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GUEST EDITORIAL

New Graduate-Level Education in Parapsychology on the Horizon

Jeffrey Mishlove

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One of my life's ambitions has been the creation of ongoing graduate-level education in parapsychology along the lines that I originally envisioned when I created my own individual and interdisciplinary doctoral major in parapsychology at the University of California at Berkeley, from which I matriculated in 1980. Now, 44 years later, I can say that some first steps have been taken to realize this dream at the California Institute for Human Science (CIHS) located in the San Diego area. CIHS is also a distance learning school with students from all over the world. If you go to the CIHS website (https://CIHS.edu), you will see a Master's degree in psychology with a concentration in parapsychology among the offerings. A Doctorate in psychology with a concentration in integral, transpersonal, and positive psychology with a specialization in parapsychology is also one of the offerings. We hope to expand these offerings even further in the future.

CIHS founder—Dr. Hiroshi Motoyama (1925-2015)—was both a scientist and an accomplished yogi. Dr. Motoyama explained that he founded CIHS in 1992 with two principles in mind (Motoyama, n.d.):

1. *Subtle energy can bridge the gap between spirituality and science*. In my opinion, there are two kinds of subtle energy: one which is physical in nature (i.e. ki or chi energy), and the other which is not physical but rather spiritual in nature and is therefore not limited by space or time boundaries.

2. *Education should be a transcendental experience*. Through spiritual practices such as meditation, students should experience the three aspects of the human mind: the unconscious, consciousness, and super-consciousness. It is my wish to continue to create an educational environment at CIHS in which people can scientifically explore the applications of spirituality and subtle energy.

In addition to myself, other faculty in parapsychology include the following: Callum Cooper, who holds two Ph. D.s and is currently supervising doctoral students in parapsychology at the University of Northampton in the United Kingdom; Debra Lynne Katz, Ph.D., who also serves as President of the International Remote Viewing Association; Nancy Zingrone, Ph.D., who has twice served as President of the Parapsychological Association; and Paul Leslie, Ed.D., a clinical psychotherapist. The classes in the programs include the history of psychical research and parapsychology, practical applications of psi abilities, postmortem survival, clinical parapsychology, and remote viewing. Some courses, such as remote viewing, will be academic and experiential, giving students both an objective and subjective understanding of psi phenomena. CIHS is one of the most affordable graduate schools. Furthermore, it is fully accredited by the Western

Association for Schools and Colleges. These are the first graduate degree-granting programs, specifically in parapsychology, in the United States since the master's degree offering at John F. Kennedy University (where I was then an instructor) closed in the early 1980s.

Parapsychology is a controversial field. I'm sad to report that Wikipedia still refers to parapsychology as a "pseudoscience." This is contradicted by the simple fact that, since 1969, the Parapsychological Association, the professional organization of parapsychologists, has been an affiliate organization of the American Academy for the Advancement of Science. This occurred after a lengthy discussion and a vote of the board and constituent members of the American Association for the Advancement of Science. It represents an acknowledgment that the methods used by parapsychologists are scientifically valid and appropriate.

Parapsychological studies basically fall into two categories: The most common is *extrasensory perception*, sometimes called anomalous cognition or non-local perception, i.e., the acquisition of information that could not be known through psychological sense perception. The second category is known as *psychokinesis* or non-local perturbation, i.e., consciousness directly affecting matter, including therapeutic intention/healing. Today, six stabilized parapsychological protocols are used in laboratories around the world to explore these two categories of phenomena.[1] Under rigorous conditions, each of these six has independently produced Six Sigma results. Six sigma can occur by chance only one time in a billion.

As far back as the mid-90s, after studying the data from just one of these four protocols, remote viewing, stalwart skeptic University of Oregon psychology professor Ray Hyman (1995) had to grudgingly admit, "...the experiments [being assessed] were free of the methodological weaknesses that plagued the early . . . research . . . the . . . experiments appear to be free of the more obvious and better-known flaws that can invalidate the results of parapsychological investigations. We agree that the effect sizes reported... are too large and consistent to be dismissed as statistical flukes" (pp. 71 to 72). In each case, there is also a large enough body of research from enough different institutions, done by enough researchers, that we have some idea of the process and how successful it can be.

Remote Viewing

A double- or triple-blind protocol in which a participant is given a task that can only be accomplished through non-local perception, the acquisition of information that could not be known with the normal physiological senses because of shielding by time or space or both. Sitting in a room 2,000 miles away, in answer to the question, "Please describe the current circumstances and conditions of the target couple." You couldn't know they were, at that moment, standing beneath a waterfall in the mountains of Colombia standing next to the water surrounded by greenery, watching two flying parrots. But non-local perception can and has provided just such information many thousands of times under conditions that even skeptics have had to acknowledge are impeccable (Tressoldi, 2011; Tressoldi & Katz, 2023).

Ganzfeld

A protocol similar in intent to remote viewing in which an individual in a state of sensory deprivation provides verifiable information about film clips being shown at another location (Williams, 2011).

Presentiment

A measurable psychophysical response that occurs before actual stimulation, such as the dilation of a participant's pupils while staring at a monitor screen before the pictures appear (Radin, 2004). Or it is a change in brain function before a noise is heard (Mossbridge et al., 2012).

Retrocognition/Recognition

Many protocols also involve time dislocation to the past or future to be successful. It is routine today to do remote viewing experiments in which the session data are collected and judged against a randomly chosen target set before the target in that set is randomly selected.

Random Event/Number Generator (REG/RNG) Influence

The REG protocol actually consists of two major protocols. The first constitutes studies in labs where an individual intends to affect the performance of a physical system, such as a random quantum mechanical random event generator (Bösch et al., 2006).

Global Consciousness Project

The second REG protocol is the Global Consciousness Project. Psychologist Roger Nelson of the Princeton Engineering Anomalies Research group understood the implications of individuals affecting REGs. Could it be possible that a mass of people having an individual but linked experience, some major emotionally-charged world event, collectively produce a non-local perturbation effect on a constantly running coordinated network of computer-linked RNGs? A measure of consciousness linked non-

locally expressing itself as social awareness—something like the world's reaction to the death of Princess Diana in a car accident or the Japanese tsunami? The available evidence certainly suggests that subtle interactions link us with each other and the Earth. When human consciousness becomes coherent and synchronized, the behavior of random systems may change. Quantum event-based random number generators (RNGs) produce completely unpredictable sequences of zeroes and ones. But when a great event synchronizes the feelings of millions of people, our network of RNGs becomes subtly structured. The probability is less than one in a billion that the effect is due to chance (Nelson & Bancel, 2011; Nelson et al., 2002).

These hard-earned experimental findings and meta-analyses are the results of decades of scientific research. Nevertheless, parapsychology is more than a science. Like many other disciplines involving human performance, parapsychology involves experimental research, field studies, practical applications, and theoretical work. CIHS courses will necessarily cover all of these. In addition to its psychology program, where parapsychology resides, CIHS has the noetic sciences program, in which they're also exploring facets of the paranormal – including UfOlogy and contact with ostensible non-human intelligence. Parapsychology students will be able to take any of the electives that are offered in noetic sciences, transpersonal psychology, and the other clinical psychology tracks as well.

Prospective students often wonder what they can do with a degree in parapsychology. It's not like getting a degree in mathematics or engineering or the biological sciences, where one can expect a high-paying job waiting for you upon graduation. Employment opportunities do exist, but they're relatively rare. At CIHS, we have a philosophy of preparing students for careers as public intellectuals (which is what I have done, myself, after having earned a doctoral degree in parapsychology). This entails writing and speaking skills. But a degree program in parapsychology should also foster greater intellectual humility, which can certainly help to produce more reflective and rigorous thinkers across the physical, biomedical, and social sciences.

There is a hunger in the population and mainstream academia for valid information about the 'paranormal.' Surveys consistently show that most people report having had paranormal experiences. The research in parapsychology suggests that all conscious persons have the potential for psychic functioning. So, the possibilities are sky-high for students who want to devote themselves to this most fascinating of all fields.

ENDNOTE

[1] Special thanks to Stephan A. Schwartz, who has graciously permitted me to include material he developed (Schwartz, 2015) for the discussion herein about areas of parapsychological research attaining Six Sigma status.

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Journal of Scientific Exploration
Anomalistics and Frontier Science

RESEARCH ARTICLE

Is it Possible to Wake Sleeping People and Non-Human Animals by Staring at Them?

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HIGHLIGHTS

A study of 340 accounts suggests the possibility of waking up either sleeping people or non-human animals by staring at them, and in some cases, the people or animals looked directly at the starer on waking.

ABSTRACT

Some people say that they can wake sleeping people or sleeping non-human animals by staring at them. We investigated the natural history of these claims by examining more than 240 accounts submitted to us over a 30-year period by informants in the UK, US, Germany, and several other countries. Most of these reports, 145 cases, concerned waking sleeping dogs and cats by staring at them; some described waking people up by looking at them, and some accounts were from people who had been woken by looks from animals or by other people. When animals were woken by people's stares, 26% of them were said to have responded directionally by looking straight at the person who was watching them. Some people said that they themselves responded directionally to the stares of animals or other people as they woke, but the proportion of directional human responses was significantly lower (11%) than animal responses. Several informants said that animals were harder to wake when staring at them while they were dreaming. In most cases, possible explanations in terms of subtle sounds or chance coincidence seem unlikely. The ability to be woken by stares may involve a form of perception that is yet unrecognized by science, for which we suggest the name *scopegersis*, from the Greek roots *scop* = "look at" and *egersis* = "awakening". This putative ability seems closely related to the ability of people and many species of animals to feel the looks of unseen others when they are awake, known as the sense of being stared at or scopaesthesia. In both cases, these responses may depend on the activity of the superior colliculus, a mid-brain region concerned with orientation towards environmental stimuli. These sensitivities may have evolved in the context of predator prey-relationships. We suggest experimental tests for investigating scopegersis in more detail.

KEYWORDS

Directional responses, dreaming, non-human animals, predator-prey relationships, scopaesthesia, sense of being stared at, superior colliculus, scopegersis, waking by looks.

INTRODUCTION

Many people say they have detected when someone is staring at them from behind, turning round, and meeting the eyes of the looker. Conversely, many people have found they can make others turn around by staring at them (Sheldrake, 2003). This ability is known as the sense of being stared at, or stare-detection, or *scopaesthesia* from the Greek roots *skopein* = "to look at", as in a microscope, and *aisthesis* = "sensation", as in anesthesia (Carpenter, 2005). Surveys have shown that most adults and children say they have experienced it (Braud et al., 1993; Coover, 1913; Cottrell et al.,1996; Sheldrake, 2003). Tens of thousands of randomized experimental trials by 38 investigators have given results that suggest this ability really exists. Taken together, these positive results are highly significant statistically ($p = 1x10^{-20}$) and cannot simply be explained in terms of peripheral vision or subtle sensory cues (Sheldrake, 2005). A meta-analysis of a subset of ten of these studies specifically designed to preclude the implicit learning of sensory cues showed a mean effect size far beyond the mean chance expectation ($p = 5x10^{-17}$) (Radin, 2005).

Scopaesthesia seems to be widespread among humans, mammals, and birds (Sheldrake, 2003; Sheldrake & Smart, 2023); both humans and non-human animals seem able to detect when they are being watched from behind or above, when the looker is invisible to them. However, within contemporary science, no one appears to know how this ability might work, even in principle. There is no known physical or sensory means by which looking at someone from behind could enable that person to detect the stare and respond by turning around in the absence of sensory cues. The very existence of scopaesthesia is controversial precisely for this reason.

According to the philosophy of mechanistic materialism, minds are no more than the activity of brains and are confined to the insides of heads (Sheldrake, 2020). Hence, scopaesthesia, like other psychic phenomena, is deemed impossible (Reber & Alcock, 2020). Brugger (2024), a leader of the organized skeptical movement in Germany, asserts that "scopaesthesia does not exist"; it is "a mere object of belief (and not a perceptual or attentional phenomenon)." He concludes that the only interesting scientific questions concern the brain mechanisms responsible for this irrational "folk belief".

We agree with materialists that scopaesthesia is unexplained, but for that very reason, we find it an intriguing subject for scientific enquiry. Scopaesthesia implies that minds extend beyond brains; they are not confined to the insides of skulls. There seems to be an extramission – a sending out – of attention that can affect a person that is the object of this attention (Gomez-Marin & Sheldrake, 2023). This extramission is directional by its very nature; in some unknown way, both people and non-human animals can detect it and respond directionally by turning and looking straight back at the looker (Sheldrake & Smart, 2023). The process of stare-detection is non-visual, in that it can happen when the looker is behind or above the person or animal looked at and outside their field of vision. It does not depend on sensors in the skin because it occurs in animals with thick fur coats and in people who are fully clothed, wearing gloves, and with long hair or a scarf or coat collar covering the back of their neck (Sheldrake & Smart, 2023). Moreover, in most experimental tests for scopaesthesia, the participants were blindfolded. In addition, several randomized experimental tests have shown that when people are looked at through closed circuit TV (CCTV), there are significant changes in their electrodermal activity, suggesting that they can detect physiologically when they are being watched by a remote person, even though they may be unconscious of this response (Schmidt et al., 2004).

The non-visual detection of staring raises the possibility that animals and people might be able to detect when they are being looked at, even when they are asleep. Such an ability would make good evolutionary sense. Scopaesthesia may have evolved in the context of predator-prey relationships: a potential prey animal that could detect the look of a hidden predator would stand a better chance of surviving than one that could not (Sheldrake, 2003). Animals are generally at their most vulnerable when asleep; an ability to detect when they are being watched when sleeping would be of serious survival value and favored by natural selection.

Here, we explore the natural history of waking sleeping animals and humans by staring at them, based on a collection of nearly 250 accounts in our database. As far as we know, this phenomenon has not previously been investigated scientifically or named.

We cannot conclude from these reports that the phenomenon definitely exists. Rather, this collection of accounts provides a preliminary natural history of people's experiences. Patterns that emerge from the analysis of these accounts suggest that systematic experimental investigations would be worthwhile.

At our request, the classical scholar David Bentley Hart has suggested a name for this putative phenomenon: *scopegersis*. As in scopaesthesia, *scop* means "look at"; the Greek word *egersis* means "awakening". It is pronounced *scop-egg-ersis* (adjective, *scopegertic*).

METHODS

For 30 years, we have been collecting stories about unexplained human and animal abilities in several broad subject areas, including the sense of being stared at, telepathy, premonitions, precognitions, and the sense of direction, subdivided into more than 100 categories. These stories have been sent to us in response to appeals for information by RS in his books, lectures, media appearances, website, and social media. To start with, these appeals did not specifically mention waking people and animals by staring, but people sent in stories about these subjects anyway. RS then appealed through newspapers and social media for information about waking sleeping animals and people, which resulted in new influxes of stories. These accounts in our collection have mainly come from the UK, the US, Canada, Australia, and continental Europe, especially Germany and Switzerland. Stories in German and other languages were translated for us by native speakers of those languages.

All the people who submitted these stories were aware that we were collecting them for research purposes and consented to our putting them on our database. Many were willing for us to use their real name when quoting their stories, but some preferred to remain anonymous. In this paper, in the interests of uniformity, we have anonymized all accounts.

Most of our informants were women. We do not know if this is because more women than men saw and responded to our appeals, or whether more women than men noticed whether animals or other people woke in response to stares.

Table 1. The total number of cases describing waking or being woken by the stares of a non-human animal or person, the number and percentage of cases that included a directional response, and the number of reports concerning dogs, cats, birds, and other species.

	Total Cases	Directional (% of total)	Dogs	Cats	Birds	Others
Waking Animal	145	38 (26%)	71	60	7	5
Woken by Animal	65	10 (15%)	34	30	0	1
Waking Person	18	1 (6%)				
Woken by Person	20	0 (0%)				

Our collection of stories was archived on a FileMaker Pro database, and the accounts were assigned to one of four categories: animals woken by people's looks, people woken by animals' looks, people woken by other people's looks, and people who woke others by looking at them. In preparing this paper, we read all the accounts in each category and recorded the total number in each category. Necessarily, we have had to choose a limited number of examples to illustrate the phenomena we discuss. We tried to make a representative selection. We also quote only the most relevant parts of people's accounts, some of which include stories about other kinds of unexplained behavior as well as extraneous personal details.

Anyone who wants to study our full collection of anonymized cases for themselves is welcome to do so: the complete database is available online as Supplementary Information at https://www.sheldrake.org/wakedata.

RESULTS

The Overall Picture

Table 1 shows the total number of cases in our database in four different categories of waking by looks. The largest number of cases, 145, concern people who said they woke non-human animals by staring at them. Nearly all these animals were domestic pets, predominantly dogs and cats, along with several birds, including parrots, a budgerigar, and a pigeon. There was also one each of the following species: horse, rat, rabbit, piglet, and hand-reared lamb, making up five in the "others" category.

There were 65 cases in which people said they were woken by an animal: 34 by dogs, 30 by cats, and one by a horse.

There were fewer reports about person-person interactions, with 18 cases of waking a person by looking at them, and 20 of a person being woken by the looks of another person (Table 1).

In waking life, scopaesthesia is usually directional, in the sense that the person or animal looked at from behind or above turns and looks straight at the looker (Sheldrake & Smart, 2023). A similar orienting response was said to occur in some of the sleeping people and animals when woken by being stared at. In the cases where animals were woken by people staring at them, 26% of the reports described a directional response (Table 1). The other three categories in Table 1 refer to people being woken by looks from animals or by other people, with lower percentages of directional responses.

Non-Directional Reports

In most cases, our informants did not explicitly mention directional responses of the animal or person who woke up in response to being looked at. However, this may not have been because the response was non-directional, but because the reports were generalizations, lacking detail, as in the following examples.

Animals Woken By People

> I've noticed that my dog always wakes up when I am looking at him while he is sleeping. I have two dogs right now and have had dogs for years, and I can state unequivocally that dogs will often awaken if you stare at them, but it's most likely to occur if you are thinking about them, less likely if you happen to be looking at them but are thinking of something else. I can wake my cat up when she is sound asleep if I look at her. I have done it many times. I have woken my cat up by just briefly looking at her while thinking of her.

People Woken By Animals

> My greyhound wakes me in the night by staring at me. I sleep heavily, and noises have little effect, but the dog staring at me in the dark does. Each time he's done this, I've also had the strong impression that I need to get up and let him out. The first time, when I was a little slow, he was sick all over the bedside rug, so now I respond quickly.
>
> I woke up if my beautiful Collie stared at me (I don't know for how long) having some particular need.
>
> My dog wakes me up at night by staring at me. I've had more than one dog who has done this. It's usually when they need to go out. They don't make a sound, just stare intensely. I wake up and know immediately what's going on.
>
> My animals (mostly cats) can certainly stare me awake and they can stare their thoughts into me. For example, I will be sleeping and I will be stared awake and I will answer the cat by saying, "OK, let's go and get some water from the tap."
>
> I have frequently been woken by animals staring at me. I have known this to happen with horses.
>
> As the report about the Collie makes explicit, the person who is woken generally does not know how long the animal has been staring, so we cannot tell from these reports how promptly people respond. However, when people are staring at sleeping people or animals the reports are more informative; in some of the cases in the next section, people woke soon after the staring began.

People Woken By People

> When my sister and I were small, still going to primary school and sharing a room, I came to realize that when she was sleeping, all I needed to do to wake her was to look at her. This would happen almost invariably, so when I didn't want to wake her when leaving or entering the room I strictly avoided looking at her.
>
> When I was a child, I would often wake up to my mother's face in my bedroom doorway. One day I asked her how she woke me in the morning to get ready for school because I realized I had never heard her say anything to me, or touch me, or even come near me. She replied that she just stopped at my door and looked at me and I would wake up.
>
> My mother tells me that when I was little, probably around 3 years old, I used to come into her bedroom and stare at her when she was asleep. She would wake up and I would be standing there just staring at her. I didn't make a sound and don't know how long I was there before she woke up.
>
> My husband spent the first year of our relationship waking me in the middle of the night by watching me. His stare pulled me right out of a sound sleep several times. It was like a magnetic pulling sensation that brought me to consciousness.
>
> As I was in love with him, I liked to look at my sleeping friend, but I soon discovered that this was not possible if I didn´t want to wake him up immediately. After just two seconds my deeply sleeping and loud breathing friend woke rapidly up and opened his eyes, irritated, looking for who or what had disturbed him. As I didn't want to steal his sleep, I avoided looking at him when he was asleep – but even if I forgot about that and looked at him by accident it was always the same result – he woke up immediately.

> [From a woman in Germany] My husband and I sometimes play the game of gazing at the other who is sleeping until he or she wakes up. We call this "wachgucken" which means literally "to stare someone awake".
>
> I found that I could wake a sleeping colleague by staring at him during his afternoon naps. He had the habit of taking a large hot lunch each day, and then becoming lethargic in the afternoon. He would doze off in a sitting position. As his boss, I was not happy with this, and would be sure to give him deliberate, scornful glares. He would normally wake up as soon as I turned to stare at him.

In addition to these examples of waking someone from sleep, we received one account of waking from anaesthesia, describing a similar effect:

> I am a recovery room nurse working and living in Alberta, Canada. People will wake from anaesthesia by being stared at. At least I find that happens with some of my patients.

Directional Responses

Some of our informants mentioned that they looked at a sleeping person or animal while thinking about them, and as quoted above, one person wrote that her cats "can stare their thoughts into me", in accordance with their needs. This raises the possibility that, at least in some cases, waking occurred because of a telepathic influence, rather than because of staring itself.

However, one way in which scopaesthesia seems to differ from telepathy is that responses to staring are usually directional, whereas telepathic responses are generally non-directional (Sheldrake & Smart, 2023). For example, in telephone telepathy, a person may know who is calling, but not know where that person is. Hence, when people are woken when they are being stared at if they respond directionally, this would suggest that they are reacting to the gaze itself rather than merely to thoughts or intentions associated with it. In our collection, there were 53 reports of directional responses. Animals and people were said to wake up in response to being looked at and look straight back at the looker.

In 38 cases in which animals were said to be woken by people staring at them, the reports described a directional response, and so did 15 cases where people were woken by the stares of an animal or another person (Table 1). Directional responses by animals made up 26% of the total, a higher proportion than the reported directional responses by people. Taking together the categories in which people were woken by animals or by other people (the lower three rows in Table 1), the human directional responses were only 11% of the total. A 2x2 chi-squared test showed that the proportion of directional responses reported for people was significantly lower than for animals ($p<.005$). We do not know whether this suggests that people are less directionally sensitive than animals, or whether it reflects a bias in reporting. Probably, people have more opportunities to wake animals than other people. Moreover, people may be less aware of their responses when woken themselves, and hence less able to notice the details.

Here are some of the reports of directional responses.

Dogs Woken By People

> My dog sleeps in his bed at night, which is beside mine, and if I am awake in the night (which is quite often as I don't sleep particularly well) I sometimes look at him while he is sleeping. However, in doing this I seem to wake him up. He will suddenly open his eyes and turn his head to look straight at me. I just pat him, and he will then settle back down and go to sleep.
>
> In my experience with my dog (mix between golden retriever and cocker spaniel and almost 10 years of age) it is possible to wake him up just by staring at him for a while. This happens fairly regularly, although not always. When he is asleep and I'm sitting on the sofa, some three meters away, staring at him, he frequently opens his eyes and looks straight at me. Although not successful all the time, it seems to work better when I'm consciously staring with the intent to wake him up.
>
> I find that whenever I look at my dogs, they will lift their heads from sleep to look back at me and perhaps wag their tails. Not that I was intentionally trying to wake them, but as though they have a "sense" of the fact that my eyes were trained on them.

Cats Woken By People

> I loved to watch my cat sleep because she assumed the most amazing positions, and often when I would watch her for a little while, she

> would wake up and look right at me. Other times, when I would stare at her, she would utter her little acknowledgement murmur without opening her eyes, as if to say, "I know you are watching me, but I'm too sleepy to wake up."
>
> I can look at my cat from a distance, careful not to make any movement or noise which could alert him to what I'm doing and with hand on my heart, I can say he truly knows I'm thinking about him. His eyelids will gradually open to reveal beautiful green eyes, which will look sleepily in my direction before he groans, then snuggles down again, the interruption not seeming to be too much of a disturbance, just accepted as the mingling of our minds.
>
> As my cat was lying fast asleep on the carpet, I decided to try waking him by staring. At first, nothing much happened, though I noticed that each time I stared at him and mentally said his name, his tail would twitch and start waving about. When I looked away and continued working on the computer, I saw – from the corner of my eye – that his tail would stop. After three tries of him lashing his tail without opening his eyes, I left him in peace for about five minutes. Then I turned my attention on him again, mentally thinking his name. The result was amazing. His whole body jerked awake and he turned his head and looked straight into my eyes accusingly, as if I'd physically shaken him awake.

This is the only example in our collection describing one animal waking another animal by staring at it. The response was directional.

> Our cats Seymour and Sylvia had a very distant relationship. Seymour would crawl up and snuggle in my grandmother's lap and go sound asleep. Sylvia would walk into the room and see Seymour asleep. She would stand in the doorway just staring at Seymour. He would awake in a start, look over his shoulder, see Sylvia staring at him and jump off my grandmother's lap and run out of the room. Sylvia would them saunter into the room and claim some place of desire to her, but not on my grandmother's lap.

Farm Animals Woken By People

This report is from a woman who farms in Britain.

> I had a tiny piglet I was hand rearing. She slept in a tea chest by the cooker. I passed by it constantly going to the kitchen and bathroom, and as long as I didn't look in, she would stay asleep, but every time if I looked in the box as I passed, she would grunt, and immediately be wide awake looking up at me. I have had the same experience with hand-raised orphan lambs, but they're not so quickly lively as the piglet. I have also had pigs in their pens wake as soon as I pause and look at them.

People Woken By Animals

Almost all the example in this category concerned cats. With dogs, most people woke to find the dog looking at them, but the accounts did not make it clear whether this was because they turned to face the dog or because the dog positioned itself in such a way that it looked at the sleeping person's face. This was also the case with most of the stories about cats, but in some cases the person seemed to have responded directionally, as in these examples:

> A few years ago, my then partner and I lay on the sofa sleeping. The light was subdued. At some time during the night, I woke up. My look turned upwards/behind and I was startled. My partner's cat sat at the bed-head and looked at me.
>
> When the cats want to come in at night, they sit on the windowsill right outside my bed and they must simply sit there and stare at me. Without fail, I wake up in the middle of the night, look at the window, get up and let them in. My kids say a bomb could go off and I wouldn't wake up. But I wake up without fail for my cats.

People Woken By People

This is the only example in our collection of a directional response by people woken by someone staring at them:

> When travelling on subways I look at sleeping people. When I look at them with love, they wake up smiling and know instantly I'm the one staring at them. Then sometimes I look with hate, and they look up directly at me with fear in their face.

In most cases, these accounts suggest that the ani-

mal or person woke first, and then turned towards to the looker. However, in some cases, the orienting response seemed to happen while still asleep, or at least before opening the eyes. Here is a case with a dog:

> I have a 3-year-old Catahoula Leopard dog who is lovable and loyal to a fault. He is so alert even while sound asleep. I can disturb him simply by focusing on him in his bed. When I've silently fixed my gaze on him, he cautiously opens one eye, already aimed directly where I sit or stand, regardless how he is positioned. He then waits for instructions and obeys appropriately, whether going outside or simply back to sleep, as told to do.

Likewise, with a cat:

> My sleeping cat would wake when I stared at her. Sometimes she'd turn to face my direction before opening her eyes.

In this case, a woman found herself facing her cat when waking:

> I had a cat who could wake me up in the middle of the night for food just by sitting in the doorway and staring at me. There were two strange things about this. The first is that I'm the kind of person who could sleep through Armageddon; the second is that when I woke up, I'd be staring straight at him.

Taken together, these accounts suggest that, at least in some cases, the orienting response usually associated with scopaesthesia in waking animals (Sheldrake & Smart, 2023) also occurs in scopegersis and may be an integral part of the process. It is not as if animals or people are woken by stares and then look around to find the source of the stares, but rather the detection and direction of the stares go together, and in some cases, the orientation response seems to precede the opening of eyes upon waking.

Differential Sensitivity

Some of our respondents noted that some people or animals were more sensitive than others to being woken by staring.

> My youngest male dog is extremely responsive in all circumstances and my oldest male responds differently depending on timing. An example of this would be late at night when it's time for him to be put outside. If I try to wake him by staring and he's not ready to go outside, it will fail.
>
> When my first baby was born, I used to love staring at him when he was asleep, but I would not do it with my second baby because he would wake up straight away.
>
> When my son was little, he could wake me in the middle of the night by coming to the bedroom door and staring at me. He knew that would wake me but not his father.
>
> I have two Norwich Terriers. My older dog doesn't seem to notice me or anyone else stare at her either awake or asleep and never has, however my other dog does. He is 18 months old, and often while he's asleep if I look at him for a minute or two, he'll suddenly open his eyes and look straight at me no matter how close I am to him or where I am in the room.

In addition, some of the accounts suggested that animals were less sensitive to being woken when they were dreaming, as judged by their bodily movements. In six cases with dogs and one with a cat, our informants (all women) mentioned that their animals' sensitivity depended on whether they were dreaming or not. We did not ask about sensitivity in different states of sleep, so all these accounts were unprompted. The first example, from an Australian woman who kept several dogs, is the most detailed:

> I have found that I can wake my dogs by staring at them with various determining factors. These include the sleep pattern: dream state (least likely), deep sleep (moderately likely) or napping through inertia (very likely). My feelings and intentions prior to and during the stare also seem to impact. Warm, loving feelings tend to rouse them more efficiently and they are ready for a pat pretty quickly. If I'm cross with them, they seem to ignore me but can often ear-twitch and even rearrange themselves to face away from me in their bed. If they've been excited or perceive a threat prior to their nap, e.g. we have a visitor, they are much more likely to wake up. (I don't know if they get to deep sleep state with visitors in the house).

> My dog Pooka is more psychic than I am, and I am a professional. She definitely wakes up when I stare at her. However, she does not wake up if I stare at her when she is having a hunting dream. That is, when her legs are running and her eyes rolling.
>
> I have a young black female German Short-haired Pointer who is incredibly sensitive and will wake when I stare at her unless she is in deep sleep dreaming.
>
> I am owned by a five-year-old male Patterdale Terrier. Unless he is in a dream state, I can always wake him by staring at him from across the room.
>
> I can wake my small poodle by staring, unless she is very deeply asleep and dreaming. I've been careful not to do anything but raise my eyes, if I've been reading for example, and look directly at her, and her eyes open within 30 seconds, and she focuses on me.

In the following case, a British woman found that she could wake up one of her dogs even when it was dreaming, and saw this as a sign of unusual sensitivity:

> I have two Brittany Spaniels, Bryn and Honey. Honey is deaf so we rely on eye contact to communicate. Both of them, if asleep, will wake up if someone is looking at them. Honey is most likely to wake up first if someone is looking at her and she will even wake up if she is in a dream or deep sleep. Bryn also wakes up when someone is looking at him, but he is not so sensitive to people looking at him as Honey is.

Here is an account from Canada of a cat that was less likely to wake when dreaming.

> My cat not only knew when I was staring at him, he knew when I needed to know that I was staring at him! He would hardly open one eye – acknowledging my inquiry – and close it again. When he was in a deep sleep – dreaming or twitching – it was more difficult to communicate. The staring thing seemed to have a window.

If further research confirms that dogs, cats and other animals are harder to wake by staring at them when dreaming, this could suggest either that dreaming reduces their ability to detect that they are being stared at, or that it inhibits their ability to respond, or both, as discussed below.

DISCUSSION

Inevitably, our collection of cases is biased in favor of situations in which people or animals were or seemed to be, woken by staring, as opposed to being stared at and not woken. As with field observations in general, we cannot be sure that these responses involved causation rather than correlation. It could be argued that people happened to look at a sleeping animal or person who just happened to wake up at the same time, perhaps by mere coincidence. If people forgot the occasions on which sleepers did not wake when stared at, remembering only the occasions when they appeared to do so, then an illusion of waking by staring could be created in people's minds.

It is also possible that sleeping animals or people really did wake when looked at, not because they detected and responded to looks, but because of subtle sounds caused by the movements of the people or animals staring at them. Then, the problem would be to explain why sleeping animals and people only wake in response to some sounds rather than others, and why faint sounds that might be caused by turning to look at them would have more effect than all the other sounds in the environment. However, most people are aware that sleeping people or animals can be woken by noises. The reason our informants thought that waking was owing to stares rather than sounds was because there was little or no accompanying noise. The fact that some of the responses were directional implies that that they were indeed a result of being looked at.

When people and animals are awake, their response to being stared at is usually directional: the person or animal stared at turns to look straight at the looker (Sheldrake & Smart, 2023). This feature of scopaesthesia supports the idea that the response is indeed to the visual aspect of staring, rather than a kind of telepathic response to the focussing of attention. Telepathy is generally non-directional: for example, people may feel who is calling them on the telephone or emailing them (Sheldrake, 2014) but not know from what direction the call or email is coming. Moreover, it is possible to focus auditory attention on someone by listening to them, but in experimental tests, people were unable to tell when they were being listened to on the telephone, compared with periods in which they were not being listened to (Sheldrake & Stedall, 2023).

It is, therefore, of particular interest that more than a quarter of the reports of animals waking in response

to stares responded directionally (Table 1), immediately turning towards the looker. Similar directional responses were reported in 15% of the descriptions of people being woken by the looks of animals. In our appeals for information, we did not ask about the directionality of responses, so our informants were not prompted to mention them, and some may have omitted these details. Hence, the percentages in Table 1 are probably underestimated. In future appeals for information, it would be worth including a question about directionality.

According to several of our informants, animals' sensitivity seemed to vary according to the state of sleep, differing during dreams and in sleep without dreams. Experimental studies in which sleeping animals or people are filmed and watched at randomized times could provide quantitative data on these points. At present, however, in this preliminary exploration of the natural history of scopegersis, the only information available is people's personal accounts.

Several of our informants commented on the variation in sensitivity between individual dogs, cats, and people, for example, "My older dog doesn't seem to notice me or anyone else stare at her either awake or asleep and never has, however my other dog does." People and animals differ in their sensitivities to sounds, smells, visual cues, and other stimuli, and the same might be expected with scopaesthesia and scopegersis. In general, both when awake and asleep, it seems likely that scopaesthesia depends on the intensity of the stimulus and on sensitivity to it. Low-intensity stimuli or low sensitivity may result in no effects or subliminal effects; overt responses may occur only when the stimulus and sensitivity are above a threshold level. This threshold may change according to attentional and physiological states and seems to be higher when dreaming.

Although the accounts we describe in this paper strongly suggest that people and non-human animals can be woken by staring at them, this finding needs to be explored experimentally. The first step could be to use straightforward, non-invasive methods carried out in the animals' normal environment. The simplest tests would involve filming them when asleep and staring at them at randomly chosen times to find out whether they wake in response. Several dog owners have, in fact, already carried out preliminary filmed tests at our request with positive results, but so far, these experiments have not been done with rigorously randomized timings. The best-case scenario would be for a scientifically minded dog or cat owner to train their animal to wake in response to stares by rewarding them for doing so, and then to conduct filmed tests in which they stare at the animal at randomized times through a soundproof two-way mirror or a window covered with two-way mirror-film.

The ability to detect staring seems to be both widespread and evolutionary ancient, at least among mammals and birds, suggesting that it has been favoured by natural selection (Sheldrake & Smart, 2023). The most obvious possibility is that it plays a role in predator-prey relationships. A prey animal that could detect the looks of a hidden predator would stand a better chance of escaping than one that could not (Sheldrake, 2003). Animals are especially vulnerable when they are asleep, and therefore, the ability to detect stares might be particularly helpful for sleeping animals. Because this type of stare-detection is non-visual, it does not depend on the eyes being open. The cases described in this paper suggest that scopaesthesia does indeed occur in sleeping animals and humans and can lead to their waking up, for which we use the new word *scopegersis*, literally "look-awakening". A German term, suggested by one of our informants, is *wachgucken*, "to stare awake".

Although almost nothing is known about the way in which stares are detected, responses seem likely to depend on regions of the brain that are concerned with alertness to potential threats and orientation towards salient stimuli. In this connection, a recent suggestion by Bettinger (2023) is very relevant. He proposes that the brain region most likely to be involved in scopaesthesia is the superior colliculus, located in the dorsal posterior midbrain. The superior colliculus, also known as the optic tectum, is a visual processing and attention-control center for orienting the body, head, and eyes, directing defensive behavior (King, 2004), and detecting evolutionarily significant stimuli that require immediate action, such as approach and avoidance behavior (Castro-Alamancos & Keller, 2011). This brain region's function is largely conserved in vertebrates, including fish, amphibia, reptiles, and birds. It is the oldest visual-processing area in vertebrate brains and plays a major role in unconscious "attentional capture" (Fuchs & Ansorge, 2012). Once stares have been detected, it seems probable that this brain region plays a major role in animals' responses to them both when they are awake, as Bettinger suggests, and also in the process of being woken up.

In this context, the observation by some of our informants that their animals seemed less sensitive to being woken by stares when dreaming is of particular interest. If confirmed by further investigations, this could mean that the animals are either less able to detect stares or respond to stares when dreaming. The visual regions of the brain, including the superior colliculus, are known to be activated during rapid-eye-movement sleep associated with dreaming (Bókkon & Mallick, 2012; Cohen & Castro-Alamancos, 2010). If the superior colliculus does

indeed play a key role in scopaesthesia, its involvement in dreaming may inhibit its ability to respond to the detection of staring.

An experimental investigation of the brain regions involved in scopaesthesia would be difficult to carry out with domestic dogs and cats because most pet owners are unlikely to want their pets to be wired up for EEG measurements, or for their animals to be immobilized in brain scanning devices. However, it might be possible to study sleeping human subjects while monitoring their brain activity using an EEG in order to try and detect changes in activity when the person was being stared at. If it were possible to study scopaesthesia with laboratory rats or mice, more detailed studies might be feasible. In a laboratory setting, sleeping rodents could be observed through a two-way mirror to avoid any possible auditory, olfactory, or visual cues. In the first phase of this research, the effects of looking at randomized times by human observers could be compared with looking by cats, which may be more effective at waking the sleeping rodents. If they can be woken by staring under these controlled conditions, it should be possible to study the rodents' brain activity during scopegersis and investigate the role of the superior colliculus when they are dreaming and when they are not.

Our case collection is largely based on experiences with humans, dogs, and cats, with only a few examples of other mammalian and bird species. Almost nothing is known about scopegersis in reptiles, amphibia, fish, and invertebrates. A wider exploration of its natural history would be possible by appealing for information from people who keep unusual pets, including reptiles, such as snakes and lizards, and insects like stick insects, as well as from people who work in zoos or aquaria. For example, can sleeping octopuses be woken by staring at them?

This is an almost completely unexplored area of scientific inquiry. At this stage, we do not know how widespread scopaesthesia and scopegersis are in the animal kingdom, or when they might have evolved. Fortunately, much of the preliminary research could be done inexpensively in student and citizen science projects. Such research could help in developing an understanding of scopaesthesia itself, which may depend on a new understanding of the nature of vision (Gomez-Marin & Sheldrake, 2023). Scopaesthesia also implies a new type of non-visual sensory system that detects the directional attention of others, perhaps through some kind of biofield extended around the body. Simple, though this research may be, it has profound implications for our understanding of minds and sensory abilities. It could play an important part in a shift of paradigm from minds locked inside heads to minds extended beyond brains and bodies into the wider environment, capable of direct interactions with other minds and bodies.

IMPLICATIONS AND APPLICATIONS

The ability of sleeping people and animals to detect when they are being stared at and respond by waking up may be widespread in the animal kingdom and may have evolved in the context of predator-prey relationships. It seems to be closely related to scopaesthesia, the ability of animals and people to detect when they are being stared at by an unseen looker when they are awake, and to respond directionally by turning to look at the looker (Sheldrake & Smart, 2023). Our preliminary results suggest that this phenomenon, which we call *scopegersis*, would be well worth investigating experimentally. Like scopaesthesia, it implies that an influence flows outwards from the eyes of lookers and can be detected non-visually by an unknown sensory system, which may be a kind of biofield surrounding the body.

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Author Contributions

Rupert Sheldrake: Conceptualization, Data analysis, Writing – original draft, review and editing, Funding acquisition. PS: Data curation and analysis, Writing – review of draft.

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RESEARCH ARTICLE

The Case of Gnanathilaka Baddevithana: An Early Independent Investigation of One of Ian Stevenson's Reincarnation Cases

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HIGHLIGHTS

Ian Stevenson's 1961 investigation of the Gnanathilaka Baddevithana reincarnation case missed key details, but his findings appear accurate despite prior criticisms of his methods.

ABSTRACT

This paper analyzes one of the first reincarnation cases Ian Stevenson studied, in 1961, and reported in *Twenty Cases Suggestive of Reincarnation*. The case of Gnanathilaka Baddevithana had previously been investigated by H. S. S. Nissanka, who kept records of his interviews in writing or on tape, making this one of fewer than three dozen published cases with records produced before past-life memories were verified. Unfortunately, because the book Nissanka wrote about the case was published only in Sri Lanka, and not translated until 2001, his investigation is little known. Because Nissanka's and Stevenson's investigations were conducted independently, by comparing their reports, one can evaluate to what extent Stevenson's oft-criticized practices of spending only a few days in the field and working through interpreters impacted his presentation and conclusions. These practices are shown to have led Stevenson to miss considerable detail but to have had no effect on his evaluation of Gnanathilaka's case. This suggests that criticisms of Stevenson's methods are misguided and that, if anything, some of the cases he reported may be phenomenologically richer and evidentially stronger than he presented them as being, rather than the reverse.

KEYWORDS

Criticism of reincarnation research, reincarnation case studies, reincarnation research history, reincarnation research methodology.

INTRODUCTION

Critics frequently deride reincarnation case studies as anecdotal, implying that researchers have done no more than collect unsubstantiated stories or folk tales. Indeed, many accounts of past-life memory, especially those reported before 1961, when Ian Stevenson began his field research, are of this nature. However, there are exceptions. At the end of the 17th century, the Mughal Emperor Aurangzeb, then ruling India, heard about a child who claimed to recall having lived before and called him to his court to question him (Matlock, 2019, pp. 89–90). In the 19th century, the past-life memories of Katsugoro were documented by three different teams (Ohkado, 2021). In neither of these cases did investigators assess the validity of the memory claims by interviewing witnesses to the previous life, but this was done in India in the 1920s by R. B. S. Sunderlal (1924) and K. K. N. Sahay (1927) and

in the 1930s by a government committee concerned with Shanti Devi (Gupta et al., 1936). Later, P. Pal (1961-1962) reported the Indian case of Sukla, reinvestigated by Stevenson in 1961 and included in *Twenty Cases Suggestive of Reincarnation* (Stevenson, 1966, 1974).

Cases that have been investigated to any extent cannot fairly be deemed anecdotal, although not all are equal in their quality. Especially valuable are cases with records made before the verifications of memory claims and cases that have been examined independently by two or more investigators. Very few cases meet both these standards. In his prize-winning essay for a contest sponsored by the Bigelow Institute for Consciousness Studies (BICS), Michael Nahm (2023) drew attention to one of them—the Ceylonese (Sri Lankan) case of Gnanathilaka Baddevithana, reported by Stevenson in *Twenty Cases*, but investigated before him by H. S. S. Nissanka.[1]

Nissanka wrote about Gnanathilaka Baddevithana in the Sinhalese weekly periodical *Silumina* in 1960 and 1961 and then, in 1964, in a book whose title is transliterated as *Năvata Upan Dăriya*. An English translation of the book was made by Nissanka's wife Rukmani in 1968 when the Nissankas were at the University of Pittsburgh, where H. S. S. Nissanka was undertaking graduate studies in international relations. The Nissankas were unable to find a publisher for their translation in the US, the UK, or Sri Lanka until 2001, when *The Girl Who was Reborn* was issued by S. Godage Brothers in Colombo. Although acquired by some libraries and reprinted in 2010, the book (Nissanka, 2001, 2010) is scarce and hence not well known, apart from its summary in a *Psi Encyclopedia* article (Wehrstein, 2017a).

The families of both Gnanathilaka and Gallege Turin Thilakaratne,[2] whose life Gnanathilaka recalled, were Sinhalese speakers, and H. S. S. Nissanka and his colleagues conducted interviews in their native language. Moreover, Nissanka was able to arrange for a controlled meeting between Gnanathilaka and members of Thilakaratne's family, permitting him to observe her recognition of these persons without the crowd influences involved on most such occasions.

After examining Nissanka's investigation, we compare it to Stevenson's. If there are problems with either investigation, they should be reflected in divergent findings and conclusions. Also, comparing the investigations allows us to assess how Stevenson's brief contact with witnesses impacted his report and evaluation (he spent only two days on the case during a week in Ceylon, as Sri Lanka was known until 1973, working through interpreters, practices which have been much maligned). Stevenson's reinvestigation supports Nissanka's findings, and we can discern no indications of unreliability in Stevenson's report. Although Stevenson missed considerable details documented by Nissanka, he introduced some significant new facts that helped flesh out and clarify elements of Nissanka's narrative without contradicting them, and we conclude that a full appreciation of the case requires consideration of both reports together.

As an assist in our evaluation, we drew on Stevenson's unpublished field notes and correspondence preserved at the University of Virginia. Where Nissanka's and Stevenson's spelling of personal names differs, as it does for Gnanathilaka Baddevithana, we follow Nissanka's spelling. Table 1 provides a timeline of the development of the case, its investigation, and its reporting.

EARLY DEVELOPMENTS

At her birth in February 1956, Gnanathilaka's parents were living in Dihintalawa, a remote section of the village of Hedunuwewa, in central Ceylon. Gnanathilaka's mother told Nissanka that Gnanathilaka made her first references to a previous life shortly after she began to speak: "In the days when my little daughter learnt to say the words 'mother' and 'father', one day she suddenly said: 'Talawakelle mother'. After this she made frequent references to her 'Talawakelle mother'. In the mornings, after waking up from bed, she said, 'Mother, my Talawakelle mother fed me during the night'" (Nissanka, 2001, p. 84). Gnanathilaka's parents told Stevenson that, at first, she only spoke about having other parents. When she was about 12 months old, she said she had another mother and father. At about two years old, she added that she had two brothers and many sisters. Not long thereafter, residents of Hedunuwewa who had spent a few weeks in Talawakelle visited Gnanathilaka's house. Prior to their coming, Gnanathilaka had not mentioned the name Talawakelle, but afterward, she did so regularly and talked more about the previous life she recalled (Stevenson, 1961 field notes).[3]

Although discrepant in some details, the differences in these accounts do not seem problematic to us. In talking with Stevenson, Gnanathilaka's parents may have been more careful in recounting the case's development. In both versions, Gnanathilaka began to make references to a past life very early and began to refer to Talawakelle as the site of that life later. After this, she mentioned Talawakelle more often and recounted many other things about Thilakaratne's life, typically in response to things she saw or heard. Neither Nissanka or Stevenson report her ever having used Thilakaratne's name, which impeded his identification by Nissanka's team.

Upon seeing her mother carry firewood from the garden into the house, Gnanathilaka informed her that her

"Talawakelle mother" "bought" firewood. This was very possibly true, because Talawakelle was a town in the highlands, where firewood was scarce, whereas Dihintalawa lay in a lowland jungle valley, where it could be gathered freely. The term Gnanathilaka used for "bought," *kuliyata gannawa,* was not employed in her family in the sense of "bought," so her mother asked her what it meant. She replied, "It means you give money to get something" (Nissanka, 2001, p. 84).[4]

Gnanathilaka's awareness of the contrasting environments between her home and the life she recalled was also shown one day when her brother Ariyapala[5] climbed a tree to pick a coconut, prompting her to tell her mother, "There are no coconut trees at Talawakelle – we used to buy our coconuts from the store!" (Nissanka, 2001, pp. 84–85). Similarly, because in Talawakelle there were no kitul (jaggery) palms from which to obtain treacle, they had to purchase the syrup, Gnanathilaka said. She recalled that one of her brothers ran a shop from which provisions were brought to her home (Nissanka, 2001, p. 88).

