performance across conditions. However, it is of note that involvement with creative activities, and unusual experiences, were significantly correlated with faster problem solving in the NPE condition, suggesting that these variables facilitated problem solving in general. The hypothesis that psychometric variables would be associated with enhanced LI and psi-effects with a complex masking task load was not supported.

Discussion

In Experiment 2, both significant LI and LI-like-psi effects were obtained, and only with an ordinary masking task load, as hypothesized. This accords with Braunstein-Bercovitz and Lubow's (1998) finding that increased attentional load attenuates the LI-effect. These effects were not moderated by creativity, schizotypy, or belief in the paranormal as predicted. With an ordinary masking task those scoring highly on non-linear creative cognition showed enhanced LI, while originality was associated with attenuated LI. There were no significant correlations with the LI-like-psi-effect.

That a significant psi-LI-like effect was obtained supports the hypothesis that psi-mediated information may be processed like the inconsequential-stimulus in LI studies, being inhibited from conscious awareness when not needed. Both the LI-effect and the psi-effect were attenuated by attentional capacity. This would suggest that the psi-stimulus was processed with automatic attention, which, with a more complex task, was not available to process the psi-stimulus. However, it must be noted that the outcome for the psi-effect under high cognitive load was borderline (z = -1.95, p =.051), leaving open the possibility that psi might not be processed in the same way as inconsequential perceptual stimuli. Figure 2 suggests that the psi-stimulus appeared to "add" to the effect of the perceptual inconsequential-stimulus on learning, akin to adding extra perceptual exposures, supporting the interpretation that the psi-stimulus was processed in the same way as the visual stimulus.

In Experiment 2, reports of anomalous and altered experiences in the creative process (NLCC) was significantly associated with enhanced LI, suggesting more efficient filtering of irrelevant information from conscious awareness. Results suggested that with ordinary cognitive load, NLCC enabled controlled cognition to be given to the masking task (and automatic attention to irrelevant stimulus), an effect that was abolished with high task complexity. The enhanced LI effect for those scoring high on NLCC might be explained in part by previous research suggesting that creative individuals shift their attentional focus to meet task requirements (Fink & Benedek, 2014; Martindale, 1999) and are able to filter out irrelevant information when required to do so, unlike those diagnosed with schizophrenia (Merten & Fischer, 1999). Hence, creativity might be a more reliable correlate of attenuated LI if task demands required cognitive disinhibition (i.e., the masking task requires original ideation).

The outcomes for originality replicated those of previous research that the production of remote and unusual ideas is associated with attenuated LI (Carson et al., 2003; Fink et al., 2012). That this effect was reversed with a high task load again aligns with previous findings for schizotypy, supporting the hypothesis that schizotypy and original ideation share a common mechanism (Braunstein-Bercovitz et al., 1998; 2004). However, given that the opposite effect was found for unusual experiences and self-report measures of creativity in the current experiment, this interpretation is somewhat problematic. Different components of creativity may affect attention in different ways (as different dimensions of schizotypy do; Granger et al., 2016; Gray et al., 2002). Original ideation may be associated more with cognitive dysfunction or disinhibition than creativity, which is commonly defined as "adaptive novelty" (Eysenck, 1995), and requires the selection and testing of appropriate ideas (which originality alone does not). The possibility that different types of creativity might be associated with different attentional resources deserves further exploration.

Table 2

Correlation coefficients and associated probabilities for the relationship between unusual experiences, creativity and belief in the paranormal across the conditions of Experiment 2

Predictors	Ordinary masking task load						High masking task load					
	PE	NPE	Difference between PE and NPE	ΨPE	NΨPE	Difference between ΨPE and NΨPE	PE	NPE	Difference between PE and NPE	ΨPE	NΨPE	Difference between ΨPE and NΨPE
Unusual experiences	.482 * (.031)	.123 (.250)	1.15 (.250)	.172 (.468)	.356 (.134)	-.057 (.569)	-.111 (.631)	-.624 ** (.003)	1.83 (.067)	-.271 (.248)	-.302 (.172)	.100 (.920)
Emotional creativity	.268 (.254)	.250 (.303)	.060 (.952)	.294 (.209)	.307 (.201)	-.040 (.968)	-.073 (.754)	-.213 (.354)	.420 (.675)	-.292 (.211)	-.021 (.927)	-.840 (.401)
Non-linear creative cognition	.865 ** (.000001)	-.103 (.674)	4.07 ** (< .001)	.193 (.416)	.366 (.124)	-.540 (.589)	.196 (.408)	-.389 (082)	1.80 (.072)	-.207 (.382)	.095 (.682)	-.910 (.363)
Originality	-.534* (.015)	.394 (.086)	-2.91** (.004)	.138 (.562)	-.053 (.828)	.55 (.582)	.173 (.454)	.126 (.581)	.140 (.889)	.377 (.101)	-.109 (.631)	1.52 (.129)
Creative personality	.213 (.368)	.339 (.156)	-.039 (.697)	.082 (.732)	.330 (.167)	-.035 (.726)	-.132 (.569)	-.360 (.109)	.026 (.472)	-.280 (.232)	-.270 (.224)	.030 (.976)
Creative activities	.234 (.321)	-.189 (.438)	1.23 (.219)	.083 (.729)	.345 (.148)	-.790 (.430)	-.190 (.410)	-.611 * (.003)	1.22 (.222)	-.350 (.130)	-.296 (.182)	.180 (.427)
Belief in the paranormal	.537* (.015)	.263 (.276)	.95 (.342)	.139 (.558)	.198 (.417)	-.17 (.865)	.149 (.520)	-.229 (.317)	.115 (.250)	-.003 (.991)	.044 (.845)	-.14 (.889)

Note. Statistics indicate in order of rows in each cell: 1) spearman's *rho*; 2) *p*-value (in parentheses) of correlation coefficient, except for columns which show the difference between correlations in sending and exposure conditions, which show *z*-statistics with associated *p*-values in parentheses. In each cell $n = 20$. * indicates statistical significance where $p \leq .05$, and ** indicates $p \leq .01$. All *p*-values are two-tailed.

Given that creativity variables appeared to affect attentional resources in Experiment 2, it is unclear why any psi effect appears to have operated independently of such effects, and why attention was not moderated by the same variables. It may be that by recruiting female participants only in the current experiment and by working with a female long-term meditator as the sender, the psi-stimulus was more salient, so that the sample as a whole showed a psi-effect, rather than a sub-sample that scored highly on non-linear creative cognition. Alternatively, some other factor may explain the psi outcome, such as a statistical fluke. An examination of person characteristics that might bias performance between the experimental conditions revealed no significant differences. However, repeated measures LI protocols, controlling for individual differences across conditions, might be of value in future research.

General Discussion

Our research suggests that the modelling of psi as an analogue to the inconsequential stimulus in attention is profitable and worthy of further consideration, especially since in Experiment 2, a significant LI-like-psi effect was obtained that appeared to be subject to the same attentional constraints as the LI effect. This provides support for models where psi-mediated information is described as a weak stimulus filtered out of conscious awareness due to the more pressing needs and demands of everyday life, yet may be present in the neurocognitive system at an unconscious level, thereby potentially affecting behavior (e.g., Carpenter, 2004; Palmer, 2015; Stanford, 1990).

Nevertheless, the individual difference parameters of this putative LI-like-psi effect were not clear. Creativity, unusual experiences, and belief in the paranormal were not reliable predictors across ex-

periments. This accords with patterns in prior studies with similar variables and both implicit (Luke & Zychowicz, 2014) and explicit psi studies (Zdrenka & Wilson, 2017) that suggest that most individual difference measures are actually inconsistent predictors of psi.

LI was not consistently attenuated by schizotypy or creativity as reported in previous research (Burch et al., 2004; Carson et al., 2003; Gray et al., 2002). Indeed, at times variables correlated with LI in the opposite direction to that predicted. This is similar to the findings by Granger, Moran, Buckley, and Haselgrove (2016), where unusual experiences were associated with enhanced LI. The current research supports previous comments that the relation between LI and individual differences is complex, and may depend on factors such as level of creativity, intelligence, gender, and the demands of the masking task (Carson et al, 2003; Braunstein-Bercovitz, & Lubow, 1998; Lubow & Gewirtz, 1995; Wuthrich & Bates, 2001), as well as the type of LI paradigm employed (of which there are several) (Byrom et al., 2018; Granger et al., 2016). Future research could explore such potential effects, although, the creativity/schizotypy-LI effect may not be as robust as portrayed in the literature and a meta-analysis might be of value.

There are several limitations to the current study design. Using a between-subjects design meant that different volunteers composed the comparison groups and, although randomly allocated to a condition, the comparison groups may not have been adequately matched. A within-subject design, in particular the visual search LI protocol developed by Lubow and Kaplan (2005), may profitably be used in the future to eliminate between group sources of error. Future studies might also pre-select high scorers on individual difference variables that may allow for a clearer understanding of LI and psi-LI effects. For example, it may be useful to repeat the research with professional artists to enhance the likelihood of finding both LI and psi-LI effects. Further, the statistical power in Experiment 2 was relatively low, and future work examining correlates of performance across levels of masking task complexity would benefit from a larger sample size.

The interaction between schizotypy dimensions might also be important, since negative and positive symptoms may affect LI in opposite directions (Shrira & Tsakanikos, 2009). For example, healthy schizotypes (who score highly on only the positive symptoms) might be better able to control their cognition and therefore be more likely to demonstrate enhanced LI (unlike those scoring highly on both positive and negative symptoms) (Mohr & Claridge, 2015). More work is needed to elucidate how different types of schizotypy interact in any relation with both LI and psi-performance. Pre-selecting healthy and high schizotypes could assist with this goal.

Conclusion

This research used the latent inhibition paradigm to measure implicit psi-performance and to investigate how creativity, unusual experiences, and paranormal belief correlate with LI and psi-LI effects. There was some support for the hypothesis that psi information is processed in a manner akin to the unattended stimulus and is impacted by attentional load in a similar way. Replicating these effects would suggest that psi information may register within the system and interact with cognitive processes. However, individual difference measures were inconsistent in terms of their relation with LI and psi-LI effects. It cannot be concluded from the current research that weak attentional filters, as assessed by the LI paradigm, underpin creative, positive schizotypal or anomalous cognition. However, some interesting patterns were observed, where, for example, intrapersonal openness in the creative process was associ-

ated with a psi LI-like effect in Experiment 1 and enhanced LI in Experiment 2. Future work is needed to replicate and further explore the parameters of any effects, including employing within-participants designs, working with artists and "healthy schizotypes" who are prone to unusual experiences, and using masking tasks that encourage a creative, playful state.

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Est-ce que l'Inhibition Latent Sous-tend la Créativité, la Schizotypie Positive, et la Cognition Anomale?

Résumé : Cet article présente deux expérimentations au cours desquelles un paradigme développé pour examiner l'efficacité des mécanismes filtrants de l'attention, l'inhibition latente (LI), a été adapté pour inclure une composante psi. La LI évalue le traitement de stimuli non-pertinents, ainsi nous avons testé la possibilité qu'un stimulus psi puisse être traité comme un stimulus non pertinent. Puisque l'on sait que le traitement de stimulus non pertinent est modéré par la créativité et la schizotypie positive, nous avons fait l'hypothèse que les mêmes variables allaient également modérer le traitement de tout effet psi. Dans l'expérience 1, un effet significatif de LI a été observé mais aucun effet psi. Toutefois, une

cognition non-linéaire dans le processus créatif (NLCC) (telle que l'intuition et l'hypnagogie) a été significativement associé avec un effet « psi-comme-LI ». Dans l'expérience 2, il y a eu un effet psi significatif qui semblait opérer dans les mêmes conditions que LI (en étant atténué par une forte charge attentionnelle). Toutefois, la créativité et la schizotypie positive n'ont pas modéré la force de l'effet « psi-comme-LI ». L'effet LI fut significativement renforcé par la NLCC et atténué par l'originalité.

Unterstützt latente Hemmung die Kreativität, positive Schizotypie und anomale Kognition?

Zusammenfassung: In diesem Beitrag werden zwei Experimente vorgestellt, in denen ein experimentelles Paradigma, das zur Untersuchung der Wirksamkeit von Filtermechanismen der Aufmerksamkeit, der latenten Hemmung (LH), entwickelt wurde, so angepasst wurde, dass es eine Psi-Komponente enthält. Die LH beurteilt die Verarbeitung irrelevanter Stimuli, so dass wir überprüften, ob ein Psi-Reiz einer ähnlichen Verarbeitung unterliegt wie der irrelevante Reiz. Da sich gezeigt hat, dass die Verarbeitung des irrelevanten Reizes durch Kreativität und positive Schizotypie moderiert wird, stellten wir die Hypothese auf, dass dieselben Variablen auch die Verarbeitung eines Psi-Effekts moderieren würden. In Experiment 1 wurde ein signifikanter LH-Effekt, aber kein Psi-Effekt beobachtet. Allerdings war die nicht-lineare Kognition im kreativen Prozess (NLKK) (z.B. Intuition und Hypnagogie) signifikant mit einem psi-LH-ähnlichen Effekt assoziiert. In Experiment 2 gab es einen signifikanten Psi-Effekt, der unter den gleichen Bedingungen wie LI einzutreten schien (abgeschwächt bei hoher Aufmerksamkeitsbelastung). Kreativität und positive Schizotypie beeinflussten jedoch nicht die Stärke dieses psi-LH-ähnlichen Effekts. Der LH-Effekt wurde durch NLKK signifikant verstärkt und durch Originalität abgeschwächt.

¿Subyace la Inhibición Latente la Creatividad, la Esquizotipia Positiva y la Cognición Anómala?

Resumen: Este artículo presenta dos experimentos en los que se adaptó un paradigma experimental desarrollado para examinar la eficacia de los mecanismos de filtrado de la atención, la inhibición latente (LI), para incluir un componente psi. LI evalúa el procesamiento de estímulos irrelevantes, por lo tanto analizamos si se podría procesar un estímulo psi de manera similar al estímulo irrelevante. Debido a que se ha mostrado que la creatividad y la esquizotipia positiva moderan el procesamiento de estímulos irrelevantes, hipotetizamos que esas mismas variables también moderarían el procesamiento de algún efecto psi. En el Experimento 1 se observó un efecto significativo de LI pero ningún efecto psi. Sin embargo, la cognición no lineal en el proceso creativo (NLCC) (por ejemplo, intuición e hipnagogia) estuvo asociada significativamente con un efecto similar a psi-LI. En el Experimento 2 hubo un efecto psi significativo que parecía funcionar en las mismas condiciones que LI (atenuándose con una alta carga de atención). Sin embargo, la creatividad y la esquizotipia positiva no moderaron la magnitud de este efecto similar a psi-LI. El efecto LI estuvo significativamente incrementado por NLCC y atenuado por la originalidad.

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Psi and Anomalous Experiences in Susan Hiller's *Oeuvre*[1]

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Abstract: Susan Hiller (1940-2019) was a contemporary artist who dealt with topics like PSI and anomalous experiences, and had a pervasive interest in consciousness. Although the subject matter of various of her works is shared with parapsychology, her way of tackling these issues belongs to an area of knowledge that offers interesting contrasts with science. In some of Hiller's *oeuvre* there is a coexistence of experimental framing and openness to whatever may happen, the results are less relevant than the experience- which is not exclusively mediated by language- and there is a deliberate ambivalence. Her intention as an artist was to delve into the cultural unconscious, pointing at overlooked and neglected areas, among which are a yearning for nonordinary experiences and unconventional views on culture. In this article, five of her productions that have to do with psi are shown and put in context, using Hiller's own words. Related to telepathy, *Draw Together* (1972), *The Dream Seminar* (1973), and *Dream Mapping* (1974) are presented. Dealing with psychokinesis is *Psi Girls* (1999). An artwork related to psychic automatism is also shown: *Sisters of Menon* (1972-1979). The degree of self-exposure of the artist, her position towards the subject-matter of her work, the deeper content of her oeuvre, Hiller's role as an artist and the epistemic nature of art in relation to reality are finally discussed.

Keywords: Susan Hiller, contemporary art, psi, telepathy, automatic writing, telekinesis

Several publications have highlighted the propension of artists to manifest psi (Holt et al., 2004; Holt, 2007; Cardeña et al., 2012); consequently, it has been recommended that artists should be included "as participants and researchers in psi research" (Cardeña & Marcusson-Clavertz, 2015, p. 111). Although the well-known artist Susan Hiller neither lent herself as a subject for laboratory parapsychological studies nor—only exceptionally—offered first-person accounts of her own anomalous mental phenomena, her work could be of interest to parapsychologists for various reasons. On one hand, her early production included pseudo-experiments (which were really artistic events, although borrowing some structures of formal research) around psi phenomena and nonordinary consciousness. On the other hand, Hiller's mature oeuvre often dealt with anomalous cognition in various ways, including cultural representations of psi and collections of world-wide personal accounts of psi and anomalous experiences. Lastly, in addition to treating these subjects, Hiller gave an epistemological meaning to her work. She understood art as a way to generate a specific type of knowledge, imbued with not-knowing,

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polisemic and embodied, where meaning is generated between the author and a participating audience. This way of accessing and generating knowledge could enrich the discipline of parapsychology, accustomed to the use of stringent methodologies.

This article presents five of Hiller's productions that have to do with psi, relying extensively on primary sources. These artworks are *Draw Together* (1972), in relation to telepathy; *The Dream Seminar* (1973), and *Dream Mapping* (1974), in relation to dreams and, secondarily, telepathy; *Psi Girls* (1999), related to telekinesis, and *Sisters of Menon* (1972-1979), a work originated in an experience of automatic writing. The discussion section gives a wider context to these and other works within the artworld and tackles issues of subject-matter, content and epistemology.

Susan Hiller

Susan Hiller (1940-2019) was a contemporary American-born British visual artist whose career spanned over the last 50 years. She was a figure of international relevance in the art world (e. g., she had two solo exhibitions in the Tate Gallery, in 1996 and 2011) and is considered highly influential for younger British artists, to the point that she was called "an artists' artist" (Berens, 2005), not only for her artistic production, including artist's books (e.g. 2000a, 2000b, 2010), but also for her curating (Hiller, 2000c), writing and public speaking (e.g. Coxhead & Hiller, 1996; Einzig, 1996; Hiller, 1991a, 2008a, 2011a, 2012a), mentoring, and teaching.

Art historians and critics have called her a second-generation conceptualist, a performance artist, a pioneer of installation and multimedia in the British 1980s, a feminist, a neo-surrealist, a science-artist, and, to her annoyance, have played up the importance of her former training as an anthropologist. Whilst acknowledging these sources and others (minimalism, Fluxus, surrealism, psychoanalysis, the psychology of perception, occultism, anomalous psychology, parapsychology), she often stated her malaise towards being categorized or, worse, explained away: "I suppose I wish to avoid being understood as much as being misunderstood" (Hiller, 2002, para. 3). In an attempt to offer a term that could partly do her justice, she coined *paraconceptual*, midway between conceptual and paranormal.[2]

Hiller's oeuvre can be divided in two main periods: the first, of an experimental character, often involving groups, and a second, more mature production, which is better known by the wider public. In her first period, broadly during the 1970s, a more conventional, minimalist production coexisted with performative, collective works that she called *group investigation pieces*,[3] which question the individual

2 Although the term *paraconceptual* can seem appealing to readers knowledgeable in PSI, a cautionary note becomes necessary: the scope of topics across most of her *oeuvre* covers unimportant, everyday objects, alongside with more appealing cultural productions, having to do with parapsychology, but also with anomalous experiences and alterations of consciousness. (For a monograph of Hiller's work in the light of consciousness studies, see Iribas Rudín, 2017.) *Paraconceptual*, in Hiller's sense, should therefore not be taken as only referring to PSI, but loosely to the works dealing broadly with non-ordinary experiences in general, and, moreover, in an even broader sense, to "all sorts of marginalized and disputed and absurd kinds of ideas [...] or objects [....] dreams and other sorts of liminal consciousnesses" (Hiller, 2012b, min. 4:43). The term was generated in order to avoid other adjectives that the artist found to be too limiting, although its definition remained lax and has not given birth to a certain artistic style or movement with ascribed practitioners. Its use, aside from sporadic mentions by the artist, has been scarce: it was the title of a solo exhibition by Hiller at Lisson Gallery, New York (2017) and was part of the title of a book chapter by Kokoli (2006) which performed an analysis not from the point of view of parapsychology but of feminism. Lastly, this neologism is not applicable to the whole of Hiller's production, since not all of the subject matter of her work belongs to this kind of phenomena.

3 The first-period line of works with groups of people involved either numerous participants (e.g. 100 invited artists, in the case of *Draw Together* [1972]) or were more intimate (with 12 and 7 participants in *The Dream Seminar* [1973] and *Dream Mappin*g [1974], respectively).

identity of the artist and posit a distributed creativity. However, at a certain point[4] she realized that these works began and ended within the group itself, with no possibility of access to anyone else, and decided to take another course of action in the form of installations. It is from the 1980s that her working method and intention bear her hallmark.

The next sections will cover four works by Hiller related to psi in its specific meaning, and one related to an anomalous experience that originated spontaneously during the process of an artistic experiment with PSI. All the works but one belong to Hiller's first, experimental period. Given the field-specificity of this Journal, other works by Susan Hiller, albeit considerably more significant to the art world and doubtless of a higher quality, will not be tackled in this article. The reader is strongly encouraged to visit the artist's personal webpage (www.susanhiller.org) to access her most relevant artworks, publications, catalogs, interviews and other materials.

Hiller's Artworks Related to Psi and Automatism

Dreamwork: *The Dream Seminar* (1973) and *Dream Mapping* (1974)

Susan Hiller probed so-called altered states, among others, the dream,[5] trying, as she expressed in a 1993 interview, to "erode the supposed boundary between dream life and waking life" (Hiller, 1996b, p. 56). Her inquiry was experiential and intellectual, and resulted, among others, in two seminars on dreaming (in 1973 and 2011), a couple of books (Coxhead & Hiller, 1976; Hiller, 2012a), a collaborative performance (*Dream Mapping*, 1974), an interactive piece for the Internet (*Dream Screens*, 1996), and other works (e. g., *Bad Dreams*, 1981; *Lucid Dreams*, 1983).

The Dream Seminar. An Investigation into the Origin of Images and Ideas (1973) was a group investigation piece where 12 participants[6] (artists, poets, musicians) gathered to study the dream experience, both in theory (learning about culturally alternative explanations of dreaming) and in practice (with their own dreams), and its relation to art. The discussion group extended over 12, ca. two-hour-long weekly meetings, from September to November 1973, and took place in a very small classroom in Notting Hill Gate, London. In a 1975 talk, Hiller recalled that in *The Dream Seminar* "[t]he tone of the project was intensely serious and very funny" and that there was "openness and intimacy among the members of the group." She did provide instructions and a certain structure, opportunities for things to happen, and then these art experiences evolved naturally without constraints. There was "accurate observation and recording" of the group members' dreams, "careful description [...] correlations of group dream experience and shared dreaming, analysis of the overlap between dream and waking reality" (Hiller, 2007, p. 174). As for the results of *The Dream Seminar*, although there was abundant discussion about "the relation between 'art' and 'dream'" (Hiller, 2007, p. 174), "we made absolutely no attempt to come to a

Several pieces were part of *An Investigation into the Origin of Images and Ideas* (which was the subtitle of *Draw Together* and *The Dream Seminar*). These group works "sometimes took a quasi-scientific form, but the basis was always an attempt to examine something considered to be irrational or trivial" (Hiller & Malbert, 2998, pp. 213, 215).

4 This awareness came after the work *Dream Mapping*, discussed later in this text, which precipitated a major shift, "since the conclusions or the feeling that these [participatory group] works create can't be communicated to anybody else, it's a very exclusive way of working, and I've tried to do works that are more open to people" (Hiller, 2012b, 00:13:58).

5 Actually, calling it either non-ordinary or altered would seem inappropriate, since it is such a common experience.

6 Susan Hiller, David Coxhead, Carla Liss, Esther Beven, Christina Toren, Amikam Toren, Rosemary Dinnage, Domingo Armengol, Suzan Arthur, Tamara Kadishman, Hugh D'Ange, and Signe Lie (Hiller, 1996, p. 174).

final conclusion" (Hiller, 2012b, min. 10:22); it comes therefore as no surprise that "new definitions and final conclusions were *not* achieved."

Despite the lack of conclusiveness, there were episodes of shared dreams (e. g. different people dreamt of sailing on a boat)—which could be attributed to telepathy—, and a possible episode of precognition told by a participant:

> [T]wo weeks before the first meeting [...] I had an extraordinarily vivid dream in which, with four or five of my friends [...] we were in a classroom [...] for little children, a primary school classroom, talking to the headmistress [...]. And that was the exact prefiguration of *The Dream Seminar*. I mean, in my dream there were these paintings by little kids on the walls, you know, and little chairs, and all of this, which was exactly the way the classroom was in which we sat (Hiller, 1996d, pp. 176-177).

These remarkable instances were nevertheless of little importance to the artist. "What is interesting is the fact that on a certain night people might appear in each others' dreams and recognize this fact. [...] [I]f you have a dream, tonight, a shared dream, and we can say to each other tomorrow that this has happened, and we are aware of it while it happened... This would be of some importance" (Hiller, 1996d, p. 176). The same participant recounts:

> what we were doing in the seminar in a way was walking through each other's dream landscapes. There was a point in this dream in which one of the people who was accompanying me [...] said something about how strange it was that the images that were in my dreams were of such and such a quality, while the ones in her dreams were not like that at all. It was extraordinary, but I didn't think much about it [...]. Things like that happened a lot (Hiller, 1996d, p. 176).

The London group, led by Hiller, was cohesive, but this was not the case of all other subsequent collective dream projects. Hiller recalled a letter later sent to her by the conceptualist Henry Flynt:

> the reason people in New York did not wish to take part in his dream piece was they found that they were walking in and out of each other's dreams, and they [...] dropped out of this piece because they were [...] sharing dreams. And they felt that their work would be adversely affected (Hiller, 1996d, p. 177; see also Flynt, 1975).

Such experiences seem to open epistemological questions, since they provide "access to something I know to be a certain kind of order which is quite, quite different from the [...] order of my everyday life" (Hiller, 1975; Hiller, 1996d, p. 175)[7].

In view of the questions opened in the *Seminar*, Hiller decided to invite friends[8] (some attendees to the former piece and some new) to join another group investigation piece, this time of a performative character: *Dream Mapping* (1974) which—she said in a 1983 interview—"attempted to discover wheth-

7 They also encourage further exploration, in consciousness studies and in parapsychology, of state-specific communication and PSI in lucid dreamers who are practitioners of creative disciplines, such as the visual arts.
8 According to different sources, the numbers vary. It seems that ten were invited and seven attended.

er or not there are shared structures that underlie individual dreams" (Hiller, 2007, p. 56). In a 1993 lecture she recalled: "I saw my role as creating a structure in which certain possibilities of memory and awareness would be enabled, and perhaps a collective language would emerge" (Hiller, 2007, p. 129). The preparation for the work, during the month prior to the performance, involved the use of a notebook with a map of the location where they would get together; in this notebook, participants recorded their dreams in visual schemes or maps, as non-verbally as possible, following a set of instructions. In August 1974, they gathered in Purdies Farm, in Hampshire, UK, a place with an abundance of so-called fairy rings of *marasmius oreadis* mushrooms. These dispositions, Hiller said, are associated with special energy patterns and exist in the prehistoric monument of Stonehenge.[9] Folklore attributes those circles to fairies and the possibility of entering their realm and losing one's mind if they are trespassed.[10] The performative aspect of the event involved dream incubation: for three consecutive nights, participants picked a circle of their liking and slept in it. The following mornings, they recorded their dreams in their notebooks and drew the corresponding schemes/maps. After, they reproduced on tracing paper the most salient graphic features of their dreams and, with those individual contributions, a daily composite map was created, in which heavier lines noted coincidences or overlaps [Fig. 1].

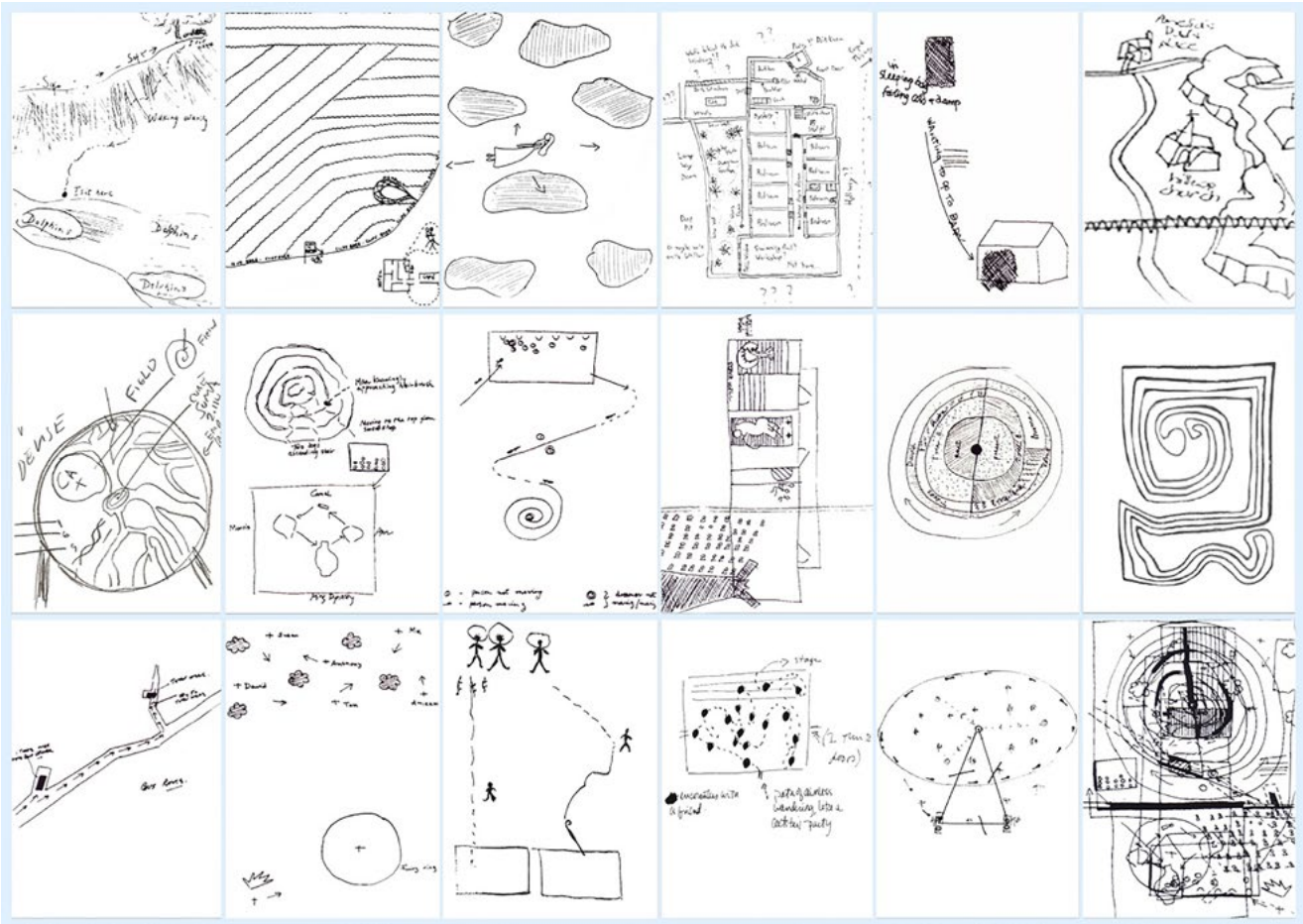

Figure 1. Dream Mapping (1974) (detail: pages of black and white maps), dimensions variable.
© Susan Hiller

9 E.g., see www.sarsen.org/2012/09/mysterious-rings.html
10 The widespread association of these circles, in England and other countries, with fairy dance was not mentioned by Hiller.

"So we had diagrams, notations, maps in order to break apart the received notion of dream as a narrative in linear time" (Hiller, 2007, p. 129). "I like these dream maps very much. There is a light-hearted struggle to make something visible" (Hiller, 2007, p. 130). For Hiller the graphic element was a key feature since she had explored at length different notations of dream space[11] during the research related to *The Dream Seminar* and found that "[i]n some ways it seems that 'drawing' might actually be better understood [than] 'writing'" (Hiller, 2007, p. 128).[12]

After great preparation and expectations, people dreamed about one another and an abundance of circles appeared in their notations—but what else could be expected? With the stress involved, in contrast to the *Dream Seminar*, little of psychic interest issued here. Still, the work was valid since it was, above all, an artistic event. Hiller made it clear: "*Dream Mapping* was something open-ended, experiential, more like a roughly choreographed dance than a scientific experiment" (Hiller, 2007, p. 130). "[T]here is a difference between science and art—this wasn't an experiment to prove people would have splendid dreams under those circumstances. It was just a kind of open situation that was set up. [...] this is not an attempt, in any sense, to make an equivalent to a scientific experiment. This is [...] experiential—this is a structure that invites possibilities of intensified experience. It's not oriented toward 'results'" (1996d, p. 179-80). "What a piece of work like *Dream Mapping* does very effectively is to focus participants on lived experience and embodied knowledge, eliminating any mind/body split ... I believe that art can allow us access to this knowledge, which will be different for each of us. In this way, art is a vehicle for shifts in understanding and behavior" (Hiller, 2007, p. 30).

Notwithstanding, although there was nothing near proven ESP, in *Dream Mapping* "there were interesting coincidences... [P]erhaps because of culturally determined limits on kinds of notations, there were very intriguing overlaps where two or more individual dream events overlapped. We all became very elated whenever this happened. For instance, on one night 'dolphins' overlapped with 'clouds' and this became the concept 'cloud/dolphin', which seemed to have to do with the way new concepts or ideas come about" (Hiller, 2007, p. 130). Of course, to the reader this may seem nonsensical, but Hiller assured it "was extremely interesting to do and was very interesting for the participants... That meant a great deal to *us*—it means nothing to you, I realize that! Which is the problem for an artist working in this kind of way, where there's no way to convey to an outside audience what the actual experience of the participants was" (Hiller, 2012b, 00:12:52).

Telepathy pseudo-experiment: *Draw Together* (1972)

Susan Hiller, in line with the conceptualist art movement, exploited the idealist notion of a direct transmission of thought.[13] In a 1969-1970 text, *Ideal Work* (Hiller, 1998) she proposed the direct trans-

11 Hiller examined dream representations in different cultures. One image often chosen to accompany her reflections on dream notations is a 19-century map of the Chuckchi Siberian shamanistic culture, which she commented on highlighting its psycho-topological qualities: "[t]he idea of the map is to show how not to get lost during dreams by going to the wrong place", as well as its collective dimension, transcending the realm of the private: "[p]ersonal information obtained in a dream is made public, is shared" (Hiller, 1996c, p. 128).

12 These graphic notations can provide information not adequately conveyed by words. If coded and agreed upon beforehand, they could be a useful piece of evidence to examine in parapsychological studies and in dream studies and could be explored in depth as an experimental tool.

13 This is actually not a conceptualist invention, but rather an aspiration of earlier artistic movements, tightly coupled with abstract avant-gardes and the surrealist movement. See Rousseau (2015) for 20th century art and telepathy, and Drinkall (2011) for more recent contemporary art and telepathy. As Hiller's method evolved, she drifted away from such purism and defended the materiality of the artwork and its non-verbal, embodied grasping. In addition, her mature work relinquished the possession of truth by the author and embraced a notion of co-creation by the participant public.

mission of thought as an artwork in and of itself:

> The most interesting and possibly the most adventurous form of art is direct mind-to-mind transmission of images and ideas, without intervening objects, texts, markets, institutions, etc. Every artist wants to eliminate the duality of conception and perception, every artist wants to close the gap between intention (mine) and interpretation (yours)... Eventually it becomes clear that the quality of images and ideas delivered depends as much on the talents of the receivers as the caliber of the transmitters (Hiller, 1998, p. 76).

A couple of years later, strongly inspired by the famous Sinclairs' domestic experiments with telepathy (Sinclair, 1930), Hiller set out to structure a group investigation piece, *Draw Together* (1972), also primarily intended as an artistic inquiry on shared subjectivity and distributed authorship,[14] using the avant-garde genre of mail art.[15] The experiment had a formalistic character, in the sense that it had the potential to lend itself to the categorization and analysis characteristic of the scientific method. Nevertheless—implicit was her rejection of the perceived unscientific and biased anthropology she was practicing at the time she dropped off her doctoral research—, the piece was a mock, ironical, experiment, as was already patent in the letter of invitation that she sent to 100 people around the world:

> Dear_____,
>
> Would you like to take part in a genuine (SELECT ONE)
>
> ___a. art event ___b. social event ___c. psychic experience ___d. scientific experiment ___e. doesn't matter?
>
> Here are the details:
>
> On Friday, April 21; Monday, April 24; Friday, April 28; Monday, May 1; and Friday, May 5, at 7:00 pm (Greenwich Mean Time), Participant A. will choose at random a number corresponding to one of 100 illustrations and photographs previously selected at random by Participant B. On each of these five occasions, A. will concentrate on the designated image or picture for at least five minutes, trying to transmit its essential details to all the other participants in the event. A. may use whatever transmitting technique he/she likes.
>
> The other participants (C. 1-100), from their respective geographical positions, will simultaneously attempt to tune in to and record what they pick up of A.'s transmission of the image, drawing or otherwise describing it in as much detail as possible. They may use whatever receiving/recording techniques they like.
>
> Each participant will send her/his records to INFO (London), where they will be correlated, analyzed, and admired. A complete report of some kind will probably be sent to everyone involved.

14 "In the days when postal art was the current trend, I designed a postal art event" (Hiller, 2012b, 00:36:15). "It was a piece which playfully worked against ideas of the artist as a solitary genius; the idea was that everyone was a kind of transmitter for a flow of energy and ideas, and only egotists would grab an idea and call it theirs" (Hiller & Morgan, 1997).
15 See Jacob (1995).

> Please let us know (soon) if you will be able to take part, and if you have any questions or comments, pass them on. Also, if you know of someone we haven't contacted who would like to participate, send his/her name and address along, too.
>
> Could be serious
>
> Should be fun & a chance to draw together.
>
> Love,
>
> ACE POSIBLE[16]
>
> N.B. On each of your five reports, please include
>
> 1. your name 2. geographical position 3. local time of reception 4. date of reception
>
> If you forget/to tune in on a designated date, or if your local time equivalent of 7:00 pm GMT is an inconvenient hour of the day/night, you may pre-receive or post-receive.[17] Just remember, please, to record the date and the time when you tuned in (Hiller, 1996d, p. 180).

The actual procedure went like this: from a series of numbered magazine and newspaper cutouts, one number was blindly picked out and the corresponding image was used as a target to be transmitted telepathically, at an agreed-upon day and time, by the sender.[18] The transmission was supposed to be facilitated by focused concentration and intense gazing, with the intention of reaching the participating friends around the world. The receivers were, in turn, expected to tune in and take in the target image, making annotations of their mental imagery and thoughts. The receivers send their answers back through the mail.

Up to here, things went as planned, but a timely postal strike, unforeseen by the artist, caused the delay and loss of the majority of the feedbacks, so "it again falls very nicely into the area of art and funky documentation" (Hiller, 1996d, p. 180). What played against the scientific character of the piece reinforced instead its poetic fate.

The results were, nevertheless, promising, and coherent with the findings in telepathy research:[19] "there did seem to be some interesting correlations, particularly on the images that were the most vivid, and maybe had some emotional impact" (Hiller, 1996d, p. 181). For example *[Fig. 2]*, when a red Navaho blanket with a zigzag pattern [bottom left] was a target, people visualized the color red, a reddish sunset, mountains, palm trees, zigzag, or triangles.

16 In her immaterial, experimental group works of the 1970s, Hiller used this pseudonym—much to her later shame and regret.
17 These options expanded the possibilities of ESP to precognition and retrocognition—issues not made explicit by Hiller, thus muddling a bit more the methodology of the experiment.
18 According to different versions of this story through time, it was Susan Hiller only or either she or David Coxhead who acted as senders. E.g., Hiller (1996, p. 180)—relatively close to the year of the events—stated both of them were senders. This, in turn, contradicts the information in the invitation, where there is only one sender mentioned (participant A.), reinforcing the methodological laxity of the piece.
19 For instance, the well-known experiments with dream telepathy at the Maimonides Medical Center (Ullman et al., 1973).

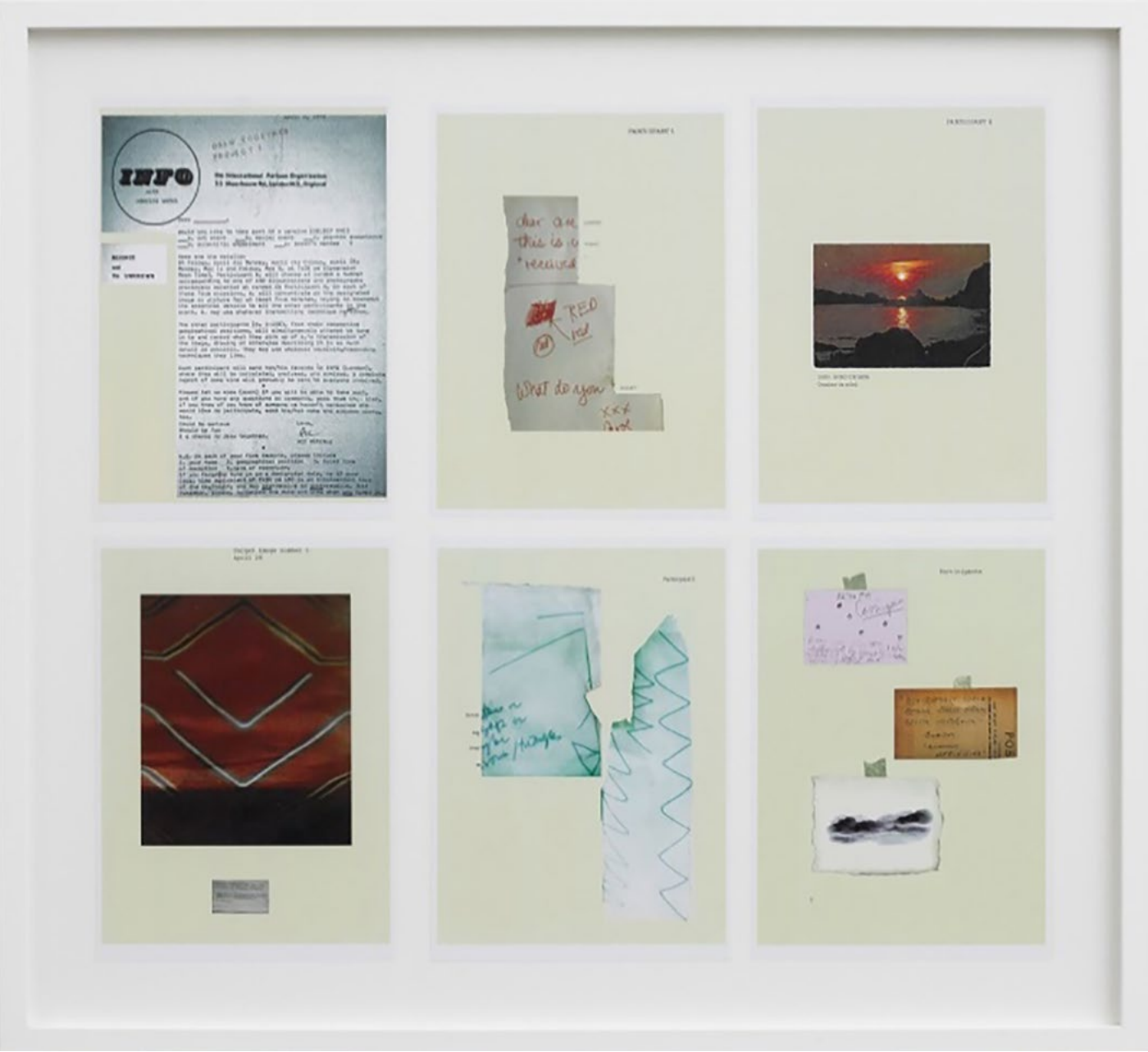

Figure 2. Documentation of *Draw Tog*ether (1972), mixed media, 74 x 80 cm. © Susan Hiller; Courtesy Lisson Gallery. Photography Jack Hems.

This piece is minor and has not received particular attention in the art world, among other reasons, for the dearth of visual documentation.[20] In hindsight, in a 2002 lecture, Hiller said "I don't think *Draw Together* was in itself a very good work, but it opened up avenues for more interesting pieces [...] it was the relaxed but alert atmosphere it generated that made possible *Sisters of Menon*" (2008e, p. 243).

20 In a personal communication in 2011, Susan Hiller told the author of this article that there remained no visual documentation of the piece—fortunately, this has proven wrong since some images, presented here, have been retrieved.

Automatic writing: *Sisters of Menon* (1972-1979)

There has been a historic interest of artists in occultism and mediumship, often inscribed in spiritualist beliefs.[21] This was known by Hiller, but only in theory, until, one day in 1972, in the south of France, she was in the process of performing the *Draw Together* experiment. "I must have been in a very relaxed and slightly distracted mood" (Hiller, 2017, 00:30:00); "Admittedly, the stage was set for some altered state of consciousness, but wasn't eerie or peculiar" (Hiller & Morgan, 1997, p. 246). She had just finished the attempt at transmitting an image.[22] She put down the magazine cutout and, unexpectedly, produced her first automatic writing. On a blank sheet of paper, she recalled, "I suddenly began to write; my hand began to move" (Hiller & Malbert, 2007, para. 6); "[t]he pencil seemed to have a mind of its own". What started as a doodle began to take shape: "at first the marks formed what looked like childish drawings I could not decipher. Then, coherent words began to appear". Her hand "wrote page after page of text in an unfamiliar style". "For a while it seemed an engrossing and somewhat eerie experience to step aside so completely" (Hiller, *Sisters of Menon*, 1972-9, 1979 note). She deemed it "a very uncanny experience because I was just observing my hand writing. I felt a total dissociation from the experience" (Hiller & Malbert, 2007, para. 6). But the novelty and surprise soon faded out "and then it became quite boring because my hand was just writing and writing. It wasn't like being in an interesting trance; it was just an occurrence that had an everyday-ness" (Hiller & Morgan, 1997).

Formally, the traces of the pencil were a "combination of undecipherable hieroglyphics which turned into readable words with several puns: a sort of shape that looked like a child's drawing of an eye for 'I', and a lot of mirror writing, backward, reverse writing, and so forth" (Hiller & Malbert, 2007, p. 215). The character of the text was repetitive and rhapsodic, switching from the 'I' to 'we' or 'everyone', and seemed to be dictated by a collective entity: the 'Sisters of Menon'. This is the transcription of the automatic writing:

> Who is this one/I am this one/Menon is
>
> Menon is this one/you are this one/
>
> I am the sister of Menon/I am your sister/the sister of – of everyone's sister/I am Menon's sister
>
> – I live in the water/I live on the air/
>
> I am – the sister/love of my sister/
>
> The woman is the sister/a man is the mother of the sister/
>
> Eye eye eye eye I live my sister
>
> – – – – – – – – – – – – – VLant-RO zero is the silly morse/is the sister of sister of

21 See Durant & Marsching (2006), and Cardeña et al. (2012) for contemporary art and the paranormal. See Waldo-Schwartz (1977), and Dichter et al. (2007) for art and occultism.

22 In different sources there are incongruences when referring to this episode. E.g., in Hiller & Morgan (1997), she said it was her turn to tune in (as a receiver) and draw. In Hiller & Malbert (2007), she said she had finished staring (as a sender). The latter version is more congruent with the design of the experiment, but that does not necessarily imply that it is truer than the former.

Mennon/we three sisters are your sister/this is the nothing that we are/

the riddle is the sister of the zero/we are the mother

of men/we are the sister of men/o the sisters

I want the water/I

want the air/I want the sister of Menon to become as the water/

will you become my sister/

I am the sister of everyone/I am your sister/we 3 sisters are

1 sister/you are the sister/last night we

were 3 sisters now we are 4 sisters/you are the sister of Menon/we are 3 sisters we live on the air in the water/

we are the sisters of Menon/everyone is the sister/I am the sister/love oh the sisters/

love love love to the sisters of everyone who is the sister/come to the ⊕⊕⊕⊕ to the ⊕

– – – – – we are your sisters from Thebes Thebes/

The manuscripts disappeared. "For a long time I believed the original scripts to be lost. Then, in May 1979, exactly seven years after the original transmission, they re-appeared..." (*Sisters of Menon*, 1979 note). Hiller admitted that losing them might have obeyed an unconscious motivation: an inability to address the production with her mindset of the time. In a 2005 interview she said "[t]he problem for me was that I didn't have the ideology of spiritualism or any other belief system that would support this kind of experience. I didn't think spirits were dictating to me or anything of the sort. I was just left with this drawing, really, and that led me to look again at surrealism" (Hiller & Malbert, 2008, p. 215).

The reencounter with this material prompted her to study it in depth to try to decipher its meanings. Feminist and identity issues, distributed creativity, ESP, mediums, psychoanalysis, symbolism, Cathar history, and literature came in to help in the hermeneutics, but at a certain point she understood that "any commentary on them would be endless, and there have already been several versions. None of these versions is a better 'explanation' than any other" (Hiller, *Sisters of Menon*, 1972-1979, 1979 note). The greatest point made in this automatic writing was that identity is plural: "It convinced me of the reality of the divided self, and that one person is many voices, but there is no bounded unity which contains the voices. They could be seen as possibilities of being", she recalled in a 1995 conversation (Hiller & Morgan, 1996, p. 247).

The final *Sisters of Menon* artwork *[Fig. 3]* consists of a central cross with four L-shaped arrangements of the sheets of paper with the automatic writing/drawing of 1972, and a later part, four smaller lateral modules, of transcription and commentary, of 1979.

Figure 3. *Sisters of Menon* (1972-1979), four L-shaped panels of automatic writing, blue pencil on A4 paper with typed labels (1972); four panels, typescript and gouache on paper (1979), 91.2 x 64.2 cm and 31.8 cm x 23 cm. © Susan Hiller

Later, Hiller practiced other attempts at automatic writing of the same kind that resulted in several art pieces.[23] She said: "I learned a huge amount from that automatic writing experience, and after that I was able to do it anytime I wanted to, I'd just switch to that mode". But being anything but a mannerist artist, "I stopped doing it because my handwriting became so elegant, so practiced, so to speak, so it seemed to be losing its value for me" (Hiller & Orbach, 2013, 01h:05:00).[24]

23 E.g., *So Don't Let it Frighten*; *Get William*; *Mary Essene*; *My Dearest* (all automatic writings date of 1975 and were framed in 1981).