Gnanathilaka's talk of Talawakelle increased over time and became more prominent after she was about two and a half years old. When her father hung a calendar that featured a full-face photograph of Queen Elizabeth II,

Table 1. Principal Events in the Case of Gnanathilaka Baddevithana

Date	Event
Jan. 20, 1941	Gallege Turin Thilakaratne born.
no dates given	Thilakaratne climbs Adam's Peak twice.
Apr. 15, 1954	Thilakaratne sees Queen Elizabeth II when she passes through Talawakelle on train.
Nov. 9, 1954	Thilakaratne dies (aged 13 years, 9 months) at Aranayake District Hospital.
Feb. 14, 1956	Gnanathilaka Kumudini Baddevithana born in Ramboda Hospital.
Spring 1957	Soon after she starts to speak, Gnanathilaka begins to talk about other parents.
Summer 1958	From around 2 years, 6 months, Gnanathilaka's reminiscences of Talawakelle become more frequent and intense.
Aug. 1959	Nissanka visits India, hears about Swarnlata Mishra and other cases of children claiming memories of past lives.
early Sep. 1960	Gnanathilaka's brother Ariyapala Baddevithana takes her to Talawakelle on a bus; they visit a temple and return home.
Oct. 9, 16, 1960	Nissanka's first articles on cases of children's past-life memory appear in *Silumina*, prompting reader reports of similar cases in Ceylon.
Oct. 21, 1960	Reader sends Nissanka letter informing him about Gnanathilaka. Nissanka requests more information.
Oct. 27, 1960	Reader sends Nissanka follow-up letter on Gnanathilaka, with first detailed account of her memory claims.
Nov. 1, 1960	Nissanka's first visit to Dihintalawa to see Gnanathilaka, when she is about 4 years, 8 months. He records his interview in writing.
Nov. 6, 1960	Nissanka's first article about Gnanathilaka published in *Silumina*. Nissanka's first visit to Talawakelle.
Nov. 8, 1960	Nissanka's second visit to Talawakelle.
Nov. 10, 1960	Nissanka's second visit to Gnanathilaka in Dihintalawa.
Nov. 12, 1960	Ariyapala writes to Nissanka relaying his father's written consent for Nissanka's investigation.
Nov. 13, 1960	Second article about Gnanathilaka published in *Silumina*.
Nov. 14, 1960	Headmaster of school at which Gnanathilaka's elder sister taught sends Nissanka letter listing Gnanathilaka's memory claims relayed to him in 1958 and 1959.
Nov. 19, 1960	Nissanka takes Gnanathilaka to Talawakelle. He encounters Thilakaratne's father and identifies Thilakaratne as the referent of Gnanathilaka's past-life memories, but she and her father leave Talawakelle without meeting Thilakaratne's family. Nissanka tape-records interview with Thilakaratne's family.
Nov. 27, 1960	Nissanka arranges for the families to meet at his home in Kandy, but Thilakaratne's family fails to appear as promised. Nissanka tape-records interview with Gnanathilaka and her family.
Dec. 17, 1960	Teachers from Sri Pada College high school, Hatton, including D. V. Sumathipala, visit Gnanathilaka at her home in Dihintalawa. Gnanathilaka recognizes Sumathipala, who had taught Thilakaratne.
Dec. 18, 1960	Nissanka meets and interviews D. V. Sumathipala in Talawakelle. Gnanathilaka's and Thilakaratne's families meet for the first time, with tape-recorded controlled introductions to Gnanathilaka.
Jan. 22, 1961	Nissanka's third and final article about Gnanathilaka in *Silumina.*
Feb. 2, 1961	Nissanka interviewed about the case by Radio Ceylon; compilation of tapes played.
Feb. 19, 1961	*Times of Ceylon* publishes three-paragraph summary of the case in English.
Feb. 19, 1961	*The Ceylon Observer, Sunday Edition* publishes longer English-language article by Nissanka. Francis Story sends this to Stevenson.
Early 1961	Gnanathilaka begins kindergarten at Hedunuwewa Central College.
Aug. 27–28, 1961	Stevenson's investigation. Gnanathilaka is about 5 years, 6 months.
Sept. 10, 1961	First letter from Piyadassi Maha Thera to Stevenson.
July 13, 1962	Stevenson writes to Nissanka for first time.
Mar. 1964	Stevenson finalizes Ceylon section of *Twenty Cases*.
July 1966	Stevenson's first follow-up visit to Gnanathilaka.
Sept. 1966	First edition of *Twenty Cases* published in ASPR *Proceedings*.
Nov. 1970	Stevenson's second follow-up visit to Gnanathilaka.
1974	Second edition of *Twenty Cases* published by University Press of Virginia.

Table 2. Gnanathilaka's Memory Claims and Application to Thilakaratne

Item	Memory Claim	Application to Thilakaratne
	Letter from A. Jayasekara to Nissanka, Oct. 27, 1960	
S1	She had a house in Talawakelle.	Correct, although this could refer to either her mother's house or the house of an aunt, in which she slept.
S2	She had other parents in Talawakelle. §μ.	Correct. §β.
S3	She had a "sister" (*akka*) named Dora in Talawakelle.	Correct, with the minor confusion of Dora rather than Lora. The Sinhalese term *akka* refers to elder sister or elder girl cousin, but may be generalized to female friends to whom one is as close as a sister. Although T did not have a sister named Dora, he did have a close friend named Lora.
S4	She and a "sister" (*akka*) watched Queen Elizabeth II pass through Talawakelle on a train. *ρ §μρ,	Correct. T saw the Queen with a girl cousin, terminologically the same as sister.
S5	Her mother watched Queen Elizabeth from a window.	Correct. She watched it through the window of her brother-in-law's car, per tape-recorded testimony. Compare S42.
S6	She remembered the Talawakelle temple, in particular a large statue of the Buddha there.	Correct about the statue, although by this time, G had visited the temple with her brother AB.
S7	She remembered the Talawakelle post office.	Correct, or appropriate for T, who had gone there often because his father worked there.
	Interview with Gnanathilaka, Nov. 1, 1960 (recorded in writing)	
S1	She used to live in Talawakelle. [In response to question of where she lived in the life she recalled.]	Correct.
S8	She had gone to (i.e., climbed) Adam's Peak. [In response to question of where she had gone when she lived there.] §μ.	Correct. T had visited Adam's Peak twice, per tape-recorded testimony. Compare S92.
S9	She had gone by car. [In response to question of how she had gone there.]	Correct. T had gone the first time by car.
S10	It was not possible to get there by train. [In response to question of whether she might have gone by train.]	Correct. Trains go no closer to Adam's Peak than Hatton, an hour away.
S11	There was a long flight of steps up the mountain. [spontaneous]	All correct. Ascending the steep sides of Adam's Peak requires a climb up a stairway.
S12	She used to go a school far away from her home. [In answer to Q of where else she went.]	Correct. T attended a high school in Hatton, 14 miles (23 km) from Talawakelle.
S13	She went to school with her *akka* (elder sister or girl cousin). [In response to Q about with whom she went.] §βφ.	Correct, although her sister attended a different school in Hatton, per tape-recorded testimony, §β.
S14	They went by train. [In response to Q about how they went.]	Correct, per tape-recorded testimony. Compare S93.
S15	They went in the morning and returned the evening, at around the time N's team had arrived, i.e., 5 pm. [In response to Q of what time of say she went.]	Correct, per tape-recorded testimony.
S16	There were many children at the school; how could she say how many? [In response to question of how many there were.]	Correct.
S17	She had 6 elder sisters in Talawakelle. [In response to follow-up Q on her *akka*.] §μ.	Correct. Compare S85. §β.
S18	Her sisters sometimes hit her, didn't give her enough rice to eat. However, her sisters in the other houses were good to her; they loved her. [In response to her question of whether her sister's loved her.]	Unverified, although plausible, and indicates awareness that some of T's 6 sisters were married and lived in different houses.
S3	One of her sisters was named Lora. [In response for request for her sister's names, when prompted by AB to say the name she sometimes mentioned.]	Correct. The term G used for "sister" was *akka*, which may be used in reference to close friends.
S19	Lora was good to her, unlike some of her other sisters. [spontaneous]	Unverified, but plausible. N confirmed that T's sisters sometimes mistreated him.
S2	Her mother and father lived in Talawakelle. [In response to Q of who else lived there.]	Correct.
S20	She loved her Talawakelle mother very much (*mage sudu amma*). [spontaneous]	Correct. T was close to his mother. The Sinhalese word *sudu* can mean "fair," but here the expression indicates affection.
S21	Her mother brought her dinner at night. [spontaneous]	Correct for one period of time, when T was in school in Nawalapitya.
S22	Her house in Talawakelle was near a factory that ground tea leaves. [In response to Q of where her house was located.]	Correct for T's aunt's house, in which he slept, but not for his mother's house
S23	Her house was situated between the railroad and the highway. [Continuation of S22, in response to Q of where her house was located.]	Correct for T's aunt's house, but not for his mother's house. Compare S93.
S24	There was a flight of steps going up to the house. [spontaneous]	Correct for T's aunt's house, although not for T's mother's house.
S25	There were many (tea) factories in Talawakelle, and many houses. [spontaneous]	Correct.
S26	That house might not be standing now; houses were being demolished and rebuilt. [In response to Q if she could find the house in Talawakelle.]	Correct in its cautionary language, as referring to T's aunt's house. T's mother's house was demolished shortly after T's death. However, his aunt's house was still standing in 1961.

S27	Talawakelle is much colder than Dihintalawa. [In response to Q about differences in climate.]	Correct. Talawakelle is at a much higher elevation than Dihintalawa.
S28	They used to get water from a little waterfall. [spontaneous]	Unverified for T's aunt's house. His mother's house had piped water, per tape-recorded testimony. Compare S43.
S29	They used to wash in the morning at "a kind of well" or "spring". [spontaneous] *μ.	Correct, per tape-recorded testimony.
S30	They used to bathe in a river. [spontaneous] *μ.	Correct, per tape-recorded testimony. Compare S78, S96.
S31	She had a till (piggy bank) in which she kept money. [In response to Q about what she did in Talawakelle.]	Correct.
S32	She purchased a blue cloth with that money. [spontaneous]	Correct, per tape-recorded testimony. T broke the till shortly before his death to purchase the cloth.
S33	It was in a wardrobe in her house. [spontaneous]	Correct for the aunt's house in which T slept and kept his belongings.
S34	It was blue because she liked blue. [In response to question of why it was blue.]	Correct. Blue and white were T's favorite colors, per tape-recorded testimony.
S35	She had two boxes of paint of many colors. [In response to Q of what other things she had.]	Correct.
S36	She and her sister used to paint their fingernails red. [In response to Q of what she painted.]	Correct.
S37	She drew and painted pictures in coloring books. [In response to Q of what else she had done.]	Correct.
S38	She kept the coloring books on top of the wardrobe. [spontaneous]	Correct, per tape-recorded testimony.
S39	She made flowers out of paper. [In response to Q about what else she did.]	Correct. When N first interviewed G, she asked him to make a paper flower.
S4	She saw Queen Elizabeth II when she was at Talawakelle. [In response to Q if she had seen anyone else while she was at Talawakelle.] §μρ.	Correct. Note that she did not say here that she was with a sister, as in S4, but not coded as separate statement.
S4	She was in a train. [In response to question about the vehicle in which the Queen was travelling.] §μρ,	Correct.
S40	She went to see the Queen with her *akka*. [In response to question of with whom she went to see the Queen.]	Correct. *Akka* may refers to an elder girl cousin as well as well as elder sister. T went to see the Queen with an elder girl cousin.
S41	She stood at the roadside and watched. [spontaneous]	Correct, per tape-recorded testimony.
S42	Her mother had stood at the window in the house and watched	Partially correct. Her mother watched from the window of her brother-in-law's car, per tape-recorded testimony from T's family. Compare S5.
	Letter from headmaster of Wetalawa School, Hedunuwewa, Nov. 14, 1960	
S43	On seeing her mother make lavariya (a sweet Sri Lankan pastry), she told her mother had made curry patties (unknown in Dihintalawa), which she closed with the aid of "something like a garden fork." *μ.	Correct. Curry patties, introduced by the British, are common in towns like Talawakelle, but largely unknown in rural villages. T had helped his mother prepare such patties. G had never had the opportunity to see a regular cutlery fork, used in the towns but not in rural areas of Ceylon. She was familiar with larger forks used in gardening, however.
S23	Her house was located between the highway and railroad, facing the former.	Correct for T's aunt's house.
S30	They used to bathe in a river that flowed below (at a lower altitude than) the highway.	Correct. Compare S79, S96.
S44	Drinking water came from a spring on the other side of the railroad. [In response to Q about where they got drinking water.]	Unverified. Compare S28, which omits the location detail.
S45	The houses of her sisters were close by her house.	Correct. T's married sisters lived in other houses close by their mother's house.
S46	She had had two grand-uncles or grand-fathers in Talawakelle.	Incorrect. It is not known to whom G was referring.
S47	One of her brothers had a store from which provisions were bought for her home.	Correct, although the brother's store was in Aranayake rather than Talawakelle.
S48	Her father lived in another house.	Correct. At the time of T's death, his parents were separated and his father lived in a different house.
S49	Her mother used to go along with the tea-plucking laborers to the tea estates, and used to hoe the estates, although she was not a laborer.	Correct. T's mother was not a regular laborer at the tea estates, but she did go there occasionally to help.
S50	Her family owned five or six small pieces of land for growing tea.	Incorrect. T's family owned no land and did not work in tea cultivation.
S51	A tamarind tree that was situated in their garden.	Partially correct. Correct for garden of T's brother in Aranayake, but not for members of the family in Talawakelle.
S52	Because they had no *kitul* palms, they had to buy their treacle syrup from the store.	Unverified, but plausible. There were no palm trees in Talawakelle, owing to its elevation.

Gnanathilaka stared at it for a while, then informed him: "Father, I have seen this person – she travelled through Talawakelle by train'" (Nissanka, 2001, p. 85). Besides seeing the Queen, she said, she had climbed Adam's Peak. When Ariyapala asked her what Adam's Peak looked like, she leaned two pillows against each other in the shape of a symmetrical steep-sided mountain—exactly the appearance of Adam's Peak, a well-known pilgrimage site in central Sri Lanka (Nissanka, 2001, p. 85).

In addition to her parents, she had six sisters in Tala-

S53	She went to school along the railroad track holding her sister's hand.	Correct, if metaphorically expressed. T went to school on the train with one of his sisters. Compare S13-S14.
S54	Her mother cried when she "came to her present home" (i.e., when she died).	Unverified, but plausible.
S55	She drank medicine before "coming here" (being reborn in Dihintalawa).	Correct. Compare S83.
S56	She just "came here" after she died. [In response to Q about why she "came here."]	Unverified.
S57	Her mother had been wearing a blue sari the day she died.	Unverified; apparently never queried by N.
	Unprompted statement by G on way to Talawakelle, Nov. 19, 1960 (not recorded)	
S58	One can buy fish in Talawakelle. Boys fished in the river and sold their catch.	Unverified, but likely correct.
	Interview with G, Nov. 27, 1960 (tape-recorded)	
S59	She was a boy before. [In response to Q if she was a boy or girl before.]	Correct.
S60	She used to go to the post office to send letters. [In response to Q if she went to the post office then.]	Correct.
S61	The post office was up a hill. There was a flight of steps which twisted like a snake. [In response to Q of where post office was and how she got there.]	Correct.
S62	She would go to the post office with her *nangi* (younger sister). [In response to Q of whom she went with]	Correct. T was accompanied to the post office by Gunalatha who, although not younger than T, was called *nangi* by him.
S63	Her sister Lora, not the sister who sewed, would stitch her clothes.	Unverified. Counted as partially true by N, without comment.
S64	At school, she loved her sister (*akka*) best. [In answer to Q of whom she loved most at school.]	Unverified. This appears to refer to LA, because Gunalatha attended a different school.
S65	At home, she most loved her "sister who lived at home" [In answer to Q of whom she loved most at home.]	Unverified, but T was close to his sister Gunalatha, who lived with his mother.
S66	A dog once bit Lora's hand, and her mother dressed the wound. [spontaneous]	Confused. LA's father's hand was bitten and T's brother's hand was bitten, but LA's hand was not.
	Testimony about G's statements from adult witnesses, Nov. 27, 1960 (tape-recorded)	
S67	Her Talawakelle mother used to purchase firewood. *μ §μ.	Correct, per tape-recorded testimony.
S68	When she saw a Buddhist statue in a local temple, said the one at Talawakelle was much larger. *σ. The nails were much larger.	Correct. The temple at Talawakelle had an unusually large statue of the Buddha, with sizeable nails.
S69	There are no coconut trees in Talawakelle. *μ §μ.	Correct. Because the higher altitude, coconut trees did not grow at Talawakelle.
S70	They used to buy their coconuts from the store.	Correct.
S71	When asked what Adam's Peak look like, leaned two pillows against each other to demonstrate its steep slopes.	Correct. Adam's Peak has a conical shape.
	Visit of teachers to G's home, Dec. 17, 1960 (not recorded)	
S72	The train to Hatton passed through a tunnel. [Said in response to DVS remarking that when she came on the train, it suddenly gets dark, then after a while, light again, doesn't it?] *μ §μ.	Correct. §σ.
S73	Sitting on DVS's lap, looking at him, G clinches her fist. When asked why, refers to Jataka tale. [spontaneous] §σ.	Correct. T was in class when DVS taught tale shortly before T's death.

wakelle, Gnanathilaka affirmed. "Her" house was located between the highway and the railroad, facing the former. They used to bathe in the river that flowed by the highway. Drinking water came from a "little waterfall" (spring) and they would wash in the morning "at something like a well" (Nissanka, 2001, p. 38). Her sisters lived in houses close to hers, but her father lived in a different house (Nissanka, 2001, p. 88).

Upon seeing an unfamiliar man walk past her house in Dihintalawa one day, Gnanathilaka asked her father to invite him in, for "he lives near our house in Talawakelle." Although she repeated this entreaty three times, her father ignored her (Nissanka, 2001, p. 87). Sometime later, news of a woman's body floating down the Kotmale River past Hedunuwewa and Dihintalawa reached Gnanathilaka's family. The dead woman was rumored to be from Talawakelle. Hearing this, Gnanathilaka became very upset, saying that it might be her "Talawakelle mother." She was in tears for days, until finally Ariyapala took her to Talawakelle, 22 miles away, on the bus. Although Gnanathilaka appeared to recognize the area around the bus depot, they went to a nearby temple, where she at last calmed down (Nissanka, 2001, pp. 85–86). In 1961, Ariyapala told Stevenson that Gnanathilaka had led the way to where she said Thilakaratne's mother's house had stood, but the house had been demolished and another was being

S74	Scrawls map in chalk showing relation of school to train station, and explains, "you get there by this railroad. And then you go up this flight of steps." [In response to Qs about school in Hatton.] *σ §σ. The school was surrounded by many hills. [spontaneous]	Correct, G's drawing depicted correct relationship of these structures, before G had visited the area. §σ. They were surrounded by many hills.
	Statements made at December 18 meeting with T's family (tape-recorded)	
S34	She liked the color blue. [In response to Q about what color she liked.]	Correct. Compare 32.
S12-S14	She went to a school that was a long way off on a train with a sister. [In response to where she went with a certain sister, whom she had recognized.]	Correct, per tape-recorded testimony from T's family.
S75	She had won prizes in a Sunday school prize-giving. [In response to direct Q about whether she recalled it.]	Correct.
S76	She went to Aranayake with her elder brother. [In response to Q about with whom she had gone to Aranayake.]	Correct. Aranayake is where her eldest brother lived.
S77	Request for pears. [When "fair sister" asked if there is anything she would like her to bring.] †π §φ.	Correct, appropriate response to question. When young, T had often asked "fair sister" to pick pears for him from a tree in their yard.
S78	She liked girls rather than boys [In answer to Q about which she preferred.]	Correct.
	Additional statements noted by Nissanka (not recorded)	
S79	There was a small bridge near the house under which the children used to bathe.	Correct for aunt's house, in which T slept. Compare S30, S96.
S80	She made sketches and paintings.	Correct.
S81	There were two vases at home.	Correct, per N. In tape-recorded testimony, GT says T used to make paper flowers and put them in vases.
S82	Her mother hit her while she was eating a meal at home. [Said to have been reported frequently, but never in recorded testimony.]	Unverified. Counted as correct by N, without substantiation. That T fell off his chair after his mother struck him may be based on a rumor of residents of Talawakelle, per IS. Compare S100. *.
S83	She was eating, sitting in a chair, then was in bed and drank medicine before she died. *σ.	Unverified, although likely correct. Compare S54, S101.
S84	Her Talawakelle mother sat crying by her bedside at this time.	Unverified, although plausible.
	Additional statements and variations reported by Stevenson (1966, 1974), recorded Aug. 1961	
S85	She had a mother and father, two brothers, and many sisters living in Talawakelle. §μ.	Correct, per IS, although technically only partially correct, since one of T's brothers lived in Aranayake, not Talawakelle. Compare S2, S17. §β.
S86	Her father was a postman. *μσ §μ.	Correct. Noted by N, although he does not ascribe the statement to G. §φ.
S87	Her brother was once bitten by a dog. *μ §μ.	Correct, per tape-recorded testimony. Noted by N, although he does not ascribe the statement to G. Compare S66. §μ.
S88	Her Talawakelle father did not have a knot on the back of his head. *μ §μ.	Correct, according to G's parents. Likely, but not mentioned by N or observed by IS. §μ.
S89	One of her sisters went to school at Nawalapitiya. Her "fair sister" went to school at Nawalapitiya. *μ §μ.	Correct, per IS, but not independently verified by him. Not noted by N.
S90	She had a brother named Dharmadasa. *μ §μ.	Correct, per N. G's eldest brother also was named Dharmadasa. †π
S91	Her Talawakelle mother was stout. *μ §μ.	Correct, mentioned by N, but G's statement not recorded by him. §.
S92	She had climbed Adam's Peak with some monks. *μ †π §μπ.	Correct. Compare S8. The second time T climbed Adam's Peak, he went with monks, per N. †π §π.
S93	Her house was located between the bus station and post office in Talawakelle. *μ §α.	Correct for T's mother's house when he was living, but not recorded in this form by N. Compare S23. §α.

constructed in its place (1961 field notes). With no other leads to Thilakaratne's family, Ariyapala and Gnanathilaka returned home on the day's last bus (Nissanka, 2001, pp. 60–61).

NISSANKA'S INVESTIGATION

Although Nissanka went on to author ten books, principally about Buddhism and Sri Lankan foreign relations,[6] in 1960, he was a feature writer for the Sinhalese-language *Silumina* weekly. In September of that year, the editor asked him for a series of articles on any subject of public interest. When he had been in India the previous year, Nissanka had read about Swarnlata Mishra (another reincarnation case Stevenson was to include in *Twenty Cases*) and had written about her for *Silumina*. That article had been well received, and it occurred to him that more on the topic would serve the purpose. At the time, no children's past-life memories had been reported from Ceylon, so he wrote about reincarnation cases in other countries. As a result, he heard about six previously unknown cases from different parts of Ceylon. For investigation, he selected Gnanathilaka because she resided closest to his hometown of Kandy.

Nissanka had few models to guide him. The Indian case reports from the 1920s (Sahay, 1927; Sunderlal, 1924) had appeared in obscure places, and Sunderlal's

Additional statements reported by Stevenson (1974), recorded Nov. 1970

S94	B had damaged one her Buddha shrines shortly before she died. §.	Correct. B knocked over a shrine she had constructed of Vesak cards, per N (1961).
S95	She had seen her present brother AB dancing in Talawakelle and "developed a fascination for him." §μ.	Unverified, but possible. G's brother AB was in Talawakelle, dancing, on this day.

Additional statements and variations recorded by Stevenson in field notes, 1961, 1966, and 1970

S96	Her Talawakelle mother would bathe in a river. *μ.	Unverified. Compare S30, S79.
S97	She took clothes for washing to a certain laundryman's house. *α	Correct.
S98	She was sometimes beaten by her mother. *μ	Correct, according to N, likely based on rumors (compare S82). AN denied to IS that she had ever beaten T. *β.
S99	She accidentally spilled a bowl of juice and her mother pulled the chair out from under her. She fell and hurt her back. *σ.	Unverified. Compare N's version, S82-S83.
S100	She spilled some food and her mother hit her, causing her to fall off the chair.*μ	Unverified, but consistent with N was told. Compare S82-S83.
S101	She was put in bed and the next day was taken to the hospital. *μσ	Unverified.
S102	She died in the hospital. *μσ	Unverified.
S103	Her Talawakelle mother was crying when she died. *μ	Unverified.
S104	Her Talawakelle mother said "Don't go away." *μ	Unverified.

Key to Initials: **AB** = Ariyapala Baddevithana, G's brother. **AN** = B. L. Alice Nona, T's mother. **B** = Buddhadasa Thilakaratne, T's brother. **DVS** = D. V. Sumathipala, T's high school teacher. **G** = Gnanathilaka Baddevithana. **GT** = Gunalatha Thilakaratne, T's sister. **IS** = Ian Stevenson. **KB** = Karunawathie Baddevithana, G's sister. **LA** = Lora Almeida, T's friend. **N**= H. S. S. Nissanka. **T** = Turin Thilakaratne.

* Recorded by IS in field notes, per witnesses: **α** Ariyapala Baddevithana. **β** B. L. Alice Nona; **κ** Karunawathie Baddevithana. **μ** G's mother and father. **ρ** K. G. Ratnayaka, headmaster of G's school. **σ** D. V. Sumathipala.

† Communicated to IS in correspondence, by: **π** Piyadassi Maha Thera.

§ Reported by IS (1974), per witnesses: **α** Ariyapala Baddevithana. **β** B. L. Alice Nona. **μ** G's mother and father. **ρ** K. G. Ratnayaka. **σ** D. V. Sumathipala. **φ** T's "fair sister," Salinawathie.

was in French. Nissanka was skeptical about the number of accounts of children's past-life memory, if not about its possibility, but he wished to reserve judgment until he had put the claims to the test. Before proceeding, he asked his correspondent to collect more information about Gnanathilaka. The man reported back after he had gone to speak with her. Among other things, the girl told him about seeing Queen Elizabeth on the train. She and a "sister" had observed the Queen from the roadside, but her "Talawakelle mother" had watched from a window. Queen Elizabeth had passed through Talawakelle in April 1954, about two years before Gnanathilaka was born.

Nissanka realized that his next step was to interview Gnanathilaka himself, but he did not want to go alone. He recruited a well-known Buddhist monk, Piyadassi Maha Thera,[7] and a local school teacher, K. H. M. Sumathipala, to accompany him. Guided by Nissanka's correspondent, the three investigators set out for Gnanathilaka's home on November 1, 1960. They discovered that it lay along a footpath half a mile from the center of Hedunuwewa. Gnanathilaka was happy to tell them some of what she remembered about the previous life, which they recorded in written notes. There appeared to be sufficient detail to identify the person the girl was talking about, but they were uncertain how to go about it. If that person had seen Queen Elizabeth as she passed through Talawakelle, he or she could not have died before April 15, 1954, but there was little else to go on. Nissanka decided to write an article for *Silumina*, in the hope that readers would supply additional leads.

The piece that appeared in *Silumina* on November 6, 1960, aroused such interest that Nissanka felt that he must visit Talawakelle. He went there the same day, along with the Ven. Piyadassi, K. H. M. Sumathipala, and two other men. The only name besides Talawakelle, then mentioned by Gnanathilaka, was Dora or Lora (she used the former in speaking to Nissanka's correspondent, the latter in conversing with his team), whom she said was one of her former sisters. Nissanka's team located a family with a daughter named Lora that had lost a son, but on a date after Gnanathilaka's conception in the summer of 1955, which was enough for them to rule him out. Their other inquiries led nowhere, and they returned to Kandy.

Nissanka went back to Talawakelle two days later with K. H. M. Sumathipala and others but made no progress in tracing the person whose life Gnanathilaka recalled. The same day, he received a letter from Ariyapala, requesting he not write more about his sister without their father's permission. Nissanka at once enlisted the assistance of an intermediary. Besides promising to speak to the father, the intermediary addressed a letter to Ariyapala and, armed with this letter, Nissanka paid another visit to Gnanathilaka. The intermediary's missive proved insufficient; Ariyapala would not allow them to interview

Gnanathilaka again. By the end of the week, however, the father had given his consent, and Nissanka wrote a follow-up story about Gnanathilaka for *Silumina*. This was published on November 13, and in short order, Nissanka received a letter (dated November 14) from the headmaster of a school at which Gnanathilaka's sister Karunawathie taught. This letter listed more of Gnanathilaka's memory claims reported "during the third trimester of 1958 or the first trimester of 1959" (Nissanka, 2001, p. 86),[8] no later than the beginning of Gnanathilaka's third year.

On November 19, 1960, Nissanka took Gnanathilaka and her father to Talawakelle, but left them at the town's rest house while he made inquiries. As it happened, he was finally able to track down Thilakaratne's father, who had read the *Silumina* stories and acknowledged they seemed to apply to his son. He agreed to go to the rest house to meet Gnanathilaka, but before he arrived with other members of his family, Gnanathilaka and her father had departed. Nissanka took advantage of the opportunity to tape-record an interview with Thilakaratne's family, confirming that Gnanathilaka's memories referred to him. Nissanka tried again to bring the families together in Kandy on November 27, but this time Thilakaratne's family failed to show. Nissanka tape-recorded another interview with Gnanathilaka, along with her parents and Ariyapala. Finally, on December 18, the two families met, in a room of the Talawakelle Rest House, in the presence of Nissanka, the Ven. Piyadassi, and a few others, with additional witnesses outside the door and in an adjacent room. The proceedings were tape-recorded and photographed.

GNANATHILAKA'S MEMORY CLAIMS

Gnanathilaka's recollections of the life of Thilakaratne are listed in Table 2.[9] Our presentation differs at times from that of Nissanka (2001, pp. 172–176), mainly because we have grouped a few items differently and have included statements reported by Stevenson (1966, 1974) in *Twenty Cases* or mentioned in his unpublished field notes. We have subdivided the list by the occasion on which the statements were recorded. When Gnanathilaka replies to direct questions, we have indicated the questions in brackets. Some questions were designed to bring out details Gnanathilaka expressed previously and were intentionally leading. Often Gnanathilaka answered such questions with the expected responses, but then provided additional remarks. We have labeled these additional remarks "spontaneous." When essentially the same information is given on separate occasions, we have assigned it the same reference number, so that the final number (104) represents the total number of discrete statements or significantly different information about the previous life attributed to Gnanathilaka.

In the righthand column of Table 2, we assess how Gnanathilaka's memory claims apply to Thilakaratne. Of the 74 statements made before the two families met on December 18, 1960, 11 (14.9%) could not be verified, 58 (78.4%) were correct, three (S42, S51, S66) (4%) were partially correct or confused, and two (S46 and S50) (2.7%) were incorrect.[10]

A critical issue in the evaluation of Gnanathilaka's statements is the meaning of the Sinhalese kinship terms *akka* and *nangi*. Both terms may be translated as "sister," but *akka* designates a sister or girl cousin older than the speaker, and is often generalized to include female friends with whom one has a sisterly relationship. Gnanathilaka referred to Lora Almeida as her *akka* (S3 and elsewhere). Lora was 13 when Thilakaratne died, the same age as he, although she was slightly older than he was. Although Lora was not Thilakaratne's sister or cousin, they were very close (Nissanka, 2001, p. 123), and it would have been appropriate for him to have thought of her as an *akka*. Similarly, *nangi* refers to a sister or girl cousin younger than the speaker. Gnanathilaka employed this term in relation to Thilakaratne's sister Gunalatha (S62). Gunalatha was actually slightly older than Thilakaratne, but as the youngest sister of the family, other siblings called her *nangi*. Thilakaratne adopted this usage when young and although he learned the correct term as he grew older, he continued to call Gunalatha affectionately his *nangi*, the term Gnanathilaka used in reference to her (Nissanka, 2001, pp. 119–120).

There is uncertainty about how Thilakaratne died, due in part to his family's apparent attempt to cover up the details. When asked how she "came here" (was reborn in Dihintalawa), Gnanathilaka would say she had "just come." She drank medicine, and "her mother" was crying at the time, the school headmaster related in his letter of November 14 (Nissanka, 2001, p. 77; S54–S56). Gnanathilaka's memories of drinking medicine appear to refer to Thilakaratne's stay in the hospital, where he spent a few hours before he passed (Nissanka, 2001, p. 69). Before that, he had been at home, where, apparently, he had fallen off a chair (S82–S83). His family maintained that he had been hit by a cricket ball at school, a story Nissanka was unable to confirm (Nissanka, 2001, p. 130). When Thilakaratne's mother declared this in Gnanathilaka's presence sometime in 1962, she retorted: "Mother, you are lying! That's not how I died; I fell off a chair – and now you're lying about it!" (Nissanka, 2001, p. 171).

Nissanka (2001, pp. 169, 176) states that Gnanathilaka said Thilakaratne fell off the chair after being hit by his mother (S82), but nowhere in recorded testimony does

Gnanathilaka say this. In his field notes, Stevenson reports Gnanathilaka saying that she was sometimes hit by her mother, but she does not say it happened on this occasion. Thilakaratne's favorite high school teacher, D. V. Sumathipala (no relation to K. H. M. Sumathipala, of Nissanka's team), who came to know Gnanathilaka well after Thilakaratne was identified as the referent of her memories, relayed a different version to Stevenson. Gnanathilaka confided in Sumathipala her recollection that Thilakaratne had accidentally knocked over a bowl of juice, and his mother had then pulled his chair out from under him. He had fallen on his back and was in obvious

Table 3. Gnanathilaka's Recognitions of Places, Possessions, and People

Item	Stimulus	Comment
	Places Known to Thilakaratne	
R1	Place "her" house had stood in Talawakelle (Oct. 1960). *μ §α.	Successful recognition, per AB. Compare R6. §α.
R2	Door of laundryman's house in Talawakelle. §μ. Place laundryman lived (Oct. 1960). §α.	Successful recognition, per AB. IS was told T used to take laundry there and states that this was confirmed by AN, but it is not mentioned by N. §μ §α.
R3	Talawakelle railway station (Nov. 19, 1960).	Suggestion of familiarity, but no conscious recall.
R4	Talawakelle temple (Nov. 19, 1960). *μ.	Suggestion of familiarity, but no conscious recall.
R5	Steps from road to river down which T went to bathe (Nov. 19, 1960).	Successful recognition, confirmed by N.
R6	Place her mother's house had stood, now the site where a new house was being constructed (Nov. 19, 1960). G pointed out the location again when being carried to the Talawakelle Rest House on Dec. 18.	Successful recognition, confirmed by N. Pointed out the house. Accuracy confirmed to IS by AN *β. Compare R1.
R7	Tall trees on road leading to Adam's Peak (Nov. 19, 1960).	Successful recognition. T would have driven this way at least twice, once in a car and once in a bus, and probably more often.
R8	Suspension bridge on road leading to Adam's Peak (Nov. 19, 1960).	Recognition failure? G did not respond to bridge, but it is not clear that this is the suspension bridge she claimed to recall.
R9	Post office on hill opposite temple (Nov. 19, 1960). *μ.	Successful recognition, but discounted by N because G could have seen the post office on her earlier visit to Talawakelle.
R10	Houses of T's married sisters (Nov. 19, 1960).	Suggestion of familiarity, but no conscious recall.
R11	House of T's aunt, in which he had slept and kept most of his belongings, in location correctly described by G (Nov. 19, 1960).	Suggestion of familiarity, but no conscious recall.
	Thilakaratne's Possessions	
R12	Photograph of T, taken a few months before his death (Dec. 18, 1960).	Suggestion of familiarity, but no conscious recall.
R13	T's drawing books (Dec. 18, 1960).	Suggestion of familiarity, but no conscious recall.
R14	T's blue pair of shorts and a blue shirt, and some raw fabric which he had bought a few weeks before his death (Dec. 18, 1960).	Suggestion of familiarity, but no conscious recall.
	People Known to Thilakaratne	
R15	Queen Elizabeth II in photograph on calendar (1958). *μ.	Successful recognition, recalling related memory.
R16	Man walking past house as from Talawakelle. *μ §μ.	Successful recognition.
R17	Headmaster of T's high school in 1960 (but not when he attended in 1954) (Dec. 17, 1960). §σ.	Successful non-recognition of man not known to T.
R18	Teacher at different Hatton school in 1960 (Dec. 17, 1960). §σ.	Successful non-recognition of man not known to T.
R19	DVS, T's high school teacher (Dec. 17, 1960). *σ §σ.	Successful recognition, stimulating additional comments
R20	T's mother, AN (Dec. 18, 1960). *βσ §βσπ.	Successful recognition, emotional response, stimulating additional comments
R21	T's father (Dec. 18, 1960). *σ §σπ.	Successful recognition, emotional reaction.
R22	T's sister Gunalatha, as the sister with whom he had gone to school (Dec. 18, 1960). *σ §βφσ.	Successful recognition, emotional reaction.
R23	Man who had settled in Talawakelle after T's death (Dec. 18, 1960). *σ §σ.	Successful non-recognition of man not known to T.
R24	T's "fair sister," Salinawathie (Dec. 18, 1960). *σ §βφσ.	Successful recognition, emotional reaction, stimulating additional comments.
R25	T's sister Somawathie, "the sister who lives in the house below ours" (Dec. 18, 1960). *σ §βφσ.	Successful recognition.
R26	T's sister Leelawathie, "to whose house we go to get our clothes stitched" (Dec. 18, 1960). *σ §βφσ.	Successful recognition.
R27	Businessman of Talawakelle well known to T and family, "the father who lived in the lower house" (Dec. 18, 1960).	Successful recognition.-
R28	T's Sunday school teacher (Dec. 18, 1960). §σ.	Successful recognition.
R29	T's brother Buddhadasa (Dec. 18, 1960). §βφσ.	Successful recognition with strong negative reaction.

R30	At Talawakelle Rest House, woman who had quarreled with T's mother (Dec. 18, 1960). *σ §σ.	Successful recognition, per DVS, but not mentioned by N.
R31	En route from Talawakelle Rest House to temple, female devotee of temple known to T (Dec. 18, 1960). *σ §σ.	Successful recognition, spontaneously picked out of crowd. Not mentioned by N, but confirmed by DVS, who spoke to woman.
R32	T's sister, who had not been present in Talakawele with the others (Jan. 1961).	Successful recognition, spontaneously picked out of crowd, but in uncontrolled setting.
R33	T's sister, who had not been present in Talakawele with the others (Jan. 1961).	Successful recognition, spontaneously picked out of crowd, but in uncontrolled setting.
R34	Baggage handler on train to Hatton (1966).	Successful recognition, as reported to N.
R35	Girl from Talawakelle unknown to T (Nov. 1970). §.	Successful non-recognition, when introduced by IS.
R36	Lora Almeida (Nov. 1970). §.	Successful recognition, when introduced by IS; identifies her as Dora from Talakawele, but does not react further.

Key to Initials: **AB** = Ariyapala Baddevithana, G's brother. **AN** = B. L. Alice Nona, T's mother. **DVS** = D. V. Sumathipala, T's high school teacher. **G** = Gnanathilaka Baddevithana. **IS** = Ian Stevenson. **N**= H. S. S. Nissanka. **T** = Turin Thilakaratne.

***** Recorded by IS in field notes, per witnesses: **β** B. L. Alice Nona. **μ** G's mother and father. **σ** D. V. Sumathipala. **φ** T's "fair sister," Salinawathie.

† Communicated to IS in correspondence, by: **π** Piyadassi Maha Thera.

§ Reported by IS (1966, 1974), per witnesses: **α** Ariyapala Baddevithana. **π** Piyadassi Maha Thera. **σ** D. V. Sumathipala. **φ** T's "fair sister," Salinawathie.

distress, so his mother put him in bed. The following day, he was taken to the hospital, where he died. Stevenson thought that Nissanka might have relied on rumors going around Talawakelle for the idea that the fall was due to his mother's having hit Thilakaratne (1966 field notes).

Of the 30 statements (S75–S104) reported on or after the two families met for the first time on December 18, 1960, 11 (36.7%) were unverified, and 19 (63.3%) were correct. None we were partially correct, confused or incorrect.

GNANATHILAKA'S RECOGNITIONS

Gnanathilaka is reported to have made striking recognitions of places and people known to Thilakaratne (see Table 3). Most of the recognitions were immediate, but a few took time to surface in her conscious awareness. A delay occurred with her recognition of Queen Elizabeth and the memory of seeing the Queen travel through Talawakelle on the train (R15). A similar thing happened when she first met D. V. Sumathipala.

This meeting came about as a consequence of Nissanka's contacting the headmaster of Thilakaratne's high school in Hatton (Nissanka, 2001, pp. 90–91). The headmaster had not been at the school in 1954, and Thilakaratne had not known him, but he decided to visit Gnanathilaka to see what this was about firsthand. He took with him two other teachers, including D. V. Sumathipala. When the headmaster and the teacher Thilakaratne had not known asked Gnanathilaka whether she recognized them, she said she did not (R17, R19), but when Sumathipala asked her if she knew him, she gazed at him intently for a while before replying, "You have taught me. You have never caned me for punishment!" (R19). She walked to him and climbed into his lap. Soon thereafter, she referred to a tale from the Buddhist Jataka canon, ostensibly stories of the Buddha's past lives, that Sumathipala had taught Thilakaratne's literature class not long before his death (Nissanka, 2001, pp. 91–93).

On a few occasions, Gnanathilaka stared intently at objects or places with which Thilakaratne was acquainted but related no memories in response to them. This occurred with the Talawakelle railway station from which Thilakaratne departed for school in Hatton each weekday (Nissanka, 2001, p. 60; R3). Similarly, she appeared comfortable in the Talawakelle temple and knelt before the Buddha statue she had talked about previously (Table 2, S6), but it stimulated no new memories (R4). When taken to the houses of Thilakaratne's married sisters, she "chatted happily and beamed contentedly," but did not say anything that might have a bearing on Thilakaratne's life (Nissanka, 2001, pp. 121–122; R10). Her reaction to Thilakaratne's aunt's house was different, and stronger (R11). This is a house in which Thilakaratne had slept and in which he had kept his personal belongings, his mother's house being too small to accommodate him. Gnanathilaka had speculated that Thilakaratne's aunt's house might no longer be standing, like his mother's house (Table 2, S26). As she approached her aunt's house, she "suddenly and inexplicably started crying. Her sobs became louder as she was carried up the steps and into the house. No offers of sweet or sweet drinks could console her," and the visit had to be curtailed (Nissanka, 2001, pp. 122–123).

On other occasions, Gnanathilaka not only recognized but remarked on places connected to Thilakaratne. After mid-morning tea on November 19, Nissanka, Gnanathilaka, and her father strolled down the main street of Talawakelle, in the direction of the temple and bus station she had seen on her visit with Ariyapala. When they reached a flight of steps leading down from the road, Gnanathilaka suddenly announced: "Down these steps we went to the river, to bathe" (Nissanka, 2001, p. 57; R5). At another place, closer to the bus station, she stopped to stare at a

house being constructed and was heard to mutter, almost to herself: "Those houses are not here now" (Nissanka, 2001, p. 57; R6).[11] Nissanka established that this was the site of Thilakaratne's mother's former home (Nissanka, 2001, p. 58). After the walk, Nissanka drove Gnanathilaka some way along the road from Talawakelle to Hatton, which leads onto Adam's Peak. As they passed a row of unusually tall trees, Gnanathilaka exclaimed, "Why, these trees are still here!" (Nissanka, 2001, p. 58; R7). Before returning to Dihintalawa, they went to the Talawakelle temple. Upon exiting the building, Gnanathilaka shouted excitedly, "There's the post office ... on that hill ... on that hill!" (Nissanka, 2001, p. 60; R9).

Gnanathilaka did less well with Thilakaratne's possessions. When Thilakaratne's mother Alice Nona[12] showed her his drawing books, she "regarded them fondly," but did not comment on them (Nissanka, 2001, p. 121; R13). When Alice Nona showed her some of Thilakaratne's clothing (a pair of blue shorts and a blue shirt) and a piece of blue fabric he had purchased a few weeks before his death, Gnanathilaka "turned shy and hid her face in her mother's sari, but did not say anything" (Nissanka, 2001, p. 121; R14). Alice Nona also showed Gnanathilaka a photo of Thilakaratne taken not long before his death. She examined it closely, but could not say who it was (Nissanka, 2001, p. 121; R12).

Gnanathilaka was at her best with people she met, making several successful recognitions of Thilakaratne's family and other persons known to him. The first to be introduced to her was Alice Nona. At the time, Gnanathilaka was tired and crying. Her mother was holding her in her arms. Alice Nona approached her, and the Ven. Piyadassi asked if she knew who she was. Gnanathilaka lifted her head, still sobbing, but her countenance quickly changed. Her eyes widened, her face brightened, and she stared at the newcomer in silence for a full minute. Asked again if she knew her, she said "yes," but refused to identify her.

Alice Nona fished a chocolate from her handbag, and Gnanathilaka accepted it eagerly, but still was reluctant to say who she was because, she said, her mother might hear. Her mother stepped back a few paces. Gnanathilaka looked around the room, saw Ariyapala, and said that he would hear. Ariyapala, too, moved further back. Gnanathilaka then bent to whisper in Alice Nona's ear. Nissanka moved swiftly with his microphone and picked up "Talawakelle mother..." Unable to contain herself, Alice Nona blurted out, "She says I am her Talawakelle mother!" Gnanathilaka's mother, by now, was crying audibly, covering her face with her sari. Alice Nona began to tear up as well. She handed Gnanathilaka back to her mother. "Go to your mother ... go to your mother," she told the girl. When she had composed herself, she added, "Her mother too has her feelings ... my child was a son ... son, stay with your mother ... but come and see me too sometimes!" (Nissanka, 2001, pp. 100–101, 104–105; R20).

After this, Gnanathilaka made recognitions with less trepidation, although initially, she required assurance that her parents did not object to her acknowledging her previous family. Without hesitation, she identified Thilakaratne's father (R21), his four sisters who were present that day (R22, R24–R26), a businessman of Talawakelle known to Thilakaratne (R27), and one of Thilakaratne's Sunday school teachers (R28). She said she did not recognize the one person presented to her that Thilakaratne had not known (R23).

Gnanathilaka reacted with considerable emotion to Thilakaratne's family members. She identified his sisters appropriately as the sister with whom she went to school (R22), "the sister who lives in the house below ours" (R25), and "the sister to whose house we go to get our clothes stitched" (R26). She answered their questions correctly (see Table 2, S74–S77) and, at times, made appropriate remarks in association with them. She had often talked about her "fair sister," Salinawathie,[13] whose complexion was unusually light. When Salinawathie asked if she knew who she was, Gnanathilaka responded, "Yes, you're my fair sister!" (Nissanka, 2001, p. 108; R24). When asked by Salinawathie if there was something she would like her to bring when they next met, Gnanathilaka said, "pears." This was significant because there had been a pear tree behind Thilakaratne's house in Talawakelle and, when young, Thilakaratne had asked Salinawathie, of all his sisters, to pick pears from this tree for him (Nissanka, 2001, p. 119).

In contrast to Thilakaratne's parents and sisters, Gnanathilaka had a strong negative reaction to Thilakaratne's brother Buddhadasa (Nissanka, 2001, pp. 114-117; R29). When she saw him, "the happy, bright look went out of her face, to be replaced by an angry stare." She insisted she did not know Buddhadasa, although it was obvious that she did. When Nissanka suggested she tell her mother who he was, she whispered in her ear, "Talawakelle ... my brother from Talawakelle...." Nissanka caught this on tape. Gently, he implored Gnanathilaka to tell the rest of them. She complied slowly, drawing out the identification, "My ... brother from ... Talawakelle," but would not let Buddhadasa hold her, despite her mother's intervention (Nissanka, 2001, pp. 114–115). Thilakaratne and Buddhadasa had a very strained relationship, and Nissanka judged Gnanathilaka's reaction to be appropriate for Thilakaratne (Nissanka, 2001, p. 116).[14]

Gnanathilaka is reported to have recognized a few people in later years, unusual for an older child. In 1966, when she was 10, she recognized a baggage handler on

Table 4. Gnanathilaka's Implicit (Behavioral) Memories of Thilakaratne

Item	Implicit (Behavioral) Memory	Application to Thilakaratne
	Behavioral Reenactments	
B1	When taken to the Talawakelle temple, G ran in and knelt before the big statue of the Buddha (Nov. 19, 1960).	Kneeling before the Buddha statue is a sign of reverence that was often performed by T.
B2	G placed flowers at feet of DVS, sign of devotion (Dec. 17, 1960). *σ.	T also would do this. Reported to IS by DVS, but not mentioned by N. *σ.
B3	G offered flowers at altar in Talawakelle temple (Dec. 18, 1960). *σ.	This is something T often did. Not reported by N, but witnessed by DVS. *σ.
B4	G would scribble on paper and ask her father to mail them to "her mother" in Talawakelle.	T's father worked at the post office and T would have been familiar with letters and mailing.
B5	When young, G drew diagrams showing relation between buildings; as an older child, she enjoyed drawing and painting. *μ.	T enjoyed drawing and painting.
B6	G built her own Buddha devotional shrine.	T built his own Buddha devotional shrine.
B7	As she grew older, G cut and stitched her own clothes. *μ.	T would cut and stitch his clothes or have this done by Lora or one of his sisters.
	Personality Traits	
B8	G's parents judged her to be more mature than her peers, including her older sister at the same age. §μ.	Not credited to G's parents by N, but noted by him.
B9	Hint of precocious sexuality in recitation of Jataka tale to DVS. *σ.	T was 13 when he died. Compare Table 2, S73.
B10	G was judged by her family to have some masculine traits, in contrast to her sister KB. *μ §μ.	T was male.
B11	G showed an unusually strong interest in Buddhism and religious observance, which persisted at least until 1966. *γ §γ.	Noted by N as well as IS. T was unusually religious for his age *β.
B12	G liked to use flowers in religious observance	T liked to use flowers in religious observance.
	Language Use	
B13	Precocious use of language. G used much longer words than most children her age employ. §μ.	Reported by G's parents and commented on by both N and IS. This is a common feature of reincarnation cases studied by IS.
B14	Employed *kuliyata gannawa* to mean "buy," in relation to purchase of firewood.	Confirmed by N to be used in T's family in this sense, specifically to purchase firewood.
B15	Referred to GT as *nangi*.	*Nangi* means "younger sister/female cousin." GT was older than T, but he picked up this use from his family.
	Philias and Phobias	
B16	G favored the color blue, especially in her dress; this preference persisted at least until 1966. *γ §γ.	T's favored blue, per N, or blue and white, per S in talking to IS. *βφ T liked to wear blue and white clothes and had broken his till to purchase blue fabric shortly before his death. *βσ
B17	On occasion of N's first visit, G asked AB to make a paper flower (Nov. 1, 1960).	T had been fond of making paper flowers, but at her age at the time, G would not have been able to do this herself.
B18	G feared climbing on anything from which she might fall, despite her general fearlessness. *μ §μ.	Not noted by N. As above.

the train to Hatton, which Thilakaratne had ridden daily to school (Nissanka, 2001, p. 164; R34). In November 1970, when she was 14, Stevenson introduced her to Lora Almeida for the first time, along with another girl unknown to Thilakaratne. Gnanathilaka identified Lora as "Dora from Talawakelle"[15] but said that she did not know the other girl (Stevenson, 1974, pp. 148–149; R35, R36).

On the whole, Gnanathilaka's record with "recognitions" is good. Of the 36 items listed in Table 3, she successfully responded to 28 (78%), 3 of them (R18, R23, R35) successful non-recognitions of people not known to Thilakaratne. In another 7 instances (20%), her reactions suggested familiarity, but she expressed no conscious recall. She failed to react to the suspension bridge along the road to Hatton (R8), but it is not known that this was the suspension bridge she claimed to remember, or that it held significance to Thilakaratne. Twelve (57%) of the 21 recognitions or non-recognitions of people were made in controlled settings.

GNANATHILAKA'S IMPLICIT MEMORIES

In addition to declarative memories, reincarnation cases typically include implicit memories that influence behavior, language, personality, and other unconscious dimensions of activity. Gnanathilaka's case is no different in this regard (Nissanka, 2001, pp. 152–153; Stevenson, 1974, pp. 143–144). Examples are listed in Table 4.

Gnanathilaka struck her parents as unusually mature for her age (B8). She was advanced in her use of lan-

B19	G demonstrated a noticeable fear of doctors and hospitals. Fear of doctors. §μ.	Not noted by N. This expresses a phobia related to the death in the remembered life, a common feature of reincarnation cases studied by IS.
	Emotional Memories	
B20	G expressed a strong attachment to AN as her "Talawakelle mother" that was evident in their first meeting and persisted thereafter. *σ †π §,	Compare Table 3, R19.
B21	G's often spoke of her "fair sister" and her attachment to S in particular was shown when they met on Dec. 18, 1960. *φ †π §,	Compare Table 3, R23.
B22	G's strong affection for her other sisters was evident when they first met on Dec. 18, 1960. §,	Compare Table 3, R21, R24, R25
B23	G had a strong and persisting negative reaction to B until at least 1970. *γ §γ,	T and B had had a very strained relationship, and this response was appropriate to T. Compare Table 3, R28.
B24	G developed an unusually strong bond with DVS. *σ,	DVS had been T's favorite high school teacher.
B25	G often expressed her affection for her "sister" Lora and recognized LA when introduced to her as late as Nov. 1970, when she was 14. * §.	T and LA were very close.

Key to Initials: **AB** = Ariyapala Baddevithana, G's brother. **AN** = B. L. Alice Nona, T's mother. **B** = Buddhadasa, T's brother. **DVS** = D. V. Sumathipala, T's high school teacher. **S** = Salinawathie, T's "fair sister." **G** = Gnanathilaka Baddevithana. **GT**= Gunalatha Thilakaratne, T's sister. **IS** = Ian Stevenson. **KB** = Karunawathie Baddevithana, G's sister. **LA** = Lora Almeida, T's friend. **N**= H. S. S. Nissanka. **P** = Piyadassi Maha Thera. **T** = Turin Thilakaratne.

* Recorded by IS in field notes, per witnesses: **β** B. L. Alice Nona. **γ** = Gnanathilaka Baddevithana. **μ** G's mother and father. **σ** D. V. Sumathipala. **φ** T's "fair sister," Salinawathie.

† Communicated to IS in correspondence, by: **π** Piyadassi Maha Thera.

§ Reported by IS (1966, 1974), per witnesses: **γ** = Gnanathilaka Baddevithana. **μ** G's mother and father. **σ** D. V. Sumathipala.

guage, using longer words than her peers and introducing terms such as *kuliyata gannawa* (B14; see Note 4). When young, Gnanathilaka would sometimes scribble on pieces of paper and give these to her father to mail to her "Talawakelle mother" (Nissanka, 2001, p. 85; B4). Nissanka (2001) interpreted this as a remembrance of interaction with Thilakaratne's father, a postman. Thilakaratne frequently went to the post office to see him and would have been well aware of how postal services worked. Nissanka remarks, "It must be very unusual for a little girl of three or four years, as Gnanathilaka was at the time, living in a remote jungle village where the nearest mailbox was two miles away (to be reached on foot), to indicate such knowledge of, and interest in, the mailing process" (2001, p. 162).

There was a hint of precocious sexuality in connection with the Jataka tale Gnanathilaka related to D. V. Sumathipala (Table 2, S73). Suddenly looking at him, she clenched her fist. Asked why she did this, she said that (in the tale), Pandit Mahaushada (the Boddhisatva) had clenched his fist, and Amara Devi had stretched out her fingers. Sumathipala asked why Pandit Mahaushada had clenched his fist, and Gnanathilaka, with "an adolescent type of embarrassment," explained, "in a small voice," "Pandit Mahaushada asked Amara Devi if she were married, and she replied that she was not" (Nissanka, 2001, pp. 92–93; B9).

Both Thilakaratne and Gnanathilaka were more religious than their peers (B10). Thilakaratne regularly went to the temple to worship. He attended Sunday school and won a prize there, which Gnanathilaka recalled having received (Table 2, S75). Thilakaratne observed sil, a Buddhist practice of self-discipline and meditation (Nissanka, 2001, pp. 72, 73–74, 75–76). He made the pilgrimage to Adam's Peak twice. In addition to a Vesak-card shrine, Buddhadasa knocked over (see Note 14) Thilakaratne carved Buddha statues out of cardboard and wood for veneration. As an older child, Gnanathilaka constructed her own Buddha shrines (B6).

Gnanathilaka, when young, showed great delight in visiting the temple in Talawakelle. She ran in and knelt before its Buddha statue (Nissanka, 2001, p. 60), which she had previously described accurately as being immense and possessing large nails (Nissanka, 2001, p. 84; Table 2, S68). The Jataka tale she related to D. V. Sumathipala was not the only one she recalled. Her sister Karunawathie told Stevenson that upon seeing a Vesak card illustrating a Jataka tale, she had related the entire story.[16] By 1970, Gnanathilaka had adopted vegetarianism for religious reasons and persuaded her mother to do the same (Stevenson, 1974, p. 147).

Thilakaratne was notably effeminate. He preferred the society of girls and would paint his fingernails red. Thilakaratne disliked being male and asked Sumathipala if it were possible to change sex from one life to the next. Gnanathilaka said she was happier as a girl, and although her parents judged her to have some masculine traits (B10), these lessened over time and were not apparent to the headmaster of the school with the kindergarten she began to attend at age 5 (Stevenson, 1974, p. 143).

Gnanathilaka's implicit memories are also reflected in her emotional reactions to Thilakaratne's family members (B20–B23). She behaved toward them very much as Thilakaratne had behaved. She also formed a special bond with D. V. Sumathipala (B24). When he first met Gnanathilaka on December 17, 1960, Sumathipala presented her with some sweets, which she accepted with alacrity—the first time her parents had known her to accept anything from an outsider. She allowed Sumathipala to use her cup, although she did not permit even her parents to do this. As Sumathipala was leaving that day, Gnanathilaka collected a flower from another room and placed it at his feet, a sign of utmost devotion. This was the first time her parents had seen her do this for anyone other than themselves. Sumathipala began to visit Gnanathilaka regularly, and she invited him to attend the opening ceremony of her kindergarten in 1961 (Stevenson, 1961 field notes).

Philias are common carryovers in reincarnation cases and phobias related to the manner of death are common as well. Gnanathilaka, like Thilakaratne, was fond of the color blue (B16) and favored it in her dress. She feared climbing on things from which she might fall (B18). Stevenson (1974, p. 144) reports that she had a fear of doctors and hospitals also (B19).

STEVENSON'S INVESTIGATION

Stevenson began collecting accounts of reincarnation in the late 1950s and published a review of published reports in 1960 (Stevenson, 1960). By this time, he had become aware of a few promising new cases, mostly in Asia, which he resolved to investigate himself. Upon receipt of a grant from the Parapsychology Foundation, he made plans to do this in the summer of 1961 (Matlock, 2024b). Stevenson wanted to research past-life memory claims in India and Burma (now Myanmar), but when he could not obtain a visa for Burma, opted for Ceylon. His decision was influenced by a letter he received from Francis Story, a British expatriate living on the island, who sent him a clipping of Nissanka's article about Gnanathilaka in the *Ceylon Observer, Sunday Edition,* on February 19, 1961.[17]

When apprised of Stevenson's decision to come to Ceylon, Story arranged with Piyadassi Thera to work with him, and the Ven. Piyadassi freed five days from his schedule to do so. However, Stevenson extended his stay in India and arrived in Ceylon later than planned. The Ven. Piyadassi, meanwhile, had accepted other engagements, and he and Stevenson did not meet during the week Stevenson was there. Nissanka tried to call him at one point, but assuming that Nissanka was trying to reach him in his capacity as a journalist, Stevenson did not return the call, a decision he later regretted. The result of these missed opportunities ended up being fortunate, because it meant that Stevenson's investigation was carried out independently of Nissanka's. Although Stevenson had seen Nissanka's one-page *Observer* story, this omitted much of what Nissanka had accomplished. Stevenson did not see translations of Nissanka's *Silumina* articles and was unaware of the extent of Nissanka's investigation until Nissanka sent him the English translation of his book in 1968, two years after the publication of the first edition of *Twenty Cases*.

On August 27, contrary to his usual practice of interviewing the case subject first, Stevenson interviewed Alice Nona and Thilakaratne's sister Salinawathie at their home in Talawakelle. Because this was his first direct acquaintance with the case, Stevenson did not know what questions to ask to confirm or disconfirm Gnanathilaka's memory claims and thus, in his write-up in *Twenty Cases,* only occasionally cites either Alice Nona or Salinawathie for verifications. In Tables 2–4, items recorded in Stevenson's field notes are indicated with an asterisk (*) and those in *Twenty Cases* with a section sign (§). These symbols are followed by lower-case Greek letters identifying the witness or witnesses providing testimony. Alice Nona is noted by beta (β) and Salinawathie ("fair sister") by phi (φ). Although it is not clear that Stevenson employed an interpreter for these interviews, he probably did.

On the morning of August 28, Stevenson interviewed D. V. Sumathipala in Hatton and K. G. Ratnayaka, the headmaster of Gnanathilaka's school, in Hedunuwewa. Both men spoke English, so these interviews did not require interpreters. Sumathipala as an informant for Stevenson is noted by sigma (σ) and Ratnayaka by rho (ρ) in Tables 2–4. Sumathipala accompanied Stevenson to meet Gnanathilaka and her family and acted as an interpreter for them. Gnanathilaka's father and likely her brother Ariyapala also spoke English, so these interviews may have had a bilingual character, but this is not indicated in the field notes or the case report. When informants for Stevenson, Ariyapala is indicated by alpha (α) and Gnanathilaka by gamma (γ). Their parents are collectively designated mu (μ), because their testimony is invariably shown by Stevenson (1966, 1974) to be coinciding.

After his return to Charlottesville at the beginning of September 1960, Stevenson replied to a note the Ven. Piyadassi had left for him with a German monk in Kandy. He asked follow-up questions, principally regarding Gnanathilaka's "recognitions" of Thilakaratne's family members, at which Piyadassi Thera had been present. Piyadassi Thera consequently is listed as a witness for some items in *Twenty Cases*, although Stevenson had no contact with him during his fieldwork, only in correspondence later in 1961 and in 1962. Information Stevenson received

in correspondence is marked with a dagger (†). Piyadassi Thera's testimony is indicated by pi (π). Stevenson also confirmed some items of testimony with Sumathipala in correspondence in 1962 and asked additional questions in 1968. Gnanathilaka's father wrote to Stevenson (in English) in 1962 and 1966, but he contributed no new information about statements Gnanathilaka had made.

Stevenson met with Gnanathilaka and her family again in 1966 and 1970, although he did not return to Alice Nona. In 1970, he also interviewed Gnanathilaka's sister Karunawathie (κ) and Lora Almeida (λ) and introduced Gnanathilaka to Lora. These developments are reported in the second edition of *Twenty Cases* (Stevenson, 1974), although they are not entered in the table of Gnanathilaka's statements and recognitions, which is unchanged from the 1966 edition of the monograph. Gnanathilaka wrote to Stevenson (in English) in 1974 and 1978, giving news about herself and her family (her mother died of cancer in 1974; she was studying Ayurvedic medicine in 1978) but contributing no new memories of Thilakaratne. Stevenson then lost track of Gnanathilaka, and nothing is known about her after 1978.

Stevenson's table of Gnanathilaka's statements and recognitions in *Twenty Cases* (1974, pp. 136–141) includes 17 statements. Two other statements drawn from interviews in 1966 and 1970 are mentioned in the Later Development section of the second edition (Stevenson, 1974, pp. 146–149), for a total of 19 statements documented in *Twenty Cases*. Table 2 indicates more items than this because Stevenson's organization of testimony does not always match ours. Stevenson learned of some memory claims not reported by Nissanka (Table 2, S85–S94), although in three instances (S87–S89), he was unable to verify them independently of the witnesses who reported them. Stevenson collected several other items in interviews and recorded them in his field notes (S97–S105), but did not include them in *Twenty Cases*. We have, however, listed these in Table 2.

Altogether, in his unpublished field notes and correspondence, along with his published report in *Twenty Cases*, Stevenson mentions 27 of Gnanathilaka's memory claims. In addition, with *Twenty Cases*, Stevenson listed 17 of her recognitions (of people known to Thilakaratne) or non-recognitions (of people not known to Thilakaratne). In the second edition of the monograph, he added the recognition of Lora, which he had witnessed (Stevenson, 1974, pp. 148–149). These recognitions are noted in Table 3. Stevenson spent more time than Nissanka on Gnanathilaka's implicit memories, as reflected in Table 4.

Overall, there is good agreement between what Stevenson and Nissanka learned, sometimes from different witnesses. We have mentioned two places where the information they were given diverged—on the question of how Gnanathilaka's memories of Thilakaratne developed and what she said about Thilakaratne's death—but these are the only instances of the kind. The many things Stevenson missed are much more striking. Nissanka (2001, Chap. 17) lists 61 statements, compared to Stevenson's 27 (counting items from his unpublished fieldnotes).[18] The two investigators agree that Gnanathilaka's statements, recognitions, and implicit memories apply unambiguously to Thilakaratne. There is no significant difference in their evaluations of the case, despite the reliance on different witnesses and the varying emphases of the presentations. However, because each investigator presents some details the other does not, their reports must be considered together for a full appreciation of the case.

DISCUSSION AND CONCLUSION

Stevenson (1974, p. 371) considered Gnanathilaka's case one of the richest he had studied, due to its strong behavioral features along with its veridical memory claims. Although not all of Gnanathilaka's statements and behaviors are specific to Thilakaratne, taken together, they clearly point to him and to no one else.

Gnanathilaka's case was immediately controversial in Sri Lanka, where it was interpreted as confirming Buddhist doctrine. Christian and secularist critics were quick to take issue with it and stepped up their attacks when the Sinhalese edition of Nissanka's book came out in 1964. Novelist Martin Wickramasinghe (1965) implied that Gnanathilaka's parents had influenced her, but how he thought they could have fed her information when they knew nothing about Thilakaratne themselves, he did not explain. Christian advocate Lynn de Silva (1966) was of the opinion that Gnanathilaka's memory claims could be accounted for by "social and cultural dynamics," if not "conscious or unconscious fraud" (p. 19). Secularist H. S. D. Senaratne (1970) insinuated fraud as well. Abraham Kovoor (1980) later reproduced Senaratne's treatise verbatim, without properly attributing it, plagiarism that added nothing to the debate.[19]

Although Euro-American skeptics have said nothing about Gnanathilaka's case specifically, they have criticized Stevenson's methods in general, making charges similar to those of the Sri Lankan skeptics. Keith Augustine (2015) provided a comprehensive overview of critiques of Stevenson's methodology (see Nahm, 2023, p. 162, for a summary). To allegations of social construction and parental guidance, Augustine added questions about issues such as memory reliability, selective recall, leading questions, Stevenson's brief periods in the field, and his use of interpreters. These concerns are rendered moot when

there are reliable records of a case subject's statements made before verifications, but not many cases have them. As of 2005, there were 33 cases with prior written records in the University of Virginia files (Keil & Tucker, 2005), 21 of which had been reported in print. Other "before" cases have been reported by other investigators, bringing the total number of published reports to 33. In 31 of these 33 cases, the creators of the "before" records were speakers of the subject's native language (Matlock, 2021a).

So important is the documentation of a subject's memory claims before verifications that several critics have tried to find flaws in "before" cases (Matlock, 2021a). "Could the absence of credible conventional explanations of CORT [cases of the reincarnation type] be an artifact of the fact that they were not investigated deeply enough?" Augustine asks, adding, "This is not some mere possibility; Sudduth (2021) has already *demonstrated* an example of it" in his analysis of the James Leininger case (2022b, p. 379, italics in original). The Leininger case (Tucker, 2013, 2016; Wehrstein, 2017b) is unique among "before" cases in its dated internet downloads and other documentation compiled *after* the case was solved, making it unusually vulnerable to criticism. But unfortunately for Augustine (and Sudduth), Tucker (2022) exposed many of Sudduth's distortions, and Matlock (2022a) showed that he employed a faulty timeline in trying to dispose of the case. Matlock (2022a) presented a different, secure timeline backed by documents sent to the Psi Open Data repository for public inspection, negating Sudduth's arguments.

Sudduth (2021) believed he had uncovered evidence of fraud on the Leiningers' part, a position apparently embraced by Augustine (2022b) in his critique of the BICS contest essays.[20] In a reply to Augustine, Nahm (2022, p. 788) observed that "Sweeping generalizations without foundation do not qualify as scientific arguments," and asked, "Where exactly did the parental coaching, misinterpretation, misreporting, or cheating enter the reports about Ryan's[21] and Gnanatilleka's cases? What is the flaw that renders them untenable?" Augustine's (2022a) response was to assert that Nahm was asking the wrong question. "The scientific community (not me) asks a different question," Augustine insisted.

> Where exactly did Nahm (or anyone else) rule out all non-reincarnationist conventional explanations, including those where dark data are potential factors?
>
> In order for Nahm to meet his burden and show (by the standards of the scientific community) that paranormal information or influence was responsible for certain features of a CORT, he would have to provide (good) positive evidence that reincarnation caused the presence of those features. (Augustine, 2022a, p. 798)

Now, it seems to us that Nissanka's investigation successfully ruled out all possibilities other than "paranormal information or influence" by applying standard practices of scientific inquiry. Nissanka presented written records of Gnanathilaka's statements from his initial correspondent and from K. G. Ratnayaka, the headmaster of Gnanathilaka's school in Hedunuwewa, then recorded in writing or on tape statements about Thilakaratne by Gnanathilaka, before identifying Thilakaratne as the referent of her memories. Nissanka assembled the most comprehensive set of "before" statements in any reincarnation case yet reported.[22] Nissanka also described the development of his investigation in sufficient detail to exclude the realistic possibility that inadvertent leakage of information might explain the case's core features, recruited co-researchers of social standing to his team, and arranged for the meeting of the families to be photographed as well as tape-recorded.[23] Stevenson's reinvestigation of the case confirmed Nissanka's essential findings and reached similar conclusions, providing additional support for it.

The counter-proposals of Augustine and other critics are vague and speculative in comparison to the investigations of Nissanka and Stevenson. As Matlock put it in his review of "before" cases for the *Psi Encyclopedia* (Matlock, 2021a), "Sceptics frequently throw out charges (including investigator fraud) without substantiating them – in striking contrast to the works they are critiquing." Nonetheless, fraud is often the only alternative left for critics,unless they wish to appeal to living-agent psi (Sudduth, 2016). In the absence of any indication of fraud, the onus, we repeat, falls on Augustine and other critics to show that the details of a case have not been recorded correctly or are otherwise deficient. However, something more than this appears to be involved with Augustine's response to Nahm, as quoted above.

Drawing on an inappropriate analogy concerning a physical event, namely the shooting down of an airplane with a surface-to-air missile, Augustine (2022a, p. 798) insists that in order to show that "paranormal information or influence" is responsible for certain features of a reincarnation case, one must not only rule out "all non-reincarnationist conventional explanations," but also provide "(good) positive evidence that reincarnation caused the presence of those features." In other words, researchers need to supply a convincing theory of the reincarnation process in order to render reincarnation a scientifically plausible explanation for putative past-life memory. Although efforts are being made in this direction (Matlock,

2019), we are far from having a widely accepted theory, as Augustine must know. Nahm (2023) stressed that

> it is presently difficult to obtain a deeper understanding of what the afterlife realm might actually be like, or to determine which aspects of personalities might survive in what form, and for how long. ... There might be different variants of survival that coexist, and reincarnation might also only be facultative. It might even be that aspects of personalities split into parts with different degrees of activity or passivity, merge with aspects of other personalities, or even enter non-personal forms of awareness that may recondense into centers of individual awareness.[24] (Nahm, 2023, p. 195)

At present, we do not have a satisfactory explanation for the function of consciousness in living organisms or an account of how exactly consciousness relates to brain activities. In fact, more than 2,500 investigated reincarnation cases, diverse related survival phenomena, other parapsychological phenomena, and other mind-brain-anomalies—on top of philosophical considerations—make it seem likely that consciousness is a complex phenomenon, precluding any simple characterization (Nahm, 2012, 2023).

By remaining silent on these fundamental issues and likening the process of reincarnation to a physical plane crash, Augustine leaves the appropriate level of argumentation and appears intentionally to be calling for something he knows cannot be delivered. He is deliberately asking the impossible. Science is not, nor has it ever been an all-or-nothing enterprise. Scientific understanding proceeds step by step, and what is considered convincing "positive evidence" at any given juncture may be tainted by subjective opinions and agendas within the cultural zeitgeist (just ask Ukrainian and Russian officials about the reasons for the crash of Malaysia Airlines Flight 17 in July 2014). Augustine's portrayal of science comes across as hugely facile. In order to develop a theory of reincarnation, one must first accept the possibility that young children can gain knowledge about previous lives in one way or another, as epitomized by the case of Gnanathilaka. By denying this possibility, Augustine forecloses the developments he demands.

In any event, we can use Nissanka's extensive case study to gauge the force of criticisms of Stevenson's research methodology. Granted that Stevenson was able to interview witnesses soon after Thilakaratne was identified, the close agreement between his informants and Nissanka does not suggest problems with the interviewing style or with the memories of witnesses. A comparison of the percentage of accurate recollections related before and after Gnanathilaka's and Thilakaratne's families met goes against the idea that witnesses are selective in what they relate after they are familiar with the life recalled: The percentage of Gnanathilaka's verifiably correct statements is marginally higher (79% vs. 78.4%) when only those recorded in writing before the identification of Thilakaratne are considered (see Note 10). At least in Gnanathilaka's case, then, the idea that apparent past-life memory may be attributed to human error receives no support. Nor does Stevenson's short time in the field and working through interpreters appear to have impacted his appreciation of the case. The only discernable consequence of Stevenson's methods is that he missed a great deal of detail, but the overlooked material would have strengthened, not weakened his conclusions.

From today's perspective, the pioneering work of Stevenson and his first-generation colleagues (e.g., Mills, Haraldsson, & Keil, 1994) was extremely important in legitimizing research on reincarnation, and a few other early cases are as strong as Gnanathilaka's (Stevenson, 1975). This does not mean that there are no improvements to be made in research methodology or the presentation of findings (Matlock, 2022b). We can help counter a "will to disbelieve" in the evidence by enlisting more local investigators conversant with the languages and cultures of the cases they study and by reaching cases early enough in their development for the subject's memory claims to be recorded (either in writing or with readily available modern means of documentation) before efforts at verification begin. Both are features of recent investigations (Matlock, 2024a; Ohkado, 2023; Rawat & Rivas, 2021, pp. 88–91). At the same time, it would be wrong to dismiss the work of Stevenson and his colleagues as inherently unreliable. The more cases that are studied, the more their basic patterns are confirmed (Matlock, 2017, 2019). Numerous cases have been reported from Sri Lanka alone since Gnanathilaka Baddevithana and two others included by Stevenson (1966, 1974) in *Twenty Cases* (e.g., Haraldsson, 1991, 2000a, 2000b; Stevenson, 1977; Stevenson & Samararatne, 1988; see Nahm, 2023, p. 143, for a list of six Sri Lankan "before" cases), and as demonstrated by one of us (Weerasekera & de Silva, 2023), fine cases continue to be reported from there.

IMPLICATIONS AND APPLICATIONS

We appear to be well on the way to establishing that human consciousness is not an effluence of the brain, or even necessarily dependent on and confined to the brain (e.g., Kelly & Marshall, 2021; Matlock, 2016, 2019; Nahm,

2012). This is a finding of enormous consequence, especially for biology and philosophy (Nahm, 2019; Nahm & Hassler, 2011). Two of us have argued elsewhere (Matlock, 2019; Nahm, 2023) that reincarnation has an advantage in explaining cases of veridical past-life memory over other possibilities, including living-agent psi (Sudduth, 2016). Although many details of a presumed reincarnation process and past-life memory remain obscure and continue to be subject to speculation, future research very well may provide improved insights into these matters, illuminating the role of reincarnation in the human condition. As more investigators enter this research domain, we can expect faster progress to be made in developing theory and testing hypotheses that address critics' concerns.

AUTHOR CONTRIBUTIONS

James Matlock (ORCID: 0000-0003-1280-2476): Project conceptualization, writing – first and final drafts. Akila Weerasekera (ORCID: 0000-0003-0446-7604). Comments on paper draft and substantive contributions to revision. Michael Nahm (ORCID: 0000-0003-1930-9692): Comments on paper draft and substantive contributions to revision.

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ENDNOTES

1. Both Gnanathilaka and Baddevithana appear in the literature with variant spellings. Stevenson used "Gnanatilleka Baddewithana" in *Twenty Cases* (1966, 1974), and this consequently is the spelling by which the case is best known (Nahm, 2023; Wehrstein, 2017a), but we have chosen to employ Nissanka's "Gnanathilaka Baddevithana" in the present article. Other examples of "before" cases studied by two investigators are those Stevenson (1975) called Jagdish Chandra and Bishen Chand Kapoor, which were studied and reported initially by K. K. N. Sahay (1927) under the names Jagdish Candra and Vishwa Nath.
2. Sinhalese names generally are composed of three parts: a paternal ancestral name; a given name or names; and a modern surname. Here, Gallege is the ancestral name, and Turin Thilakaratne is the given name. Both Nissanka (2001) and Stevenson (1966, 1974) refer to him as Thilakaratne, and we follow their practice. Gnanathilaka, whose full name is Gnanathilaka Kumudini Baddevithana, went by the first part of her name. Although it serves as a surname, Baddevithana is actually her ancestral name, and Gnanathilaka Kumudini is her given name.
3. The visitors from Hedunuwewa had not known or heard about Thilakaratne's family when they lived in Talawakelle.
4. The term *kuliyata gannawa* actually means "hiring," but was used to refer to purchasing firewood in Thilakaratne's family, his mother told Nissanka in a recorded interview (Nissanka, 2001, p. 78).
5. More formally, D. Ariyapala Baddevithana. Nissanka (2001) calls Ariyapala by his ancestral name Baddevithana, but in order to avoid confusion with his father, also D. A. Baddevithana, one of Stevenson's informants and correspondents, we use his given name here.
6. See https://worldcat.org/identities/lccn-n84103072.
7. This name does not follow the format of other Sinhalese names (see Note 2). Piyadassi was a name bestowed when he became a monk. Maha and Thera are not names, but honorifics, meaning "esteemed elder." Alternatively, monks may be addressed as "Ven.," for "Venerable," and we employ "Piyadassi Thera" and "the Ven. Piyadassi" interchangeably.
8. Because the headmaster heard these statements from Gnanathilaka's sister, they are, at best, second-hand, and unless Gnanathilaka's sister was a witness to them, they are third-hand. Nonetheless, this letter was written before the case was solved and thus represents important documentation of Gnanathilaka's memory claims before that point. As it turned out, all the details related proved correct for Thilakaratne, so even if third-hand, the statements were not distorted.
9. With exception of those credited to Stevenson, the statements are abstracted from the transcriptions of interviews presented by Nissanka (2001).
10. A more conservative evaluation would take into account only the 57 statements recorded in writing before Thilakaratne was identified and his family interviewed on November 19, 1960. Of these, 8 (14%) could not be verified, 45 (79%) were correct, 2 (S42 and S51) (3.5%) were partially correct or confused, and 2 (S46 and S50) (3.5%) were incorrect.-
11. Gnanathilaka had observed on her earlier visit with Ariyapala to Talawakelle that "her" mother's house was no longer standing (Stevenson, 1961 field notes).
12. Alice Nona's full name is Beliatte Liyanage Alice Nona. Beliatte and Liyanage are ancestral names; Alice and Nona are given names.
13. Nissanka avoids using the name of "fair sister" at her

request, but it is supplied by Stevenson (1966, 1974). Stevenson interviewed Salinawathie along with her mother in 1961, and Salinawathie apparently raised no objection to his use of her name.

14. Buddhadasa, who was two or three years older than Thilakaratne, teased him mercilessly about his devout religious observance. He once knocked over a shrine that Thilakaratne had constructed of Vesak cards (featuring religious images and texts) and used to venerate the Buddha. Stevenson (1966, 1974) credits Gnanathilaka with recalling this episode (Table 2, S94), which is described in detail by Nissanka (1961).

15. Oddly, in *Twenty Cases,* Stevenson (1974, pp. 148–149), expresses puzzlement about this recognition because, he says, Thilakaratne did not know Lora well, but from his 1970 field notes, it is clear that he realized that they had been very close. Nissanka's (2001) account makes it clear how close they were.

16. It is not clear whether or not this is the story of Pandit Mahaushada and Amara Devi; most likely it is a different Jataka tale from the series of over 500.

17. All correspondence referenced is included in the "Gnanatilleka Baddewithana" case file in the Division of Perceptual Studies (DOPS), Department of Psychiatry and Neurobehavioral Sciences, University of Virginia School of Medicine.

18. Our total of 104 statements is due to our breaking some of Nissanka's (2001) list of statements into two or more elements, as well those and Stevenson (1974) recorded, in his table from 1966 or in later interviews described in his fieldnotes.

19. These early critiques were made in response to the original Sinhalese edition of the book (Nissanka, 1964) rather than the later English translation (Nissanka, 2001), prompting the question of the difference between the versions. Weerasekera read the Sinhalese edition and compared it to the English. The body of the text is complete and unchanged, but the Sinhalese edition includes an introduction from a religion scholar that emphasizes an interpretation of the case within the Buddhist framework. In the English edition, that introduction is replaced by a presentation Nissanka gave to an international seminar on rebirth research held University of Peradeniya (Sri Lanka) in 1999 (Senanayake, 2001), shifting the emphasis toward a research perspective.

20. The BICS contest winners were announced in 2021 and posted online, where they are still available (https://www.bigelowinstitute.org/), although in 2023, they were published in a series of five volumes. The exchange between Augustine (2022a, 2022b) and Nahm (2022) refers to Nahm (2023).

21. Ryan refers to Ryan Hammons (Matlock, 2021b; Tucker, 2013).

22. A close runner-up is the Ryan Hammons case (first reported by Tucker, 2013 and summarized by Matlock, 2021b), in which Ryan's mother recorded 230 statements, although it has not been possible to verify the majority as applying to the previous life recalled.

23. Nahm (2023, p. 142) included two of these photographs in his BICS essay. They are taken from the 2001 edition of Nissanka's book in English translation.

24. This is not the place to go deeply into these issues, but we deem it probable that reincarnation began when life began, which would mean that reincarnation is a feature of all life. Consistent with this view, Reber (2019) traces the origins of consciousness back to the primordial ooze from which unicellular organisms sprang. A major implication is that the postmortem survival and reincarnation of consciousness may be as varied as are the species of life consciousness animates. The "Lamarckian" dimension of reincarnation cases (in the sense of a non-physical form of "inheritance of acquired characteristics" in the course of evolution) has been highlighted by Nahm (2019; Nahm & Hassler, 2011). Clearly, we are thinking of consciousness much more broadly than conscious awareness, including subconscious processing, and it is at the subconscious level that we imagine there may be some division or blending of consciousness streams. Nonetheless, as Matlock has observed (2019, pp. 264-270; Matlock, 2021c, in reply to Schwenke, 2021; and Matlock, 2023, in reply to Greyson, 2021), it is noteworthy that there are no reported cases of divided or multiple reincarnation with carryovers of past-life memory, suggesting that personal identity has a more complex relationship to consciousness than is currently appreciated.

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Where is "Out There"?

ESSAY

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HIGHLIGHTS

'Psychic' information may exist and operate in a non-physical domain that is fully integrated with the physical universe of matter, energy, and spacetime.

ABSTRACT

Experimental evidence and verified individual accounts show that visual and other types of information from distant minds and environments can enter the conscious as well as the unconscious mind of an individual and can measurably affect brain and body function. The information appears to pass through every physical obstacle and does not degrade in quality with increasing distance in the path between source and receiver. No signal can be detected with current physical instrumentation. What is the medium in which this "psi-encoded information" appears to propagate? What is its format? What is its lifetime? Selected examples of apparent psi information propagation from differing types of sources are presented and analyzed. In order to account for the behavior observed in the examples, a worldview developed in the Advaitic thought tradition is considered, in which a non-physical domain interacts with the physical domain of matter-energy and spacetime. A main currency of the non-physical domain is postulated to be psi-encoded information. It is concluded that this information does not propagate through space. Other characteristics of the non-physical domain and its content are inferred from the examples. They provide a framework in which the nature of psi-encoded information and its processing may be further explored.

KEYWORDS

Clairvoyance Information, consciousness, non-physical, telepathy, psychometry, thoughtforms, , universal mind,

INTRODUCTION

When I was in graduate school studying experimental psychology, I was invited for dinner to a woman's house whom I had just met. We were in her kitchen. Early in our conversation, she mentioned to me that she was psychic. Our conversation wandered, and eventually, there was a lull. She was stirring vegetables in a frying pan with her back to me. In the silence, I decided to try an experiment to see if she really was psychic, and without her knowledge, I silently visualized a bright white '6' against a black background. To my amazement, she whirled around to face me and said, "Did you just put a 'six' out there?" I said that was exactly what I did! But I thought, what did she mean by "out there?" Where is "out there?" And I assumed that the probability of my impromptu "experimental result" being "pure coincidence" was essentially zero.

The event mentioned above describes an instance of

telepathy – communication of thought information between two individuals using biology alone. Experimental studies have shown that the quality of telepathy is not affected by the distance between a sender and receiver, and physical obstructions in the path between them, such as electrical shielding or mountains, do not degrade telepathic quality (Radin, 2006; Targ, 2012; Utts, 2018). It has not yet been determined whether the speed of telepathic information sharing is limited to the speed of light or if it is possibly instantaneous, as is theorized to be the case with information sharing in quantum entanglement (Caltech Science Exchange, 2022). No known instrumentation is able to detect the presence of the telepathic "signal" during its apparent transit from one point in space to another. But the fact of telepathy's existence is undeniable. It is substantiated by a growing body of experiments and meta-analyses with statistically significant results (Cardeña, 2018; Mossbridge et al., 2012; Utts, 2018). It is substantiated by a growing number of instances of spontaneous telepathic events that occur and are reported in every culture (Society for Psychical Research, 2023). Telepathically shared information can be classed as a form of "psi-encoded information." This type of information is definitely "out there," even if only for brief periods during telepathy, but where exactly is "out there?"

In order to investigate this question, selected examples in which psi-encoded information transfer has been observed will be presented as a starting point. Some readers will not believe the documented examples below. Others, especially those who have personally had psi experiences, will not doubt their veracity.

Our senses tell us that we cannot see things that occur farther away than the eye can see. But data shows that clairvoyants have been able to, for example, help police solve crimes by "seeing" a specific distant scene where a crime took place, or the scene in which a person of interest may be found (Pollack, 1964; Wehrstein, 2019). Even if this kind of event happens rarely, when "pure coincidence" and fraud are ruled out, it points to the need to revise our current model of reality.

One fact about research into psi phenomena must be understood: currently, there is no foolproof paradigm to test for psi that is easily replicable. A growing number of published papers show failed replications of experimental data. Walach et al. (2021) cite many instances of failed replications of different types of psi phenomena, including notable failures like that of Radin's double slit paradigm (Walleczek, J., & von Stillfried, N., 2019) and the PEAR paradigm (Jahn et al., 2000). These experiments address interactions of human consciousness with physical devices and processes.

At the same time, the number of confirmed spontaneous cases of the phenomena that occur worldwide (Society for Psychical Research, 2023) continues to grow, as well as the number of experiments with various psi phenomena which find statistically significant results. What might be happening can be illustrated by historical example. In the history of science, new theories often face resistance until sufficient evidence accumulates to support them. The existence of disease-causing germs was initially met with skepticism by many in the scientific community. Even after Semmelweis discovered that the incidence of postpartum infections could be drastically reduced by handwashing with chlorinated lime solutions, his ideas were largely ignored, ridiculed, and rejected. However, the accumulation of evidence from experiments and observations by Pasteur, Koch, and others eventually led to the wide acceptance of germ theory. This paradigm shift revolutionized the field of medicine. The transition from skepticism to acceptance of the germ theory of disease demonstrates the nature of scientific inquiry, where evidence and open-mindedness drive progress and lead to the revision of outdated or incorrect models of understanding the world.

Psi phenomena certainly deserve, at this point, to be called "elusive" in laboratory settings. Over time, innovative methodologies and technologies help shrink this elusiveness. For example, experiments like that of Achterberg et al. (2005) (detailed in Example 4 below) have produced strong effects. Their methodology involved working with practiced distant healers and fMRI technology to observe recipients (Rebman et al., 1995). They also used a distant healing methodology in which changes in recipients' blood volume pulse (BVP) and other physiological variables were monitored. They obtained combined BVP results of $p = 0.00002$.

It requires only one solid, well-documented instance of a phenomenon to indicate that the phenomenon exists. Enough of such instances have occurred, documented in the references of this paper alone, to conclude that biological communication that transcends distance is real. But this phenomenon is not explainable with today's science, and not reliably replicable, with the result that some choose to believe it is not real.

PSI-ENCODED INFORMATION TRANSFER EXAMPLES

Telesomatic Phenomena

Consider the case of the twins, Marta and Silvia:

> Marta had burned her hand on a hot clothes iron. As a large red blister was forming, an identical one developed on the hand of Silvia, who was away visiting her grandparents at the time.

> Silvia was taken to the doctor, unaware of what had happened to her sister Marta. When the two little girls were united, their parents saw that the blisters were the same size and on the same part of the hand (Dossey, 2016, p. 196).

More cases of this type have been documented (see Dossey, 2016; Playfair, 2002). This kind of telepathic connection, where physical symptoms such as burns and bruises are shared, is termed a *telesomatic event*.

Psychometry

Psychometry is a form of clairvoyant phenomena in which the clairvoyant becomes consciously aware of the desired information by means of the connecting link of material objects, such as a sealed envelope with written material inside, a piece of hair, article of clothing etc., which has had previous associations with the thing, person or scene regarding which clairvoyant information is desired. The desired information can be accessed by a clairvoyant in the following way:

> Take strange objects, and, sitting in a quiet room with the object held to your forehead, shut out all thoughts of the outside world, and forget all personal affairs. In a short time, if the conditions are all right, you will begin to have flashes of scenes connected with the history of the object (Panchadasi, 2011, p. 63).

Psychometry Case Study 1 – Ossowiecki's Remarks When Given a Sealed Envelope

(Quoted text and figures in the three case studies below are reproduced from Barrington et al., 2005).

Stefan Ossowiecki ("ah soviet zki") (1877 – 1944) was a modest Polish engineer and industrialist who demonstrated exceptional clairvoyant ability from an early age. He was happy to participate in a series of controlled observations and experiments conducted in Warsaw and Paris. These are quoted from Barrington et. al. (2005), a book which documents his many clairvoyant abilities. The transcribed narrative below is from a public experiment conducted on October 29, 1925, in Warsaw:

> A letter from Spain... I see a yellow-white house, two story, entrance through a small garden, and on the right a lot of greenery, stone stairs around, entrance on the right hand side. The house of a man of modest means. Then a moment in the study, when he is writing this letter, not a letter. A small dark-haired man, an open forehead, very lively, dressed in black, six o'clock, a hall next door. His wife passes, he is upset by a terrible tragedy, he has lived through the loss of a child, a girl. His wife expects another. A boy has been born already, they wanted a girl. Masses of books around, leather seats, not new. When he was writing this letter, a man entered, they talked. Next to the study a narrow vestibule, from there a tiny hall, glass verandah towards the garden, lots of flowers and greenery.
>
> A strange child next to him. The wife is 32, dark hair, pointed nose, dress in black, something black hanging from the neck – these are dice.
>
> The master, the doctor, he has scissors on the table, he is cutting up paper, holding papers. It is not a letter, only something written down. A man of science, studies a lot, has a number of degrees, has encyclopedic knowledge.
>
> He has approached the table and he begins to write, he is bent. He is cutting bits of green paper, the seal ready on the table. I see what and how he draws.
>
> He wanted to draw a circle within a square, then a face, and he finished with a point" (Ossowiecki draws. [See Figure 1]) He gets up, lights a cigarette and comes back to the table. He picks up a pencil or a pen and writes a question, draws an enormous 'T.' Here he writes something, two questions, questions about the paranormal. He asks me if I believe in telepathy. "At the top it is written in French. There is someone else in the room, an older man. The question: 'Croyez-vous à la télépathie?' The second – do I believe in life after death? The apartment has four, six rooms."
>
> When the envelope was cut open, inside was found a sheet of white paper. folded in two, covered by three rectangular sheets, two of which were green. The drawings and the sentences written on the white sheet correspond in the smallest detail to the drawing by Ossowiecki.
>
> The documents were sent to Martinez, who wrote back to the Metapsychical Institute, and to Ossowiecki, who cites from the letter to himself:
>
> Everything that you saw, apart from a leather armchair, is totally accurate.
> (Barrington et al., 2005, p. 93)

Psychometry Case Study 2 – Ossowiecki's Remarks When Given a Sealed Box

This is an account of an experiment carried out by

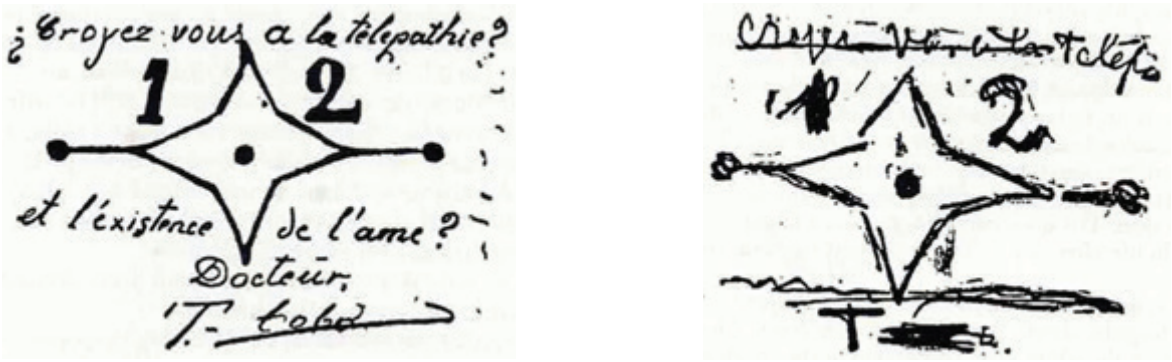

Figure 1. Left: Drawing in a sealed opaque envelope; Right: Drawn by Ossowiecki. From: Barrington et al., 2005, pg. 94. NOTE: The information Ossowiecki accessed was likely in Martenez's memory. If so, this could have been a form of telepathy if all the details were in Martenez's memory. Otherwise, Ossowiecki was clairvoyantly seeing an event that occurred in the past.

the Polish Psychophysical Society. The experiment was conducted by Prosper Szmurlo, editor of Zagadnienia Metapsychiczne, on January 20, 1935. M. Denoise Jonky assembled the package and gave it to Szmurlo, who, after trying a few times unsuccessfully to arrange an experiment with Ossowiecki**,** put it in his desk drawer, where it stood untouched for years and forgotten. When Szmurlo heard that Mr. Jonky had died, Szmurlo remembered the box and arranged to meet with Ossowiecki. At that time, the contents of the package were unknown to anyone living. The package was 7 cm x 4.2 cm x 4 cm, of cylindrical shape, covered with cloth and cross-tied with cord sealed with wax at the ends and crossing points, weighing 59.5 grams.