24 Automatism in contemporary art has had different manifestations. It is worth to mention how Hiller took a position in relation to them. The problem with stylization was also the root of Hiller's criticism of the automatism of the New York abstract expressionists. She said: "I'm determined to insert my work with automatism within and against the tradition of the gestural in modern art—against the reactionary, self-aggrandizing gesturalism [...] and *within* the socially-motivated investigation of mark-making initiated by the Surrealist group" (1996b, p. 54).

Nevertheless, the automatic writing experience, according to Hiller, was decisive for her art because it "precipitated me outside the bounds of pure conceptualism" (Hiller & Orbach, 2013, 00:26:00).[25] After this experience, she said, "I stopped making a distinction between the rational and irrational" (Hiller & Morgan, 1997).[26]

In subsequent works of the 1980s,[27] she exploited a different kind of automatism—pre-linguistic, a manifestation of pure bodily rhythm—in the form of non-significant calligraphies and/or vocalizations.

Hiller's interest in automatism lead her to abundant readings—many of them grouped in an installation called *Lucidity & Intuition: Homage to Gertrude Stein* (2011)—and to collect automatic writing/drawing of various sources (analysands, mediums, artists—herself included—, art students, writers, and frauds). Displaying a number of photographic negatives of these productions[28] in light boxes, she highlighted the otherliness of such manifestations. As homage, the installation, *From India to the Planet Mars* (1997-2004) *[Fig. 4]*, bears the title of the seminal work by Théodore Flournoy (1900) on the medium under the pseudonym Hélène Smith.

(Moreover, in relation to the wrongly attributed purity of his automatic method, Pollock spent many hours staring at already much-stained canvases and planned further actions; see Rubin, 1999.) In contrast, Hiller sided with André Masson (one of the main pioneers of surrealist graphic automatism), although she underlined that Masson's automatism was only a first stage of elaboration, followed by the addition of figurative elements suggested by the meandering lines. She was also interested in the surrealist undermining of personal authorship: "the implications of automatism would eventually erode all notions of personal property rights and individual authorship of works [...] because everyone can do it [...] it's unpredictable and seems to be outside any kind of individual control" (Hiller, 1996b, p. 54). Other figures experimenting with automatisms whom she felt akin to were, in literature, Gertrude Stein (for her self-experiments, see Solomons & Stein, 1986), in relation to whom she made the piece *Homage to Gertrude Stein* (2011), and, in his graphic facet, the Belgian-French poet and artist Henri Michaux, from whom the author of this article believes Hiller may have borrowed the word *élan* [momentum] for the title of one of her automatic pieces (for an analysis of Michaux's signs, see Parish, 2007).

25 To get a better grasp on this statement it has to be understood that the first-generation conceptual art of the time was male-dominated, allegedly objective and language-centered; Hiller always considered herself to be a second-generation conceptualist, distancing herself from the conceptual art world of the 1970s, which would soon despise her, as she recalled in a 2007 interview, for "introducing pop art to conceptualism" (Hiller, 2008d, p. 131) with her postcard piece *Dedicated to the Unknown Artists* (1972-1976).

In addition to this, at the time of the automatic writing, the artist was already siding with feminists, who took an anti-logocentric position: "[W]hat's already in language, for my generation of women, was not what we wanted to say" (Hiller, 2008d, p. 130).

Another aspect that estranged her from the formal purity and the frequent absence of physical involvement with the works in progress of first-generation conceptualists was Hiller's emphasis on the body and the contact with objects before any conceptual clarity took shape; "[t]he ideas do not come first. That's why I often say I have a materials-based practice" (Hiller & Orbach, 2013, 01:17:28).

26 It goes without saying that this statement should not to be taken literally. Of course she could distinguish them; what she meant was that it was possible to play with both. The duality between rationality and irrationality had already made itself patent in an earlier phase of her life: her choice to be an artist, relinquishing the believed objectivity of anthropology and becoming a creator, is patent in the *aha!* moment in which she decided to abandon the writing of a doctoral dissertation. In contrast to science, she recalled, "I felt art was, above all, irrational, mysterious, numinous [....][.] I decided I would become not an anthropologist but an artist: I would relinquish factuality for fantasy" (Hiller, 1991b, p. 2); instead of being an outside observer, she said, "I determined to find a way to be *inside* all my activities" (Hiller, 1996a, p. 19). Throughout her artistic career, Hiller was an intellectually sophisticated and articulate thinker but remained at the same time critical of the one-sidedness of Western rational thought and fascinated by anomalous experiences and non-normative ways of knowing. She straddled both dimensions with ambivalence, offering an inspirational example of mixed (or at least alternating) epistemologies.

27 E.g., *Élan* (1983) (for a sample of its soundtrack, see www.youtube.com/watch?v=qUMhI43eiJE) and *Belshazzar's Feast* (1983-1984).

28 The sources and authors of the automatic productions of the installation are: Jean Bate (1985): *The First Three Months*; F. Blight Bond (1917, 1930): *The Gates of Remembrance*; André Breton (1933): *Le message automatique* (by Mme. Smead, 'Max'); Nik Douglas (1977): *Book of Matan* (by 'a young man'); Théodore Flournoy (1898): *From India to the Planet Mars* (by Hélène Smith); George M. Harper (1987): *The Making of Yeats' 'A Vision'* (by George Yeats); Susan Hiller (1972): *Sisters of Menon*; Hans Holzer (1978): *Elvis Presley Speaks* (by Dorothy Sherry); Anita Mühl (1963): *Automatic Writing: An Approach to the Unconscious* (by anonymous analysands); Fred Oliver (1974): *Dweller on Two Planets* (by 'Phylos the Thebetan'); Florian Rodari (1998): *Shadows of a Hand* (by Victor Hugo); Austin Osmond Spare & Frederick Carter (1916): 'Automatic Drawing'. *Form*, 1(1), April; volunteer art students (1996-1997), and Signe Toksvig (Comp.) (1986): *Swan on a Black Sea* (by Geraldine Cummings).

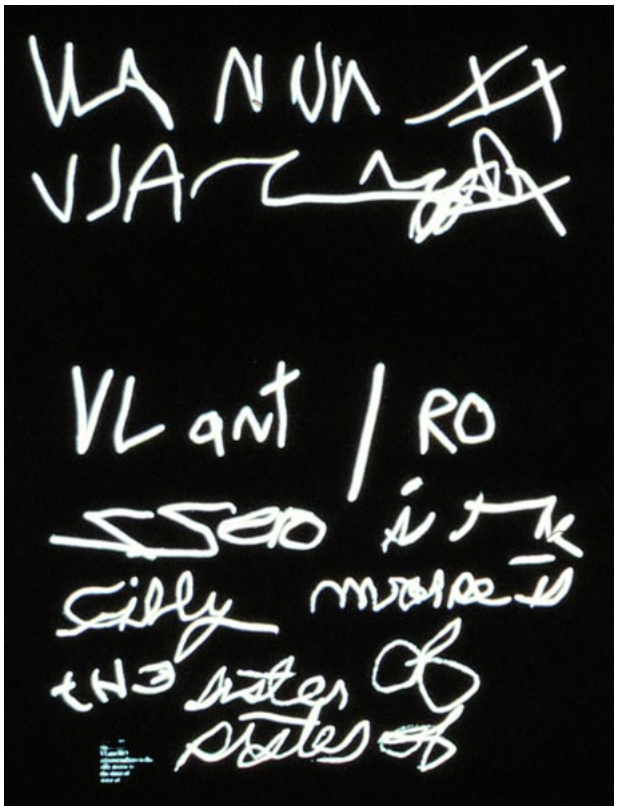

Figure 4. From India to the Planet Mars (1997-2004), (detail, image 26, one of Hiller's automatic writings that became part of *Sisters of Menon*), unique photographic negative in wall mounted lightbox 67.5 x 52 x 12 cm. © Susan Hiller

Representations of telekinesis: *Psi Girls* (1999)

While official religions in the West lost adepts, fiction cinema became rife with representations of secular miracles, magic, and witchcraft. Yesterday's saints have become today's ESP talents. Susan Hiller was interested in the investment of popular culture in the paranormal, and movies were an excellent example of this. Consistent with the work method of her second period—which used cultural productions instead of her personal experiences or that of a restricted group—she chose extraordinary feats performed by children for two installations: *Wild Talents*, and the later *Psi Girls*, more powerful in its greater simplicity. Hiller explained that these works explore human beings' need of myth and fable[29] and "represent collective dreams, cultural artefacts that form our common understanding of what is possible and our fantasies of what we wish were possible" (Grayson, 1998).

Wild Talents (1997) bears the same title as Charles Fort's (1974) collection of anomalous phenomena and psi,[30] and shows edited fragments of movies, mostly from Hollywood, in which children display extraordinary feats like ESP, telekinesis, levitations, religious ecstasies, etc., together with sound effects,

29 Hiller drew from the view, shared by many psychologists and mythographers (e.g. Jung, 1978/1958; Eliade, 1963; Campbell, 1972; Doty, 1986), that the current Western scientifically-oriented society favours facts and reason at the expense of images and tales that speak the language of the unconscious and emotions, providing symbols of psychological unity. Deprived of religion and living myths, such a society is psychologically impoverished and hungers for another order of experience of the world, its re-enchantment and a feeling of deep meaningfulness.
30 Fort contended that these abilities were of use in early stages of humankind and that they remained latent in all humans and could be trained.

a chair, votive lights and a monitor with footage of a pilgrimage. Text and voice elements appear, nostalgic of childhood and Middle Age beliefs in an enchanted world.

Psi Girls (1999)[31] *[Fig. 5]* uses fragments of movies[32] where girls perform telekinesis. The artist declared: "I love to see girls doing these wonderful things!" (Hiller & Orbach, 2013, 00:37:00). She was interested in the freshness of children's worldview, where the supernatural can be experienced as natural. Another element at play in the piece is the vindication of female power—so often treated as dangerous and menacing to the patriarchal order. In addition, Hiller posited a metaphorical value to telekinesis: it "has something to do with art [...] transforming things through mental powers" (Hiller & Grunenberg, 2008, 00:00:54).

Figure 5. Psi Girls (1999), video installation: five synchronized programs, five projections, color with stereo sound, real-time audio processing. Program duration 20 minutes. Dimensions variable. © Susan Hiller; Courtesy Lisson Gallery.

On five large, successive screens are projected an equal number of movie scenes. All but one are edited in tempo to fit a length of ca. two minutes.[33] The images are also edited in color, so that each panel shows a different hue. This is done "to emphasize the artificiality of these constructions" and to give various emotional connotations to the images. Every two-minute-cycle is interrupted by a pattern of interference—as when TV emissions are down—and the sound of static, after which the scenes are re-

31 A video fragment of *Psi Girls* can be accessed here: www.youtube.com/watch?v=5MsQ0z2iHLY
32 These are: Brian de Palma (1978): *The Fury*. Prod.: 20th Century Fox; Andrew Fleming (1996): *The Craft*. Prod.: Columbia; Danny de Vito (1996): *Matilda*. Prod.: TriStar Pictures; Mark Lester (1984): *Firestarter*. Prod.: Universal, and Andrei Tarkovsky (1979): *Stalker*. Prod.: Mosfilm.
33 The only unedited fragment is the one with the sick girl in Andrei Tarkovsky's film. The Russian's production (removed from Hollywood language) is characterized by a slow, introspective tempo, so there would seem to be no need to slow it down any further.

played, but on different screens and with different colors. The high-volume soundtrack has been edited from a live recording of percussion and hand clapping by the gospel choir of St. George's Cathedral in Charlotte, NC. It is an overwhelming, crescendo rhythm, "very hypnotic," which "changes the way you see the imagery"—inviting credibility. But, after the break, there is a two-minute period of silence—a time for criticism and reflection. Hiller explained:

> So you're looking at this Russian movie in silence, and you're scrutinizing it; you may notice some special effects and so forth. And then, when you look at it with this music, you can feel your heart-rate increasing and you might begin to feel it's a little creepy, it's a little strange, you feel disturbed by it. There's two different ways of looking at it (Hiller & Grunenberg, 2008, 00:59:00).

> I deliberately designed that piece so no one could walk out and say, 'Oh, Susan Hiller believes in telekinesis.' They might say 'Well, for two minutes she believes in it and for the next two minutes she does not believe in it.' The piece was intended to demonstrate the ambiguity of this whole area[34] (Hiller & Orbach, 2103, 00:39:00).

> The replicable laws of nature leave us unsatisfied; we hunger for depictions of marvels that do not fit our classical worldview. "We know perfectly well how delicious these moments are, at the same time that we know that they are created by cinema trickery. ... yet, isn't it interesting how easily the fantasies of that as a true condition recur? (Hiller, 2004b, 00:03:42).

Discussion

This section gives a wider context to these and other of Hiller's works and deals with her work method, the degree of self-exposure of the artist, her position towards the subject-matter of her work, the deeper content of her oeuvre, Hiller's role as an artist and the epistemic nature of art in relation to reality.

Susan Hiller's work method pervaded her mature oeuvre. She claimed to proceed without a pre-conceived idea. Her starting point was a certain material (either an object or a social fact—cultural artifacts, in the anthropological sense) that she came upon, something towards which she felt both "attracted and disturbed" (Hiller, 2012a, para. 5). Far from resolving this polarity, she declared: "I want to be true to my own ambivalence" (Hiller, 2002, para. 5). Interestingly, this mixture of affects is also the hallmark of the Freudian uncanny (*unheimlich*) (Freud, 2003), which couples feelings of homeliness with an undertone of disquiet, as if something disturbing lurked within the familiar—which is indeed repressed psychic material. It is as if Hiller were particularly sensitive to hidden, disquieting meanings that go unnoticed for most of us. This is true for the less explicitly parapsychological material of her art (such as *An Entertainment*, 1990, *From the Freud Museum*, 1991-1997, or *The J. Street Project*, 2002-2005) where, in a hermeneutic impulse also akin to psychoanalysis, Hiller's work with the material intended to elucidate its hidden meaning, and give it back to society in the form of thought-provoking art. But certainly in the most renowned pieces, many of them openly dealing with issues of consciousness, it is not a matter of

34 The deliberate ambivalence (a term more suitable than ambiguity) of *Psi Girls* reflects equally Hiller's fascination and critical skepticism towards these phenomena. The tolerance of contradictions and the coexistence of apparently mutually exclusive views is a hallmark of art, whereas science needs univocality, disambiguation and clear-cut conclusions. Lived experience seems in many ways close to artistic knowledge. It remains a challenge for science (parapsychology included) to study the richness of life in all its complexity.

revealing hidden meanings, but rather to present this controversial material in a way that invites suspension of disbelief, together with a contemporarily skeptical view on it.

In her artistic production, alongside everyday objects of popular culture, Susan Hiller tackled "[t]elepathy and other forms of ESP; dreams; automatic writing, drawing and speaking; dowsing; electronic voice phenomena; the human aura; ghost images seen on TV; contemporary visionary experiences; projections of all sorts" (Hiller, 2002, para. 2), which are doubtless part of the appeal of her oeuvre.

A phenomenological inquiry would expect a plethora of the author's personal accounts about these phenomena. This opens the question of the degree of self-exposure of the artist regarding her first-hand experience with the topics treated in her work. She was certainly a woman of her time during the hippie years: "Sex, drugs and rock n'roll! I'm of that generation of the 60s-70s and totally influenced by a quest for visionary, mystical experience," she said in an interview (Buck, 2004, p. 35), and was accordingly experienced with psychedelics, although "the most interesting experiences I've ever had have not been on drugs" (Hiller & Grunenberg, 2008, 01:07:00). We know that she was "ironically in love with" the occult (Hiller & Morgan, 1997), that she was acquainted with Zener cards to test psi—"validated, 1996"—, and with the Ouija board—"practiced, 1995"—(both are present in the installation *From the Freud Museum* [1991-1997]; the quotes refer to annotations to the objects displayed), that she took a course in dowsing, practiced with dreams—and, we infer, at least attempted lucid dreaming—(e. g., Coxhead & Hiller, 1976; *The Dream Seminar*, 1973; *Dream Mapping*, 1973; *Lucid Dreams*, 1981-1983; *The Dream Seminar II*, 2011). She attempted telepathy as a sender—with some putative results (*Draw Together*, 1972)—, was involuntarily subject to automatic writing (*Sisters of Menon*, 1972-1979) and purposefully trained herself afterwards in this automatism. Despite all, it is only when speaking of her first experience with automatic writing that she disclosed a truly and sufficiently extensive phenomenological account. If we presume her interest in these topics was based on personal experience, we must accept that the greatest deal of her first-hand acquaintance with psi, anomalous experiences and altered states of consciousness has remained deliberately private.

The artist's public utterances in relation to psi and non-ordinary experiences were destined to distance her from the personal self-exposure that characterizes other artists who approach similar themes (e. g., Marina Abramovic). Although Hiller's strategy entailed a dearth of first-hand testimonies of potential use for consciousness research, it does seem an intelligent way to take a position in the art world. As the materials for her work were social in origin, the collective experience and testimonials took center stage while she faded into the background. In this context, when she spoke of herself, it was mostly to clarify her position amidst these cultural productions and collective experiences: "I have rarely discussed the works with the more remarkable subject matter, in most circumstances not wanting to sensationalize or exoticise what I do" (Hiller, 2012a, para. 2). This, again, is a clever strategy, since it is easy to be taken as a New Age adept or as an uncritical believer—amusingly, in 2002, Richard Grayson, the curator of the Sydney Biennale, remembered her being "chased around town by Raelians" and that "they thought Susan had some inside knowledge that they needed to know" (Hiller & Grayson, 2008, 00:37:00). Despite her fascination with these subjects, Hiller was an educated intellectual with a critical Western mindset, "tolerant, but skeptical" (Cole, 2012, p. 39). When asked about the truth of the stories about UFOs collected in her most famous piece, *Witness* (2000), the influence of Carl G. Jung (1978)—stressing the psychological truth of this kind of experiences—can be traced when she answered: "Well, yes, they're real

stories, they're social facts, they're real social facts" (Hiller & Malbert, 2007). And she stated shrewdly: "I don't believe in anything. So therefore, I don't believe these things are true… any more than I believe that they are not true" (Hiller & Orbach, 2013, 01:21:00). Her role as an artist was neither to take sides nor to prove or disprove; that is not the task of art, but of science; "I can't do the kind of thing that I do with the material if I always have to pre-censor myself by asking the kinds of questions that [...] a scholar would ask" (Hiller & Malbert, 2007).

Hiller took pains to make clear that the array of topics treated were only the surface—however appealing—of her work. The artist cautioned: "People get diverted by the subject matter in my work, and then they don't actually deal with the content. The content is not as straightforward as it might seem" (Hiller, 2004b, 00:13:00). The subject matter "is only the starting point" (Hiller & Grayson, 2008, 00:40:00).

So what is the content of Hiller's artwork? In a 1991 conversation, Hiller said: "Art is epistemological"; artists are "first-order thinkers" (Einzig, p. 155); "I think [art is] as important as any kind of academic research" (Hiller, 2012b, 00:02:53). The content of Hiller's artwork is knowledge, and it is a hybrid one, encompassing poetic intuition and unconscious processing[35] together with rational inquiry, as well as embodiment.[36] It is a questioning of the status quo through the revelation of hidden meanings of our cultural artifacts, although these meanings "will change over time and will never be fully accommodated within language or reducible to language". Rather than answers, Hiller's work offers "lines of exploration" (Hiller, 2002, para. 3). The inquiry is performed by means of a psychic and cultural archeology, "exploring the unconscious of culture" (Hiller, 2008c, p. 67). This way of knowing goes hand in hand with what Hiller considered to be the artists' job: "to represent and mirror back the values of the culture in a way that people haven't seen before" (Cooke, 2011). Art "functions as a mirror to show us what we don't know that we know" (Hiller, 1992, p. 3). Such knowledge can put the finger in the wound of social consciousness, as is the case of her critique of the children's cruel and phallocentric puppet show Punch and Judy (*An Entertainment*, 1990), of the treatment of the post-Nazi management of Jewish street names in Germany (*The J. Street Project*, 2002–2005), and of many examples of apparently innocent ethnocentrism and sexism in boxes that make up *From the Freud Museum* (1991–1996).[37] Other works point at experiences that question the prevailing mode of knowledge, opening possibilities of alternate epistemological pathways,[38] setting the stage for the possibility of collective anomalous cognition, as is the case of *Draw Together*, *The Dream Seminar* and *Dream Mapping*, recording spontaneous automatic writing (*Sisters of Menon*), collecting worldwide first-person accounts of near-death experiences (e. g., *Clinic*, 2004; *Channels*, 2013) and UFO encounters (*Witness*, 2000), or dealing with paranormal abilities in the media (e. g., *Psi Girls*).

For Hiller, the popular fascination with psi, anomalous experiences, and altered states of consciousness is rooted in a yearning for transcendence that is intrinsic to the human condition. Since "art has the potential to alter consciousness" (Hiller, 2011a, 00:23:00), it can open the mind:

35 "[W]hatever 'knowledge' is generated by the work or is part of the work, is far from objective and logically arrived-at; not-knowing is built into my working methods" (Hiller, 2002, para. 1).

36 Hiller said in 1994: "When I use words I always feel [...] that I'm translating from something to something else. [...] I'm wondering whether I'm simply the kind of person who understands physically through my sensory experiences, my tactile experiences. Objects can provide me with knowledges of various kinds that I can later translate. I'm [...] talking about [...] getting your hands dirty, [...] material practices" (Hiller, 1996e, p. 237).

37 For an in-depth study of Hiller's *From the Freud Museum* see Iribas Rudín (2019).

38 See Cardeña (2018).

> "I am clearly taking the side of those vernacular visionaries who witness something extraordinary, something repressed by society and misrepresented by empiricism [...]. I hope that you will all join the visionaries and enjoy your innate capacities to imagine, project, hallucinate and dream while fully awake, and at the same time, retain all your self-awareness, your consciousness and your critical ability" (Hiller, 2008b, p. 29).

Psi and radical non-ordinary experiences, she acknowledged, seem to question what we take to be real, or to point to other possible dimensions of reality: "I consider the definitions of reality are always provisional [...] we are all involved collectively in creating our notions of 'the real'" (Hiller, 1999, p. 45).

In conclusion, Susan Hiller's art has several points of contact with parapsychology: the subject-matter of psi and anomalous cognition, some methodological aspects of various group works and the epistemological function of her work in relation to consciousness and reality. On the other hand, Hiller was an artist, not a scientist. Her treatment of these topics does not imply a search for clear-cut answers or proving the validity of specific hypothesis. Hiller's art poses questions, offers as-if and what-if views, provokes embodied experiences and creates ambivalent, open and participatory meanings. Such a way of knowledge has the potential to enrich parapsychological enquiries in ways yet to be explored.

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Psi et Expériences Anomales dans l'*Oeuvre* de Susan Hiller

Résumé : Susan Hiller (1940-2019) était une artiste contemporaine qui s'occupait de sujets tels que le psi et les expériences anomales, en montrant un intérêt soutenu pour la conscience. Bien que nombre de ses travaux portaient sur des thèmes parapsychologiques, sa façon d'appréhender ces sujets appartenait à un champ de connaissance offrant un contraste intéressant avec celui de la science. Dans certaines des œuvres de Hiller, il coexiste un cadre expérimental et une ouverture à ce qui peut survenir, les résultats étaient moins pertinents que le vécu, qui n'est pas toujours médiatisé par le langage, et qui manifeste une ambivalence délibérée. Son intention en tant qu'artiste était de fouiller dans l'inconscient culturel, pointant vers des zones négligées ou marginalisées, en quête d'expériences non-ordinaires et de perspectives non-conventionnelles sur la culture. Dans cet article, cinq de ses productions relatives au psi sont montrées et mises en contexte, en employant les propres mots de Hiller. Relativement à la télépathie, *Draw Together* (1972), *The Dream Seminar* (1973) et *Dream Mapping* (1974) sont présentés. Par rapport à la télékinèse, nous abordons *Psi Girls* (1999). Nous étudions aussi un travail artistique relatif à l'automatisme psychique : *Sisters of Menon* (1972-1979). Nous discutons finalement le degré d'exposition de soi de l'artiste, sa position sur les sujets qu'elle travaillait, le contenu profond de son œuvre, son rôle en tant qu'artiste et la nature épistémique de l'art par rapport à la réalité.

Psi und anomale Erfahrungen im *Oeuvre* von Susan Hiller

Zusammenfassung: Susan Hiller (1940-2019) war eine zeitgenössische Künstlerin, die sich mit Themen wie Psi und anomalen Erfahrungen beschäftigte und ein ausgeprägtes Interesse am Bewusstsein hatte. Auch wenn einige ihrer Arbeiten thematisch mit Parapsychologie zu tun haben, gehört ihre Art, diese Themen zu behandeln, zu einem Erkenntnisgebiet, das interessante Kontraste zur Wissenschaft bietet. In einigen von Hillers Werken gibt es eine Koexistenz von experimenteller Rahmung und Offenheit für alles Mögliche, die Ergebnisse sind weniger wichtig als die Erfahrung, die nicht ausschließlich durch Sprache vermittelt wird, und es herrscht eine gezielte Ambivalenz. Ihre Intention als Künstlerin war es, sich in das kulturelle Unbewusste zu vertiefen und auf übersehene und vernachlässigte Bereiche hinzuweisen, zu denen das Verlangen nach ungewöhnlichen Erfahrungen und unkonventionellen Ansichten über Kultur gehören. In diesem Artikel werden fünf ihrer Werke, die mit Psi in Berührung stehen, beschrieben und mit Hillers eigenen Worten in einen Kontext gestellt. In Bezug auf Telepathie werden *Draw Together* (1972), *The Dream Seminar* (1973) und *Dream Mapping* (1974) vorgestellt. Mit Telekinese befasst sich *Psi Girls* (1999). Ein Kunstwerk, das sich auf den psychischen Automatismus bezieht, wird ebenfalls vorgestellt: *Sisters of Menon* (1972-1979). Der Grad der Selbstentblößung der Künstlerin, ihre Position zum Gegenstand ihres Werkes, der tiefere Gehalt ihres Oeuvres, Hillers Rolle als Künstlerin und die epistemische Natur der Kunst im Verhältnis zur Realität werden abschließend diskutiert.

Psi y Experiencias Anómalas en la Obra de Susan Hiller

Resumen: Susan Hiller (1940-2019) fue una artista contemporánea que trató temas como psi y experiencias anómalas, dentro de un interés profundo en la consciencia. Aunque el tema de varios de sus trabajos es común a la parapsicología, su forma de abordar estos temas pertenece a un área de

conocimiento que ofrece interesantes contrastes con la ciencia. En algunas de las obras de Hiller existe la coexistencia de un encuadre experimental y una apertura a lo que pudiera suceder, los resultados son menos relevantes que la experiencia -que no está mediada exclusivamente por el lenguaje- y hay una ambivalencia deliberada. Su intención como artista era profundizar en el inconsciente cultural, señalando áreas ignoradas y descuidadas, entre las que se encuentra el anhelo de tener experiencias no ordinarias y puntos de vista no convencionales sobre la cultura. En este artículo se presentan y describen cinco de sus producciones que tienen que ver con psi y las pongo en contexto, usando las propias palabras de Hiller. En relación con la telepatía, se encuentran *Draw Together* (1972), *The Dream Seminar* (1973), y *Dream Mapping* (1974). *Psi Girls* (1999) trata de la psicoquinesis y *Sisters of Menon* (1972-1979) de la escritura automática. También discuto el grado de autoexposición de la artista, su postura ante el tema de su trabajo, el contenido más profundo de su obra, el papel de Hiller como artista y la naturaleza epistémica del arte en relación con la realidad.

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Depicting the Ethereal, Part I: Visual Art and Psi [1] [2]

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Abstract: The turn from figurative art to the depiction of internal experiences opened the door for artists to represent anomalous experiences and ostensible psi phenomena. Various studies have described how Abstract art was influenced by Occultism, but there were other important influences. They include scientific theories of the ether and hypergeometric dimensions, the development of technological advances showing the reality of unseen electromagnetic waves and wireless communication at a distance, Spiritualism, and the inception of psychical research. This paper focuses on how psi phenomena, research, and theory, often in conjunction with the other influences, have been an important topic and source of inspiration in various modern and contemporary movements including Surrealism and Abstract and Conceptual art.
Keywords: psi; parapsychology; psychical research; art; Abstract Art; Surrealism; Conceptual Art.

Paul Klee wrote that "Art does not reproduce the visible but makes visible" (1920), exemplified in his own paintings and drawings of ostensible mediumistic materializations, levitation, and automatic writing (Okuda, 2011). Thus, his statement can be interpreted as a dictum that art should depict not only occultist symbols (e.g., Rosenthal, 1982) but also ostensible parapsychological/psychic (psi) phenomena. The characteristic disdain for all things psi expressed by some academics and the laughably biased entries in Wikipedia has its counterpoint in their importance and acceptance by many visual artists, particularly since the late 1800s. The influence of occultist beliefs in modern art, particularly Abstract, has been recognized for decades (e.g., Henderson, 1987; Tuchman, 1986), but more recent scholarhip has shown that such beliefs (not necessarily antagonistic to belief in scientific theories and discoveries) and ostensible psi experiences have also influenced other modern and contemporary art movements. In major and minor museums throughout the world, there has been a growing number of unapologetic and very popular exhibits on art, Occultism, and psi phenomena and research. Museum blockbusters during the last twenty years, some of them with the collaboration of dozens of collections throughout the world include:

1 The author is very thankful for the previous collaboration with Ana Iribas and Sophie Reijman, which ignited my interest. My deep gratitude also to Professor Linda Dalrymple Henderson for her foundational scholarship and kind and thorough review. Thank you as well for the helpful critiques and suggestions of Carlos Alvarado, Renaud Evrard, Lauren Reid, and Sophie Reijman. Address correspondence to: Etzel Cardeña, Ph. D., Thorsen Professor of Psychology, Department of Psychology, Lund University, 22100, Sweden, etzel.cardena@psy.lu.se
2 Chris Roe, Ph. D., was Action Editor for this paper.

- "The Disembodied Spirit," at the Austin Museum of Art (Ferris et al., 2003).
- "The Perfect Medium: Photography and the Occult," at the Metropolitan Museum of Art (Chéroux, et al., 2004**)**.
- "The Message: *Kunst und Okkultismus,"*at the Kunstmuseum Bochum, in Köln (Dichter et al., 2007; for a review see Cardeña, 2012).
- "Susan Hiller," a major retrospective of her work at the Tate Britain, 2011 (see Iribas, 2020).
- "*L'Europe des Esprits ou la fascination de l'occulte. 1750-1950*" at the Museum of Modern and Contemporary Art in Strasbourg (Pijaudier-Cabot & Fauchereau, 2011).
- "*Schwarze Romantik: Von Goya bis Max Ernst,"* at the Städel Museum in Frankfurt am Main, 2013, and the Musee d'Orsay (Krämer, 2012).
- *"Cosa Mentale,"* at the Pompidou-Metz, 2016, probably the most focused exhibit on psi and art (Rousseau, 2015).

Furthermore, the recently rediscovered mediumistic work of the extraordinary Swedish painter Hilma af Klint (Fant, 1989; Henderson, 2019) has toured major venues throughout the world. Her work and that of other mediumistic artists preceding and following her (Althaus et al., 2018) are rewriting the history of Western art. There have also been smaller relevant exhibits in France (Evrard & Méheust, 2012), Japan (Safarova et al., 2012), Spain, 2019 (https://www.esbaluard.org/exposicion/alma-mediums-visionarias/), Sweden (Lundskonsthall, 2013), and the USA, 2005 (https://cadvc.umbc.edu/blur-of-the-otherworldly-contemporary-art-technology-and-the-paranormal/). A common, and unfortunate, characteristic of many of these exhibits, though, is that they have rarely differentiated between Occultism/esoterism and psi.

To help carify this issue, I will distinguish the domain of psi research from the only partly overlapping area of Occultism, with which it has been conflated in art history. Parapsychology/psychical research are sometimes used interchangeably, but a finer distinction is that *psychical research* was the initial term and sometimes is used to differentiate the scientific naturalistic study of psi phenomena, for instance in Spiritualist séances, from *parapsychology*, or the experimental study in a laboratory of such phenomena. What both types of investigation share in common is a commitment to the scientific method. Particularly at its inception, psi research adopted adopted the scientific method as described by Riskin (2020. P. 48) more generally: "an integral approach to understanding the natural world." From this perspective, ostensible psi phenomena were evaluated where and as they occurred naturally, be it in a mediumistic séance or spontaneous experiences of, for instance, a vision of someone who was unexpectedly dying far away.

Psychical research was institutionalized in 1882 through the foundation by eminent scientists and philosophers of the (British) Society for Psychical Research, whose goal was "to examine without prejudice or prepossession and in a scientific spirit those faculties of [hu]man, real or supposed, which appear to be inexplicable on any generally recognised hypothesis" (https://www.spr.ac.uk/publicationsrecordings/journal-society-psychical-research). Other aspects of science were present then as today and in-

clude the testing of alternative explanations or hypotheses, thorough and open communication of the procedure employed and the results, and an ongoing dialogue with scientists from different persuasions.

And what are psi phenomena? They comprise ostensible accurate information or influence from spatially or temporally distant events not mediated through the senses or reason (also known as anomalous cognition or ESP, including so-called telepathy, clairvoyance, precognition, and retrocognition). An example of ostensible ESP would be to think of a person from the past one had not thought of in years the same day that that person sends one an unexpected email. Another area of study is the study of ostensible direct mental effect on microscopic or large objects (i.e., anomalous perturbation or force, psychokinesis, PK, or telekinesis), as in a clock suddenly and without reason ceasing to work at the time that his/her owner dies. The final main area of study includes research on the possibility of human survival, as when a person (e.g., a medium) reveals precise information about a deceased individual that is nor probable or discernible from the behavior of the client (for a review of the concept and research on all these areas see Cardeña et al., 2015).

Beliefs in the reality of psi phenomena in general or as the result of the development of a higher consciousness level are not infrequent in Occult schools such as Theosophy and Anthroposophy, but there also fundamental distinctions between them and psi research. An essential one is that parapsychology does not take psi phenomena as a given but evaluates them scientifically. Other distinctions are that schools of Occultism may follow reputed secret traditions and texts, use magical incantations and formulas, adopt specific symbols as in the Tarot cards, or follow esoteric rituals (see, Lingan, 2014, for a description of various tenets of Occultism; see also Cardeña, 2019a). Thus tarot, kabbalah, magic, or religious or spiritual beliefs and practices should not be confused with psi research.

The warm embrace by art of the "unseen" (including ostensible psi phenomena) was multidetermined. One source, particularly since the end of the 19th century (although with predecessors such as Goya, see Hoffman, 2010; Krämer, 2012; Sueur-Hermel, 2016) was the goal to express subjective experiences through painting and sculpture, sometimes questioning any strong demarcation between the inner and the outer, the objective and the subjective. Furthermore, some artists read about recent scientific discoveries and ideas, some of which supported their own ideas and ostensible psi experiences. An example is the Abstract painter and writer Kandinsky, who kept himself well informed of psychical research. In an edition of his very influential book *The Spiritual in Art* (1911/1979), he evidenced in footnote 7 familiarity with the work of at least 5 psychical researchers (Crookes, Flammarion, Lombroso, Richet, and Zöllner; see also Méheust, 1999, who describes the influence of psychical research in the work of Kandinsky). Noakes (2019) and other contemporary historians of science have pointed out that very important investigators at the end of the 19th century integrated modern scientific findings and theories with such research, challenging the notion that science is antithetical to psi research (and some ideas also held by occultists).[3]

Another reason for the interest of artists in depicting subjective experiences was that some of them had unusual experiences that were not being recognized in polite company then (or, to an ex-

3 For a list of Nobel prizewinners and other eminent scientists and creators with a serious interest in psi see Cardeña, 2015; for a list of 100 academics, some of first rank universities, calling for an open inquiry of psi phenomena, see Cardeña, 2014.

tent, now, see Cardeña et al., 2017). This is expectable since artists tend to experience "thinner" mental boundaries between them and the "outside" world than average (Hartmann et al., 2001), blurring distinctions between "inner" and "outer" experiences, and have uncommon perceptual experiences and beliefs (Holt, 2019). That the latter are not only "subjective" is suggested by controlled psi experiments, in which artists tend to perform significantly better than chance (e.g., having a 50% hit rate when 25% would be expected by chance, Schlitz & Honorton, 1992) and better than individuals who are not artists or do not follow mental disciplines such as meditation (Baptista et al., 2015). Consistent with this research, a high proportion of individuals who have shown consistent good performance in controlled psi studies have been artists, for instance the medium Mrs. Leonard and the remote viewer Ingo Swann (see Cardeña et al., 2012). Some current psi researcher have adopted artistic activity as a criterion to select individuals more likely to perform well in a psi experiment (e.g., Watt et al., 2020).

After publishing, with two colleagues, a paper reviewing some of the experimental and anecdotal literature tying psi and the visual arts and literature (Cardeña et al., 2012), I continued to study the topic and found that it deserved a lengthier treatment. This paper, the first in a series of two, focuses on art and psi. The second will turn its gaze to alterations of consciousness and psi. The distinction is partly arbitrary because there are some manifestations, such as *The Dream Seminar* by Susan Hiller (1973; see Iribas, 2020), that overlap art, other states of consciousness, and ostensible psi. And, depending on how one interprets the source of channeled or mediumistic art, it is the manifestation of idiosyncratic personal and cultural processes, telepathic communication with living, spiritual or deceased entities, or a mixture of some or all of these processes. For clarity's sake and since I do not think that it will be contested that mediumistic art involves an alteration of the ordinary state of consciousness, I will mostly discuss it in the second of these papers.

The Dissolution of Matter and the Subjective/Objective Distinction

Making a blunt discrimination in the history of Western Art, at the end of the 19th century there was a swerve from trying to depict the "natural" world (e.g., objects, landscape, or people) from consensually perceived reality (i. e., representational or figurative art) to increasingly focus on the "inner" or subjective experience of the artist. Initial movements such as Romanticism and Symbolism sought to portray inner moods and other states, although still leaning on naturalistic images and conventions (e.g., Krämer, 2012). Later, non-representational art more clearly divorced itself from such imagery. As Rousseau (2015, p. 78) writes, quoting the Symbolist writer Kahn, some of the art of that time attempted to "objectify the subjective," to depict not only what is seen, but what is being felt and intuited.

This change had many variations, including the emotionally intense chromatic expressionism of Kokoschka's oils, the transformation of matter into energy and vice versa in works by the Futurist Buccioni (Henderson, 2002; Rousseau, 2015), and the ominous representations of a purported vibratory protoplasm in the work of Munch and Strindberg (the latter an important painter besides a trailblazing writer) (Brain, 2010). The pull away from a sharp distinction between the subjective and the objective had diverse causes. One of them was the idea that "subjective" experiences have universal configurations, as proposed by the Theosophists Annie Besant and Charles W. Leadbeater in their influential book *Thought-Forms* (1901). They stated that they had clairvoyantly found out that thoughts, emotions,

and aesthetic experiences had specific forms, colors, and dynamics. Their idea would impact the ideas and works of various Abstract Art painters including Kandinsky, Mondrian, and Kupka (Anderson, 2011; Ringbom, 1986; Rousseau, 2015). Theosophy and later Anthroposophy were also very important influences in the work of an Abstract painter who has been arguably advanced as a pioneer of Modernist Abstraction, Hilma af Klint (see Tallman, 2019). And the Abstract mediumistic art of of Georgiana Houghton, full of translucent, colorful swirls and unusual geometrisma preceded that of af Klint for decades (Althaus et al., 2018). Houghton, by the way, was also the author of a book on purported spirit photographs (Houghton, 1882).

The general idea by Besant and Leadbeater that certain emotions, thoughts, or other subjective experiences have a universal representation in form and color is not farfetched, if we restrict it to how humans establish intermodal matching. Even though synesthetic matching of the senses is idiosyncratic rather than universal, there are some regularities. For instance, psychologist Köhler (1929) tested what is now known as the "bouba/kiki" effect, in which, from infancy, some qualities are cross-culturally associated with certain shapes. This is an instance of more general inborn tendencies to match different sensory stimulation, such as high pitch with brightness (Marks, 2000).

Unification of the subjective and objective was also present among some Zürich Dadaists, as in this quotation by Hans Arp, who advocated for: "the Absolute, for the unpartedness of nature and spirit, object and subject" (in Wynands, 2001, p. 82). The Dadaists' serious regard of chance events as triggers for art was also indicative of a presumption of a general hidden order in the universe for both "objective" and "subjective" events, anticipating surrealism's own take on the issue. In a less synesthetic way than that offered by the Abstract artists, the Surrealists sought to reveal directly the unconscious psyche of the artist by such techniques as depicting automatic messages, images from dreams, and so on. Correspondences between mental and material "stuff" would follow what Charles Duits, a writer friendly with the Surrealists, wrote about psi phenomena, namely that they are incompatible with a dualist mind/matter conception of the universe but are "possible and plausible if a porous and diaphanous partition separates the 'objective' from the 'subjective'" (Duits, 1974, in Duplessis, 2002; my translation).

Photography, already from the end of the 19th century was employed not only to provide dubious evidence of the Spiritual world in manipulated photographies, but also, conversely, to assist psychical researchers documenting mediumistic levitations and ectoplasm. Photography would also be employed by Baraduc, Darget, and others to offer what they considered concrete manifestations of such matters as the soul leaving the body, or subjective experiences such as nightmares, thoughts, or emotions, initiating what would later be known as *thoughtography* (Oursler, 2019; Rousseau, 2015).

The concretization of the subjective was also advanced by scientific inventions producing graphic displays of brain/mental events. The first important brain imaging technique was the electroencephalogram (EEG), initially devised by Berger to measure psi phenomena, after his sister sensed that he was in danger at the time he had a riding accident in a distant place (Berger, 1940; for other proposals to visualize thoughts see Rousseau, 2015). Enns (2013) discusses the interconnections between photography, brain waves, psi phenomena, and Abstract art at their inception.

The reality of the unseen was also manifested through technological inventions showing that only a very small segment of the electromagnetic spectrum is perceivable, whereas other bands were re-

sponsible for radio wireless transmission or for deadly radiations. And the work of some psi researchers, for instance the physicist and psi researcher Crookes, was fundamental to the development of wireless communication (Noakes, 2019). Thus, artists could read in texts in physics, psychical research, some esoteric traditions, and mesmerism/animal magnetism that they might be affected by unseen influences and might be able to affect others at a distance (Rousseau, 2015). From some of these texts, they could also deduce that their thoughts and emotions could affect others at a distance. This was given a precise rendition in the 1924 embroidery by the *Brut* artist (she was confined in an insane asylum) Jeanne Natalie Wintsch's *Je suis radio* (I am radio) (Fig, 1, see also Althaus et al., p. 16). Similarly, the metaphorical marriage of new technology and psi is present in the title of the book *Mental Radio* (Sinclair, 1930, with a preface by Einstein) on the telepathic experiments, using often drawings as stimuli, of the writer Upton Sinclair and his wife, Mary Craig Kimbrough. Attempts to use technology to "mind read" or, more modestly, achieve "noun identification" through the evaluation of brain activity, continue to our days (e.g., Mitchell et al., 2008).

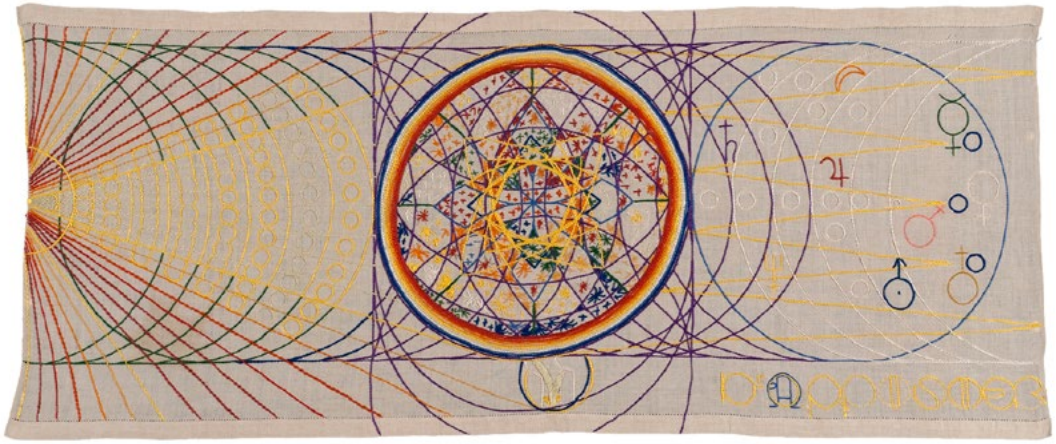

Fig. 1. Jeanne Natalie Wintsch's embroidery *Je suis radio*. © Canton Zurich.

The interpenetration of scientific discoveries and interest in psi phenomena and their potential implications was present in the writings and work of foundational artists at the turn of the 20th century (Bauduin, 2012; Henderson, 2014). One reason is that psi phenomena seemed to challenge a sharp distinction between mind and matter. Anomalous cognition suggested that mental events can be influenced by information about "objective" events that are distant in space (telepathy, clairvoyance) or time (precognition); whereas psychokinesis suggested that intentions can have a direct effect on matter (for a recent study on this proposal see Radin, Michel, & Delorme, 2016). One of the founders of Futurism, Marinetti, conceived of a human machine to create the ectoplasmic manifestations of séances and externalize human Will (in Brain, 2013, p. 136). And scientists (and some artists and occultists) proposed that the all-pervading substance of ether and an unseen spatial dimension explained how this all happened...

Things Are not as They Seem: The Ethereal Reality

Parallel to the concretization of the subjective was the dissolution of matter. Idealist philosophies have always proposed that the ultimate stuff of the universe is subjective, but at the turn of the 19th cen-

tury some scientific findings and theories reinforced the idea that the substrate of reality was not matter in the sense considered until then. As the influential astronomist Camille Flammarion wrote in 1907 during a discussion of his psychical research, matter is not "what it appears to be to our vulgar senses... [but] a manifestation of the movement of invisible and imponderable elements" (p. 23). Similarly, some Romantic and Symbolist artists at the end of the 19th and beginning of the 20th centuries posited a hidden order of reality (Henderson, 1986; Krämer, 2012), an idea that also influenced other artistic disciplines such as dramatic texts and performances by Theosophist and other groups (Lingan, 2014).

Flammarion was following the implications of recent discoveries and inventions that showed the limitations of the senses and the existence of vast unseen influences, among them: electromagnetic waves (by Hertz), radio transmission (by Marconi), radiotelegraphy (by various, including Thomas Alva Edison), X-rays (by Röntgen), and radiation (Becquerel, Marie and Pierre Curie). Incidentally, of these seven figures, mentioned in a paper by Henderson (2014), only Röntgen and Becquerel do not seem to have had any known interest in psi.

The Ether

Parallel to these discussions and discoveries mentioned was the idea that a substance, the (luminiferous) ether, originally proposed by Newton, permeated the whole universe and was present in space and throughout matter; it was the conduit through which light and unseen waves or vibrations, as well as telepathic communications, were transmitted according to some scientists at the time (Noakes, 2019; Rousseau, 2015). Similarly, the founder of Anthropophy, Rudolf Steiner (1971), had proposed an "etheric" level of reality. Ether was seen by some not only as an all-pervading substance but also as representing the hidden interconnected nature of the universe (Henderson, 2014).

One of the foremost historians of the links between science, Occultism, and art at the turn of last century, Linda Dalrymple Henderson (e.g., 2002, 2014), considers the ideas of ether and of the fourth dimension intellectual foundations for various artistic movements of the time, including Abstract Art, Cubism, and Futurism. She mentions distinguished scientists who supported the notion of ether, including Nobel prizewinner physicist J. J. Thomson, William Crookes, Oliver Lodge, and Balfour Stewart, all of them seriously interested in psi research, and with some having presided over the Society for Psychical Research (https://www.spr.ac.uk/about/past-presidents). Lodge, among others, specifically connected the notion of the ether to psychic functioning (see Noakes, 2019).

Ether was inspirational to modern artists from different movements. For instance, Composition VI by the Abstract artist Kandinsky was designed not only to portray unseen energies, but also to directly affect the consciousness of the spectator via transmission through the ether (Henderson, 2014, p. 236). More recently, the ether has been the *raison d'être* for exhibits in the Centre Pompidou in 2011 (https://www.estherschipper.com/exhibitions/203-ther.-from-cosmology-to-consciousness-christoph-keller/) and the center of contemporary art La Panacée in 2014 (https://www.montpellier.fr/4173-2014-a-la-panacee.htm).

The theory of a substance such as ether or of ethereal layers is no longer held by contemporary physicists because it was not supported by the Michelson-Morley experiments on the speed of the

transmission of light or Einstein's theory of relativity (see Navarro, 2018). Nonetheless, proposals of a hidden underlying interconnectedness of everything in the universe are current as potential implications of quantum mechanics (QM). The important QM theoretician David Bohm wrote that the world of experienceable time and space occurs in the explicate order of the universe, but underlying it there is an implicate order or guiding field that is non-local and non-temporal, and which might explain psi phenomena (Bohm, 1986). Another distinguished theoretical physicist, Bernard d'Espagnat (1979, 2006), concluded that, consistent with the ideas of transcendentalists thinkers, there is a "veiled reality" that pervades the universe and interacts with consciousness (for more examples of physicists supporting the possibility of psi phenomena and a brief discussion of these ideas in the context of consciousness and psi research see Cardeña, 2018). And, as a piece of the Standar Model of physics, the Higgs energy field (not a substance) has been proposed to exist throughout the universe and endow particles with mass (https://profmattstrassler.com/articles-and-posts/particle-physics-basics/how-the-higgs-field-works-with-math/). More generally, while discussing the implications of Quantum Mechanics, the Nobel laureate Max Delbrück (1986) concluded that: "Modern science . . . has forced us to abandon absolute space and time, determinism, and the absolute object" (p. 279). Thus, the proposal of an interconnected universe remains in contention, even though the notion of an ethereal substance has been abandoned.

The Fourth Dimension

Henderson describes another imperceptible "meta-reality" (2014, p. 235), a fourth dimension of space, underlying our ordinary three spatial dimensions. In it, events that might seem mysterious for our senses are fully manifested. This idea is consistent with an invisible order of the universe and for some, such as Steiner (1971), whose writings influenced various artists, it could explain the apparent violations of time and space in psi phenomena. Those able to sense that dimension would make sense of phenomena opaque to our ordinary senses. The astronomer and psychical researcher Zöllern also proposed that a fourth dimension could explain genuine psi manifestations during séances (Valente, 2008).

The notion of the fourth dimension was held by scientists and esoteric authors and inspired the work of various artists. For instance, the Suprematist painter Malevich used some of his paintings to represent multiple, overlapping planes, as well as a sense of infinity or vastness (or the corresponding Void) presumed to reside in such dimension (Henderson, 2015; Levy, 2011). Hilma af Klint experimented with unfolding geometric representations, for instance in a painting of a multi-dimensional crucifixion (Henderson, 2019). The geometric fourth dimension was also an inspiration to other artistic movements including Futurism and Cubism (Bauduin, 2012; Henderson, 2014), and the work of the Surrealists Matta and Onslow-Ford (Henderson, 1986).

Etheric vibration and hypergeometry were integrated by scientists and artists alike. An example of the former is the assertion by the physicists Stewart & Tait (1876, in Henderson, 2002, pp. 130-131) that the changes in the visible universe were transferred through the ether and stored in the Unseen fourth dimension. The pioneer of abstract paiting František Kupka integrated his readings in science and theosophy (and perhaps his own mediumistic early experiences) to champion an art that would reveal the underlying reality behind the physical world (Hatch, 2013). And in his *The Yellow Sound* performance piece (circa 1914), Kandinsky proposed that rhythm, color, and movement would communicate a vibra-

tion through "Hertzian waves translated into telepathy or emanations... [into] a hyperspace in which the dissipated material energy could be ... elevated to the level of spiritual energy (Vanden Heuvel, 2013, p. 206).

More recently, geometric hyperdimensionality has been discussed not only with respect to string theory (which describes that the properties of strings depend on vibrations, by the way) but to explain psi phenomena. The most developed model is by Professor of Mathematics and Astronomy Bernard Carr (2015), who posits that additional dimensions can explain why events that are temporally or spatially distant in our ordinary experience (i. e., psi phenomena) may be contiguous in additional dimensions and influence each other.

Art and Psi Phenomena

Examples of Ostensible Psi Phenomena Reported by Artists

A previous paper (Cardeña et al., 2012) gave some examples of what seem to be uncanny anticipations of unpredictable events among artists. They include the surrealist painter Victor Brauner's self-portrait showing him with an ennucleated eye, anticipating by many years a weird accident in which he would lose that eye. De Chirico's portrait of Apollinaire, with a drawn line on the head, where he would be shot later, has also been considered premonitory, (https://www.theguardian.com/culture/2003/oct/25/art). We also discussed a play by the writer-artist-musician García Lorca that seemed to anticipate his own execution to the date of dating his piece (similar to the report by a medical student writing a note anticipating the death of his future wife, Duplessis, 2002). And the entheogenic artist Alex Grey concluded that his 1989 painting *Gaia* had been influenced by the later 9/11 attack (Grey, 2007).

Hilma af Klint was described by her nephew Erik as having "second sight" since she was a child when she had a vision of two coffins with the years in which she in the future came close to dying, besides other examples of ostensible synchronicity and precognition (Fant, 1989, pp. 16, 199). A strong influence on Klint was Steiner, who claimed that he could sense at a distance when an aunt committed suicide and continued to have contact with her afterwards (http://www.rudolf-steiner-handbuch.de/images/Handbook.pdf, p. 17).

Kupka worked in his youth as a medium. And the Futurist painter and sculptor Boccioni claimed that artists could develop psychic abilities: "Who can still believe in the opacity of bodies, since our sharpened and multiplied sensitiveness has already penetrated the obscure manifestations of mediumistic phenomena? Why should we forget in our creations the doubled power of our sight, capable of giving results analogous to the X-rays?" (1973, p. 28, in Henderson, 2002).

Individual Psi Art

As mentioned earlier, Kandinsky thought that he could directly affect the consciousness of the spectator through his work, but other artists have gone further and asserted that their artistic vision can be transmitted psychically. These ideas go back to the concretization of thought and its transmission through electromagnetic waves (Daniels, 2002; Henderson, 2002; Rousseau, 2015). Kupka declared that "The artist could then make visible for the beholder the film of his rich, subjective inner world, making

unnecessary the current labor of producing a painting or a sculpture" (in Daniels, 2002, p. 117, translation by Ana Iribas). The performance artist Marina Abramović stated that in the future the artist will be able to transmit an image directly (in Phipps, 1981, p. 50). And in *Ideal Work* (1969-1970), Susan Hiller wrote that "The most interesting and possibly the most adventurous form of art is direct mind-to-mind transmission of images and ideas... (Hiller, 1988, p. 76).

In Conceptual Art, the desire for an objectless art was matched to psi-mediated art. In his reflections, the pioneer of systems art Jack Burnham (1970) stated that by not including sensory information, telepathy was the ideal conceptual art. In his *Psychic Series*, Robert Barry created various pieces along these lines. In his *Project Class* (1969), he tasked art students to agree on an idea that would remain a secret and would cease to have value once it was discovered or revealed by someone. And in his famous *Telepathic Piece*, also of 1969, he sought "to communicate telepathically a work of art, the nature of which is a series of thoughts that are not applicable to language or image"; at the end of the exhibition the work of art was revealed in the catalogue (Lippard, 1973, p. 98). Fluxus artist Robert Filliou took a more whimsical approach to psi in his *Extrasensory Misperception* and *Telepathic Music* set of works, one of which is owned by the Centre Pompidou (Rousseau, 2015, who has other examples of purported telepathic art).

Mention should also be made of Karen Russo's 2010 work *Meditations on a Triangle*, in which she asked a remote viewer/clairvoyant to describe Kandinsky's 1927 *Variegations in the Triangle*, and then had three artists create works based on the viewer's description (the video of the remote viewing and descriptions of the artists' work are at https://vimeo.com/27655932). At times, art exhibits have taken the role of psi laboratories. In the curator and artist Christoph Keller's exhibit, *Grey Magic* (2015), participants were asked to take part in a telepathy experiment (https://www.estherschipper.com/exhibitions/74-grey-magic-christoph-keller/), and *La Cosa Mentale* exhibit included a room at the end of the exhibit dedicated to testing telepathy (Rousseau, 2015).

Collective Psi Art

A whole artistic movement, Surrealism, took psi phenomena very seriously, sought to elicit them in various ways, and even planned to carry out systematic research on the further reaches of the mind (Bauduin, 2020; Duplessis, 2002; Evrard & Méheust, 2012). André Breton, the erstwhile Dadaist, became the figurehead of the Surrealist movement. Much has been made of the influence of Freud's notion of the unconscious and dreams on the surrealists, which Breton underlined in *Le Manifeste du Surréalisme* (1924), but in that same document Breton also wrote that the mind conceals strange forces. After mentioning the Freudian unconscious he remarked later that he was also very aware of the even more exciting world of the *subliminal self* addumbrated by F. W. H. Myers and William James (Breton, 1933). For Breton, the unconscious mind was not only the depository of instinctual urges and personal histories à-la Freud, but it also gave access to creativity and psi phenomena such as telepathy and precognition, as Myers (1903) maintained (for a contemporary discussion of the relevance of Myers's work to contemporary research in various areas of psychology and psi see Kelly et al., 2007). Thus for Breton and some in his group, the goal of Surrealism went beyond the typical interpretation of being a program to achieve the "synthesis of the human dream and material reality" (Balakian, 1986, p. 138). Breton's fascination with psi phenomena is evident in his book *Nadja* (Breton, 1928/1964), in which he recounts

his encounters with the eponymous character (the former Charcot patient Léona Delcourt), whose ostensible telepathic and precognitive gifts had a greater appeal to Breton than Nadja as a person. Breton and his group took part in a reading by a psychic at the French psychical research association (*Institut Métapsychique International* or IMI) that could be interpreted as relating to Nadja and he and his entourage became so unruly that the police had to be summoned (Evrard, 2017). Breton kept himself abreast of the research on metapsychics (the French term for what is known in English as psychical research/parapsychology), while metapsychics researchers were very aware of surrealist activities. Some examples of these various interconnections include the IMI dedicating a special number of their journal Revue Métapsychique to discussing Art and the Occult with a paper by Bruno on Breton (1954). Breton, in turn, published a paper (1955) referring to Bruno´s article in a parapsychology journal (Duplessis, 2002).

The program of the surrealists included ways to alter consciousness and have access to this reservoir of latent psi capacities (see the second paper in this series). They first experimented with a type of sleep/mediumistic sessions (described by Breton, 1922 in *Entrée des Médiums*). This was followed by a more sustained practice in automatic writing and drawing, focus on dreams, and various surrealist "games," which might give an inkling of telepathic type bonds and a hidden order to reality. To describe briefly the most famous one, the chain activity "exquisite corpse," so titled after the outcome of one game, was carried out by having one person write a word (for instance a noun), and have another continue (for instance by adding an adjective) without him/her being able to see the initial text; a similar procedure entailed creating a communal drawing using folded paper in which only a very small section of the previous drawing could be seen and had to be continued by somebody else (Brotchie, 1991). Some of the drawings and texts seemed to indicate striking continuities but it is fair to point out that it is likely that unsuccessful attempts were not generally paid attention to. This directed use of "chance" could be interpreted as a type of group mind (Duplessis, 2002), or might be thought of as a synchronicity ("a *meaningful coincidence* of two or more events"; Jung 1951/1957, p. 201). An example of their co-creation is the book *Les Champs Magnétiques* by Breton and Soupault (1920).

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The surrealists engaged in various activities, some potentially psi-related, within a communal context in which connections across people could be established. The idea of transient communities of shared psi mentality has been described within the therapeutic setting (e.g., Cardeña, 2019b; De Peyer, 2016), whose emotional context would be closer to that of a community of artists (or of other intense emotional connections) than the emotionally cold setting of most controlled experiments. The creation of a "psychic community" was a goal in Susan Hiller's *Draw Together* (1972) and *The Dream Seminar* (1973) created communal waking and putative dreaming psi events (see Iribas, 2020, for a thorough discussion of these and other relevant works of Hiller). Another important connection between art and psi is the work of performance artist Marina Abramović. In an interview she declared that one can learn to master telepathy in four years (in Rousseau, 2015, p. 269), and declared a direct communication with

her late artistic and romantic partner Ulay. The also decades-long artistic collaborators Gilbert & George declared in a 1997 interview that their joint work was "partly telepathic" (in Rousseau, 2015, p. 245).

The notion that individuals are always open to the influence of others is consistent with the anthropological concept of porous "dividuals" who are affected and defined partly by their interactions with others, rather than being isolated, impermeable beings (e.g., Cardeña & Schaffler, 2018; Smith, 2012). This general concept is also consistent with psi research, suggesting that whether they are aware of it or not, people may be affected by others' intentions, gazes, and so on (Cardeña, 2018). This proposed openness or interdependence may go beyond specific human beings, as seen in the research on psi with non-human animals (Sheldrake, 2015), with whole communities in the Global Consciousness Project (Nelson, 2015), and with the effect of changes in solar activity on performance in psi experiments (Ryan, 2015). Fabrice Hyber has given expression to these interactions in a painting of a brain surrounded by a vast, open field (in Rousseau, 2015, p. 279).

Psi Phenomena and Research as a Cultural Artifact

A different approach has been to use or create psi phenomena, images, and films, found or created as the topic of art. The exhibit on purported spirits, auras, and séance photography *The Perfect Medium* (Chéroux et al., 2004) discussed it as a mostly historical, cultural artifact. Most if not all spirit photographies were created through double exposures and other trick photography techniques. Nonetheless, the catalogue included contributions on Ted Serios's "thoughtography" (Braude, 2004) and the Kluski hand casts (Schmidt, 2004), which have been more resistant to conventional explanations.

In two of her works, *Wild Talents* (1979) and *Psi Girls* (1999), Susan Hiller edited fragments of mostly commercial films showing young people manifesting psi phenomena (Iribas, 2020). The multi-award winner Susan McWilliams has based much of her art on photos and other paraphernalia related to psychical research (e.g., séances) and parapsychology (e.g., remote viewing) (https://www.susanmacwilliam.com/work). And Zoe Beloff, whose work has been exhibited at the Museum of Modern Art and the Whitney Museum, created the installation *The Ideoplastic Materializations of Eva C.* (2004), based on historical mediumistic séances (http://www.zoebeloff.com/pages/installations.html), and directed films on a medium and on Edison's attempt to create a machine to talk to the deceased (http://www.zoebeloff.com/pages/film.html).

The broader concept of the paranormal (which includes psi phenomena but also much more), technology, and art was explored in an exhibit in 2005 (https://cadvc.umbc.edu/blur-of-the-otherworldly-contemporary-art-technology-and-the-paranormal/), which brought attention to the ethereality and dividuality of technological life. The webpage for the exhibit, though, regrettably shows a common bias, mentioning that it is about "culturally inbred questions/superstitions." In the online material to students, the only contributor who expressed knowledge of psi research was the eminent writer and mythologist Marina Warner (https://cadvc.umbc.edu/files/2014/10/CADVC_Blur_Curriculum.pdf).

And in between art, spiritualism, and ethnography is the haunting work of the celebrated photographer Shannon Taggart (Taggart, 2019), with techniques such as long exposure times to illustrate the mysteries and uncertainties she found while immersing herself in Spiritualist communities. Inciden-

tally, her interest was triggered by the mediumistic reading of a cousin who got very precise information about the death of a grandfather, which even the cousin did not know at the time.

Conclusion

Psi theory, research, and imagery have had considerable impact on the development of non-representational art, independently of occult themes. Theories of ether, hypergeometry, interconnectedness, the nature of the (in)dividual author, imagery from actual psi research, and speculations about the full extent of human abilities have all nurtured artistic creation. One of the common complaints about psi research is that even if the phenomena are valid, they offer little of practical use given their typical small effects and apparent lack of reliability and controllability in controlled experiments (Rousseau, 2015, p. 278, even concludes, incorrectly, that psi cannot be verified; see Cardeña, 2018). There are different responses to this objection. One is that spontanous manifestations in everyday life, as in some of the accounts of artists, can be far more precise and life-transforming than what is typically obtained in the sterile and unimportant context of an experimental setting. Another is that even the small and erratic effects obtained in experimental protocols may be used to obtain financial gain (e.g., Carson et al, 2014). Psi research has advanced scientific methodological and statististical developments such as randomization and meta-analysis, which have later percolated into science at large (Hövelmann, 2015), and there was the fruitful exchange between physics theory and research, and the puzzles of psi phenomena during the late 19th and early 20th centuries, which may occur again (Noakes, 2019). In addition, this paper shows that whether as concept, practice, experience, research, or aspiration, psi phenomena and research have inspired artistic creation and innovation for more than a century, and continue to do so.

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Représenter l'*Éthéré*, Partie 1 : Les Arts Visuels et le Psi

Résumé: Le passage de l'art figuratif à la représentation d'expériences internes a incité les artistes à mettre en avant leurs propres expériences anomales et autres phénomènes psi apparents. Diverses études ont décrit comment l'art abstrait était influencé par l'occultisme, mais il y avait d'autres influences importantes. Parmi elles, les théories scientifiques des dimensions éthérées et hypergéométriques, le développement des avancées technologiques montrant la réalité des ondes électromagnétiques invisibles et la communication sans fil à distance, le spiritisme et les débuts de la recherche psychique. Cet article se concentre sur la façon dont les phénomènes psi, ainsi que la recherche et la théorie parapsychologiques, souvent en conjonction avec ces autres influences, ont été un sujet et une source d'inspiration importants dans divers mouvements modernes et contemporains, notamment le surréalisme et l'art abstrait et conceptuel.

Das Ätherisch abbilden, Teil I: Visuelle Kunst und Psi

Zusammenfassung: Die Wende von der gegenständlichen Kunst zur Darstellung innerer Erfahrungen öffnete den Künstlern die Tür zur Darstellung anomaler Erfahrungen und scheinbarer Psi-Phänomene. Verschiedene Studien haben beschrieben, wie die Abstrakte Kunst vom Okkultismus beeinflusst wurde, aber es gab auch andere wichtige Einflüsse. Dazu gehören wissenschaftliche Theorien über den Äther und höherdimensionale Geometrien, technologische Fortschritte, die die Realität unsichtbarer elektromagnetischer Wellen und drahtloser Kommunikation auf Entfernung zeigten, der Spiritualismus und die Anfänge der parapsychologischen Forschung. Dieser Beitrag konzentriert sich darauf, zu zeigen, wie Psi-Phänomene in Forschung und Theorie, oft in Verbindung mit den anderen Einflüssen, zu einem wichtigen Thema und einer Inspirationsquelle für verschiedene moderne und zeitgenössische Bewegungen einschließlich des Surrealismus und der Abstrakten und Konzeptkunst wurden.

Representando lo Etéreo, Parte I: Arte Visual y Psi

Resumen: El giro de arte figurativo a la manifestación de experiencias internas abrió la puerta para que los artistas plasmaran experiencias anómalas y aparentes fenómenos psi. Varios estudios han descrito cómo el ocultismo influyó en el arte abstracto, pero hubieron otras influencias importantes, incluyendo: teorías científicas del éter y las dimensiones hipergeométricas, el desarrollo de avances tecnológicos que mostraron la realidad de las ondas electromagnéticas invisibles y la comunicación inalámbrica a distancia, el espiritismo, y el inicio de la investigación psíquica. Este artículo se centra en cómo los fenómenos psíquicos, junto con su investigación y teoría, a menudo junto con otras influencias, han sido un tema importante y fuente de inspiración para varios movimientos artísticos modernos y contemporáneos, incluyendo al surrealismo y al arte abstracto y conceptual.

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Psi and Science Fiction[1]

Damien Broderick

Psience Fiction focuses on the way in which, for a time—especially in the 1950s—ESP was the hottest trope in the broad fields of science fiction (sf) (Broderick, 2018). What most readers of these thrilling tales in the mid 20th century did not realize was that such uncanny phenomena might, after all, be genuine, unlike Superman's ability to fly or Wonder Woman's to bounce bullets off her bracelets. Yet the capacity of science fiction to render strange mental abilities believable very likely played a significant role in persuading some Enlightenment-trained skeptics to wonder. Might these vividly imagined phenomena possibly be real after all, once the exaggeration due to wishful thinking was peeled away from the fantastic tales? If so, perhaps they were worth investigating with government funding. The answer, it turned out, just like the once-science fictional reality of orbital spacecraft and Moon landings, and nuclear explosives or power reactors, was Yes.

Regarded by many as entirely bogus or the domain of 19th century mediums and swamis and spiritists, such alleged phenomena rose up like a narrative tsunami in the science fiction magazines of the 1940s and 1950s, then diminished from the fiction of strange science without ever going away. The result, in its heyday, was a quite new and startling variety of science fantasy: an imaginative literary exploration (and thematic exploitation) of psi. For example, H. L. Gold, the editor of *Galaxy* magazine, made paranormal-fiction history with two dazzling, baroque, tectonic serials by Alfred Bester: *The Demolished Man* and *The Stars My Destination* (known also as *Tiger! Tiger!,* from the poet William Blake's brightly burning verse). The latter was reviewed by *New World*'s Leslie Flood (1956, p. 156) as "packing into the story practically every device known to 'psience-fiction,' plus a few original twists of his own." I found Flood's coinage so wryly apt that I borrowed it for the title of my book.

Even as the trope lost its first feverish appeal to increasingly jaded fans, certain anomalous abilities were being developed for real under top secret security cover for twenty years in the USA and the Soviet Union. This was the true world of ESP, and in some ways it had been foreseen by some sf writers, while in many other respects there was barely any recognizable affinity. Of course, hardly anybody gave these parapsychologists any credence, except for those in the military (as we know now that the programs have ostensibly been shut down and their documents declassified), and by Japanese companies and Chinese research teams, and probably by other nations as well, and all the hundreds of millions or maybe billions who believed that the paranormal was actually normal and everyday, however spooky it seemed.

The strangest narrative element of all, for a readership largely of engineers and young men, was

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the hunger for transcendence, sometimes fused with what is now called the transhuman or even the posthuman. Mutants with mindboggling psychic powers. Mutants with telepathic tendrils. Levitators, and men and women who could move things by the force of their personality, and people with the rare gift of shifting from our tiresome reality into alternative universes (this before the Many Worlds Theory was on the lips of every cosmologist). It wasn't fantasy, because it had to operate under some kind of lawful constraints. It was the paranormal treated as a kind of science. It was ESP and future-telling and more, and then more again; it surged through the sf world like a contagion, driven in part by *Astounding Science Fiction*'s editor John W. Campbell Jr.'s urging and endless teasing editorials, and then by those other editors working adjacent streets of the scientific imagination.

Despite Campbell's crucial role in spurring his contributors' interest in psi phenomena, it is important to understand that earlier writers had already been influenced by the possibilities of unusual mental abilities. One of the greatest prognosticators and explorers in early sf, before it was widely known as such (let alone as "sci-fi"), was the British philosopher and Marxist Olaf Stapledon. His magisterial novels, most notably *Last and First Men* (1930), *Odd John* (1935) and *Starmaker* (1937), invoke telepathy as an evolutionary advance to be expected already and, more elaborately, in the deep future. Consider the following account of the mind sciences of artificial human beings and Martians in *Last and First Men*:

> The culture of the Fifth Men was influenced in many respects by their "telepathic" communication with one another. The obvious advantages of this capacity were now secured without its dangers. Each individual could isolate himself at will from the radiation of his fellows, either wholly or in respect of particular elements of his mental process; and thus he was in no danger of losing his individuality. But, on the other hand, he was immeasurably more able to participate in the experience of others than were beings for whom the only possible communication was symbolic. The result was that, though conflict of wills was still possible, it was far more easily resolved by mutual understanding than had ever been the case in earlier species. Thus there were no lasting and no radical conflicts, either of thought or desire. It was universally recognized that every discrepancy of opinion and of aim could be abolished by telepathic discussion. Sometimes the process would be easy and rapid; sometimes it could not be achieved without a patient and detailed "laying of mind to mind," so as to bring to light the point where the difference originated (Stapledon, 1966, p. 228).

And so on, for a number of pages. This kind of indigestible "expository lump" was already superannuated when these novels appeared in the 1930s, increasingly replaced by energetic if not always nuanced dramatization. Indeed, it is often said that Campbell's ascension to the editorship of *Astounding* is just what forced a paradigm change in the way sf was conceived and written. Of course other editors were not without skill, and by the end of the 1950s would create in their own magazines a kind of aesthetic advance that simply did not interest Campbell even when some of his favored writers (Theodore Sturgeon, husband-and-wife team Henry Kuttner and Catherine Moore, a few others) proved just as capable. It is not that he went out of his way to purchase crudely composed fiction, or to reject poetic or character-sensitive work if it came his way. Rather, his goal was ideational and increasingly quirky, with a marked taste for engineering-based ingenuity powering a ripping yarn.

Behind, or alongside, this pragmatics of publishing a magazine devoted to wholly imaginary lives and worlds, Campbell grew increasingly devoted to the study of psi phenomena. At the start of the 1950s he was intensely involved with L. Ron Hubbard's Dianetics, but within a few years his ardor cooled, and his concerns began to center on psi. He was not much interested in the tedious card-guessing experiments of Rhine and his colleagues, nor their attempts to control the fall of tossed dice. Campbell was after something closer to the practical: what he came to call *psionics*. He hoped to chase down the working principles of those anomalies pursued by Charles Fort (1874-1932), whose books dealt with reports of fish falling from the sky, strange figures menacing the quotidian or ignoring it, lights in the heavens that would later be dubbed UFOs, poltergeists, apports, teleportation, and telepathy. These books had resonant titles, appealing to the eccentric: *The Book of the Damned, Lo!, Wild Talents*, and *New Lands.* The key notion of Wild Talents, preferably once they were harnessed by scientific method and no longer wild, is what galvanized Campbell's enthusiasm.

With his second wife, Peg, he spent a considerable amount of time and effort in this quest. In a long letter to British sf author and Fortean Eric Frank Russell, dated October 1, 1952, he deplored weaknesses in the approaches of both Hubbard and Fort. "[Fort's] data was valid. It contained important understandings, and important clues. In that, he was right. But why didn't *he* do some of the hard work of integrating it and finding the pattern..." (in Chapdelaine, Chapdelaine, & Hay, 1985, p. 70).

This was not just the irritation of a born editor reading work that trailed off without a denouement. His intention, expressed repeatedly in numerous editorials about psi and stories he drew from his stable of writers, was to get this weirdness under control. He explained to Russell:

> Peg and I have done it. We have the basic understanding of what the psi functions are, and how they work. It took us over two years of damned hard work. The reason why I'm now starting it in the magazine [*Astounding*] is that I do have some integrated understanding of what we're dealing with. I'm not yet ready to say a damned thing about it, either, because I recognize that Fort *was* wrong, and what the right answer is. Until I can demonstrate the phenomena myself, and communicate the exact nature of the mechanisms involved, with demonstrations of each step, I'm not ready to talk. When I've done that, though, by God the physical scientists *will* gladly pitch in and help. I know the general concept of teleportation, levitation, and a few other spontaneous psi phenomena—also telekinesis, etc. In addition, I know the general basic laws which can permit precognition, and an absolute barrier of pure force that will block passage of *any* force now known to physical science (in Chapdelaine et al., 1985, pp. 70-71).

This might seem like the ravings of a psychiatric patient off his medication, but Campbell set Eric Frank Russell's mind at rest:

"I am not kidding.

"I am not cracked either" (in Chapdelaine et al., 1985, p. 71).

Well, but if this were so, why didn't Campbell reveal at least some of this advanced knowledge to the world? (As far as I know, they still remain undisclosed.) Because:

> These forces are real, and I have a theory of their structure. I haven't developed methods of setting up an experiment however, and until I can demonstrate it at an experimental level, it simply doesn't count.... So, the first step toward getting interest in psionics started is to establish *that there is a reward to be earned*.... Reward for considering that psionic forces are real, and actually constitute a level of force below the sub-nucleonic; amusement, plus a hint of satisfying, yet intriguing, possibility (in Chapdelaine et al., 1985, pp. 71-72).

The kinds of rewards Campbell was suggesting were threefold: intellectual fun of the bull session kind; eventual glory and profit from the application of this new psionic framework to technology and science; and most immediately, the reward of having a story incorporating these ideas accepted by *Astounding Science Fiction.* Intriguingly, Campbell actually specified his embrace of psience fiction in a long 1953 letter to J. B. Rhine. First, he reminded Rhine that he had studied at Duke University in Durham, North Carolina and indeed had contributed his guesses to a set of ESP tests run in Rhine's department:

> I attended Duke, quite some years ago; somewhere in your records must be some of the runs on the ESP cards that I made. Later, for some years I lived across the street from the brother of your experiment designer, Dr. Charles Stewart. I had a good many discussions with Charlie about your work (in Chapdelaine et al., 1985, p. 222).

Most of Campbell's letter is a wandering discussion of logic versus empiricism, arguing that Rhine's emphasis on psychology as the prime discipline for studying psi was misplaced. Physics, this former physicist asserted, was the relevant domain. "Physicists in the 25 to 35 year age bracket are looking for new projects to study. They are, probably, most apt to be willing and competent to search out the new basic laws of the Universe which underlie the psi functions. Getting them to do so, however, is something of a trick." (in Chapdelaine et al., 1985, p. 225). Campbell explained candidly to Rhine the approach he'd earlier proposed to Eric Frank Russell:

> The psycho-socio power of fiction as a medium of communication has been somewhat overlooked and underrated, I believe. Jesus used fiction as one of his most powerful teaching tools. I am trying to use fiction to induce competent thinkers to attack just such problems as the psi effects; my magazine is widely read by creative, speculative, physical scientists. The students at major universities read it—and so do their instructors. Currently, I am seeking, through the fiction, to nudge interest in psionic powers as an engineering value... Why engineers in particular? Because they were interested in results, not the approval of those narrow-minded theoreticians...The theoretician feels satisfied when he has proven to his satisfaction that "What you want to be can't be done. I have proven it is impossible."
>
> The horny handed engineer can be a great trial to such a theoretician. He's apt to go out and do that impossible, forcing the unhappy theoretician to revise all his theories.
>
> In our fiction, therefore, our major attack on the Society's block against the psionic functions is at the level of engineering applications of the psi functions — and acknowledging that they work only statistically. The engineer is quite happy with statistical success, because he can simply use a factor of safety (in Chapdelaine et al., 1985, pp. 226-228).

And here was his psience fiction method of reaching and fertilizing the imagination of those practical engineers:

> The Christian doctrine of "By their fruits ye shall know them" is solidly valid. "Make it work!" is the equivalent statement. In fiction, I can make it work. Since human entertainment and relaxation is a very important aspect of living—why, I can make the psionic forces work very nicely, right now, at an engineering level. But there's a sly trick here. If the reader is to enjoy the entertainment of the story, *he must temporarily accept the validity of psionic powers.* Never again can he be *wholly* opposed to the idea, for he has already accepted it in a certain degree. Accepting the idea is already associated with pleasure-satisfaction; that association makes it psychologically difficult for him to reject the idea flatly (in Chapdelaine et al., 1985, p. 229).

Campbell (in Chapdelaine et al., 1985, p. 229) closed with a call for solidarity between the science fiction writers and the parapsychologists: "Give me time, Sir! I'm in your business too!"

What was Rhine's response to this offer of a propaganda wing of the psi explorers and advocates? There is no known record of any reply.

Campbell's lure would be psionics, a merging of paranormal phenomena with mechanisms capable of detecting and perhaps amplifying such effects. But he was at pains to point out that any such an investigation, at that point, was necessarily strictly *unscientific*. (He did not mean *anti*scientific, but rather *pre*scientific.) It lacked theory, and however honest its explorers might be, they could not obtain the kinds of repeatable results available to scientists working in established disciplines. This was a frank and rather disarming admission. He went on:

> But I must state clearly beforehand that the statements made in such articles will be claims of having accomplished things that any intelligent modern man knows are clear, pure nonsense—impossibilities. Precisely; that is the necessary condition for proof of discovery... It is not *demonstration* that is lacking, but *explanation* (in Chapdelaine et al., 1985, p. 158).

So his approach would differ from that of parapsychologists such as Dr. Rhine. As the editor of the leading magazine filled with speculative fiction, written and read for the enjoyment of testing the limits of the known, he was under no obligation to provide a new theory of the universe capable of including the bizarre phenomena of psi. In a subsequent editorial in June 1956, "The Problem of Psionics," he was even more explicit:

> The only sane thing we can do is say, mentally, "O.K.—so we're fumbling amateurs, and we don't know what we're talking about. But if it works, if it is useful to all, in any way, it's a worthwhile gimmick. And if it never does a darned thing of any practical value- fine. I've had fun trying" (Campbell, 1956, p. 5).

He did not really mean that, of course. In January 1959 (six years after his letter to Rhine), Campbell, in another quite serious editorial, "We *Must* Study Psi" (Campbell, 1959), noted the already long history of psi in science fiction:

> During the last four years, I've been investigating psi: I started the investigation largely because it has been a background element in science fiction, almost from the start. Telepathy has been stock business. E.E. Smith's Lensmen series was based primarily on psi—for the Lens itself is, essentially, a psi machine.
>
> With the development of science into engineering proceeding at the pace it has, by 1950 the major developments that science fiction had been forecasting were definitely under engineering—not theoretical—study. It was time for us to move on, if we were to fulfill a function as a frontier literature. To some extent, science fiction moved on into the social sciences—sociology, anthropology and psychology... I was forced back toward psi, even when science fiction started toward the social sciences (Campbell, 1959, pp. 4-5).

In a candid declaration, he wrote: "Since I published the editorial in the February 1956 issue, suggesting running material on psi machines, I have been receiving quantities of information, from hundreds of sources" (Campbell, 1959, p. 5). But aside from this hint to keep publishing fiction and non-fiction on the topic in order to sell more copies, can it really be true that we *must* study psi? This was still the heyday of behaviorism, which had apparently trounced psychologists of the unconscious such as Freud and Jung, certain that minds were simple if enormously elaborate machines. Noam Chomsky's devastating review of B.F. Skinner's magnum opus, demolishing that entire research program in a single blow (or so it seemed), would not appear for another year: "In 1959 Noam Chomsky wrote a scathingly negative review of B. F. Skinner's attempt to account for language in behaviorist terms, and he was successful in convincing the scientific community that adult language use cannot be adequately described in terms of sequences of behaviors or responses" (Hoff, 2005, p. 231).

So it was somewhat scandalous, like a confession of metaphysical conversion, for Campbell to write:

> Psi phenomena exist at the same level that emotion, desire, and want do, as far as I can make out. If that's the case, then in studying the psi phenomena, you're studying the level which men, today, hold to be the ultimate level of privacy—Subjective Reality. An understanding of the laws of this level would make it possible to manipulate desire, change attitudes, control emotions.... I suggest that Subjective Reality bears the same relationship to Objective reality that field-forces do to matter. Field forces are not material; they obey wildly different laws—but they do obey laws. I suggest that Subjective Reality is a true, inherent level of reality in the Universe (Campbell, 1959, pp. 159-160).

If this is the case, perhaps it makes sense that "*we must study* psi, *because it is the only objectively observable set of phenomena stemming from subjective forces*" (Campbell, 1959, p. 161). In later issues, Campbell spent time promoting a mysterious gadget he called the Hieronymus machine, patented by one T. G. Hieronymus, a box containing a prism and amplifier tubes and resistors, and yielding curious subjective tinglings at certain dial settings, mostly idiosyncratic to each user. To the inventor's dismay, Campbell let his ad hoc theorizing lead him to a startling extension: a symbolic version of the machine with no internal parts, just a circuit diagram. Apparently it worked just as well as the original.

Exploration of fascinating ideas and possibilities, formulated as propaganda! Science fiction had

seen this already, to a degree, in Campbell's unfortunate backing for Hubbard's Dianetics, before he lost faith in that alleged "modern science of mental health." His advocacy of psionics was more fruitful and persistent, although it never managed to convince the world that psychic forces were on the verge of being understood and applied.

As we now know, when that did finally happen (for instance in the Star Gate program of operational military remote viewing), the news was heavily classified for nearly two decades at the TOP SECRET level, before finally being released to the public in 1995 when the program was closed by the CIA with a clear and misleading implication that psi did not exist, bad luck, so sad. Close reading of the public dismissal of psi shows that no such implication was justified. In the fourth and final volume of *The Star Gate Archives* (May & Marwaha, 2019, p. 72), the quite limited assessment by the American Institutes for Research, leading to closure, noted that "the laboratory research conducted... has identified a statistically significant 'anomaly'." Yet they concluded "There is no evidence that the phenomenon would prove useful in intelligence gathering." Psi was deemed not reliable enough *to stand by itself* as a crucial military information source. But that is true of *every* highly secured data source. Something else was going on. Even today, nobody outside the highest levels has any certain idea what that might have been.

By then, indeed even before that program was funded and launched, Campbell was dead at the shockingly early age of 61, in 1971. But Campbell's influence continued—sometimes at second and third hand, from protégés who were too young to know where these notions had been propounded most forcefully in fiction. In psience fiction, in fact.

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You Attract what You Are: The Effect of Unconscious Needs on Micro-Psychokinesis[1]

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Abstract: Quantum-based psychophysical correlation models offer an attractive framework for predicting mind-matter interactions. We report a test of such interactions in the form of observer effects on quantum-based random number generator (QRNG) outcomes. Specifically, we tested the influence of certain motive states on related stimulus presentations chosen by the QRNG. Deviations from randomness were expected among participants exhibiting high incongruence (HI) characteristics but not among those who exhibited low incongruence (LI). Our first experiment, testing the effects of three psychological needs—attachment, self-esteem protection, and control— with a Bayesian analysis yielded anecdotal evidence for H_1 only for self-esteem-related stimuli within the HI group. The second experiment was a selective continuation of the promising self-esteem protection condition, exploring the further sequential course of evidence for H_1 and its oscillation over time. Our criterion for confirming H_1 was initially reached in the target group. Shortly thereafter, a decline to a final result of anecdotal evidence for H_1 occurred. To test the systematic trend in the data against chance fluctuations, further post hoc analyses comparing the maximum Bayes Factor, the curve's energy, and frequency spectrum analysis between both groups to 10,000 simulations were performed. These analyses indicated that the HI subsample's data differed significantly from chance fluctuations, whereas the LI subsample's data did not. In sum, the results suggest that core affectively laden subconscious beliefs can manifest through volatile yet statistically detectable deviations from quantum randomness when precisely triggered by an adequate task.

Keywords: micro-psychokinesis, mind-matter, quantum measurement, intentional observation.

Various models describing the relation between mind and matter have been developed over time within different disciplines. The idea that these entities are different substances, as articulated by Cartesian dualism, poses two unsolved riddles regarding mind-brain interaction. First, the *hard problem of free will* concerns the question of whether phenomenal experiences can translate into physical events (Shariff et al., 2008). Second, the intricately related *hard problem of consciousness* (Chalmers, 1995) asks why and how a conscious mind that corresponds to the materialized reality evolves (Brüntrup, 2008). Thus, the core question is: How can two qualitatively different substances such as mind and matter interact with one another? Most current mainstream sciences tend to ignore this problem and seem to be

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satisfied with the position of radical emergence. In sum, they accept logical weaknesses, in particular its contradiction of the genetic argument, which states that conscious experience emerges from the pure configuration of different material units in an inexplicable and unpredictable way (Brüntrup, 2008).

By contrast, a possible means of avoiding these theoretical problems may lie in the consideration of dual-aspect monism theories, which consider mind and matter to be two distinct aspects of a common ground (e.g., Atmanspacher, 2014). One variant, psychophysical substance dualism, has a long tradition in philosophy, and can be found in Leibniz's monadology and Fechner's psychophysical theory (for an overview of this tradition in the Western culture see Skrbina, 2017). According to psychophysical substance dualism, interactions between mind and matter are located within a common ground, in which both aspects of reality exist as preforms (pre-conscious and pre-material), and, at this stage, are not yet separate from each other. This proposition of an existing pre-reality remained highly speculative until the advent of quantum theory. Newer versions of psychophysical substance dualism included quantum mechanics as their basic theoretical framework. Examples include the "unus mundus" theory developed by C.G. Jung and W. Pauli in a letter exchange between 1932 and 1958 (Atmanspacher et al., 2013), the "Implicate Order" theory (Bohm, 1985, 1990; Bohm & Hiley, 1982), and "Generalized Quantum Theory" (GQT) (Atmanspacher et al., 2002; Filk & Römer, 2011). Those approaches formalize the core idea that mind and matter form a unit on a deeper layer of potentiality and are separated only by measurement into the realms of conscious experience and corresponding matter at a higher level (for different approaches, see, Penrose & Hameroff, 2011; Pradhan, 2012; Römer, 2004).

The act of measurement constitutes a fundamental process in quantum physics in which a quantum system interacts with an outside system, a so-called observer. Before measurement takes place, specific features of a quantum particle, such as an electron's location, exist in a superposition of different states that are described by Schrödinger's wave function (Schrödinger, 1935). Upon measurement, one of these potential location states is determined with a probability reflecting the squared amplitude of the wave function on this position (Born, 1926). Orthodox quantum physics consider this random behavior to be ontic and inherent in nature (Bell, 1964; see Greenstein & Zajonc, 2006). Some authors (e.g., Mensky, 2014; Penrose & Hameroff, 2011; Pradhan, 2012; Stapp, 2007), however, allow an intentional observer to influence the quantum probabilities, making an outcome more likely than predicted by the Born rule (see also the correspondence between Jung and Pauli, but with the restriction that these effects can only be spurious and unsystematic; similar predictions are also made within GQT). In other words, a conscious observer's mind might play a more active role in the outcome selection than assumed within the original quantum theory framework (Schwartz et al., 2004).

With psychophysical substance dualism and dual-aspect monism in mind, Maier, Dechamps, and Pflitsch (2018) emphasized that such an influence must happen indirectly and emerge from the common ground prior to measurement. It is thus not the conscious deliberate intention itself that affects the emergence of materialization but, rather, the observer's pre-conscious (and therefore unmeasured) state of mind that impacts the becoming of conscious experience of a classical material result (Dechamps & Maier, 2019; Maier & Dechamps, 2018).

Micro-Psychokinesis

The influence of an intentional observer on deviations from quantum randomness during the process of measurement has been the subject of investigation for several decades. This area of research has been part of a wider field of research labeled micro-psychokinesis (micro-PK). Micro-PK effects are defined as "minute influences on inanimate, probabilistic systems, producing effects that can only be detected through statistical means. The target systems may include tumbling dice, coin tossing systems, or hardware random number generators (RNGs)" (Varvoglis & Bancel, 2015, p. 266). Several meta-analyses aggregated the results of hundreds of micro-PK studies involving a quantum-based true random number generator (QRNG), and observed significant overall effects (Bösch et al., 2006; Radin & Nelson, 1989). On average, intentional observation had an effect on the probabilities of quantum events. However, the rather unconventional high heterogeneity of effect sizes in these analyses left room for doubt (see, however, Radin et al., 2006). In addition, a large-scale study testing micro-PK with 12,571 participants also found no evidence of the effect (Maier et al., 2018). Furthermore, the "benchmark" experiment of the Princeton Engineering Anomalies Research (PEAR) program could not be replicated. The latter program consisted of over 2.5 million trials over twelve years, eventually yielding a remarkable *Z*-score of 3.8 (Jahn et al., 1987). Contrary to expectations, a direct replication attempt by a research consortium collecting 750,000 trials over three years failed, with an insignificant Z-score of 0.6 (Jahn et al., 2000). Although some of these discrepancies may be attributed to extreme outliers in the PEAR study and a subsequently underpowered design of the replication study (Varvoglis & Bancel, 2015), variable effects in micro-PK studies continue to challenge researchers (e.g., Maier & Dechamps, 2018).

Along with selective publication and enhanced study design, some authors attribute declining effects to individual psychological variables, such as the individual's motivation or stress level (Varvoglis & Bancel, 2015). This can be addressed by using fewer trials and working with paradigms that are less performance-based, in addition to applying study designs that work with effortless intention, rather than effortful, deliberate tasks (e.g., Braud & Braud, 1979; Debes & Morris, 1982). For that reason, in our study, we sought to subconsciously active implicit psychological variables to pair with the effect. However, psychological moderators can only account for declines concerning individual participants; they do not address declines over the course of a single study or more (Bierman, 2001).

Model of Pragmatic Information

A more global explanation for decline effects was originally proposed by von Lucadou, Römer, and Walach (2007) in their "Model of Pragmatic Information." It states that the novelty of a finding based on non-local entanglement correlations is complementarily related to its likelihood of confirmation (von Lucadou, 2006, 2015). The authors realized that a violation of the probability rule in quantum mechanics would also conflict with the "no-signal" theorem (or NT-Axiom in terms of the GQT), according to which no signal can travel faster than light. This could, in theory, be realized through a consistent and reliable occurrence of non-local entanglement correlations. Thus, the systematic detection of micro-PK effects and the potential signal-use of this effect must be prohibited (Atmanspacher et al., 2002). Replication of micro-PK effects, therefore, is highly unlikely, leading to a decline in the effect over the course of subsequent replications. Recently, Maier et al. (2018) modified this proposition somewhat, arguing

for a systematic counter-mechanism that eliminates the original micro-PK effect as long as it represents a signal, leading to an oscillating pattern of appearance and disappearance across studies and participants over time. This antagonistic force may also be related to the second law of thermodynamics, which states that entropy must always increase in closed systems, ensuring that order does not emerge from chaos (or information from randomness). This interplay between effect and counter-effect should manifest in a specific pattern of evidence for the effect across time, resembling a damped harmonic oscillation.

Directionality and Emotional Transgression of Micro-PK

In the studies presented herein, we tested observer effects on micro-PK using the participants' pre-conscious motive states as independent variables. Our focus on pre-conscious intentional states refers to the proposed origin (see Atmanspacher, 2014) of mind-matter interactions that locates them within the realm of the pre-reality that existed before the measurement of a quantum state. An increased likelihood of a specific pre-conscious mental state should find its correspondence after measurement in the increased likelihood of the equivalent physical state during conscious observation of the measurement's result. This means, micro-PK effects can only be congruent to implicit motives, rather than to deliberate goals. There is empirical evidence for this claim in studies that show directional psi effects of participants that were not consciously intending them.

The direction of the psychogenic influence may be derived by the Emotional Transgression Model (ETM)—a model for the emotional impact of motivational goals on unconscious behavior activation. According to this model, every motivational goal of an individual is based on an emotionally laden unconscious expectation grounded in a certain belief. Two emotions are primarily relevant here: hope and fear (see Elliot, 2008). When goals are based on approach-oriented expectations grounded in the aim to succeed during goal performance the driving emotion is hope for positive outcomes. On the other side, when goals are based on avoidance-oriented expectations grounded in the expectation of a negative outcome the underlying driving emotion is fear of loss. For example, if someone wishes to find a job an approach orientation would be characterized by the hope to find a perfect job pretty soon. Confidence in getting a desired job would be the underlying belief here as this is the core theme of hope. In the case of an avoidance orientation, the individual would anxiously desire to find a job. Fearful doubts about getting a desired job would be the underlying belief here as this is the core theme of fear. In both cases the individual's explicit goal is to find a job, but the emotional expectations that lay behind are completely different. We argue that micro-PK effects are dependent only on those emotional expectations. As is apparent in this example, they cannot be translated directly from explicit goals but depend on the emotional transcription that goes along with them. Thus, an avoidance-based goal should unconsciously lead to a negative self-fulfilling prophecy. Empirical evidence can be found in Stanford's work regarding his theory of "psi-mediated instrumental response". Studies showed the occurrence of a directional psi effect within subjects that were not consciously intending them (Stanford, 1976; Stanford et al., 1975). The ETM extends the non-intentionality (Stanford, 1990) and goal-orientation (Schmidt, 1974) postulates regarding psi effects and proposes that the directionality of the effect is directly dependent on the emotional interpretation of the goal shaped by a basic core belief. Our goal in this study was to identify

strong and measurable subconsciously active beliefs that may trigger either an approach- or an avoidance oriented micro-PK effect using the predictions of the ETM.

Consistency Theory

In view of the above, we selected Grawe's "consistency theory" (1998) as a model of basic motivational determinants measurable with reliable questionnaires like the "Inkongruenzfragebogen" (INK; "Incongruence Questionnaire") (Grosse Holtforth et al., 2004). According to Grawe's "functional model of the psychic event", the elementary function of adequate adaptation to an individual's environment is successful if the basic psychic needs are fulfilled. Similar to comparable concepts (e.g., the Cognitive-Experiential Self-Theory by Epstein, 1990), consistency theory considers "attachment/connection," "self-esteem enhancement/protection," "orientation/control," and "pleasure maximization/distress avoidance" as the four basic human needs. In our study we selected "attachment," "self-esteem protection," and "loss of control" to create a specific micro-PK task and excluded "pleasure maximization/distress avoidance" as it could not be operationalized sufficiently for our experiments. In the course of socialization, motivational patterns develop individually and are expressed through certain goals and behaviors that fulfill these needs. In consensus with other authors (e.g., Elliot et al., 1997) Grawe (1998) considers approach- and avoidance-motivation to be two distinct psychic systems for self-regulation. The approach system focuses on the maximization of need fulfillment, whereas the avoidance system aims to protect the individual from harmful experiences. If the basic psychic needs are frustrated, they become increasingly urgent and "energized" through their connection with strong emotions. This state is described as incongruence of needs. Therefore, high incongruence is more strongly associated with avoidance-oriented goals than with approach-oriented ones, as the approach system is more directly connected to need fulfilment. Furthermore, avoidance strategies develop from enduring experiences of need frustration, which also enhance expectations of not having enough. For example, if the need for attachment is frustrated by early experiences of social rejection, the individual may develop the emotional belief of not being likeable for others and corresponding motivational patterns like avoiding to openly engage with other people in order to protect oneself from further harmful experiences of exclusion. We consider incongruence to be a strong indicator for subconsciously active core beliefs, which should possess the capability to trigger a micro-PK effect distorting the results of random events according to the predictions of the emotional transgression model.

Hypotheses

In the first experiment, we expected an initial micro-PK effect for the target group of participants who exhibited high incongruence (HI) characteristics, but not for those who exhibited low incongruence (LI). Therefore, we hypothesized that the HI group would show significant deviations from randomness while observing stimuli addressing deprived needs vs. neutral ones selected by a QRNG. For micro-PK tasks involving targets designed to resemble an approach-motivated means of satisfying a need in this experiment through the presentation of positive, need-relevant pictures, we assumed that participants who exhibited HI (i.e., individuals who are generally unable to adequately satisfy those needs) would elicit fewer positive target stimuli than chance suggests. The ETM would predict an outcome of fewer positive pictures than would be expected by chance, as the HI group is more likely to have inner fearful doubts

of being rejected or left by others. Comparatively, for micro-PK tasks using negative need-relevant target stimuli designed to resemble an avoidance-motivated means of satisfying a need, we predicted that HI participants (i.e., individuals who are generally unable to adequately avoid such negative events) would show more negative targets than expected by chance. In the case of the need for self-esteem protection, this means according to the ETM that individuals exhibiting HI-characteristics are less likely to avoid derogatory stimuli as they are prone to have inner fearful concerns of not being good enough in any task or only deserving negative responses. When trying to avoid a loss of control, the ETM would predict a higher likelihood for participants who exhibit HI to attract experiences in which they lose control, as they are more likely to have inner fearful doubts of losing control of a situation or not being able to affect their environment at all instead of a hopeful feeling of self-efficacy. Furthermore, for the LI group, no significant deviations from chance were predicted, since unconsciously active beliefs should not be triggered by this micro-PK task (see Figure 1). From a wider perspective, we assumed the micro-PK effect to be volatile and to follow a systematic oscillating pattern across participants over time. Therefore, we expected to observe a decline in our second experiment, after strong evidence (*BF* = 10) had been obtained. The researchers' a-priori belief that the hypotheses in this study would be supported can be classified on a scale from 5 = "strong belief" to 1 = "strong non-belief" as 4 = "moderate belief".