> The package has been sent to someone who looked very much like M. Gravier. It was in his apartment, the package stayed there, I see it down there in the bookcase.
>
> There are some pieces of something in there, several things ... two ... three... brown...like lime stones. There are also some metal clips. There is a connection with volcanic mineral. It was once in the hands of a girl. She was to give them to someone ... it's something like a family souvenir.
>
> There is something here that pulls me away to other worlds ... towards another planet. Now I am seeing a huge planet, immense, a distant world quite unconnected with ours.
>
> It is rushing headlong through outer space. It collides with another body. There is a catastrophic cosmic event.
>
> Something breaks away, breaks up, shatters into small pieces. They rush on, they fall to earth in various places. Yes, yes, they are pieces of meteorite. [...] (Barrington et al., pp 82-83.)

When the package was opened, it contained, among other articles correctly described elsewhere in the narrative, 3 pieces of light brown stone analyzed to be limestone, and it contained paper wrapped around meteorites, labelled AEROLITH.

Precognition - Ossowiecki's Remarks Regarding Specific Future Events

This case occurred in 1927. It was reported by Ossowiecki and confirmed by Antoni Jaroszewicz. A tenor singer, D. Smirnov, asked Ossowiecki what would happen to him in the near future:

> After concentrating for a few minutes, being in a very good mood, I easily transported myself into his world and told him, "You will divorce your wife. You will be invited for a number of concerts to America, where you will meet a woman, a Russian, with whom you will fall in love and whom you will marry shortly after. Her name will be Lydia."
>
> Smirnov denied this vigorously, saying that this was impossible since he had no intention of going to America and getting married again. Two years later, in 1929, he visited Warsaw again. ... Here is a short report by Mr. [Antoni] Jaroszewicz:
>
> "I confirm that everything Mr. Ossowiecki has written about Smirnov and the prophecy according to which the singer would divorce his wife and marry again, this time a Russian called Lydia whom he would meet in America, came true exactly." (Barrington et al., p. 120)

Distant Intentionality

Achterberg et al. (2005) published an experiment,

entitled 'Evidence for Correlations Between Distant Intentionality and Brain Function in Recipients: A Functional Magnetic Resonance Imaging Analysis', in the *Journal of Alternative and Complementary Medicine* in 2005. In this experiment, eleven healers who expressed an ability to connect or heal at a distance - the phenomenon of distant intentionality (DI) - were recruited from the island of Hawaii. Each healer selected a person with whom they felt a special connection as a recipient for DI. Each recipient was placed in an MRI scanner that was physically isolated from the healer. At random 2-minute periods unknown to recipients, healers sent forms of DI that related to their own healing practices. Very highly significant differences (p = 0.000127) in brain activity were found between periods of healing and no healing. "This study ... demonstrated that distant intentionality (DI), defined as sending thoughts at a distance, is correlated with an activation of certain brain functions in the recipients" (Achterberg et al., 2005, p. 965).

Thought Forms

Another psi phenomenon deals with what has been referred to as a *"thought form"* (alternate spellings: *"thoughtform"*, *"thought-form"*). This term has been attributed to a broad variety of phenomena (see Besant & Leadbeater, 2016; Mayer, 2007; McCoy, 2011; Leadbeater, 1968; Parker & Puhle, 2018). A truncated definition provided by Parker & Puhle will be adopted to describe the term here:

> The term 'thoughtform' describes the concept of an entity created directly and exclusively by the mind, whether unconsciously or consciously, which appears to develop a life of its own, as an independent agent in the real world [...] (Parker & Puhle, 2018, p. 1).

Harold McCoy, dowser, healer, and clairvoyant who successfully located a stolen harp over 2000 miles away after receiving a request over the telephone from a person he had never met (Mayer, 2007), provides an excellent example for understanding what is meant by *thought form* in the current discussion. McCoy explains how he used one to get rid of pests:

> I got into a meditative state...When I was visualizing, I saw a bubble come out of my solar plexus – just energy, a "thought form." It got larger and larger, and then I was inside it. I was in the geometric center of this bubble. It looked like a "dome" because half of it was underneath the ground, so it could take care of other things. So, in my mind's eye, I could see this bubble getting bigger and bigger, so that it went out to the edge of my yard and my garden.
>
> I was programming the following to happen: I was saying, "Ticks and chiggers will be very uncomfortable in the center of this bubble, and they'll all want to get out of it. Those that are out will not come into it, because it is filled with energy that is detrimental to ticks and chiggers." I was visualizing this bubble and these thought forms. You can program things to do what you want. I programmed this bubble so that ticks and chiggers would be uncomfortable in it and move out of the yard. In a few days I realized I had no more ticks or chiggers on me. (McCoy, 2011, p.37)

A *thought form* essentially is the creation of a thought with intention which can be associated with a specific location or material in space and which persists. The intention in a thought form can influence the behavior of living organisms.

McCoy mentioned his use of another thought form which he put into operation to ensure that the person who robbed the harp would treat it well (see Mayer, 2007, p. 264).

Linked Physiological Responses

Radin (2004) conducted an experiment in which one subject (the receiver, "R") relaxed in a room shielded from radio waves facing a video camera. In another room, a friend (the sender, "S") watched a video screen at random times which, after 5-25 seconds of a blank screen, would show the image of the receiver in the remote room for 15 seconds. Both subjects were connected to EEG data recorders. EEG data averaged over 622 trials from 13 pairs of subjects shows that both the senders' and the receivers' brain wave activity showed a peak when the sender saw the video of the receiver transition to on or off (Figure 2a). The data also showed that the stronger the EEG peak variance in the sender, the stronger the EEG peak variance in the receiver (Figure 2b). Standish et al. (2004) have replicated Radin's basic finding and comment:

> Since 1963 seven independent laboratories in the United States, Mexico, England, and Germany have published data showing statistically significant correlated EEG signals between two humans who are separated up to 10 meters and in sensory isolation from one another. Since 1963, each laboratory has used different psychophys-

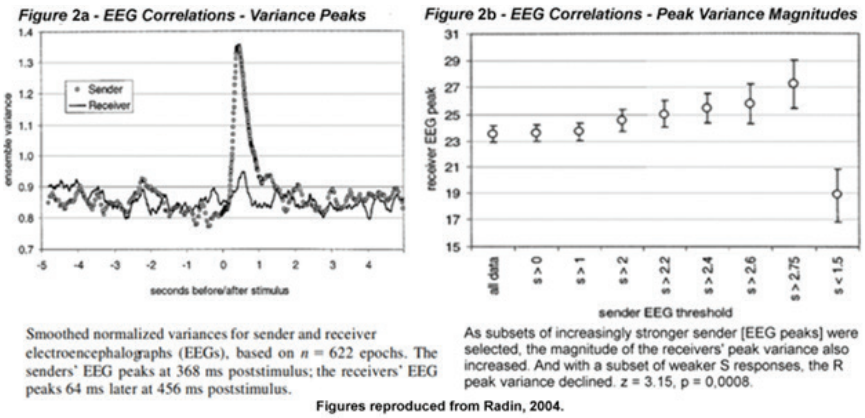

Figure 2. (Figures reproduced from Radin, 2004)

ical, electrophysiologic, and statistical methods that began in 1963.

The correlation between brain signals that appear to occur between human brains at a distance seems to have been established after 40 years of research. Research must now proceed with studying its physical and biological mechanism, its generalizability to varying populations and relationships, and its clinical application (Standish et al., 2004, p. 313; cf. Richards et al., 2005 and Radin, 2017).

Intelligent Need Fulfillment

There is a form of psi phenomena in which the psi-encoded data-handling functionality appears to be complex and capable of influencing high-level "willful" behavior of humans in specific ways. Consider the following account by an "utterly astonished" hitchhiker:

> My grandmother lived about four miles from the little church my parents usually attended. I was to go to the service there on Easter Day. Afterwards, I decided to walk the four miles back rather than wait forty minutes for the bus because I wanted to test out my solution to a familiar school mathematics question. I had worked out exactly how fast I would have to walk so the bus wouldn't catch me up. If my calculations were wrong, I would admit defeat by taking the bus for the rest of the journey. I was absolutely determined to walk those four miles at just the right pace, to prove that I'd worked it all out correctly.
>
> However, after about twenty minutes, I was shocked to find that – in what I can only call a reflex action, as though my right arm had suddenly taken on a life of its own – I put out my right hand to thumb down one particular car. I was utterly astonished to watch myself defeating my own purpose. To my relief, the car drove past – my race against the bus was, I thought, not to be spoilt. But a moment later, the car suddenly stopped. Since, regrettably, I had thumbed it down, I felt I had to accept the offered lift.
>
> I got into the front beside the chauffeur. I imagined he had first driven by and chosen to ignore me, but had then been told to stop by the lady in back. So I turned to her, and simply said, "Thank you."
>
> She immediately asked, "Were you at Winchester?" I had no idea what prompted the question, but I replied that I was currently at that school.
>
> She replied, "If you are there now, you won't know the person I am thinking of. He was called Roddie Casement and he went to Winchester, but that must have been a long time ago now." When I told her that she was actually speaking of *my father*, the lady was delighted, and immediately asked, "Is his mother still alive?" I informed her that she was, and that we would soon be driving past her door, two miles down the road we were on. The lady then told me a story almost exactly parallel to the one I had been hearing from my grandmother all week. This lady had been trying to trace her very close friend – my grandmother – ever since they had lost touch during the war. She was, in fact, the friend my grandmother had been seeking for ten years. They spent that day together – probably their last chance, as my grandmother died soon thereafter. (Account by Patrick Casement in Mayer, 2007, pp. 21-22)

This form of psi suggests that areas of the human

brain involved with the control of muscular activity are connected to an information handling system that has knowledge of and operates on information "out there". Apparently, this information handling system for psi-encoded information can directly influence the "willful" actions of biological entities. (Other examples of this type of behavior are given in Mayer's book.) In this case, "as though my right arm had suddenly taken on a life of its own – I put out my right hand to thumb down one particular car". An arm and its hand "had suddenly taken on a life of its own". The action felt like a "reflex action" – a muscular movement that does not involve the "free will" of the individual.

The specific processing of psi-encoded information that occurred appears to have had the ability to *fulfill specific needs by "intelligently" controlling and coordinating the behavior of one or more individuals*. This type of psi phenomenon does not have a particular name. Its existence forces a re-examination of the true nature of free will – which apparently in special situations can be *temporarily overridden,* and it points to a form of information processing of psi-encoded information "out there" in which an apparent *goal-oriented intelligence* is active, rather than being a simple "system" that handles psi-encoded information – simply a mechanical type of information storage and retrieval system. The general type of goal-oriented "intelligent" processing in the above example may be classed *as need fulfillment*, and its limitations are unknown. Its ability may extend to modifying DNA to fulfill needs in evolutionary development.

The psi phenomenon described in this case may be considered an extreme example of the typically synchronistic behavior of psi. Discussed in von Lucadou et al. (2007), psi tends to occur in the framework of a "meaningful coincidence". In their theory, psi phenomena operate in a framework where causality of the kind physicists know and apply successfully is not applicable. The result is that from the perspective of physical spacetime, the "synchronistic behavior" of psi phenomena might well appear random and not be easily replicable.

INFERENCES FROM THE EXAMPLES

Listed below are inferences which can be drawn from the Examples:

(1) Information "out there" can be sourced from the minds of beings with consciousness (telepathy, distant intention, etc.).
(2) Information "out there" is capable of affecting both the body as well as the mind of a recipient (telesomatic phenomena, distant intention, linked physiological responses).
(3) Information "out there" can be sourced simply from information at specific locations in space ("geolocated information") specifying configurations of purely inanimate matter (clairvoyance, psychometry).
(4) Geolocated information from the past, present, and (predicted) future is "out there" (clairvoyance, psychometry, precognition).
(5) Psi-encoded information can, with intention, be put "out there" in specific geographic locations with the ability to affect the actions of living beings in those locations for an extended period of time (thought forms).
(6) Psi-encoded information "out there" can be processed in complex ways to bring an individual with a specific need together with a specific individual who can fulfill that need – a phenomenon that could be called "intelligent need fulfillment" or "synchronistic behavior".

A NON-PHYSICAL DOMAIN

Given the examples above, a number of issues arise: (1) There must be a way in which information "out there" is stored. (2) There must be a way in which the information appears to move across distance in physical space. (3) The information would be expected to have some kind of *format*. How and where is it stored? What is its format? How does it propagate? To answer these questions, an appropriate concept of the structure of reality is needed.

Western science currently embraces *physicalism.* It claims that everything in existence, including the mind and consciousness, can be explained in physical terms. However, no known instrumentation can detect any energy supposedly used to propagate the information transferred from one point to another in the above examples, and the source and mechanism of consciousness are unexplained. The Advaitic worldview expressed in Maharaj (1981) regards reality in terms of *three* aspects instead of a single "physical" aspect. This worldview postulates three *Akashs*, translated as *expanses*: (1) the *expanse of matter-energy*, "the physical space with all that can be contacted through the senses," (Maharaj, 1981, p. 191) This is the familiar physical domain acknowledged and explained by Western science; (2) the *expanse of consciousness*, "the mental space of time, perception and cognition," (Maharaj, 1981, p. 191) also referred to as "universal mind" (Maharaj, 1981, p. 227); (3) the *expanse of the source*. The *expanse of the source* can be understood here as a source of fundamental "*pure awareness energy*" which is required for consciousness to occur. These three

Akashs are fully interconnected. They express a more multifaceted nature of reality than is currently believed to be the case in Western science.

In the Advaitic worldview, the *expanse of consciousness/universal mind* is not physical in nature, and it is claimed to be the abode of the *mind* and *consciousness*. The non-physical domain, then, is the domain in which the *content of consciousness* is experienced. This basic core of three aspects was expanded into a more Western-style model, called "TAM" for "Three-Aspect Monism", shown in Figure 3 (see Graboi, 2023 for a detailed description of the "TAM" model).

Once the existence of a non-physical domain of reality intimately connected with the physical domain is accepted, the question of "where is 'out there'?" becomes much easier to answer: "out there" is in the non-physical domain. This answer is based on the thought system expressed in Advaita Vedanta (see Maharaj, 1981), and referred to here as the *expanse of consciousness/universal mind*, or "EC" for short. Throughout history, the concept of a realm that is not physical in nature has appeared in various forms across different cultures and belief systems. A number of philosophers, including Hegel and Jung, and movements, including the New Thought and Theosophy movements, have advanced the idea of a "universal mind," or a "collective consciousness," as being a part of our reality.

Western Physicist David Bohm theorized the existence of two "orders" of reality, the "Explicate Order," which is the familiar domain of the physical, and the "Implicate Order," a non-physical domain composed of a form of information he and his colleague Basil Hiley called *active information*. Bohm theorized the Implicate Order as "informing" the Explicate Order, meaning that the non-Newtonian active information in the Implicate Order guides the composition and behavior of the matter-energy in the physical universe – an information-centric universe. The theory proposes an oscillation in which the Implicate Order "unfolds" into the Explicate Order, which then "enfolds" back into the Implicate Order, and so on. Bohm termed this dynamic process *holomovement*. *Information*, in Bohm's process of "unfolding," is not just a set of data points or bits but a participant in the fundamental processes and relationships that constitute reality.

Physicist John Wheeler (1989) conceptualized a similar information-centric universe in his famous catchphrase "It from bit" — "it" refers to all the matter-energy of the universe, and "bit" means *information*.

The three-aspect monism model in Figure 3 has a third domain with an admittedly metaphysical character. It is the source of "pure awareness" – a fundamental, irreducible metaphysical primitive – without which consciousness and all phenomena in which consciousness is involved would not be possible. Any complete model for reality must concede there are foundational metaphysical principles on which it rests. In physical science, these are the foundational metaphysical principles which make physical phenomena possible – for example, that which

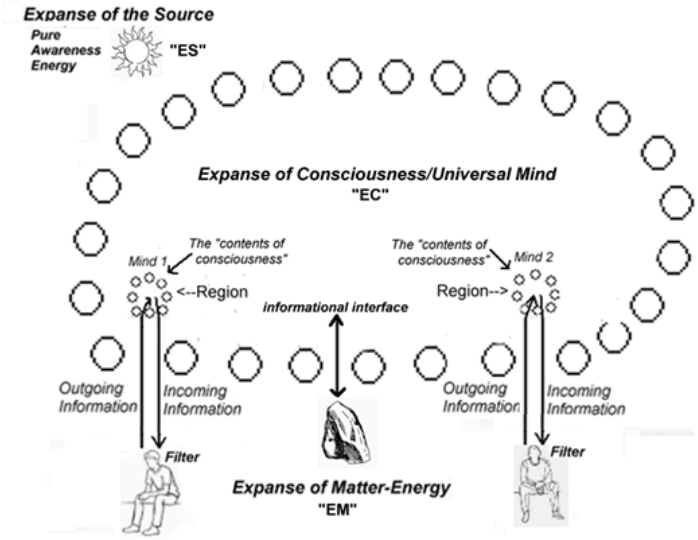

Figure 3. Basic Three Aspect Monism (TAM) Model. All the information in the *expanse of consciousness/universal mind* ("EC") is available in every small region of the *expanse of matter-energy* ("EM"). Every *individual mind* is viewed to occupy a *region* of the EC. A change in one region is thought to change the entire EC data structure instantly. The three *expanses* operate as a unified system in the present – a real-time "three-aspect monism" ("TAM") model. *Non-physical information ("psi-encoded information")* and its processing is a characteristic of the EC. *Non-physical information* is interfaced with matter in the EM, which includes brains, bodies, and inanimate matter-energy. The *expanse of the source* ("ES") provides *pure awareness energy* which makes consciousness possible. In addition to processing information associated with living organisms, the EC processes information associated with inanimate matter, illustrated by a rock in the figure. The *source* domain is described as "absolute", with a character beyond physical and non-physical. See text and Graboi (2023) for further explanation of the character and behavior of the three *expanses*.

makes matter-energy and spacetime possible. "Pure awareness" is seen as a basic metaphysical foundational principle.

Foundational metaphysical principles are not addressed in many modern theories of consciousness. Integrated Information Theory (IIT), proposed by Giulio Tononi (2004), suggests that consciousness arises from the integration of information within a physical system. The theory suggests that any system with a certain level of information integration experiences consciousness to some degree (possibly including artificial systems). IIT is based on the physicalist notion that consciousness emerges from information processing systems as their complexity increases. But, no explanation is given as to how such emergence occurs.

Panpsychism, a theory of consciousness that is experiencing a resurgence, suggests that consciousness is a fundamental property of all matter, not just complex systems like brains. This view holds that even simple matter possesses some form of consciousness. But no explanation is given as to what makes it possible.

Other current theories propose that quantum mechanics plays a crucial role in consciousness. Roger Penrose and Stuart Hameroff's "Orchestrated Objective Reduction" (Orch-OR) theory (2014) suggests that consciousness arises from quantum state reductions occurring in microtubules within brain cells. Again, this theory does not explain the underlying nature of conscious awareness.

Rather than viewing consciousness as an emergent property of physical processes, Advaitic thinking considers the pure awareness that underlies consciousness as a fundamental building block of reality, a primary metaphysical aspect of the universe from which material existence emerges and with which it is intrinsically intertwined. The hypothesis of a metaphysical domain containing pure awareness (Figure 3, "ES"), if true, implies that consciousness transcends computation and suggests a direct connection of consciousness to a metaphysical, unexplainable root principle.

Although a complete scientific explanation of "pure awareness" may be a "hard problem" (Chalmers, 1995), this may be because it is *beyond understanding by the mind*. However, the informational structure and function of the *expanse of consciousness* (EC) remain amenable to scientific analysis. Inferring from the behavior observed in the examples above, properties which appear to characterize the EC are suggested and discussed below and summarized in the APPENDIX.

All The Information in the EC is Available Everywhere in Spacetime

To conceptualize how an entire store of information can be available *everywhere in the universe,* Bohm (1980) provided the analogy of the *hologram* (see also Talbot, 1992). In a conventional 2D hologram of a 3D scene made using film and lasers, any small piece of film can be cut out, and, in the ideal case, it contains *all the three-dimensional information* in the entire scene in the hologram – all the information is available everywhere on the film. Generalizing to the concept of a higher-dimensional hologram, any small region of physical spacetime, analogous to the piece of film, would have the entirety of higher-dimensional information available in it. If the information in the EC were organized holographically, all the information contained in the EC would then be available *everywhere* in physical spacetime. This behavior is observed, since events involving psi-encoded information occur all over the world and are insensitive to distance.

A Change at Any Place in Spacetime Instantly Affects the Entire EC

If the information in any small region changes, the entire "cosmic hologram" is assumed to be affected simultaneously. The view of *the universal mind* expressed by Maharaj (1981) is that it is "the totality of all perceivers" (Maharaj, 1981, p. 192). In the TAM model, A *local region* of the *universal mind* is assumed to act as the *local mind* of an individual. It appears possible for a local mind to "put a thought 'out there' in universal mind" simply by thinking the thought with whatever intention accompanies that thought. And it appears possible for a suitably sensitive distant mind anywhere to receive that thought immediately by "tuning in to it". The speed of thought has not yet been measured, but if it is shared in a non-physical domain that operates outside of physical space and time, there is reason for it to behave nonlocally with instantaneous transfer speed.

Participatory Universe

Each *individual mind* is assumed to be *informationally interfaced* to the "cosmic hologram." A change in one mind instantly changes the entire hologram of which it is a part, which includes every mind. Williams writes: "...relying heavily on Bohm's pioneering work, I am proposing that our conscious experience is ultimately rooted in an information rich, non-local' space.' ... our minds share this inherently non-local space" (Williams, 2019, p.32). John A. Wheeler stated, "all things physical are information theoretic in origin and this is a participatory universe" (Wheeler, 1989, p.311). A "participatory universe" is one in which all minds contribute. The Advaitic view, as expressed by Maharaj, is that "Everything affects everything. In this

universe, when one thing changes, everything changes. Hence the great power of man in changing the world by changing himself" (Maharaj, 1981, p.360).

Psi-Encoded Information Does Not Move Through Space

As a hologram operating outside the physical realm, the EC distributes information instantaneously. From the perspective of the physical realm of energy-matter, this information appears to "propagate" from one point in spacetime to another. But, this apparent movement of information from one point to another in physical space is better described as *correlation* rather than *propagation.* A presumably equivalent type of instantaneous apparent movement of information is seen in the quantum mechanical phenomenon of *entanglement.* In this phenomenon, for example, if two electrons are created together as a system of "entangled" electrons with opposite spins, they can become separated by any physical distance, but when the spin of one is reversed, the spin of the other reverses simultaneously – breaking the speed of light limit (Caltech Science Exchange, 2022). This information-sharing behavior is referred to as "correlation" rather than "propagation" in quantum mechanics; for consistency, the same behavior of the apparent motion of psi-encoded information through physical space would better be regarded as "correlation". This would follow if entanglement and telepathy use the same underlying communications infrastructure. The phenomenon of quantum entanglement hints at a reality where observable physical phenomena emerge from a deeper, interconnected realm, one that defies traditional notions of space and time, a domain of reality that is fundamentally non-local and not directly observable.

Information Transfer by Correlation is Noiseless

With no physical energy or thermal motion in the non-physical domain, there would be nothing to degrade the information. In telepathy and other psi phenomena, the quality of information does not degrade with distance or intervening obstacles. Therefore, as is the case with entanglement, the sharing of information across physical distance may be assumed to be noiseless.

Presence of a Memory in the Non-Physical Realm

The memory capacity in the EC is presumably immense and complete beyond imagination. This is deduced by noting that psi phenomena have demonstrated an ability to access in detail what appears to potentially be *just about any* event past or present, and apparently probable events in the future as well. Although time and space do not physically exist in the EC, spatially and temporally organized groups of elements in the physical domain can be stored in its memory. The memory in the EC also allows for the possibility to predict probable future events. Prediction would be expected if the memory were organized so as to capture sequential probabilities, analogous to the operation of organically evolved as well as artificially intelligent (AI) memory systems.

Very Long Information Lifespan

With no thermal noise in the EC, all the information stored in the EC memory could, in principle, last forever. Of possible relevance is an accepted law of conservation in quantum mechanics: information in a closed system can neither be created nor destroyed (it can be transformed). Stephen Hawking (2005) has proposed mathematical reasons why information can't be destroyed even if it goes into a black hole.

Intrinsic Information Storage

Being non-physical, there can be no consumption of physical energy to "keep the information alive." *Intrinsic information* is a type of information that is stored in a repository that does not require active maintenance or energy input. Examples of intrinsic information include the arrangement of atoms in a crystal lattice, the genetic code in DNA, and the structure of a hologram. In contrast, *volatile information* refers to data that disappears when the power is turned off. Speculating, t*he information stored in the memory component of the EC is intrinsic. Energy is not required to keep the information intact.*

In a desktop computer with non-volatile memory, energy is used to write data into the memory, as well as read it out. Is energy involved in writing updated data into the intrinsic data structure of the non-physical memory in the EC? If this data-writing process occurs in the non-physical domain, by definition, no physical energy would be available to use in this process. Energy is used in the physical domain ("EM") to change and update the configuration of matter there. But, it is assumed that the data as it updates in the EM is simply acquired into the non-physical repository in the EC without additional cost of energy.

Non-Selectivity of Information That Gets Stored

There is the question of *what information gets encoded into the memory fabric of the non-physical domain*. Since much computational information processing in a biological brain operates unconsciously, is all brain-generated

information, including information used in the regulation of heartbeat, digestion, etc., available and remembered "out there"? What about structural information about the configuration of biological bodies, which, as is seen in remote healing phenomena, can be affected by distant intention? This suggests that *everything physical, down to the smallest subatomic particle, including everything mental, down to the slightest subconscious thought,* is encoded (recorded) in the immense memory in the non-physical domain. This aligns with Bohm's theory, which postulates that the Implicate Order manages the physical domain at the level of subatomic particles (Bohm, 1980). The assumption, fantastic as it may sound, is that *psi-encoded information about everything physical and mental, across time and space, is "out there."* This is substantiated by the behavior observed in retrocognitive psi phenomena, with many confirmed examples cited in Barrington et al. (2005). (See also Society for Psychical Research, 2023). It aligns with the idea of an information-centric universe, the concept of "it from bit".

Associational Memory Organization

The behavior of clairvoyance provides strong evidence to suggest that psi information is encoded and stored using *associational organization*. It is through a *chain of associations* that a clairvoyant seems to zero in to the desired target information. In the examples presented above, Ossowiecki would start with an object associated with an event of interest. It appears that spatial and temporal proximity associations between material objects are acquired and remembered in the EC as well as the associations found in the thoughts of individuals.

How can conscious thoughts be remembered by presumably the same system that remembers inanimate configurations of matter in an environmental scene? In one case, we have *information produced in the brain*; in the other case, we have *visual configuration information about matter in the environment*. In the first case, if the configuration of the connections between all the associated neurons and their activities in the neural network in a brain are acquired into the memory in the EC, this information is sufficient to remember, via computation similar to that done in a human brain, the content of the corresponding thought. In the second case, if the proximity associations of all the atoms in a particular region of spacetime are acquired into the memory of the EC, this information is sufficient to remember, via appropriate computation, the physical and visual representation of the environmental scene.

Basic Data-Handling Functionality

Basic data-handling functionality is displayed in all the examples given above. For example, in the phenomenon of distant intention (DI), a remote healer can select a specific recipient for the healing of a specific area of the body. In this action, specific information regarding the identity of the recipient is apparently needed to vector specific information about what needs to be done in a "push"-type psi information transfer. Such a remote healing transaction might occur as follows: The healer produces information that includes the specific attributes of the receiver as well as "payload" information, which has the ability to heal a specific part of the specific recipient's body. The content of the information and the strength of the intention that accompanies the psi-encoded information in the thought allow it to pass through the recipient's filter (see Figure 3) that blocks irrelevant and unneeded psi-encoded information from overwhelming the receiver. The filter is set by expectations in long-term memory (LTM) and short-term memory (STM). No movement of any actual "signal" from one physical location to another is assumed to occur. Rather, the information comes directly from the spaceless and timeless "cosmic hologram".

In a "pull"-type psi information transaction, a clairvoyant may focus on the attributes of the desired target information to select and read directly from the holographic memory in the EC. This amounts to a selective associative search process controlled by a receiver. The process first accesses the information associated with the starting-point information, for example, a "link object" consisting of a bit of hair from a missing person. In the "cosmic database", the hair is associated with the missing person, which then associates to the environmental scene where the person is located. This amounts to a memory search involving a chain of associations – an "associational search".

The same type of search process occurs in the human brain. For example, in the cognitive process of generating speech, we find a specific word by thinking first about its attributes – implementing an associational search to get to the desired word. The production of speech searches for information in the brain's memory. Analogously, clairvoyance searches information in the vast memory "out there" in the EC.

The ability to mediate both "push" and "pull"-type apparent data transfers are basic types of *data-handling functionality* assumed to operate in the non-physical realm.

Absence of Gravity/ Absence of "Flow of Time"

By definition, the non-physical domain operates outside of spacetime. Without physical content, the EC

does not contain any physical matter-energy. According to Einstein, the presence of matter-energy produces gravitation. Therefore, there would be no gravity in the non-physical domain. Einstein has also shown that physical time is malleable and that the more powerful the gravitational field in a region of space, the slower the relative rate of time in that region. With zero gravity, one might expect the rate of time in the non-physical domain to be infinite. There is only the *present* in the non-physical domain (as well as in the physical domain). An infinite rate of time supports the assumption that any information entering the memory in the non-physical domain in the present can correlate instantaneously throughout the entire domain.

Non-Physical Information Has No Format

When we perceive or think of something, say an orange, the neurons that produce specific visual information in various brain centers, as well as specific taste information, auditory information (the sound of the word "orange"), and other associated memories, become active to the degree that they are relevant. This specific information is now represented as a set of relatively activated neurons in the neural network structure of the brain. This neurologically generated information can be specified by an *activation profile of a specific brain structure*.

However, what if one considers *the pure information by itself* in isolation from the neurological structure that produced it? This is assumed to be the information that enters the content of the individual's consciousness. This notion of *pure information* is *abstract.* We might say that *pure information* simply *is,* or it is *self-declaring,* or it is *formatless.* Yet, it has *content* which can be described by a *mathematical structure.* It can also be emulated in a suitably configured artificial intelligence (AI) neural network.

Formatless information is information that is independent of the specific structure that generates it. In this sense, it is "universal" – it is agnostic to any specific brain structure. This would make it easier for thought sharing to work across different brains with different "wiring" structures. No two human brains have the same "wiring" structure, due to differences in genetics and the fact that experience continually modifies neural connections. But, formatless information could be shared between, for example, a human and an animal. Sheldrake and others have produced evidence to show that inter-species telepathy exists (Boone, 1954; Sheldrake, 2000). Alternatively, two beings sharing information telepathically could have different neural circuits which interface with a universal format in the EC.

As we understand it, all information is encoded in the physical realm as a *variation* in matter or energy across space and/or time. How might "non-Newtonian information" be encoded in a non-physical domain? One form of information that is a candidate for requiring no space, time, matter or energy, is *formatless* information, as discussed above as an abstract mathematical concept.

The idea that the universe essentially springs from mathematics or information is a concept that has been discussed by philosophers and thinkers throughout the ages. Plato proposed the concept of *mathematical realism*, in which abstract mathematical entities exist independently of the physical world and form the basis for reality. Max Tegmark, a contemporary physicist and cosmologist, has proposed the "Mathematical Universe Hypothesis" (Tegmark, 2008). This theory suggests that the universe is not merely *described* by mathematics, but *is* mathematics - a *mathematical structure.* Such a reality, Tegmark argues, has *no baggage.* A *mathematical structure* that has no "baggage" describes "abstract entities with relations between them" (Tegmark, 2008, p. 2).

However, information, when rendered as conscious thoughts, definitely has variation over time, for example, when thinking about a particular song. Thoughts are understood in neuroscience to be accompanied by a varying activation pattern of neurons in space and time in the physical neural network of the brain. This can explain the variation found in the content of thought. In starting from a non-physical domain where information is represented by abstract mathematics and ending up in the physical domain where information is represented by variations in neuronal activation patterns, we are left with the need to implement some form of *data expansion* which operates on a presumably formatless thought that resides in non-physical memory and transforms it into a thought with spatial and temporal extension in physical memory. Conversely, some form of *transformation operation* would be required to render a physically expressed thought into its potentially formatless representation in non-physical memory. These operations might occur naturally as part of the fundamental way in which the universe works, but nevertheless, they would appear to involve some form of *computation.*

This thinking leads to the idea that formatless information in non-physical memory would be assumed to have the ability to be transformed into whatever format is required by a destination physical LTM-STM memory for the information. Such a transformation might occur in the non-physical domain, the physical domain (the brain), or both.

Complex Computational Processing is Supported in the Non-Physical Domain

The above considerations about the possible requirement to computationally pack and unpack information across the two types of memory, non-physical and physical, coupled with behavioral evidence which indicates the operation of computational capacity which acts to fulfill needs, as discussed in the last example (7) above, indicate that in addition to supporting an immense memory, the EC supports *computational resources*. It is noteworthy that Tegmark augmented the Mathematical Universe Hypothesis with a corollary: "The mathematical structure that is our external physical reality is defined by computable functions" (Tegmark, 2008, p. 20). These considerations support the possibility that the non-physical component of our universe can be described in terms of a mathematical structure with computational capability.

The Universal Mind May Have "Universal Consciousness"

Every *individual mind* appears to have a form of consciousness. If a *region of* the *universal mind* is responsible for the content of consciousness of an individual, the EC would be expected to support the sum of information in individual consciousnesses. When consciousness is experienced in a particular region of the EC, it might be experienced simultaneously both in the *universal mind* and in an *individual mind*. In other words, that consciousness would be represented as *part of a holistic information space*. When an individual thinks a thought, the individual experiences the conscious awareness of that information, and the same information is available in all regions of the hologram, hence, all regions of spacetime. It should be noted, following the thinking expressed in Maharaj (1981), that consciousness cannot contain a representation of the deeper reality from which it emerges. For this, the third aspect of the *source* (Figure 3, "ES") is reserved.

The Universal Mind May be Capable of Perception

Every known conscious entity has some form of *perception. A universal mind* may be capable of perceiving the perceptions of all conscious beings. For example, a dolphin has a refined sense of sonar which it can use to "see". *The universal mind* may have the ability to become conscious of what this kind of perception feels like. An *individual's consciousness,* limited by the particular senses available, cannot perceive and, therefore, is not capable of experiencing sensory information that is outside the scope of the operation of its senses. This suggests a potential difference between *the individual* and the *universal mind*.

Local Consciousness is Different Than Universal Consciousness

A *local mind* has a *consciousness* that is conditioned by and limited to its particular sensory-cognitive apparatus. In this sense, *local consciousness* is not *universal consciousness.* Maharaj (1981) has discussed the limitations of consciousness and the mind in general. Even though *universal consciousness* appears able to record and possibly experience the conscious perception of a dolphin's sonar, *individual human consciousness* cannot experience it. However, for so-called "realized" individuals – in a stable state of higher awareness and spontaneity – it may be possible:

> I find that somehow, by shifting the focus of attention, I become the very thing I look at and experience the kind of consciousness it has ... I call this [the] capacity of entering other focal points of consciousness [...] (Maharaj, 1981, p. 204).

DISCUSSION

In a verified case, Ossowiecki, in Poland, using a sealed envelope with written material inside as a cue, was able to accurately access a rather unremarkable stream of events that occurred weeks earlier in a two-story house in Spain. In another case, Ossowiecki was apparently able to accurately access visual information regarding a past event in outer space involving matter but no living beings. His report was consistent with how meteors are formed. Alternately, he might have imagined that visual event, but he has accurately reported past information in cases where people were present to confirm them. Information access of purely environmental scenes is common in clairvoyance. And we have seen an example where specific (potential) future events were apparently accessed ("You will marry a Russian woman named Lydia"). Another case demonstrated that it is possible to access visual information imagined by another individual ("Did you just put a six out there?"). The biology of organs can be affected by distant intention (DI), and it appears that the free will of individuals can, in certain situations, be overridden by apparent intelligent computations by processes that occur "out there" (Mayer, 2007, p. 21: "I was utterly astonished to watch myself defeating my own purpose"). How can all these behaviors be understood?

The "Akashic Record" in Theosophical philosophy (Leadbeater, 1968) is thought to contain all knowledge and information about the past, present, and future. It is believed to contain the record of every event, thought, emotion, and experience that has ever occurred in the past, present, and potentially in the future. The information in this record is believed to be accessible by suitably

sensitive individuals. Laszlo proposed the existence of an "Akashic field" or "A-field" as an information field at the heart of the cosmos – the "holographic memory of the universe" (Laszlo, 2004, p. 56). Di Biase (2023, p. 165) hypothesized that "Our mind is a subsystem of a universal hologram, accessing and interpreting this holographic universe." "Nothing in this world is evanescent; all things continue to exist through the traces they leave in the cosmic information field" (Laszlo, 2004, pp. 161-162). Psychic Edgar Cayce said, "Conditions, thoughts, activities of men in every clime are things... They make their impressions upon the skein of time and space. ... [T]hey become as records that may be read by those in accord or attuned..." (Cayce & Cayce, 2004, p. 67).

Whether it is called "Akashic Record," "cosmic information field," the "holographic memory of the universe" or the "memory" in the "expanse of consciousness/universal mind", these terms all refer to the same basic concept: an immense information repository with, amazingly, *all the information, both physical and mental, pertinent to this universe*. Considering all the evidence, how can one deny the existence of an information repository well-described as being "out there"? The data show that psi-encoded information is available everywhere on earth. It has not yet been proven that the speed of psi-encoded information correlation is faster than the speed of light, or that it is available everywhere in the physical universe, but such assumptions do not contradict the data. In the case of information correlation in the phenomenon of quantum entanglement, correlation speed has been measured to be *at least* 10,000 times faster than light (Yin et al., 2013), and theoretically, its speed is instantaneous (Caltech Science Exchange, 2022).

A *memory* does not generally exist in isolation; it exists as part of a larger system which puts the memory to use. In biological organisms, the function of memory is embedded in brain physiology which includes senses. The human brain, a biological organ, can be conceptually partitioned into the information stored in it and the system that operates on that information. Analogously, the *expanse of consciousness/universal mind* (EC) can be viewed as containing a system with an information storage component (*memory*) and a process that operates on that information.

When neural networks are built at large scales and trained with large amounts of data, what emerges in a way not yet understood is "creative intelligence". This has been observed in the current state of development of artificial intelligence (AI) technology. The information managing component of the EC might be viewed as analogous to a very large-scale AI neural network system. Such an AI system would, in principle, be able to emulate the behavior observed in the examples given above. The notion of a giant computer at the heart of a simulated reality, called the "simulation hypothesis," has been proposed (Bostrom, 2003). In essence, it suggests that we might be living in a kind of virtual reality. The alternative would be a "natural explanation" to explain the behavior observed in the examples.

The examples presented above demonstrate that what is "out there" includes a *memory* in which potentially unlimited psi-encoded information exists, which can be accessed by some (if not all) individuals. More than a *memory* alone, there appears to be a sophisticated *information handling system* "out there" which shows evidence of an ability to perform cognitive processing and creative thinking. What is 'out there' may have consciousness.

These notions don't fit in perfectly with the purely materialistic scientific paradigm that is the current scientific "party line" expressed in the West, but the data force us to accept that the information is "out there", where it can't be found with instruments, and where it is processed in various ways. The current materialistic paradigm *must be extended* to include a domain that exists outside the bounds of what is considered physical and contains an immense psi-encoded information repository and handling system. If physical reality indeed coexists and interfaces with such a non-physical domain with non-Newtonian information, it nonetheless would leave most of the current scientific paradigm intact. And it would enrich the current scientific paradigm by allowing for the existence of so-called "psychic abilities" as natural phenomena.

> Consciousness is that dimension which is neither physical nor is it electrical nor is it electromagnetic... [It is] a non-physical dimension. It is the non-physical in whose lap the physical is happening. Physical is a small happening... Not even one percent is physical. The rest is non-physical (Sadhguru & Shetty, 2020, timestamp 2:39).

The simple question posed at the beginning asked, "where is 'out there?'" After the considerations discussed above, an answer can be given: "Out there" is in the non-physical *expanse of consciousness/universal mind*. This "domain", or "realm", or "expanse" is distinct from the relatively well-understood *expanse of matter-energy* which is the "physical domain". The non-physical domain is thought to pervade, overlay, and intimately connect with the physical domain via what Bohm and Hiley (1993) might term an *active informational interface.* Furthermore, "out there" is actually "in here", in the sense of being in our individual *minds* which are part of the cosmic holo-

gram.

A critical issue becomes, how can *information* – which implies *variation* – be stored and computationally processed in a domain without physical matter, energy, space and time? What is the recording medium if there is nothing physical in the domain? Plato proposed the concept of a realm of abstract forms, including mathematical forms, which exist independently, and that the material world is a shadow or imperfect representation of these forms. Pythagoras believed in the mathematical and numerical basis of reality. Galileo stated that the universe is a grand book written in the language of mathematics. Bohm and Hiley (1993) theorized an "Implicate Order" which "informs" the "Explicate Order" via "active information." Wheeler proposed "it from bit". Tegmark proposes an abstract mathematical structure with "no baggage" which can, in principle, encode variation. This is a partial list of thinkers and traditions that propose what amounts to an *abstract information structure* as a core principle in our universe.

The issue of free will also comes to the fore. What does the ability to access events in the future (precognition) imply for free will ("You will marry a Russian woman named Lydia")? Note that the human cognitive system, with its knowledge of sequential probabilities, makes predictions all the time. The predictions are probable and potential. It is possible that information about the future developed in the EC works the same way as future prediction works in the human brain. With so much more information available in the EC than in an individual brain, EC-based future predictions would be expected to be significantly more specific and accurate. The idea of free will is also questioned by what appears to be EC-based control of the "willful" behavior of individuals in real-time so as to "fulfill needs" (Example 7 above).

The purpose of science is to study and understand every phenomenon that is real. The examples cited above provide strong evidence that a non-physical domain exists. Science needs to understand its workings. It is time to acknowledge its reality, extend our belief system accordingly, and move on.

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APPENDIX

Ten Proposed Features of the Non-Physical Domain

1. Its operations occur in the *present* (real-time operation).
2. It contains a *memory* with the capacity to remember all structural configurations, physical events, and thoughts. Real-time information pertinent to everything in the physical domain is continually acquired into this *memory.*
3. Its memory storage is intrinsic (non-volatile).
4. The memory may have *a hierarchical associational storage organization* like the human brain's memory organization.
5. The information stored in non-physical memory is assumed to be "pure" and "formatless": a mathematical structure that can be unpacked via computation into any destination format.
6. The domain operates outside of time and space and interfaces informationally with everything in physical time and space.
7. The domain supports basic low-level data-handling functionality, for example, apparent "push" and "pull" type correlations of information from one geolocation to another.
8. It supports instantaneous holographic-style distribution of all information in memory for total access via correlation everywhere.
9. Information processing in the non-physical domain can result in *need fulfillment* and other cognitive processing functionalities such as prediction and creative thinking.
10. Universal mind may have consciousness. When information in universal mind activates and becomes conscious, it may simultaneously become conscious in a region, which is the local mind of an individual.

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ESSAY

Reissner's Fiber at the Intersection of Neuroscience and Mysticism: An Evolutionary Perspective

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HIGHLIGHTS

An overlooked and mysterious structure within the center of the brain might be the physical basis of higher states of consciousness.

ABSTRACT

During their evolutionary transition from apes, *Homo sapiens* developed the capacity to create mental worlds. While conferring a selective advantage and leading to wondrous intellectual achievements and transformative technologies, this capacity set humankind on a historical trajectory that is approaching the potential for its extinction. The genetic and anatomical basis of humankind's unique mental capacities is unclear. However, the perinatal regression of Reissner's fiber (RF) in humans, an enigmatic, strategically located filament originating from the center of the brain, is a likely factor. This study explores the hypothesis that the originators and transmitters of religious mystical traditions were rare individuals whose RFs persisted into adulthood. They perceived the fiber with its surrounding sensory neurons and experienced higher states of consciousness generated by it. Those perceptions have been transmitted in prescientific, mythological, symbolic language as the "subtle body," the supposed intermediary connection between humans and the divine, bridging the gap between materiality and immateriality, and expanding consciousness beyond the limits of reason. Ultimately, this connection is the purported means of redemption. The secrets of mystical religious traditions are lost under the dust of fallen Babel. However, the identification of RF with the central axis of the "subtle body" presents a path toward their rediscovery. Emerging biotechnologies offer the potential to reverse RFs perinatal regression. Advanced technologies, such as real-time neurofeedback using quantum models, present exciting opportunities for the scientific study of consciousness and have the potential to revolutionize our understanding of spirituality and reality.

KEYWORDS

Neurocosmology, neurofeedback, neurotheology, Reissner's fiber, subtle body, quantum biology.

INTRODUCTION

During the evolutionary transition from apes to *Homo sapiens*, natural selection favored the perinatal regression of an enigmatic, strategically positioned, and evolutionarily conserved structure: Reissner's fiber (RF), *an ever-growing filament found within the neural canal* (Munoz et al., 2019; Reissner, 1860). Consequently, the persistence of this fiber into adulthood has become extremely rare. Although emerging biotechnologies have the potential to reverse this regression (Cowan et al., 2020; Merling et al., 2016; Ortiz-Alvarez et al., 2019; Redmond et al., 2019), the potential consequences of such a reversal remain uncertain

Herein, I propose that such a reversal could lead to the rediscovery of lost secrets of what various mystical traditions call the "subtle body"; this concept refers to the purported connection between humans and the divine, between materiality and immateriality. The originators and transmitters of those traditions were extremely rare individuals whose RFs persisted into adulthood. They "saw" the fiber with the visual sensory system that surrounds it. Therefore, descriptions of the "subtle body" are more related to neuroanatomy than myth. The fiber stimulated surrounding receptors that mediate entheogenic experiences, thereby facilitating feelings of connectedness to a higher power. Most importantly, to paraphrase William Blake (1994), RF cleansed the doors of perception, allowing man to see everything as it truly is—Infinite.

Those doors have recently been partially cleansed by entheogens and modern physics. Neuroimaging studies suggest that entheogens increase brain entropy, thereby breaking down rigid conceptual filters of perception (Carhart-Harris et al., 2014). Experiments with entangled subatomic particles have shown that they lack definite measurable properties before they are observed. Prior to being observed, "quantum objects" are conceived as superpositions of possibilities and probability clouds. To paraphrase John Stewart Bell (1980), whose analysis of quantum entanglement showed that local realism is untenable (Bell's Theorem), would it not be very interesting if, when a formulation of quantum mechanics beyond all practical purposes is attempted, we discovered an "unmovable finger obstinately pointing outside the subject, to the mind of the observer, to the Hindu scriptures, to God, or even only Gravitation?" Given RF's hypothesized identification with the central axis of the "subtle body " and its suitability as a site for quantum biological behaviors, it provides an intriguing empirical path for exploring the realms toward which that unmovable finger points.

Reversing the typical perinatal regression of the fiber in many individuals has the potential to transform private, ineffable religious experiences into consensus realities. Innovative techniques, such as real-time neurofeedback using relativistic, quantum, and neurobiological models, can provide synergies that integrate traditional spiritual practices with neuroscientific methodologies. The mutually exclusive, popularized parallels between mysticism and physics (Capra, 1978) would converge. The following section presents descriptions of the central axis of the "subtle body" from yogic, Kabbalistic, and Taoist traditions; an account of current knowledge about RF; and a synthesis of the two based on that knowledge and speculative relativistic-quantum models of the fiber. A key objective is to inspire research on this neglected structure.