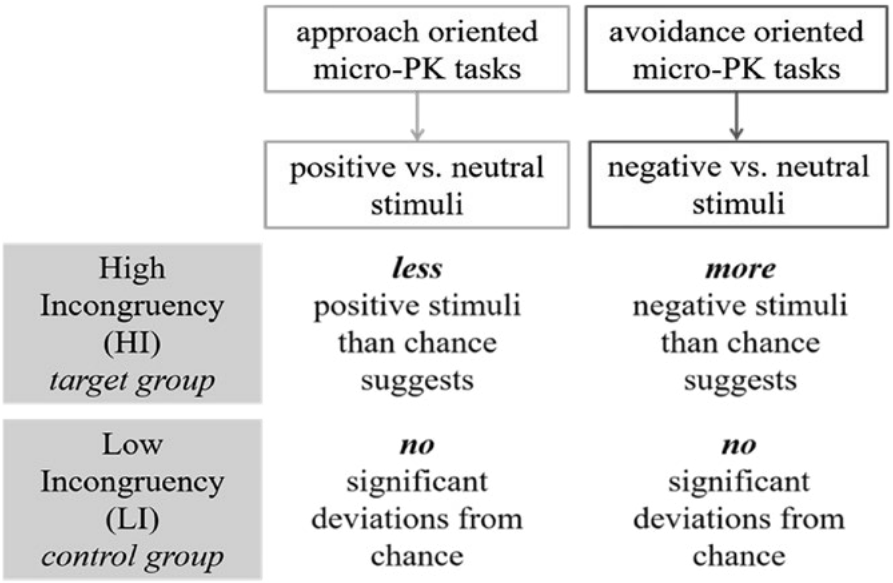

Figure 1. Predicted directions of the effect for both experimental groups concerning micro-PK tasks that resemble approach- vs. avoidance-motivated means of satisfying a need.

Method

This study was preregistered at the Open Science Framework (https://osf.io/xm4wf). The instructions did not reveal the study's purpose, but assured anonymization and emphasized the participants' right to withdraw from the experiment at any given time. Voluntarily participation was ensured by obtaining written consent. An explanation about the study's purpose was offered individually after the tasks were completed. This procedure and the experiment were approved by the ethical board of the Department of Psychology.

Design

For this study, we selected a between-subject design with two conditions. We conducted a quasi-experiment with LI and HI in basic psychological needs as independent variables. Participants were divided into these groups based on their individual average overall-incongruence score measured by the INK (Grosse Holtforth et al., 2004). The dividing point was the standardized average value for healthy individuals as detailed in the manual. Furthermore, we developed specific micro-PK tasks for the psychological basic needs "attachment," "self-esteem protection," and "orientation and control," testing various modes of operationalization concerning stimulus formats, tasks, and approach- vs. avoidance-motivated focus. Each micro-PK task comprised ten trials of stimulus presentation on a screen. For each trial, a QRNG chose between a need-related and a neutral stimulus. The number of need-related stimuli displayed served as a dependent variable (DV).

The first micro-PK task focused on the need for attachment, and implemented an approach-oriented design, using positive pictures of happy couples as targets and neutrally rated pictures as control stimuli. Participants were required to observe the pictures attentively. The DV was the number of positive target pictures selected by the QRNG tested against the expected value of five out of ten presentations under chance.

The second micro-PK task focused on the need for self-esteem protection, and implemented an avoidance-oriented design, using derogatory adjectives as targets and neutrally rated adjectives as control stimuli. Participants were instructed to read the words attentively. Again, the DV was the number of negative target words selected by the QRNG tested against the expected value of five out of ten presentations each under chance.

The third micro-PK task concerned the need for avoiding a loss of control. This task differed from the first two, as participants had to press a button after each trial. In every trial a repulsive picture was presented at the screen. Participants were either able to end the display of the picture as soon as it appeared, by pressing a button ("in-control trials") or it lasted 2500 ms regardless of a button being pressed or not ("loss-of-control trials"). A QRNG output for each trial decided whether a trial was an in-control or a loss-of-control trial. To create a strong feeling of loss of control, we chose a percentage of 75% "in-control trials" instead of 50% as baseline for the QRNG. This made the loss-of-control trials more outstanding and awkward since the usual experience was to be in control. The DV was the number of trials in which pressing a button did not end the display ("loss-of-control trials"). As the baseline probability for those trials was only 25%, we tested against an expectancy value of 2.5 out of ten instead of five like in the other two micro-PK tasks.

Materials

Hardware and Software. The lab study was conducted on a set of ten experimental computers, all of which had been prepared identically. The stimuli were presented on a black background at a size of 500 x 400 pixels. A presentation procedure was programmed in jsPsych, which translated the output of the random number generator into the selection of either need-related or neutral stimuli. For stimulus randomization, we used a hardware-based QRNG, the "BitBabbler Black" (BitBabbler, 2014–2015),

which passed all important tests for randomness (ENT, FIPS 140-2, Dieharder, NIST SP800-22, and TestU01). A truly random source during stimulus selection is essential to allow a state of superposition to emerge, which might enable an unconscious interaction between motivational patterns and quantum processes. The "BitBabbler Black" offers an external physical process, including quantum mechanical and semi-quantum mechanical procedures using different sources of electrical noise. These signals are reinforced and integrated in a way that none of the deterministic processes in the analog circuit can exert an influence on the outcome. During the transition from the analog to the digital circuit, the noise signals are transformed through a 3.3V logic into a binary output (Bit 1 and Bit 0), which serves as a quantum-based source for randomness for each experimental trial.

Stimuli. To ensure adequate emotional valence, all neutral pictures used as control targets in the task for attachment were obtained from OASIS (Kurdi et al., 2017), a picture set containing 900 validated stimuli. Furthermore, we conducted a pre-study to rate all other stimuli without sufficient empirical validation in the present literature with regard to the target pictures (all need-related pictures for "attachment" and "loss of control") and all word stimuli (negative and neutral) on the three dimensions of valence, arousal, and content-related association (see Table 1). For this evaluation the sample consisted of N = 26 students (25 females n = 25; age: M = 22.27 years, SD = 1.70) enrolled in a course on experimental psychology. All 80 stimuli were assessed on a seven-point scale with respect to emotional valence ("How does the induced emotion feel?"; from 1 = "very negative" to 7 = "very positive"), arousal ("How intense does the induced emotion feel?"; from 1 = "very weak" to 7 = "very strong") and content-related association (pictures: "How closely do you associate this picture with relationship/disgust"; words: "How strongly do you feel evaluated by this word?"; from 1 = "very weak" to 7 = "very strong").

To address the need for "attachment" in the first micro-PK task, the set of target stimuli contained 20 pictures of happy couples. The material was obtained from Shutterstock (www.shutterstock.com), a provider of royalty-free stock photographs. The mean subjective association with the concept "attachment" obtained from the pre-rating of the pictures was M = 5.41 (SD = 0.94) with a rather strong arousal (M = 4.94; SD = 0.73) and a positive valence (M = 5.39; SD = 0.98), indicating the pictures' on average clear attachment-relevant and emotionally loaded content. The neutral pictures used as control targets in this task were obtained from the picture set OASIS (Kurdi et al., 2017), with ratings with respect to valence and arousal on a seven-point-Likert-scale for each stimulus. Twenty pictures, each depicting everyday objects, rated very low on arousal (M = 1.98; SD = 1.37) and with neutral valence (M = 4.09; SD = 0.66), were selected.

For the self-esteem-protection task, all word stimuli were presented in Arial font with white letters on a black background. The 20 neutral adjectives with low arousal (M = 2.85; SD = 1.42) and a neutral valence (M = 3.99; SD = 0.19) focused on attributes that are not typically used to characterize a person and consequently do not possess any qualities associated with self-esteem (association: M = 2.52; SD = 1.38), namely geometric shapes and surface textures (e.g. "five-cornered," "dotted"). Twenty derogatory adjectives (association: M = 4.87; SD = 1.27) with a rather high arousal (M = 4.47; SD = 0.78) and a negative valence (M = 2.49; SD = 0.48) were generated, based on the dimensions of the "Feelings of Inadequacy Scale" (Janis & Field, 1959). This included words related to self-esteem ("useless," "boring." "inferior," "unimportant," "worthless"), to academic skills ("dumb," "unsuccessful," "incompetent," "weak,"

"bad") and to physical attractiveness ("unlovely," "off-putting," "ugly," "inexpressive," "disgusting," "unsightly," "unattractive," "nauseous").

To establish aversive trials for the simulation of a loss of control in the third task, participants were presented with unpleasant, nauseating pictures (association: *M* = 5.46; *SD* = 0.58) with rather strong arousal (*M* = 5.24; *SD* = 0.67) and a negative valence (*M* = 2.04; *SD* = 0.41) also obtained from Shutterstock. These typically involved scenes of environmental pollution, feces, dirty toilets, or similar.

Table 1
Descriptive results of the validation study.

		M	*SD*	Min.	Max.
attachment					
	association	5.41	0.94	2.80	6.75
	arousal	4.94	0.73	3.45	6.20
	valence	5.39	0.98	2.65	6.55
loss of control					
	association	5.46	0.58	4.45	7.00
	arousal	5.24	0.67	3.90	7.00
	valence	2.04	0.41	1.05	2.75
neutral adjectives					
	association	2.52	1.38	1.00	4.25
	arousal	2.85	1.42	1.05	4.55
	valence	3.99	0.19	3.55	4.40
derogatory adjectives					
	association	4.87	1.27	1.60	6,55
	arousal	4.47	0.78	2.50	5.90
	valence	2.49	0.48	1.70	3.50

Questionnaire. Incongruence in basic psychological needs was measured by the long version of the INK (Grosse Holtforth et al., 2004), which takes around ten minutes to administer. For interpretation, the manual contains standard tables with t-values. The standard sample varies in gender and age and was based on *n* = 707 healthy individuals and *n* = 569 patients from different psychotherapy settings. The questionnaire consists of 94 items, rated on a five-point scale. The first part concerns approach-goals and contains 57 items. Participants must assess whether they feel that the concrete needs were fulfilled "recently" (from 1 = "far too little" to 5 = "completely sufficient"). Because the questionnaire measures incongruence, these scales' ratings must be reversed. The particular scales are labeled "intimacy/attachment," "sociability," "helping others," "receiving help," "respect/appreciation" "being superior/impress," "autonomy," "performance," "control," "education/understanding," "belief/sense," "enjoyment of life," "self-confidence/self-esteem," and "self-reward".

Analogously, the second part captures the avoidance-goals by asking participants to rate how often aversive events have been experienced "recently" (from 1 = "not at all true" to 5 = "very true"). This includes the scales "loneliness/separation," "contempt," "humiliation/disgrace," "accusations/criticism,"

"dependence/loss of autonomy," "tensions with others," "vulnerability," "helplessness," and "failure". In addition to the individual scales, the questionnaire provides an incongruence value for approach- and avoidance-goals and an overall-incongruence score. This overall-incongruence score, split into a HI and a LI group, was used as an independent factor. The splitting criterion refers to the standard sample of healthy individuals based on a *t*-scale (with *t* = 50 as the average value and *SD* = 10). Participants with an overall-incongruence score of *M* = 2.2 or above were considered to exhibit HI characteristics (*t* = 51). The INK is an appropriate measure, as it guarantees high objectivity by providing standardized instructions, clear analytical guidelines, and *t*-values for interpretation. Internal consistency across the different standard samples ranges from acceptable to very good for most scales. For the approach-scales, the retest-reliability lies between *r* = .42 - .91, with an average of *r* = .68, and for avoidance-goals between *r* = .54 - .79, with an average value of *r* = .64.

Procedure

Participants were tested in the department's laboratory, which contained ten identically set-up testing computers separated by room dividers (see Fig. 2). The entire experiment took around 30 min. The experimenter read a standardized instruction text aloud explaining the procedure in a friendly but factual manner. When the participants had no further questions, the experimenter gave them the signal to begin the INK. After completing all questions, the participants were instructed to continue by clicking the "next" button and to initiate the image display by pressing any key as soon as they were ready. Participants attentively observed three consecutive series of ten trials each. The micro-PK tasks were performed in the following order: "attachment," "self-esteem protection," and "loss of control". After each task, the program advised the volunteers to remain focused and press the button again to confirm their attentiveness. In each trial, they looked at a fixation cue (700 msec) first, then at the stimulus (pictures: 400 msec; words: 800 msec), and, finally, at a black screen (inter-stimulus-interval: 400 msec). This process was repeated 30 times in total (see Figure 2). In every sequence, the QRNG decided whether the next image shown would be from a set of need-related or neutral images. BitBabbler's randomness function selected which of the stimuli in the selected set would be displayed. At the beginning of each trial, the QRNG chose a number corresponding to one of 20 stimuli in both sets. After the fixation cue, the sequence produced by the QRNG was completed to select the definite stimulus by determining the category. Stimuli were selected by sampling with replacement.

After the third task was completed, participants were asked to complete the post-task questionnaire, which asked to indicate how unpleasant the disgusting pictures were perceived (from 1 = "very unpleasant" to 5 = "not unpleasant at all") and to state their assumptions about the study's aim.

Data Analysis

Data collection and analyses were performed using Bayesian inference techniques for hypotheses testing, as recommended by Wagenmakers, Wetzels, Borsboom, and van der Maas (2011), and the strategy was preregistered. While the frequentist approach makes assumptions about theoretically repeated replications of the same study, the Bayesian method accumulates data concerning the effect, and repeatedly updates an effect's likelihood given additional data. In this framework, the strength of evidence for the effect is considered dependent on both the given data's support for H_0 and for H_1. To determine

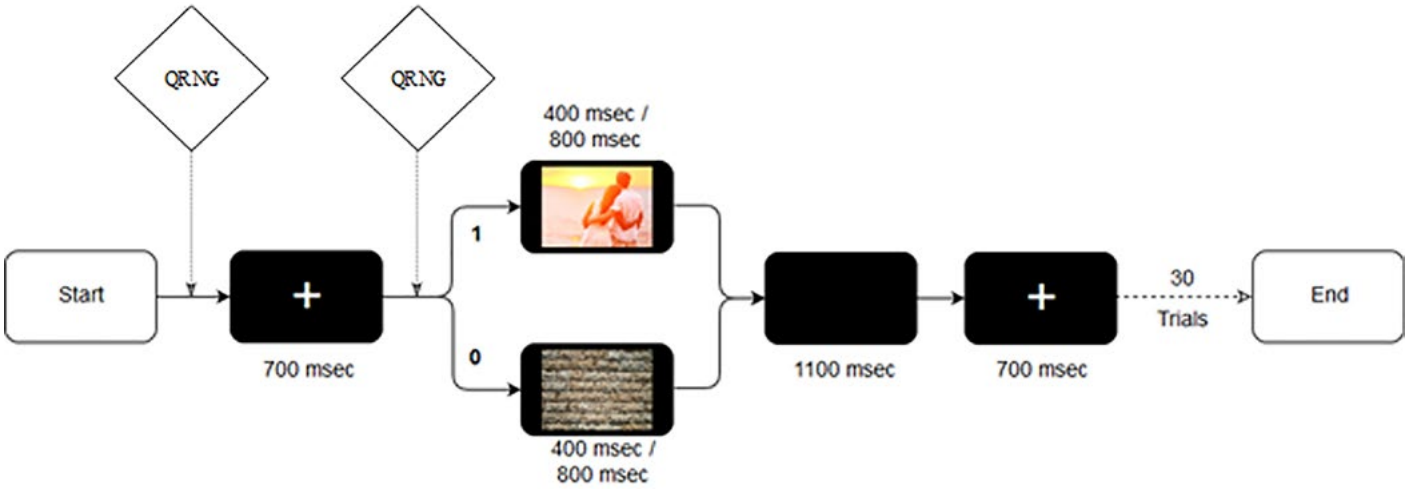

Figure 2. Each trial comprised the display of a fixation cue, a need-relevant or neutral stimulus, and a black inter-trial interval.

whether the data provide more evidence for H_1 or H_0, both likelihoods are pitted against one another. The resulting score is called the Bayes Factor (BF), and resembles the relative amount of evidence that the data provide for or against a postulated effect. A BF of 10 or higher is considered to indicate strong evidence for H_1 or H_0, respectively (see Jeffreys, 1961).

To calculate the BF, a probability distribution for the effect size must be specified a priori. Usually, a Cauchy distribution centered around zero with scale parameter *r* is used ($\delta \sim Cauchy(0, r)$) to identify the prior. Wagenmakers et al. (2011) recommend that *r* equals 1. The statistic software JASP, designed to perform basic Bayesian analyses, uses a default *r* of .707. Other authors recommend a lower *r* of .5 (Bem et al., 2011) or .1 (Maier et al., 2014) The choice of the prior provides a degree of freedom within the Bayesian approach. We decided to use $r = .1$, i.e. $\delta \sim Cauchy(0, .1)$. This score was determined and preregistered before data collection commenced.

Bayesian hypothesis testing offers several valuable advantages. One is that the BF combines information about the effect and the sample power within its score. A high BF can only be reached when sufficient power is provided through sample size, whereas the frequentist approach might accidentally detect an effect within a severely underpowered study. Thus, the frequentist approach requires an a priori power analysis and pre-definition of sample size to compensate for this potential problem, which is unnecessary when applying Bayesian techniques. Moreover, the Bayesian approach allows for data accumulation, (i.e., additional participants can be tested and included in the dataset until a pre-specified BF criterion for H_1 or H_0 has been reached). This also permits optional stopping and is therefore more effective than the frequentist method. We decided to use a BF of 10 as a criterion. In the study preregistration, we therefore set either $BF = 10$ in all of the three micro-PK tasks or a target sample size of $N = 300 - 352$ as the stopping rule for the first experiment. To do so, data were analyzed on a regular basis for every new 5 participants as soon as 50 participants had been tested.

Since researchers in the psychology field are more familiar with the frequentist approach than with Bayesian hypothesis testing, we outline our reasons for using the Bayesian approach here in greater de-

tail, and *p*-scores are also provided. We used the Wilcoxon signed-rank test, as the population cannot be assumed to be normally distributed. The statistical software tool JASP (Version 0.8.2; JASP Team, 2017) was used for all Bayesian analyses.

Experiment 1

This first experiment was implemented and analyzed according to the preregistration with all three outcome variables as described above.

Methods

Participants. In the first experiment, 318 participants were tested, and the target sample size of *N* = 300 - 352 came into operation when our given testing period ended. Due to technical problems, 23 data files were excluded from analysis: The QRNG connection was deficient in five sessions, during which the stimulus selection did not work. For 18 participants, incorrect software settings produced 100 trials rather than 10 in each of the three blocks. Therefore, *N* = 295 datasets of test subjects fulfilling all inclusion criteria were viable (female *n* = 210, male *n* = 84, unspecified *n* = 1; age: *M* = 23.27 years, *SD* = 6.46). Participants were recruited through the department's announcement board, handouts distributed during class, Facebook groups, and direct contact with the experimenters. Undergraduate psychology students could acquire credits for participation. Inclusion criteria included a minimum age of 18 years and proficiency in German.

Experimenters. For this study, 32 informally trained students were used as experimenters as part of a practical course on empirical psychology. Their task was to identify participants fulfilling the inclusion criteria. They had no knowledge about the experiment's goal at the point of data collection and were advised to only interact with the participants in a friendly but also factual manner. The experimenters sent raw data to the study's supervisor after each testing session.

Results

Separate Bayesian *t*-tests were performed for each of the three micro-PK tasks for the HI (*n* = 133) and the LI (*n* = 162) subsamples. The prediction was that the HI group would show a higher-than-chance score for the neutral pictures in the attachment task, for the derogative adjectives in the self-esteem task, and for the loss-of-control trials in the control task. No deviations from chance were expected for the LI group.

We first report the analyses of the HI group: The score of self-esteem protection stimuli (number of derogatory adjectives displayed) yielded an anecdotal effect close to the threshold of moderate evidence for H_1. The other two Bayesian *t*-test analyses showed no substantial deviations from chance, either for the attachment or loss-of-control tasks (see Table 2).

Table 2
Descriptive and frequentist outcomes for the HI subsample. A small but significant deviation from chance is indicated for the micro-PK task concerning the need for self-esteem protection.

	N	M (SD)	BF	Z, p-score
attachment	133	5.08 (1.57)	0.70	0.39, .35
self-esteem	133	5.27 (1.59)	2.95	2.17, .02*
loss-of-control	133	2.60 (1.30)	0.92	0.65, .26

For the LI subsample, three two-tailed Bayesian one-sample t-tests were performed. A two-tailed approach was adopted since, for the control group, no substantial deviations from chance were expected in any direction. As expected, no substantial evidence for H_1 was found, nor were deviations from randomness detected in any of the three DVs, although the BFs confirmed no substantial evidence for H_0 either (see Table 3).

Table 3
Descriptive and frequentist outcomes for the LI subsample. No significant deviations from chance were observed.

	N	M (SD)	BF	Z, p-score
attachment	162	4.91 (1.47)	0.54	-0.56, .71
self-esteem	162	5.15 (1.57)	0.74	1.12, .11
loss-of-control	162	2.51 (1.58)	0.46	-0.30, .62

Discussion

In sum, the results from the first experiment revealed moderate evidence ($BF < 10$) in

the postulated direction within the HI group for the self-esteem protection task but not for the attachment- or the loss-of-control tasks. As hypothesized, no substantial deviations from randomness were observed within the LI group, but the H_0 was not confirmed either. Since we had reached the end of our given testing period, we followed the stopping rule even though our criterion for strong evidence ($BF > 10$) for H_1 or H_0 had not been satisfied at this point.

Several limitations concerning the operationalization of the attachment- and the loss-of-control tasks might explain why the effect failed to appear for these outcome variables. The results from the stimulus validation show that, despite the valence of the attachment-related pictures being positively rated on average, the minimum value lies within the negative range. Therefore, images of happy couples may not always be perceived as positive stimuli, but may also cause envy or sadness, particularly

in individuals experiencing HI of the need for attachment. The more complex and socially related the operationalized constructs become, the more the images might be prone to unconscious individual interpretations, which could be a source of confound for implicit micro-PK experiments of this nature. Furthermore, during the testing phase, the loss-of-control task design failed to create the intended impression of a key that is sometimes stuck. This may be due to the small number of trials, which may be insufficient to establish a feeling of control over the picture presentation and its loss during several trials. Oral reports from experimenters and participants confirmed this guess: this task was unclear to many test subjects, with some reacting by not pressing the button at all. Nevertheless, the operationalization of the micro-PK task for self-esteem protection appeared more suitable, as the words concretely and precisely addressed the need in question, without accommodating individual interpretations. Therefore, we selected this condition for further exploration.

Experiment 2

As none of the effects in Experiment 1 yielded clear evidence for H_1 or H_0, we continued collecting data until strong evidence for or against the postulated effect was obtained. We focused on the promising outcomes of the self-esteem-protection task, excluding the other two tasks for economic reasons. Otherwise, the procedure and analysis strategy remained unchanged. To maintain the original study duration, another separate experiment was added at the beginning.

In view of the non-replicability problem common within psi studies, the data collection continued beyond obtaining strong evidence ($BF > 10$), to investigate a potential decline effect in micro-PK experiments. We did not propose a concrete hypothesis concerning the volatility of the effect in the original preregistration, as decline effects were not expected within the target sample size of the first study. Because experiment 2 will enlarge the sample size considerably and has a replication character to some extent, we additionally assumed a decline for the further data collection in our second experiment after initial strong evidence ($BF > 10$) had been reached.

Methods

Participants. In the second experiment, 217 further participants were tested. QRNG connection was deficient in five of the sessions, so $N = 212$ (female $n = 155$, male $n = 57$, unspecified $n = 1$; *mean age* = 23.60 years, $SD = 7.13$) datasets of test volunteers fulfilling all inclusion criteria could be added, making a total sample size of $N = 507$ (i.e., previous study $n = 295$ plus this study $n = 212$).

Experimenters. Three informally trained undergraduates (female $n = 2$, male $n = 1$) were responsible for recruiting and testing. Again, they had no knowledge of the study goal at the time of data collection and received the same instructions for interacting with the participants according to the standardized protocol. The two females experimenters ranked their attitudes towards psi by self-assessment of their belief on a scale from 5 = “strong belief” to 1 = “strong non-belief” as 4 = “moderate belief.” Unfortunately, we could not obtain this information from the other two experimenters.

Results

Sequential Bayesian analyses. Individual Bayesian one-sample *t*-tests of the micro-PK tasks on self-esteem protection were conducted for the HI and the LI subsamples. The graphs below represent a sequential analysis of the BFs for the HI (see Figure 3) and LI group (see Figure 4).

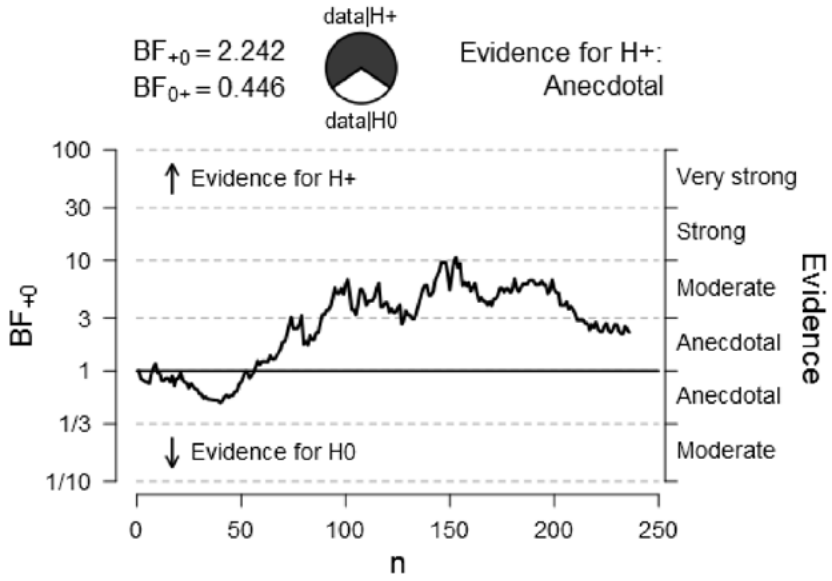

Figure 3. Sequential analysis of the BFs within the HI subsample. Shortly after the significance criterion of *BF* = 10 had been reached at *n* = 153, evidence declined again to a final result of *BF* = 2.24.

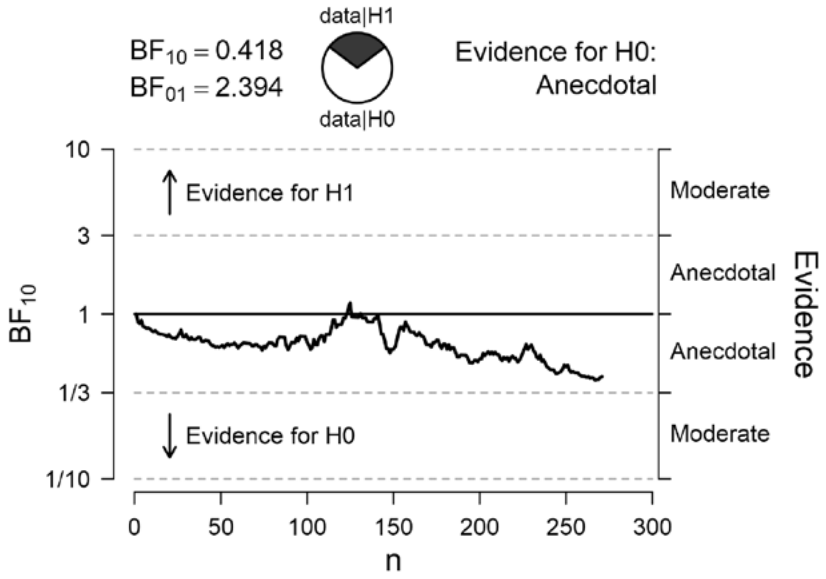

Figure 4. Sequential analysis of the BFs within the LI subsample. The graph shows a null curve, which almost always runs under the mark towards evidence for H_0.

In the HI subsample of *n* = 236, results reached the significance criterion of *BF* = 10 at *n* = 153 (*BF* =

10.72), and declined shortly thereafter to a final result of *BF* = 2.24, which can be classified as anecdotal evidence. In the LI subsample, there was no substantial deviations from chance at any time (see Table 4).

Table 4
Descriptive and frequentist outcomes for the HI and the LI subsample.

	N	M (SD)	BF	Z, p-score
HI	236	5.18 (1.58)	2.24	1.86, .03*
LI	271	5.04 (1.54)	0.42	0.43, .67

Exploratory analyses. Concerning the selective continuation of the self-esteem protection task, the course of the effect across participants over time differed considerably between the experimental groups. The curve of the target group seems untypical of chance fluctuations, whereas the control group's sequence does not. To test the likelihood that such a sequence would be produced by chance, we performed post hoc exploratory analyses based on Dechamps and Maier (2019). These analyses were not included in the preregistration, as we were unaware of these methods at that point. Encountering frequency analyses as a procedure for capturing differences in evidence sequences on a quantitative level led to the post hoc adjustment of our hypotheses. Doing so, we looked at the sequential Bayesian analyses of both the HI and LI group and compared them to 10,000 simulations (see Figure 5). For a better comparison, the graph of the control group was also based on a one-tailed Bayesian one-sample t-test in the same direction as in the target group for this analysis. These simulations consist of 2710 random bits each (271 subjects * 10 trials) that were aggregated in the same manner as the experimental data. Subsequently, a sequential Bayesian t-test with the same parameters as for the experimental data (one-tailed; δ ~ Cauchy (0, .1)) was conducted for data points 10 to 271. These simulations represent an experimental null-effect dataset.

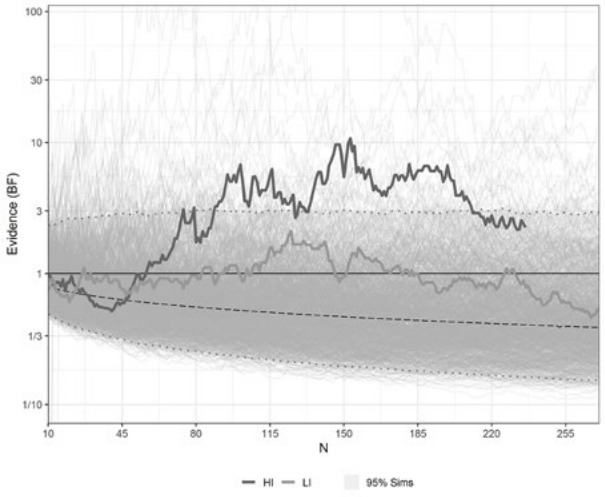

Figure 5. Sequential one-tailed Bayesian analyses of the HI and LI group in comparison to 10,000 simulations (1,000 depicted in the figure), the median of the simulations (dashed line) and the Confidence Interval of 95% for the BF (hatched area between the dotted lines).

Maximum BF. First, we compared the subsamples' highest BFs to those of the simulations. The highest BF in the HI group is 10.72 at *n* = 153. Only 3.3% of all simulations reached a higher BF at any point. LI group's highest BF equals 2.10 at *n* = 125, which is surpassed by 26.1% of simulations.

BF energy. Next, we examined the overall orientation of the BF curve, calculating the area between the curve and the borderline of evidential power between H_0 and H_1 at *BF* = 1. A positive value of this area—also called the curve's *energy*—means an overall tendency for the BF to be directionally positioned toward H_1. The HI group's energy is 564.13, which is surpassed by only 1.9% of simulations. By contrast, the LI group's energy lies at -7.06, and is surpassed by 17.7% of simulations. The typical energy of a null-effect simulation was found to be *M* = -41.85 (*SD* = 647.40).

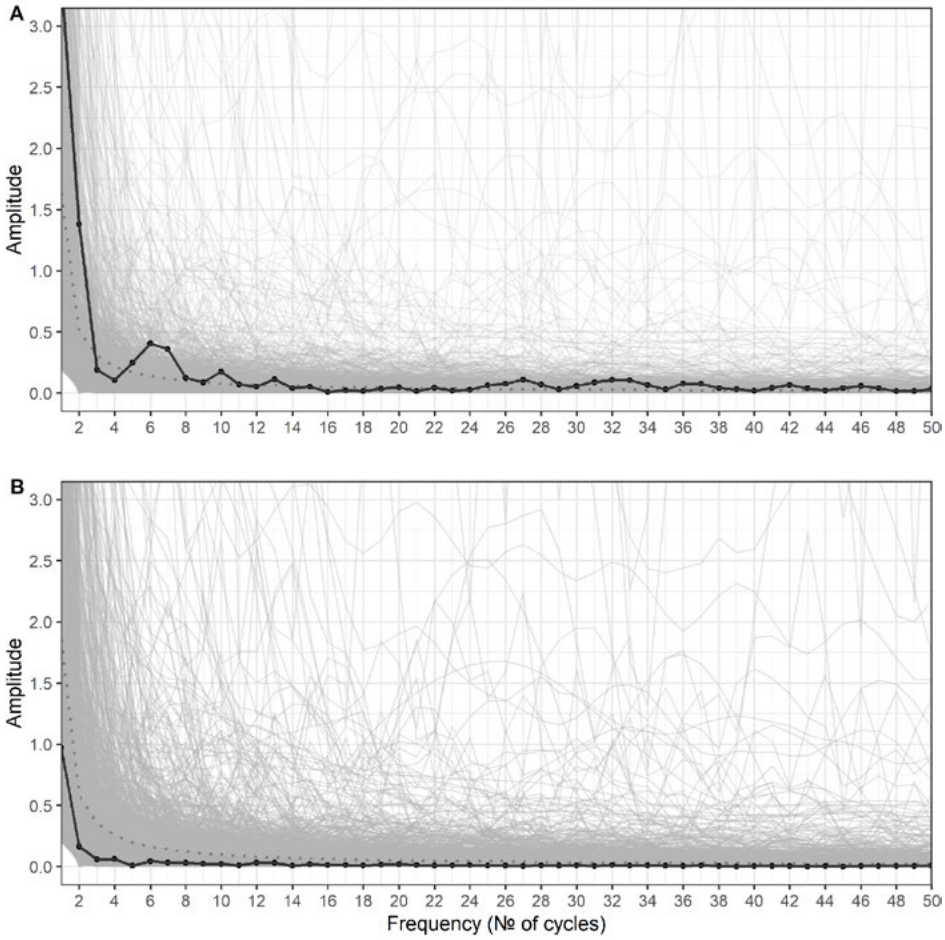

Figure 6. Fast Fourier transformation (FFT) on the sequential Bayesian analyses of the HI (A) and the LI (B) subsamples, and of all 10,000 simulations with the 95% Confidence Interval for the amplitudes (hatched area under the dotted line).

Bierman, Spottiswoode, and Bijl (2016) argue that "Pilot to Confirmation (PtoC)" should be considered a questionable research practice (QRP), as it increases the alpha error. This is the case when studies using frequentist statistical approaches are considered. Bayesian approaches, however, permit the selective continuation of a promising study, even when other, fewer promising studies are dropped. Because sufficient incremental evidence for H_1 can only be obtained with sufficient power in Bayesian

statistics, analyses of this nature rarely fall into alpha error traps. Furthermore, we preregistered all three micro-PK experiments concerning confirmatory hypotheses about the BF using an a priori set criterion of *BF* = 10 for significance. This degree of evidence was reached in one out of three experiments, and remains unlikely to be produced by chance fluctuations. Nevertheless, to examine the robustness of our post hoc exploratory analyses, we performed a further 10,000 simulations, which this time began immediately after the first experiment's end result (BF_{10} = 2.86). In other words, the sequential BF curve of the study's first part was combined with each simulation, and those 10,000 data sequences were then compared to the sequential BF curve of the complete experimental data keeping the first part of the data constant. As expected, the target group's curve is not as outstanding in comparison to simulations as it was in the original analyses (see Figure 7).

Frequency spectrum analysis. Adding toward the summation of all BFs, we examined the oscillatory pattern of the sequential analysis. Any input signal can be converted to a representation of its composited frequencies via a Fourier transformation, which indicates the amplitudes of all frequencies comprising the input sequence. For a random sequence, none of the frequencies should stand out. Noticeable spikes indicate the presence of a periodic element. A fast Fourier transformation (FFT) was conducted on the sequential Bayesian analyses of both subsamples and all 10,000 simulations. Simulations for the HI group were cut after *N* = 236 data points, to ensure comparability to the experimental data. Sampling rate was 1/N in each case. Since the resulting transform was symmetrical, only the first half was considered in the analysis. As Figure 5 indicates, the transforms of both subsamples differ systematically in most aspects. In comparison to the simulations' transforms, the HI subsample shows 81 amplitudes (68.6%) in the top 5% of all frequencies. Comparison to 1,000 further simulations indicates that the probability of such a proportion or above is 4%. By contrast, no frequencies show significant amplitude size at any frequency in the LI group (see Figure 6A and B).

Discussion

HI in basic psychological needs is shown to be promising as a subconsciously active motive state for triggering a micro-PK effect. The threshold of strong evidence for a non-random deviation of several words was reached over the course of further data collection in the self-esteem protection condition. Still, since we were well aware of the non-replicability common among psi studies (e.g., Jahn et al.,2000; Maier & Dechamps, 2018) we continued data collection to further investigate the nature of decline effects in micro-PK experiments, although our stopping rule was met and a Bayesian approach would have allowed the cessation of data collection. A decline became noticeable in the HI subsample (*N* = 507), leading to a drop in the BF to mere anecdotal evidence (despite a significant *p*-value).

Our explanation for the decline follows the reasoning of Lucadou et al. (2007) and Maier et al. (2018), who claim that systematic detection of micro-PK effects and a potential signal-use of this effect and, respectively, a decrease in entropy over time, cannot occur. Thus, Maier et al. (2018) argue for a systematic counter-mechanism that will eliminate the original micro-PK effect, leading to an oscillatory pattern of appearance and disappearance across studies and participants over time. The introduced explorative sequential Bayesian analyses of target and control groups, in comparison to 10,000 simulations, as suggested by Dechamps and Maier (2019), facilitated the investigation of non-random temporal data structures independent of the final score. All exploratory analyses revealed significant results in their ability to distinguish between

the HI and the LI subsample. Dechamps and Maier (2019) state that the close examination of the development of the BF for effects that are volatile in their strength may be fruitful. The performed analyses show that the energy of the HI subsample's curve, as well as its highest reached BF, are unlikely in purely random data, in contrast to the LI subsample. Furthermore, a remarkable difference is evident when the FFT is applied to the sequential Bayesian analyses of both subsamples and their corresponding simulations. The frequencies' amplitudes—meaning their significance in comprising the input signal—are higher in the HI subsample. When compared to 10,000 simulations, this transform features amplitudes in the top 5% of simulations for more than two thirds of all frequencies, suggesting a BF curve characterized by prominent harmonic patterns. Thus, the frequencies seem to follow a volatile dynamic rather than a pattern of decline effects and recoveries. Comparatively, the LI curve possesses no exceptional characteristics.

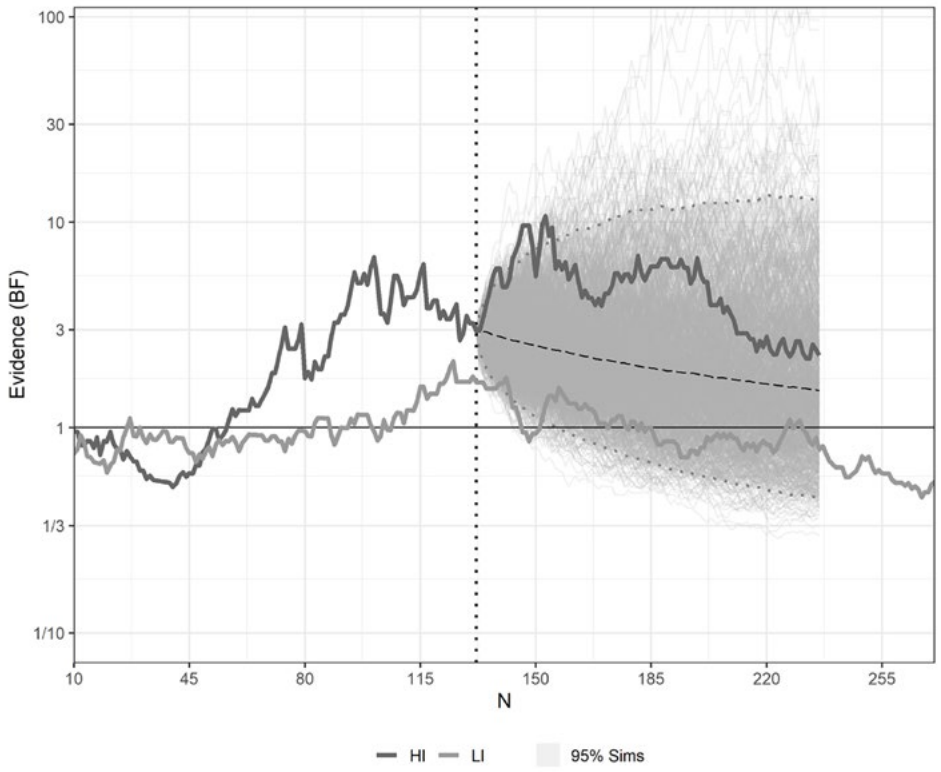

Figure 7. Sequential Bayesian analyses of the HI and LI group in comparison to 10,000 simulations (1,000 depicted in the figure) and the Confidence Interval of 95% for the BF, when the sequential evidence of the first experiment is kept as a constant.

This time, 11.8% (compared to 3.3%) of all simulations reached a higher BF than *BF* = 10.72 at *n* = 153, at any point**,** and the BF's energy of the HI group of 564.13 is now surpassed by 10.6% of simulations, rather than 1.9%. In comparison to the simulations' transforms, in the HI subsample only 13 (compared to 81) frequencies (11%) show amplitudes in the top 5% of all frequencies. Comparison to 1,000 further simulations indicates that the probability for this proportion or higher is 9.1%. A significant probability (< 5%) would require a minimum of 33% of amplitudes in the top 5% of all frequencies (see Figure 8). Nonetheless, for a random sequence, no frequencies should stand out, yet noticeable spikes indicate the presence of a periodic element.

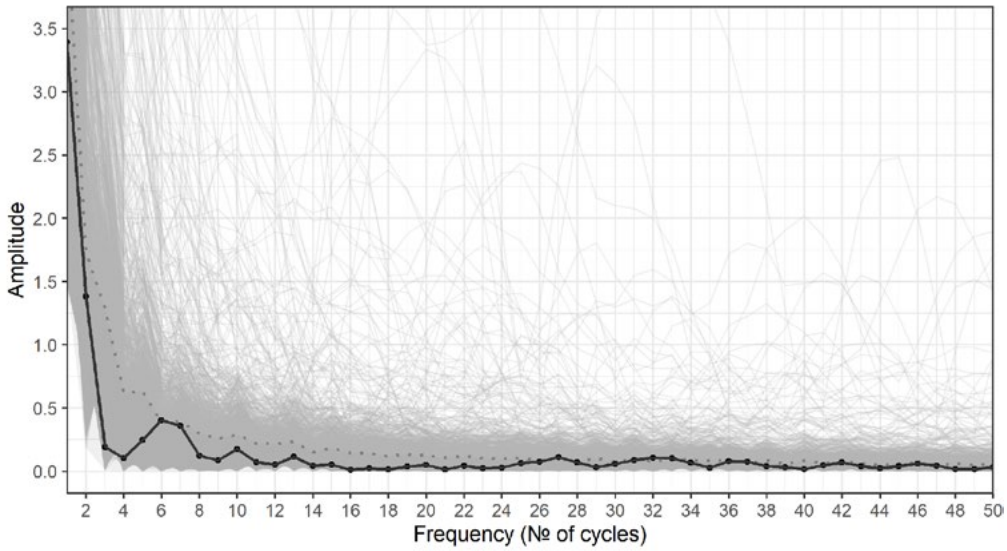

Figure 8. Fast Fourier transformation (FFT) on the sequential Bayesian analyses of the HI subsample and of all 10,000 simulations with the 95% Confidence Interval for the amplitudes (hatched area under the dotted line).

In sum, by controlling for the initial, more extreme data obtained in the first study on the need for self-esteem protection, less outstanding but still marginally significant results were obtained with the FFT. This specific study indicates a non-random variation of the effect across time, but the selective continuation may also be partly responsible for its outstanding course. Therefore, an exact replication of the micro-PK task on the need for self-esteem protection with preregistered hypotheses, including the sequential time course analyses, is required to ensure robust, confirmatory conclusions.

As the sharp decline of the BF to the final level of 2.24 occurs within the last fifth of the target subsample, varying sample characteristics of other external factors that are confounded by the date of data collection could serve as an alternative explanation. However, these possible influencing factors neither show up in noticeable differences in demographic variables nor in the sum score of incongruence of needs (freshmen: M = 2.25, SD = .50; others M = 2.20, SD = .49).

General Discussion

The study's aim was to tackle the problem of mind-matter interaction by investigating micro-PK effects as support for quantum-based models of psychophysical substance dualism. Therefore, we tested observer effects on quantum-based RNG outcomes using the participants' pre-conscious motive states of incongruence in basic psychological needs as an independent variable. We assumed that higher activation of an individual's specific pre-conscious mental state should, during the perception of a QRNG outcome meaningfully related to this pre-conscious state, result in a higher likelihood of the appearance of a corresponding material state and a corresponding conscious observation of a quantum measurement's result. Hence, we expected substantial evidence for deviations from randomness in the HI group but not in the LI subsample. The direction of the effect was predicted by the ETM, which is claiming that the core affectively laden belief of subconsciously active motives would determine the more likely out-

come for an individual. For targets resembling an approach-motivated means of satisfying a need, this would mean a display of less positive stimuli than chance suggests, as participants exhibiting HI characteristics are generally unable to adequately satisfy this need in their everyday lives. By contrast, for target stimuli resembling an avoidance-motivated means of satisfying a need, we predicted several negative stimuli above chance, as individuals exhibiting HI are generally unable to avoid negative experiences.

To test our assumptions, we first conducted a preregistered experiment with a specific micro-PK test for three of Grawe's (1998) four psychological basic needs—"attachment," "self-esteem enhancement/protection," and "orientation/control"—testing various ways of operationalization concerning stimulus formats, tasks and approach- vs. avoidance-motivated focus. The avoidance-oriented design of the need for self-esteem protection using negative vs. neutral word stimuli revealed anecdotal evidence close to the threshold for the moderate classification for H_1 in the predicted direction within the HI group. As hypothesized, no significant deviations from chance were observed within the LI group. Significant deviations from randomness were not found for the attachment and the loss-of-control tasks in any of the groups. As discussed, considering several weaknesses in the operationalization of these conditions, methodical explanations seem most plausible to us. Furthermore, these results raise the question of whether incongruence with basic psychological needs is conceptually the best indicator for micro-PK effects on self-related adjectives, since the need for self-esteem protection/enhancement is merely one aspect of this construct. Therefore, our future research will investigate other, similar psychological variables connected to inner core beliefs about the self, such as self-biases measured by the implicit-association test (IAT) or personality styles.

In the second experiment, we focused on further observation of the sequential evidence for absolute deviations from quantum randomness in the self-esteem-protection task, and investigated oscillatory changes overtime. Our significance criterion of $BF = 10$ was initially reached at $n = 153$ within the HI group by attracting more presentations of derogative target words than chance suggests in comparison to neutral words. Shortly thereafter, a decline to a final result of almost moderate evidence occurred, similar to the results of other experiments in this field (e.g., Jahn et al., 2000; Maier et al., 2018). Explorative sequential Bayesian analyses of the target and control groups, in comparison to 10,000 simulations suggest that the data of the HI subsample are highly unlikely to be produced by chance. This contrasts with the LI subsample, in which no significant deviations from randomness were observed.

Our finding of an initial micro-PK effect in the context of the basic need for self-esteem protection supports implicitly motivated observers' systematic influence on probabilities, as suggested by other proponents (e.g. Mensky, 2014; Penrose & Hameroff, 2011; Pradhan, 2012; Stanford, 1990; Stapp, 2007), at least for sessions within a certain period. For participants whose need for self-esteem protection is frustrated, the effect's direction can be explained by the ETM. This assumes that individuals who are unable to adequately avoid everyday experiences that reduce their self-worth will also attract the corresponding negative targets above chance during the testing phase. Thus, the unconscious fear of "being devalued" or "not being good enough" leads to a self-fulfilling prophecy. Consequently, this study's findings suggest that mind-matter interactions may occur according to quantum-based theories of psychophysical substance dualism on a common ground, in which both exist as pre-conscious and pre-material forms.

Moreover, a decline was observed in this study after strong evidence for the postulated micro-PK effect had been reached. Nevertheless, the introduced methods of sequential Bayesian analyses with simulations still enabled statistical detection of non-randomness in the data structure as well as differentiation between the target and control groups independent of the final average value. Furthermore, the frequency analysis suggests a volatile dynamic within the data sequence rather than a decline effect. Future projects will include predictions for these analyses with a priori set criteria for significance in our preregistrations. However, the mechanisms behind the frequently observed volatile effects remain unknown. Maier et al. (2018) argue for a systematic counter-mechanism that eliminates the original micro-PK effect, leading to an oscillatory pattern of appearance and disappearance across studies and participants over time, to compensate for initial violations of the second law of thermodynamics. Therefore, such volatility might be inherent in the nature of some effects and demands methods of evidence collection that transcend conventional modes of replication. Moreover, it is important to notice, that the results were checked on a regular basis during data collection as it is common for the Bayesian approach. Nevertheless, this procedure might allow observer effects on the course of evidence. This open question could be addressed by a replication of the study without any analyses during data collection but checking the data only in the end.

Furthermore, assuming a systematic volatile effect across participants would mean the entanglement of the entire sample. Consequently, an individual's outcome in the experiment would depend on the results of predecessors unknown to the participant. As both experiments were performed as group testing with up to ten individuals within one session, participants completed the micro-PK tasks simultaneously on identical computers separated by dividers in the same laboratory room. Thus, this situation is open to non-local interactions. The collected data do not comprise information on the exact grouping of participants and, therefore, analyses on this topic cannot be provided. Nevertheless, it is interesting to consider this possibility concerning the interpretation of the given results. However, it is important to acknowledge that all interpretations of the current results refer only to the group level: the community of individuals with a certain shared motivational pattern, such as HI in the basic needs, might be more likely overall to attract events that confirm their inner core beliefs. Taking possible entanglements into account, no predictions on the level of individual participants are possible. Single-case studies with similar experimental setups, performed on a daily basis over several weeks, could help in exploring the meaning of such micro-PK effects for individuals in the future.

Conclusion

In this study, we identified HI within the basic psychological needs as a strong and measurable subconsciously active set of beliefs that can be addressed in a way that triggers a volatile micro-PK effect using the predictions of the EMT. Testing different ways of operationalization in the first preregistered experiment with a specific micro-PK test for each of the three of Grawe's (1998) four basic needs—attachment, self-esteem enhancement/protection, and control—the design of the need for self-esteem protection using derogatory vs. neutral adjectives revealed significant anecdotal evidence close to the threshold of the moderate classification in the predicted direction only in the target group, whereas significant deviations from randomness were not shown in any group for the attachment and the control task. Based on these results, we decided post hoc to focus on the further observation of the

sequential evidence for absolute deviations from quantum randomness in "self-esteem protection" and to investigate oscillatory changes overtime in a second experiment. Our significance criterion of *BF* = 10 was initially reached in the HI group, yet no significant deviations from randomness were observed in the control group at any time. Shortly thereafter, a decline to a final result of anecdotal evidence occurred. As volatility may lie in the nature of micro-PK effects (Maier et al., 2018), three different explorative sequential Bayesian analysis strategies were added post hoc in an effort to distinguish systematic sequences from random fluctuation (see Dechamps & Maier, 2019). All three procedures significantly indicate systematic variation, which is highly unlikely to be produced by chance, in the target group's sequence, but random fluctuation within the control group, in comparison to 10,000 simulations. This means, that the observed micro-PK effect might systematically oscillate around a random baseline, as has been observed in previous studies within this research field (e.g., Maier & Dechamps, 2018).

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Tu Attires ce que Tu Es: Les Effets des Besoins Inconscients sur la Micro-Psychokinèse

Résumé : Les modèles de corrélation psychophysique basés sur la physique quantique offrent un cadre alternative pour prédire les interactions esprit-matière. Nous relatons le test de tells interactions sous la forme d'effets observateurs sur les résultats d'un générateur de nombres aléatoires quantique (QRNG). Plus spécifiquement, nous avons testé l'influence de certains états motivationnels sur les présentations de stimuli choisis par le QRNG. Les déviations du hasard étaient attendues chez les participants montrant des caractéristiques de forte incongruence (HI) mais nous chez ceux qui montraient une faible incongruence (LI). Notre première expérience, testant les effets de trois besoins psychologiques – l'attachement, la protection de l'estime de soi et le contrôle – avec un analyse bayésienne ont montré des résultats anecdotiques pour H1, seulement pour les stimuli relatifs à l'estime de soi dans le groupe HI. La seconde expérience était une poursuite sélective de la condition prometteuse de protection de l'estime de soi, explorant les preuves favorables à H1 et leurs oscillations au cours du temps. Notre critère pour confirmer H1 était initialement atteint dans le groupe cible. Peu après, nous

avons constaté un déclin pour aboutir à un résultat final anecdotique pour H1. Pour tester la tendance systématique des données par rapport aux fluctuations du hasard, d'autres analyses post-hoc ont comparé le Facteur Bayes maximum, l'énergie de la courbe et l'analyse spectrale de fréquence entre les deux groupes sur 10.000 stimulations. Ces analyses indiquent que le sous-échantillon de données de HI diffère significativement des fluctuations du hasard, tandis que le sous-échantillon LI ne le fait pas. En somme, les résultats suggèrent que les croyances subconscientes affectivement chargées peuvent se manifester à travers des déviations volatiles mais statistiquement détectables du hasard quantique, lorsqu'elles sont précisément déclenchées par une tâche adéquate.

Du ziehst an, was Du bist: Die Wirkung unbewusster Bedürfnisse auf die Mikro-Psychokinese

Zusammenfassung: Quantenbasierte psychophysikalische Korrelationsmodelle bieten einen attraktiven Rahmen für die Vorhersage von Wechselwirkungen zwischen Geist und Materie. Wir berichten über eine Untersuchung solcher Interaktionen in Form von Beobachtereffekten auf quantenbasierte Zufallsgeneratoren (QRNG). Insbesondere testeten wir den Einfluss bestimmter motivationaler Zustände auf entsprechende Reizdarbietungen, die vom QRNG ausgewählt wurden. Zufallsabweichungen wurden bei denjenigen Teilnehmern erwartet, die Merkmale einer hohen Inkongruenz (HI) aufwiesen, aber nicht bei solchen mit einer geringen Inkongruenz (GI). Unser erstes Experiment, in dem wir die Auswirkungen von drei psychologischen Bedürfnissen - Bindung, Selbstwertschutz und Kontrolle - mit einer Bayesschen Analyse prüften, ergab anekdotische Evidenz für H_1 für die mit dem Selbstwertschutz zusammenhängenden Stimuli innerhalb der HI-Gruppe. Das zweite Experiment war eine selektive Fortsetzung der vielversprechenden Bedingung Selbstwertschutz, womit der weitere sequentielle Verlauf der Evidenz für H_1 und seine Oszillation über die Zeit untersucht wurde. Unser Kriterium für die Bestätigung von H_1 wurde in der Zielgruppe zunächst erreicht. Kurz danach zeigte sich ein Decline-Effekt bis zum Endergebnis der anekdotischen Evidenz für H_1. Um den systematischen Trend der Daten gegen Zufallsschwankungen zu testen, wurden weitere Post-Hoc-Analysen durchgeführt, bei denen der maximale Bayes-Faktor, die Energie der Kurve und die Analyse des Frequenzspektrums zwischen beiden Gruppen mit 10.000 Simulationen verglichen wurden. Diese Analysen ergaben, dass sich die Daten der HI-Teilstichprobe signifikant von Zufallsfluktuationen unterschieden, während dies bei Daten der GI- Teilstichprobe nicht der Fall war. Zusammengefasst deuten die Ergebnisse darauf hin, dass sich zentrale affektiv aufgeladene unbewusste Überzeugungen mittels flüchtiger, aber statistisch nachweisbarer Abweichungen vom Quantenzufall manifestieren können, wenn sie durch eine geeignete Aufgabe präzise getriggert werden.

Atraes lo que Eres: El Efecto de las Necesidades Inconscientes en la Micropsicoquinesis

Resumen: Los modelos cuánticos de correlación psicofísica ofrecen un marco atractivo para predecir las interacciones mente-materia. Reportamos una prueba de tales interacciones en forma de efectos de observación en los resultados del generador cuántico de números aleatorios (QRNG). Específicamente, evaluamos la influencia de ciertos estados de motivación en la presentación de estímulos relacionadas elegidos por el QRNG. Esperábamos desviaciones de la aleatoriedad entre los

participantes con características de alta incongruencia (HI) pero no entre con baja incongruencia (LI). Nuestro primer experimento, evaluó los efectos de tres necesidades psicológicas (apego, protección de autoestima, y control) con un análisis Bayesiano que mostró evidencia anecdótica de H1 solamente para estímulos relacionados con la autoestima dentro del grupo HI. El segundo experimento fue una continuación selectiva de la prometedora condición de protección de la autoestima, explorando el curso secuencial de evidencia adicional para H1 y su oscilación a lo largo del tiempo. Nuestro criterio para confirmar H1 se alcanzó inicialmente en el grupo objetivo. Poco después, se produjo un descenso a un resultado final de evidencia anecdótica de H1. Para valorar la tendencia sistemática en los datos contra las fluctuaciones al azar, se realizaron análisis post hoc adicionales comparando el factor de Bayes máximo, la energía de la curva, y el análisis del espectro de frecuencia entre ambos grupos con 10,000 simulaciones. Estos análisis indicaron que los datos de la submuestra HI difirieron significativamente de las fluctuaciones fortuitas, mientras que los datos de la submuestra LI no. En resumen, los resultados sugieren que las creencias subconscientes cargadas afectivamente pueden manifestarse a través de desviaciones volátiles pero estadísticamente detectables de aleatoriedad cuántica cuando se activan con precisión en una tarea adecuada.

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A Portable Bench for Research on Telekinetic Effects on a Spinning Mobile and Experimental Results Obtained with it [1]

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Abstract. In this paper we analyze precisely the starting conditions of the motion of a spinning target with the focus on the thermic/aerodynamic effects. We conducted reference experiments with a static bench, where the motion of the target is obtained with the airflow issuing from a pump, and PKer (volunteer practicing Psychokinesis) experiments (with a new portable bench), where the motion of the target inside the bench is triggered by the PKer. The comparison between the airflow speeds around the target in the two sets of experiments showed that the tangential airflow speeds in the PKer experiments were 10 times lower than the required tangential airflow speeds to start the target moving in the reference experiments. The potential bias and errors in the measurement and computation are shown to be minimal compared to the factor given above. Some particular experimental set-up, simulating the hand and the upper body of the PKer in proximity to the portable bench, did not provoke any reaction on the target. These different elements tend to prove that the motion of the target in these experiments cannot be attributed to thermal/aerodynamic effects. The portable bench could be a good way for other labs to try to reproduce and confirm these experiments.
Keywords: telekinesis; psychokinesis; airflow measurement; PIV portable bench; macro-pk;

In a conference held within a PA convention (Dullin & Jamet, 2017b), and a paper published in the Journal of Scientific Exploration (Dullin & Jamet, 2018), we presented research on historical perspectives concerning the study of psychokinesis on lightweight spinning objects, and a methodology for conducting macro-pk tests on this kind of target, in a non-confined environment.

After eliminating causes like magnetism, electrostatic forces, vibration, and radiation, the only causes remaining were aerodynamic forces (natural air currents or thermally generated air currents).

The approach to identifying the influence of these forces was to evaluate the ratio of spinning object rotational speed to object periphery airflow speed and the evolution of this ratio along the experiment (which may last several minutes).With this ratio, it was shown for a specific object (a plastic dome called Hemispheric Mobile (HM)) that pure aerodynamic effects (ratio lower than one) could be

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distinguished from other effects (motor-driven or potential macro-pk effect) with ratios significantly bigger than one (from two to seven).

We are in this paper presenting another way to analyze the phenomenon: determine through reference experiments at which threshold airflow speed the target starts to move, then analyze the airflow speeds during the start of experiments with PKer and see if they are corresponding to this threshold.

As it was presented in Dullin and Jamet, (2018), this kind of evaluation could not be found in the literature, mainly because of the lack of tools to evaluate slow airflow.

To improve the signal-to-noise ratio in experiments with PKers, and also to facilitate the use of this methodology by other labs or individuals, we developed a portable semi-confined bench. We will present here, in detail, the way it works and the improvement it brings to the global approach.

This bench requires an experiment PKer in order to produce effects (gifted participant).

We follow the idea to work with a non-confined or semi-confined environment using a partial physical isolation of the target system, with a measurement system ensuring control of the remaining known effect. As mentioned in Dullin and Jamet (2018), in Jahn and Dunne (2011) is presented the idea that uncertainty, using fewer constraints, could be a prerequisite for seeing larger phenomena. We could also mention the speculation in Puthoff and Targ (1974) following the experiments done with the gifted participant Ingo Swann in order to try to influence at a distance a superconducting differential magnetometer: “the subject thus appear to act as a local negentropic source. If true, it may be more advantageous as a practical matter to work with extremely noisy systems, rather than with highly constrained or organized systems, in order to maximize possible effects due to the introduction of order”.

Following the presentation of Martin Caidin’s work in Dullin and Jamet (2018), we did some further research on this case, going through the William G. Roll archives in the University of Georgia. Unfortunately, there was no publication except the letter of Roll to Dr. Michael Glancey of the University of Florida (Roll, 1988), reporting his experiments with Martin Caidin (10 hours) assisted by a video tape specialist from West Georgia College and one assistant. This letter presented pretty impressive results (targets from 0.5 to 90g, action from a position outside the room, stop and change of direction).

This research and the experiments were conducted without external funding (no conflict of interest).

Method

Hemispherical mobile device (HM)

A plastic dome (hemispheric shape with a flat part on the top) has been chosen (Figure M1). The shape and the smooth surface limit the interaction between the airflows and the HM.

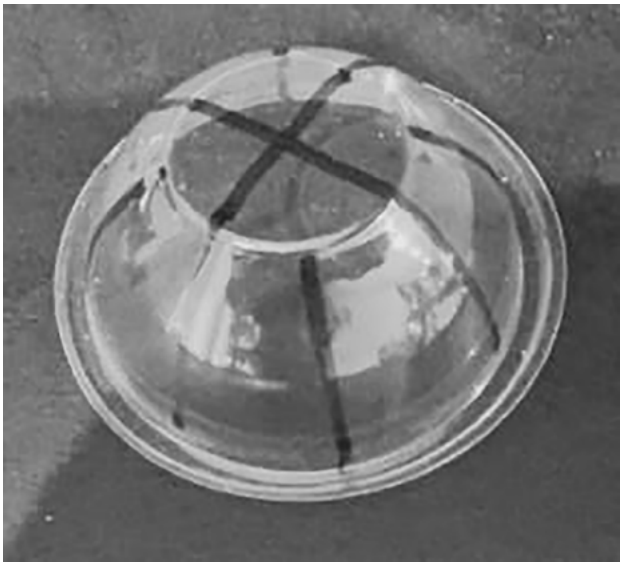

Figure M1. Hemispheric mobile (HM) device used for the experiments

The weight of the dome is 2.45 g, and its diameter is 85 mm. It is possible to find this kind of dome in retail shop : typically 4 oz (or approximately 125 ml) clear dome ice cream cup or plastic disposable round cup or clear plastic high dome lid for 4 oz. aluminum foil; the aluminum foil cupcake / ramekin could be used too although a bit more sensible to the airflows.

This dome is placed at the top of the stem of a carousel candle (Figure M2), also easily found in retail shops. The flat part on the top of the dome facilitates the balancing on the top of the carousel candle (as in these experiments we are not working with high speed, we don't need socket in order to maintain the dome in its position on the carousel candle rod).

Figure M2. HM installed on the stem from a carrousel candle

Airflow speeds measured by PIV

The core techniques used to evaluate the air currents' speed around the HM are described in detail in Dullin and Jamet (2018). They use the PIV (Particle Image Velocimetry) technique (Figure M3) in order to evaluate, with image processing, the speed of the smoke particles or/and smoke particle aggregates, driven by the air and illuminated by a laser beam. As the speed of the smoke/particles is induced by the speed of the air, it gives good information on the airflows moving around the HM.

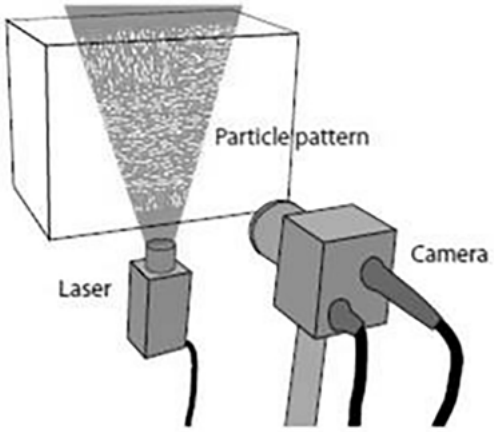

Figure M3. PIV set-up

Set-up for the reference experiments: airflow induction with pump

The first set-up for the reference experiment with a pump is the same as described in Dullin and Jamet (2018 and 2017b). It used a mechanism with a pump aspirating a mix of smoke and air. The output of the pump is pushed through a hose (such as one used in an aquarium), bringing the airflow to the PIV bench (Figure M4).

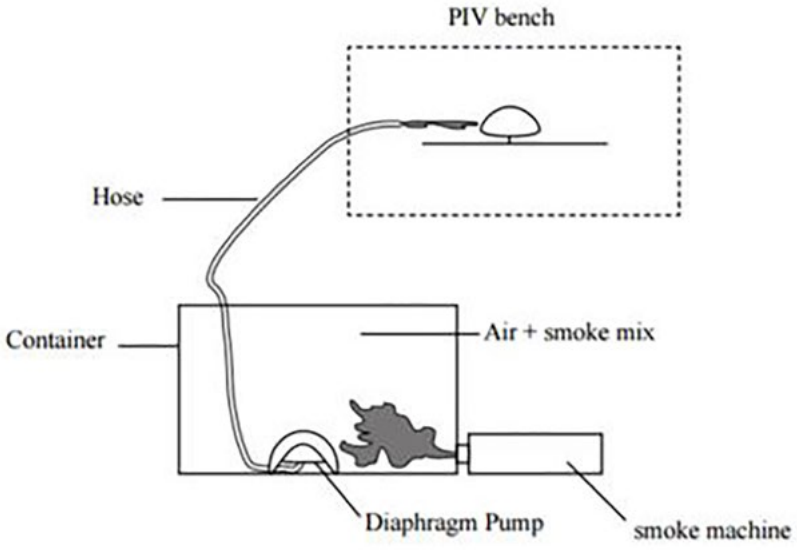

Figure M4. Mechanism for airflow generation in the reference experiment

In Figure M5, we can see the parts described above. The camera taking the images (50 images/s in a 1280 x 720 pixel resolution), is placed in a horizontal plane above, and parallel to the bench.

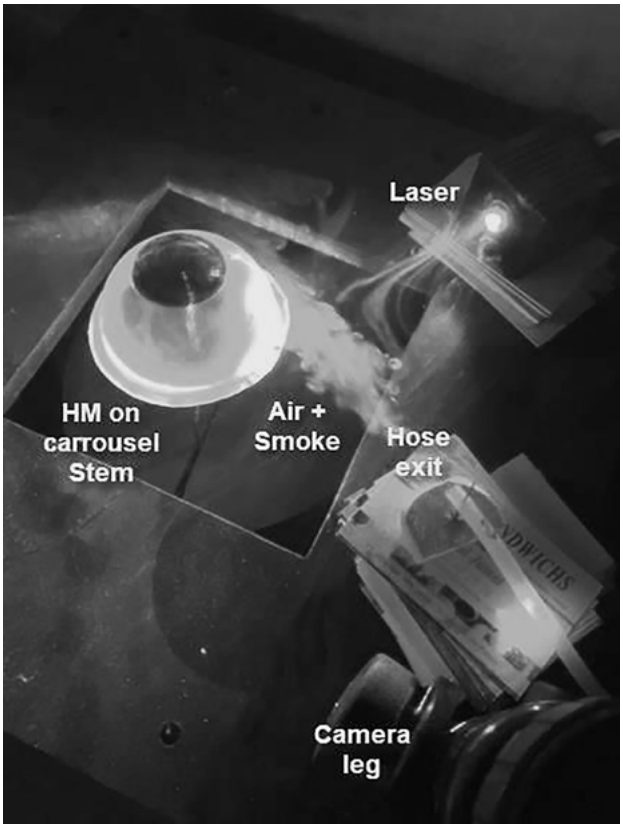

Figure M5. Airflow generation in the reference experiment

In order to facilitate other experimentation and also to open the experiments to other labs, a portable bench has been designed and constructed.

Experimental set-up for macro-Pk test: portable PIV bench

The reference experimental set-up is effective when the airflow is induced by a pump or a fan. But, when used with a PKer, the smoke generation can create noise in the experiment, which decreases the signal-to-noise ratio. Even though some good measurements were obtained with this bench (Dullin & Jamet, 2017b and c), we wanted to go a step further.

Also, we wanted to eliminate some other possible causes of the HM move as:

- The one proposed by Warcollier for the Tromelin's motor (Dullin & Jamet, 2017a and 2018)
- The one proposed by Nechayev and Perelman (Dullin & Jamet, 2017b and 2018)
- The one proposed by Albert Hofmann (Dullin & Jamet, 2018)

We also wanted a PKer to be able to work directly with a bench in a home environment, without having to come to the reference bench in a remote location. With that, we would be able to multiply the

experiments and also meet some good characteristics for the “mood” factor often presented as a key point in this kind of experiment. (Black & Carpenter, 2014).

So, a new bench has been developed with portable characteristics.

This bench (Figure M6) is constituted by:

- A plexiglass box with a lid. This lid has a rectangular opening in the middle (so we can work in a semi-confined environment)
- A support for the camera (30 image/s in a 1280 x 720 pixel resolution) to be placed above the opening
- One or two incense sticks placed in the box to generate smoke (thus, without any machinery, which works because of the semi-confined environment)
- A small laser device with a specific lens chosen to illuminate a thin horizontal or vertical air slice (visualized by the smoke).

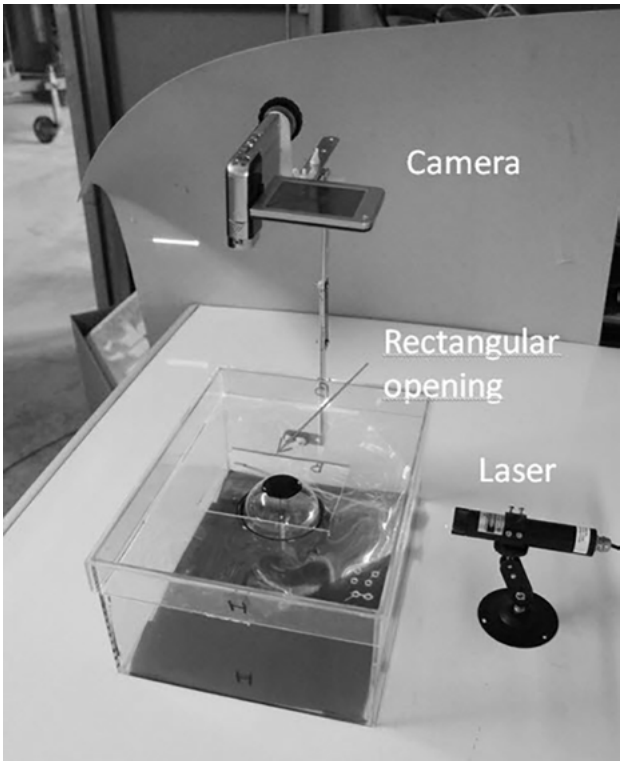

Figure M6. Portable PIV bench for macro-PK test

The way we operate the set-up is as follows:

- First, we place the target (HM plastic dome) on the carrousel stand inside the bench
- Then, we install the camera in order to see correctly the HM target in the field of view

- Then, we light the incense sticks
- After that, we turn on the laser and adjust its height so it illuminates the target at the right place. For horizontal PIV we set the horizontal plane around 1 cm above the HM base.
- Finally, we adjust the camera in order to have a sharp image of the target and the airflow.

With this experiment set-up, the PKer has to put his hand above the target, above or on the plexiglass box, and around the rectangular opening (Figure M7).

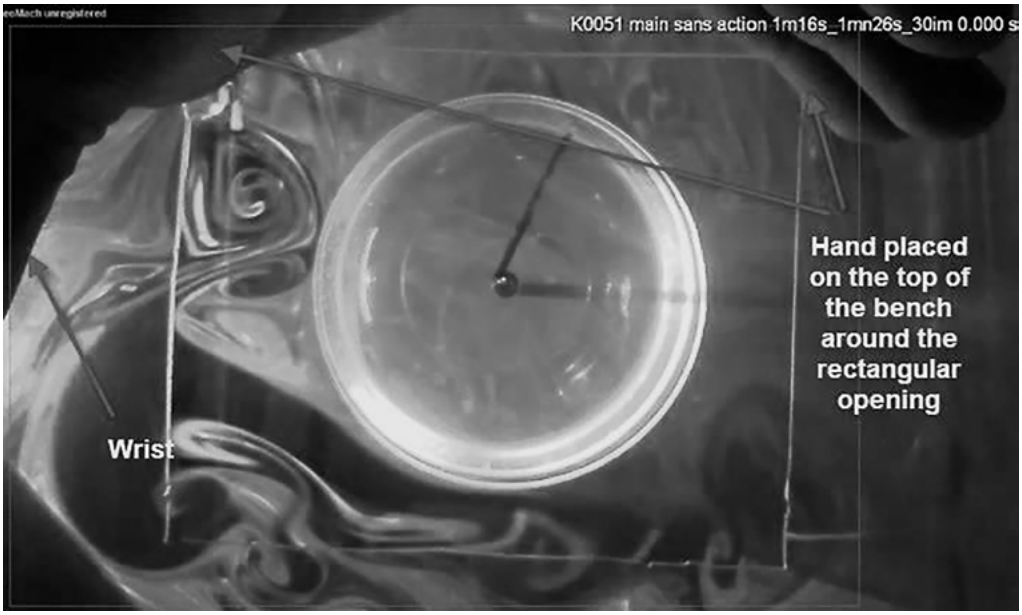

Figure M7. Portable PIV bench for macro-PK test: hand position

With this experimental configuration, the explanations of the target motion proposed by Warcollier, Nechayev and Hoffmann (Dullin & Jamet, 2018) do not apply, mainly because the hand is placed above the HM. Then, the hand cannot form an obstacle to air currents around the mobile (part of the Warcollier explanation).

Also, the temperature difference between the palm and the fingertips (Nechayev explanation of the target motion) can't influence the HM from above the plexiglass box. (See also the part of the Discussion section about the experiment studying the hand and upper body temperature effects.)

Finally, the wrist is far from the target, so it is difficult to imagine in this case that the pulse in the wrist (one of the Hoffmann's explanation of the target motion), which is already a very small effect, can induce a spinning motion of the HM (see also Dullin and Jamet (2018) on the vibration analysis).

The PKer succeeded to set the mobile in motion with this configuration in a semi-repeatable way. So, with him we have been able to conduct the experiments that follow.

Experiment protocol

In order to have the best signal-to-noise ratio possible, we worked with a heavier target. In fact, we stacked three HMs, which gave a weigh of 3 x 2.45 g = 7.35 g.

Contrary to the experiments described in Dullin and Jamet (2017b and 2018), where the focus was on comparing the target speed to the airflow speed, with the target already spinning, here we focused on the conditions of the start of the mobile.

So, experiments have been conducted to start the HM with an airflow issuing from a pump in the first set-up (Poitiers), and other experiments have been conducted with a PKer trying to start the mobile in the portable bench (Montpellier).

Then, the focus was to determine, in both cases, what were the airflow speeds around the target when it was starting to move.

As a way to compare between experiments, we selected for observation 10 seconds after the time when the target started to spin. For these 10 seconds, we evaluated for the airflow

- The different speeds of the smoke particles or aggregate around the HM represented by vectors (vector-field representation) for each frame (a frame is defined here as the difference between two sequential images)
- The mean of this speed vector field for the 10 seconds (so, for 500 frames in the reference experience and for 300 frames for the PKer experiments), which is represented in Figure M8.

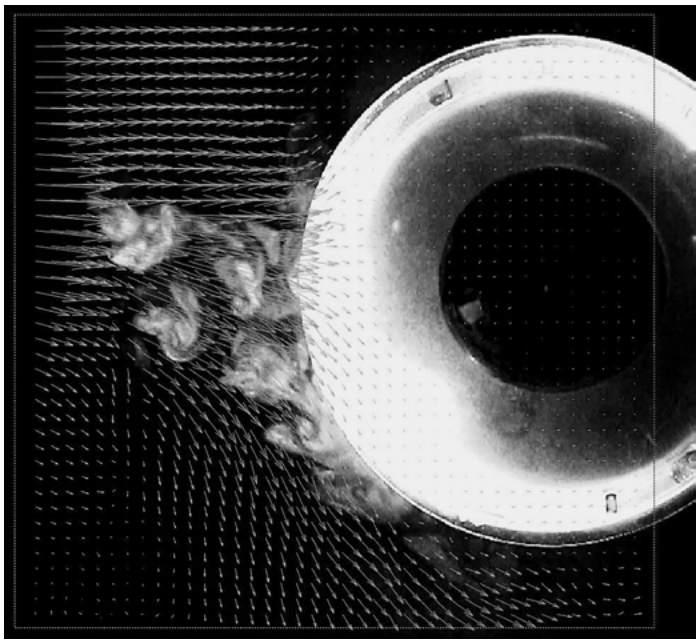

Figure M8. Mean speed vector field (with vector scale 8) for the selected 10 seconds

- The arrows represent the mean airflow speed at the considered point (base of the arrow) for the 10 seconds.

- The mean velocity magnitude of an area close to the HM and from where the movement could come. This gives information on the average value of the speed in this area regardless of the direction of each particle movement.

In Figure M9, for example, we have evaluated the mean velocity magnitude inside an area (the curved rectangle shape) close to the target, with a result of 34 mm/s.

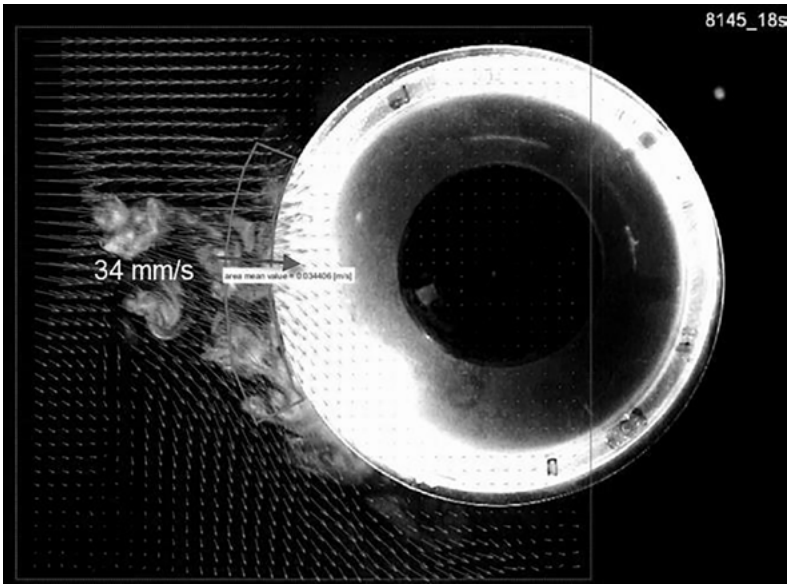

Figure M9. Area mean value for the velocity magnitude34 mm/s (vector scale 8)

In another step, we extract the components of the airflow speeds, tangential to 30 concentric circles around the target (Figure M10), as proposed in Dullin and Jamet (2018).

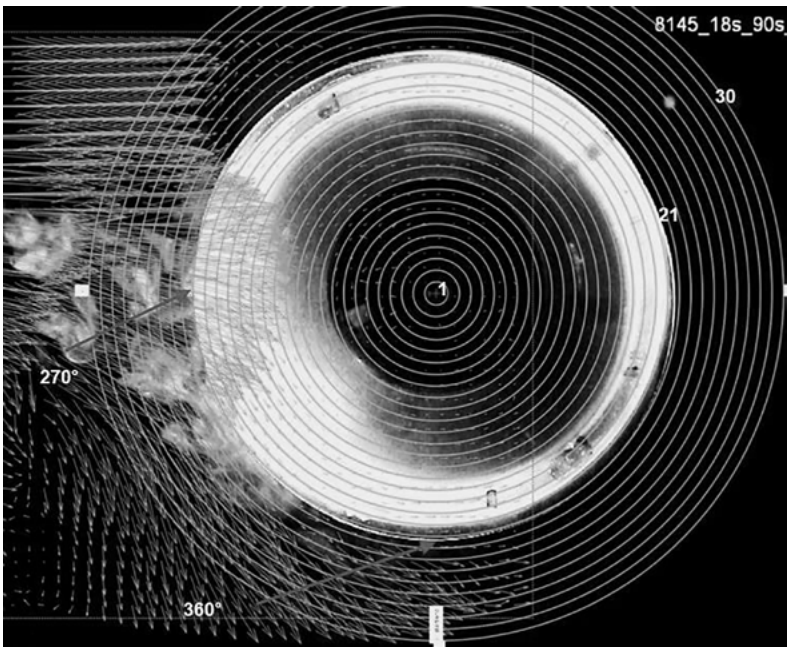

Figure M10. Concentric circles around the target for tangential speed extraction (vector scale 20)

Then we calculate a mean tangential speed for the different circles in the area impacted by the flow (270° to 360°, bottom-left quarter of the circles in the Figure M10). Finally, we draw the graph of these mean tangential speeds as a function of the circle number, which is presented in Figure M11. The outer circle is numbered “30”, and the circle at the periphery of the HM is numbered “21”.

This tangential speed is the component of the air speed which could drive the target by friction.

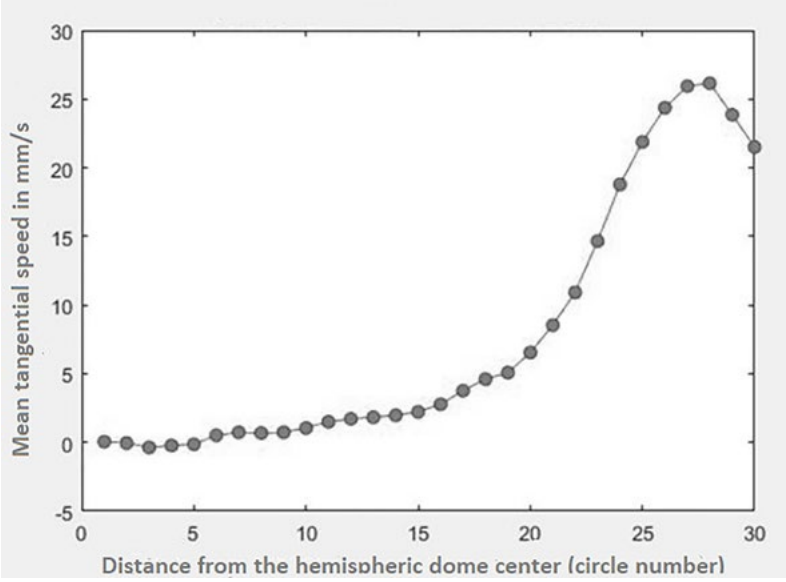

Figure M11. Mean tangential speed (in mm/s) as a function of the concentric circle concerned

For the presentation of the results and the comparison between experiments we will use this diagram, but with the use of the distance of the plastic dome surface in mm instead of the circle number.

Note: for the image treatment we use raw data, speed calculation, mean speed, and tangential speed without using any smoothing feature.

We also conducted for the PKer experiment

- An airflow speed analysis when the hand is in place on the top of the bench but without HM movement
- An airflow speed analysis when there is no hand in place (HM on the stem in the bench but no hand above the bench).

Trickery detection - other causes for movement

The techniques proposed (for airflow visualization) can easily detect any trickery involving aerodynamic forces used to move the HM (such as air blowing from the mouth—even if the PKer is wearing a mask—or hands moving).

Also, the way the HM is positioned in the bench makes it difficult to influence it from the outside of the bench to induce a spinning movement.

As the HM is made of plastic, the use of a magnet cannot induce a movement.

As presented in Dullin and Jamet (2018), static electricity could only induce some half-turn movement from one side to the other. Conversely, in the PKer experiments presented below, after the 10 second start, the PKer provoked a continuous run of the target of 4 minutes, finishing at a spin speed around 30 degrees/second before deciding to stop (Figure M12).

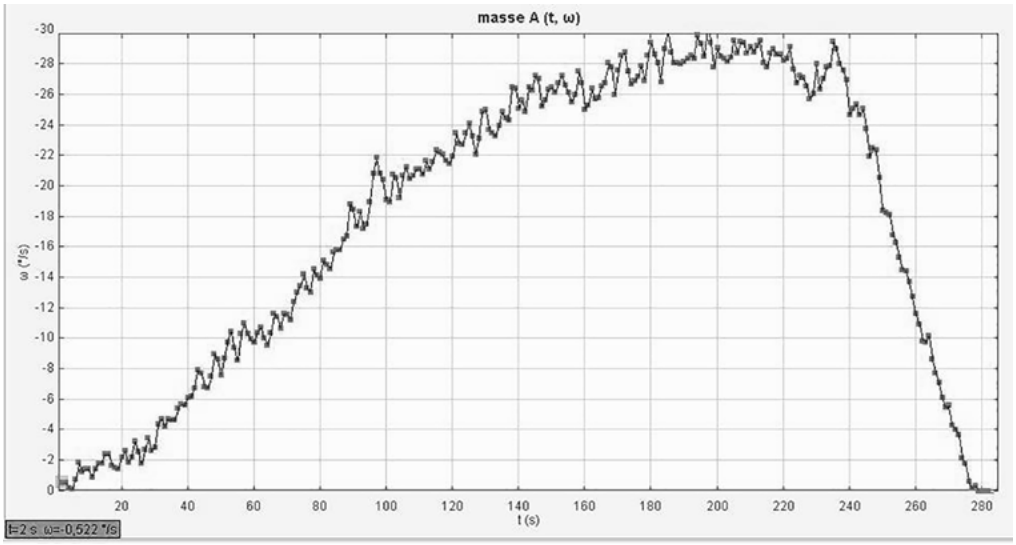

Figure M12. Spin speed evolution of the target (in degrees/second) as a function of time (in seconds), from motion start to stop, in the K0103 experiment (each experiment is attached to an internal reference number)

A-priori belief of the researchers

The three persons involved in these experiments were moderate to strong believers, before the project began, that these new experiments could show some results supporting the telekinesis hypothesis.

Results

Comparison of the speed vector fields between two reference experiments and two PKer experiments

To present the results, we will compare directly two reference ("pump") experiments with two PKer experiments.

Reminder: we conducted the "pump" experiments in such a way as to find the minimal speed of air required to start the target moving.

So, we conducted experiments adjusting the air speed and the hose exit orientation relative to the HM (Figure M5) in order to find this speed.

Then, as described in the Methods section, we go through a detailed study to evaluate the mean airflow speed around the target (which is clearly the cause of the motion in the reference experiment) and compare it with air speed in the PKer experiments.

So, first let us look at the four experiments using the mean speed vector fields during the 10 seconds when the target is starting to spin as a point of comparison (Figure R1).

The two upper images represent the reference experiments, one with a tangential air–smoke introduction (8162, on the left), the other (8145, on the right) a little bit more on the axis of the target.

Below them are images from the PKer experiments (K0103 and K0115).

The laser illuminated 0.5 centimeter above the base of the target in each case.

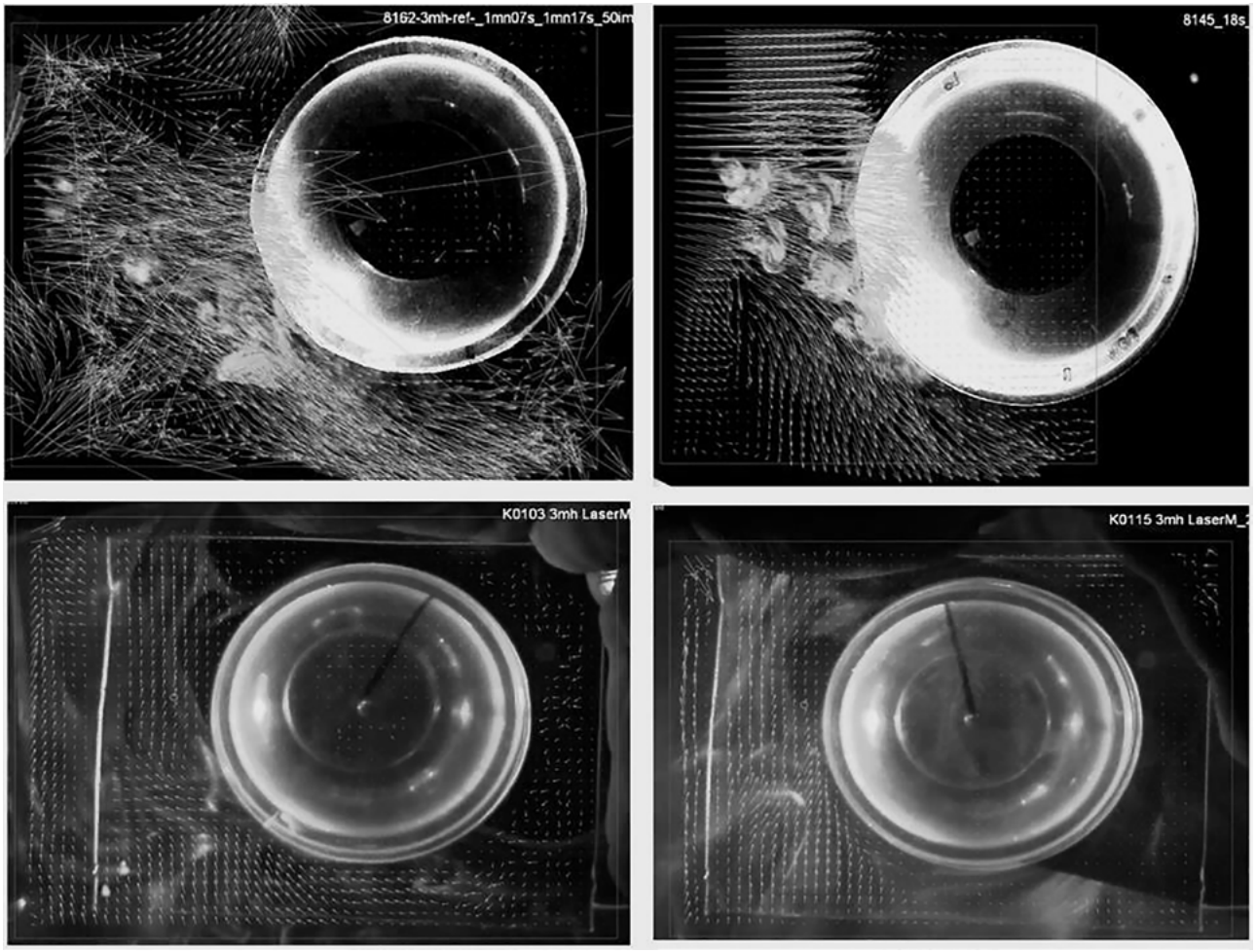

Figure R1. Speed vector field comparison between experiments 8162, 8145 (reference experiments, top two), and K0103, and K0115 (PKer experiments, bottom two)

As the speed vectors are at the same scale in all images (scale 20 in the PIV parameter), the difference between reference experiments and PKer experiments is quite evident at this stage.

Comparison of the velocity magnitude between two reference experiments and two PKer experiments

In evaluating the mean velocity magnitude in some areas around the HM where the airflow is correctly oriented to drive the HM, we obtained results shown in Figure R2.

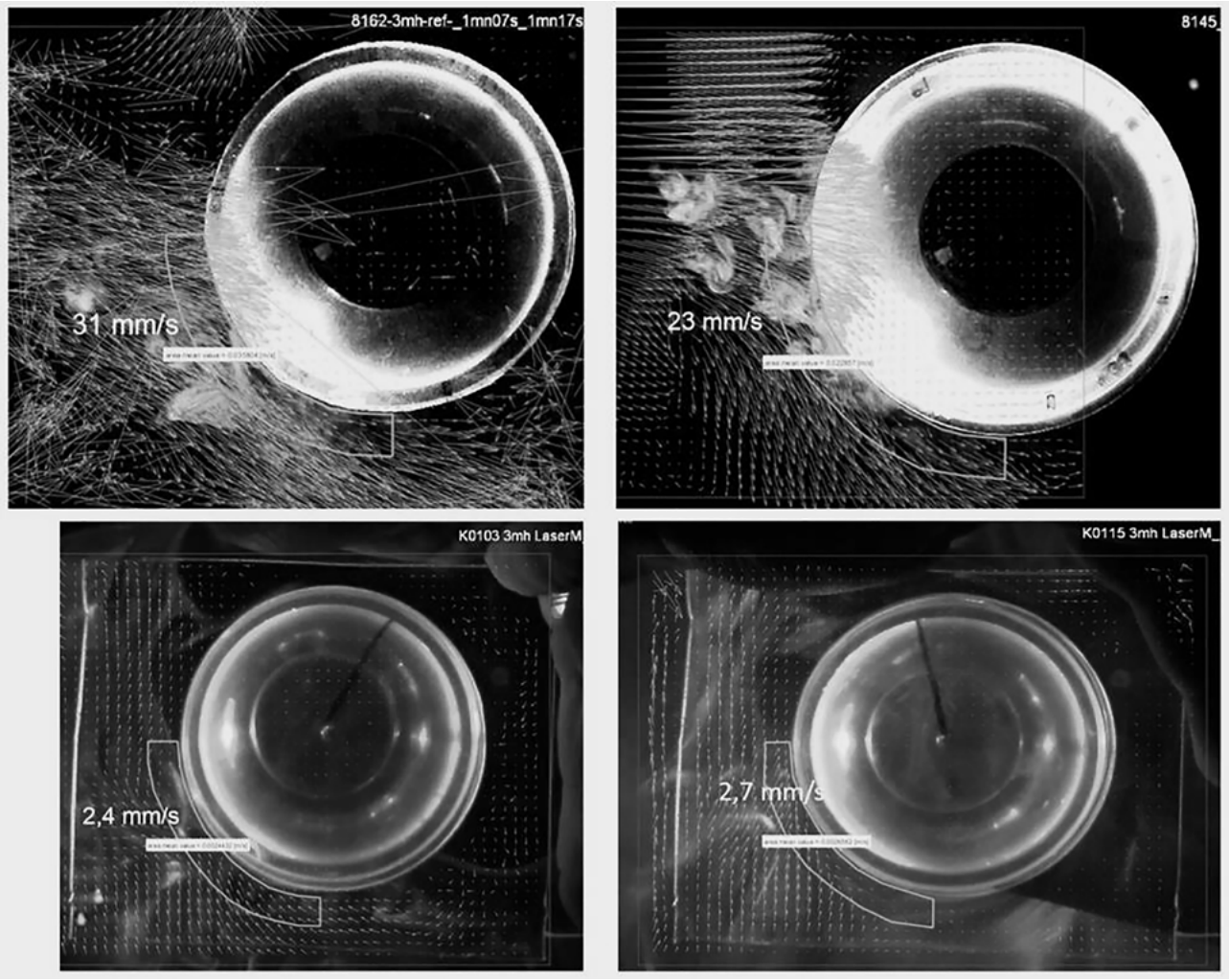

Figure R2. Mean velocity magnitude in areas close to the target
(Reference experiments, top two, PKer experiments, bottom two).

So, if we compare the lowest airflow velocity required to start the target moving with a pump (23 mm/s) with the mean speed measured when the HM starts to spin with a PKer (2.55 mm/s), we get a ratio of 9.

Comparison of the tangential airflow speed vectors between two reference experiments and two PKer experiments

In order to have a more accurate comparison, we computed the tangential speed in the different circles (see Methods section).

In Figure R3, the mean tangential speed in the angular section 270°–360°[2] is represented as a function of the radial distance from the surface of the HM for the four experiments.

Between 5 and 15 mm from the target surface, this diagram gives an average ratio of air speeds of 10 between the 8145 reference experiments and the PKer experiments and a ratio of 15 between the 8162 reference experiment and the PKer experiments. At 1 cm from the surface we have the following values for the airflow tangential speed:

- Reference experiment 8162: 29.4 mm/s
- Reference experiment 8145: 18.8 mm/s
- PKer experiment K0103: 1.5 mm/s
- PKer experiment K0115: 2.2 mm/s

This gives a ratio between the lowest tangential speed of reference to the mean of the speed in PKer experiments equal to 18.8/1.85 = 10.2.

Airflow speed comparison between experiments with PKer action and experiments with no action

It could be interesting to look at the airflow speed either when the PKer has his hand on the transportable bench, but no motion is induced on the target, or when there is no hand present, and no action from the PKer.

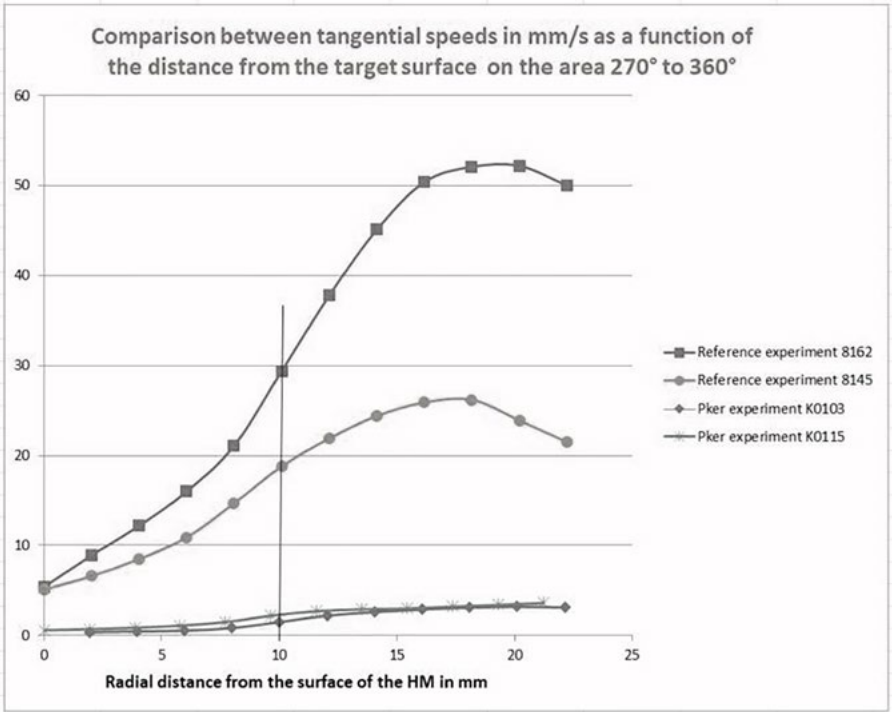

Figure R3. Tangential air speeds in mm/s as a function of the radial distance from the HM surface in mm

2 For more details, see the Discussion section "*Choice of impact zone for calculation*", below.

We conducted these experiments, which are presented in Figure R4,

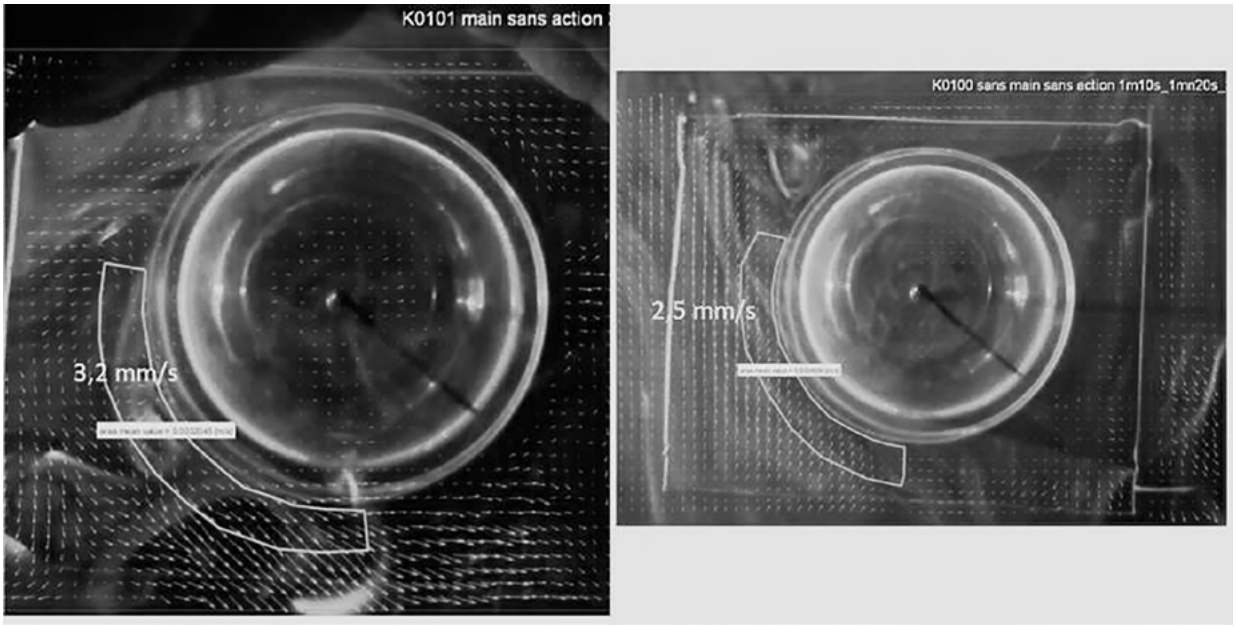

Figure R4. Left image: hand present without action. Right image: neither hand nor action

and in Figure R5 are the resulting curves compared to the two other PKer experiments.