RF- A REVIEW

RF is an ever-growing filamentous aggregation of glycoproteins that flows through the central passageways of the brain, the third cerebral ventricle, cerebral aqueduct, fourth ventricle, central canal (CC), terminal ventricle (TV), and filum terminale. It primarily forms through secretions from the embryonic floor plate and the subcommissural organ (SCO) (Abolitz & Montiel, 2021; Munoz et al., 2019). Additionally, secretions from other circumventricular structures, including the preoptic region of the hypothalamus, contribute to its formation (Enami, 1954; Knowles, 1969; Rodriguez et al., 1999; Zyo et al., 1976).

The secretory activities of the structures that contribute to the formation of RF are intricately regulated by complex neural networks. The SCO, for example, is primarily innervated by serotonergic neurons, but gamma-aminobutyric acid, dopamine, noradrenalin, oxytocin, vasopressin, substance P, alpha-neuroendorphin, and galanin are also involved (Jiminiez et al., 2001) Furthermore, while environmental temperatures have significantly influenced the fiber's growth rate (at 24 °C, approximately 70% of the fiber is renewed, while at 18 °C, the renewal rate decreases to 40%), the influence of light and darkness is small (Diederen, 1973, 1975).

In fresh specimens, the fiber is hollow (Erbel-Rothe, 1951). Electron microscopy shows that it consists of parallel 5–10-nm-diameter filaments embedded in a complex, variable matrix. This matrix contains nanosized spheres surrounded by a tri-layered membrane, which resemble exosomes, and it projects filaments to the ventricular surface (Kohno, 1969).

RF plays a role in regulating the production and hydrodynamics of cerebrospinal fluid (CSF), and its involvement has been suggested in the pathogenesis of hydrocephalus (Perez et al., 2001; Rodriguez et al., 2007; Woolam, 1982). Because it binds to various substances,

including mono-aminergic neurotransmitters, it has been hypothesized to be a "detoxifier" of the CSF (Ermish et al., 1970; Hess, 1972; Perez et al., 2001). Additionally, the fiber regulates the embryological development of a straight body axis; therefore, it has been implicated in the pathogenesis of scoliosis and the regulation of locomotion (Driever, 2018; Hubbard et al., 2016; Orts-Del'Immagine et al., 2020; Troutwine et al., 2020). The primary constituent of RF is SCO-spondin, an evolutionarily conserved giant glycoprotein (5000+ residues) found in the CSF and extracellular matrix (ECM) of the central nervous system. SCO-spondin is involved in neurogenesis, differentiation, proliferation, and axonal guidance (Creveaux et al., 1998; El Bitar et al., 2001; Gobron et al., 2000; Meiniel et al., 2001) and has been implicated in the pathogenesis of schizophrenia (Li et al., 2020; Vilkov et al., 1984), Alzheimer's disease (Le Douce et al., 2021), and transpersonal states of consciousness (Wile, 2016, 2020).

The fiber descends through the CC of the spinal cord to a triangular dilation at the base of the canal, known as the TV (Choi et al., 1992; Wislocki et al., 1956), where it coils (Studnicka, 1899). The TV is surrounded by secretory cells, forming the intraspinal organ, whose activity correlates with reproductive activity (Motavkin & Bakhtinov, 1990). This intraspinal organ is a homolog of piscine urophysis (Fridberg & Bern, 1968), which secretes urotensin. Urotensin II, the most potent vasoconstrictor, is expressed in various human tissues (Ong et al., 2005), and its receptor is linked to rapid eye movement sleep (de Lecea & Bourgin, 2008; Huitron-Resendiz et al., 2005). The contribution of the intraspinal organ to the production of urotensin is unclear.

The fiber dissolves in the TV, and its constituents pass through a narrow passageway in the filum terminale (Molina et al., 2001). While the filum terminale is generally considered a fibrous band that anchors the distal spinal cord to the coccyx, it contains nerve fibers of unknown function (Klinge et al., 2022). Proximal to the terminal organs of RF is the glomus coccygeum, a small spheroid composed of blood vessels, myofibrils, glomus cells, and sympathetic nerve fibers with nearby Pacinian corpuscles. Although the glomus coccygeum is generally considered a vestigial structure, it anatomically represents the inferior termination of the sympathetic nervous system (Conti et al., 2000). The pineal gland, once classified as vestigial, is the superior termination. The glomus coccygeum plays a role in neuroimmunomodulation, thermoregulation, hemopoiesis, and sexuality (Conti et al., 2000; Jin et al., 2017).

Considering that the SCO secretes glycoproteins both apically into the CSF and basally into the ECM (Biosca & Azcoitia, 1989; Kimble & Møllgård, 1973), and RF projects filaments to the ventricular surface, the fiber can be conceived as the center of the ECM in the central nervous system. Mechanical signals transmitted by the ECM, mediated by integrins, regulate various neural functions (Wang et al., 2001). Given that the fiber is under tension and oscillates, it could potentially orchestrate these mechanical signals (Bellegarda et al., 2023).

RF has been evolutionarily conserved, with its first production 770 million years ago in a single cell lining the inner surface of the brain of a millimeter-long gelatinous sea squirt called *Oikopleura* (Gobron et al., 1999). It is present in adult primates (Castenholz & Zöltzer, 1980; Erhardt & Meinel, 1983; Hofer et al., 1980; Horsely, 1908). The SCO typically regresses perinatally in humans (Carmona-Calero, 2022). However, a fully developed SCO has been observed in a 60-year-old man (Gomez et al., 1961). RF has been observed in human embryos (Keene & Hewer, 1935) and a 14-year-old teenager (Agdhur, 1922). Owing to its rapid postmortem disintegration, RF can only be observed in fresh or freshly preserved specimens. Furthermore, its small diameter makes it inaccessible for observation with current endoscopic or neuroimaging techniques in live individuals. Therefore, it is likely that other exceptions to the rule that RF does not exist postnatally in humans have gone unnoticed.

The genetic variations responsible for the perinatal regression of RF during the transition from apes to *Homo sapiens* is unclear. However, given the fiber's presence in human embryos and the stem cell potential of the ependymal cells that produce it, reversal of that regression, in a manner analogous to the reversal of thymic involution, is feasible.

Subtle Body

Yoga

The central axis of the "subtle body" is best described in Hatha and Tantric Yoga (Feurstein, 1998). They describe four concentric channels (*nadis*) that ascend from a triangular structure at the base of the spine (*Mooladara chakra*) through a series of psychophysical centers (*chakras*) to the brain. Through various yogic practices, including meditation, sacred sexuality, postures (*asanas*), rhythmic breathing, and breath holding (*pranyamas*), combined with forceful muscular contractions (*bandhas*), a coiled, divine feminine energy (*Kundalini*) ascends through seven energy centers (*chakras*). When *Kundalini* reaches the sixth *chakra* (*Ajna*), paranormal powers (*siddhis*) are attained. Ultimately, when *Kundalini* reaches the seventh *chakra* (*Sahasrara*), the soul (*Ataman*) unites with the masculine aspect of divinity, liberating itself from cycles of birth and rebirth (*samsara*) and uniting with the

Infinite (*Brahman*).

The nadis progress from the grossest and outermost to the subtlest and innermost, namely, the *Sushumna*¸ *Vajra*, *Chittra,* and *Brahma nadis.* The *Shatchakra-nirupana* ("Description of and Investigation into the Six Bodily Centres"), written in 1526 and translated by Sir John Woodroffe in 1927, writing under the pseudonym Arthur Avalon, provides indications of the diameters of the innermost *nadis* (Avalon, 1927/2017). In the second verse, the following is mentioned: "Inside the *Vajra* is *Chittra* . . . She is subtle as a spider's thread." The 48th verse states that the *Brahma randhra*, the entrance to the *Brahma nadi* inside the *Chittra nadi*, is "extremely subtle and like unto the ten-millionth part of the end of a hair."

The secrets of Yoga are intrinsic to the Vedas, which were transmitted through a lineage of *rishis* who received them directly through divine revelation. The meanings of those revelations were experienced as resonances among the vibrations of Vedic hymns and mantras, the *chakras*, and the cosmos. Over time, this knowledge, known as *Śruti,* was preserved, reinterpreted, and elaborated upon in the form of *Smritis*. Patanjali, around the second century CE, compiled and further developed yogic knowledge, based on both the *Śruti* and the *Smritis.* This tradition of expansion and development continued through a lineage of mystics, gurus, and sages.

Taoism

The central axis of the "subtle body" has a prominent role in Chinese mystical traditions. In *Qigong* and acupuncture, which are applications of Taoism, the flow of *Qi* along the "microcosmic orbit," formed by the Governing and Conception Vessels, corresponds to the ascent of *Kundalini* through the central *nadis* (Yu, 1999). Through meditation, breathing exercises, and sacred sexuality, *Yin,* the feminine aspect of *Qi,* is harmonized with its masculine aspect, *Yang,* to unite with the infinite Tao. Along the path to oneness with the Tao, the practitioner attains paranormal powers. Similar to Yoga, Chinese mystical traditions can be traced back to prehistoric times. The mythical origins trace back to The Yellow Emperor (2711-2599 BCE). His legend was developed into a historical narrative during the Warring States period, beginning in 475 BCE. During the Han Dynasty (206-220 CE), the *Yellow Emperor's Classic of Internal Medicine* was published. During the Ming Dynasty (1368-1644), *The Great Compendium of Acupuncture and Moxibustion* was compiled by Yang Jizhou (1522-1620) (White & Ernst, 2004).

Kabbalah

References and allusions to the central axis of the "subtle body" in Jewish mystical traditions are based on the descriptions of Adam Kadmon, an androgynous unmanifest cosmic/spiritual image of human beings. Additionally, they draw from the concept of the *Sephirot,* which consists of 10 interacting vessels aligned along three vertical columns representing the attributes involved in the interaction between humans and the divine (Scholem, 1995). The framework for the neurocosmological interpretation of the Kabballah used here was developed in the 16th century by Isaac Luria (Fine, 2003). He proposed that Adam Kadmon and the Sephirot originated from the self-contraction (*Tzimtzum*) within the Infinite (*Ein-Sof*). This process resulted in the emanation of an infinite ray called "*kav,*" which possesses an inner dimension known as the "the thread" (*chut*) responsible for weaving creation, and an outer dimension referred to as "the line of measurement" (*kav hamidah*), which defines boundaries. *Kav* flows through the spine of Adam Kadmon and the "central pillar" of the *Sephirot*.

During six 25,567,500,000-year-long spiritual, cosmic cycles (*Shmita*), the vessels of the *Sephirot* shattered (*Shevirah*), and *Kav* was severed (Kaplan, 1993). In 3761 BCE, Adam Ha-Rishon, who lived on earth, began the seventh, final, material 7,000-year-long cycle. He was poised to repair the severed connection to Adam Kadmon. However, the first bite from the fruit of the Tree of Knowledge resulted in a further descent of the spiritual realm into materiality. Adam's "garments of light" were transformed into "garments of skin" (*Bereishit Rabbah* 20:12).

Humankind's challenging journey to repair the shattered and fallen cosmos (*tikkun olam*) and unite the exiled feminine aspect of the divine (*Shekinah*/*Malkuth*) with its masculine counterpart (*Yesdod*), began and, according to the Hebrew calendar, is expected to end no later than the nightfall of September 16, 2240. According to late modern kabbalists, such as Moshe Chaim Luzzatto, Elijah ben Solomon Zalman, and Shlomo Eliyashiv, *tikkun olam* would be achieved through a synthesis of Kabbalah and science (Bakst, 2008). This proposition is based on an interpretation of a verse from the *Zohar,* the foundational text of Kabbalah:

> In the six hundredth year of the sixth millennium (5600 = 1840 CE), the gates of wisdom above [Kabbalah], together with the wellsprings of wisdom below [science], will be opened up, and the world will prepare to usher in the seventh millennium." *Zohar* (*VaYeira* 177a) (as cited in Bakst, 2008, p. 38).

Kabbalah traces its origins to Adam, who received kabbalistic secrets from the angel Raziel. According to

Kabbalistic lore, these secrets are subconsciously inscribed in every developing fetus. Lailah, the Angel of Conception, places a lighted candle at the head of each unborn infant as it grows in the womb to illuminate the secrets of Kabbalah. Consistent with the perinatal regression of the fiber, these secrets are lost at birth but are imprinted on the perinatal unconscious.

Adam transmitted these secrets to his son Seth, who began a chain of transmission that included Eonch, Noah, Abraham, and Joseph. Fulfilling a divine promise, Moses retrieved the book that was buried with Joseph on the banks of Nile. Moses passed on the kabbalistic secrets to Joshua, the 70 elders, and high priests. The book retrieved from the Nile was carried along with the Tabernacle of the Israelites in the desert and was placed in the Holy of Holies in King Solomon's Temple.

Additionally, Ahijah of Shiloh received this knowledge, and he taught Elijah, the only Old Testament prophet, other than Moses, known to have fasted for 40 days and 40 nights and to have ascended Mt. Sinai to receive divine revelations. Following a miraculous transportation to heaven in a fiery chariot, akin to Enoch's earlier fiery ascent and transformation into the heavenly angel Metatron, and Ezekiel's later vision of a chariot ascending to heaven, Elijah appeared through revelations or apparitions known as *Gillum Eliyyahu*. He aimed to promote the transmission and development of kabbalistic secrets and to proclaim the arrival of the Messiah (Matt, 2022).

Kabbalistic secrets were closely guarded. The secrets of creation, known as the "Work of Creation" (*Ma'aseh Bereishit*), could not be taught to more than one student at a time. Similarly, the secrets of heavenly ascents, known as the "Work of the Chariot" (*Ma'aseh Merkavah*), based on Ezekiel's vision, were so closely guarded that "One may not expound . . . the *Ma'aseh Merkavah* not even to one student unless – he is wise and can understand these matters by himself" (*Mishna Chagigia* 2:1). The transmission of kabbalistic secrets via an exclusive lineage supports the hypothesis that only rare individuals whose RFs persisted into adulthood could grasp those secrets.

An early identification of *kav* with what is now known as RF can be found in the *Commentary on the Talmudic' Aggadot* by Rabbi Ezra ben Shlomo, a student of Issac the Blind (1160-1235), who is considered the "father of Kabbalah." He states, "For it is the middle line, the drawing down of vitality and watering, which extends from the brain to the spinal cord, extending from there to the sinews in all directions" (Idel, 2008). This line is described as an eroticized connection between Zion and Jerusalem, representing the highest *Sephirot*, *Keter*, which draws the divine will from the infinite *Ein-Sof*, and the lowest *Sephirot*, *Malkuth*—the feminine aspect of the divine will that translates thought into action and paradoxically connects to *Keter*. While this early kabbalistic reference to a line extending from the brain to the spinal cord aligns with the proposed anatomical connection between humans and the divine, it has remained obscure because Kabbalah has primarily focused on language. The letters of the primordial Torah are conceived as divine energies that constitute Adam Kadmon and the *Sephirot*. Thus, in the words of Elliot Wolfson (2005), Jews have "textualized the body."

Christian Kabbalah developed from the belief that Jesus was the Messiah, the hypostatic union of humanity and divinity. During the Second Temple era in Jerusalem, Jesus proclaimed, "For truly I say to you, until heaven and earth pass away, not the smallest letter or stroke (one iota or one tittle) shall pass from the Law (Torah) until all is accomplished" (Matthew 5:18) and "I am the law, and the light" (3 Nephi 15:9). In Jesus, "The Word became flesh and made his dwelling among us" (John 1:14). During the Transfiguration, described in the synoptic gospels (Matthew 17:1–8, Mark 9:2–8, Luke 9:28–36), Moses and Elijah appeared before Jesus, and he "was transfigured before them; his face shining as the sun, and his garments became white as the light" (Matthew 17:2). Jesus's resurrected body was the realization of the "subtle body," a paradoxical unity of spirit and flesh.

According to perennialism, Indian, Chinese, and Hebrew mystical traditions originated from a transcendent and universal religious experience facilitated by the "subtle body" (Albahari, 2019; Schuon, 1984; Smith, 1987). While the nature, and even the existence, of the experiential basis of perennialism remains uncertain, the association of RF with the central circuit of the "subtle body" should inspire further investigation.

RF and Quantum Neurobiology

The immaterial, entangled, nondeterministic nature of the quantum world presents intriguing correlates of consciousness (Bohm, 1990; Schwartz et al., 2005). RF's 5-nanometer diameter filaments are well suited for constructing quantum neurobiological models that incorporate features of current models.

Stuart Hameroof and Roger Penrose proposed that entangled quantum coherences among neuronal microtubules can spread through gap junctions. "Orchestrated objective reductions" of these coherences are non-algorithmic processes attuned to the Platonic mathematical forms. The resulting perception of Platonic forms can transcend the boundaries of logic, as proven by Gödel's Incompleteness Theorem (Penrose, 1994). Quantum coherences in microtubules have been proposed as sites of

quantum computation and volitional control of the brain, and as a solution to the mind-brain problem (Hameroff, 1998, 2012). The potential extension of quantum states of RF through gap junctions in CSF-cNs and the ECM warrants further investigation.

Fredric Beck and Sir John Eccles (1992) proposed that the will can selectively trigger the release of neurotransmitters from synaptic vesicles in the premotor cortex via quantum tunneling through the barrier of the metastable state of the presynaptic vesicular grid. Volitional control of the quanta constituting RF, enhanced by real-time neurofeedback, could facilitate quantum tunneling or other quantum effects.

For 20 years, my team, under the leadership of Alexander Sergienko, made extensive efforts to find potential quantum coherences in the photon emissions from RF within transparent zebrafish larvae. We used cutting-edge technologies, including a novel correlation time-resolving infrared microspectroscope with a scanning confocal microscope, superconducting single-photon detectors, and femtosecond pulsed lasers. However, regrettably, we recently made the difficult decision to discontinue our project as our attempts to overcome the challenge posed by the inherent noise in biological systems were unsuccessful.

History

In 1860, Ernst Reissner discovered the eponymous fiber in the CC of the spinal cord in a lamprey. For 40 years, most anatomists dismissed his discovery as an artifact. In the spring of 1899, Porter Sargent (1904) observed the fiber, also in a lamprey. After searching the scientific literature, he was astounded that "so peculiar and conspicuous a structure as Reissner's fiber, which is of so great importance in the nervous anatomy as to persist throughout the vertebrate series, should've remained so little known for forty years after its discovery." Similarly, he was dismayed that the ventricles, including their lining and content, had been almost entirely dismissed.

Sargent established that the fiber is a biological structure. Based on anatomical and experimental investigations, he concluded that the fiber is a unique high-speed conduction pathway. Although Sir Victor Horsley (1908) declared, "the greatest deference is due to the opinion of Sargent, who has essentially made this subject his own," and Sir Charles Scott Sherrington (1906) accepted Sargent's hypothesis, it soon fell into oblivion. In his 1904 paper, Sargent mentioned, "The conclusions and the discussion of the results and bearings of this research are reserved for the second part of this paper dealing with the higher vertebrates. This is already well advanced, and it is hoped will appear in about a year." However, he abruptly abandoned his scientific career to become a self-described poet, world traveler, and educator.

The fall of his hypothesis was largely the result of the limitations of anatomical methods and the resulting ambiguity of anatomical terminology. In 1902, Rudolph Albert von Kölliker, who provided the first proof that axons were extensions of neurons and coined the term "axon," investigated RF. He was unable to decide whether it was an axon, an artifact of preservation, or a "crystallization of biological secretions." When the 1906 Nobel Prize in physiology or medicine was awarded to Ramon Y Cajal and Camillo Golgi, the debate about whether the brain was made of discrete cells or of a continuous web of fibers had not yet been completely settled. Nevertheless, although Sargent distinguished the "axons" that formed RF from "ordinary axis cylinders," described the fiber as a "highly specialized conduction path," and contrasted the "very thin medullary sheath" surrounding the fiber with the sheath surrounding "ordinary nerves," he mischaracterized RF as a coalescence of axons. Seizing on this error, George Nicholls (1909, 1917), who mischaracterized RF as a "coalescence of cilia-like processes springing from cells," hypothesized that it transmits changes in its tension to sensors located in the SCO to regulate fish flexure.

Subsequently, both Sargent's hypothesis and RF itself fell into oblivion. Indeed, two notable historians of neuroscience, Regis Olry and Duane Haines (2003), have dubbed RF the "Devil according [to] Baudelaire" (p. 73) whose "loveliest trick . . . is to persuade you that he does not exist!" (Baudelaire, 2017, p. 1). This trick of concealment was largely due to studies that reported the absence of RF in humans postnatally. Additionally, as the emerging neuroscientific paradigm coalesced around neurons, RF became invisible.

While RF was being rendered invisible, the dismissal of the lining and content of the ventricles that had dismayed Sargent was being addressed. In 1913, Dimitri Tretjakov proposed that CSF-contacting neurons (CSF-cNs) and RF formed a "central sense organ" analogous to the otoliths of the inner ear. In 1921, Walter Kolmer compared RF to the gel-like tectorial membrane of the inner ear, which lies beneath Reissner's membrane of the inner ear. He suggested that the fiber stimulates CSF-cNs to form a sensory system, which he named "sagittal organ." However, as RF's invisibility became established, the "central sense organ" and "sagittal organ" faced a similar fate.

Central and Sagittal Organs Revisited

Although the CSF within the ventricles has generally been understood to function primarily as a waste re-

moval system, and the inner surface of the brain has been largely overlooked, recent investigations suggest that the content and lining of the ventricles deeply affect consciousness. Various psychoactive substances circulate in the CSF (Veening, 2010) and activate neural pathways by stimulation of chemoreceptors. A recently identified CSF-contacting nucleus receives inputs from the prefrontal, orbital, and cingulate cortex nuclei, suggesting that it participates in the regulation of cognitive and affective functions (Song et al., 2020). Considering that CSF-cNs surrounding RF are structurally similar to sensory cells found in the retina and inner ear (Vigh, 2004) and that they project to the visual and auditory pathways (Guillery & Sherman, 2002; Song et al., 2020), the generation of visual and auditory interoceptions by the fiber is indeed feasible. Not only is the inner surface of the brain lined with CSF-cNs, but there are also seven specialized sensory and secretory structures located outside the blood–brain barrier, grouped along the midline of the third and fourth ventricles, including the SCO, known as the circumventricular organs (Benarroch, 2011).

Importantly, in the present context, the interactions of RF with CSF-cNs projected from the dorsal raphe nucleus, periaqueductal gray (PAG), and hypothalamus align with its hypothesized identity as the central pathway of the "subtle body." Serotonergic CSF-cNs projecting from the dorsal raphe nucleus (Agajanian, 1978) are a key site of action for entheogens (Agajanian, 1968; Halaris et al., 1982) and provide neural inputs to the SCO. Considering that the fiber binds amines, such as the endogenous entheogen N, N-dimethyltryptamine (DMT) (Caprile et al., 2003; Ermisch et al., 1970; Hess & Sterba, 1973), it may transport molecules directly to synaptic membranes. This mechanism could explain how low concentrations of endogenous DMT, secreted by the adjacent pineal gland, can produce effects similar to those produced by exogenous sources (Nichols, 2018). Furthermore, entheogenic potency is correlated with the energy of the drug's highest filled molecular orbital, rather than the strength of its binding to receptors (Snyder & Merril, 1967); therefore, RF might facilitate similar, perhaps amplified, quantum chemical effects.

Considering that the PAG is a brain circuit that mediates spirituality (Ferguson et al., 2022), interactions between RF and the CSF-cNs lining the ventricular surface of the PAG are an enticing prospect for future neurotheological investigations. Moreover, considering the role of the hypothalamus in mediating libido and orgasmic feelings, the branch of RF connecting the SCO to CSF-cNs projecting from the preoptic region of the hypothalamus is an alluring target for exploring the connection between sexuality and spirituality.

RF and the Subtle Body: A Synthesis

The hypothesis that descriptions of the central axis of the "subtle body" and its effects are based on interoceptions generated by RF is supported by compelling evidence. However, the hypothesis that RF can facilitate the transcendence of the known limits of perceptions and powers of the mind rests on a speculative foundation. This review will explore the evidence supporting the identification of RF with the central "axis" of the "subtle body" and the speculative foundation for the claims of paranormal powers.

Evidence Supporting the Identification of RF With The Central Axis Of the "Subtle Body"

Strong evidence supporting the hypothesis that the descriptions of the central axis of the "subtle body" found in texts from mystical traditions are based on interoceptions generated by RF is the uncanny resemblance between the RF anatomy and the yogic anatomy. The *Sushumna nadi* corresponds to the CC. The *Vajra, Chittra,* and *Brahma nadis* correspond to the gross, microscopic, and immaterial features of the fiber, respectively.

The first documented identification of RF with a central *nadi* was made in 1927 by Dr. Vasant Rele. In the glossary of his book, *Mysterious Kundalini: The Physical Basis of the "Kundali (Hatha) Yoga" in Terms of Eastern Anatomy and Physiology,* Dr. Rele defines the *Vajra nadi* as "A nerve fibre said to exist inside the spinal canal called *Chittra.* It is the fibre of Reissner. Its function is not yet known. It is also known as "*Brahma-nadi.*" (Rele, 2007, Appendix IV) . Presumably, because RF was not mentioned in the text, which identified the central pathway of *kundalini* with the right vagus nerve, and the glossary entry erroneously stated that the *Vajra nadi* is inside the *Chittra nadi,* the *Vajra nadi* is known as the *Brahma-nadi,* and RF is a nerve. Rele's identification of RF with the central *nadi* was overlooked.

In 1940, Theos Bernard, a famous scholar-practitioner of Yoga and the first American ever initiated into Tantric Yoga practices by the highest Lama in Tibet, refined the identification of RF with a central *nadi.* In his book *Heaven Lies Within Us* (1940), Bernard wrote, "Inside this central (*Sushumna*) nadi, the Yogi identifies an invisible nadi known in the West as the fiber of Reissner, but which is known here as *Chittra* (the Heavenly Passage, in Sanskrit)." While Bernard corrected the mischaracterization of RF as a nerve, his identification of the fiber with "an invisible nadi" may have inadvertently contributed to its later identity as the "Devil according to Baudelaire."

The triangular-shaped *Mooladara chakra*, where *Kundalini* coils, corresponds to the triangular-shaped intraspi-

nal organ within which RF coils. The correlation between the activity of the intraspinal organ and sexuality is consistent with the concept of *Kundalini* as a transmuted form of sexual energy. The *Mooladara chakra*'s connection with the filum terminale was established by Avalon in 1919 (1974) and reexamined by Richard Maxwell in 2009.

Experimental evidence supporting the identification of RF with the central "channel" of the "subtle body" comes from investigations into the anatomical basis of traditional Chinese medicine. In the 1960s, Kim Bonghan (1963) conducted pioneering research, where radioactive phosphorous (P^{32}) was injected into acupuncture points on a rabbit's abdomen corresponding to the Governing Vessel. The subsequent tracing, using autoradiography, revealed a thread-like structure inside the CC of the spinal cord. It is worth noting that Bonghan made no reference to RF and named the labeled structure the "neural Bonghan duct."

At the turn of the 21st century, neuroscientists reinvestigated Bonghan's findings using modern anatomical techniques, including fluorescent magnetic nanoparticles and confocal laser scanning microscopy (Soh, 2009). They reported the discovery of a "novel thread-like structure in the cerebral ventricles and CC in a rabbit" (Lee, 2008). This structure was hypothesized to potentially function as an optical channel for coherent biophotons (Soh, 2004). However, notably, the researchers claimed that this structure could be distinguished from RF without performing a direct comparative analysis by showcasing both structures in parallel. Given that the CC is very narrow and RF projects filaments onto its walls, it is likely that the researchers misidentified the structure they observed because of cellular debris that typically adheres to RF.

The identification of RF with the central "channel" of the "subtle body" can be integrated with other neuroscientific models of the "subtle body." For example, Maxwell (2009) suggested that the *Sushumna nadi* is a column of gap junctions in cells that remain in the region where the edges of the neural crest join to form the neural tube; this tube opens from the filum terminale to the brain as *Kundalini* rises. RF could interact with this column of gap junctions in a manner similar to that hypothesized to occur with microtubules (Hameroff & Marcer, 1998). Joseph Loizzo (2016) proposed that contemplative practices have provided an interoceptive map of the central nervous system that can contribute to their integration with neuroscience. While this proposal motivates meditation researchers to explore the neural basis of meditation's benefits, it excludes the suprasensory and paranormal claims of yogic traditions. It also involves complex central nervous networks and their connections to other organ systems, which pose challenges for practical applicability, especially as it relates to neurofeedback. Identification of RF with the central axis of the "subtle body" and the potential for the fiber to form a long macroscopic quantum system can overcome these limitations.

Further evidence supporting the identification of RF with the central axis of the "subtle body" lies in the congruence between traditional mystical practices and the growth and development of the fiber, as well as its enhancing effects on consciousness. Yogic practices, such as rhythmic breathing and breath holding (*pranyamas*), combined with forceful muscular contractions (*bandhas*) and postures (*asanas*), can produce pressurized waves of CSF directed toward the opening of the CC to open the normally occluded CC (Yasui et al., 1999; Zhang, 2014). Moreover, neuroimaging studies have demonstrated that meditation reduces exteroceptive sensory processing in the brain, allowing attention to be focused on interoceptions related to RF (Miller, 2009).

Thus, there is compelling evidence that descriptions of the central axis of the "subtle body" found in texts from mystical traditions are based on interoceptions generated by RF, as well as that the fiber induces spiritual experiences through its connection with the raphe nucleus, PAG, and hypothalamus. The roles of the filum terminale, glomus coccygeum, and pineal gland warrant further investigation.

The biblical accounts of Moses, Elijah, and Jesus surviving 40-day fasts align with the idea that they possessed robust RFs. The primary attachment of RF, the SCO, plays a role in regulating salt and water balance (Severs et al., 1993) and aldosterone (Geerling & Loewy, 2009) (a blood pressure elevator). The fiber is also connected to the brain's two key biological clocks: the preoptic region of the hypothalamus and the pineal gland (Kalsbeek et al., 2000). The former is a thermoregulatory center. The fiber's termination in the intraspinal organ is a potential source of urotensin. Thus, RF could have facilitated Moses,' Elijah's, and Jesus' protection from dehydration, hypovolemic shock, and heat stroke. Additionally, RF could potentially slow metabolism, inducing a state akin to suspended animation.

RF and Transcendence

A key question entailed by the identification of the central axis of the "subtle body" with RF is whether the altered states of consciousness potentially generated by the fiber represent transcendence or psychosis. Did visual and auditory perceptions, as well as enhanced entheogenic experiences generated by RF, disconnect key religious figures from reality or open the doors of perception

to higher planes of reality? While the present neuropsychiatric paradigm supports the diagnosis that religious figures were grandiose, charismatic psychotics (Murray et al., 2012), relativistic-quantum mechanical models of RF suggest that they were exceptional individuals whose RFs endowed them with suprasensory perceptions of realities that cannot be perceived, or even conceptualized, by individuals who lack the fiber. RF provides a potential empirical path for following the unmovable finger, pointing obstinately outside the subject of quantum mechanics for all practical purposes.

Physicists studying quantum mechanics have been obstructed from following the unmovable finger that may be pointing obstinately to the mind of the observer, Hindu scriptures, or God for various reasons. First, there is the unsolved "measurement problem"; how does the quantum wave function that represents probability clouds transition into definite, classical physical reality?

Physicists are divided regarding the ontology of quanta between realists and antirealists. Realists, famously represented by Einstein, believe that new concepts can completely grasp quanta. Antirealists such as Niels Bohr and Werner Heisenberg believe that our knowledge of quanta is necessarily limited. Bohr advised scientists, "When it comes to atoms, language can be used only as in poetry" (quoted in Pranger, 1972). Heisenberg believed that the metaphorical use of classical concepts is rooted in our biological nature, "It makes no sense to discuss what could be done if we were other beings than we actually are" (quoted in Pangle, 2014).

We are denied perception of quanta because somewhere, somehow, and sometime along their path through a measuring apparatus and along the neural pathways to conscious perception, they collapse, decohere, or split into parallel universes. RF could open the doors of perception to quanta by bypassing the causal chain, leading to subjective perception. Direct consciousness of the fiber's subatomic constituents could fulfill its hypothesized role as the neural substrate of suprasensory perceptions of ultimate reality.

Such direct consciousness could be facilitated by organizing the quanta constituting the fiber into a macroscopic quantum system. Unlike physical objects in external reality perceived by exteroceptors, which almost instantaneously entangle with their environment and decohere into classical systems, RF, surrounded by nerve endings connected to the most powerful information processing system in the known universe, could persist as a macroscopic quantum system. Recently developed methods of quantum feedback and control have shown that macroscopic quantum systems can be created with cavity quantum electrodynamic devices using quantum feedback and control. These devices have illustrated that the hindrances to creating a macroscopic quantum system, Schrodinger's cats, are technical rather than conceptual (Wineland, 2013). RF, interacting with the surrounding nerve endings, is a biological analog of cavity quantum electrodynamic devices (Vannucchi et al., 2019; Wu & Austin 1978, 1981). Efferent CSF-cNs could emit electromagnetic signals based on feedback from afferent CSF-cNs. Based on the estimated 100 billion neurons, and 100 trillion synaptic connections operating within milliseconds, the human brain can carry out about 100 petraflops. This information processing power would be exponentially exceeded if quantum computation in microtubules or other structures is involved. Next-generation supercomputers could provide comparable feedback. Volitional control of RF's quantum behaviors could operate in manner analogous to Eccles' model of volitional control of quantum tunneling, Hameroff's model of volitional control quantum coherences in microtubules, and volitional control of EEG frequencies and coherence (Albarrán-Cárdenas et al., 2023), and single motor neurons (Basmajian, 1963; Bräcklein et al., 2022).

Strings and branes that have been posited in unified theories of quantum mechanics and gravity add another barrier to the observability of quanta. Are strings and branes only parts of equations, or parts of reality that are compacted into dimensions too small to be seen? Similarly, parallel universes are postulated by the many-worlds interpretation of quantum mechanics, but there are no known traversable routes to reach them. Condensates of strings constituting RF could facilitate their manifestation and perceptibility. Casimir effects within the fiber's hollow core could transform it into a wormhole to a parallel universe (Garattini, 2019).

Second, physicists are not equipped to travel the road from quantum mechanics for all practical purposes to Hindu scriptures and God because the language of physics and the deepest levels of the languages of the Vedas and Torah are ontologically different (Holdrege, 1996). Suprasensory perceptions generated by RF could be the neural substrate of understanding the profound depths of the Vedas and Torah. Similar to how an intact Wernicke's area is necessary for understanding ordinary language, an intact RF might be necessary for understanding language as divine energies. Because the postnatal regression of RF can be reversed, it is reasonable to discuss what could be done if we were different beings.

Third, consideration of the "subtle body" as a neural substrate of suprasensory perceptions or transrational cognitins has been deemed to be inadmissible by scientists because of prejudices about the truth value of religion. These prejudices have historical roots in the Age of

Enlightenment and childhood development. As Sigmund Freud (1928) observed, "The truths contained in religious doctrines are after all so distorted and systematically disguised that the mass of humanity cannot recognize them as truth." A child does not recognize the symbolic nature of religious truths. He hears only the distortion and feels that he has been deceived. Einstein exemplifies this mistrust of religion. He went through a period of religiousness, following kosher dietary laws and singing self-composed songs praising God. However, at the age of 12, after reading popular science books, he concluded that much in the stories of the Bible could not be true. The result was the "crushing impression" that he had been intentionally deceived by lies. Thus, when Einstein wrote to Maurice Solovine expressing his belief that the capacity of freely created mathematical systems to reveal a hidden order that defies expectations based on naïve sensory experience is a "miracle," he further stated that the miracle cannot be legitimately approached lest his friend think that, weakened by age, he had "fallen prey to the clergy" (Einstein, 1987, p. 118)

Quantum Mysticism

The following section will explore relativistic-quantum mechanical models of RF in the context of mystical religious traditions. The literal interpretation of Adam and Eve's creation and exile from Paradise has served as a wedge between science and religion. However, the kabbalistic interpretation of Adam as the first individual to enter the cycles of material existence, where his "garments of light" transformed into "garment of skin," aligns with an account of the loss of RF and the transition to consciousness dominated by exteroception. The ascents of Enoch, Elijah, and Ezekiel, as well as the radiance of Moses' transitions to consciousness, are dominated by RF.

The suprasensory perceptions attributed to mystics include the transcendence of time. Ordinary temporal perception operates under what Einstein, in a famous letter to the sister of his recently deceased friend Michele Besso, called the distinction between past, present, and future, a "stubbornly persistent illusion." Relativistic conduction could allow perceptions to penetrate that illusion. Wormholes connecting different regions of the space-time continuum could also accomplish the same. Beyond the range of temporal and spatial events is the transtemporal, transgeometric realm corresponding to *Brahman, Tao,* and the *Ein-Sof.* The activity of compacted dimensions and quantum fluctuation of space-time that physicists describe within the 1.6×10^{-35} m diameter core of RF, identified as the *Brahma nadi* or *kav*, provides a neural substrate for the interface with the highest plane of reality.

Mystical religious traditions involve suprasensory perceptions as well as paranormal powers. However, scientific evidence of paranormal powers has been tainted by fraud (Pinch, 1979) and has remained difficult to detect statistically (Jahn & Dunne, 1986). Consequently, mainstream science has rejected it. Macroscopic quantum systems embodied by RF could amplify the effects of psychokinesis. Quantum systems embodied by RF could potentially exploit the paranormal properties of the quantum world—superposition, tunneling, and entanglement. This could lead to the creation of improbable macroscopic quantum systems that are indistinguishable from magic. Furthermore, RF may have the ability to manipulate the creation and annihilation of virtual particles and particles in the physical vacuum, essentially generating something from "nothing."

While suitable test subjects and technologies to measure RF are currently unavailable, and evidence of paranormal powers demonstrated by historical religious figures is unverifiable, the image on the Shroud of Turin is a possible exception. Initial carbon dating suggested that the Shroud of Turin was a Medieval forgery, but subsequent studies using X-ray dating and recalculations of carbon dating based on sample contaminants have yielded results consistent with a much older origin, dating back approximately 2,000 years (de Caro et al.,2022). Theories explaining the creation of the image by a finely tuned burst of radiation have been presented, accounting for the features of the image (di Lazarro et al., 2010; Fanti, 2010; Jackson et al., 1984). However, the challenge lies in the astronomical odds against configuring the subatomic constituents of the human body into a mechanism capable of emitting such a burst of radiation. RF provides a potential avenue to overcome these odds and offers a novel perspective on these phenomena, potentially bridging the gap between science and the miraculous.

The ultimate attainment of the "subtle body" is the Kabbalistic doctrine of *Tikkun Olam.* In cosmological terms, the shattering of cosmic harmonies is expected to be repaired during a new cosmogenesis by 2240. Based on measurements of the rate of cosmic expansion and the cosmic microwave background, the previous cosmogenesis is calculated to have occurred 13.7 billion years ago. According to calculations based on measurements of the Higgs boson and top quark at the Large Hadron Collider, the observable universe is currently in a metastable state. This state is described as a false vacuum separated from a lower-energy true vacuum by an energy barrier that can be penetrated by quantum tunneling, thereby initiating a new cosmogenesis (Devoto et al., 2022; Rafleski & Bir-

rell, 2015). While the odds of such an event occurring by random quantum fluctuations are vanishingly small, it potentially could be engineered using quantum feedback and control of RF, with the facilitation of neurofeedback (Bi & Song, 2013; Shukla et al., 2020; Zhang et al., 2014, 2017). Despite the scientific consensus deeming a new cosmogenesis resulting from tunneling through this barrier as the ultimate catastrophe (Coleman, 1977; Tegmark & Bostrom, 2005), uncertainties, including the potential unfolding of compacted dimensions, leave open the possibility that it could also lead to cosmic redemption.

CONCLUSION

Evolutionary Crossroads

Homo sapiens evolved the unique capacity to create mental worlds, communicate them with language, and use them to achieve practical goals. This capacity conferred a variety of selective advantages. Lying confers an advantage over competitors. Political and religious systems promote social cohesion. Understanding the physical world enhances survival. Considering that natural selection favored the perinatal regression of the strategically located RF during the evolutionary transition from apes to *Homo sapiens*, the loss of the fiber was likely a factor in creating the neural foundation for that transition.

I propose that the evolutionary loss of RF is analogous to the breakdown of the "bicameral mind" described by Julian Jaynes (2000). He proposed that humans, as recently as three thousand years ago, were organisms bound by stimuli and that their behavior was governed by command auditory hallucinations transmitted from the right side of the brain to the left via the anterior commissure. According to the model proposed here, RF transmitted the transtemporal, transgeometric constituents of consciousness to the ECM, ion channels, and microtubules to create unity between inner and outer reality. Similarly to the "bicameral mind," this unity broke down when previously isolated cultures clashed (Wile, 2018).

Now, after 300,000 years, according to conventional evolutionary theory, or 3,000 years according to Jaynes, the accelerating expansion of mental worlds and their consequent effects pose a threat to human survival. The postmodern age began replacing truth with power struggles. The information age is overwhelming human cognitive capacities. Artificial intelligence holds the potential for exacerbating those dangers. In fact, Frederic Jameson (1992) argues that this new danger, "stands as something like an imperative to grow new organs, to expand our sensorium and our body to some new, yet unimaginable, perhaps ultimately impossible, dimensions."

Mystical traditions have proposed that developing the central axis of the "subtle body" can lead to a harmonious connection between the human microcosm and the divine macrocosm. Based on this analysis, it is suggested that reversing the perinatal regression of RF, integrating it into neuropsychological functioning, and enhancing fiber activity through real-time neurofeedback can fulfill this vision.

The exploration of whether a neurocosmology organized around RF can fulfill the perennial vision of mystical traditions is alluring to some but repulsive to others. The group that finds this repulsive either dismisses mystical traditions as myths, superstitions, or products of hallucinatory confusion, or regards "quantum mysticism" as pseudoscience. Regardless of the camp to which one belongs, RF is an enticing enigma, and the starting point of the exploration of RF's potential effects on human consciousness is the same, i.e., the investigation of persons whose fibers persist postnatally.

Considering the potential role of RF in preventing or treating scoliosis, hydrocephalus, schizophrenia, and Alzheimer's disease, the first step in investigating RF as a neural correlate of human consciousness is likely to involve reversing the fiber's perinatal regression through cellular reprogramming. Whether individuals with regenerated fibers will be harbingers of an era of expanded consciousness and revelations of truth or misguided challengers of natural selection remains to be seen. Meanwhile, empirical and theoretical evidence supporting the hypothesis that RF is the means to achieve the goals of mystical traditions can assuage the intellectual bad conscience of people of faith who have been criticized for holding beliefs unsupported by reason or evidence and illuminate new fields of scientific exploration, especially the nascent field of quantum neurobiology.

IMPLICATIONS AND APPLICATIONS

Investigations of Reissner's fiber using cellular reprogramming, cognitive neuroplasticity quantum neurobiology, and neurofeedback could contribute to the fields of neurophysiology, neuropathology, neurotheology, transpersonal psychology, and transhumanism. The eschatological implications of this paper could contribute to a constructive dialogue between science and religion.

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ESSAY

Exploring the Link Between Paranormal Phenomena and Plasma Balls

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PLATINUM OPEN ACCESS

HIGHLIGHTS

Many strange phenomena like UFOs, poltergeists, or ball lightning could be 'electroballs,' or plasma-like forms with electrically charged layers.

ABSTRACT

This article explores the relationship between many paranormal phenomena and a proposed type of plasma ball, with two electrically charged layers, referred to in this paper as "Electro-balls". It provides a framework to explain these weird phenomena as different manifestations of Electro-balls and the mechanisms behind them. These manifestations include unexplained phenomena such as ball lightning, strange sounds in the sky (skyquakes), UFOs/ UAPs, haunted houses, poltergeist phenomenon, levitation, cattle mutilations, cryptids, angels & demons, demonic possessions, etc. It also discusses the electroball formation, its characteristics, and its effects on the environment.

KEYWORDS

Animal mutilations, ball lightning, earthquake, electro-balls, EMF, haunts, levitation, paranormal, plasma, sleep-paralysis, UFO.

INTRODUCTION

Many paranormal phenomena seem to be caused by events of intense static electricity (Auerbach, 2010), and some of them by a kind of ionized plasma ball, called here *electroball*, closely related to ball lightning. It is hypothesized here that ball lightning is an extreme form of electroball. Ball lightning is difficult to explain; however, if models could be formed, then many unexplained phenomena could finally be answered (Turner, 2003). This idea was shared by other researchers, but was mainly limited to ball lightning and was rarely suggested to explain UFOs or Poltergeist phenomenon (Richmann, 2007). Electroball occurrence can often be characterized as fleeting and extreme; however, with the proliferation of cameras integrated within cell phones and digital devices, a growing database of excellent quality visual evidence and data is emerging.

Electroball Definition

It is a mass of ionized air or plasma surrounded by another layer of ionized air or plasma with an electrical charge of the opposite polarity. Occasionally, they are also referred to as orbs or plasma balls. The core of the electroball is compressed by the attraction of both layers. A neutral layer is often formed between them by electric discharges (Figure 1). Therefore, a structure is formed that stores electric charge like a spherical capacitor (Anderson et al., 2004). If it rotates, it generates a magnetic field (Oreshko, 2015). There are no direct measurements, but in some anecdotal cases of small balls (less than 10 cm in diameter), the magnetic field was so strong that it burned out a nearby magnetometer, vaporized gold jew-

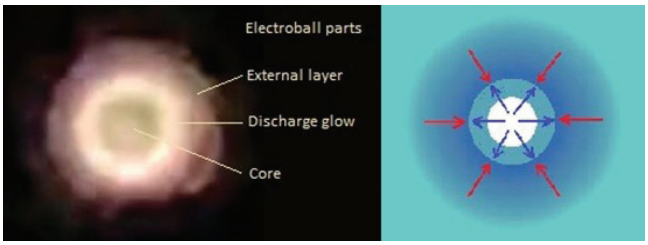


Figure 1. An electroball is a ball of ionized air or plasma surrounded and compressed by another layer of ionized air.

elry without touching it (Nikitin, 2023), or induced hallucinations at short distances (Clarke, 2000; Persinger, 2010). Occasionally, low-energy ball lightning has a bluish-violet glow around the core, which is produced by a corona discharge. In high-energy ball lightning, the glow generated by the movement of the elements of its core is added to the glow of the shell, so the total spectrum shifts to the red region. (Bychkov et al., 2008; Oreshko, 2021). The size of Electro-balls can vary from microscopic (Nikitin, 2023) to enormous (lenticular clouds).

Ball lightning seems to be one of the most mysterious and extreme Electro-balls. In ball lightning, the glow is different in nature and more intense. Very often, it lasts longer and contains much more energy than it should, according to current theoretical models (Sagan, 2004). Ball lightning has been produced in the lab, and results support some of the theories related to plasma spheres. The existing estimations of the energy density of the ball lightning show that this value is equal to 10^{10} J/m^3 (Friday et al., 2013; Oreshko, 2021). The occurrence of these plasma balls, especially ball lightning, typically occurs for a few seconds up to a minute (Donoso et al., 2016). Based on at least 10,000 reports of ball-lightning, they appear to be on average 1 foot (30 cm) in diameter, be as bright as a 100 Watt incandescent lamp, and last around 10 s (Stephan, 2012).

Some lenticular clouds share the same structure but last much longer with less charge density. Between this type of cloud and ball lightning there are many other types of Electro-balls.

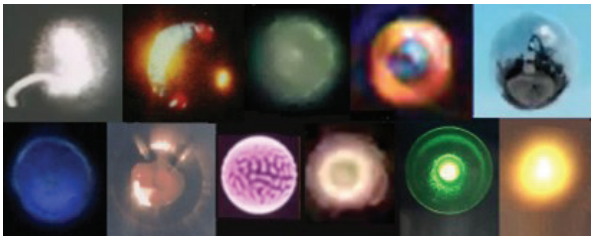


Figure 2. Electroballs can be transparent, translucent, cloudy, opaque, clear, dark, reflective, blurry, glowing, incandescent, and combined with others. (Galán S., M. A., 2021).