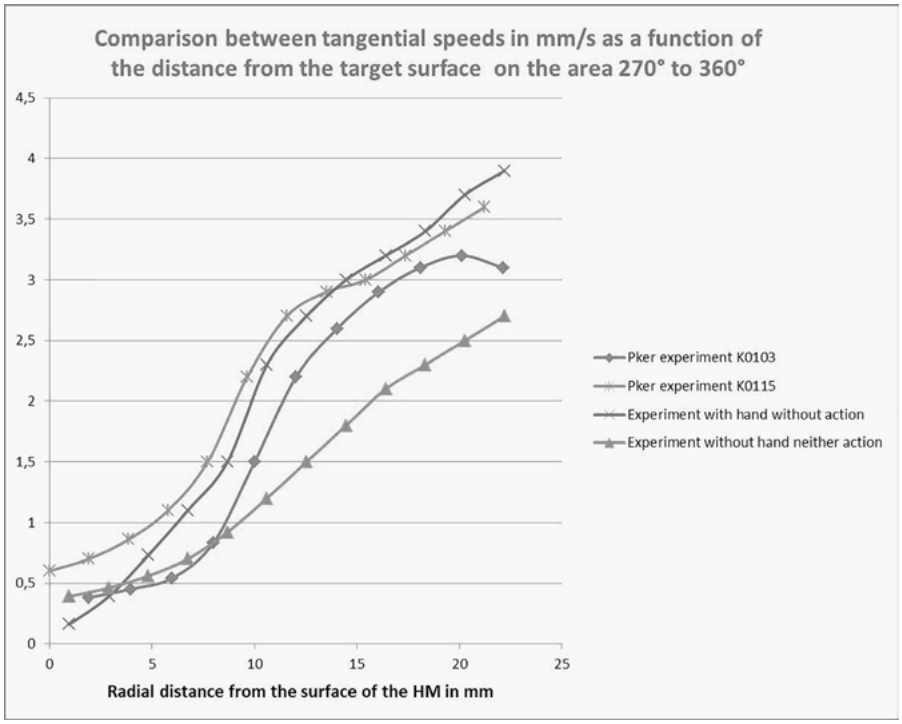

Figure R5. Tangential speeds in mm/s as a function of the radial distance from the HM surface in mm

With regard to the airflow speeds, there is no real difference between PKer experiments with action on the target and not. In the case where there is no hand in place, the speed of the airflow looks a bit lower beyond the 10 mm area zone. So, we can see an impact on the airflow because of the hand on

the top of the transportable bench, but it is small (on the order of 1 mm/s, which is far lower than the 20 mm/s required in the reference experiment).

Viewed from the perspective of reference experiments with the pump, there are no differences between these experiences, in terms of the airflow speeds. They are all producing very low speeds.

Conclusion

The reference experiments enable us to evaluate the minimal airflow speed required to set the HM target in motion (velocity between 23 and 31 mm/s, depending on the hose exit orientation) and the tangential speed at one centimeter from the surface of the HM (between 18.8 and 29.4 mm/s).

Compared to these, the experiments with the PKer yielded an airflow velocity as low as 2.4 mm/s (the other experiment at 2.7 mm/s) and the tangential speed at 1 cm from the surface of the HM as low as 1.5 mm/s (the other one at 2.2 mm/s). This gives a ratio for the tangential airflow speeds between the two kinds of experiments close to 10 (10.2 if we look at 1 cm from the surface of the HM).

This means that the target in the PKer experiment started to move with an airflow speed more than 10 times smaller than the required speed to start it (estimated in the reference experiment). Also, we saw in the PKer experiments that the hand on the top of the bench did not have a significant impact on the airflow speed (1 mm/s at most).

This confirms our hypothesis that the main cause that starts the HM motion in the PKer experiments, as presented, is not the airflow. As we have eliminated the other physical causes (see the subsection “Trickery detection / other causes for movement”), we appear to have demonstrated an Anomalous Perturbation, which could probably be attributed to some macro-PK effects.

Also, the experiments with this new portable PIV bench showed us that we are able to produce results with a good signal-to-noise ratio and with semi-repeatability (thanks to the PKer being able to set in motion three stacked MHs in this semi-confined environment). So, we invite other labs to try to reproduce this kind of experiment, in order to confirm these results.

Discussion

In Dullin and Jamet (2017b and 2018), several points associated with the methodological approach were discussed:

- the image acquisition error and frequency acquisition tolerance
- the calibration error
- the error induced by the PIV algorithm (image treatment)
- the difference between fluid and particle velocity.

The global error estimation for the final ratio presented was +/- 8.9%, so approximatively +/- 10%

which is minimal compared to the ratio of 1000% (factor 10) between the reference experiments airflow speed and the PKer experiments airflow speed. In addition, we would like to consider the following points:

- Vertical speed evaluation
- Global approach of slicing horizontally and vertically—Reynolds number justification
- Choice of impact zone for calculation

Finally, we will present a particular experiment with simulation of the heat generated by the hand and the upper body of the PKer.

Vertical PIV experiment for vertical speed evaluation

With the portable PIV bench, we are dealing with a semi-confined box with a rectangular opening at the top and burning incense sticks at the bottom to create the smoke. One could argue that this configuration could create an upward convection current reinforced by the heat of the PKer hand placed on the top of the box.

Even though our experiments showed no real impact of the hand placed at the top (maximum 1 mm/s increase in the airflow speed), this was on a horizontal plane, not on a vertical one. An upward current with disequilibrium around the HM could possibly induce a spin of the target. We did not have success in other experiments to produce a continuous movement of the HM by that means (even with only a single HM, whereas we have three stacked here), but we felt it was important to evaluate this scenario and conducted a new experiment with vertical PIV.

In order to measure the airflow speed in a vertical direction, the portable bench was used with the laser illuminating a vertical plane instead of a horizontal one, as in Figure D1.

Accordingly, the camera was set horizontally to record vertical images.

With this configuration, we performed a PKer experiment (K0054) with the three HMs stacked and made an analysis of the 10 seconds associated with the start of the target's motion. In Figure D2 we can see the results with the vector scale at 20. The mean velocity is 3.2 mm/s in the selected area.

So, these speeds are close to the ones we saw for the horizontal PIV.

On top of that, we recorded some videos without laser "slicing". So, we were able to see the flow of smoke all around the target and verify that we did not miss any particular event.

So, the speeds measured cannot explain the evolution of the target's motion (three HMs stacked), from stillness to a continuous spin, over the course of 4 minutes (with a final speed of 30 degrees/second).

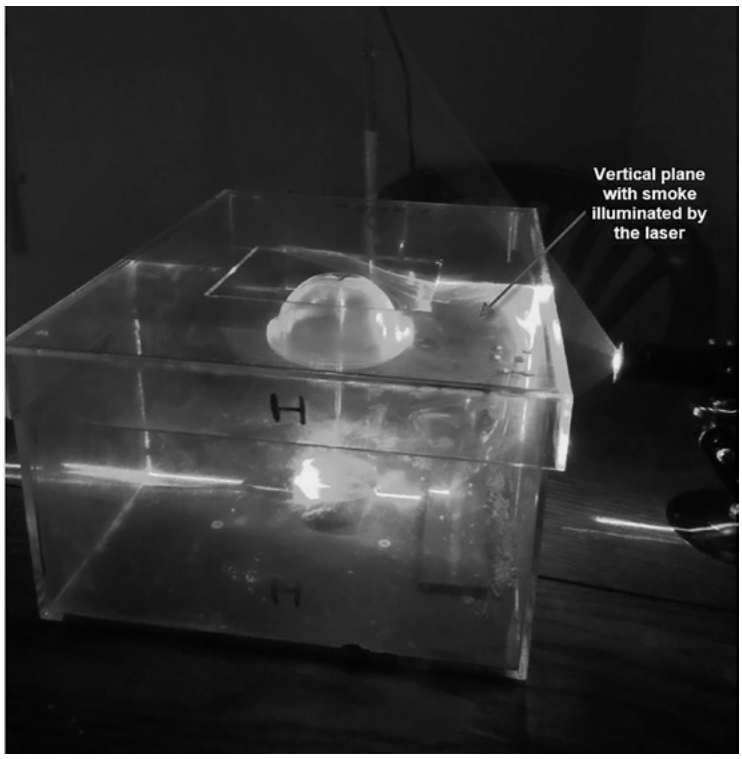

Figure D1. Vertical PIV configuration for the portable PIV bench

Figure D2. Vertical PIV—mean velocity magnitude in a selected area (vector scale 20)

Global approach of slicing horizontally and vertically—Reynolds number justification

In order to compare different experiments, we needed some reference criterion. The ultimate point of these experiences is to evaluate the role of the airflow around the target vis-à-vis its motion. The ideal situation would be to have a complete, three-dimensional view of the entire airflow around the HM and then compute the total torque applied by the airflow to the target over time. This is something really difficult to reach:

- The necessary set-up would be very complex to build, able to measure all the airflow speed in 3-D, in real time (50 images/s), even with the low speeds concerned.
- Even assuming all the data could be collected, it could be a hard task to transform this data into a torque value with good precision.

So, the way we approached it was to use reference experiments. First, we qualified the kind of flow concerned. So, we will use the Reynolds number, defined as

Re = ρ•V•D/μ, where ρ = density of the air, V = airflow speed, D = diameter of the HM and μ = dynamic viscosity of the air.

We are dealing with slow airflow speeds around the target (below 200 mm/s for the reference experiments and far below that for the PKer experiments).

For the range 200 mm/s to 10 mm/s, at ambient temperature (20 °C), Table 1 gives the Reynolds numbers, Re.

Table 1
Reynolds numbers (Re) for airflow speeds between 200 mm/s (0.200 m/s) and 10 mm/s (0.010 m/s)

Airflow speed (m/s)	0.200	0.100	0.050	0.025	0.010
Diameter (m)	0.073	0.073	0.073	0.073	0.073
Re	973.4	486.7	243.3	121.7	48.7

The Reynolds number for 200 mm/s is 973.4. So, we are clearly not in turbulent flow, for which the threshold often used is 2 400 (which would require, in our case, a speed of 500 mm/s). Because of that, what happens in one horizontal plane is similar to what happens in another horizontal plane (no shearing of the flow).

Then, in our reference experiment, we can work with an illuminated plane of smoke at the center part of the flow generated by the pump. It gives us a good approximation of the airflow field around the target. It is the same for the PKer experiments, and by using the same slice (at the same average height on the HM), we have a good basis for comparison between reference and PKer experiments. Also, the mean vertical speed study (see preceding paragraph) gave a confirmation of the airflow speed magnitude relative uniformity, with the vertical velocity magnitude being close to the horizontal velocity magnitude.

Choice of impact zone for calculation

There is a link between the mean airflow speed and the frictional torque around the mobile, which potentially drives it. In the reference experiment, the airflow is focused in a specific zone (determined by the direction of the hose exit). In this case, it is evident that the airflow speeds of concern for the triggering of the target spin are the ones in this specific zone. We can assume that the mean speed in this zone is greater than in any other zone around the target, on this horizontal plane.

In the reference experiments, we are trying to trigger the motion with a flow along the target; the main part of the flow impacts the bottom-left side of the HM (see Figure R1). If we look at the flows in the PKer experiments, they present speeds a bit higher in this zone, too. So, to avoid an arbitrary choice regarding the definition of the angular section on which to base the calculation of the representative mean tangential speed for each experiment, we decided to use the exact 270°–360° angular section (bottom-left part) of the HM for all experiments.

Then the resulting ratio of tangential speeds is a good approach to the comparison of the two kinds of experiments (this ratio could probably have been bigger if we had focused precisely on each higher speed zone in each experiment, but with the risk of many arbitrary choices).

Experiments with simulation of the heat generated by the hand and the upper body of the PKer

The objective here was to simulate the heat generated by the hand and the upper body of the PKer leaning on the bench and study if we could trigger a motion on the target.

We conducted different experiments, with three glasses filled with hot water (simulating the hand), another glass (simulating the wrist) and a big glass jar (simulating the upper body). Some of the glasses were filled with very hot water (90 °C, as in Figure D3), some with water at body temperature (37 °C at the glass surface). No motion of the target was observed at either temperature, as long as the PKer was not in the room.

In Figure D3, we can see the three glasses simulating the hand and the one simulating the wrist in their corresponding positions around the rectangular opening on the top of the bench. We can see also the glass jar representing the upper body of the PKer.

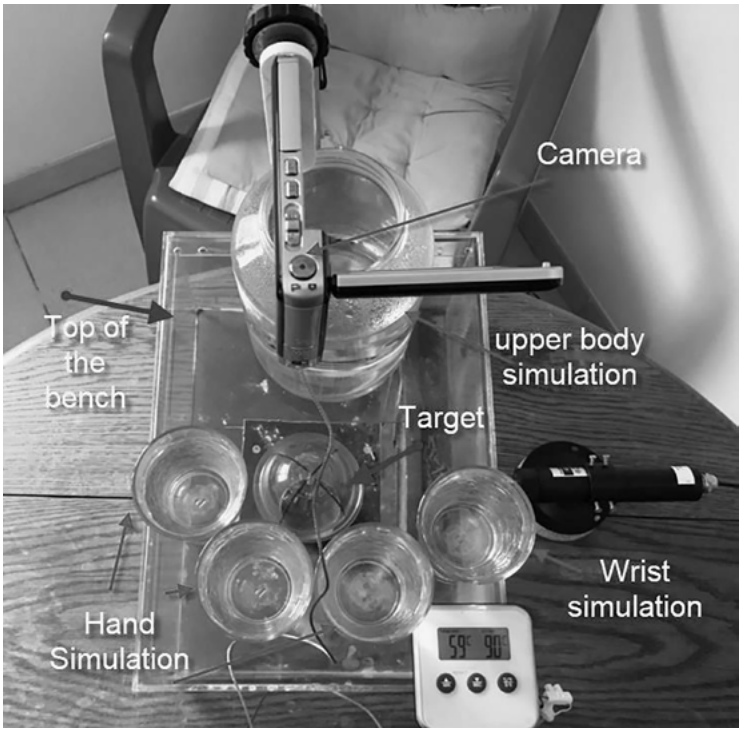

Figure D3. Simulation of hand, wrist and upper body with glasses and a glass jar filled with hot water

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Un Banc Portable pour la Recherche sur les Effets Telékinétiques sur un Mobile Rotatif et les Résultats Expérimentaux Obtenus avec Lui

Résumé : Dans cet article, nous analysons précisément les conditions de départ du déplacement d'une cible rotative en nous focalisant sur les effets thermiques et aérodynamiques. Nous avons conduit des expérimentations de référence avec un banc statique, où le déplacement de l'objet est obtenu par le flux d'air issu d'une pompe, et des expérimentations avec un PKer (praticien volontaire de psychokinèse) avec un nouveau banc portable, dans laquelle le mouvement de la cible au sein du banc est déclenché par le Pker. La comparaison entre les vitesses de flux d'air tangentiels autour de la cible dans les deux configurations expérimentales a montré que les vitesses des flux d'air tangentiels dans les expérimentations avec PKer étaient dix fois plus faibles que les vitesses de flux d'air tangentiels requis pour démarrer le déplacement de la cible dans les expérimentations de référence. Les biais potentiels et les imprécisions de mesure et de calcul sont objectivement minimes comparés au facteur montré précédemment. Certains dispositifs expérimentaux spécifiques, simulant la main et le haut du corps du PKer à proximité du banc portable, ne provoquent aucune réaction de la cible. Ces différents éléments tendent à prouver que le déplacement de la cible dans ces expérimentations ne peut pas être attribué à des effets thermiques ou aérodynamiques. Le banc portable pourrait être un bon moyen pour que d'autres laboratoires tentent de reproduire et de confirmer ces expérimentations.

Eine tragbare Versuchsanordnung für die Untersuchung telekinetischer Effekte auf ein sich drehendes Mobile und die damit gewonnenen experimentellen Ergebnisse

Zusammenfassung: In diesem Beitrag analysieren wir präzise die Ausgangsbedingungen der Bewegung eines sich drehenden Targets unter besonderer Berücksichtigung der thermisch/aerodynamis-

chen Effekte. Wir führten Vergleichsexperimente mit einer feststehenden Versuchsanordnung durch, bei denen die Bewegung des Targets mit einer durch eine Pumpe erzeugten Luftströmung erzielt wird, und Experimente mit PKern (Freiwilligen, die Psychokinese praktizieren) (mit einer neuen tragbaren Versuchsanordnung), bei denen die Bewegung des Targets innerhalb der Versuchsanordnung durch die PKer ausgelöst wird. Der Vergleich zwischen den Strömungsgeschwindigkeiten der Luft um das Target in den beiden Versuchsgruppen zeigte, dass die tangentialen Strömungsgeschwindigkeiten der Luft in den Experimenten mit PKern 10mal niedriger waren, verglichen mit den tangentialen Strömungsgeschwindigkeiten der Luft, die notwendig waren, um das Target in den Vergleichsexperimenten in Bewegung zu setzen. Der potentielle Bias und die Fehler der Messung und Berechnung erweisen sich im Vergleich zu dem oben angegebenen Faktor als minimal. Einige spezielle Experimente, bei denen die Hand und der Oberkörper der PKer in der Nähe der tragbaren Versuchsanordnung simuliert wurden, lösten beim Target keine Reaktion aus. Diese verschiedenen Elemente deuten darauf hin, dass die Bewegung des Targets in diesen Experimenten nicht auf thermische/aerodynamische Effekte zurückzuführen ist. Die tragbare Versuchsanordnung könnte auch von anderen Laboratorien verwendet werden, um diese Experimente zu reproduzieren und zu bestätigen.

Un Banco Portátil para la Investigación de Efectos Telequinéticos en un Móvil Giratorio y los Resultados Experimentales Obtenidos con Él

Resumen. En este artículo analizamos precisamente las condiciones iniciales del movimiento de un objetivo giratorio enfocados en los efectos térmicos/aerodinámicos. Llevamos a cabo experimentos comparativos con un banco estático, donde el movimiento del objetivo se obtiene por el flujo de aire emitido por una bomba, y experimentos con un PK (un voluntario que practica psicoquinesis) (con un nuevo banco portátil), donde el movimiento del objetivo dentro del banco es activado por el PK. La comparación entre las velocidades de flujo de aire alrededor del objetivo en los dos grupos de experimentos mostró que las velocidades de flujo de aire tangencial en los experimentos PK fueron 10 veces más bajas que las velocidades de flujo de aire tangencial requeridas para iniciar el movimiento del objetivo en los experimentos de referencia. Mostramos que el sesgo y los errores potenciales en la medición y el cálculo son mínimos en comparación con el factor indicado anteriormente. Una configuración experimental, simulando la mano y la parte superior del cuerpo del PK cerca del banco portátil, no provocó ninguna reacción en el objetivo. Estos diferentes elementos tienden a demostrar que el movimiento del objetivo en estos experimentos no puede atribuirse a los efectos térmicos/aerodinámicos. El banco portátil puede ser una buena manera para que otros laboratorios intenten reproducir y confirmar estos experimentos.

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Dissonance, Complementarity, and Psi[1]

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Abstract: Complementarity, involving contradictory or incompatible observations necessary for a full description, is essential to the concept of entanglement in quantum theory. Both terms have recently been used, analogously, in three somewhat similar theories relevant to the subject matter of parapsychological research, Generalized Quantum Theory, the Model of Pragmatic Information, and Dual-Aspect Monism. I propose that phenomenologically the cognitive/emotional experience of *dissonance* may be a consequence of consciously acknowledged complementarity. Dissonance may be a necessary component of psi, particularly psychokinesis. Reduction of dissonance may account for a number of the replication difficulties reported in the parapsychological literature. These are, total failure to replicate a significant result, partial confirmation with or without position effects, reciprocity of effect strength/reliability, and experimenter effect whereby significant results are reported by some experimenters but not by others. I describe a research design that could elucidate the role of dissonance in obtaining significant evidence for psi.
Keywords: Dissonance, complementarity, psi

What has been described by Kennedy (2003) as "the capricious, actively evasive, unsustainable nature of psi" is evidenced in parapsychological research by failures in replication, either complete or partial. Effects such as non-replication of statistically significant results, supposed serial order decline or incline of significant results, displacement effects within and between trials, reciprocity of effect size/reliability, and possible experimenter effects, have all been cited as exemplifying Kennedy's description. An explanation (other than the obvious skeptical one) which could encompass these varied patterns of results is overdue.

In this paper I propose that *dissonance* describes the phenomenological experience of complementarity, a term used in quantum theory to denote a state of incompatibility between some observables, all of which are necessary to fully describe an event or state. In the context of parapsychological research, the state of dissonance may result from attempts to accommodate contradictory or incompatible cognitive schema including incompatible anticipations of outcome. The experience of dissonance by experimenters and/or participants may be positively correlated, or possibly necessary, to significant results in psi, particularly psychokinesis, experiments. Furthermore, variations in dissonance may de-

1 The author is grateful to an anonymous reviewer for this journal who made very significant and comprehensive suggestions about an original version of this paper, and to colleagues Peter Lamont and Caroline Watt for their critical comments and suggestions on early drafts of this paper. Address correspondence to: Correspondence: Dr. Ian Tierney, Honorary Research Fellow, Koestler Parapsychology Unit, Psychology-PPLS, University of Edinburgh. 7 George Square, Edinburgh EH8 9JZ, UK, iantierney50@gmail.com

scribe most, and possibly all, of the effects described by Kennedy. These contentions are based on three independent lines of reasoning, stemming from three recent theoretical conjectures, an empirical observation and several experimental results.

First - complementarity, which has been part of a number of recent theories in parapsychology, is essential to entanglement which is employed in the description of psi or synchronicity as 'non- local entanglement correlations' (Lucadou, Römer, & Walach, 2007). It is possible that a phenomenological description of the quantum theory concept of complementarity might lead to insights for designing more informative parapsychological experiments. Houtkooper, describing the history of Bell's Inequality notes that "an issue which at first had to do with the understanding of the theory and how to paint a satisfactory mental picture of it became an experimental issue" (Houtkooper, 2002, p. 175).

Second, analysis of a large collection of spontaneous anomalous (or extraordinary) experiences (Fach, 2011: 1649 individuals) suggest that complementarity is an element that occurs very frequently in the descriptions given by experients.

Third, in the context of general psychology, dissonance is the result of experiencing contradictory beliefs or information. It is often experienced as to some degree aversive, producing psychological discomfort or stress. This usually results in avoidance behavior, specifically cognitive changes which reduce the contradictions (Festinger, 1957), so dissonance is usually a short-lived experience. Reflecting on the origin and fate of dissonance as experienced by both experimenters and participants in parapsychological experiments reveals many similarities with the observed effects or patterns which were the bases of Kennedy's observations.

Complementarity in parapsychological theory and experiment

Lucadou et al., (2007) suggested that synchronistic or psi phenomena can be interpreted as entanglement correlations using the formalism introduced by Weak or Generalized Quantum Theory (GQT: Atmanspacher et al., 2002) and that complementarity is necessary for entanglement. The GQT argument is that it is possible to define certain quantum theory terms such as 'complementarity and entanglement' in generalized ways. The "weak version of the theory is still mathematically formulated, but no longer restricted to physics in its traditional scope" (Atmanspacher et al., 2002, p. 380). These authors have proposed that this formulation "could be explored in philosophical, psychological or psychophysical problem areas" (p. 380). Complementarity or "the non-commutativity or incompatibility of observables is at the heart of the non-Boolean structure of quantum theory, *and as such it is a major precondition for situations in which states of systems are entangled*" [emphasis added] (Atmanspacher et al., 2002, p. 382). Atmanspacher (2014, p. 182) has elsewhere noted that "as is well known in mathematics, representations of non-Boolean systems are generally incompatible, and complementarity can be formally characterized as a maximal form of incompatibility". In GQT, complementarity also reflects Niels Bohr's 1948 use of the term where "complementary features typically exclude one another, but at the same time complement each other mutually to give a complete view of the phenomenon under study" (Atmanspacher et al., 2002, p. 381).

The contexts in which the term complementarity can be used legitimately, particularly in GQT

discussions as opposed to more accepted usage of this term, has been examined by Hinterberger and Stillfried (2013). These authors have cautioned against the act of associating the term complementarity with a variety of dualistic phenomena, by analogy and/or metaphor, suggesting that this "is often done without enough consideration of the essential differences between them" (Hinterberger & Stillfried, 2013, p. 452). Never-the-less, they have suggested that the "complementarity between local and global observations might be a very generic complementarity .....It is thus the contrast of potentiality versus actuality, or the probabilistic and factual description of the world" (Hinterberger & Stillfried, 2013, p. 451).

For example, in psychokinesis experiments the local expectation/anticipation of producing a highly unlikely event (versus a skeptical general, global, anticipation) would constitute complementarity. As an illustration, this is the assumption implicit in some recent psychokinesis experiments using the Correlation Matrix Method (CMM: Lucadou et al., 2007; Lucadou, 2015a). In the CMM participants are asked to influence the output of a random number generator (RNG) represented as a 'growing' fractal target, using intention alone. They indicate their intention, growth to right or left, using key presses. A correlation matrix for each experiment is constructed using variables from the participant's intention behavior (frequency and timing of key presses) correlated with mean and variance measures of the RNG output. Several experiments (Lucadou, 2015a; Flores et al., 2018; Lucadou, 2019; Walach et al., 2020) have found a greater-than-expected number of significant correlations in these correlation matrices. Permutation tests are usually employed as control procedures in these experiments where these 'excess' significant correlations are cited as evidence for psi or synchronicity and are believed to be a-causal non-local entanglement correlations. These correlations occur even in parts of the matrices where it is difficult to identify causal origin (present target events correlate with future intention, time-displaced correlations). However, caution in interpreting these results has been introduced by the suggestion that, to an as yet undetermined degree, some of these excess correlations are artefacts produced by speed of response on the indicative key presses interacting with diode heating in the RNG where key presses initiate a trial but are otherwise not connected to the RNG. This possibility has been reported recently in one data set from one experiment (H. Grote, personal communication, August 19, 2019). Removing these correlations, which were assumed to be causal in origin, resulted in a statistically non-significant outcome.

Nevertheless, these CMM experiments serve as examples of parapsychological research where the use the terms 'a-causal', 'non-local' and 'entanglement' derived from quantum theory is central to the argument. While Walach et al., (2020) say explicitly that "we use quantum entanglement correlations as an analogy" they continue:

> we assume that it is likely that these correlations are all we have and no further underlying signal will be discovered, and such correlations are instigated by the general systemic arrangement and might be ontologically final in the sense that there is no underlying deeper causal structure to be discovered. (p. 174)

A theory that shares many of the elements of GQT is Lucadou's (1995, 2015b) Model of Pragmatic Information (MPI). In the MPI the eponymous pragmatic information or meaning in the system, is the product of two complementary states, 'novelty' and 'confirmation' (Lucadou, 2015b, pp. 3-4).

The observed anomalous events, psi or non-local entanglement correlations, such as those reported in experiments using the CMM, occur when this condition of complementarity exists in the experimental environment. The MPI differs from the GQT primarily in the introduction of a non-transmission (NT) axiom. This is seen as being the inevitable consequence of using quantum theoretical constructs and, importantly, as an explanation for Kennedy's 'evasive and unsustainable nature of psi'. Lucadou (2015b) suggests that poor replicability, decline effects, and the inverse relation between effect size and its reliability all arise because experiments implicitly assume that effects are causal (or signal-based). Normally, in standard research into cause, a significant result would contain informational properties: most importantly the idea that predictions can be made – that the causal chain is understood. Lucadou believes this is not the case in psi phenomena where acting on such an understanding axiomatically destroys the correlation. The NT-axiom states that:

> any attempt to use a non-local correlation as a signal transfer makes the non-local correlation vanish or changes the effect in an unpredictable way (e.g. the effect may show up in a different variable which was not in consideration beforehand), known as 'displacement-effect'. (Lucadou, 2015b, p. 7)

However, it is not clear on what grounds this axiom is justified, other than it addresses, *post hoc* without experimental support, some observed effects in parapsychological research, and is required in formal, as opposed to generalized, quantum theory.

The NT-Axiom is seen by Lucadou as relevant to many anecdotal reports throughout the history of parapsychological research that more significant results are obtained at the inception of a research program (Rhine, 1935; Dunne et al., 1994; Kennedy, 2003; Grote, 2017 p. 7 [footnote]). Results of subsequent attempts to replicate these findings sometimes demonstrate either failure to replicate at all, variable replication success or putative series position effects (Dunne, et al., 1994: The PEAR studies; Haraldsson & Houtkooper,1995; Storm, Tressoldi, & DiRisio , 2010; Baptista et al., 2015; Lucadou, 2016). However, the evidence for serial position effects, such as those reported in the PEAR studies, may be confounded by the employment of very rare 'gifted' participants at different points in the series resulting in artefactual patterns which may not reflect a general effect. Whatever the proportions of these patterns, or indeed whether there is reliable evidence for series position effects at all, it is unclear by definition how, logically, an absolute NT- axiom could effect a gradual rather than complete decline, or how 'displacement', the alternate outcome claimed for the axiom, could produce any sustained pattern of results.

Another theoretical formulation related to anomalous events such as psi and involving complementarity is the Pauli-Jung conjecture (Atmanspacher, 2012; 2014). In this formulation - dual-aspect monism - "mind and matter appear as complementary aspects: they are mutually incompatible but both together necessary to describe mind-matter systems exhaustively" (Atmanspacher, 2014, p. 182). This reflects the radically holistic position that mental and physical aspects emerge from an undifferentiated state (Jung's *unus mundus*) by a decomposition of the whole rather than a composition of elements. Atmanspacher added to this deeply metaphysical position by suggesting that there are two types of psychophysical correlations, structural and induced, which result from this decomposition. Structural psychophysical correlations are predictable, uni-directional in time, ubiquitous, persistent and empiri-

cally reproducible (Atmanspacher, 2014, p. 190). Atmanspacher noted that rather than the term synchronicity employed by Jung in relation to these events, Pauli preferred "meaningful correspondences" under the influence of archetypal "a-causal ordering".

The second type of correlation - induced psychophysical correlations - "refer to the back-reaction that changes of consciousness induced in the unconscious and, indirectly, in the physical world as well" (Atmanspacher, 2014, p. 190). This reflexive or temporally bi-directional effect "depends on all kind of contexts (e.g. personal situation, environment). They occur occasionally, are evasive and not easily reproducible." (Atmanspacher, 2014, p. 190). These induced psychophysical correlations have the elusive capricious properties Kennedy describes and sound very similar indeed to the non-local entanglement correlations described by Lucadou et al., (2007) and for which complementarity is a necessary condition. Furthermore, the description of the 'contexts' is very reminiscent of Lucadou's use of the term *organizational closure* in the MPI (Lucadou, 1995/2015; Tierney et al., 2018) which describe some conditions which elsewhere in the parapsychological literature are considered psi-conducive (Delanoy, 1997).

Finally, in a clinical setting Fach (2011) has presented empirical evidence that in a large sample (1649 cases) of spontaneous anomalous (or exceptional) experiences outside of the laboratory setting complementarity is often evident in the experient's description. He has cited several possible complementary features: "these include, among others, conscious/unconscious, repression/projection, external/internal, autonomy/reliability, control/trust, and novelty/confirmation" (Fach, 2011, p. 242). Although Fach describes anomalies of both a self-model and a world model associated with different types of anomalous experience, in externalized events such as poltergeist (possible PK) phenomena it is the latter that applies: "for individuals experiencing such anomalies, their exceptional character is due to a subjectively perceived violation of the principles of cause and effect, i.e., the absence of a conventional explanation "(Fach, 2011, p. 236). Translating this into the experience of a participant in a PK experiment, it is the incongruity and incompatibility of possible outcomes that illustrate complementarity. In Fach's terms, derived from Lucadou's MPI (1995, 2015b), this experience implicates complementary states e.g. 'novelty/confirmation' and possibly 'autonomy/reliability'.

Differences between Knowledge by Acquaintance and by Description

Differences between 'knowledge by acquaintance' and 'knowledge by description' (Russell, 1910) are another way to approach the experience of complementarity. These two types of knowledge are usually congruent, but where they are in contradiction, they may affect the observer in different ways. Usually knowledge by acquaintance tends to contain more emotion (because it has been experienced personally previously) whereas knowledge by description tends to generate more dispassionate cognitive expectations. Anticipating unlikely outcomes, as a result of previous personal experience, while knowing the consensus view of their probability, sets up a conflict while at the same time make tolerating that conflict more difficult.

For example, in attempting to influence a physical system solely by volition alone (psychokinesis: PK) the participant in such experiments is required to consider various possible complementary outcomes as the experiment progresses. In an initial PK experiment the local observables, before feedback of results, are the experimental requirements, both physical and psychological. The global observations

are the consensus view on how the world 'works'; and positive outcomes from PK experiments are unlikely to be the considered consensus view. However, by the nature of the enquiry, there must be some different expectation in the parapsychological researcher, and possibly in the participant, that the results of the initial experiment might contradict the consensus. In further experiments feedback from the first experiment affects their anticipation of subsequent results.

Dissonance

My central contention in this paper is that dissonance (Festinger, 1957; Bem, 1967) is the cognitive and emotional experience of consciously acknowledged complementarity and is necessarily involved in anomalous experiences such as psychokinesis. Whether it is a sufficient condition remains to be seen. Dissonance is a disquiet generated by trying to accommodate conflicting observables. This state, which was first described by Socrates as *thaumazein* has been translated as 'bewilderment provoked by seemingly impossible contradictions' (Lamont, 2017, p. 2). Tellingly, Descartes held a negative view of this state: "Although it is good to be born with some kind of inclination to this passion because it disposes us to the acquisition of sciences, yet we ought afterwards to endeavor as much as we can to be rid of it." (Descartes, 1989, p. 52).

The degree to which the dissonance is maintained or, with time and feedback, is usually reduced, defines a commutator presently missing from descriptions such as the GQT and the MPI - in mathematics the commutator gives an indication of the extent to which certain binary operations fail to be commutative. Dissonance is typically short-lived as it usually results in avoidance behavior - specifically cognitive changes which reduces the degree to which the observables are complementary – non-commutative. As a result of this reduction the observables then become more commutative; anomalous events (putative non-local entanglement correlations) are reduced; results then conform increasingly to global expectations, resulting in non-replication or series position effects. This directionality, where dissonance is reduced to cope with disquiet by favoring the dominant global observation is most often the case, as, going in the other direction, favoring the local observation, is increasingly hard to sustain against the 'weight' of the consensus global observation. However, in situations where the initial studies, for whatever reasons, are particularly convincing (c.f. Batcheldor, 1984, Lucadou, 2015a) it may be possible to tolerate the dissonance engendered by complementary local and global observations for some time and over several studies, leading to an incline or at least an asymptotic effect on the statistical significance of results.

Tolerating dissonance should sustain the anomalous events, but this requires the experimenter to effectively encourage the participant (and themselves) into a state where she/he can maintain dissonance. Without this the dissonance is likely to collapse in favor of the consensus. The reciprocity of effect size and reliability illustrates this. The higher the 'amazement' factor, the starker is the contrast with the consensus, therefore the greater the dissonance that must be sustained to maintain the experience. Dissonance produced by two incompatible global observations, both knowledge by description, such as occurs in a naïve subject or experimenter, is likely to involve expectations with less emotion invested, because neither of the observations relies on personal experience, and therefore the state of dissonance is more readily tolerated. This may permit the original hypothesis, however unlikely, to

be evidenced in the early pattern of significant non-local entanglement correlations associated with complementary observables. Thereafter the person is no longer naïve but must accommodate their previous results/experience as local observables. It is possible, however, that novel changes to the parameters of the experiment may 'reset' the conditions for dissonance, but only where the changes are indeed novel in the participant's experience.

Manipulating Dissonance

Measuring or otherwise manipulating dissonance should be lawfully correlated with outcome. Reduced dissonance in favor of the consensus should be negatively correlated with effect size in parapsychological experiments. As an example of an experimental design which could test this: two groups of subjects, differentiated by the 'openness to experience' personality factor (in the NEO formulation: Costa & McRae, 1992) are each split again such that half of each group is exposed to either a pro- or anti-psi propaganda video clip before asking all subjects to undertake a psi-task (Jolij, Bierman, and Lobach have recently piloted this procedure, albeit for different reasons). The prediction from a dissonance model would be that the 'low openness/anti-psi clip' group would produce less significant evidence of psi than would the 'high openness/pro-psi clip' group. The first group are likely to experience low to very low dissonance. The second group, comprised of individuals who while being open to, and positively anticipating the anomalous events, are as equally aware as the first group of the consensus global view on the probability of psi, so have to accommodate higher levels of dissonance. In principle it is difficult to predict which characteristics are likely to maximize dissonance, and indeed it is probable that many different combinations of characteristics will produce this state. One ideal candidate would be someone with relatively set views on the existence of psi who is also willing to consider seriously, and be affected by, the counter evidence.

The dissonance element should not be confused with belief or disbelief in psi as addressed in the parapsychological sheep/goat literature (Schmeidler, 1945). Belief is not synonymous with anticipation of results which change continuously depending on feedback. Belief is a much more long-term state dependent on many and varied variables, many unrelated to feedback. Scales which assess belief in the paranormal either measure, in some or most of the items, the participant's agreement with general statements about the paranormal (Tobacyck, 2004: The Revised Paranormal Belief Scale: 25/26 items) or also include items reflecting the participant's personal anomalous experience (Thalbourne, 2010: The Australian Sheep/Goat Scale: 13/26 items). There is presently no measure of disquiet/dissonance experienced due to incompatibility between knowledge by experience and knowledge by description. For reasons discussed above such disquiet/dissonance is not static but may be altered by feedback, so is unlikely to be measurable by relatively inflexible, lengthy, scales. Possibly a simple Likert scale indication of such disquiet at times during an experimental session might suffice.

Experimenter Effect

While concepts like the NT-axiom or induced correlations in dual-aspect monism may address non-replication and possible serial position effects, this is not the case for the experimenter effect. This is the observation that some experimenters are consistently more successful than others in obtaining significant results in psi experiments (Kennedy & Taddonio 1976; Wiseman & Schlitz, 1997; Parker &

Millar, 2014). There does not appear to be any relevant aspects of the previously mentioned theories that address this. Even assuming that some of these patterns are due to methodological and reporting errors (Kennedy, 2014; Bierman et al., 2015) this effect, often talked about as 'the elephant in the room', requires an explanation. Here dissonance may provide such an explanation because there are likely to be experimenter-specific differences between experimenters in their ability to sustain their own and their participants' dissonance.

Conclusion

Some mechanism such as the NT-axiom from the MPI or the reflexive nature of induced psychophysical correlations in dual-aspect monism *is* required to account for some effects observed in parapsychological research – i.e. non-replication, reciprocity of effect size/reliability, possible serial order effects and experimenter effect. If complementarity is a necessary condition for the occurrence of psi, as suggested in the theories discussed, can this state be described in phenomenological terms? I suggest that the experience of conflicting incompatible observations/anticipations, characterized as 'dissonance', describes a state which is necessary for the occurrence of anomalous psychophysical events such as psychokinesis. Furthermore, when compared with the NT-Axiom the dissonance model accommodates more of the observed difficulties in replicating statistically significant results. The dissonance proposition is testable. Measures or manipulation of dissonance prior to initial parapsychological experiments, and subsequently prior to replications, should vary lawfully with effect size. If reduction of dissonance accounts for all the effects which contribute to Kennedy's (2003) "capricious, actively evasive, unsustainable nature of psi", then the terms complementarity and entanglement may have more heuristic value than their present analogical use in parapsychological discussions.

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Dissonance, Complémentarité, et Psi

Résumé : La complémentarité, impliquant les observations contradictoires ou incompatibles qui sont nécessaires pour une description complète, est essentielle dans la conception de l'intrication dans la théorie quantique. Ces deux termes ont récemment été employés, de façon analogique, dans trois théories similaires relatives à la recherche parapsychologie : la Théorie quantique généralisée, le Modèle de l'information pragmatique et le Monisme à double-aspect. Je propose que, phénoménologiquement, l'expérience cognitive/émotionnelle de la *dissonance* pourrait être une conséquence d'une complémentarité consciemment reconnue. La dissonance pourrait être un composant nécessaire du psi, en particulier dans la psychokinèse. La réduction de la dissonance pourrait rendre compte d'un certain nombre de difficultés de réplication reportées dans la littérature parapsychologique, dont l'insuccès total dans la réplication d'un résultat significatif, la confirmation partielle avec ou sans effets de position, la réciprocité de la force et de la fiabilité de l'effet, l'effet expérimentateur où les résultats significatifs sont rapportés par certains expérimentateurs et non par d'autres. Un protocole de recherche est esquissé afin d'investiguer le rôle potentiel de la dissonance dans l'obtention de preuves significatives du psi.

Dissonanz, Komplementarität, und Psi

Zusammenfassung: Komplementarität, d.h. widersprüchliche oder inkompatible Beobachtungen, die für eine vollständige Beschreibung notwendig sind, ist für das Konzept der Verschränkung in der Quantentheorie von wesentlicher Bedeutung. Beide Begriffe wurden in jüngster Zeit analog in drei sich ähnelnden Theorien verwendet, die für den Gegenstandsbereich der parapsychologischen Forschung relevant sind, nämlich in der Verallgemeinerten Quantentheorie, dem Modell der Pragmatischen Information und dem Duale-Aspekte-Monismus. Ich schlage vor, dass die kognitiv-emotionale Erfahrung von *Dissonanz* phänomenologisch eine Folge der bewusst wahrgenommenen Komplementarität sein kann. Dissonanz kann ein notwendiger Bestandteil von Psi sein, insbesondere der Psychokinese. Die Reduktion der Dissonanz kann für eine Reihe von Replikationsschwierigkeiten verantwortlich sein, über die in der parapsychologischen Literatur berichtet wird. Diese sind: völliger Fehlschlag bei der Replika-

tion eines signifikanten Ergebnisses, teilweise Bestätigung mit oder ohne Positionseffekte, Reziprozität von Effektstärke/Reliabilität und der Experimentatoreffekt, bei dem signifikante Ergebnisse von einigen Experimentatoren berichtet werden, von anderen jedoch nicht. Es wird ein Forschungsdesign skizziert, das die Rolle von Dissonanz zur Erzielung signifikanter Evidenz für Psi prüfen könnte.

Disonancia, Complementariedad, y Psi

Resumen: La complementariedad, que implica observaciones contradictorias o incompatibles necesarias para una descripción completa, es esencial para el concepto de entrelazamiento (entanglement) en la teoría cuántica. Ambos términos se han utilizado recientemente, de manera análoga, en tres teorías algo similares relevantes al tema de la investigación parapsicológica: la Teoría Cuántica Generalizada, el Modelo de Información Pragmática, y el Monismo de Doble Aspecto. Propongo que fenomenológicamente la experiencia cognitiva/emocional de disonancia puede ser una consecuencia de la complementariedad reconocida conscientemente. La disonancia puede ser un componente necesario de psi, particularmente la psicoquinesis. La reducción de la disonancia puede explicar varias de las dificultades de replicación reportadas en la literatura parapsicológica incluyendo: falla total para replicar un resultado significativo, confirmación parcial con o sin efectos de posición, reciprocidad de fuerza de efecto/fiabilidad, y efecto del experimentador, en el que algunos experimentadores informan resultados significativos y otros no. Describo un diseño de investigación que podría dilucidar el papel de la disonancia en la obtención de evidencia significativa para la psi.

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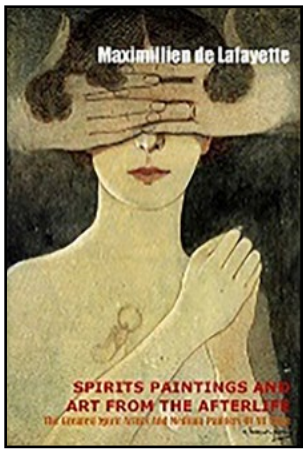
Mediums that Paint and Draw[1]

Carlos S. Alvarado

Reviews of: *Spirit Paintings and Art from the Afterlife: The Greatest Spirit Artists and Medium Painters of All Time* by Maximillien de Lafayette. Times Square Press, 2015. Pp. 4259. Kindle Edition. $9.99

L'Arte Inconsapevole: La Dissociazione Creativa, l'Ispirazione, la Medianità: Studi sull'Arte Medianica [Unintentional Art: Creative Dissociation, Inspiration, Mediumship: Studies of Mediumistic Art], edited by Massimo Biondi. GSE, 2018. Pp. 167. 18.00 Euros. ISBN 978-88-943176-1-9



In 1854, spiritualist and publisher S.B. Brittan presented an editorial in his New York newspaper *Spiritual Telegraph* in which he wrote:

> The Spirits are doing some wonderful things in Washington, and among these a variety of drawings, ascribed to their agency, are worthy of particular attention. I have conversed with seven mediums of this description, five of whom, if I am rightly informed, had not acquired the slightest skill in the art by any previous discipline; but they are all at present employed as passive instruments in the execution of some very curious pictures which, as the Spirits distinctly affirm, are intended to represent the flowers, fruits, etc., of the higher spheres. These pictures do not, in all respects, conform to the accredited rules of art, but it must be conceded that very many of them are well drawn, while the shading is often delicate and beautiful (Brittan, 1854, p. 194).

In addition to Brittan, there were many early writings in the spiritualist literature about mediums who paint or draw, among them *Spirit-Art* (Hardinge, 1871) and *Spirit Drawings* (Wilkinson, 1864). A case achieving some prominence in England were medium's Georgiana Houghton's abstract watercolor productions, particularly when they were publicly exhibited in London in 1871 (Houghton, n.d.). There is an interesting literature of drawings and paintings produced by mediums, which is the topic of the two books reviewed here.

Some of the later literature about mediumistic painting and drawing includes overviews, such as

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Pintura e Disegni Metapsichichi (Egidi, 1954), and *Arte Medianica* (Giovetti, 1982), and studies of specific cases (e.g., Maraldi & Krippner, 2013; Osty, 1928). An early case was the Scottish medium David Duguid, who also produced direct painting and other phenomena. One occasion in 1868 he was seen to apparently enter a trance state, raise from his chair, and go to an easel to work. As stated in the article the medium worked very fast, stopping sometimes to look at his work, and sometimes changing part of it. He could also work in darkness. One time they noticed the medium, "to our astonishment, with what appeared to be a few careless daubs, inserted a pleasure boat, in which were several figures" (Anderson, 1868, p. 557).

The first book reviewed here, *Spirit Paintings and Art from the Afterlife: The Greatest Spirit Artists and Medium Painters of All Time*, with short essays and interviews with mediums, is a popular introduction to the topic. The discussion is organized in three sections covering performance styles and characteristics of the artistic productions (Part 1), contemporary artists (Part 2), and painters the author believes were clearly influenced by deceased painters (Part 3).

The author presents much information about mediumistic drawings and painting that will be useful to those interested in these phenomena. For one, de Lafayette identifies many mediums from the past (Catherine Berry, Elizabeth d'Esperance, David Duguid, Marjan Gruzewski, Hima af Klint, Augustin Lesage, John Ballou Newbrough, Heinrich Nusslein, Victorien Sardou, and Hélène Smith), as well as from more recent times (Luiz Gasparetto, Ginny Jones, Raphael Lonné, Matthew Manning, Jose Medrado, Coral Podge, Coral Ryder, Angelique van Bezouwen, Jennifer Wallens, and Alice Westernberg). Also useful is the information about the characteristics of some of these paintings, which is complemented by the high number of illustrations appearing in the book. In addition, there are occasional descriptions of the way these mediumistic artists work, such as obtaining information about their artistic piece via visual and auditory perceptions, as well as via feelings, and, occasionally, via apparent possession by a spirit.

The author identifies two types of artists. These are those who produce a work of art inspired or guided by deceased painters, and those who, guided by other spirits, specialize in portraits. Talking about the late Brazilian medium Luiz Gasparetto, de Lafayette notices that he could paint with his eyes closed, at a great speed, and that he could produce two paintings at the same time (see a video of Gasparetto's performance here: https://www.youtube.com/watch?v=ie4NjHYxSy0). The medium has claimed that he was influenced by the spirits of such famous painters as Degas, Gauguin, Goya, Matisse, Renoir, Michelangelo, Rubens, Toulouse-Lautrec, and Van Gogh.

In addition, de Lafayette points out that mediumistic art was associated to other movements and topics. This included the *Art Brut* movement and paintings of the mentally ill. In fact, as the author says, these phenomena have had an impact on wider cultural spheres, among them aspects of modern art and surrealism (Dichter et al., 2007).

But regardless of all this general information the book is problematic in many ways. In addition to lacking footnotes to document many discussions or quotations presented throughout the book, the ideas presented are somewhat disorganized, with many unnecessary repetitions. Adding to this, the author does not include discussions about classic studies of the topic. For example, although the case of Hélène Smith (pseudonym of Catherine Élise Müller) is included, the discussion of Flournoy's (1900) classic study about her fails to mention his comments about the paintings. The paintings, wrote Flournoy, were

not "executed in complete somnambulism." He believed they could not be considered to be the product of automatic processes. "They are nothing more than simple compositions of the normal consciousness of Mlle. Smith" (Flournoy, 1900, p. 169, all quotes; see also Flournoy, 1901). Of course, this seems to presuppose that art cannot be produced mediumistically without an altered state, and that there are no degrees of automatic activity acting during apparent waking states.

Furthermore, there is no mention of important writings about Hélène Smith's religious paintings that started after she was no longer in contact with Flournoy. I am referring to the studies of French psychological researcher Auguste Lemaitre (1908) and to Swiss historian and archeologist Waldemar Deonna's *De la Planète Mars en Terre Sainte* (On the Planet Mars in Holy Land, 1932). The latter is a fascinating study of the style and development of Smith's paintings, and visions, including psychological speculations about their development. Deonna argued that the fertile imagination of the medium generated ideas to produce the paintings "by a slow mental incubation" involving "unconscious desires, childhood recollections, [and] autosuggestions" (p. 205, this, and other translations, are mine). Furthermore, the medium heard voices telling her what to paint.

Also ignored in the book is French physician and psychical researcher Eugène Osty's (1928) study of French painter Augustin Lesage, whose beautiful paintings included many details and geometrical forms reminiscent of ancient Assyrian, Babylonic, and Egyptian art (see http://www.christianberst.com/en/artist/lesage.html). Interestingly, at the time Osty's interest in Lesage was covered by the Parisian press. The medium told a reporter that he was but an instrument to paint: "An unknown guide directs me . . . I do not know how to draw or to paint . . ." (Anonymous, 1927, p. 1).

Edited by physician and historian of Italian psychical research Massimo Biondi, the second book reviewed here is *L'Arte Inconsapevole: La Dissociazione Creativa, L'Ispirazione, La Medianità: Studi sull'Arte Medianica* (Unintentional Art: Creative Dissociation, Inspiration, Mediumship: Studies of Mediumistic Art), the proceedings of a conference about mediumistic art held in 2017 organized by the Centro Studi Parapsicologici. This book is issue 47, 2018, of the *Quaderni di Parapsicologia*. The volume opens with an essay by physicist Ferdinando Bersani presenting an "Introduction to Mediumistic Art." This is a good introduction to many important issues about the topic, and one that acknowledges some of the work that has been conducted on the subject, while realizing that little has been done in a systematic fashion. Bersani refers to mediumistic art, but he points out that he does not mean the action of discarnate spirits. Instead he uses "mediumistic" to indicate

> a state of mind different from the ordinary one, in which skills emerge that the subject does not seem to possess in conditions of normal consciousness and that subjectively is often experienced as due to a sort of force external to consciousness, which guides the execution of the work outside or above the will, and beyond rational planning (p. 12).

Like Gruber (1980) before him, Bersani attempts to classify the different paintings and drawings he is familiar with. He proposes the following styles: figurative (or traditional); between figurative and surreal dreams; symbolic-figurative; symbolic-schematic (decorative elements in many shapes), decorative-morphogenetic (chaotic shapes); and mixed (of uncertain classification). While interesting, the types are in need of clearer description so as to be sure what is meant by some of these terms.

This discussion reminds me of previous writings on the topic. One example was Flournoy's (1911) description of the structure of the drawings of a lady who participated in a survey of mediums he conducted. He stated that the drawings had

> an overabundance of ornamental motifs, sometimes drawn from geometry or architectural decoration (arabesques, triangles, hooks, circles and spirals, arches, scrolls, interlacings, etc.), sometimes recalling vegetable forms more or less stylized . . . It is rare that these bizarre sketches, sorts of reveries or disordered exercises of the pencil, present some unity of composition, or a marked symmetry . . . most of them have a fragmentary appearance (Flournoy, 1911, p. 165)

This introduction is followed by a section, edited by Bersani, in which many photographs of mediumistic paintings and drawings are presented. Starting with Lesage, the section features the productions of many others, among them Joseph Crépin, Evelyne Disseau, Gertrud Emde, Luiz Gasparetto, Giuseppe Lanzillo, Heinrich Nüsslein, Laure Pigeon, Coral Polge, Valdelice Salum, and Victorien Sardou.

Two chapters are devoted to specific artists: one on Giuseppe Lanzillo (by Nerio Bonvicini), and the above mentioned on Lesage and Gustavo Rol (by Paola Giovetti). The Lanzillo case, studied by Piero Cassoli and by other members of the Centro Studi Parapsicologici, showed changes in the type of paintings produced over time. The painter started with landscapes and later changed to portraits.

In his paper "Mediumistic Art: Between Parapsychology and Neuroscience," Giuseppe Galetta speculates on the role of mirror neurons in mediumistic art, due to a hypothesized action on creative automatisms. In this view mirror neurons would be involved in the painter's imagery necessary for the production of art. The images would permit those "endowed with mirror neurons to set in motion the processes of creative automatism typical of the phenomena of mediumistic art, which could therefore be explained from a neuroscientific point of view" (p. 127).

This process, which may vary from individual to individual, could provide some people with a "hypersensibility" to environmental esthetic information from their surroundings that would allow the artist to automatically produce mental images. The sensory-obtained information, Galetta affirms, could also depend on suggestions from the environment, among them the suggestive influence of spiritualistic circles. The artists would access an "aesthetic memory" to produce their work. That is, "a repertoire of images already seen in some way and stored by the brain through the reading of books, seeing images on television or on the Internet, or visits to museums or art galleries" (p. 128). In addition to the interaction between mirror neurons and memories, the author also speculates about the involvement of the concept of creative dissociation.

Although the idea is interesting, and there is much to say, and even more to learn about, processes such as creative dissociation (Grosso, 1997), and the influence of indirect suggestions on mediumship, the speculations about mirror neurons are tentative at best, even though current research suggests some relations to non-mediumistic art production (Piechowski-Jozwiak et al., 2017). One hopes Galetta will make an effort to test the involvement of mirror neurons with mediumistic art experimentally so as to support his model empirically.

The final paper about artistic mediumship is by Massimo Biondi, entitled "Thoughts on Mediumistic Art." He points to various commonalities in the art in question, such as "the obsessive repetition of the same distinctive trait, [and] the multiple replication of a single theme" (p. 157), as well as the difficulty of classifying the standard elements of the artistic production, and the lack of technical abilities of the painters.

Biondi sees no evidence of spiritual influence in these cases, and this includes the painters' statements. For various reasons, he is also skeptical about psychiatric explanations. "Equally useless seems to turn to psychiatry" (p. 164), where the point of comparison is the art of the mentally ill. According to Biondi, "the close examination of biographies of mediumistic painters does not reveal - except perhaps in a couple of cases - mental disorders of marked severity, so the psychiatric relevance of the issue should be dutifully excluded" (p. 164). I do not believe that many today will agree with French writer Jules Bois, a student of the occult and psychic phenomena, when, he wrote referring to drawing mediums: "It is not the normal man who expresses himself in these drawings . . . It is the subnormal or below normal man, the abnormal one" (Bois, 1897, p. 419).

The psychopathological approach does not seem promising. However, and while agreeing with Biondi, we may still learn something useful from psychopathology in relation to mediumistic art. One possible line of approach is that we may consider that the automatisms involved in pathological processes and mediumship are similar without implicating pathology. Frederic W.H. Myers speculated that supernormal and abnormal phenomena may act through the same channels. "If epilepsy, madness, &c., tend to split up our faculties in certain ways, automatism is likely to split them up in ways somewhat resembling these" (Myers, 1903, Vol. 2, p. 84). Once again, this is another interesting idea that needs empirical support, and one that should consider recent discussions of the relation between unusual experiences and psychopathology as one lacking evidence or having alternate explanations such as relations with a third unidentified variable (Cardeña, Lynn, & Krippner, 2017).

Another idea is the further exploration of similarities in the art of both mediums and the mentally ill (e.g., Gruber, 1980). Both similarities and differences could be instructive and could inspire theoretical developments dealing with the cognitive psychology behind the art of mediums and the mentally ill.

Other authors in the book address topics related to mediumistic art. These are artistic performance after near-death experiences (Fulvia Cariglia), musical mediumship (Cecilia Magnanensi), and psychedelic art (Bruno Severi). In her chapter about musical mediumship Magnanensi reminds us that artistic mediumship is not limited to painting. There are also cases of individuals with a disposition, or talent, to produce literature, music, and sculpture.

The books commented here are very different from each other. *Spirit Paintings and Art from the Afterlife* is really a popular book, and a loosely written one, while *L'Arte Inconsapevole* is clearly for higher level readers used to more systematic and scholarly discussions. The authors of the second book are also more in touch with the literature on the subject and are more concerned with scientific issues. For this reason, I consider Biondi's to be the best recent general book on mediumistic painting and drawing available today.

But what can be said about the study of mediumistic art as a field of study? Osty (1928) con-

sidered mediumistic art as one of those topics at the boundary of psychology and psychical research. Certainly, this is an extremely underdeveloped topic that, as Cassoli (1984) has pointed out, has been mainly unexplored in the field of psychology. But the same may be said about the lack of attention to the topic by members of other disciplines interested in mediumship, such as parapsychology and anthropology. There is an urgent need for new studies, be they experiments, examinations of groups of cases, or of single cases, as seen in the study of Maraldi and Krippner (2013).

A research program on mediumistic art can focus on various issues. One is its relation to mediumship in general. How common is painting and drawing mediumship among mediums in general? Is painting and drawing related to other artistic mediumistic performances such as music and sculpture? Other questions can be related to the features of mediumistic painting and drawing. This could include the characteristics of the art (symbols, general style, topics, colors), and how inspiration is received (visions, voices, impulses), what Myers (1903) referred to as sensory and motor automatisms. In addition, this would be an opportunity to study the ill-defined concept of trance, which could involve alterations of different sorts and depths (on problems with lack of clear definitions of trance see Cardeña, 2011, pp. 4-5). Much has been said about these issues, but in an impressionistic way. Further work could analyze groups of cases so as to quantify the findings in a more precise way.

Other studies could focus on the painters, exploring psychological, social, and physiological aspects related to the medium (Maraldi & Krippner, 2013), and comparisons to non-artistic mediums, and to non-mediums. This could include investigation of developmental aspects, and about other mediumistic gifts and psychic experiences. For example, in addition to painting, the Spanish medium Josefa Tolrà was said to see auras and communicate with the dead. Furthermore, she wrote healing prescriptions, poetry, songs, and discoursed on science, and geography, topics about which she was not educated (Bonet, 2014).

Such work would allow for connections to other topics. This includes inspiration (Oleynick et al., 2014), and the cognitive aspects of the artistic experience (Wah, 2017). Studies about brain activity of mediumistic painters could be modelled after a recent study of automatic writing with Brazilian mediums (Peres et al., 2012).

Furthermore, the systematic study of artistic mediumship could be guided by specific theoretical concepts. The possibility that the paintings and drawings present examples of veridical mediumship could be considered. Inspired by claims that some mediums can draw portraits that correspond to deceased persons' photographs and the recollections of sitters, presumably without sensory information (Miller, 1943/1995), controlled experiments could be conducted. Research can also be tailored to test, and expand, the concept of creative dissociation (Grosso, 1997; Maraldi & Krippner, 2013).

Although it is easy to suggest ideas for future developments, the current lack of researchers involved in these topics will make the development of this sub-specialty of mediumship research very difficult. Nonetheless, one can always hope the future will bring more opportunities for research that can only expand our outlook of human potential.

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More than Fiction? Psi, Consciousness, and Science-Fiction[1]

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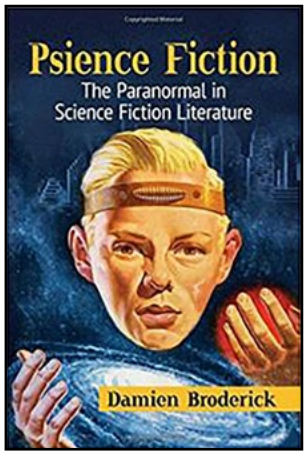
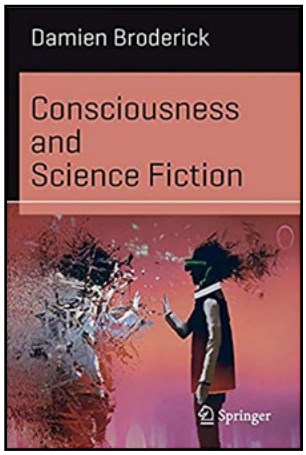


Reviews of the books by Damien Broderick: *Psience Fiction: The Paranormal in Science Fiction Literature.* McFarland, 2018. Pp. 235 (paperback) $45.00 ISBN 9 781476 672281. And

Consciousness and Science Fiction. Springer 2018. Pp. 196 (paperback) $27.99. ISBN 978-3-030-00598-6



One must vacillate when attempting to define *science-fiction* (SF). The *science* component, even if implying developments not currently reached, undergirds much but by no means all SF, and even the *fiction* aspect is contestable. Consider, for instance, the novels of the great writer Margaret Atwood. *The Handmaid's Tale* and the *Oryx and Crake* trilogy are, by her own admission, extrapolations or *speculative fiction* (her preferred term) of events and trends very much present in our days (Atwood, 2011). More classically, some SF has partly anticipated technological advances, from the various works of Jules Verne to the nightmarish life-in-death mental filtrations in dead people conserved in large containers of Philip K. Dick's *Ubik,* which recent work on reviving brain cells (Vrselja et al., 2019) seems to make terrifyingly plausible.

Damian Broderick, a scholar and extraordinarily prolific SF writer and editor, has an astute way to deal with the conceptual fuzziness of SF by mentioning major tropes of the genre: interplanetary or interstellar voyage, monsters from other planets, future scenarios, and the whole array of psi phenomena (telepathy, clairvoyance, precognition, PK, communications with the dead).

I learnt my first letters under the vast shadow of *The Star Beast,* the book by Robert Heinlein (1954), which my father used to teach me to read. Although my father's preference for SF literature did not quite rub off on me, in my youth I still counted two SF novels, *More than Human,* by Theodore Sturgeon (1953), and *Childhood's End,* by Arthur C. Clarke (1953), among my favorite books. Both works are considered SF classics and treat psi phenomena as a given. Sturgeon's novel is an intimistic account of

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how a small group of gifted outsiders create, partly through psi, a *homo gestalt* to replace their isolated existence. The work by Clarke makes reference to telepathy and precognition, but as comparatively minor processes on the road into an evolution/dissolution of humanity into cosmic consciousness.

Both novels, along with more than 50 other SF works, are discussed in *Psience Fiction,* an erudite overview of the presence of psi phenomena (or the *paranormal*, as per the title) in SF. Of the two books reviewed here, *Psience Fiction* is the more felicitous for a simple reason. Broderick is not only an expert in SF but also in psi, on which he has written or edited well-received books (e.g., Broderick, 2007; Broderick & Goertzel, 2015). In contrast, his knowledge about current work on consciousness is sketchy, as I will point out below.

Psience Fiction includes a preface, an introduction, two appendices, and the central section consisting of critical summaries of more than 50 SF novels and short stories that have had psi phenomena as a central theme, from the 1930s through 2016. The array of psi phenomena is vast, from Donald Macpherson's "electroplasm," through mutations tied to a great increase in psi abilities (e.g., Stapledon's *Odd John,* Van Vogt's *Slan*), to psi as a metaphysical marker of a transformation into a different form of being, as in Clarke's *Childhood's End*. Broderick explains that part of the great interest in psi in the "golden age" of SF, between around the 1930s-1950s, can be traced to John W. Campbell, Jr., the very influential editor of *Astounding Science Fiction* and SF author himself (his novella *Who Goes There?* was adapted into two SF movies titled *The Thing*). Campbell corresponded with J. B. Rhine and encouraged the term psionics, coined by Jack Williamson for psi "energy," particularly as related to technology, and of continued currency (Tremmel, 2016). Probably explainable by self-selection, but augmented by the literature they read, in a survey 38% of SF readers stated that ESP "definitely exists" (Bainbridge, 1986, in Lowentrout, 1989).

Now to Broderick's other book. *Consciousness and Science Fiction* (*CSF*) starts off with an attempt to summarize recent positions on consciousness, held by neuroscientists, psychologists, philosophers, and others. This endeavor would be foolhardy even for a specialist in the field given the complexity of arguments and evidence, and, Broderick, not a specialist, is not quite up to the task. He mentions many of the usual suspects (Damasio, Dennett, Nagel, Searle, etc.), but the complex material is not very well organized and Broderick often meanders into trivialities rather than explaining matters more deeply. He also provides some inaccurate information, such as stating that hard synesthetes occur one in 10 million, which, even granting the rarity of the phenomenon, is still a tremendous overestimation (Marks, 2014). Just to give another example, he writes that David Chalmers claims "that consciousness is what he calls a 'hard problem'" (p. 2). Not quite. Chalmers (1995) specifically states that there are "easy" problems of consciousness, and its "hard problem" refers specifically to how neural, material processes can give rise to the qualia of conscious experience. There are other problems relating to consciousness, some of them arguably as tough to resolve such as the unity of conscious experience (Natsoulas, 1981). An explanation of these differences would have helped the reader understand better the issue than writing that: "Chalmers was not a desiccated Jesuit or bald pipe-smoker in a tweed jacket, but a strikingly good looking young man with flowing heavy-metal hair" (p. 2).

As in *Psience Fiction,* the main section of *CSF* provides summaries of many works of SF , in this case exploring alternative forms of consciousness, with titles such as "What Is it Like to Be a Patchwork Mon-

ster" (for Shelley's Frankenstein), "What Is It Like to be Brain-Colonized" (for Slonczewski's *Brain Plague*), or "What Is It Like to Be a Zombie" (for Sawyer's *Quantum Night*). Each of these subtitles precedes the discussion of a particular work, and they are organized under categories whose nature sometimes escaped me. The categories were at times chronological (e.g., The Second Gold Age), thematic (e.g., Radically Different Minds), or just abtruse (e. g., *L'Être et le Néant*, which makes reference to the essay by Sartre for reasons that escape me). Non-SF authors, of course, have also imagined different perspectives than the human one, as in Paul Auster's poignant 1999 novel *Timbuktu,* the world seen from a dog's perspective.

Broderick brings his vast knowledge of SF to his books, and I appreciated his inclusion and discussion of various female SF writers, who have been mostly erased out of SF history (Rudick, 2019). Nonetheless, the books share some common weaknesses. The most important is that I found the few chapters summarizing plots of work under overarching topics to be of greater value than the central descriptions of dozens of works that, after a while, become a blur. Instead of having general discussions of SF topoi only as introductions or appendices, I would have preferred them to be the central part of the books, and to have the brief summaries of the plots as appendices.

Another limitation is that the books are monolingual, only covering the SF literature in English, even though there have been important contributions to the genre in other languages (see, e.g., Bergier, 1963; Parkinson, 2015). Broderick does not discuss very important and relevant works in translation, such as the Polish Stanisław Lem's *Solaris* or *The Futurological Congress* (the latter turned into the phantasmagoric movie *The Congress,* see Cardeña, 2014). Nor does he mention literary masterpieces such as the epic rueful poem *Aniara* (1956), by Nobel prizewinner Harry Martinson, in which the computer Mima exhibits emotions, self-reflection, and, arguably, clairvoyant abilities, or the short story *Las Ruinas Circulares* (The Circular Ruins, 1944/1997), by Jorge Luis Borges, a literal rendition of Prospero's reflection that "We are such stuff as dreams are made on" in Shakespeare's The Tempest. And despite his experience as a creative writer, Broderick could have used an editor to curb his romance with multiple adjectives, alliterations, and academic jargon (e.g., "Those uptown intellectual boulevardiers - with their difficult and frequently derided jargon of antihumanism, subject positions, discourse formations, deconstructions and disseminations- turn out to have an eerie resemblance to Dennett's down-home empiricists," CSF, p. 9), and help him prune his overwrought prose.

Consciousness and Science Fiction must be approached tentatively with respect to the statements about consciousness and cognition research, but the SF literature reviewed shows an abundance of imagination and empathy into potential alternative forms of sentience. *Psience Fiction*, the better work in my estimation, is a welcome example of how psi phenomena have percolated into culture. Jeffrey Kripal's (2011) strikingly illustrated book on the paranormal in comics and SF supplements it very well.

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Evidencing the Ineffable?[1]

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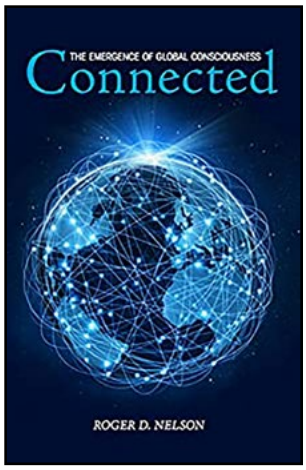
A Review of *Connected: The Emergence of Global Consciousness* by Roger Nelson. ICRL Press, 2019. Pp. 332. $18.95. ISBN 978-1-936033-35-5



Roger Nelson is very well placed to write a book about possible nonmaterial linkages between consciousness and physical processes, not only because he is one of the principal actors in the empirical tale, but also because he is as well versed in accounts of reality derived from the great mystical traditions as he is in those derived from contemporary physics. In effect this book provides an account of his research career in parapsychology that aimed to evidence those linkages, from June 1980, when he joined the Princeton Engineering Anomalies Laboratory (PEAR) to conduct formal studies of PK and remote viewing, to retirement in 2002 and his continued involvement in the Global Consciousness Project (GCP). Nelson gives a charming pen portrait of the personalities and the warm ambience at the PEAR lab, including an introduction to *Murphy*, a random mechanical cascade that occupied a whole wall with 9,000 polystyrene balls tumbling off pegs like a giant pinball machine such that they should produce a normal distribution in the collection bins at the bottom. I would have appreciated a longer description of his earlier non-GCP work, since some of the principles that underpin the GCP could have been introduced here more straightforwardly (particularly the nature of randomness, the *modus operandi* of research grade random number generators [RNGs], and the evidential case for their responsiveness to human intention). I also felt the book would have benefitted from a clearer distinction between the ESP and PK strands of the program which are quite distinct conceptually and operationally but become conflated here as neighboring paragraphs flip from one to the other in a way that could be confusing for the non-specialist.

The book comprises 28 chapters divided into 4 parts (The EGG story, The Instrument, The Results, and Interpretation and Meaning). The chapters are quite short (typically 5-10 pages) and have the quality of a collection of essays. Although they often build one from another, they also allow for quite marked jumps in topic and include quite a bit of (perhaps inevitable) repetition. The agenda of the book is laid out at the outset, as Nelson asserts (p. 12),

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> The Global Consciousness Projects research reveals subtle but meaningful structure in what should be random data, collected during periods of time when millions of people share common emotions, suggesting a powerful conclusion: consciousness is instrumental, implying that it is fundamental. It is not just a secondary emanation from the brain, but instead is both part of and independent of the physical substrate of neurons and synapses protected by the skull. Mind has a real and participatory role in the world.

The program and its interpretation are deeply influenced by the teleological teachings of Pierre Teilhard de Chardin, that argued for orthogenesis, the hypothesis that organisms have an innate tendency to evolve in a definite direction towards some goal due to some internal mechanism or driving force. That ultimate goal involves a coming together of individual consciousnesses, a coalescence that would create a *noosphere* for the Earth.

In a section that now seems prescient of the coronavirus outbreak, Nelson draws attention to the various forms of globalization that have heightened our awareness that the whole of the Earth represents just one interconnected community. As a consequence, significant events in one place have greater immediacy and emotional impact around the globe than ever before. Emotional responses transmit rapidly, like a radiating nervous impulse, and much as the coordinated activity of the 100 billion cells of the human brain can give rise to a singular collective experience, so might the attention and intention of the 7.5 billion individuals on the planet give rise to a coherent global consciousness. Of course, he does not claim that this idea is particularly new, and readily draws on the great religious traditions that speak of a *oneness*, a *ground of all being*, and a *Brahman* of which the *Atman* is an inherent part. For Nelson, then, the GCP represents an attempt to detect and characterize the interconnections that link human consciousnesses.

Nelson's book is beautifully written and he offers an intuitively appealing idea, but the proof of the pudding is in the eating. Where might we find evidence of this global mind in action? A solution suggested itself when he learned that a world-wide synchronized meditation, Gaiamind, was planned for January 1997. His past research had indicated that focused attention could interact with RNGs such that their output conformed to those intentions. These effects seemed to be independent of distance, so he asked friends who were conducting research with RNGs to send him output produced during the meditation period. The data across 14 RNGs showed "a significant departure from expectation during the period of 5 minutes set for the meditation" (p. 37). Sadly, he does not at this point explain what is meant by a departure from expectation, and the lay person may have some difficulty in getting a sense of what the output from these devices means or implies. A second test opportunity some months later involved the funeral of Princess Diana. This time data from 12 RNGs from the US and Europe showed "deviations" during the ceremony with odds against chance of about 100 to one. These and other initial tests showed sufficient promise to warrant the establishment of a network of 60-70 RNG devices around the world. The distribution of detectors across the surface of the Earth was reminiscent of the nodes of an EEG device, with each RNG being equivalent to an individual sensor that measures cortical activity in a particular region of the brain, and the network of RNGs creating a multichannel record of activity that is "something like an EEG for the world" (p. 16). Much as brain coherence might be indicated by synchronous activity across different regions of the cortex, so might synchronous activity across different RNGs be indicative of coherence across the noosphere. Thus the network became known as an 'electroGaiaGram, or 'EGG', and the GCP was alternatively known as the EGG project.

The happenings that might produce this coherence tend to be unpredictable, however, and typically can only be identified after the fact (although there are many exceptions, such as New Year celebrations or Royal Weddings). Thus an essential feature of the GCP strategy for nominating events of interest is to ensure that formal predictions about EGG behavior are precisely specified and analysis explicitly pre-planned and registered before the data are seen — this is certainly not a case of noticing an anomaly and then casting around to find an event that might be the nominal cause. The full hypothesis registry is available for scrutiny by independent observers (at http://noosphere.princeton.edu/pred_formal.html). By late 2015, 500 events had been specified and analyzed. Although individual event deviations are typically very small, the cumulative effect is an impressive 7.3 sigma, with odds against chance of a trillion to one (p. 117). A vast amount of control data taken from periods outside the designated events but otherwise using the same parameters gives a reassuring distribution around an average *z* score of zero (p. 182).

Management of the project has been refreshingly transparent, with daily tables (and graphic representations) of data readily available online. There is also a clear emphasis on replication in the sense of looking for similar outcomes from similar events to ensure the effect is not just a statistical aberration. It is also encouraging that meaningful patterns emerge across instances; for example, events involving larger numbers of people produce larger effects, and emotional events produce stronger effects than neutral ones, particularly where they evoke compassion in the perceiver.

Notwithstanding these impressive findings, there are conceptual aspects of the GCP, and therefore of the book, that I remain unclear about or uncomfortable with. Events of interest are described as eliciting "a focus of collective attention or emotion ... that .... engages people across the world" (p. 104) and implies a degree of interpersonal consistency in that engagement. But what would qualify as an incident that could capture such uniform collective attention? Some cases involve acute events with a very specific point in time and space that very likely captured world attention (such as the Twin Tower attack), but others are much more nebulous both in terms of when they "occurred" and how people might have reacted to them (such as the announcement of the death of Nelson Mandela), and I struggle to see how they can be presumed to give rise to a homogenous response in a wide range of people. To illustrate, Nelson regularly nominates New Year celebrations as an event likely to elicit an EGG response because this coming together stirs common emotions such as "a generous attitude toward fellow celebrants, some hopeful thoughts about the future, perhaps just the simple enjoyment of being together and sharing an easy, human custom" (p. 188). However, not everyone has such a positive association with New Year; for example, *The Telegraph* reported in 2012 that 10 million Britons described New Year's Eve as the "most depressing night of the year", exacerbating feelings of loss, isolation and inadequacy.[2] This kind of variation, from positive to negative, extreme interest to indifference, will surely be more pronounced for many of the less well circumscribed events in the database, making any kind of consistent response unlikely.

The claimed global reach of the identified events is also debatable. Generally, there is a pronounced skew towards events of importance to citizens of the USA. For example, at the time of this review the four "latest events" listed on the GCP website included Obama's farewell address, Trump's inauguration, and the Women's March on Washington. The book also adds the Oscars and OJ Simpson's

2 https://www.telegraph.co.uk/news/uknews/9771415/New-Years-Eve-most-depressing-night-of-the-year.html

trial (p. 89), among others. Although these may be considered newsworthy around the world, it seems a stretch to suggest that non-Americans were captivated by them. And there seems to be a reciprocal blind spot to unselected serious events around the world that provide the backdrop for events that are singled out. As an early example of a terror attack, Nelson refers to the US Embassy bombings in Nairobi and Tanzania that took place in August 1998, killing 224 people with more than 5,000 wounded. They "exemplify a tearing of the social fabric that would shock a global consciousness" (p. 136). Undoubtedly these are appalling events, but can it truly be said that this was of global significance? These attacks occurred at the same time as a number of other significant conflicts that collectively cost 500,000 lives and displaced a million refugees: the Sierra Leone Civil War, the Algerian Civil War, the Burundian Civil War, the Maoist conflict in Nepal, the Republic of the Congo Civil War, the Kosovo War, and the Eritrean–Ethiopian War. Perhaps most significantly, the second Congo war was escalating in the Autumn of 1998, and involved acts of genocide between the Hutus and Tutsis that led to 350,000 violent deaths and a further 3-5 million deaths attributable to the war. If the EGG network is responding to events that are truly shocking and have broad impact then it is not clear why it should show such a particular sensitivity to US-related events.

It seems to me that few events capture the world's attention in real time. The 12 highest live viewing figures are for recent Olympic Games and World Soccer finals, each drawing an audience of over 3 billion. Some of these figures are inflated because the events run over a number of weeks, but the single match between India and Pakistan as part of the 2015 cricket world cup was watched by over a billion people and would have made a good international target given the intense rivalry between those countries. Nelson has conducted analyses on sporting events, including world cup soccer matches, but surprisingly has found that they "are not reliable sources of resonance and coherent consciousness" (p. 167). This is puzzling given the vast numbers who focus on these events in real time, and the strong emotions that they can elicit. Despite their inherent triviality, they can have much more powerful and direct impacts on ordinary working class people than political or even military events that take place in other parts of the world (as Bill Shankly famously said, "football isn't a matter of life and death — it's much more important than that"), and there is no doubt that nations come together and create a tangible sense of belonging and shared identity during times when their team is doing well. Their failure to be detected by the EGG network is a concern.

The final part of *Connected* explores how the findings might be interpreted. Given the book's poetic style, it is not surprising that Nelson relies on allusion and metaphor when attempting to make sense of the associations he reports. For example, he compares (p. 127) EGG data from a host who sadly died during this period with data from a neighboring site; the former gave significant above chance scoring and the latter significant below chance scoring. Nelson comments, "it is ... difficult to ignore the symmetry and the timing. I think there is a message here — a vision of love and compassion manifesting in data". For some this may seem frustratingly vague — why should love and compassion be reflected in *symmetry* rather than, say, *synchrony*? Would the demise of the host not be better indicated (figuratively) by "negative" deviations rather than positive ones? It leaves open the possibility that *any* deviation could be interpreted after the fact as meaningfully portraying the event to which it is supposed to relate. More generally, key terms like *coherence* and *structure* are left unscrutinized, relying instead on an intuitive understanding of what is meant; but while the poet might be free to leave terms open to interpretation by the reader, the scientist needs to explain and justify his operational definitions. This is particularly true

for the notion of consciousness, which is described in terms of "synchronized … thoughts or emotions" (p. 261), which seems to presume more than it explains. What do we mean by *synchronized*? In what way can two minds ever be said to have the same thought? Most importantly, why should *coherence* of intention in a human mind/brain be expected to give rise to coherence in an electronic device? In what way can these coherences be thought of as equivalent in a way that allows one system to conform to the state of the other?

Notwithstanding these quibbles, I enjoyed reading this book and found the evidence for an anomaly convincing. The empirical strategy seems to me sound and robust. With respect to interpretation, I am left with many more questions than answers, but perhaps that is the *raison d'être* of a book such as this.

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For Credulity's Sake[1]

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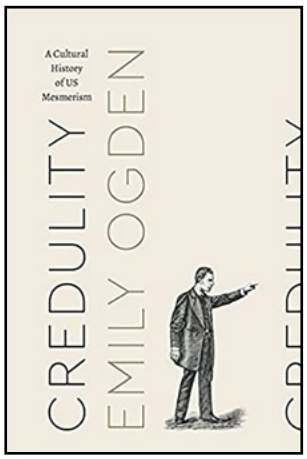
A Review of *Credulity: A Cultural History of US Mesmerism.* By Emily Ogden. University of Chicago Press, 2018, pp. ix- 267. ISBN 13:978-0-226-53233-2



Secularization, the bifurcation of the human world into a religious sphere and an a-religious sphere is, according to scholars, a distinguishing feature of modernity. A clear-eyed agentic self and a cool ordered mind is the secular ideal because that allows people to operate rationally in the public sphere, independent of religious belief. Recent scholarly work on secularization points to how varied are its expressions (Taylor, 2007) as well as how challenging and incomplete is its boundary-making (Modern, 2011).

Arguably, it was in the Enlightenment when the self-consciously more modern, secular rationalists began to pick fights with their irrational "others" – those they saw as overly superstitious, prone to delusions, or offensively emotional about their God. Ridding people of their "backward" beliefs in magic and witchcraft and curbing their excessive feelings for the supernatural that had "infected their brains" – as Voltaire famously put it – became an activating cause. Roy Porter (1999) called this campaign, the "Enlightenment Crusade." Scientific analysis and rational discourse became the esteemed methods to defeat, or at least to marginalize, the many forms of human irrationality lurking about.

Emily Ogden, author of *Credulity; A Cultural History of US Mesmerism* and Associate Professor of English at the University of Virginia, tackles the closely related topic of believability (or gullibility) in the late 18th and 19th centuries by fusing the uneven advance of secularization with a second body of sociological work addressing the enchantment-disenchantment process. First introduced by Max Weber, this modernization meta-narrative – if you will – involves liberating the person from enthrallment in fictitious beliefs. The aim is to disenchant, achieved by adopting attitudes supporting objectivity and rationalism. Interestingly, there is now an enchantment literature that juxtaposes the march toward modernity with enchantment's persistent presence. Beliefs in magic, the occult, the paranormal and assorted inexplicable (often religiously-tinged) experiences are frequent subjects of such studies. This literature includes Morris Berman's (1981) classic work bemoaning the loss of enchantment in the modern world and Alex Owen's (2004) study of late 19th – early 20th century British occultists who synthesized esotericism

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with advancing ideals of modernity. A number of these works ask why, in our modern rational age, do otherwise intelligent, normal people allow themselves to be so enchanted – and, in the minds of their skeptics – deceived into believing in hidden mind powers and psychic abilities? Confounding matters even more, Ogden cites contemporary scholars who propose that enchantment is not so bad for moderns after all! By imbuing the persistence of enchantment with both positive and negative valences, however, it becomes a not so neatly bifurcated concept to work with.

For brevity, I will call Ogden's synthesis, the secularization-disenchantment view (still a mouthful!). Ogden rightly proposes that mesmerism is a worthy topic of study for this form of analysis. By the 1840s, the Viennese physician Franz Anton Mesmer's 18th century maverick healing method based on the manipulation of a subtle, unseen naturalistic substance he called animal magnetism, had grown into an international phenomenon. Mesmerism had spread from Western Europe to the United States, Canada, India, and the Caribbean. It had grown into a radical form of medicine that treated illnesses outside of regular medicine's capacities, and, through the discovery of the mesmeric trance – so believers held – a means to induce people into a higher realm of mind powers and metaphysical truths. Groups of Americans and Europeans were aglow with the promise of this "new science." Not so fast, claimed the incredulous inheritors of the Enlightenment Crusade. By the mid-19th century, these crusaders had grown into groups of debunkers and skeptics who found in popular delusions, investment scheme crazes, upstart religions, and faddish medical marvels fitting targets upon which they disgorged a stream of sarcasm and ridicule. Those who believed in mesmerism's alleged transcendental offerings, they claimed, were "dupes, knaves and mountebanks." Mesmerism's supporters, infused with noble romantic sentiments, countered by portraying debunkers as mean, unimaginative people, blighted of hope and resistant to human progress. Needless to say, there is plenty of contested terrain here for Ogden to explore.

A third focus of Ogden's book is built on a body of work, initiated, at least in part, by members of the Modern Language Association, which examines the ways mesmerism influenced 19th century writers. Fred Caplan's *Dickens and Mesmerism; The Hidden Springs of Fiction* (1975) and more recently, Bruce Mills's *Poe, Fuller and the Mesmeric Arts* (2006) are part of this scholarship. The Americans Nathaniel Hawthorne, Edgar Allen Poe and Margaret Fuller allowed mesmerism to inhabit their writing in different ways. Analysis of their work appears often in Ogden's book, especially of Hawthorne. How these writers used mesmerism as a springboard for story-telling or used it to explore credulity-incredulity issues of their day are addressed in some detail. Ogden also draws analogies between being in the mesmeric trance and being absorbed in reading a book. Isn't a reader's "suspension of disbelief" that permits entry into the imaginary worlds spun by a novelist similar to being mesmerized?

I review Ogden's book as an historian of psychology and a student of mesmerism. Let me focus on the book's strong suits first. I found the best chapter was the case of Colonel William Leete Stone, a New York newspaperman and veteran who, in 1837, became interested in Loraina Brackett, a young blind woman and unusual mesmeric trance-adept. Ogden builds on historian of psychology Sheila Quinn's (2012) pioneering work on the Stone-Brackett story and digs deeper into the archives. Stone, a reportedly hard-nosed public skeptic was "converted" to the power of animal magnetism by way of Brackett's memorable psychic – or in the parlance of the day, magnetic – abilities. This included her ability to "see" the physical world when magnetized (i.e., while in trance) despite her physical blindness.

Her alleged ability to travel to distant places while magnetized and describe what she saw there was another head-turner. (This practice later became known among mesmerists as distant viewing, from whence the current practice of remote viewing is related.)

After Stone published his personal conversion story about going from incredulous critic to believer in Brackett, a public debate ensued, ably recounted by Ogden, about whether or not Stone had been duped. Among other critics, the physician David Reese, whose book, *Humbugs of New York* (1837) was one of the first debunking books published by an American, weighs into the controversy. This chapter is where Ogden's secularization-disenchantment approach as an analytical tool worked particularly well. In other chapters, it felt forced or too reductive, but not here.

Through impressive archival research, Ogden also advances our understanding of another famous chapter in the history of mesmerism in America, the story of Charles Poyen. A former medical student of French Colonial Creole descent whose family owned a Guadeloupe sugar plantation, Poyen, unexpectedly became the transmitter of French mesmerism to the U.S. In 1836, at the tender age of 22, he induced great interest in animal magnetism among elites in Boston and Providence, thus putting mesmerism on the map in America.

Other highlights of the book include a portrayal of the eclectic physician and prolific editor, Joseph Rodes Buchanan's practice of phreno-mesmerism. This mix of phrenology and mesmerism was briefly popular in the early 1840s before fading. One can see the uneven way secular understandings of human nature were constructed out of phreno-mesmerism. The chapter addressing J. Stanley Grimes, a phrenologist who embraced phreno-mesmerism and who wrestled with the expansive growth of spiritualism is also noteworthy. His lonely struggle against spirit mediumship allows Ogden to toggle back and forth between different positions of credulity and incredulity, while exploring issues involved in the secularization of self-control exposed by this practice.

There are parts of the book that needed a stronger treatment or that omitted essential features of mesmerism. First, enchantment was too broadly defined. Certainly, if you are spellbound by something you are enchanted. But what if you are intensely curious or have a strong positive feeling for something without the absorption. Is that enchantment? At one point, Ogden even equates mesmerism with enchantment. That is over-reach. Adopting such a view unnecessarily draws aspects of the practice into enchantment's lair that are not contingent upon it. Equating the whole of mesmerism practice to the manipulation of credulity is equally reductive and not supported by the period literature.

The subtitle of this book indicates that it will provide a cultural picture of U.S. mesmerism, which suggests a holistic treatment of it. I think Robert Fuller's (1982) seminal insight that mesmerism insinuated itself into religion, science, and medicine all at once is both borne out in the period literature and instructive here. To legitimately cover mesmerism, you need to acknowledge its several avenues of expression (see, for example, Winter, 1998).

Missing from this book is an analysis of experiments from the late 1830s on, routinely conducted to determine what was real and true about mesmerism and what was fake. There are dozens of experiments described in the literature and likely thousands were performed. Many experiments were specious of course, little more than parlor games that served to support believers' presuppositions.

Others, however, involved sophisticated strategies with the aim of producing objective and empirically grounded results. They represent a distinct kind of public science and psychological knowledge seeking (Schmit, 2005). By way of their methodology, these experiments are recognizable prototypes of later research methods employed in psychophysiology, consciousness studies, and parapsychology (Crabtree, 1993; Schmit, 2010). With just a couple of exceptions, they occur outside of Ogden's narrative.

The absence of a discussion of mesmeric medicine in Ogden's book – perhaps the most robust of mesmerism's varied expressions – is also an omission. For those who found relief from their sufferings from a mesmerism treatment, it was "proof" of its legitimacy. Consigning all of mesmeric medicine to the placebo effect misses the mark.

Robert Fuller (2004) and Catherine Albanese (2007) have persistently argued that mesmerism was part of an awakening of 19th century American metaphysical thought that included transcendentalism, Swedenborgianism, spiritualism, and, later, mind cure. Emerson - who briefly appears in this book – for example wrote famously about the "Oversoul" but he never described for his readers how to reach it. For a number of Americans and Europeans, mesmerism's trance was a doorway to higher worlds. Innovative ideas about consciousness, interior life, and psychology were birthed during this period that far outlived the people who generated them (suggesting that these ideas were enduringly believable). The voices of these believers could have been stronger in this book.

In fairness, Ogden states in the introduction that her intent was to focus on the overlap between credulity and mesmerism. But I think readers of a book on mesmerism with this subtitle deserve an explanation why these other key aspects of this movement, which could have informed such a study, were not included. That said, Ogden leverages her secularization-disenchantment approach to reveal unfinished corners of the psychology of modernity. By examining how credulity was used and abused in period discourse, a number of the disjunctive, jagged edges of the secularizing self are exposed.

The slippery character of mesmerism combined with how it manifested in different arenas of American culture has made it difficult to write histories about it. Professor Ogden dives into a dynamic and contentious episode of the American march toward modernity and expands our knowledge of it in a fascinating (enchanting?) way. Future historians working on these topics will need to grapple with the issues raised in *Credulity*.

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A Comprehensive Academic Review of Reincarnation Research[1]

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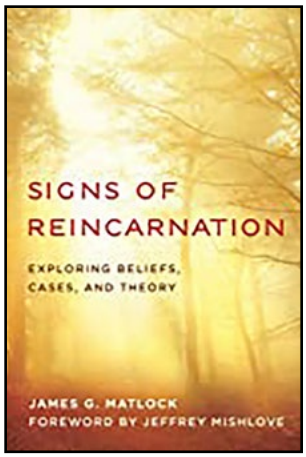
A Review of *Signs of Reincarnation*: *Exploring Beliefs, Cases, and Theory*, by James G. Matlock. Rowman & Littlefield, 2019., Pp. xxi + 385. $39.00 (paperback). ISBN 9781538124796



Beliefs in past lives have been widespread throughout history and different cultures around the world and they still are prevalent nowadays. In addition to belief in reincarnation being very popular among Eastern religious/spiritual traditions (Hinduism, Buddhism, Jainism, and Sikhism) its expression is also significant in the West. Belief in reincarnation was reported by 20% of the general population in Eastern Europe, 27% in Western Europe, 33% in USA, and 37% in Brazil (DataFolha, 2007; Inglehart et al., 2004; Gallup, 2003). Moreover, belief in reincarnation has been associated with people's worldview, impacting their mental health (Davidson et al., 2005), as well as their capabilities of overcome illnesses and stressful life events (Peres, 2012), and psychological resilience and human virtues (Linley & Joseph, 2004). On the other hand, belief in past lives might be associated with psychological struggle, guilt feelings, and a sense of passivity toward life (Stauner et al., 2016). However, it is worth to note that the last five decades were marked not only for studies and investigations about belief in reincarnation, but, that a further scientific field was developed to investigate possible empirical evidence for the factual truth of reincarnation. This is mainly about claims of past-life memories.

Reports of children who have claimed past-life memories have been published sporadically at least since the late 19th century (Fielding, 1898; Hearn, 1897; Stevenson, 2000). Although a considerable research body has been built in the past half century (Daher et al., 2017), this substantial amount of evidence is not well known outside of the field of parapsychology. There are a few books providing a good overview of reincarnation research for general audiences and some academic books devoted to the analysis of certain aspects of reincarnation studies, or of studies developed by a research group. *Signs of Reincarnation: Exploring Beliefs, Cases, and Theory* is, to our knowledge, the first academic comprehensive review of the field of past-life memories investigations. Its main objective is to address "the nature of the evidence for reincarnation, the question of how good that evidence is, and, if it is satisfactory, how best to interpret it" (p. xix).

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James G. Matlock has a background in anthropology and parapsychology and an old interest in reincarnation research. His first paper on parapsychology was a book review on the topic (Matlock, 1986) and his MA thesis in anthropology was about reincarnation beliefs in tribal societies (Matlock, 1993). After that, he shifted his interests to other topics, but since the beginning of the current decade he has focused again on reincarnation studies. Since 2011 he developed and has taught a graduate level course on reincarnation and this book is largely the product of this course. Currently, he is a Research Fellow of the Parapsychology Foundation and has contributed several articles on reincarnation to the *Psi Encyclopedia*. Matlock has also recently written, in partnership with the leading reincarnation researcher, Erlendur Haraldsson, the popular book *I Saw a Light and Came Here: Children´s Experience of Reincarnation* (Haraldsson & Matlock, 2017).

All this experience in the topic is reflected in this scholarly book, based on around 900 references. Despite the fact that we have been interested in reincarnation research for more than two decades, we were constantly and positively surprised by the references to relevant books and articles unknown to us. Matlock integrates evidence provided by studies from different fields, such as parapsychology, psychology, anthropology, psychiatry, and history. As expected, he gave special attention to the seminal and voluminous scientific contribution of Ian Stevenson, the University of Virginia`s professor of psychiatry who basically founded the field of academic investigation of empirical evidence suggestive of reincarnation and is still the most prolific researcher the field has ever had (Daher et al., 2017).

Matlock begins *Signs of Reincarnation* reporting a recent, unpublished and solved case of reincarnation type that he investigated. It concerns Rylann O´Bannion´s, a girl from Bartlesville, Oklahoma, who was born in 2008. When she was between two to three years old, Rylann started to claim a supposed past-life. Later her case was associated to a previous personality named Jennifer Schultz, a girl from Kenner, Louisiana, who was born in 1971 and died probably by electrocution in 1982 while talking on a phone during the Pan Am 759 airplane crash. This case is based on the child`s own memories claims and unusual behavior, most of them verified through interviews with Rylann, first-hand witness reports, documental analysis and the reports of Jennifer's parents. Based on Rylann's case, the author starts to introduce the field of past-life memories investigations, providing a good taste about the exciting, challenging and complex scientific investigation of such cases. Before presenting and discussing the empirical evidence provided by reincarnation studies, Matlock first provides a very good contextualization, providing a cross-cultural analysis of reincarnation belief and discussing research methods, their criticism, and interpretative frameworks. Following Edward Tylor, one of the founders of modern anthropology, Matlock claims that reincarnation beliefs have empirical basis, i.e., are mainly based on experiences suggestive of that.

In order to provide a comprehensive analysis and interpretation of the empirical evidence related to reincarnation cases, it is essential to deal not only with isolated features, but with what Matlock describes as "rebirth syndrome." This would be composed of two categories of what he called "signs of reincarnation." The "principal signs" are spontaneous memory claims of previous lives (autobiographical verbal, spatial and identification memories), behavioral identification with the previous person (personality traits, unusual behaviors, and skills) and birthmarks and other physical signs. The "secondary signs" are signs of discarnate agency (rebirth announcement dreams, or apparitions, and intermission memories of the period between death and the new life), universal and near-universal patterns (e.g., predom-

inance of males and violent deaths, age children start and stop talking about previous life) ,and psychological impacts of past-life memories (e.g., phobias and gender non-conformity). The book provides a fairly comprehensive review of these "secondary signs" that are often overlooked in academic literature, for example the transcultural similarities and differences, and the existence of verified statements about facts claimed being observed during intermission periods. Another interesting innovative point is the analysis of the similarities between reports of near-death experiences (NDEs) and intermission periods in reincarnation cases.

Given the fact that the most robust evidence comes from children, there are few studies of adults claiming memories from past lives, both spontaneous and induced (usually by regression hypnosis) cases. There is a chapter that fills this gap reviewing the evidence available and concludes that the evidential nature of the published reports is still very poor. However, it is also important to understand who the adults who claim these memories are, and, what are the features of these claims. There is also some discussion about revelations by shamans, psychics, and mediums of alleged consultants` past lives.

At the end of the book, Matlock states: "With no valid reasons for rejecting reincarnation a priori, the questions of its occurrence should be settled by the evidence" (p. 271). After providing a fairly comprehensive and balanced review of the empirical evidence related to reincarnation, he concludes: "I now feel no hesitancy in declaring that I believe reincarnation to be the only intellectually defensible interpretation of the data" (p. 270). In making the case for the reality of personal *postmortem* survival, the author properly puts the evidence provided by reincarnation cases in the broader context of several other empirical evidence suggestive of survival such as NDE, crisis apparitions, mediumship, and terminal lucidity. Finally, Matlock proposes a "theoretical model of the reincarnation process" (p. 271), which he calls "processual soul theory." Based on the empirical data and ideas from authors like Frederic Myers, William James, and Ian Stevenson, his model argues that "the stream of consciousness that animates a body during life continues into death, and persists though death, until it becomes associated with (possesses) another body... The consciousness stream is composed of both subliminal and supraliminal strata... Once in possession of its new body, the reincarnating mind customizes it by adding behavioral and physical effects through psychokinetic operations on its genome, brain, and underlying physiology" (p. 259). This model is proposed for heuristic reasons to stimulate further research and developments. Matlock also argues for the persistence of personal/individual consciousness but against the existence of retributive or juridical karma, astral bodies, and Cartesian dualism. Instead, he proposes processual karma, a stream of consciousness (a continuous self with no astral body), and an idealist property dualism. However, we found unconvincing the arguments he provided against the former and in support of the latter. It seems we still have no empirical base to decide, since, for example, concepts of Cartesian ego and astral body may also be able to accommodate the evidence available.

Some historical aspects presented are also problematic. It is not correct to attribute Kardec`s views on mediumship to a single medium (a claim based on an Aksakof`s controversial paper based on poor historical investigation, i.e., an interview with only one person who was hostile to Kardec) (Aksakof, 1875; Moreira-Almeida, 2009). It is also not accurate to state that according to the "most widely accepted version of quantum theory ... consciousness ... is instrumental in the creation of physical reality" (p. 236). Although there are leading physicists who have defended this position, it

is questionable to state that this is the most widely accepted version of quantum theory. However, these problems are related only to collateral aspects of book`s main purposes and do not jeopardize its many good qualities.

Although the phenomenon of past-life memories still is a scientific field largely unexplored, even neglected by the mainstream academic community, Matlock´s work reinforces it as a current, relevant, and worldwide phenomenon that warrants further attention. Moreover, as pointed by Stevenson (2000), the great empirical significance of cases of the reincarnation-type should be further considered regarding its possible implications to personality development, health, learning, relationships, and religious/spiritual aspects, even in those people who have never claimed any past-life memory. However, some challenges have to be overcome. There are few research groups currently investigating such cases around the world, with the exceptions of the Division of Perceptual Studies at the University of Virginia (USA), Erlendur Haraldsson at the Psychology Department in the University of Iceland, Ohkado Masayuki at the Chubu University in Japan, and the Research Center in Spirituality and Health at the Universidade Federal of Juiz de Fora - UFJF (Brazil). Moreover, considering the cross-cultural aspects of such cases, the language barrier might be considered a great limitation. Consequently, it would be important that new researchers are trained and prepared to carry out such challenging investigations around the entire world. Finally, considering the decrease of scientific studies related to past lives memories after Ian Stevenson´s death, we hope *Signs of Reincarnation* will be an important way of disseminating, bringing attention, and encouraging the interest of a new generation of researchers to the exciting and challenging scientific field of reincarnation phenomena.