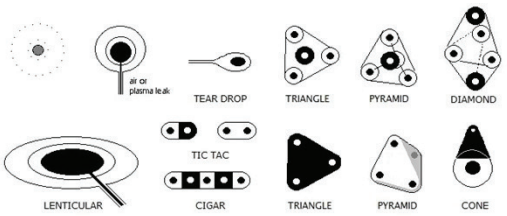


Figure 3. Common combinations of electroballs seen in UFOs. Some keep the round shape and others share the outer layer (Galán S., M. A., 2021).

Electro-balls can be transparent, translucent, cloudy, opaque, clear, dark, reflective, blurry, glowing, incandescent, etc, or have combinations of the above characteristics (Figure 2). The core could be covered with other substances like dust, litter, cobwebs, "angel hair" by the strong electromagnetic field. The most common are transparent or invisible, but they become visible with infrared cameras (Infamousfanclub, 2015). The transparent orb, in this case, was filmed during daylight hours (Paranormal Intelligence Agency, 2023). Electro-balls can combine by their charges, forming molecule-like structures. Many UFOs are made up of these combinations (Figure 3), but the most common are made up of just one (AARO, 2023).

In this video, a combination of three Electro-balls are visible (Figure 4) interacting with others around and creating more with leaked plasma from the core (ufotoday, 2009).

Formation of Electro-balls

A sudden corona discharge can create an electroball if the air around has a charge of the opposite polarity, as it is attracted to the air within, compressing it (Figure 5).

For ball lightning, gas discharge properties have been calculated to assess the possibility of resulting from an electrical discharge forming stable plasma balls, with electron densities of ~10^{11} cm^{-3}. The ball can exist independent of the electrodes from corona pulses from a high voltage point within any structure, such as a house or aircraft fuselage. Large electric fields would be present at the tips of such metal conductors within an ambient electric field existing during a thunderstorm (Lowke, 2021).

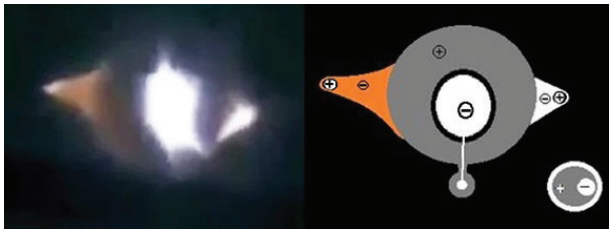


Figure 4. A combiation of three electroballs (ufotoday, 2009).

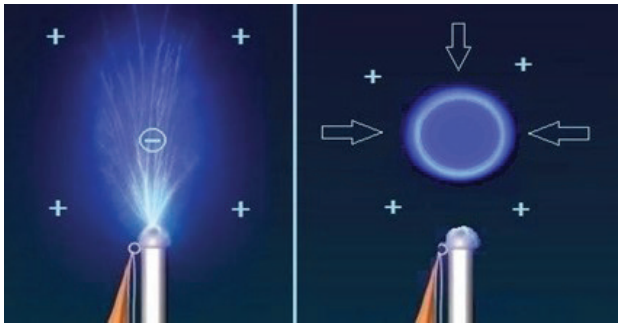


Figure 5. A sudden corona discharge or St. Elmo's fire at the top of a metal flag pole combined with charged air around form an electroball (Galán S., M. A., 2021).

Energy stored in ball lightning is, on average, 20KJ, energy density around 0.2 KJ/cm^3 or 100 KJ/g, more than the common explosive trinitrotoluene (TNT). These powerful charge and energy densities suggest the extreme properties proposed here.

Sources of Electricity

The main sources of electricity in the air that form Electro-balls and other extraordinary phenomena are thunderstorms, charged particles discharged to Earth from the ionosphere, the Van Allen Belts or auroras (Figure 6), and electromagnetic pulses of meteors. The full moon and new moon phases can also have an influence as reported by Kovalyov and others below.

Discharges From The Van Allen Belts

Research indicates that particle discharges from the Van Allen Belts may generate UAPs, often during a full moon (Kovalyov, 2022), especially around areas with electromagnetic anomalies, detectable even at 400 km altitude (NASA, 2004). A link has been observed between full moon nights, new moon, and the paranormal (Dubaj & Dupont, 2022). Full moons and new moons increase the number of reported UAP's and paranormal cases, but it is not clear if it is made by tidal forces, due to the passage of the moon through the Earth's magnetic tail, or due to the

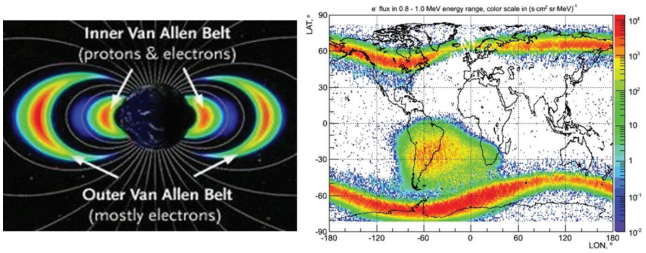


Figure 6. Particles in the Van Allen Belts. (Source: NASA / JHU-APL / Univ. of Colorado), and Electron Precipitation in the range of 0.8-1.0 MeV. (SPENVIS NASA, 1997).

Figure 7. A meteor triggers an unusual lightning called sprite (Shibahofer, 2023).

influence of the sunlit part of the moon that is charged with electricity by the solar wind and the radiation. During a full moon, the lunar sphere exerts a strong electrical influence on the night side of the Earth, especially when the moon is nearer to Earth (perigee). It seems the passage of the moon through the Earth's magnetic tail, made of plasma, could increase the particle flow through the Van Allen Belts and trigger a much larger discharge, with resemblance to the transistor amplification effect (Bell & Defouw, 1966). In line with the lunar amplification effect, researchers analyzed KP index data from 1932-1972 and found that there was an increase of 3 standard deviations around the time of a full moon (Knott, 1975).

Electrical Storms

Thunderstorms can form electroballs in the air or after a lightning strike, even dark & misty, like in this amazing video (iFunny, 2023). One model reported the generation of a powerful surge of microwave energy in the vicinity of a lightning strike (Wu, 2016). This microwave energy then ionizes the air in the locality of the strike and gives rise to a plasma sphere. This explanation is consistent with recorded observations of ball lightning (Stenhoff, 1976). Research into the effects of the full moon on increased thunderstorm activity was made with the hypothesis that the moon affected the Earth's geomagnetic field and possibly its atmosphere (Pinto & Pinto, 2015).

Electromagnetic Pulses (EMP)

EMPs created by meteors, lightning, solar storms, or nuclear explosions can trigger discharges because they can induce electric currents through the air, the ground, and in large metallic infrastructure, such as wires, pipes, or railways, and create discharges at the ends. This happened in telegraph lines during the Carrington event on September 1, 1859, when a significant geomagnetic storm with intense auroras occurred (Muller, 2014). The EMP from nuclear tests can also create Electro-balls in the atmosphere (Atomic Tests Channel, 2021).

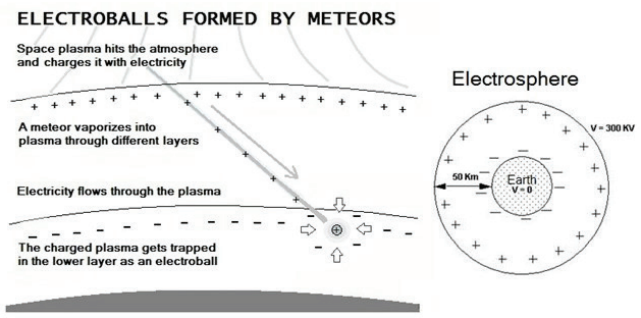


Figure 8. Electroball formed by charged plasma, from a meteor, trapped by charged air with the opposite sign around it (Galán S., M. A., 2021).

A 60% increase of UFO events were reported during meteor showers (Clarke & Anthony, 2000; Hughes, 2010). We propose two ways in which they could be formed: An EMP could happen when the conductive plasma tail of the meteor allows an electric discharge between atmosphere layers with very different electric charge (Hughes, 2010). The EMP triggers discharges such as sprites from below and from the ground as well (Figure 7). A video of a meteorite apparently triggering two sprites was captured recently over Mount Fuji in Japan (Shibahofer, 2023).

Another way a meteor could create an electroball is by vaporizing as charged plasma that becomes trapped by air with the opposite charge in the lower layers of the atmosphere (Figure 8). The charge of the core is transferred from the upper layer through the conductive plasma contrail to it. Then, once the electroball is formed, it could move in an alternative direction, following the electric field, in an unexpected movement.

Seismic Events

Occasionally, the sources of electricity are underground discharges, especially during earthquakes or volcanic eruptions, and often over fault lines (Derr & Persinger, 1991). Research by Freund on seismically generated luminous events and what he refers to as plasma plumes supports this idea (Freund, 2003; St-Laurent et al., 2006). Other research by Persinger further states that a solid-state plasma could form when tectonic strains trigger such an event. Specifically, the detection of Electro-balls in the vicinity of the seismic epicenter could provide a precursor to an earthquake event (Persinger, 1976; St-Laurent et al., 2006). Tiny plasma balls were actually simulated in the lab by placing rock samples under enormous physical pressure, thus reproducing seismic energy buildup (Derr & Persinger, 1986).

It is likely that the mass scale piezoelectric effect is the cause of these discharges, but research found links to Van Allen Belts particle discharges and moon phases as well (Kovalyov, M., 2022; Conti et al., 2018). It appears that, prior to large earthquakes, a strong electric field builds up on the ground, the polarity of which is most often such that it pushes the F layer (+) aside, allowing energetic electrons from the higher ionospheric layers to penetrate to lower levels. These perturbations are generally observed about 5–10 days before large seismic events and disappear within 1–2 days (Freund, 2003).

Short Circuit Sparks

Electrical arcing of high intensity could also form different kinds of Electro-balls or ball lightning. Some of them created Electro-balls as ball lightning or even as black ball lightning (Rabinowitz, 1998). It should be noted that ball lightning was obtained with a charge in the capacitive energy storage model: Q = 1 - 3 C, and black ball lightning was also observed at a very low charge in the capacitive storage equation: Q = 0.25 C (Oreshko, 2021; Nikitin et al. 2021). In an excellent video recorded in Serbia, an intense electrical storm is taking place, and after a short circuit occurs, two bright spheres move at high speed near the camera, causing distortion on the audio portion of the video recording (Almir Curić, 2019), consistent with strong EMF and its possible effect on electronic devices (Camp et al., 2001).

Static Electricity and Magnetic Anomalies

Electrical and magnetic parameters are essential characteristics of these phenomena (Persinger, 1975). When Electro-balls spin (Figure 9), they create a magnetic field able to be detected with a compass or magnetometer (Oreshko, 2015). Electromagnetic field meters have also been used to detect the resulting fields (Healing Tools, 2018).

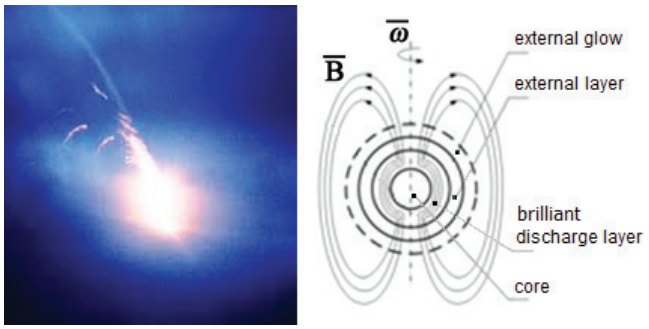


Figure 9. One of the few images of ball lightning taken at short distance. Notice that it is spinning and leaving a contrail. Magnetic field around (Oreshko, 2021).

Radioactivity

Radioactivity has been detected in some UFO sightings with Geiger counters but the origin is unknown. In experiments, radiation emitted when ball lightning pass through solid objects can be explained by cascading generation of particles by high-energetic protons of the ball lightning that enter dense matter and interact with it (Oreshko, 2015, 2021).

Places contaminated with radioactivity, like nuclear facilities and test areas, report more paranormal and UFO sightings (History Channel, 2019). Radioactive ionization of the surrounding air may attract them as radioactive lightning rods do by attracting lightning (Israelsson et al., 1987). Areas with higher natural radioactivity are related to higher air conductivity. Paranormal events have been linked to radon gas within houses especially in homes with basements (Baldassarro, 2013; Frohlich & Davis, 2003).

Radio Interferences, Electrical Anomalies, and Damage to Electronic Devices

The presence of Electro-balls discharging electricity can cause surges in nearby circuits. Plasma's high conductivity allows it to create short circuits, turn on lights, increase the electricity consumption of the grid or discharge batteries by contact with them (Turner, 1994). The discharge produces electrical noise which may be coupled into a radio receiver.

Cold Spots

If transparent orbs are formed outside, they could create cold spots if they enter a building, especially if they were formed at high altitudes where the air is very cold. Thermographic cameras are helpful in detecting and visualizing cold spots (Turner, 1994).

Sounds

Air leaks from the compressed core of the electroball can produce noise. Blows, cryings, roars, hissing or trumpet sounds have been reported (Stenhoff, 1999). Leaks from lenticular clouds have a sound like jet engines or strong wind gusts. They can explode with loud bangs or with weak pops (Figure 10). The corona discharge produces noise, too. In a video recording, loud horns can be heard echoing across a semi-rural landscape (MrGlowTm, 2019). They can make noises by colliding, bouncing, or even moving furniture. If a person speaks inside an electroball, the voice will be altered because the air is denser, suffering later hearing discomfort or tinnitus due to the high pressure.

Silence

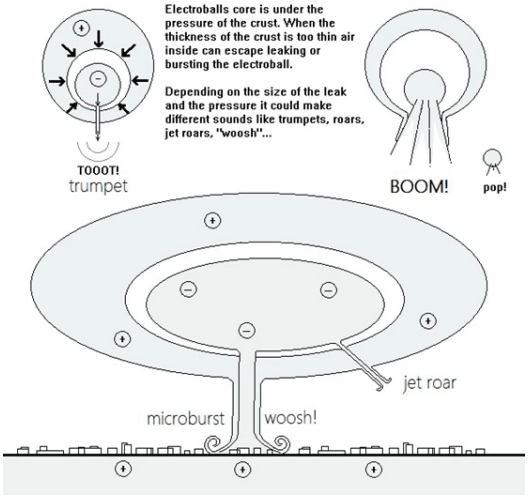


Figure 10. Sounds and wind blows produced by Electroballs (Galán S., M. A., 2021).

Often, there is a strange silence around large Electroballs because the ionized air dampens the noise by its attraction to the core. Probably, some supersonic UAPs are silent for this reason as well (Stenhoff, 1999).

Odors

The most common are by ozone and nitrogen oxides created by electric discharges through the air. Other odors that could be noticed are smoke (if it was burning) due to something trapped inside such as dust, moisture, etc (Neppe, 1983).

Fires

They can occur due to the impact of ball lightning. Apparently, transparent Electro-balls can sometimes burn things, too (Boerner, 2019). A short circuit between both layers or an electric discharge could be the mechanism to trigger them. Ball lightning has been proposed to explain some cases of spontaneous human combustion (St, 2006).

Hallucinations

Witnesses often report that they hear disembodied voices or see strange creatures. The intense electromagnetic field of the electroball can create auditory and visual hallucinations and other weird feelings, such as intense pareidolia or out-of-body experiences, especially at close range (Persinger, 1988). If a human happens to be in the vicinity of such a plasma orb, it could affect the perceptions by electrically stimulating the brain's neural circuits (Persinger et al., 2010; Roll & Nichols, 2000). Persinger and others further speculated that paranormal events could be perceived by witnesses in the form of a haunt or even an alien abduction event (Holden & French, 2002; Persinger,

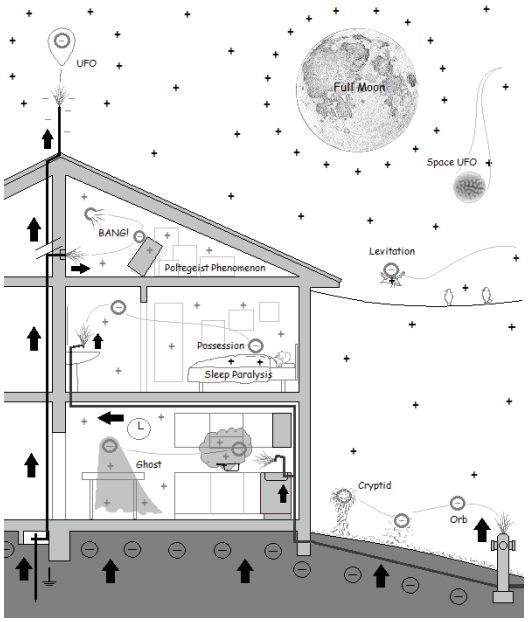


Figure 11. An isolated tall house, on top of a hill, during a night with a big full moon and under storms or auroras, is a good place to have paranormal phenomena or to see ufos. The electric influence of the moon (+) attract electrons (-) upwards through conductive elements, such as pipes or wires, especially if the air is charged too (+). The discharge of electrons could form electroballs (Galán S., M. A., 2023).

2001). These hallucinations seem to increase pareidolia because it is very common for people to see or hear what they would expect based on their personal expectations.

CRITICAL DISCUSSION

We now proceed to apply this model to some of the best-known paranormal phenomena. As can be seen, this proposal is primarily qualitative and necessarily quite speculative due to the strange and elusive nature of this phenomenon and the lack of enough quality data.

Haunted Houses and Boats

There are certain buildings with many reported cases of paranormal phenomena. Very often, these phenomena could be explained by electroballs formed inside by air previously charged and combined with a sudden surge of static electricity with the opposite charge or by electroballs attracted from the outside. The typical circumstances able to form such a rare phenomenon include the following: an isolated tall house, hilltops, full (super) moon nights, and beneath storms or auroras (Figure 11).

These discharges could happen especially at the top of isolated buildings or boats as corona discharges, such as Saint Elmo's fire, but also inside buildings from wires

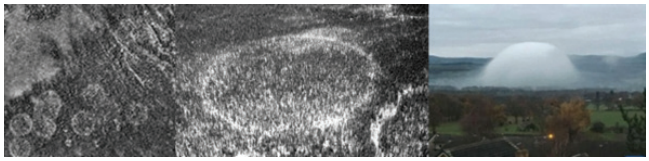


Figure 12. Forest rings from above. A charged cloud attracted to something on the ground.

or pipes, so they would be more common in kitchens and bathrooms located on upper floors. The observer may report witnessing a paranormal anomaly such as a ghost or an orb (Cameron, 1882). Electro-balls theory would be consistent with electrical disturbances during many reported haunts (Dagnall et al., 2020).

Forest Rings

Forest rings are large, circular patterns of an area with a low density of trees in the boreal forests of northern Canada and other locations generally found under the auroras. These rings can be from 50 meters (160 feet) to almost 2 kilometers (1.2 miles) in diameter, with edges about 20 meters (66 feet) thick. The origin of the forest rings is unknown. Some hypotheses include radially growing fungi, buried kimberlitic pipes, trapped gas pockets, and meteorite impact craters. Electrical anomalies have been found in them, especially in the center (source of negative charge) and around the edge, where charge differences can be found between the inner and outer sides measuring around 300mV (Hamilton, 2008). Similar rings have traditionally been linked to the paranormal. A strong electrical anomaly like this must be a source of ions for Electro-balls or to attract ionized air. Possibly, even large masses of surrounding ionized air create domes around the center of the ring (Figure 12). Similar domes have been seen developing tentacle-like protrusions that point or extend toward nearby objects.

Levitation

When the core of the electro ball has a large electrical

Figure 13. Left: The Sorcerer of Cideville France, 1850. Note animals on ceiling. Right: Poltergeist in a kitchen (Cawthorne & Matthews, 2009; Sinn, 2012).

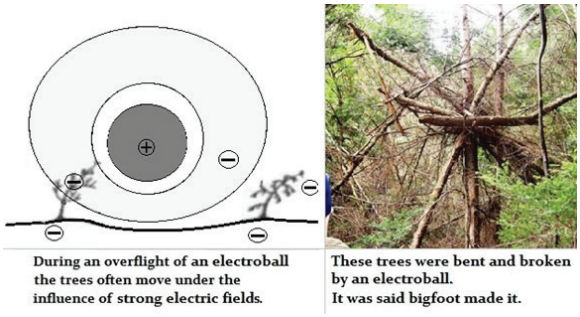


Figure 14. Near the ground, electroballs will attract or repel objects like trees, bending or even breaking them (Galán S., M. A., 2021; MagnusApollo, 2021).

charge, and it is over a place with the opposite charge, it moves towards it but without colliding because the external layer electrostatically repels the ground strongly at a short distance. The electroball tends to float at a short distance above the ground (Grand Illusions, 2012). Near the ground, Electro-balls could attract and raise objects depending on what charge they have, especially if they touch the outer layer (Figure 14). Extremely energetic electroballs (*Faya World Secrets*, 2019) could bend or even break trees (Figure 14) (Stenhoff, 1976, 1999). Sometimes, the classic bigfoot or sasquatch phenomena have been blamed for these occurrences (Clark, 2012)

Objects Levitating

Some objects in contact with the external layer get so highly charged that they levitate towards the core, because of opposite charges. The magnetic field has influence too. Reported cases of objects that appear or disappear, mysterious water puddles inside home, stone rains or even cars levitating are proposed to be explained as this type of levitation (Nikitin et al 2021; Cameron, D., 1882; Clark, 2012).

Levitation of Persons and Animals

It seems that the blood plays an important role in this since it has been noticed that it moves quickly towards the electroball but not as much as the rest of the body does (Bolonkin, 2005). We propose that the hemoglobin in the blood becomes charged after breathing the charged air of the outer layer, increasing the attraction to the core, with the opposite charge (Figures 15-16). It is not clear which charge, positive or negative, plays a role in charging the hemoglobin to levitate.

Cattle Mutilations and Animal Rains

The animal mutilation phenomenon can purportedly happen the same way. The blood of animals is attracted towards powerful Electro-balls making animals levitate,

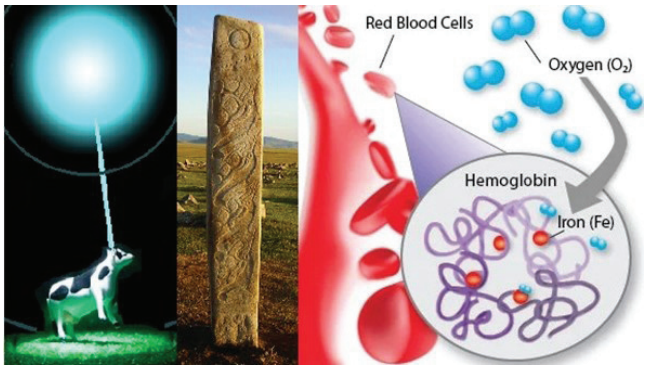


Figure 15. Attraction to animal's charged blood produces bleeding to the electroball, mutilations and even levitation (Galán S., M. A., 2021); Deer stone, represents deers levitating to an electroball.© Ts.Turbat (2009); Hemoglobin (Doyle, Maggie, 2015).

suffer extreme bleeding and mutilations by the strong electrostatic pull on blood. Later, when the electroball vanishes or the animals lose enough blood, they fall. Fish rains could happen in this way.

In the USA, in the last 50 years, there are reports of over 10,000 animals that have suffered similar mutilations (O'Brien, 2014). In Alamosa, Colorado, on September 7, 1967, a horse named Snippy is believed to have come in contact with a fireball. Sadly, Snippy did not survive, and there was evidence of scorching. The flesh from the head and neck was completely cleaned to the bones. There were also reports of scorch marks on the ground (Denver Public Library, 2020).

It seems that in ancient times, this was a big problem due to the risk to people and livestock, so they offered blood sacrifices at the top of shrines to these supposed entities to attract them to the sacrificed blood. In Siberia and Mongolia, hundreds of monoliths of the late bronze age, called deer stones, seem to represent animals like deer levitating and being mutilated under Electro-balls,

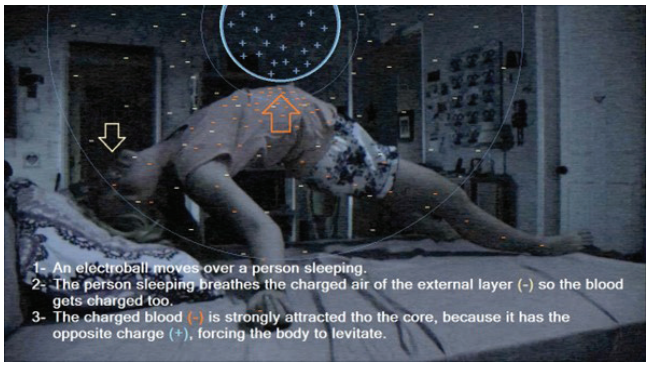


Figure 16. Levitation during sleep. The ground must have the same charge sign than the core to avoid the core to move down. (Galán S., M. A., 2021).

probably as a warning of the risk within their vicinity (Figure 15). In Scotland, some monoliths with the so-called "Pictish beast", dated around the 200AD, seem to depict the same.

Spirit-Demonic Possessions and Attachments

In some circumstances, an electroball can get attached electrostatically to a person, often as a transparent one, and be identified as a possession by a spirit or a demon. If the influence is very strong, the person can get paralyzed (Figure 17: Fuseli 1781), suffer seizures, or be physically dragged by the electro ball. It seems to happen more during full moon nights and often in the early morning (Dubaj & Dupont, 2022). Sometimes, climbers report being followed by an invisible entity or suffer sudden hallucinations near the top of mountains due to this.

Extreme Sleep Paralysis

Sleep paralysis is only identified as a mild neurological problem, but when the characteristics are very extreme, it seems to be hypothesized as being associated with electroball attachment (Figure 17: Fuseli, 1781; Wright, 2017). It occurs more at night, around 3:00AM, when an electro ball adheres to the upper part of the body or to the head, suffocating the victim and also causing strong pressure on the chest. Paralysis is often reported, among other disturbing symptoms, as near-death experiences or abductions. Some appear to have been suffocated to death. Sudden infant death syndrome could be related as this phenomenon has been referred to in folklore (Wright, 2017). Researchers have found that sleep paralysis can be induced when magnetic fields are applied to the right temporal lobe (Roll & Nichols, 2000). This would be consistent with the electromagnetic fields reported with plasma balls.

Incubi and Succubi

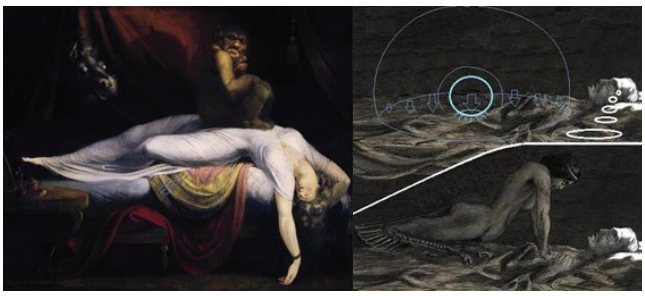


Figure 17. Sleep paralysis (Source: Henry Fuseli "The Nightmare" 1781). The victim use to suffer hallucinations and paralysis induced by the electroball's electromagnetic field.

Figures 18 & 19. Left: Spherical plasma surface with ripples made in the laboratory. (SAFIRE Project. 2020). Right: Claw-like marks known as stigmata. ("The Exorcist", 1973).

When the attachment happens on the groin, it is identified as a possession with sexual assault by a demon, sometimes even with penetration. In folklore, this demon is referred to as a succubus if it attacks a man or an incubus if it attacks a woman. In many cases, the victims report being attacked by invisible entities, such as dark shadows, orbs, or lights. If they hallucinate, they often see creatures very different from persons, such as demons, aliens, beings of light, etc. (Persinger, 2001).

Hitchhiker Effect

Being apparently deeply affected or "infected" by paranormal phenomena after being exposed to them has been called the Hitchhiker Effect (Kelleher, 2022). It could last for years and the cause is unknown, excluding those based in autosuggestion or social contagions. There is a hypothesized link to quantum entanglement, but this has not been proven (I-Team, 2022), or to multiple charged clusters having the structure of ball lightning (Nikitin A.I., 2023). Again, there is a possible link between hemoglobin and electricity overcharge because among the symptoms, there are blood disorders, as well as lupus and Raynaud's disease (Kelleher, 2022). Thyroid disorders are also common, which are linked to radioactivity (UpToDate, 2024). I suggest avoiding charged places and earthing as a treatment to discharge it to the ground. One particular location that has gained notoriety with this effect is the Skinwalker or Sherman Ranch in Utah state (Kelleher, 2022).

Dermography and Stigmatization

The repulsive forces among the charged particles in the core push them to its surface. If the density of particles is very high, they could form ripples (Figure 18). Sometimes, when the electroball touches the skin, it could cause finger-like marks when pressure is exerted if it has an undulated surface. Objects attracted to the electroball

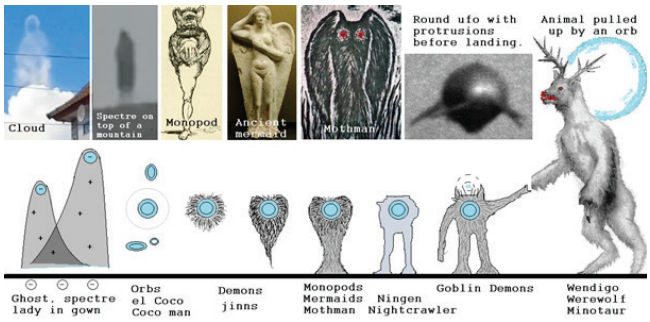


Figure 20. Cryptids formed by electroballs attracting charged mist or litter around them. Note that ghost shapes are visible in orange and white colors in this video (Figure 4).

could scratch the skin as well. When these marks are short-lived lived they are called dermography (Collins Dictionary, 2023) because they can be misidentified as writing. If the attraction of the blood is very strong, internal bleeding could result, and even claw-like marks are also commonly reported (Figure 19). Its cause is often attributed to demons. These scars are called stigmas and are also referred to as a witch's mark in folklore (Wikipedia, 2023).

Cryptids, Ghosts, Spirits

Sometimes electroballs can be misidentified as paranormal entities or creatures:

- When they are transparent or invisible: as spirits, poltergeists, guardian angels, or demons possessing their victims.
- When they are brilliant like ball lightning or glowing orbs, as angels, apparitions of God, the Virgin, saints, fairies, extraterrestrial or multidimensional beings of light, and even demons.
- When they are misty: as specters, ghosts, ladies in gowns, shadow people. They could look clear or dark depending on the position of the light around them (Figure 20).
- When they make noises: if the noise is like a woman crying, as Banshee (Ireland) or La Llorona (México); if it is like a roar as a Bigfoot and if it is like a trumpet as angel Gabriel.
- When they show attraction to blood, as vampires, chupacabras, and other bloodthirsty gods and monsters. Sometimes, it even kills with a plasma beam from the core (Wells A., 2016).
- When they are covered with electrostatically bonded litter like hair, cobwebs, dust, leaves, grass, or ice, they could resemble furry creatures such as Bigfoot-Sasquatch, Yeti, gremlins, critters, etc. Depending on the quantity of litter attached or if they develop protrusions, they could appear to float midair or have one or more limbs, legs, or feet if the litter reaches the ground, but the minimum number of limbs is the most common. The head would be another electroball. Like Fomorians (Irish mythology), they are very different from each other and show random characteristics (Figure 20).
- When electroballs move, they resemble living beings because they do it independently to gravity or wind (Joseph, R., 2024), following charged objects or people without colliding with them as if they were interested in them (e.g., Foo Fighters or the Angel Raphael following pilgrims). It happens because the double-layer bi-charge structure of the electoball usually attracts charged objects at long distances but repels them at short distances, reaching a balance point where it maintains the distance. That can be imitated with magnets (Grand Illusions, 2012). They could develop protrusions that look like limbs and point to charged objects in the vicinity (Figure 20).
- Some cryptids identified as animals that walk like humans (werewolves, minotaurs) could be explained as cases of levitation in which the animal is lifted by the head, but the force is not enough to raise the entire body, so it seems that it walks on hind legs (Figure 20).

A driver recorded what seems to be a cryptid like a goblin or a nightcrawler seen on the road apparently made by a misty electroball with protrusions as legs (Fox News, 2023).

Angels & Demons

In ancient times, Electro-balls were often identified as angels and demons. They were believed to be messengers between God and men. The concept of an angel has

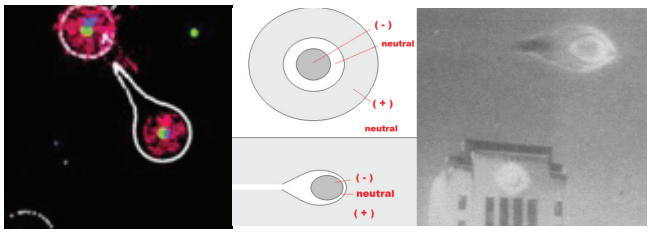


Figure 21. : (Left) A program with a similar kind of particle simulation can be seen in this video. Even without been adjusted to test this concept, it shows the spontaneous formation of structures similar to electroballs and groups of particles that move as if they were conscious living beings, as happens with electroballs (Brainxyz, 2022). (Right) Supersonic UFOs don't use to create sonic boom. Image of a silent and fast UFO over Vancouver (1937).

changed, becoming more anthropomorphic and confusing over time, but in its origin, it was probably based on different transitory phenomena observed in the sky, such as Electro-balls or parhelion (Seraph, Thrones, Cherub: Galán, 2021). In the Bible, there are many references to them, but it doesn't explain what they are; it only assumes their existence and activity. In Judaism, during some epochs, they were said to be entities without conscience or shape. Different types were described: some as wheels, spheres, or flying torches. For the Catholic Church, angels are incorporeal creatures with personality.

Common angels and archangels often looked like torches and used to be Electro-balls like ball lightning. If they were high in the sky, they couldn't do any harm, so they were identified as angels, but if they were seen close to the ground, they could harm people, animals, or properties, so they were identified as demons: the fallen angels rejected by God. Among them, you can identify at least Michael, Gabriel, Raphael, guardian angels, and choirs of angels.

- *Michael:* He is described as a warrior angel with a fire sword. It is a luminous electroball with a beam of plasma leaked from the core. (first image in Figure 2).
- *Gabriel:* Often identified as a trumpet-blowing messenger angel. It is an electroball, often without light, like a cloud or not visible at all, with a noisy air leak. It often makes a trumpet or horn sound known as a skyquake. There are many recordings on YouTube (MrGlowTm, 2019).
- *Raphael:* It follows pilgrims and travelers. It is an electroball attracted to electrically charged objects such as people or vehicles. Called Foo Fighter during the WW2. They could be of very different types (iufosightings, 2015).
- *Guardian angels:* They are transparent Electro-balls, the most common, responsible of spirits and also for the poltergeist phenomenon (Paranormal Intelligence Agency, 2023).
- *Choirs of angels:* Some Electro-balls surrounding a mass of charged air forming a circle.

EXPERIMENTAL RESEARCH PROPOSALS

It is possible to study the phenomenon of Electro-balls with computer simulations, in the laboratory and in situ. Similar experiments have already been carried out successfully.

Computer Simulations

The simulation of Electro-balls necessitates a meticulous consideration of several factors. Notably, ionized air serves as a more feasible medium for simulation compared to plasma due to the latter's inherent conductivity and strong magnetic properties, which present challenges requiring sophisticated computational algorithms. Of particular interest is the determination of whether the presence of particulate matter, such as dust, smoke, or fog, is requisite for electroball formation, along with the influence of various environmental parameters, including temperature, charge, humidity, and pressure. Some researchers hypothesize the formation of charge aggregates on the surface of ball lightning, positing the existence of Exotic Vacuum Objects (EVOs) characterized by a ring of electrons confined within their self-generated magnetic fields. Additionally, certain sightings have suggested the manifestation of macro-quantum phenomena or unconventional states of matter within Electro-balls. These complexities render comprehensive simulation of this phenomenon challenging, prompting an initial focus on modeling ionized air scenarios. For example, a team of computer scientists applied classical and quantum gravity models in order to create an Imax resolution visual simulation of gravitational lensing using a spinning black hole. This video sequence was used for scientific explorations in astrophysics and in the movie Interstellar. Within a few years, this simulation was verified to be correct.

Proposed Simulations

1. General Particle-Based Simulation: Given the skepticism surrounding this phenomenon, such simulations offer a simple and intuitive means to illustrate its basic features, including the double-layered structure, responses to gravity and electric fields, various configurations observed in UAPs, as well as phenomena such as leaks, beams, protrusions, and explosions. Even basic 2D simulations can effectively convey these concepts. Notably, these programs are user-friendly, lightweight, and capable of real-time operation, making them particularly suitable for modeling scenarios involving sparsely ionized air, such as certain cloud formations or large air masses, rather than highly ionized plasma environments (Figure 21).
2. Simulating a supersonic-charged plasma ball in ionized air offers insights into the reported absence of a sonic boom in supersonic UFOs believed to be composed of such plasma balls. We propose that the ionized air surrounding the plasma ball is attracted to its core during movement, thereby attenuating noise. This effect is attributed to the deformation of the bow wave around the electroball into a teardrop shape, resulting in reduced aerodynamic drag and noise levels (Figure 21). Additionally, rare instances of ball lightning pass-

ing through solids with apparent ease may provide an alternative explanation for the lack of noise, albeit observed only under extreme conditions (Oreshko, 2021).

Laboratory Experiments

Various studies have endeavored to recreate phenomena such as ball lightning and other plasma balls, yielding intriguing findings (Shabanov, 2019). Some have successfully generated Electro-balls resembling ball lightning or even black ball lightning (Rabinowitz, 1998). Notably, ball lightning has been observed at charge levels in capacitive energy storage ranging from Q = 1 to 3 C, while black ball lightning has been noted at significantly lower charge levels, around Q = 0.25 C. These Electro-balls have exhibited the ability to penetrate solid-state barriers, similar to observations of natural ball lightning (Oreshko, 2021; Nikitin et al., 2021). Furthermore, experimental setups have replicated surface irregularities or ripples consistent with eyewitness accounts (see Figure 18).

Proposed Experiments

We suggest to replicate and expand previous experiments with the aim of generating various types of Electro-balls, including transparent, translucent, misty, and black variants.

- Employ IR and thermal cameras, as many Electro-balls are invisible to the naked eye.
- Utilize polarized filters, because the charged surface could align molecules as a liquid crystal able to polarize light. Some UAPs have been seen only through them.
- Employ barometers to measure internal pressure, which is expected to be higher near the core of the electroball. Additionally, utilize hygrometers, thermometers, and other instruments to assess atmospheric conditions.
- Employ Geiger counters to detect radioactivity, as was reported in some UFO cases.
- Create two types of Electro-balls: one in uncharged air, which typically floats without colliding, and a plasma ball in charged air that moves very fast and collides quickly.
- Test their reactions to external electromagnetic fields (EMF) because they must react to but not collide with charged objects in neutrally charged air.
- Test the adhesion of water, ice, and debris to the surface. This includes testing whether debris adheres in shapes consistent with proposed hypotheses (Figure 20).
- Disperse different substances inside them to know whether moisture, dust or smoke are necessary to create them and what differences these components make, as the composition of the air influences the color of light emitted, akin to the phenomenon observed in auroras.
- Create an invisible "force field": Reports occasionally mention the presence of a mysterious "force field" surrounding certain UFOs, in a 3M factory or around charged objects such as an airplane. These objects were heavily charged with electricity, attracting air of opposite charge so intensely that it formed a compressed cushion of air around them.
- Induce leaks, beams, and "tentacles" by bringing charged objects close to them.
- Anecdotal cases suggest that they can be formed as transparent Electro-balls, like those in haunted houses. This involves combining ionized air from storms in the outer layer with discharges to form the core, potentially sourced from power grids (~230V AC for residential use and up to hundreds of thousands of volts AC for transmission lines), telephone lines (40-75V DC), or electric welding (20-100V DC). It seems that air is so highly conductive in some situations that it could drain the batteries or turn on the lights or other devices.
- Spray water to discharge Electro-balls as has been used during exorcisms. Using a metallic web should work even better to discharge them, but beware of electric shocks and explosions.
- Test whether light shortens the duration of the phenomenon, as has often been noticed.
- Test whether pocket laser beams cause internal flashing as they increase inter-layer conductivity, as has been stated by UAP witnesses. Powerful laser beams have triggered lightning from storm clouds to Earth. Be careful of electric shocks in both cases.
- Test whether rubber balloons filled with charged air under ionized air conditions behave similarly to Electro-balls. If it works, it might be easier to see their behavior.
- Test the attraction to charged blood: To test if the blood of animals is attracted to electroballs (cattle mutilations, possessions, levitation, vampires), check if there is the attraction of a small animal, such as a mouse, towards a charged surface over it. Repeat the experiment after letting the animal breathe charged air from an air ionizer. If it works, the different attraction to charged blood after breathing ionized air should be noted. It is not clear if it works with the electrical charges of each polarity, so it must be tested with both positive and negative.
- Test the attraction of Electro-balls to blood outside the body. Based on folkloric beliefs and reported blood based phenomena, many societies throughout history practiced blood sacrifices to the gods, supposedly to prevent demons and spirits from attacking people or

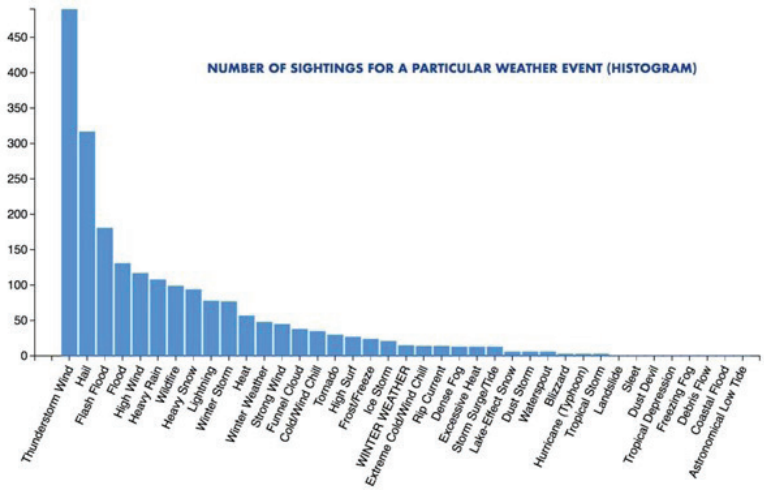


Figure 22. To examine if severe weather events influenced sightings, USC Viterbi computer science master's students joined the UFO dataset with a NOAA dataset and found that most sightings occur during thunderstorms. Source/Team 8 Final Project Visualization.

livestock.

In Situ Experiments

To test these ideas in situ, we need to identify the places and circumstances where they should be easiest to find.

Places

Locations with heightened conductivity and a propensity to accumulate charge including:

- Mountain peaks (Mount Shasta), hilltops (castles), isolated islands, buildings, boats
- Around rivers bordered by deserts, such as the Nile and Colorado rivers.
- Sites like caves, forest rings, wells, oil rigs, or missile silos due to their underground conductivity.
- Upper floors and basements of buildings, especially places with pipes, such as bathrooms or kitchens, and along large metallic infrastructures such as cables, pipes, drill holes, fences, or railway tracks.
- Areas under auroras or with large precipitation of particles (Figure 6) and around magnetic anomalies at low or high altitudes (Hessdalen).
- Around active fault lines or volcanoes, such as Popocatepetl and Yellowstone.
- Sites ionized by radioactive contamination, including Chornobyl, Fukushima, basements with radon, and nuclear facilities.

Moreover, recent reports of repetitive paranormal or UFO activity often cluster in specific locales, such as:

- Haunted houses, characterized by phenomena like Poltergeist activity, ghost sightings, demonic possessions and extreme sleep paralysis.
- UFO or cryptid hotspots and areas with documented cases of animal mutilations.

Circumstances

UFO sightings are most prevalent around 9:30 PM, particularly when there is a full moon (Kovalyov, 2022). This phenomenon also tends to coincide with earthquakes, volcanic activity, auroras, meteor showers, and severe weather conditions (Figure 22).

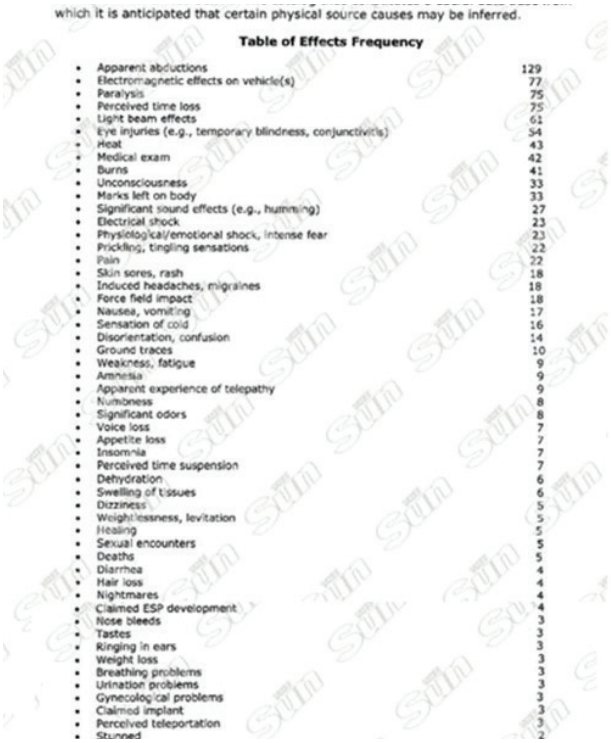
Similarly, other paranormal occurrences, such as Poltergeists, cryptids, extreme sleep paralysis, and demonic possessions, tend to peak at night, around 3:00 AM (Roll, 2003).

During electric storms, they have been seen as lenticular or spherical clouds, as ball lightning, glowing orbs, and translucent or transparent Electro-balls. Transparent Electro-balls seem to be the most common, but IR cameras or polarized filters are required to see them.

Certain cloud formations, including ellipsoidal, spherical, lenticular, and teardrop-shaped clouds, are not recognized by meteorologists as formed from masses or charged air.

Measures Proposed

- Barometric pressure, temperature, humidity inside clouds and air around them.
- Measure electromagnetic fields, radioactivity, and ozone levels in the air.
- Analyze their chemical composition with spectrometers if they are luminous.



which it is anticipated that certain physical source causes may be inferred.

Table of Effects Frequency

Apparent abductions	129
Electromagnetic effects on vehicle(s)	77
Paralysis	75
Perceived time loss	75
Light beam effects	61
Eye injuries (e.g., temporary blindness, conjunctivitis)	54
Heat	43
Medical exam	42
Burns	41
Unconsciousness	33
Marks left on body	33
Significant sound effects (e.g., humming)	27
Electrical shock	23
Physiological/emotional shock, intense fear	23
Prickling, tingling sensations	22
Pain	22
Skin sores, rash	18
Induced headaches, migraines	18
Force field impact	18
Nausea, vomiting	17
Sensation of cold	16
Disorientation, confusion	14
Ground traces	10
Weakness, fatigue	9
Amnesia	9
Apparent experience of telepathy	9
Numbness	8
Significant odors	8
Voice loss	7
Appetite loss	7
Insomnia	7
Perceived time suspension	7
Dehydration	6
Swelling of tissues	6
Dizziness	5
Weightlessness, levitation	5
Healing	5
Sexual encounters	5
Deaths	5
Diarrhea	4
Hair loss	4
Nightmares	4
Claimed ESP development	4
Nose bleeds	3
Tastes	3
Ringing in ears	3
Weight loss	3
Breathing problems	3
Urination problems	3
Gynecological problems	3
Claimed implant	3
Perceived teleportation	3
Stunned	2

Figure 23. Study on UFO-Related Human Physiological Effects during close encounters.

- Shooting intense laser beams through lenticular clouds could trigger lightning inside or toward the ground. This is being investigated today with storm clouds.
- Monitor voltage surges in power and telephone lines, as they are sources of electrons.
- Measure ionization of air, from ground to air discharges, and measure currents in conductive pipes and lightning rod wires. Especially interesting in moments and places with a higher probability of having paranormal phenomena mentioned before.
- Measure environmental radioactivity because it increases air conductivity, which correlates, in contaminated areas, with reports of UFOs and paranormal phenomena.
- Ground electron flow induced by the moon, storms, aurora and meteorite EM pulses. During earthquakes, over-voltages of 5-10 kV were recorded in underground cables.
- In natural environments, attract them using large surfaces charged by high voltage generators or Van de Graaff generators.

APPLICATIONS

The spontaneous and stable presence of plasma inside ball lightning and radioactive emissions suggest the possibility of using an electro ball to keep the plasma confined in a nuclear fusion reactor as a simpler and cheaper way than with, for example, using a tokamak fusion reactor (Tar, 2009). Charged deuterium and tritium would be in different layers, reacting between both layers in this proposed simulation of ball lightning within a fusion reactor, which essentially reproduces the forces and temperature of the sun (Oreshko, 2015).

EXPECTED DANGERS

Warning!: Electro-balls pose significant dangers. Refer to the health risks associated with UFOs in Figure 23. Even small Electro-balls present numerous health hazards, including electric shocks, burns, cuts, bruises, internal bleeding, irritating gases, ionizing radiation, hallucinations, seizures, paralysis, emotional trauma (PTSD), and the Hitchhiker effect. In severe instances, risks extend to fatal encounters, displacement, mutilation, lightning strikes, deep burns, and radioactive poisoning. It's crucial to avoid inhaling electrically charged air, particularly during experiments conducted in situ, to minimize attraction. Damage to sensitive electronic devices is a frequent occurrence. While Faraday cages are typically effective in containing the phenomenon and its effects, some instances have seen penetration through solid metallic sheets (Oreshko, 2021). Sometimes, ionized air has exhibited extreme conductivity, leading to battery discharges, activation of appliances and lights, and a significant surge in electrical consumption. Incidences of fires have also been documented.

Remember: if this explanation is correct, reported real or imagined phenomena such as demons and monsters are connected to Electro-balls as well.

CONCLUSION

There is a consistent historical record describing paranormal phenomena. It is theorized that many stories exist in folklore and can be classified as being caused by Electro-balls. This text presents a comprehensive exploration of electroballs and their potential and categorical role in explaining a wide range of paranormal phenomena; this paper lists this phenomenon systematically and presents and examines literature and evidence in order to hypothesize possible connections to electroballs. While an exhaustive description of each phenomenon is outside the scope of this paper, the list is a starting point and reference for researchers in this area. By proposing a model grounded in scientific principles, it offers a potential avenue for further understanding and investigating these unexplained events. Since Electro-balls may happen under a very short onset time and at unpredictable locations, they tend to be very difficult to observe and measure. With the proliferation and

advancement of all sorts of novel photographic devices, the data matrix regarding this phenomenon is rapidly advancing. Many of these devices are able to record high-resolution video, which will be of immense help in collecting data on this dynamic object that seems to come out of nowhere, exist for a short time, and then randomly wander through space before dispersing.

Obviously, more photographic and videographic data of these anomalies and properly controlled studies are needed. Simulations and laboratory recreations of this phenomenon would also help to shed light on this perplexing rare phenomenon.

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BRIEF REPORT

Field REG Measurements in Egypt: Resonant Consciousness at Sacred Sites

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PLATINUM OPEN ACCESS

HIGHLIGHTS

A rigorous field study using random number generators at Egyptian 'sacred sites' found striking effects of group consciousness enhanced by meditation and chanting.

ABSTRACT

Over a two-week period, various "sacred sites" in Egypt were visited by a group interested in the spiritual qualities of the ancient temples, pyramids, and tombs. The group engaged in informal ceremonies, including chanting and meditation, to pay respect to the sacred sites of the ancient Egyptians. A portable random event generator and palmtop computer were used to generate and record ongoing random sequences accompanied by a time-stamped computer index and onsite notes of relevant observations and activities. Pre-planned hypotheses predicted anomalous deviations of the sequences during visits to the sacred sites, including the inner sanctum or Holy of Holies in each temple and all the interior chambers of the pyramids. A further prediction was made that resonance- or coherence-building activities of the group, including chanting and meditation in these special locations, would also correlate with anomalous deviations. Both formal hypotheses were confirmed with a combined associated probability of 2.7x10^-6. Other categories of data provided context and helped to distinguish the sources of the anomalous effects.

KEYWORDS

Anomalous deviations, group consciousness, Random Event Generator, Random Number Generator.

INTRODUCTION

The work described here was conducted in 1997 and documented in a technical report of the Princeton Engineering Anomalies Research (PEAR) laboratory (Nelson, 1997b). In the last decade, there has been an increase of interest in bridging scientific, experiential, and spiritual perspectives. Although that was not the motivation for the studies described here, they definitely touch on such interests. Laboratory technical reports are generally only available to colleagues and correspondents of the lab or the authors, but as the academic context changes, they may warrant wider distribution. The recent growth of attention to topics at the edges of consciousness research, including anomalies in random data linked to human intention, suggests that the material in this PEAR Technical Report should be made publicly available. Accordingly, this is the original report with minor revisions and addi-

tions for clarity and completeness.

In the intervening quarter-century, there have been a number of applications of what may be called the "FieldREG" technology and approach, which brings a random event or number generator (REG or RNG) into the field to study group consciousness. However, I am not aware of attempts to replicate this research, which looks at group consciousness in sacred sites. There have been related applications, for example, asking whether there may be "field" effects of healing or energy medicine that show up in data from an RNG located near the sessions (Carpenter et al., 2021). Similarly, researchers have asked whether RNG data during group meditations may show correlated departures from expectation (Mason et al., 2007). Another example is a long-term cumulative assessment of FieldREG effects during major solar eclipse events that garner attention from very large numbers of people (Williams, 2017).

METHODS

The experiments documented here follow a protocol developed in the early 1990s to look for effects of coherent group consciousness. The approach was an extension of laboratory findings using quantum-based RNGs developed and tested at PEAR for the express purpose of field research. We had shown that the output of calibrated research-grade physical RNGs could be altered in experiments where participants held intentions to get high or low numbers compared with expectations. The field application brought the same RNG technology out of the lab to study the possible effects of group consciousness. For example, we predicted changes in the data when groups were focused on great music, charismatic presentations, powerful rituals, and other activities conducive to coherence and resonance in the group.

Software was created to record the random data continuously (typically as trials consisting of the sum of 200 bits each second) accompanied by an index that could be annotated by keypresses to identify the time of particular events. The experimental protocol required identification of the beginning and end of conducive moments with a hypothesis that such moments would show departures from expectation. Since there was no directional instruction and nobody holding an intention (most of the group would not even know about the RNG), the standard test was the variance of the data where an increase would occur if anomalous deviations were either positive or negative. In practice, the raw score for each second was expressed as a normalized *Z*-score, and this was squared to yield a Chi-square distributed value, which is the variance for that data point. Chi-square is additive, so the variance for a specified segment is the sum of the second-by-second Chi-squares with degrees of freedom (*df*) equal to the number of seconds. The prediction was for an increase in variance in all cases based on the standard protocol for FieldREG experiments, which, from the beginning, predicted a positive deviation (increase) of the variance. This practice allows one-tailed statistical tests and, hence, an increase in sensitivity or statistical power (assuming the experience-based expectation is correct). The FieldREG methodology is documented in Nelson et al. (1996, 1997a).

Consciousness Field Experiment

An experiment addressing the effects of group consciousness on a microelectronic random event generator (REG/RNG) was conducted during a two-week visit to Egypt. Data were collected as an adjunct to a tour arranged for a group of 19 people to visit many of the best-preserved temples and sacred sites of the ancient Egyptians, including the great temples and tombs near Cairo, Luxor, and Aswan, and the Giza and Darshan pyramid complexes. Although the journey was a combination of vacation and personal quest for most of the group, some participants had also made plans to pursue academic or scientific investigations during the trip.

The group consciousness experiment is part of an ongoing series of studies designed to extend the Princeton Engineering Anomalies Research program (Jahn et al., 1987) beyond the laboratory into a variety of real-world environments (Nelson et al., 1996; Nelson et al., 1997a). The data generation and recording equipment and the standardized procedures employed in these investigations are collectively labeled "FieldREG".

The system is based on a miniaturized hardware REG that generates 200-bit trials (with an expected mean of 100 and variance of 50) at a rate of about one per second. The REG is attached via a serial interface to a palmtop computer with software that allows continuous recording of these trials in a sequence that describes a random walk having an equal likelihood of wandering in either the positive or negative direction from its expected zero deviation. Data were gathered throughout the journey in preplanned experiments designed to assess possible variations from normal expectation in those data sequences generated in sacred sites in conjunction with group activities such as meditation or chanting.

The tour provided an extraordinary opportunity to address the hypothesis that coherent group consciousness can affect a sensitive random physical process since it comprised a series of situations in which a group of people shared an intention to become an integrated col-

lective through ritual chanting and meditation. The research plan took advantage of this sequence of replicated group activities by following a well-defined experimental protocol for field applications developed over the past few years (Nelson et al., 1996, 1997a). In addition to observing possible effects of group consciousness, a second formal question concerned the potential influence on the device of sacred sites per se in the absence of any organized group activity. Throughout the trip, a combination of these two factors, along with some other related influences, was available on numerous occasions.

These FieldREG recordings provided formal data sequences that could be compared with the null hypothesis of normal random distribution with an expected mean of zero. The in situ notes made by the experimenter, along with computer index entries concurrent with the data, indicated the beginning and end of the data segments corresponding to the actual visit at each site. For both of the pre-planned categories, data were recorded at "sacred sites," meaning the central focus of temples and major religious structures, specifically the inner sanctum and the Holy of Holies in the temples, the interior chambers in the pyramids, and similar locations. The original sites for many of these structures were chosen with special care according to religious dictates; the ancient Egyptians held that the gods "drove a stake for each corner of the temple."

The two pre-planned categories were distinguished from each other by the degree of potential contribution from the presence and coherent activity of the group. In category A, most of the group was gathered at or in a sacred site for some form of communion, such as chanting or meditation, and they consciously or unconsciously tried to become resonant with each other and with the site. In category B, some of the group were present at the sacred site (in a few cases, only the author with the FieldREG), but the presence was relatively casual, and there was no chanting, meditation, or deliberate attempt to focus as a group.

Three additional categories were defined less formally during the course of the trip to extend and complement the formal data. Category C was characterized by intentional group consciousness activities such as chanting and meditation but without a defined sacred site. Category D comprised visits to special locations such as museums and tombs that were engaging but did not have a clearly defined sacred quality, and where no resonance-promoting group activities took place. A further subset, Category E, addressed a possible "experimenter effect." This was primarily a collection of personal experiences and rituals noted as impressive and meaningful by the operator of the FieldREG system.

Although the last three categories of data were defined during the course of the trip, they were specified without feedback on results so that the data sequences are suitable for the same type of statistical analysis as the pre-planned formal data, albeit without the rigorous hypothesis-testing function of categories A and B. The FieldREG device usually recorded data continuously except for a few hours at night, so the categorized segments in all cases were relatively short subsequences of a few minutes to an hour within much longer data streams.

By separating group coherence from sacred site influences and by assessing the effects of other sites (e.g., those on a tourist's list) that have no acknowledged sacred aspect, data from categories C and D may provide context and possible insights into the source and the nature of anomalous effects. Category E may help to specify possible contributions from the experimenter's conscious and unconscious wishes. The five categories have no common membership or overlap; they are statistically independent estimates of possible deviations from expectation and, hence, may be compared and combined for a comprehensive assessment of the basic question of whether there is any anomalous influence on the FieldREG output.

There were also a few identified and categorized data segments that cannot be included in the fully formal assessment for various reasons. Because of inexperience, the times for the segments at the first four special sites (three in category A and one in E) were not recorded adequately and thus required post facto estimates for the beginning and end of the data sequences. Two data segments were cut short by a "floating point error" that shut down the computer program (one in category A, one in D).

A number of other categories could be defined for exploratory purposes, but most will not be pursued in this report. These include striking first impressions, shopping and bargaining at bazaars, special restaurants, and meals, late-night conversations, and parties and celebrations (for example, a birthday party for one of the group members).

Examples

Graphic presentations of selected data subsets provide a direct visual impression of the type of data that constitute the basis for the quantitative analyses. The raw data are samples from random sequences that show deviations apparently in response to some combination of the sacred sites and the relatively coherent state of consciousness of a group of people in a shared experience. Because the anomalous effects are typically quite small in proportion to the noisy random background, it is

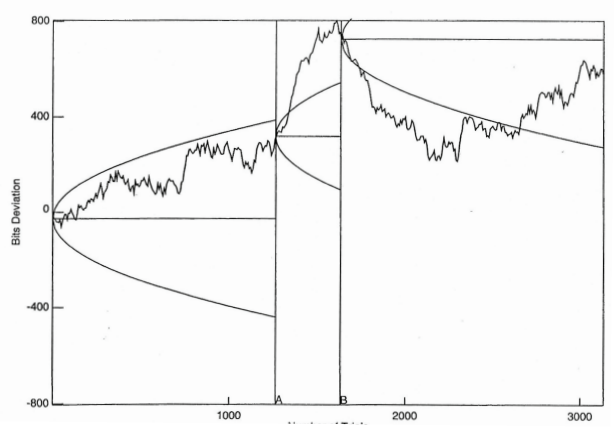

Figure 1. Cumulative deviation of the random event sequence during a 45 minute period immediately prior to landing in Cairo. The central portion corresponds to the first sight of Egypt. Horizontal lines represent chance expectation; parabolas show the 90% confidence interval for the random walk. See text for details.

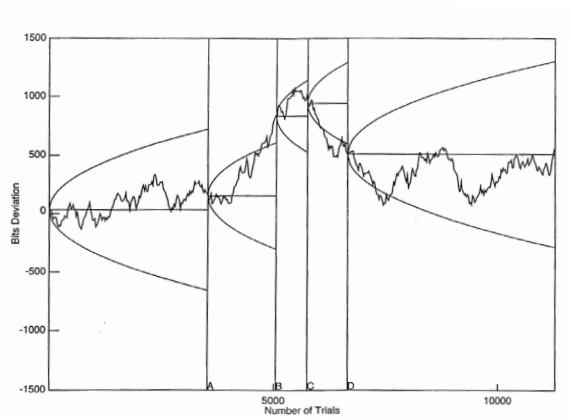

Figure 2. Data taken during two meditations, A to B and C to D, in the Hypostyle Hall of Karnak Temple in Luxor. See text for details.

necessary to display them in a way that emphasizes the signal but cancels out the noise. This is achieved by presenting the data in the form of a "cumulative deviation" graph, which plots the algebraic sum of deviations from expectation over the course of a given data sequence. That is, the difference between each 200-bit trial and its theoretically expected outcome is added to the cumulative sum of the preceding deviations and plotted as a so-called "random walk." If there are only random data in the sequence, the accumulation will wander up and down relative to the expected mean value but will not display a trend. On the other hand, if there is a tendency for more steps or bigger steps to be taken in one direction, the cumulative deviation trace will show a clear trend away from the null expectation.

Figure 1 shows in this form about 45 minutes of data taken in the airplane just before landing in Cairo. In each of the three marked data segments, the horizontal line (zero deviation) represents chance expectation, and the parabolic curves define a region within which 90% of truly random walks will remain. That is, given only chance excursions, most data sequences will stay within the envelope, but 10% of the traces may exceed the indicated deviation in one direction or the other. The jagged trace represents the cumulative deviation of the actual data over the continuous 45-minute period. The vertical lines indicate times marked in the computer index by the operator using programmed F-keys on the palmtop computer. Beginning at each marked point, a new ± 5% expectation envelope is superimposed on the random walk by the analysis program to facilitate visual assessment of the data within the identified subsequences.

The first portion of this trace displays a fairly typical random walk. In contrast, the middle segment (A to B), representing a five-minute period beginning with the experimenter's first sight of Egypt, displays an exceptionally strong positive trend. This segment has a *Z*-score of 3.07, corresponding to a two-tailed probability against chance of four parts in a thousand. Given the equally unusual negative trend that follows and the fact that these strong deviations of the overall data trace correspond precisely with the group's first experiences and impressions of the Nile Delta region, it is tempting to ascribe some subjective meaning to the image thus produced (indeed, one can readily see the trace as a pyramid shape traversed by the "random" walk). However, such visual impressions clearly do not constitute valid experimental evidence; a formal protocol is required to establish a meaningful correspondence of data deviations with potential influences. This particular example is, in fact, not part of the formal database because the data were not taken in a pre-planned category, but it is presented as an example of the data format and as an introduction to the representation used for the formal datasets recorded at sacred sites as defined in the experimental protocol and described in the following examples. For simplicity and clarity of exposition, only index marks relevant to the description are used to create the figures. Full details are given in the tables.

Figure 2 shows a visit to the Hypostyle hall of the great Temple of Karnak in Luxor by the author alone subsequent to a group visit. This is one of the defined sacred sites and is the forecourt of the Holy of Holies of the temple. The data produce a typical random walk for about 45 minutes (~3500 trials) and then, corresponding with the first of two meditations (A to B), take on a strong positive trend for about 20 minutes. This is followed by a short interlude, watching tourist children (B to C). The data then show a persistent downward trend during a second meditation (C to D). The onsite notes corresponding to the

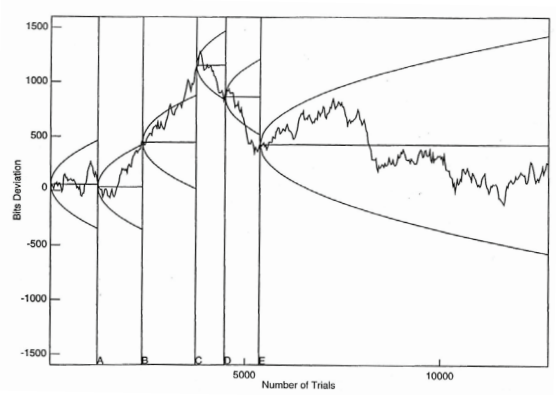

Figure 3: Three-hour visit to the inner chambers of the Great Pyramid of Khufu at Giza. Marked segments show the data taken during chants in the Queen's Chamber, the Grand Gallery, and the King's Chamber. See text for details.

meditations describe a profound experience dominated by an intuitive "recognition" of the purpose of the Hypostyle hall, where some 130 huge stone columns (70 feet high and 15 feet in diameter) transmit the wisdom of the ancient Egyptian priesthood. The graph continues with an hour-long visit to the Temple of Ptah and the Goddess Sekhmet during which the data show modest temporary trends generally consistent with random expectation. These data segments are included in formal analysis category B and are detailed in Table 1B.

Figure 3 presents the entirety of a three-hour visit to the inside chambers of the Great Pyramid of Khufu on the Giza plateau, included in category A and detailed in Table 1A. Beginning about 20 minutes after entering, the group chanted in the Queen's Chamber (A to B), then chanted during a spontaneous transition ritual in the Grand Gallery (B to C) leading to the King's Chamber. These two sequences (A to C) show a strong continuous positive trend

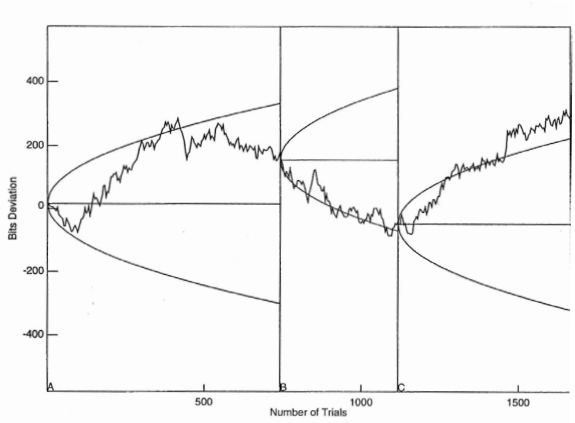

Figure 4: Twenty-minute visit to the inner chambers of the Khafre Pyramid at Giza. Marked segments show data taken in the Queen's Chamber, the Gallery, and the King's Chamber. See text for details.

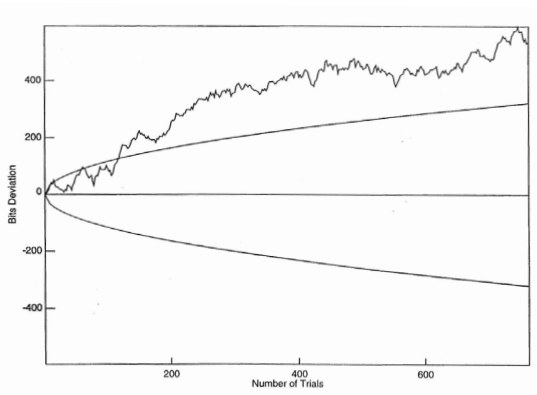

Figure 5: Data taken in the Holy of Holies of the Temple of Edfu. The group engaged in chanting and meditations. See text for details.

(combined $Z = 3.3$) over a period of about 40 minutes and are followed by a similarly steep negative trend over the next 30 minutes in the King's Chamber (C to E) during which two long group meditations took place. The rest of the trace corresponds to a variety of more individualized and personal rituals primarily associated with the large granite "sarcophagus" in the King's Chamber.

In Figure 4, we see a visually similar albeit less well-defined pattern. This was generated during a visit to the inner chambers of Khafre's Pyramid, the "second" pyramid of Giza. The visit was much shorter (only about 20 minutes) than that to Khufu, and since only two members of the group were present, it belongs in category B and is detailed in Table 1B. Because of the small signal-to-noise ratio, detailed interpretations are unjustified, but it may be interesting to note that again, the slope in the Queen's Chamber (A to B) is largely upward, followed by a downward slope beginning in the Gallery (B) that reverses during chants and rituals in the King's Chamber and sarcophagus during the last few minutes of the visit (C to end).

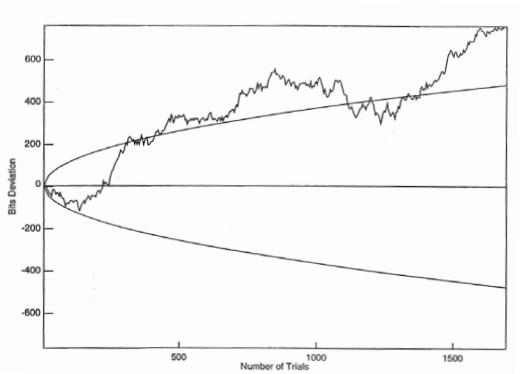

Figure 6: Data taken in the Holy of Holies of the Temple of Kom Ombo, dedicated to healing. The group participated in chants and meditations, and most also engaged in a healing ritual. See text for details.

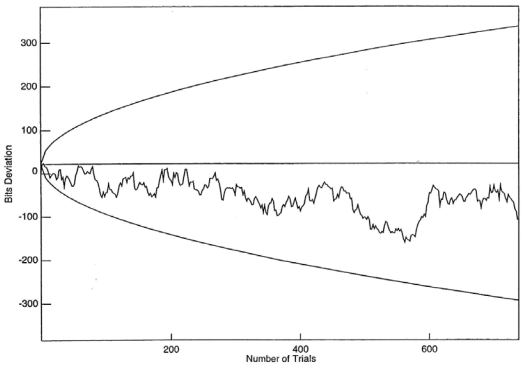

Figure 7: Data taken in the Holy of Holies of the Temple of Philae. This temple was moved from its original location, where it would have been submerged in Lake Nasser. The group engaged in chanting and meditations. See text for details.

Figures 5, 6, and 7 show data sequences taken during group rituals in the "Holy of Holies" that are the central foci in three of the major ancient temples: Edfu, Kom Ombo, and Philae, respectively. In Edfu and Kom Ombo, the upward-going trends are quite strong and are typical of FieldREG traces produced in many of the sacred sites, especially in category A. The Philae data, however, show no indication of any anomalous trend. It may be noteworthy that Philae, alone of the temples visited during this tour, is not in its original site, having been relocated to preserve it from flooding by the construction of the high dam at Aswan. Thus, although the reconstruction is remarkable, the temple is no longer in the sacred location determined according to the ancient Egyptians by the gods.

Analysis Procedures

The assessment of FieldREG data depends upon precise specification of the beginning and end of each data subsequence defined according to the experimental hypothesis. Each specified segment is extracted from the background data, and its statistical parameters are calculated. The Z-score (deviation of the mean normalized by its standard error) for each segment is squared, and these values are summed. The resulting quantity ΣZ^2 is χ^2 distributed with degrees of freedom equal to the number of segments or *Z*-scores, allowing the calculation of an overall probability for the accumulated deviations. Although the REG is extensively calibrated in independent tests, justifying a comparison of deviations in the active data against theoretical expectation, the pre-planned analysis also includes a comparison against a distribution of results generated by random resampling. In this procedure, subsequences with the same lengths as the active segments are repeatedly drawn from the original data sequence with randomly specified beginning points. This process is repeated 1000 times within each database to yield a large sample of *Z*-scores calculated for segments of exactly the same lengths as the active data but with randomly determined timing rather than direct correspondence with the presence and activities of the group. Although the resampling procedure can be designed to draw only from the background data, the present analysis utilizes the complete database and hence includes some parts of the active data by chance, making it a more conservative procedure.

In operation, the FieldREG program displays only the date and time and a count of trials since the most recent index mark, but in breaks between periods of data acquisition, the experimenter had some graphic feedback during periodic checks to ensure that the system was performing correctly. Since the onsite notes and the index marks were made prior to such observations and are specific, they provide an unambiguous identification of beginning and ending times for all the events corresponding to the formal experimental hypotheses, uninfluenced by this feedback. A few remaining practical issues and caveats concerning segment identification are embodied in the following categorization rules, which were designed to eliminate potential uncertainties or ex post facto decisions about inclusion or exclusion of segments:

1. Identification of the sacred sites was made in the onsite notes at the time of the visit. These comprise the scheduled sites specified in the trip itinerary, plus a few additions such as a second visit to Karnak Temple, a late-night trek to the Sphinx, and visits to the inside chambers of the Sneferu, Mycerinus, and Khafre Pyramids.
2. Delimitation of the portion of an extended visit to be included in the analysis was noted at the time of the visit. The general procedure for determining the actual site and specifying the timing for purposes of the FieldREG analysis was developed during the first site visits and was based upon the group's informal process for selecting appropriate places for chanting or meditation. In the special case of the pyramid visits, the entire period spent inside the pyramid was used in all cases with segmentation according to the notes and index marks identifying the individual chambers and passages. In very long visits, subsets identified as distinct rituals or chants were regarded as separate events for analytic purposes.
3. Beginnings and ends of segments were recorded in the onsite notes timed to the minute (with a probable error of fewer than two minutes) from a synchronized wristwatch, and these times were used for the analysis if no

Table 1A. Sacred Sites Group Chanting or Meditation.

Date	Begin	End	Description	No. Trials	Z
Oct 6	0820	0830	Tomb of Titi's Minister *	744	1.504
Oct 6	1025	1035	Saqqara Temple Hall of Columns *	744	2.224
Oct 6	1128	1135	Saqqara Outside Holy of Holies *	522	2.067
Oct 6	1412	1422	Sneferu Pyramid Main Chambers	754	2.930
Oct 7	1603	1625	Sphinx Group Meditation	1557	1.573
Oct 7	1635	1640	Sphinx Great Invocation	270	-1.334
Oct 8	1645	1657	Medinet Abou Holy of Holies +	884	0.680
Oct 9	0745	0808	Karnak Holy of Holies	1712	0.263
Oct 10	0936	0948	Dendara Holy of Holies	823	0.251
Oct 10	1825	1830	Luxor Holy of Holies	266	-0.121
Oct 13	0854	0905	Edfu Holy of Holies and Nut	763	2.729
Oct 13	0922	0931	Edfu Holy of Holies, 2nd stop	670	-0.765
Oct 13	0945	0950	Edfu External Chapel	655	-1.275
Oct 13	1710	1718	Kom Ombo Holy of Holies	651	1.824
Oct 13	1718	1732	Kom Ombo Healing Rooms	1046	1.858
Oct 15	0759	0808	Philae Holy of Holies	740	-0.530
Oct 17	1120	1135	Mycerinus Main Chamber	1140	0.377
Oct 17	1135	1145	Mycerinus Multi-resonant Chamber	786	1.967
Oct 17	1720	1725	Khufu Entrance Passage	507	0.038
Oct 17	1728	1745	Khufu Queen's Chamber	1485	1.941
Oct 17	1745	1800	Khufu Grand Gallery	1015	2.659
Oct 17	1800	1812	Khufu King's Chamber, 1st chant	747	-1.345
Oct 17	1812	1823	Khufu King's Chamber, 2nd chant	882	-2.133
Oct 17	1830	1900	Khufu King's, Lights Off	2234	-0.428
Oct 17	1900	1954	Khufu Sarcophagus Chants	3885	-0.610
Oct 18	2325	0100	Khufu, Second visit, King's	7072	0.002

* Non-formal: post facto time specification (see text)
\+ Non-formal: Segment short, possible damage, computer floating point error

corresponding mark was made in the computer index.

4. In all cases where an index mark was made within two minutes of the noted time, the index mark was used to specify the beginning or ending time; otherwise, the noted time was entered into the analysis program.
5. Where no notes of times were available (e.g., if there was no light) but index marks were made, these were used according to contextual notes made before and after the event.
6. In cases where an event was noted as having just ended with no beginning point marked, the preceding five-minute period was regarded as the segment. Similarly, if only the beginning was noted with no other indication of duration, the subsequent five minutes were taken. For a "point" event, the preceding three and subsequent two minutes were taken. These specifications were designed for exploratory purposes, and no segments thus defined are included in the formal analysis.

Although the notes defining the segments and the categories are quite extensive, they are sufficiently cryptic as to make an independent categorization and specification of the data subsequences by someone other than the experimenter (and note-taker) quite difficult. In the absence of independent encoding, the process of identifying and categorizing the segments was undertaken twice to check the reliability of the process. Three changes were made in the categorization (e.g., the Nefertari Tomb visit was originally included in category A, but it was changed to category D because, although impressive, it did not fall within the pre-planned circumscription of sacred sites). No changes were required for the segment timing, and the overall results of the analyses were very similar for the original and corrected specifications. The results reported here are based on the second specification.

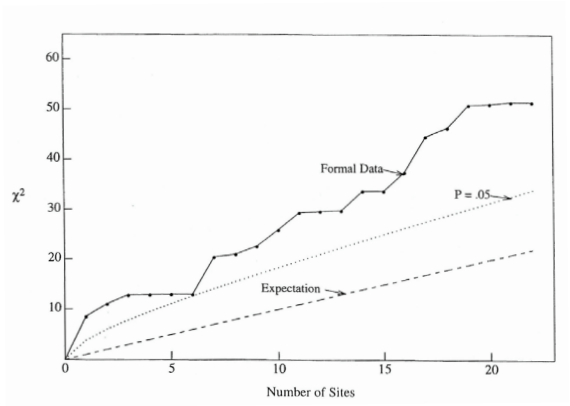

Figure 8: Graphic display of the data presented in Table 1A shown as the accumulating Chi-square from independent data sets representing Category A. These are visits to sacred sites accompanied by active group chanting or meditation. See text for details.

RESULTS

Table 1A shows the segments corresponding to sacred site visits where the group gathered to chant or meditate. Included are the date and the beginning and ending times for the segment, a short description of the site, the number of trials, and the Z-score for that segment.

The composite deviation for this category is significant with a probability against chance of p = 3.7x10^-4. Details and comparisons with the other data sets are presented in Tables 2 and 3. The data are shown in Figure 8 in the form of a cumulative sum of the Z^2 (χ^2 distributed) values associated with each site. The figures include a dashed line showing the expectation for the cumulative

Table 1B. Sacred Sites Without Coherent Group Attention.

Date	Begin	End	Description	No. Trials	Z
Oct 6	1422	1440	Sneferu Sarcophagus Chamber	1317	-0.355
Oct 8	1720	1725	Medinet Abou Duet	358	-0.538
Oct 9	0645	0715	Karnak West to East Side	2233	-1.565
Oct 9	0740	0745	Karnak, Holy of Holies Gathering	230	-1.371
Oct 9	0825	0840	Ptah Temple and Sekhmet	1065	2.041
Oct 9	0840	0904	At Sekhmet to End Visit	1851	0.454
Oct 10	0930	0936	Dendara Inner Temple, Nut	488	0.000
Oct 10	0950	0955	Dendara Sacred Lake	330	-1.822
Oct 10	1931	1936	Luxor 2nd Stop, Holy of Holies	452	-0.193
Oct 11	0628	0632	Karnak Sacred Lake, Scarab	253	-1.102
Oct 11	0715	0738	Karnak Hypostyle, 1st Meditation	1518	2.402
Oct 11	0747	0757	Karnak Hypostyle, 2nd Meditation	897	-2.097
Oct 11	0810	0825	Ptah, Sekhmet Meditation, Love	1045	1.330
Oct 11	0825	0907	Ptah, Sekhmet, Just Sitting	3366	-0.224
Oct 15	1035	1045	Philae, Upstairs Mystery Room	745	-0.741
Oct 17	0950	1005	Valley Temple Holy of Holies +	1181	-1.556
Oct 17	2339	2347	Sphinx Trek Inside Enclosure +	645	2.155
Oct 17	2347	2352	Sphinx, Between Paws +	340	0.169
Oct 17	2352	0012	Sphinx, Behind Stela in Pit +	1505	-1.054
Oct 18	2205	2215	Khufu Second Visit, Enter to Pit	671	2.555
Oct 18	2215	2247	Khufu Pit Rituals	2308	-1.460
Oct 18	2247	2300	Khufu Pit Exploration	1015	-0.821
Oct 18	2300	2308	Khufu Pit Nile and World Map	638	1.943
Oct 18	2308	2325	Khufu Return to Original Entrance	1251	-1.180
Oct 19	1625	1635	Khafre Queen's +	741	0.899
Oct 19	1635	1640	Khafre Gallery +	376	-1.539
Oct 19	1640	1647	Khafre King's and Sarcophagus +	548	2.054

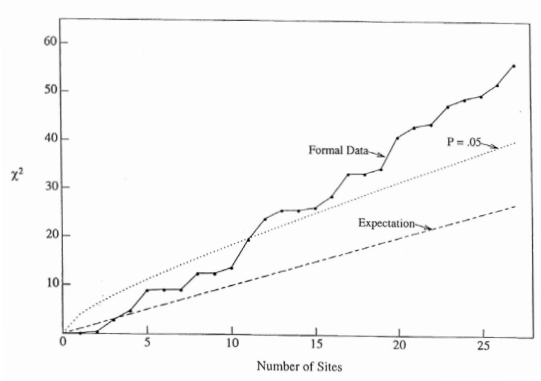

Figure 9: Graphic display of the data presented in Table 1B shown as the accumulating Chi-square from independent data sets representing Category B. These are visits to sacred sites but not accompanied by group activity.

sum (a function of the degrees of freedom) and a dotted line indicating the limit of "significant" deviations (p = 0.05) as the number of data points increases.

Table 1B presents the data from sacred sites where the group did not engage in chanting or communion. Again, the composite deviation is significant, associated with p = 7.8x10^-4. (See Tables 2 and 3.) The data are shown in Figure 9 in the same format as Figure 8. In both cases, there is a steady accumulation of anomalous excess deviation, which becomes highly significant for both datasets. (See Tables 2 and 3.)

Table 1C contains results for data taken during group activities where resonance or communion among most of the members was either organized or arose spontaneously but where the group was located in relatively mundane sites. Here, the composite deviation is not significant. (See Tables 2 and 3.)

Table 1D shows the results for a number of sites that are typically included on a tourist itinerary. They are interesting and subjectively powerful, but they did not qualify as "sacred" by the experimental definition, nor did the group engage in chanting or meditation. The composite deviation is moderately significant (p = 0.032). Details

Table 1C. Group Resonance or Coherent Attention, Not in Sacred Site.

Date	Begin	End	Description	No. Trials	Z
Oct 6	1540	1550	Rameses II head meditation	864	0.293
Oct 8	0550	0605	Airport, Ra at Sunrise	1111	0.543
Oct 9	1720	1725	Ship, Sunset Charles' Birthday	437	-1.008
Oct 12	1548	1648	Ship, Group Meditations	4432	-1.111
Oct 12	1648	1654	Gillian's Flowers into Nile	1075	-1.689
Oct 12	1710	1721	Solar Eclipse, from Ship	682	0.119
Oct 13	1510	1609	Learn Overtone Chanting	4271	-1.342
Oct 14	0943	1020	Felucca around Elephantine	2753	0.752
Oct 14	1113	1117	Felucca Sail Repair, Etc.	298	-0.614
Oct 14	1721	1841	Astrology Session, Larry	5978	-0.452
Oct 14	1845	1858	Astrology Detail, Ida	944	-2.030
Oct 16	1201	1230	Faiyum Lake Circle Meditation	2160	0.578
Oct 17	1017	1020	Circle Blessing for Morad	187	-0.486
Oct 17	2245	2305	Sphinx Trek Cemetery	1743	-2.005

Table 1D: Tombs and Other Non-Sacred but Notable Sites.

Date	Begin	End	Description	No. Trials	Z
Oct 7	1014	1032	Tutankamen Treasure Room	1340	-1.592
Oct 8	1340	1400	Tomb Rameses IV	1452	-1.051
Oct 8	1450	1505	Tomb Rameses III *	650	0.255
Oct 10	0945	0950	Dendara Crypt	566	0.690
Oct 11	1340	1352	Nefertari Tomb No. 3501-3509	1019	-2.574
Oct 11	1409	1502	Three Tombs, West Bank	3621	-1.201
Oct 11	1600	1635	Ramesseum	2723	1.089
Oct 16	2032	2050	Cairo Cultural Center, Dervishes	1485	1.740
Oct 16	2110	2230	Dervish Music and Whirling	6029	0.679

are shown in Tables 2 and 3.

Table 1E shows results for data sequences taken while the experimenter was alone or with only a few others of the group and was involved in relatively private or personal experiences that he identified as having ritual or sacred intent. The composite deviation is not significant. (See Tables 2 and 3.)

Table 2 summarizes all the data, including the preplanned formal categories as well as the three extensions, indicating the χ^2 for each category, its degrees of freedom, and the corresponding probability that the accumulated deviations of the FieldREG segments might be attributable to chance fluctuations. This is the figure of merit for the hypothesis tests. To provide some background detail, though it isn't pertinent to the experimental hypothesis testing, the table also gives a mean Z-score and standard deviation showing the directional tendency and variability of the segment Z-scores. (Negative Z-scores indicate downward trends; positive Z-scores upward trends). These statistics can be compared with their theoretical expectations: mean 0 and standard deviation 1. The mean deviation is significant (Z = -3.742) for category C and marginal (Z = 1.406) for category A (the latter is statistically significant if the ex post facto encoded segments are included). As might be expected, several of the standard deviation values are quite large, commensurate with the large corresponding χ^2 accumulations.

In addition to the main analyses presented above, a number of additional assessments can be made as global checks on the analytical procedures and to provide a broader perspective on the results. The formal analysis is based on the resampling process described earlier, where randomly placed subsequences with the same lengths as

Table 1E. Personal Rituals and Experiences: Experimenter Effect.

Date	Begin	End	Description	No. Trials	Z
Oct 6	0933	0937	Titi, "Reading" Hieroglyphs *	298	-0.147
Oct 7	1152	1211	Cairo Museum Individual Tour	1450	-1.786
Oct 11	0757	0805	Ritual Walk to Sekhmet	506	-1.314
Oct 15	0945	1007	Philae, Ritual for Original Site	1707	0.288
Oct 16	0530	0540	Ritual Packet for Khufu	787	-1.079
Oct 16	0540	0610	Ritual Wrapping for Khufu	2108	1.435
Oct 18	1048	1107	Citadel Mosque Prayer, Youths	1349	0.015
Oct 18	1130	1134	2nd Mosque, Outside Prayer	298	0.893
Oct 18	1150	1210	Coptic Church Worship, Kids	1490	-0.289
Oct 18	1310	1320	2nd Mosque, Inside Prayer	745	0.389

Table 2. Overall Results, Pre-planned Formal and Extension Categories.

Category	Mean Z	Std Dev	Chi-square	DF	Probability
A Formal, Site and Group	0.4487	1.4967	51.468	22	3.7x10^-4
B Formal, Site Only	-0.0599	1.4706	56.324	27	7.8x10^-4
C Extension, Group Only	-0.6037	0.9629	17.157	14	0.248
D Extension, Other Sites	-0.2775	1.5232	16.858	8	0.032
E Extension, Experimenter	-0.1609	1.0620	9.255	9	0.414
A with post facto	0.6287	1.4579	63.411	26	5.7x10^-5
D with short segment	-0.2183	1.4359	16.923	9	0.050
E with post facto	-0.1595	1.0013	9.277	10	0.506
Combined Formal	0.0714	1.4656	107.792	49	2.7x10^-6
All Extensions (C, D, E)	-0.3910	1.1333	43.270	31	0.071
All Formal and Extensions	0.0599	1.3649	151.062	80	2.7x10^-6
Include post facto and short	0.0208	1.3697	163.093	86	1.0x10^-6

Table 3. Summary Statistics from Resampling Procedure Adjusted Chi-square, Z-score, Trial-based Effect Size.

Category	N trials	Chi-square	DF	Probability	Z-score	Effect	SD(eff)
A	29660	52.318	22	.00028	3.450	.0200	.0058
B	27367	54.658	27	.0013	3.021	.0183	.0061
C	26935	15.780	14	.327	0.448	.0027	.0060
D	18235	17.176	8	.028	1.911	.0141	.0074
E	10440	9.741	9	.372	0.327	.0032	.0098

the active segments are repeatedly drawn from the original data sequence. This yields a distribution of *Z*-scores from which we may calculate an "adjusted" χ^2 value corrected for the empirical variance of the *Z* distribution. Other estimates for the likelihood of the outcome are also calculated, including a Bonferroni-adjusted probability for the most extreme deviation in each analysis subset and the percentage of the 1000 resampled χ^2 results that exceed the value determined for the indexed experimental segments.

Overall, these estimates agree well with the formal statistics. The adjusted χ^2 statistics are shown in Table 3, and these may be compared with the unadjusted values presented in Table 2. The differences are well within the range of chance fluctuation. In addition to the adjusted χ^2 and probabilities, Table 3 includes a corresponding *Z*-score. From this, an effect size $E = Z/\sqrt{N}$ is calculated and presented in the table along with its standard deviation.

DISCUSSION

These analyses detail an array of anomalous effects on the data stream generated while the FieldREG was present in various sacred sites visited by a group of people interested in spiritual matters. There was a notable but non-significant increment in the yield when the group engaged in an activity such as chanting or meditation at these sites to promote group resonance and a connection with the genius loci or spirit of the place (category A). Seven of the sites that are included in Category B because only a small part of the group was present arguably could belong to Category A, and it is worthwhile to consider what differences accrue if they are reassigned. The χ^2 for A increases to 67.068 with 29 degrees of freedom and a probability of 7.6x10^-5. For B, the new values are $\chi^2 = 40.724$, 20 *df*, and $p = 0.0040$. However, because the number of trials in each category changes, the effect size calculations are altered very little: in category A, the effect size increases from 0.0200 to 0.0202, and in B, it decreases from 0.0183 to 0.0180. The effect size difference between the two categories A - B remains non-significant at 0.0022 with a corresponding $Z = 0.262$ and $p = 0.397$.

The calculation of the χ^2 and corresponding probability for the accumulated deviation in the various categories requires inclusion of all the relevant sequences. It is thus important to consider the possible effect of inadvertently excluding some data segments that properly belong to a given category. We can estimate the number of missing sequences necessary to reduce the accumulated χ^2 to a non-significant level using a technique developed to address the possible "file drawer" effect in meta-analysis (Rosenthal, 1991). For the formal categories A and B, the estimate for the number of sequences with a null contribution to the χ^2 needed to reduce the significance level to $p = 0.05$ is 126 and 120, respectively, i.e., some five times the number of data sequences actually identified, meeting Rosenthal's criterion for a robust meta-analytic effect. Further, if the formal categories are combined, the number of unidentified "file drawer" sequences required to nullify the statistical indication of an anomalous effect rises to nearly 600. Given these estimates and the well-formulated criteria for inclusion in the formal categories, it is clear that the results shown in Table 2 cannot be attributed to inadvertent or motivated selection of best cases or to a "file drawer" exclusion of weak cases.

It is instructive to compare these FieldREG results with those in intentional laboratory experiments where individual operators try to influence the random event sequence to higher or lower values. In these, the overall average effect size is approximately 0.003. This is a smaller yield by a factor of six relative to categories A and B, and the difference is statistically significant. On the other hand, a subset of laboratory experiments with co-operator pairs who are "bonded" couples (Dunne, 1991) has an effect size (0.017) that is quite similar to that in the two formal categories in the present database. We may speculate that the comparable results derive from some form of resonance that is present in both cases. Interestingly, the effect sizes in categories C and E, although these subsets do not approach statistical significance, are of the same order as that found in standard single-operator REG experiments in the laboratory. The similarity of the yield suggests that these may be functionally similar situations where larger databases may be required to discern small but consistent effects.

No single source of the anomalous effect is unam-

biguously evident. Rather, the results suggest that several factors may contribute. The largest effect size is in subset (A), where all the potential sources of anomalous influence are present, including a coherent or resonant group of people engaged in shared ritual activity that may be enhanced or potentiated by the environment of a sacred site. However, even with no organized group engagement, such sites produce nearly the same level of effect in category B. Smaller but still significant effects in category D similarly indicate that unique and engaging sites may contribute to the anomalous results even without the "sacred" aspect, while the non-significant effect in the mundane locations of category C further supports the suggestion that the site may be important. The experimenter's expectations are also a potential influence that must be taken into consideration (White, 1977), and although the separate subset (E) comprising personal experiences of the experimenter shows only a very modest accumulated deviation, this factor cannot be totally excluded. The experimenter, more than anyone else in the group, was directly involved in these experiments and had expectations and motivations for achieving a useful and interesting result. It is plausible that reactions to the group dynamics within the powerful environment of the temples and pyramid chambers could have resulted in unusually large experimenter contributions, specifically in those settings. Nevertheless, while the experimenter was necessarily a part of the group, it appears from the hierarchy of effect sizes that the primary sources of anomalous deviations are the special locations and the group interactions.

The subjective impressions of several members of the group describing a "special quality" in the pyramid chambers and the primary spaces of the temples are instructive. It may be difficult to establish whether the subjective qualities are engendered directly by the place or, by the internal imagery and feelings of the people, or by some combination of both. A similar question is whether the stones and structures of a sacred site have a primordial character that makes them different and inspiring to people, or whether their use by people for sacred purposes might imbue them with some special character. This is not necessarily an issue that can be addressed experimentally, but it appears to be touched upon by the FieldREG effects produced in categories A and B.

CONCLUSION

The circumstances of this project, the personal experiences, and the opportunity to gather these particular datasets are all unusual and would be difficult to replicate. However, the results are sufficiently powerful statistically that they can support some tentative interpretations, buttressed by an increasing database of related applications (Nelson et al., 1997a). Although the precedents for the FieldREG paradigm remain limited, we can offer the following summary assessment of the results:

1. A well-calibrated random event generator produced anomalous effects when operated in certain Egyptian sacred sites linked with the presence of a group of people interested in achieving a shared experience of the spiritual and sacred aspects of these places. A formal test of the appropriate experimental hypothesis yields a probability of a few parts per million that the accumulated deviation is merely a chance fluctuation.
2. The average effect size was on the order of six times that found in laboratory REG experiments using similar devices and more than twice as large as the average of similar FieldREG applications in more mundane environments. However, among the latter applications, data generated in other ritual and ceremonial environments have exhibited effects that approach those of the Egyptian database in scale (Nelson et al., 1996, 1997a).
3. The largest effects occurred when the group attempted to develop a resonant bond through meditation and chanting within the sacred sites and were smaller when there was no group activity or when the group interacted in more mundane locations and circumstances. This implies that both the place and the group activity may play contributing roles.
4. In sacred sites where chanting or meditation did not take place, an effect was produced that is nearly as large as that in the optimal case, suggesting that simple group presence given an appropriate location may also be sufficient to generate anomalous results.
5. While statistically significant, the effect was considerably smaller in other historical or cultural sites that were interesting but did not qualify as "sacred" by the criteria established in this protocol. These places did not generally evoke a resonant group interaction, but they were certainly engaging, suggesting that even a mundane place or situation that focuses group attention may promote anomalous effects.
6. Individual experiences of the experimenter, even though deeply moving or engaging, did not appear to be adequate to produce consistent large effects comparable to those of group activity in a sacred site. Instead, the effect size was similar to that produced in single-operator laboratory experiments.