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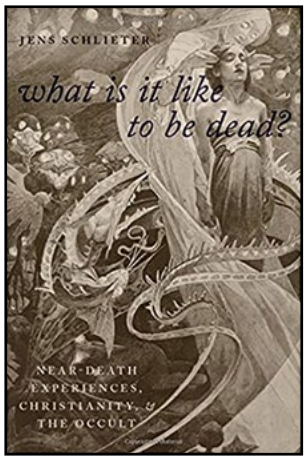
A Narrative about Narratives of Near-Death Experiences[1]

Michael Nahm

A Review of *What is it Like to be Dead? Near-Death Experiences, Christianity, & the Occult,* by Jens Schlieter. Oxford University Press, 2018, Pp. xxxii + 344. $34.95. ISBN 978-0-19-0888848



According to the blurb of the reviewed book, Jens Schlieter (Professor of the Systematic Study of Religion in Bern, Switzerland) presented the first study "to document and analyze four centuries of near-death testimonies before the codification of the genre in the 1970s, offering the first full account of the modern genealogy of near-death experiences." It seems, however, that in the 250 years between 1500, where Carol Zaleski's (1987) earlier book on Medieval near-death experiences (NDEs) left off, and the publications of Emanuel Swedenborg (1688-1772), there were only very few NDE reports. Schlieter included only five in his study, the last one representing the account of Johann Schwerdtfeger (Kern, 1734), "probably the oldest report of an experience near death in a more focused sense" (p. 62; see also Nahm, 2012). The focus of Schlieter's work clearly rests on the 19th and 20th Century, and this is where its strengths are.

The author collated numerous reports of NDEs and related topics from a huge variety of sources, some of which had been hardly discussed in the literature on Western NDEs, and he thus provided a valuable contribution to NDE studies. Schlieter shows, for example, that tunnels, panoramic life reviews, and autoscopies were absent in earlier NDE reports, thus suggesting their evolvement over time. Indeed, contents of NDEs are influenced by cultural conditions, and they also change throughout geographic regions over time, as highlighted already before by other authors (e.g., Kellehear, 2009; Nahm, 2009, 2011, 2019; Ohkado & Greyson, 2014; Shushan, 2018; Zaleski, 1987). Schlieter's interpretation of these findings is that the content of NDEs and especially the retrospectively created reports of the alleged experiences are shaped by "the individual's former conscious (or unconscious) reflection on death, the afterlife and the soul" (p. XX), being guided by wish-fulfilling self-suggestion and predefined "expectation, anticipation, and confirmation of the anticipated" (p. 5), as well as by retroactive imputations. The resulting reports would become "enriched by third-person comments" throughout the years and "harmonized with near-death reports of others" (p. 261), thus forming a "narrative."

Admittedly, such factors may play a role in formulating NDE reports, but Schlieter seems to put too much emphasis on them. A closer look into the scholarly literature on NDEs shows that things are not that simple. To begin with, Schlieter's repeated claim that NDEs must be treated as narratives but not as

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experiences that may comprise real or verifiable elements, and his frequent criticism of authors who did treat NDEs predominantly as experiences in the past (i.e., practically everybody who ever wrote about NDEs), are disputable. Schlieter even dismisses aspects of NDEs that contain elements corroborated by external observers when, for example, medical instruments were correctly identified by seemingly unconscious patients, since "the reporting parties often share the paranormal belief of the experiencers" (p. 4). Rebuking Michael Sudduth (2016), he maintains that because of the "general desirability of veridical accounts of paranormal experiences, shared by experiencers, reporters, and collectors of these reports", NDE reports would not contain empirical data that could be utilized for properly performed studies (p. 4f). Yet, I don't think that Schlieter's suppositions are reasonable and reason enough to dismiss the many documented corroborations in their entirety (e.g., Holden, 2009; Rivas, Dirven, & Smit, 2016), regardless of their interpretation.

Regarding Schlieter's claim that reports of NDEs are expectation-driven narratives shaped by previous widely known near-death reports, it remains debatable whether many of the reports he presents were really as widely known as he assumes. Moreover, he hardly touches distressing NDEs and their phenomenology, reports of which often do not contain the usual NDE elements and are obviously not in harmony with typical and widely known NDE reports (e.g., Bush, 2009, 2012). He also omits discussing the many examples in which the content of NDEs, according to the experiencers' reports, flatly contradicted their expectations and religious world views (e.g., Abramovitch, 1988). The author furthermore barely considers NDEs of (very) young children, which are typically thought to be relatively free from cultural influence (e.g., Sutherland, 2009). Schlieter also asserts that the publication of Raymond Moody's (1975) book had a substantial impact on the shaping of subsequent near-death reports, but the results of the few empirical studies performed indicate the contrary, namely that NDE reports did not differ in the years before and after 1975. Schlieter refers to one of these studies (Long & Long, 2003) and correctly emphasizes a methodological shortcoming of it. But he does not mention a second and more decisive study in which this shortcoming was not contained (Athappily, Greyson, & Stevenson, 2006). He likewise does not consider a study according to which NDEs are typically not embellished or changed over the years (Greyson, 2007), a finding that might lend at least some credibility to also the first study mentioned (Long & Long, 2003). Schlieter's claim that NDEs must be treated as "event narratives" that are embellished and harmonized with previous near-death reports of others is additionally questioned by recent findings according to which the quality and richness of memories of NDEs differ from memories of usual and of imagined events (Moore & Greyson, 2017; Palmieri et al., 2014; Thonnard et al., 2013). Schlieter cited the last of these publications as support of his hypothesis, but its authors clearly concluded that "NDEs cannot be considered as imagined events," rather, NDE reports seem to contain memories of highly emotional and "really perceived" events, i.e., of real experiences (p. 4).

When considering all these findings, it becomes obvious that Schlieter's main hypothesis is not backed up by appropriate arguments. Taken with a grain of salt, it rather appears to represent a mere narrative about NDE narratives. Summing up, Schlieter's book has two faces. On the one hand, it comprises a fascinating and very recommendable collection of previously neglected NDE reports and works dealing with them, and the author shows how features of typical Western NDE reports changed over time. On the other, the way he analyzes and interprets this material is unconvincing.

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In Defense of the Sacred[1]

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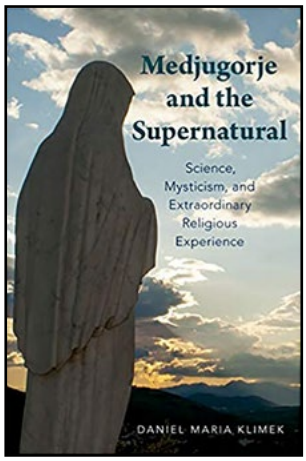
A Review of *Medjugorje and the Supernatural: Science, Mysticism, and Extraordinary Religious Experience*, by Daniel Maria Klimek. Oxford University Press, 2018. Pp. x + 375. $102.99. ISBN (Hardcover) ISBN 978-0-19-067-920-0



This book could have been more aptly titled *In Defense of the Sacred: Why Ann Taves Attribution Theory of Religion is Wrong*. The author, Daniel Maria Klimek, is a Third Order Regular (TOR) Franciscan, teaching at the Franciscan University of Steubenville [FUS] in Ohio, which has as its mission statement "Academically Excellent. Passionately Catholic."[2] The book originated as a Ph. D. dissertation from the Catholic University of America and displays its origins. Unsurprisingly, *Medjugorje and the Supernatural* presents a robust defense of Roman Catholic teachings and argues strongly for the genuinely supernatural character of the Medjugorje visions and the sacred and transformative content of the messages passed from Our Lady to the visionaries, and through them to her devotees. The book is well researched and clearly presented, although it could have been half the length as there is a great deal of repetition, both of the general arguments and, in places, of specific details as well. As a theological text, the book may well please its readers, particularly those well disposed towards Marian apparitions. For a more rounded social scientific or historical perspective, or for an account of Medjugorje that places the visionary phenomenon in the context of other paranormal phenomena (other than a discussion of mysticism), this is not the place to come.

Klimek sets out his stall in the Introduction, describing Medjugorje, the small town in the Mostar diocese of Bosnia-Herzegovina where the Virgin Mary has been appearing to a small group of children — now adults — since 1981, in the following terms:

> It is a village of visionaries, apparitions, weeping statues, dancing suns, rosaries mysteriously turned gold; a village, in a time when secularism permeates much of the Western world, where religious and priestly vocations flourish; a village where lives are transformed, where healings and miracles are said to happen, where millions of pilgrims have traveled from all

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2 The Franciscan University at Steubenville is a center for the propagation of the Medjugorje message. Professor Mark Miravalle, Professor of Theology and Mariology at FUS, also wrote his doctoral thesis on Medjugorje. Both men testified that they found the experience of visiting Medjugorje powerfully transformative.

> corners of the earth, hoping to encounter a touch of the divine in a place where, it is said, heaven meets earth (p. 1).

Although this is factually the case, it is one particular vision of Medjugorje, promoted with great enthusiasm and dedication by the Franciscan clergy of Bosnia-Herzegovina and the Franciscan Order more widely, including the Franciscan University of Steubenville. What Klimek does not say is that the apparitions took place at a moment in history when the centuries-old Franciscan hegemony in the region was under severe threat from the secular diocesan bishop and clergy, and the Yugoslavian communist civil authorities. Nor does he describe the build-up to the apparitions. In 1979 a Franciscan priest, Father Branko, who had served in Medjugorje parish for many years, attended a meeting of Catholic Charismatic Renewal in Italy. During this meeting Branko received two prophetic messages from leaders of the movement. In one, he was seen "in the midst of a fast-growing multitude" from which "flowed streams of living water." In the second prophecy, he was told not to worry about the situation in the diocese of Mostar, as "I shall send you My Mother and everyone shall listen to her" (Bax, 1990, p. 65). Branko was told to return to his parish and make preparations for the fulfillment of these prophecies.

By the time the apparitions started, the population had spent two years praying, fasting, and reciting the rosary as they awaited the fulfillment of the prophecies. Mothers were told that God was preparing special graces for the children, and two children recovered from illness after intense prayers, and a special devotion to the Virgin of Medjugorje was established. When six children found old and valuable rosaries, this was interpreted as a sign of God's coming grace (Bax, 1990, p. 66). By the time the first apparition took place on June 23rd 1981, expectations were running very high. This is not to disparage the extraordinary nature of the events that took place, but if we can move away from a binary true/false dichotomy and seek to understand such phenomena in a more holistic manner, this psychological and spiritual background preparation may well turn out to be highly significant. We still know very little about the nature of consciousness and the ways in which visible and invisible matter interact.

We do know that the Madonna seen by the visionaries resembled the statue of Mary in the parish church. In a Roman Catholic context, interpretations of paranormal phenomena take on a Marian flavor and are shaped by existing beliefs and expectations. In the Andes, when Jesus appeared to a local Indian shepherd boy on the slopes of Mount Ausankati (a powerful mountain deity of the region), he merged into the mountain. The pilgrimage of Our Lord of the Snow Star combines Hispanic Christianity and a pre-Christian rock fertility cult (Sallnow, 1991). The interaction between (possible) supernatural intervention and collective expectation is hard to unravel. In the Philip parapsychology experiment that took place in Toronto in the 1970s, a group of researchers invented and then attempted to communicate with a fictional character they created named Philip Aylesford. The group recreated a "traditional" séance environment and were able to achieve knocks and raps, a moving and levitating table, and answers to questions concerning Philip's fictional life. Whether the phenomena produced were the result of the collective energy and imagination of the group alone or involved some mischievous spirit or spirits who decided to join them, it is impossible to tell. What was clear is that paranormal phenomena could be produced and created by the power of collective imagination and thought, and also banished in a similar manner (Owen, with Sparrow, 1976; Wehrstein, 2018). The power of two thousand years of church history and the devotion of millions of believers in the miraculous powers of the Virgin Mary presumably have a role to play in Marian apparitions.

There are two discussions in *Medjugorje and the Supernatural*. One is an account of the events that occurred in Medjugorje, with descriptions of the visionaries and (very briefly) the orthodox Catholic content of their messages, and the pastoral fruits resulting from the apparitions. Although he does not go into the politics of the situation, Klimek acknowledges that the Catholic Church's final decision as to the authenticity of the apparitions and messages will be ecclesial (i.e., political), not scientific. Despite having taken the pontifical name Francis, the current (Jesuit) pope has made it clear that, unlike his predecessor John Paul II, he is unimpressed by a Madonna who sends messages every day at a pre-arranged time. He does acknowledge the pastoral benefits of pilgrimages to Medjugorje (Murzaku, 2019). Part of the Medjugorje narrative is the discussion in Chapter 5 of the battery of tests the visionaries were subjected to, although tests of orthodoxy and conformity seem to have been the main component of these examinations. Klimek quotes Mary Craig's (1988) comment that "For the first time in all the history of apparitions, science has had an opportunity to investigate extraordinary phenomena while they were actually happening" (p. 171). A case is made for the uniqueness of Medjugorje within the history of both Marian apparitions and Christian mysticism. A star witness for Klimek is Marco Margnelli, described as "an Italian neurophysiologist and an ardent atheist" who made it his business to disprove claims of mystical phenomena. He carried out tests on the visionaries in 1988 and concluded that during their apparitions, the visionaries were in a genuine ecstatic state. What apparently impressed Dr. Marginelli most was that during the time the visionaries were on their knees in ecstasy, ostensibly conversing with the Virgin Mary, the birds outside the room in which they met were silent. A few months later, Marginelli became a practicing Catholic (p. 7). The story of Marginelli's conversion is repeated several times in different chapters.

The second narrative is a rehearsal of perennialist versus constructivist views of religion. William James is recruited for the perennialist cause, although Klimek disapproves of his extension of the supernatural to embrace mediumship and other parapsychological phenomena. Klimek is highly critical (with some justification) of the tendency for many scholars of religion to rule out the possibility of a supernaturalist origin for Marian apparitions. He is particularly critical of the historian of religion Ann Taves (1990), and the underlying materialism of her 'naturalistic' approach to the study of religion. In asking scholars to set aside supernatural explanations and to focus instead on unconscious processing in interpreting religion, Klimik argues that Taves makes the unconscious the ontological root of experience, and the key to explaining the source of a phenomenon. When this happens, "we are no longer dealing with naturalistic, meaning purely empirical, claims but, rather, those that are rooted in philosophical presupposition" (pp. 225–226).

Robert Orsi and his call for historians to embrace an "abundant history" are more favorably mentioned. Orsi takes on board subaltern historian Dipesh Chakrabaty's critique of two main assumptions in modern historiography, namely, that humans exist in a single frame of historical time and that gods and spirits are ultimately social facts, and that the social exists prior to them. In other words, there is a tendency to remove the possibility of the supernatural from the frame (Orsi, 2008, p. 13). Orsi, who has studied Lourdes as well as other Marian locales in some detail, talks about the excess found at such ritual sites, the international networks that they give rise to, and above all, the promise of relationship. At Marian shrines, devotees are already in a relationship with Mary. Apparitions are a particular "excess of presence," but not unexpected or external to a pre-existing reality. This is clearly the case with Med-

jugorje, where, when the apparitions started, Mary was already anticipated. Orsi argues that within the devotional relationship, time and place become fluid, and people experience radical presence or realness (Orsi, 2008, p. 14). Abundant events are not exhausted by social history or psychology. The face-to-face experience of presence can be transformative for the historian as much for the pilgrim or devotee. Klimek's concerns are more theological (or apologetic) than historical, but Orsi has important insights into Marian apparitions that could certainly be used to support and extend Klimek's analysis. As a Franciscan at the heart of the dissemination of the Medjugorje cult (and I use the term anthropologically and not pejoratively), Klimek is in an excellent position to write a historically and socially informed study of Medjugorje, placing Marian apparitions within phenomenological as well as theological theories of religion. This is not what we have here but perhaps something we can look forward to in the future.

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The Soul Divine[1]

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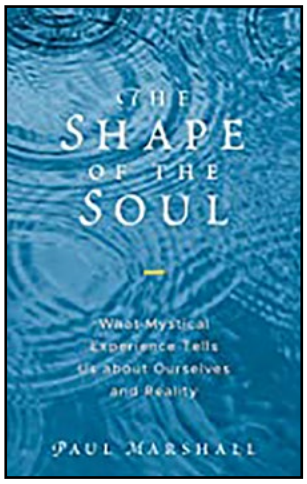
A Review of *The Shape of the Soul: What Mystical Experience Tells Us about Ourselves and Reality,* by Paul Marshall. New York: Rowman & Littlefield, 2019. Pp. x + 425. $30.00. (Hardcover). ISBN 978-1-5381-2477-2



In this book, Paul Marshall asks the reader to seriously consider the possibility that mystical experiences are veridical. Marshall distances himself from those who respect the phenomenology of mystical experience but bracket any claim to its ontological status, and from those who accept the reports of mystical experience as truthful indicators but of a distorted encounter with reality often claimed to be rooted in neuropathology. Some may be tempted to dismiss as absurd the claim that a single personal experience (extensively described in Chapter 2) can carry such evidential force.

Paul marshalls an amazing range of evidence from across disciplines to defend the thesis that individuals have access to the ultimate nature of reality through mystical experience. He asserts that he has and his book is an effort to provide an explanation of what otherwise might appear as an absurd claim. Expanding on his earlier work (Marshall, 2015) he notes that difficulties with metaphysical variations in the interpretation of mystical experiences across traditions (religious or spiritual) are not insurmountable. The solution is to focus upon reflexive accounts of mystical experiences rather than elaborated interpretations. What then is revealed is that the entire universe is to be found within, in the self or soul (p. xii). Can such a claim be taken seriously?

Marshall's work is part of the research he belated joined headed by Edward Kelly at Esalen's Center for Theory & Research. Esalen scholars fundamentally challenge modern psychology and its commitment to mind as either derivative or an emergent of brain states. Mind is assumed fundamental, "irreducible" and from this bold claim, much of contemporary psychological science is challenged as a category mistake (Kelly et al., 2007).

Although Marshall would have us work through Gottfried Leibnitz and critical versions of monadololgy, the discussion is no detour into philosophy. Monadology provides insights not only into mysticism

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but into some of the apparent conundrums of quantum physics. We contain the entire universe not as isolated selves, but as interconnected monads in a cosmic unity that is our divine self. The unifying force is love. Few readers are likely to have enough expertise to evaluate the grand claims of this book. Boldly, Marshall asserts that mystical experience reveals the literal shape of the soul. Like Jung (admittedly admired by Marshall), he does not simply believe, he knows. Furthermore, open to dialogue with mainstream science he considers how his claim is both empirical and falsifiable. However, in order to test Marshall's insights one must follow others who found physicalism unsatisfactory, as have the scholars in the Esalen group.

William James's *Principles of Psychology* (1890) is widely acknowledged as founding psychology as a natural science. However, upon reflecting on his achievement in the abridgement of that classic text, *Psychology the Briefer Course* (1892), he bemoaned that little had been achieved worthy of deep reflection. He concluded that the restrictive assumptions of a narrowly conceived naturalism were but provisional for the emerging psychology of the 20th century. It was James and others (especially F. W. H. Myers) who relied upon data from parapsychology to defend a transmissive theory of mind, compatible with the psychology the Esalen group sees as appropriate for the 21st century (Kelly et al, 2007).

Marshall's book is a *tour de force* on method, rooted in mystical revelation of reality and in methods that may occasion it. The proof is in Marshall's willingness to consider alternate claims to reductionist views. He systematically refutes each in turn. Convinced that a nuanced monadology is correct he invites the reader to be open to the limits of physicalism and to the reconciliation of science and spirituality championed by the Esalen group (Kelly et al., 2015). How far Marshall has revealed the shape of soul can be debated. Where relevant Marshall admits to speculation but nothing in the book is absurd. Marshall's vision is empirically falsifiable but only if our provisional views of the physical world (brains included) are explored as a product of mind seen as fundamental, divine, and loving.

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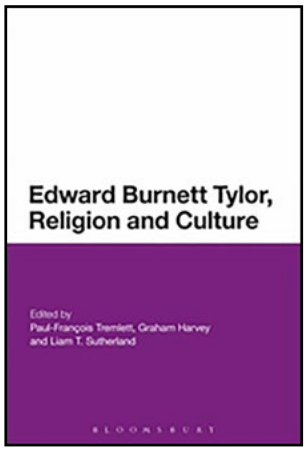
Rehabilitating E. B. Tylor[1]

James G. Matlock

Parapsychology Foundation

A Review of *Edward Burnett Tylor, Religion and Culture,* edited by Paul-François Tremlett, Liam T. Sutherland, and Graham Harvey. Bloomsbury Academic, 2019. Pp. viii + 219 (paperback) $39.95. ISBN-10: 135010597X



Sir Edward Burnett Tylor is widely regarded as the father of anthropology, but his contributions to parapsychology are less well known. He was born into a Quaker family in Camberwell, Surrey, on October 2, 1832, and educated at a Quaker school. Denied entrance to a university because of his faith, he worked for a few years in his family's brass foundry, but when he developed symptoms of tuberculosis, was sent to recuperate in warmer climes. In Cuba he met a fellow Quaker, archaeologist Henry Christy, who invited him to accompany him to Mexico to explore Toltec ruins there. This experience was a pivotal one for Tylor. It furnished the subject of his first book, a travelogue entitled *Anahuac: or Mexico and the Mexicans, Ancient and Modern* (1861), and inspired him to undertake a comprehensive review of everything that had been written about indigenous cultures around the world by archaeologists, missionaries, travelers, and colonial administrators. This led to *Researches into the Early History of Mankind and the Development of Civilization* (1865) and his best-known work, *Primitive Culture: Researches into the Development of Mythology, Philosophy, Religion, Art, and Custom*, whose first edition appeared in 1871. *Anthropology: An Introduction to the Study of Man and Civilization* followed in 1881.

Tylor is generally considered an armchair anthropologist, but as Miguel Astor-Aguilera explains in the volume under review, in addition to his time in Mexico, he conducted ethnographic fieldwork with the Ojibwa around Lake Huron, Canada, and in the southwestern American pueblos, particularly the Zuni. He spent some time studying deaf and dumb persons in institutions in London and Berlin and sat with mediums in London.

Tylor married Anna Fox in 1858, but the couple never had children. He was made a fellow of the Royal Society in 1871. Ironically, having failed to admit him as a student, Oxford awarded him a Doctor of Civil Law degree in 1875 and appointed him Keeper of the University Museum in 1883. He held the position of Reader in Anthropology from 1884 to 1895 and in 1896 became the first incumbent of a

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Chair in Anthropology at Oxford, retiring as Emeritus Professor in 1909. Tylor gave the first series of Gifford Lectures, on The Natural History of Religion, at the University of Aberdeen between 1889 and 1891. He was knighted in 1912 and died on January 2, 1917, in Wellington, Somerset.

The book under review is the paperback edition of a book first published in 2017 by Bloomsbury Academic. It is a collection of ten essays treating various aspects of Tylor's life and work, representing an attempt to correct misimpressions about him and to demonstrate his contemporary relevance. Tylor is not much read today, principally because, under the influence of Lyell and Darwin, he propounded an evolutionary theory of cultural development that anthropology has since rejected. He placed particular emphasis on religion, the most primitive form of which he thought was the belief in "Spiritual Beings." Several chapters deal with Tylor's concept of "animism," as he called this proposed earliest form of religion. In the first chapter, James L. Cox considers the debate between Tylor and his student Andrew Lang over Lang's contention that a "primitive monotheism" was more fundamental than a belief in spirit beings, the latter including the spirits of deceased humans and nature spirits, as well as deity figures. Aspects of animism are treated also by Graham Harvey in the second chapter and Jonathan Jon in the third chapter. In the fifth chapter, Liam T. Sutherland considers Tylor's conception of religion more broadly.

Other authors deal with other aspects of Tylor's writings and activities. Robert A. Segal and Martin D. Stringer treat Tylor's idea of myth as a forerunner of scientific thinking, Anne Kalvig his study of London mediums, including D. D. Home and W. Stainton Moses. Astor-Aguilera examines Tylor as an ethnographer, and Katy Soar his grounding in archaeology. Paul-François Tremlett closes the volume with a look at one of Tylor's key theoretical constructs, the "survival," a belief or practice that has persisted despite the loss of its original rationale. Tylor was interested in Victorian Spiritualism partly because he regarded it as a "survival and revival" of animistic practices (Stocking, 1971).

Together these ten papers provide a well-rounded look at Tylor, from various disciplinary perspectives, and achieve the editors' aim of rehabilitating Tylor in the context of contemporary academic interests. There is something important missing, however, and that is the parapsychological perspective. Perhaps because I entered anthropology with a background in parapsychology, Tylor's emphasis on observation and experience as the source of spirit beliefs jumped out at me on my first reading of *Primitive Culture* (Tylor, 1956a, 1956b). The contributors to *Edward Burnett Tylor, Religion and Culture* refer again and again to Tylor's concern with religious "beliefs" and repeat the abiding canard that his perspective was overly "intellectual." Several contributors acknowledge that Tylor held that spirit beliefs derive from "dreams and visions," but they seem to think that he was arguing that these dreams and visions led to spirit beliefs through a process of ratiocination, pure and simple. That is not what Tylor seems to have meant, though.

Although at various points in *Primitive Culture* he points to "dreams and visions" as the basis of belief in spirits—and life after death—Tylor used this phrasing as a shorthand reference to a range of experiences, including especially what have come to be called near-death experiences and apparitions. He cites example after example of these, some veridical. There are also out-of-body experiences, some with reciprocal apparitions, and poltergeist phenomena in association with deceased agents. When he refers to dreams, it is shared dreams, dreams that include out-of-body perceptions, or dreams of interactions with the spirits of deceased loved ones.

Tylor (1871, 1956b) proposed that nature spirits and deities in animistic cultures were generalizations from human spirits perceived in the various dreams and visions he compiled, then sought to trace the development of thought about spirit beings into the religious conceptions of the more complex societies of the Victorian era. Philosophical elaborations enter into Tylor's portrayal of the development of religion, but religion in his view began with experiences that during his lifetime became the subject matter of psychical research. Tylor was skeptical of these experiences as evidence for postmortem survival, but he nevertheless understood how they might have suggested survival to those who experienced them. When he attributed the origin of spirit beliefs to "dreams and visons," therefore, he was asserting that the beliefs had an empirical basis, even though (in modern skeptical fashion) he did not personally believe that conclusion to be justified.

Primitive Culture not only provides a wealth of testimony about spontaneous psychic experiences suggestive of postmortem survival, it was the first book to draw attention to the widespread appearance of reincarnation beliefs in indigenous cultures. Here again Tylor pointed to observations and experiences—a mother's announcing dreams, a baby's birthmarks or physical resemblance to a deceased forbearer, a toddler's behaviors reminiscent of that person—as grounds for the belief.

I have no doubt that Tylor was right that it was such experiences and observations that inspired beliefs in postmortem survival, the ability of the deceased to interact with the living, and reincarnation. Similar phenomena continue to be reported and often produce similar convictions among those who experience them today. Tylor appears never to have joined the Society for Psychical Research (formed in 1882), unlike Andrew Lang, who became a prominent member. Among other things, Lang wrote *Cock Lane and Common-Sense* (Lang, 1894), which dealt with haunted houses, poltergeists, apparitions, second sight, and other psychic phenomena in Victorian Britain, comparing them to similar phenomena reported from indigenous societies around the world. It was Tylor who set Lang on the path to psychical research, but his role in this connection has been little appreciated in parapsychology, anthropology, or religious studies. I was disappointed to find that none of the contributors to *Edward Burnett Tylor, Religion and Culture* considered it. The rehabilitation of Tylor will not be complete until that is done.

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Reflections on, But Not a History of, Transpersonal Psychology[1]

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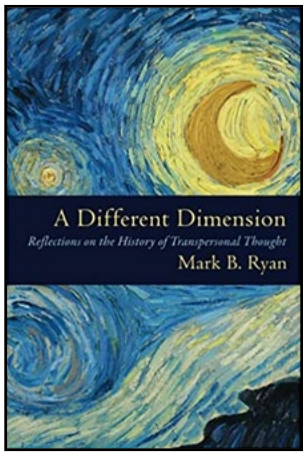
A Review of *A Different Dimension: Reflections on the History of Transpersonal Thought, by* Mark B. Ryan. Westphalia, 2018, Pp. xvii + 231. $22.50. ISBN 978-1-63391-757-6



This is not the book that I hoped to review, as I have long wanted to see a rigorous and scholarly work on the historical roots of transpersonal thought and their implications for its future evolution. Instead this book is a compilation of well-written and entertaining stories that portray many of the key figures and events leading to the transpersonal movement, including some that are still influential. I should have read its title more carefully, as indeed it is a reflection on, but not a history of, transpersonal thought. As such, it lacks the depth of analysis that could expose the many schisms and dilemmas haunting that controversial area, as well as many of its unique strengths and virtues, which a good history would have provided.

What is most conspicuously missing in this book is sufficient coverage of the scientific aspects of transpersonal thought. For example, transpersonal psychology was conceived as a science by its founders, such as Abraham Maslow, but today it is often indistinguishable from New Age religions as it is practiced. Accordingly, science seems poorly received by the book's author in terms of its relevance to transpersonal thought, and science is mostly criticized for its materialistic reductionism and largely dismissed as being mere "scientism" when applied to this area. Unfortunately, this perspective, from my view as a scientist interested in transpersonal thought, marginalizes the serious contributions of so many influential and pioneering transpersonal scientists, such as Timothy Leary, Richard Alpert (aka Ram Das), and Ralph Metzner in transpersonal psychedelics, Ken Ring and Roger Walsh in the transpersonal mapping of consciousness states, Dan Goleman in meditation research, the Greens (Alyce and Elmer) in biofeedback, Stanley Krippner and Charles Tart in the overlap between the domains of transpersonal psychology and parapsychology, and many more areas. I think it can be fairly stated that transpersonal thought pioneered many large intellectual and social movements, such as the so-called "cognitive revolution" by being among the first academic areas to consider consciousness as a legitimate topic. The origins in transpersonal thought of these and many other scientific areas are rarely mentioned, congruent with how they are not addressed much in this book.

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There are other important trends in the history of transpersonal thought that received little notice in this book. For example, multiculturalism (see Glover & Friedman, 2015) is another large intellectual and social movement pioneered by transpersonal thinkers, which is now mainstream. Transpersonal approaches were one of the first respecting, rather than denigrating, non-Western cultures. Ignoring these and many other ways that the transpersonal movement has opened areas of flourishing scholarship and profound cultural change would be an omission in a book dealing with the history of transpersonal thought but, again, this is one on reflections on such a history. Similarly, the burgeoning research and many applications related to "mindfulness" provides a salient example of a specific area pioneered by transpersonal thinkers that has gained tremendous traction today in academia and more broadly.

This book also tends to portray the transpersonal movement as holding commonly shared values and worldviews. This is an over-simplification of the diversity of perspectives held under this broad, and not well defined, umbrella. For example, the transpersonal movement is often portrayed as aligned with the peace movement, but I like to remind those who confound a specific set of values with transpersonal thought in general about World War II kamikaze pilots who engaged in transpersonal meditation prior to their missions, which were clearly not peaceful. For an overview of the diversity within transpersonal psychology, as one area of transpersonal thought, see the volume I co-edited (Friedman & Hartelius, 2013/2015).

Regarding portraying science accurately, this book claims that transpersonal approaches largely reject scientific positivism, which belies that many transpersonal thinkers operate from within a naturalistic and materialistic worldview congruent with various types of positivism. My own transpersonal research is grounded in a post-positivism that is strongly agnostic to any supernaturalism, and rejects romantic anti-intellectualism (Friedman, 2018). This does not mean I reject the possibility of expanded ways to view naturalism and materialism, but my approach, and that of many scientifically oriented transpersonal thinkers, is not based on the 19th century scientific reductionism parodied in this book as being the current scientific norm.

Along with my concern about this book's negative slant toward science within transpersonal thought, I lament its overall lack of critical analysis. Thoughtful consideration of the many controversies in the area, including about boundaries involving related areas such as positive psychology and the psychology of religion/spirituality, would have added so much more value to this book, at least from my vantage as a scientist interested in the history of transpersonal thought. As an example for readers of this journal, coverage of how transpersonal thought relates to parapsychology could have gone beyond sharing interesting stories to focused discussion of these important issues in an historical context, something I have been exploring lately (Friedman et al., 2018). Such compare-and-contrast approaches would have provided more context in which to situate the history of transpersonal thought, while part of a more meaningful analysis would have also extended some of the past's implications toward the future, as the purpose of history is not just to recount what has been, but also to learn from this and point toward what may become. Instead of much future prognostication, this book ends with some concluding, and interesting, personal anecdotes from the author, leaving this reader on his own to speculate about transpersonal thoughts' likely direction.

In summary, this book contains many interesting, and even some awe inspiring, stories that could

captivate those interested in such a read. It seems oriented primarily toward generating popular appeal, but this book does little to tackle many of the big questions that often can only be seen through the large lens of history, including by using historical reflection as a tool. Nevertheless, for those who want a brief introduction to one scholar's personal reflections on the history of transpersonal thought as conveyed in a brief and relatively easy to read, but selective in what it contains and ignores, package, there may be value in starting with this book. However, I await the book that provides deeper engagement on transpersonal thought's history in a more comprehensive way by offering insightful explanations as to why and how this area emerged and, more importantly, what relevance its past has for it making significant contributions going into the future.

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Jonathan Koons and American Spiritualism[1]

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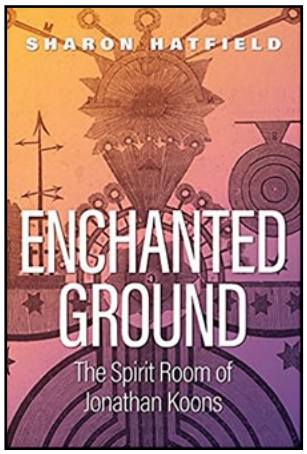
A review of *Enchanted Ground: The Spirit Room of Jonathan Koons*, by Sharon Hatfield. Swallow Press Book, 2018. 342 pp. $28.95 ISBN 978-0-8040-1208-9



Hatfield offers a solid detailed biography of one of the most famous and influential spiritualists of the nineteenth century. The unfolding history of Protestantism explored a Christianity increasingly independent of church hierarchies. An American society preoccupied with the value of the individual grappled with the intrinsic problem of personal death and the ongoing pain of widespread child mortality. After young girls began experiencing "rappings" attributed to spirits of the dead, as the events of midcentury eroded confidence in orthodoxies, increasing numbers began exploring claims that rappings associated with women, particularly young girls, represented attempts of the dead to communicate with the living. Large numbers turned to this radically democratic sense of who had access to the cosmic verities.

As with its predecessors, though, it rooted its claim to legitimacy on a certain respect for traditional institutions. Families, neighbors, and friends gathered to try their hand at spirit communication. Specific rules defined the *séance* where the most receptive participants served as a "medium" for the spirits of the departed. Most mediums were locally known amateurs, but a proliferation of movement newspapers advertised the work of hundreds who regularly toured to lecture and promote the new dispensation. The railroads and transportation system knitted together a movement capable of sustaining, often supporting, such spokespeople, even as the telegraph provided the model for communication by rapping. Editors and advocates constituted a new profession that molded and shaped the course of the wider phenomena.

Enchanted Ground presents the life and work of Jonathan Koons who—with his neighbor and relative John Tippie—found an innovative way to contribute to this process, filling a vital niche in the broader movement. Coming to maturity in a world of evangelical Christianity and ghost stories from his Pennsylvania German antecedents, Koons followed the growth of the movement from his rural home in a relatively isolated corner of Ohio, where young girls began emulating their peers back east. From his household, he sought to provide confirmations of more demonstrable communications through physical

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manifestations. Starting in 1852, what became his "spirit rooms" allowed the invisible to express itself through the kind of vocal and musical proof of what the believers desperately sought to find.

The appearance of spirit rooms—Tippie found enough interest to make it worthwhile to offer his own version in 1854—had a sweeping influence on the wider movement. These began functioning alongside serious movement efforts to establish professional standards. Believers never felt the need to believe every claim of spirit communication—or even most of them- and were well aware that the very assumptions of spiritualism invited opportunistic trickery. Although they accepted the idea that tricks demonstrated the validity of their claims, they sought, without success, to insulate the movement from those who used only tricks to defraud and mislead.

Most famously ravaged by the relentless and ruthless investigations of Houdini in the early 20th century, the problem of trickery had long preoccupied serious spiritualists, who regularly wrestled with the problem in the course of unsuccessfully trying to establish professional standards without imposing the orthodoxy they shunned. Before Houdini, spiritualists addressed the showmanship of performers such as the Davenport brothers, who would later be called magicians, as well as deliberate confidence tricksters such as Charles J. Colchester. By the late 19th century, one of the original mediums, Margaret Fox confessed that the entire movement originated in a youthful prank among gullible adults that had gotten out of hand [Editor's note: but she recanted her confession before dying]. To many, spirit rooms represented little more than a kind of spiritualist Disneyland that distilled piety into entertainment and showmanship.

Heavily influenced by Fred Nardis' *Wonder Shows* (2005), Hatfield is less concerned with the extent of trickery than the importance of its impact on those experiencing it, which was significant, even transformative. In a community sense, such exercises both expressed and shaped shared social sensibilities. Arguably, the same could be said for any kind of showmanship from sports through cinema to television. Indeed, everything from commercial advertising to politics communicates a commonality that leaves meaning up to the interpretation of the individual experience.

Hatfield's biographical narrative reflects an evocative appreciation of the rugged countryside of southeastern Ohio. Koons and Tippie belonged to a local mystical tradition that included the Swedenborgian John Chapman ("Johnny Appleseed"), and Edward P. Page who conducted his orientalized Masonic rituals in the shadow of the ancient Indian earthworks of Marietta. The Ohio valley beyond the mountains seemed to inspire new sightings of the old spirits in the woodland shadows. What spiritualism did was to give them more familiar names. The John and Katie King of the Koons spirit rooms kept reappearing in similarly dramatic settings, such as the Eddys farm in Vermont in 1874, which inspired the Theosophical Society.

Charles Partridge, Emma Hardinge Britten, and other eastern, urban spiritualists came to see Koons work as a great western curiosity, the product of a household closer to the spirits and the spirit of nature. For them—or believers from distant communities across the country—visiting the spirit rooms represented something of a medieval pilgrimage to a space made sacred by what people did and expected to experience there. Even after Koons left the area for Illinois, admirers built a tabernacle at Mount Nebo to commemorate his activities, choosing to build it as a distinctive octagon, reminiscent of contemporary preferences at the Modern Times and other communitarian experiments.

Harfield's well-written biographical narrative often misses one of the most essential features of spiritualism, its urgency—the spirits were hoping to reform the world, guided by their ability to see beyond immediate mortal concerns. She cites the diffusion of "free love" among Ohio spiritualists without exploring its significance. So, too, the belief in manifestations would be more comprehensible with a greater sense of the psychometry of the Buchanan and the Dentons, who had close ties to the spelling reformers and Fourierists Longley brothers. The entire sweep of the communitarian movements essential to spiritualism would explain the spatial physicality of the spirit rooms.

No coincidence conjured spiritualism as a mass phenomenon alongside the rise of a new Republican party, and the conflict between proslavery and antislavery forces in Kansas. Tippie, notes Hatfield, had gone to Kansas, as did Denton, and, as hoped Koons. There, the Wattles clan of Utopia, Ohio rode with John Brown. It was probably no accident that landed Koons in "Egypt," the contemporary description of southern Illinois, where Warren B. Chase moved in hopes of establishing a spiritualist community there, after his former neighbors at Ripon, Wisconsin had launched a new Republican party.

Koons sense of this insistence of the spirits on change was evident in a vision Hatfield recounted (pp. 218-219). In it, a laborer exposed the rottenness of a massive oak by girdling its base. Koons recognized him as Andrew J. Davis, the primary ideologue of the spiritualist movement. Although the tree should have fallen of its own weight, it did not. Koons recognized that the tree survived because it was braced by connections to various "airy castles" about it. Koons himself, then, severed those ties, bringing the Old Order crashing down.

Those interested in the hope and optimism spiritualism engendered will enjoy Hatfield's biographical appreciation of a fascinating figure.

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The Case behind *The Exorcist* Revisited[1]

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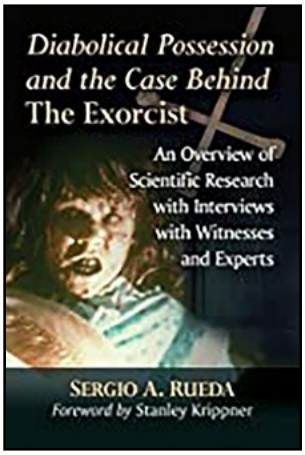
A review of *Diabolical Possession and the Case Behind the Exorcist,* by Sergio A. Rueda. McFarland, 2018. pp. x + 255 (paperback). $35.00 ISBN 9781476673844



Very often when I am giving an introductory lecture on spirit mediumship and possession I will ask my students what they already know about the subject. Many students will have encountered popular culture depictions of possession by spirits and demons - most notably through the imagery associated with the 1973 movie *The Exorcist*, directed by William Friedkin and based on the 1971 novel of the same name by William Peter Blatty (1928-2017): levitating bodies, projectile vomiting, weird and extreme physical contortions, blasphemous utterances, objects flying around rooms, and so on. In response to this, I often make the explicit point that most possession traditions are not like this. Above all, most possession traditions understand the incorporation of spirits as a desirable state that is deliberately induced (Hunter & Luke, 2014). Involuntary, or pathogenic possession, requiring some form of exorcism is - of course - also a feature of these traditions, but is relatively rare compared to institutionalized forms of possession. That is not to say, however, that it never happens.

To borrow a phrase from ufology, Sergio Rueda's *Diabolical Possession* is an analysis of a "high strangeness" spirit possession case[2] - specifically the case of a 14-year old boy called Ronald, which took place in Mount Rainier, Maryland in 1949. The incident was meticulously documented by the Jesuits, who compiled a report on the events surrounding Ronald. The report contained witness testimony for a dizzying array of anomalous phenomena including: unexplained seizures, demonic voices, xenoglossy, superhuman strength, demonography (where words and images appear on the skin), poltergeist phenomena, and various other paranormal manifestations. Rueda documents in detail the gradual build-up of paranormal phenomena around Raymond over a period of months, eventually culminating with a successful performance of the Roman Catholic rite of exorcism, during which the Devil was ostensibly banished from the boy's body. Cases such as this represent the exception, rather than the rule in the broader context of spirit possession practice and beliefs. Nevertheless, as philosopher Stephen Braude

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2 A term coined by J. Allen Hynek (1910-1986) - 'High Strangeness' cases are those that feature 'a number of separate very strange items, each of which outrages common sense' (Hynek, 1974, p. 42).

has suggested, it is often from the most extraordinary cases - large-scale psychokinesis, for example (Braude, 1997) - that we stand to learn the most.

Sergio A. Rueda is the director of the Institute of Medicine and Advanced Behavioral Technologies at Hospital Poliplaza Médica in México and is a trained Biblical scholar. This combination of specialisms - between the medical and the religious - gives Rueda a unique perspective on this extraordinary account. Throughout the book Rueda presents a range of different explanatory frameworks for understanding the events of the 1949 exorcism. He explores the possibilities of fraud and deception, gives an overview of "natural scientific' possibilities," surveys parapsychological perspectives on ESP, PK, RSPK, and so on, and finally addresses the possibility that there might be genuine demonic forces underlying such manifestations. This leaves me with the feeling that the truth is probably somewhere in between all of the above explanatory frameworks.

The book is enhanced by a foreword from long-time parapsychological researcher Stanley Krippner, who provides an interesting insight into his conversations with William Friedkin, the director of *The Exorcist*. In Krippner's words, Rueda's book "is an engrossing account...of a child whose reported experiences present challenges to established ways of viewing the world and its inhabitants" (p. 3). Credit is due to Rueda, then, for collating this body of information, which makes a useful contribution to the wider literature on mediumship and possession by highlighting some of the evidence for the most extraordinary forms of possession. The book also makes a very useful contribution to historical work on the paranormal by drawing together different strands of the paper-trail surrounding the case, in particular the commentary of parapsychology pioneers J. B. and Louisa Rhine (1895-1980 and 1891-1983 respectively), and the testimony contained in the Jesuit report. As a fan of the movie it was also interesting to see the parallels and deviations between the fiction and the real-life events that inspired it. Overall, then, this book will be of interest to those intrigued by the more extreme end of the paranormal spectrum, who enjoy exploring multiple perspectives on extraordinary phenomena, and to those who are fans of *The Exorcist.*

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To the Editor:

In 2019, The Journal of Parapsychology published a two-part paper by Houran and colleagures (Houran et al., 2019a; 2019b) in which they highlight a persistent problem in parapsychological field studies: "...ongoing research has been stifled by the lack of a specific and standard operationalization". I could not agree more! However, after reading the articles, I have serious qualms not only about the results but also about the approach taken, which I suspect could stifle any real advancement in this potentially fascinating area of study. I am aware that Houran & Lange (2001, p. 305), have already taken a stand on a central mystery which, for other researchers, drives interest in these cases – that is, whether or not there is an anomaly to investigate. They wrote, "...our research suggests that hauntings and poltergeists are delusional in nature...a delusion is...a mistaken belief that is created and sustained in an attempt to serve an adaptive function of regulating anxiety associated with ambiguous stimuli." I have no problem with that predisposition. However, it is still a predisposition.

Holding *any* belief or disposition, for any reason, necessarily closes one's mind to a greater or lesser extent, and allows bias to slip in to feelings, cognitions, attitudes, and behavior, consciously and unconsciously. The current paper reads as if driven more by a disposition than by solid skeptical scientific inquiry. For example, they have argued elsewhere that all *entity-encounter experiences* are similar, and therefore they pool them, tossing them all into a single pot that includes, "...religious and celestial visions, fairies or little folk, demons, shamanic power animals, witches, UFOs and extraterrestrials..." and other phenomena that are not usually considered parapsychological (Lange & Houran, 2001). However, there is substantial evidence that there is at least one sub-type of such experiences that stands out from the rest as being different, that this sub-type shows impressive historical consistency (Gauld & Cornell, 1979; Roll, 1972; Williams, 2020), and lends itself to objective measurability and scientific study more than other types. I refer to so-called *poltergeist* or *recurrent spontaneous psychokinesis* (RSPK) type cases, which W.G. Roll and others rarely had difficulty in identifying from among the many forms of "ghostly encounters," despite the well-known similarities. This type of case could be odds-on-favorite to yield a scientific breakthrough, appears amenable to quasi-experimental intervention (Roll & Pratt, 1971), may be our best shot at addressing the veridicality issue, as well as potentially providing valuable health and clinical clues for identifying possible triggers, diagnostic criteria, and therapeutic possibilities (Roll, 2007).

The potential benefits of collapsing diverse types of "entity encounters" into one category comes at a rather high cost - *it hides the differences*. It is the observation of differences, uniqueness, individual cases, and idiosyncratic features that triggers breakthroughs in science. It is therefore unlikely that the approach of pooling these experiences will foster breakthroughs regarding anomalous phenomena: it will more likely prevent them.

In addition to the above, I have grave concerns about collecting survey data online, and the description of the sampling plan utilized in Part II of this paper does little to convince me that the respond-

ent sample is representative of any identifiable population of "ghostly encounter" experiencers. Thus, the results may not be generalizable. Coupled with this concern , the 32-item SSE questionnaire used here does not meet *my* subjective standard for face validity due to: its abundance of tabloid terminology (such as "strange" and "mysterious"); the near total emphasis on *externals*, things done to (or believed to be done to) the respondent or surroundings, which are unbalanced by internal, cognitive, evaluative, attitudinal change items; and the paucity of items about respondent's physical, mental, emotional condition before, during, and after, or seeking or receiving coping assistance. For these reasons I cannot trust that these data are unbiased.

On the other hand, this article highlights a real need in parapsychological field studies – **operational definitions**. An operational definition specifies: 1) the characteristics or traits of a phenomenon under study; 2) how these are measured; 3) how to distinguish this phenomena from others. And it does this in such a way that anyone (with appropriate training and equipment) can reproduce it (Feest, 2005). Unfortunately, Houran et al. (2019b) only describe an attempt to operationalize the intensity of delusional experiences in a self-selected online sample of strange event reports, without regard for type of event.

Operational definitions have been problematic for other researchers as well, especially those interested in field studies of anomalous occurrences. In contrast, experimental parapsychology has operational definitions written into the procedures section: the dependent variable. This is not the case in field studies so operational definitions are easily ignored or overlooked. Attempts to operationalize reports of ghosts, poltergeists, and hauntings, have tended to rely on dictionary definitions that, in turn, fall back on Spiritualist definitions due to the etymological origins of those words. Thus, disembodied entities are built into the terminology. And with no objective measure of ghost or poltergeist, operational definitions are incomplete or nonexistent.

Instead, field studies in parapsychology rest on shaky ground, an anti-measure, really: the observation of any event that defies normal explanation is mistakenly taken as evidence of a ghostly presence (Solfvin, 2016). Pratt & Roll (1958) proposed a way out of the trap of spirit causality by coining RSPK, recurrent spontaneous psychokinesis, but this simply replaced the spiritual causation with human psychokinesis although it did connect field studies more closely with experimental parapsychology. All efforts at operationalization have been tied to some hypothetical (and unmeasurable) causation. This is not helpful for a researcher trying to investigate causation!

Is it possible to develop an operational definition that does not presuppose causality?

Possibly so. We have sufficient backlog of well documented cases to begin developing a true science capable of delving more deeply into this intriguing mystery of nature. First, we must abandon forever the troglodytic terminology of *ghosts, hauntings, and poltergeist* (and even RSPK), which carry unnecessary baggage. Second, we must begin identifying and categorizing the possible types and subtypes of these seemingly chaotic phenomena. There is at least one type, suggested above, that is ripe for isolating from the pack. Third, we must develop a more consistent system of collecting and sharing data from cases. Fourth, we must begin developing operational definitions for types and subtypes. These must be based on specific measurable characteristics that we can all – regardless of belief or predisposition – agree on.

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