IMPLICATIONS AND APPLICATIONS

A clear implication of this study is that there is an interaction of environment and the state of consciousness and that both may be instrumental and important in the generation of anomalous REG behavior. The nonrandom behavior seems to be strongest when the REG is immersed in a milieu created by a "group consciousness" based on interpersonal emotional resonance enhanced by a conducive environment. Such resonance appears to be facilitated by shared experiences, such as rituals in certain locations that were evidently designed for this purpose. The resulting anomalous effects apparently have little to do with ordinary physical parameters but are clearly linked with the subjective information that is present (Jahn & Dunne, 1997; Nelson et al., 1997a). In the FieldREG paradigm, this subjective information is established or registered in objective terms when the nominally random data sequence becomes slightly more predictable and takes on a secular trend instead of continuing its theoretically expected random walk.

Extending the interpretation to a broader perspective, this experiment can be taken as tentative evidence for special places that have an intrinsic sacred quality. That is, we recognize selected spaces or locations distinguished from the ordinary by their ability to stimulate actions and experiences that we term spiritual or sacred. On the other hand, our evidence doesn't rigorously establish the prior existence of a sacred quality in the space, though it leans that way (consider the Philae example). Most likely, there is a combination of factors linked with anomalous effects – a special place, interesting and meaningful intentions, practices, or rituals that promote coherence and resonance. Group consciousness can be achieved by intention, for example, by meditation, but also may be imposed by circumstances, as when we share feelings of awe toward a sacred presence and forget our separateness.

As the ancient understanding has it, two heads are better than one. We are more effective and powerful when we come together and create a new entity, a group consciousness, which is a little smarter than any of us. It is essential to ensure that our group effort is positive, so we should seek sacred spaces and follow practices that are conducive to right action in service of well-being.

There is scientific support for the notion that what we wish for becomes slightly more likely to come into being. The future is not fully determined; it has a fundamental unpredictability, a randomness in its manifestation that can be changed from what it might have been. Our experiments show that when we become coherent internally or in a group, we become a source of structuring information that may influence what happens next in our environment. This capacity is generally unconscious, but it can be brought up into conscious awareness when we wish, and it can be applied to turn up the brightness of our future.

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Journal of Scientific Exploration
Anomalistics and Frontier Science

BOOK AND MULTIMEDIA REVIEW

A Look Back at Georgina Bruni's Book: You Can't Tell the People: The Definitive Account of the Rendlesham Forest UFO Mystery

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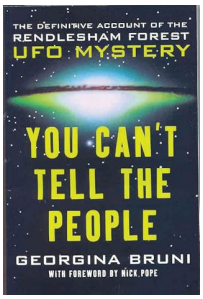

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In 2000, Georgina Bruni published what many agreed was the definitive study of the well known alleged UFO case that had taken place back at Christmas 1980, at a USAF nuclear base in Suffolk, UK. The events that had taken place at Rendlesham triggered huge media interest, and it was, in fact, the first such case to make front pages in the British newspapers.

At the time, although I no longer took an active role in ufological research, I was trying to keep in touch with events and had been shocked reading some of Jacques Vallee's books, which indicated how ufology had deteriorated over the years. On the whole, I took the Rendlesham case as genuine, although I had noticed one rather strange incident that described how one of the key witnesses had been returned to his bunk in a semi-trance state.

Over the last few years, the case has been discussed frequently on the Forteana site, and having largely forgotten the details, I found that there was still considerable interest in the odd events that took place back in 1980. I remained of the opinion that something had happened but couldn't be sure what. When I got more involved, I had to admit that the key evidence, the testimony of Col. Halt, the deputy commander at Rendlesham, was compromised because the men who went out were unable to see clearly because they were using night vision scopes. When I wondered why, the answer seemed to be that something very strange had taken place when Halt had prepared to go out on his mission. For such operations at night, the USAF kept powerful lighting equipment known as Light-alls. They had many of these devices ready for immediate use. But for some reason rarely discussed by anyone except Nick Pope, *not one of the light-alls was working that night.* So, the team was issued with image intensifiers, which both distorted and exaggerated the images they were seeing. Hence, laser light beams from drones flying overhead would appear far brighter and more threatening than they otherwise would. Tracking back from that one significant event, I began to take a very different approach to the case (Pope et al., 2014).

From this viewpoint, the whole picture changed, and when rereading Bruni's massive tome I can now see that she, and most other investigators, had been so attached to the extraterrestrial notion that they had neglected the alternative glaring answer -- *that it wasn't an alien spaceship that crashed at Rendlesham but a secret USAF asset.*

Bruni was a skilled investigator and put a massive amount of work into her research. She interviewed many people and built what appeared to be a strong case. Some witnesses had been seemingly hypnotized by a strange craft in a wooded area. (Nick Pope has recently written a book detailing this specific incident.) Another witness brought out his own book with a very different narrative. In short, there is con-

siderable disagreement, and all the indications are that this disagreement is part of a familiar pattern of disinformation and mind control. I think that the USAF has for decades been employing such methods to cover up black project disasters, and very likely a major player over the years was the German wartime head of secret research, HansKammler was brought back to the US under Project Paperclip and an evil genius. Nick Cook (2001), whose extraordinary book *The Hunt for Zero Point* is a fascinating account of a leading aero-space specialist's search for evidence of so-called anti-gravity research, felt that the extreme and violent way that black projects were protected indicated that Kammler was likely in charge of their security.

This prompted me to go through Bruni's book with an eye for detail, and I created a timeline of the events, which proved most helpful in disentangling the threads. One consistent feature was the way that a supposedly top secret extraterrestrial event was being openly revealed to random folk by USAF personnel. Having done a lot of research on the thorny topic of disinformation, I recognised the employment of a standard device, the "Unguarded Disclosure," whereby false information is introduced, seemingly by mistake.

This led me to a section of Bruni's book that I somehow failed to notice on the first reading. *Here, she is actually given the answer to what was going on at Rendlesham by someone with first-hand knowledge of intelligence operations.* Special Agent Wayne Persinger had been the Deputy Commander of the AFOSI, the Air Force Office of Special Investigations, at the time of the Rendlesham events. But at that time, he was on Christmas leave, which he spent with his English wife, so he only heard about the events a couple of days later and was not briefed on the incidents. By 2000, he had retired from the USAF and was still living in England with his wife. By all accounts, he had been one of the scariest AFOSI agents on the base, although two decades later, he had mellowed considerably. Here is what Persinger said, in Bruni's own words:

> I wondered if he would comment on the witness statements... he asked me what the base commander was doing whilst all this was going on. I told him that during one of these events, he was supposed to be at an awards dinner party on the Woodbridge base, and this was why his deputy commander was instructed to investigate. Persinger thought it was highly questionable that the base commander would continue to hand out awards when there was supposed to be a crisis. If there had been a report of a 'hostile invasion or a flight that had come down,' the Base Commander (Colonel Ted Conrad) would have dropped everything and put his police and fire departments on alert. The Wing Commander would have been notified immediately. The commander in charge of the Bentwaters AFOSI (Chuck Matthews) and special agents would have probably gone out to investigate. The major in charge of security police would have alerted his men. He would then have the patrols surround the craft and guard the surrounding area. The British authorities would have been informed and, of course, the CIA.
>
> According to Diana Persinger, a few years after her husband's retirement they received a visit from Special Agent Steve Smith. He was a fairly new recruit in 1980... he had been stationed in Britain a long time... when Diana brought up the subject of the UFOs he refused to discuss the matter.. except to say the information was 'buried' in Washington... Diana had also encountered a UFO that Christmas week... very low with lights all around... Wayne refuses to accept that's what it was. He said it was a helicopter

This is where Persinger more or less tells Bruni the answer, and she doesn't even register it:

> When I asked Wayne Persinger what they would term an investigation like the Rendlesham Forest incident he said they would call it 'Damage Assessment.' He also left me some cryptic clues. Having told him I believed the AFOSI and the CIA were responsible, he surprised me by replying, 'Well, it worked, didn't it.

How can Bruni have missed such an obvious pointer? She was so sold on the ET answer that even when an expert told her that *it was a case of Damage Assessment and that the cover-up had worked*, she ignored this and continued to believe that it was an alien craft that had crashed.

There is one other reason for rejecting the Extra-Terrestrial hypothesis in this case. Just a few hours prior to the Rendlesham crash landing, a very similar incident had taken place in the USA. The so-called "Cash-Landrum Incident" involved a diamond-shaped craft in trouble over a country road, dropping hot debris and eventually being ushered away by a fleet of helicopters. The next day, men were seen cleaning up the melted tarmac caused by the debris. The witnesses later experienced the effects of radiation exposure

and attempted to sue the US Government but failed. The similarity with the object seen at Rendlesham, also dripping some kind of hot material onto the road, is clear. If both objects had been black project devices using the same exotic drive method, it is more than possible that, like the legendary Bell, their drive mechanism is influenced by variations in cosmic radiations of some kind (Wikipedia, n.d.).

What this case does tell us is how sophisticated mind control techniques had become by the 1980s. And how easy it is to exploit peoples' belief systems and cover up one's own high-tech achievements. It is tempting to try to see how current revelations about UAPs might be in some way connected with this kind of manipulation. But most of all, it tells us that the masters of deception have no qualms about throwing innocent and genuine people, even deputy USAFB commanders, under the bus.

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Journal of Scientific Exploration
Anomalistics and Frontier Science

BOOK AND MULTIMEDIA REVIEW

The Foundations of Controlled Remote Viewing

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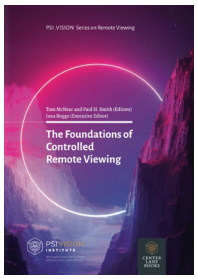

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This book is a very useful historical document and is recommended for anyone with an intense interest in remote viewing. In fact, it is primarily a compilation of many articles that have been previously published in different venues. Some of the contributions have been published in the *Journal of Scientific Exploration (JSE)*. Further, most of the information contained in the book is available on the Internet. According to Paul H. Smith, this volume was designed as a reference book to preserve historical information that was not correlated in a central repository and was subject to being lost. The advantage of this text is that the material is concisely located in one handy place. It is so comprehensive that even if you think you know a lot about remote viewing and the history of the Department of Defense program best known as Star Gate, there are still nuggets to be learned.

As Hal Puthoff begins his eloquent foreword, "On the 6th of June 1972, I had no idea what I was about to do would herald the creation of a whole new research discipline." Thus began decades of scientific exploration that continues to this day. Notably, the JSE has been one of the key conveyances for publishing the results of such research. However, as cofounder of the remote viewing topic, Russell Targ, notes in his article, "This ability is not a 'new age' discovery. Psi experiences are described in detail by the Hindu sage Patanjali in about the fourth century BCE, the *Yoga Sutras*." Indeed, while this book focuses on the military applications of some psi phenomena, the true spectrum encompasses millennia of human endeavors.

In his preface, Paul Smith laments that "lack of knowledge leads to many needless repetitions of 'reinventing the wheel." He then adds, "It is that problem which *Foundations of Controlled Remote Viewing* is meant to solve, with its authoritative collection of foundational documents." Tom McNear, a coeditor, adds, "*Foundations* contains *Ingo's* (Ingo Swann) *Ideograms at the Master's Level*, which will help readers better understand Swann's concept of the ideogram, perhaps the greatest insight to the functioning of remote viewing...."

Both Paul Smith and Tom McNear include extensive commentary regarding the Army's *Controlled Remote Viewing Manual*. There are well over one hundred pages devoted to the topic and covers the formal stages from I through VI. McNear even makes suggestions for future research and application. Then there is a commentary written by the original master himself, Ingo Swann.

The book contains a very detailed account of the development of remote viewing. Despite the best efforts, a few important incidents were missing. As an example, under "Remote Viewing Timelines," (taken from the IRVA.org website), there is no mention of NASA participation. Before the declassification of most of the program information, NASA was thought to be the first to contract with SRI on such a research project. With 1972 CIA involvement still hidden, in 1973-1974, NASA did provide some funding that was unclassified and thus could be discussed in public.

Other possible missing critical events were the interactions between remote viewing, psi researchers, and the mainstream scientific community, namely the American

Association for the Advancement of Science (AAAS). These discussions/confrontations were monumental in the acceptance or non-acceptance of the scientific data being derived. The opposition was led by renowned physicist John Wheeler, who was extremely critical and believed the field was "scientifically indefensible." That, despite substantial evidence supporting remote viewing being generated by credible scientists. There was an AAAS symposium in 1979 that led to a book, *The Role of Consciousness in the Physical World*, edited by R. G. Jahn (AAAS Selected Symposium 57, Westview Press, Boulder, CO, 1981). The compilation of papers included H. E. Puthoff, R. Targ, and E.C. May "Experimental psi research: Implications for physics." Of course, Robert Jahn was a founder of the SSE.

There also is a lack of recognition for the related research conducted under Bob Jahn at the Princeton Engineering Anomalies Research Laboratory (PEAR Lab). The credibility that PEARL research brought to the field was critical in gaining a semblance of scientific acceptance. With an impeccable scientific record as the dean of the School of Engineering at Princeton, Robert Jahn became one of the most important proponents for the study of psi phenomena.

This version of *Foundations* was created by the German-based PSI. Vision Institute, which published an earlier and shorter version as Volume 1 under the title *Von Star Gate bis heute-CRV nach 3 Jahrzehnten*. It may be worth noting that Center Lane Books, the publisher of this new book, is a derivative with advisors comprised largely of remote viewers and researchers from the former military project. In fact, while the general public thinks of the title Star Gate as the name of the remote viewing program, Center Lane was one of many names ascribed as the project evolved and was transferred from one agency to the next over time. Star Gate was the last name before the program was terminated, and the first elements became known to the public.

For full disclosure, I know many of the authors and participants involved and consider them friends. That said, I believe I can render an unbiased review and stand by the recommendation.

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BOOK AND MULTIMEDIA REVIEW

The Indispensable Right: Free Speech in an Age of Rage

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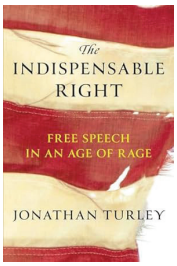

Turley, J. (2024). *The Indispensable Right: Free speech in an age of rage*. Simon & Schuster.

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CONTENT OVERVIEW

Turley begins by noting that we live in an age of rage, in which freedom of speech is most under stress: "our history of speech suppression" shows that "All three branches [of government] have abandoned protections for minority viewpoints due to a lack of a coherent and consistent theory of free speech" (p. 2).

The book's chief thesis is that the need for, and benefits of, freedom of speech have typically been proclaimed in *functional* terms and in the context of politics; whereas Turley believes that freedom of speech is a natural human right, that human beings inherently want to express themselves, so that freedom of speech is indispensable everywhere and always, irrespective of the topic or context. Admittedly, "Neither view treats free speech as an absolute. However, the latter view based on individual autonomy allows fewer 'trade-offs' through balancing and harm-based tests" (p. 4).

The book's Introduction, and the four chapters of Part I, describe historical episodes of speech suppression and striving for freedom of speech; for example, the work of Charlotte Anita Whitney in California, the sixth state to give women the vote (in 1911).

Other mentioned and discussed names and events include Socrates, Spinoza, the British "Star Chamber". The American Bill of Rights "would include the strongest protection for free speech in history" (p. 49), as James Madison wanted to keep out what he called the "monster" of [anti-]sedition laws (p. 66).

In Part II of the book, chapter 4 tells of Thomas Paine; Chapter 5 is "the Boston Tea Party and America's birth in rage". Chapter 6 is on Shay's Rebellion, and chapter 7 is on the Whiskey Rebellion. Chapter 8 describes protests against new taxes, and Chapter 9 describes how President John Adams brought back "Madison's monster" of sedition laws. Later chapters in Part II feature Jefferson; Andrew Jackson; Lincoln; the Gilded Age; Comstock; pacifists during World War I; sedition during World War II; McCarthy and the Red Scare; the rebellious 1960s; Antifa, MAGA, and the age of rage; and January 6th and "the revival of American sedition".

Part III of the book, "Holmes and dousing the fire of free speech", has four chapters analyzing and critiquing three major cases tied in some way to the well-known hypothetical about shouting "Fire!" in a crowded theater.

Part IV, "Restoring the indispensable right", has five chapters. 25 and 26 reiterate history and earlier discussions; 27 describes how it is conservative viewpoints that are now being silenced whereas in earlier times it was left-liberal speech that was being suppressed. 28 deals specifically with contemporary academic orthodoxy and cancel culture; and 29 rages against the excessive use of sedition laws in prosecuting those who stormed the Capitol on 6th January 2021.

Part V, Conclusion, summarizes Turley's theme that we have more to fear from our

inclination to silence others, than we have from engaging opposing viewpoints.

PROS, CONS, AND THE BOOK'S CONTRIBUTIONS TO THE LITERATURE

The book has a wealth of information about the struggles of dissenting viewpoints to be heard, in a variety of national and intellectual contexts. It also describes the philosophical approaches of such salient figures as John Stuart Mill and Thomas Hobbes. The actions and attitudes are discussed and analyzed, of such prominents jurists as Oliver Wendell Holmes and such political notables as Thomas Jefferson. So that is certainly a "plus".

That freedom of speech is indispensable on every subject is a crucially important point and certainly another "plus" for the book. Discussions of many topics rely on assertions as to fact, and "science" is typically looked to for the validation of facts. Unfortunately, "science" cannot speak for itself; and those who do speak for science, the generally recognized authorities, represent merely a consensus that is quite often disputed by minority voices that are typically ignored or dismissed by the authorities (Bauer, 2012). It is indeed indispensable that those voices should be heard by policymakers as well as society as a whole. Freedom of speech is necessary not only on issues of politics, social organization, and religion but on all matters of *knowledge*, scientific, medical, or ecological. Hence, the need for something like a Science Court (Bauer [Chapter 12], 2017).

However, the book's attempt to demonstrate the superiority of a natural-law basis over a pragmatic, utilitarian, functional basis in defense of the greatest possible range of freedom of speech is inevitably unsuccessful since Turley is forced continually — and quite properly — to allow for exceptions: "Neither view treats free speech as an absolute"; but making natural law axiomatic "allows fewer 'trade-offs' through balancing and harm-based tests" (p. 4).

The trouble is that "natural law" sounds like an absolute (at least for this reviewer). Turley asserts that it is natural for human beings to wish to express themselves; that free speech is as fundamental --- as natural --- as free thought and the instinctive desire to express oneself, as revealed by such creative activities as art, examples of which have been traced as far back as many tens of thousands of years.

However, there is general agreement that humans are social animals. The earliest experience of being "social" involves absorbing what is taken for granted in one's own family, clan, or tribe. An inevitable consequence is that no two human beings are exactly alike. What is taken for granted in one group will differ in some respects from what is taken for granted in other groups. What *we* do is naturally taken to be the right thing, so doing things differently seems somehow *wrong*. In other words, some degree of xenophobia would seem to be as inevitable, as "natural", as the individual wish to express oneself.

The organization of any group must therefore involve trade-offs between individual freedom and social cooperation. Human history would seem to teach that establishing a stable protocol of trade-offs works better when a group is smaller rather than larger.

In our age, we all participate in several groups of different sizes and formed for different purposes — religious, political, ideological, as well as professional, vocational, recreational, and more; and there are also differences between generations as a result of differing experiences. It is therefore *inevitable* that there will be *perpetual* stresses, for individuals of course, but also for groups; and within groups as well as between groups, there will always be tension between orthodoxy and unorthodoxy or heterodoxy.

Just as natural as free thought and the wish to express oneself creatively is surely the desire to act on the basis of those thoughts and wishes. At various points in the book, Turley attempts a sharp division not only concerning the best axiomatic basis for freedom of speech but also for the necessary distinction between speech and action, most particularly in the context of sedition laws. But here again, I would argue that no clear division is feasible, particularly in such contexts as politics. To what extent, for example, might a particular statement constitute incitement of others? To what degree might such incitement be intended or unintended?

Above all, how likely is the statement to persuade others to *act* violently?

Rather obviously, that depends on who makes the statement, and in what contextual environment. If Joe Blow in a pub rages that an election was stolen, clearly that should be classed as free speech and not as a seditious statement. If an elected representative makes such a statement in a speech in Congress, that might warrant an investigation, depending on the representative's status among the other representatives. If a just-defeated president makes the statement publicly, that would rather clearly constitute incitement to others to *act* seditiously.

Sharp divisions require the availability of objective measures. On the distinctions and differences that are discussed and analyzed in this book, no objective measures are available. Turley's theme, expressed most directly in his Conclusions, that we have more to fear from our inclination to silence others than we have from en-

gaging opposing viewpoints, may be perfectly true, but it could be the basis for actual organization only in a group in which every individual agrees to act appropriately. And that does not seem feasible in any contemporary nation-state.

The greatest flaw in this book is that the theme is a generalization whereas all actual happenings are contextual as to time, place, and actors, and every decision as to the "monster" of sedition laws (or about anything else) needs to be made on a case-by-case basis.

AUTHOR DISCLOSURES

The foregoing reveals my ambiguity about this book's message and argument. There is much detail of many important episodes, and it can be useful to learn of them; but the attempt to insist that a natural-law basis is superior to pragmatism is unsustainable.

I had become increasingly confused as I read, before recognizing that basic flaw; and looked for other reviews of the book to see whether I was missing something — especially as the editorial reviews on amazon.com are so complimentary, as also are the blurb extracts from them on the book's cover, from such respected people as a former president of the ACLU and the columnist George Will. Readers at Goodreads rate the book 4.6/5, at amazon.com 4.9/5; sampling a few 5-star and a few 1-star reviews at the latter site illustrates that overall reader ratings are best ignored.

I can only speculate that the book's blurbs came from people who were sent pre-publication drafts, looked in the index, read a few pages, and expressed praise because these bits appealed to them. George Will, for instance, would have liked and approved, as much as I did, of chapter 28, "Academic Orthodoxy and the Restoration of Free Speech in Higher Education".

Kirkus Reviews calls it "A smart book that invites argument — civil argument, that is, with good faith and tolerance" (https://www.kirkusreviews.com/book-reviews/jonathan-turley/the-indispensable-right/). I've long regarded "smart" as used when a writer wants to be complimentary but has nothing substantive to praise.

But I also found some definitely negative reviews, unfortunately rather *ad hominem*:

"A Trump apologist values at least some of the U.S. Constitution" (Kelley, 2024).

"Some years ago, academics and legal and political commentators began joining in a lament that eventually became a kind of trope: 'What the heck has happened to Jonathan Turley?' The sad refrain recalled that George Washington University law professor Turley was once a serious and respected legal scholar — a civil libertarian who often constructively criticized liberal cant — and then observed that he had turned his energy into appearing all over the media, but especially welcomed the chance to be on Fox News" (Weisberg, 2022).

That may explain why Chapter 29 rants against the said-to-be-harsh treatment of those who forced entry into the Capitol on Jan. 6th, 2021. This seems out of place in a book about the indispensable right to *free speech* which insists on the need to distinguish speech from acts. What happened at the Capitol was certainly action, after all; does Turley want to construe it as just a protest and thus a form of speech?

The harshest criticism should be directed not at the author, however, but at the publisher.

Simon and Schuster is a long-respected imprint; but this book lacks competent editing. As pointed out above, the fundamental argument for natural-law adjudication is illogical, muddled, and self-contradictory. There is a lack even of rudimentary copy-editing (for instance, "those" at bottom of p. 15 lacks a referent; middle p. 30 has "that" instead of "who" referring to a person; last four lines on page 33 could have been expressed in a more readily understandable way; and much more). There is unnecessary repetition everywhere.

But the most disgraceful point is the ridiculous pretense of documenting sources in the 55 pages of "Notes" at the end of the book. Nowhere in the text itself is there anything to suggest that a fact or statement is being cited or can be sourced. The "Notes" are a sequence of page numbers, each accompanied by a word or phrase that appears in the text on that page; and some sort of reference for that is given.

None of the academics I asked — including a well-published, long-time teacher of "creative nonfiction" writing — had ever come across this apparent substitute for reference numbers or (author, date) citation.

What has happened to Simon and Schuster? Several weeks ago I had read *Burn Book*, which has every sign of self-publication, including a last page celebrating the absence of an index (Bauer, 2024); it was also published by Simon & Schuster (the Turley book at least has an index, though it is rather perfunctory).

Both of these books bear proudly the colophon of the 100th year of this formerly respected publishing imprint.

Book publishing seems to have been taken over by multinational corporations in which good editors who love books are not particularly empowered. In the latest change of hands, Simon and Schuster was taken over by a private equity firm with a less-than-stellar reputation for doing good to those it acquires (Grothaus, 2023).

RECOMMENDATION

Read this book, if at all, only for examples throughout history of struggles for freedom of speech.

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BOOK AND MULTIMEDIA REVIEW

First Review: Inside the U.S. Government Covert UFO Program: Initial Revelations

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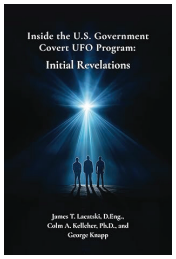

Lacatski, J. T., Kelleher, C. A., & Knapp, G. (2023). Inside the US government covert UFO program: Initial revelations. [Publisher not listed].

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In 2017, *The New York Times* published an article ostensibly covering a Pentagon UFO project. The authors of *Inside the U.S. Government Covert UFO Program: Initial Revelations* purport to tell us about it. They are James T. Lacatski, D.Eng., Colin A. Kelleher, Ph.D., and George Knapp.

In the wake of the 2017 Times article, a number of researchers got busy submitting Freedom of Information Act requests. In 2022, after over four years had passed, the Defense Intelligence Agency (DIA) released an underwhelming group of records in response to the requests (Expanding Frontiers Research, n.d.).

By that time, much of the information originally published by the Times was shown to be incorrect. The authors of the book at hand acknowledge that this is the case (unlike the Times) but fail to provide significantly more key supporting data for their version of events than the Times. Neither do the authors address the discrepancies between their assertions and their lack of confirmation to be found in the records produced by the DIA.

When citations are offered in this book, they include such sources as George Filer (an infamous unreliable narrator with the Mutual UFO Network), UFO reports filed with the National Investigations Committee on Aerial Phenomena (a mid-20th century civilian UFO organization), and Wikipedia. It is out of such reports and, at times, dubious sources that the authors fill multiple chapters with technical-sounding jargon on flight capabilities and propulsion means of objects otherwise not established to exist, at least not to the extent as speculated. Description after purported description is presented, ranging from lift forces to color changes, halos to invisibility. This leads to sections on power generation and advanced UAP power generation. Three of five citations provided on page 79 from "a relatively hefty body of anomalous craft reports of varying degrees of credibility," further described as "well documented," lead to Jacques Vallee's UFO books.

Often referenced are the physiological effects of UAP (Unidentified Aerial Phenomena) on human beings. This writer personally took a deep dive in 2022 into the allegations of what was being termed UFO injury studies, only to find the evidence lacking to the extreme (Brewer, 2022, April).

This book did nothing to change my mind. I remain unconvinced investigation of alleged UFO-related injuries took any substantial form that could establish reliable causality or would pass peer review. The merit of such reports and subsequent studies is often simply claimed without sufficient justification.

Right from the preface, the authors launch into dramatic descriptions of anecdotal stories relayed by so-called whistleblowers, though the accounts perpetually lack conclusive evidence. The authors never raise the possibility that evidence might be lacking for the simple reason that the stories are inaccurate and incomplete.

Numerous figures are presented as credible and esteemed without offering any

of the many valid criticisms of their work that are easy to locate. Figures like Dr. Garry Nolan are among those provided pedestals without informing readers of any qualified considerations of the Stanford immunologist's questionable UFO-related activities (Travino, 2017). Prof. Avi Loeb is likewise offered as what might be argued as an appeal to authority while neglecting to inform readers of the substantial and qualified criticism leveled about the dubious positions expressed by the Harvard astronomer (Miller, 2023, July 24).

The introduction of the book offers a summary of AAWSAP, which is the Advanced Aerospace Weapon Systems Application Program, a $22 million project awarded to Bigelow Aerospace Advanced Space Studies, or BAASS. This is explored along with post-2017 events but offers few references or specific citations, just mostly running narratives. We are to primarily rely on the accounts of the authors of what took place in and around Washington, intelligence circles, and UFO research networks, a reliance that becomes increasingly strained as one progresses through the book.

"The purpose of the present book," the introduction concludes, "is to unravel more deeply the AAWSAP focus on the physics and engineering aspects of UFOs." In the forthcoming pages, multiple references are made to extraordinary phenomena. In a page 5 description of Skinwalker Ranch, the authors assert, "Metallic UAP, flying orbs of varying colors, otherworldly creatures, discarnate voices, poltergeists, electromagnetic anomalies, and orange 'portals' have co-located as well as materialized separately on the property."

There is no basis in fact provided for the assertion. It seems to primarily be presented as an established fact simply because people have said so. It would be understandable if one found this rather inexplicable from authors who quite regularly remind readers of their qualifications as project scientists and a journalist.

After proclaiming on page six that this is not a book about flying saucer stories or paranormal tales, the authors proceed on page seven to assert that humanoid-shaped black shadows, loud footsteps, hauntings, and other such phenomena are "frequently" reported among UAP witnesses. This is followed by stating witnesses also regularly report precognitive, clairvoyant, telepathic and similar abilities in the wake of their UAP encounters. The authors go on to argue the circumstances should be accepted as part and parcel of the UFO phenomenon.

There are a number of items to be competently challenged in the above assertions. For one, it's putting the proverbial cart before the horse; it can't be accepted people are experiencing abilities (as the result of UAP encounters) that in at least some instances have not been established to exist - among UAP witnesses or anyone else. Secondly, because a person reports they experience something, it does not necessarily mean they do. The authors largely fail to acknowledge either point.

Many questions are therefore at issue about the methodology of interacting with and interviewing witnesses, which is not addressed whatsoever. Part of the reason for that omission may be because the cases offered for collective consideration are clearly obtained from a wide variety of sources, covering a date range of several decades, from the mid-20th century to a small percentage of investigations apparently conducted within the AAWSAP. In other words, the authors had little to no control over the integrity of witness interviews in the vast majority of cases they relied on to support their conclusions. Even if we overlook all the challenges, one is hard-pressed to conclusively assign causality for psychic abilities to UFO encounters or anything else, much less convince a peer review panel that would be quite familiar with the scientific process. A reader might suspect that's why they're finding these assertions, notably of such alleged paradigm-shifting significance, in a paperback instead of a published research paper.

Chapter 5 begins an argument for flight characteristics exhibited by "novel aerospace technologies," or UFOs. These flight characteristics asserted to be "beyond the state-of-the art technologies," are ultimately not presented in any manner other than the words of the authors and indirect reference to reports where "they have been observed." From this, the authors conclude and inform us this novel technology will revolutionize the quality of life in spectacular ways.

Several pages are subsequently dedicated to educating readers about what UAP do. There are no counterarguments presented for how objects in the sky may not always be operating the way witnesses interpret, including when observed on film. Little to no consideration is given to the caution that should be exercised when considering the accuracy of witness testimony.

Significant attention is given to "UAP lift concepts," including those the authors label advanced. Several more pages are dedicated to UAP propulsion. Discussion of such things as plasma and fusion propulsion give way to "UAP spatial/temporal translation," which gets into "temporal anomalies such as invisibility and distorted time."

Readers might feel as if they are viewing the work of people who cannot conclusively establish a single UAP case as necessarily outside reasonable explanation, so they instead opt to continuously suggest an abundance of extraordinary cases as a foregone conclusion. The authors then present what could arguably be dubbed hand-tracing about how these craft supposedly operate. Dozens of

pages of it. I am quite unconvinced of the validity of the arguments presented in this book.

As a specific example, it is asserted that a category of UAP spatial/temporal translation is "Become Fuzzy in Appearance." Page 55 states, "An otherwise solid-looking object may suddenly start to become fuzzy looking and even become transparent before disappearing. While this may be a defensive maneuver, it could also be the start of a spacetime transition event." No alternative, infinitely more likely and common explanations are offered for why things in the sky may become less clear as they fade from view.

The research goals are examined of a collection of papers known as the Defense Intelligence Reference Documents, or DIRDs. For this reader, too much emphasis is put on the contents of the papers, and not enough attention is given to their theoretical and often highly speculative nature. For that matter, there is an underlying implication throughout the book of a tightly run project that consisted of qualified experts toiling away at maverick science that leads to the technology of tomorrow. I am quite unconvinced that this is an accurate portrayal of AAWSAP, and the authors actually reinforce my doubts rather than dispel them.

The 2004 "Tic Tac" case is explored. The authors neglect to mention, for whatever reasons, that in 2007, this USS Nimitz-meets-UFO story first sprung on the UFO subculture at the Above Top Secret message board (Above Top Secret, n.d.). People were not particularly interested, and the story didn't gain traction. That was some two years before 2009, when the authors state, "the investigative wheels of AAWSAP moved into high gear," and project personnel picked up the trail. If the reader knows no different, they might incorrectly interpret that no one outside of the Navy knew anything about the chain of events until the story was more recently delivered to the public through the actions of self-described UFO Disclosure activists. The authors omit the wider circumstances from their telling of the saga.

I was relatively interested in reading chapters and sections dedicated to addressing Robert Bigelow, his BAASS aerospace corporation, and collaborations with the Mutual UFO Network. Not because I would necessarily accept the narration if adequate citations and applicable documents were absent but because I wondered what the authors would say.

The infrastructure of the MUFON-BAASS collaboration is emphasized, noting the large number of MUFON investigators already in place and subsequently available to BAASS. The formation of special rapid response teams that were created to investigate select UFO sightings is described. However, none of the challenges inherent to MUFON and its questionable scientific competence are acknowledged, of which there are many (Brewer, 2018, February). As a matter of fact, quite the opposite is heavily implied, potentially leaving readers with the incorrect impression that MUFON runs a well-trained army of scientifically capable volunteers. There is much evidence to the contrary, none of which is mentioned.

The authors similarly fail to point out that neither the MUFON civilian investigators that were leveraged by the AAWSAP nor the witnesses interviewed were made aware the Defense Intelligence Agency was funding the collection of the reports. It is likewise omitted that people who at the time suggested the intelligence community might be involved in MUFON affairs, which even included the organization's then-director James Carrion, were criticized and often shunned over voicing their concerns. According to Carrion, he and most of the MUFON governing board, other than John Schuessler, were not allowed to know the source of the funds negotiated from BAASS to MUFON, only that BAASS was acting as a conduit for an undisclosed sponsor (Carrion, 2011, January). The authors refer to John Schuessler as a scientific advisor in their version of the story. Rather than address the then-ambiguous money trail and a BAASS-MUFON deal that went south, they focus on descriptions of a rapid response team.

The authors say the team had the ability to collect physical evidence and promptly send it to multiple BAASS laboratories for forensic, biological, isotope and other types of scientific analysis. The next three dozen pages consist of witness narratives and notes compiled from case reports gathered by MUFON and BAASS investigators, though not a single instance of such analysis of physical evidence is presented, much less explored in detail.

In Chapter 15, the authors assert, "A significant achievement of the AAWSAP program was the successful development of the Data Warehouse." However, I am unaware of any mention of a Data Warehouse in the records released in March 2022 by the Defense Intelligence Agency in response to requests submitted through the Freedom of Information Act. There is certainly no emphasis placed on such a database in the DIA records released. Therefore, much like the majority of material presented in this book, its status is largely unverified, and its practicality is subsequently in doubt. The authors add that a BAASS contract was awarded to Dr. Jacques Vallee of Documatica Research, LLC, to outline and classify anomalous aerial vehicles – basically, categorize and report on UFOs – as they may pose potential threats to the United States.

As the current status of the Data Warehouse is open to question, so is the validity of the records reported to populate it. According to the authors, the records consist of material gathered from such sources as MUFON, the Robert Bigelow-operated yet now disbanded National

Institute for Discovery Science, and Skinwalker Ranch, among others.

A handful of examples are offered of the some 248,000-plus cases reportedly making up the Data Warehouse database. The examples offered primarily involve witness testimony and include no actual raw data, detailed descriptions of tests conducted on physical evidence, results of any such tests, or similar material.

Arguments are presented that UAP activity involves psychic phenomena. This is tied into attempts to persuade readers to adopt the authors' conclusions that psychic phenomena inherent to UAP sightings bear significant responsibility in making the investigation of UAP difficult. Counterpoints are not discussed. Neither is it acknowledged that the types of psychic phenomena described and inferred are largely not accepted to exist within the scientific paradigm in which the authors suggest they and project personnel should be considered respected and active participants.

Skinwalker Ranch's alleged events are presented. The listed events were reported by security personnel and caretakers and include "Sensed or perceived presence," "Perceptions of being watched," and "Perceptions of emotional distress," among other subjective and arguably questionable categories. The reports include alleged orb sightings, hairs rising on the arm of security personnel, and a dog biscuit having to be used to coax a canine out from under a vehicle. These are examples of what is offered in support of the existence of anomalous phenomena out of some quarter of a million reports said to have been collected for a database described as a significant achievement of a $22 million publicly funded project.

The authors report that at Skinwalker Ranch on January 30, 2008, "Norton finds two doors closed on one of the bedrooms. He previously recalls the doors being open, and there was no one in the trailers to shut the doors. Previous photographs taken by Norton indicate the doors were open."

One might find this book disappointing other than as entertainment or perhaps if interested in monitoring the unverified claims that circulate within the UFO subculture. It is simply another in a long line of UFO paperbacks that make grand proclamations while failing to deliver data that justifies the contents. What's more, a significant number of those paperbacks are produced by the very circles kept by the authors.

When work is framed as scientific, then, by definition, there are certain standards to be respected and a burden of proof to be met. That is all the more the case when the work purports to address "the biggest secret in human history" (page xv). *Inside the U.S. Government Covert UFO Program* does not rise to that burden of proof.

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Journal of Scientific Exploration
Anomalistics and Frontier Science

BOOK AND MULTIMEDIA REVIEW

Second Review: Inside the U.S. Government Covert UFO Program: Initial Revelations

Micah Hanks
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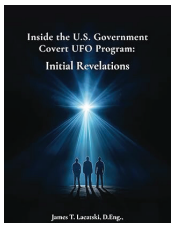

Lacatski, J. T., Kelleher, C. A., & Knapp, G. (2023). Inside the US government covert UFO program: Initial revelations. [Publisher not listed].

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In recent years, the United States government's renewed interest and investigations into what it calls unidentified anomalous phenomena—aerial mysteries more commonly known as UFOs—have generated significant public interest.

The Pentagon's current official UAP investigative effort, the All-domain Anomaly Resolution Office (AARO), is only the latest in a succession of similar initiatives the Department of Defense has launched over the last several years. Its predecessor, the Unidentified Aerial Phenomena Task Force (UAPTF), was established on August 14, 2020, and was itself an outgrowth of a once-secret multi-agency effort within the DoD that examined unidentified aerial threats, informally referred to as the Advanced Aerospace Threat Identification Program (AATIP), a name first revealed to the public in reporting that appeared in *The New York Times* in 2017.

Although a program that received around $22 million in taxpayer funding indeed existed as described in the 2017 *Times* article and had been referred to as AATIP, it was later revealed that this was merely its nickname and that there had, in fact, been two separate programs. The official name of the original program, which began in 2008 and ran for just two years within the Defense Intelligence Agency (DIA), was the Advanced Aerospace Weapons Systems Application Program (AAWSAP), and it was effectively the seminal new millennium DoD effort that gave rise to the modern renascence in U.S. government interest in unidentified aerial mysteries. The other program was the same multi-agency effort (discussed above) that persisted for several years after AAWSAP ended, which borrowed the former program's unclassified nickname for a time.

Now, the AAWSAP program and its early foundational discoveries are the subject of a significant new volume, *Inside the U.S. Government Covert UFO Program: Initial Revelations* (Bowker, 2023), coauthored by the program's director, James T. Lacatski, D.Eng., along with its Deputy Director, Colm A. Kelleher, Ph.D., and Las Vegas-based journalist George Knapp.

Inside the U.S. Government's Covert UFO Program picks up where the authors left off in their previous collaboration, *Skinwalkers at the Pentagon: An Insiders' Account of the Secret Government UFO Program* (Independently Published, 2021), the unusual name of which was derived from another earlier work by Kelleher and Knapp, *Hunt for the Skinwalker: Science Confronts the Unexplained at a Remote Ranch in Utah* (Gallery Books, 2005). In their initial 2005 treatise, Kelleher and Knapp chronicled an independent scientific evaluation undertaken at Utah's infamous Skinwalker Ranch by the National Institute for Discovery Science (NIDS), an independent scientific investigative organization funded by Nevada business magnate Robert Bigelow. The story continues in 2021's *Skinwalkers at the Pentagon*, where the authors were joined by AAWSAP Director James Lacatski to detail the story of the once-secret DIA program overseen by another of Bi-

gelow's enterprises, Bigelow Aerospace Advanced Space Studies, the staff for which consisted largely of past NIDS employees.

Now, in this latest installment of the ongoing series, *Inside the U.S. Government's Covert UFO Program* goes beyond the rise and fall of AAWSAP and the general overview of its research efforts outlined in the previous volume, providing a breakdown of AWWSAP's scientific investigations with, as the authors explain, a "focus on the physics and engineering aspects of UFOs."

This is indeed a good, simplified summation of the work, which begins with a preface featuring a comprehensive overview of recent developments involving UAP and the U.S. government's interest in them by coauthor George Knapp. In both the preface and the book's introduction, the authors bring readers up to date on the UAP situation, alluding to the factual errors conveyed in the initial 2017 *Times* reporting that helped give rise to the aforementioned AAWSAP/AATIP confusion (though perhaps to the degree that nears redundancy) and offer an outline of recent events that would certainly aid any reader unfamiliar with the nuances of current UAP-related happenings.

The book's early chapters then provide a succinct overview of the AAWSAP program before comparing it to the DoD's current efforts under the recently formed AARO, citing program functions outlined in recent Congressional language under Sec—1683 which convey what AARO's investigations are expected to entail. While the authors argue that "AAWSAP was effectively restarted by the U.S. Government in 2022," worth noting here are more recent statements by AARO's former director, Sean Kirkpatrick, that were issued since the publication of *Inside the U.S. Government's Covert UFO Program* and which contrast rather sharply with the author's assertions.

With timely comparisons between the new and old U.S. government UAP initiatives aside, the next several chapters focus on various components of the AAWSAP program, which are identified as *Project Database,* a combined database of historic UAP sightings; *Project Physics,* which focused on twelve technical areas and produced more than three dozen papers that examined potential advanced capabilities exhibited by UAP; *Project Engagement* which involved attempts at direct observation of UAP; *Project Northern Tier*, which focused on UAP incidents that occurred decades ago at several U.S. strategic sites; *Project Colares,* which analyzed UAP incidents that occurred in Brazil in the 1970s; *Project Ranch,* which continued investigations at Utah's Skinwalker Ranch; and *Project Consciousness* which explored "the connection between UAP/UFO and paranormal phenomena and the human mind and body."

Within the chapters devoted to subjects like possible propulsion systems, power generation, and other capabilities displayed by UAP, the authors provide intriguing analysis that draws from descriptions harvested from historical UFO narratives, many of which date back several decades. Admittedly, a few readers may find this to be a redundant rehashing of information lifted from already well-trodden paths left in UFO literature. However, it is the opinion of this reviewer that such historical comparisons are significant primarily for a few reasons: 1) here, the authors successfully illustrate that past observations of strange phenomena may represent displays of advanced aerospace technologies that are better understood today than they were at the time they were first described, 2) they offer a potentially meaningful technical analysis for cases that, in past publications, were mainly presented anecdotally, and 3) they provide a candid perspective on the interconnection and dynamics between AAWSAP's investigations, and the historical information amassed in its CAPELLA database, a massive project overseen by computer scientist Jacques Vallée that resulted in what is, arguably, the largest and most comprehensive global historical resource that documents UAP sightings, and which presently remains classified.

In addition to propulsion and other advanced capabilities, several of the more anomalous components of historical UAP displays are explored by the authors, which include the sudden appearances/disappearances of UAP, changes in size or shape, and even the apparent merging of several objects into one (see the book's seventh chapter for an overview of incidents of this variety). Such cases, the authors contend, "suggest spatial/temporal translation concepts that not only explain the observed vehicle flight characteristics, but go on to provide a basis for very advanced lift, propulsion, and structural materials." Additional phenomena examined include apparent alterations in time experienced by some UAP observers, as well as potential effects that "temporally-modified fields" produced by unconventional technologies may have on the surrounding environment (i.e., accelerated growth displayed by vegetation nearest to the UAP).

Along with its assessments of UAP capabilities conveyed in past observations and their technological implications, *Inside the U.S. Government's Covert UFO Program* offers a few surprises too. Arguably, one of the most controversial statements is offered by Lacatski, who discusses being present at a meeting that occurred at the U.S. Capitol building in 2011, at which time he "stated that the United States was in possession of a craft of unknown origin and had successfully gained access to its interior." Possessing "a streamlined configuration suitable for aerodynamic flight but no intakes, exhaust, wings, or con-

trol surfaces," a possible function of the curious vehicle was speculated, according to Lacatski, as having been "a life-support craft useful only for atmospheric reentry," a purpose that might seemingly account for the apparent lack of any discernible propulsion system within the device.

Discussion of this alleged anomalous vehicle recovery is presented mainly as an introduction to a discussion about Defense Intelligence Reference Documents (DIRDs) produced for the AAWSAP program by Earthtech International, a Texas-based research facility managed by physicist Harold E. Puthoff. Thus, little context is provided within the text that conveys a basis for the supposition that such a craft exists in the U.S. government's holdings. However, the most obvious comparison that comes to mind involves descriptions of similar alleged vehicles provided by Bob Lazar, who claims to have observed such craft in the U.S. government's possession in the 1980s. Departing somewhat from the "life-support craft" hypothesis, the DIRDs subsequently addressed within the same chapter then look at negative mass and vacuum (spacetime metric) engineering as possible mechanisms that may help provide an understanding of potential underlying mechanisms for such technologies.

The book's later chapters also provide useful historical information on the AAWSAP program's investigations into the now-famous Nimitz incident off the Baja California coast in 2004, as well as its arrangement with the Mutual UFO Network (MUFON) that allowed AAWSAP investigators special access to information collected by one of the country's largest and oldest existing UAP investigative organizations. This cooperative agreement managed to generate controversy both at the time and still today to some degree, primarily because the majority of the organization's members—and even most of its board of directors—were unaware that the financial support MUFON received from Robert Bigelow had been taxpayer money associated with a DIA program (those interested in this cooperative arrangement are referred to the book's twelfth and thirteenth chapters, where a brief history and an overview of sample MUFON cases that AAWSAP evaluated during this period are provided).

In the book's final chapters, discussions involving AAWSAP's Data Warehouse, as well as AAWSAP's investigations into UAP incidents along the U.S. Northern Tier in the 1960s and 1970s, physical injury cases from the late 1970s in northern Brazil, and an additional summary of the investigations at Skinwalker Ranch between 2008-2010 are outlined. Mirroring elements of the story conveyed in *Skinwalkers at the Pentagon*, the authors also discuss what the AAWSAP program was *not* able to achieve due to time constraints, lack of additional funding, and, ultimately, the program's termination in 2010. As the authors explain near the volume's conclusion, a few components of the AAWSAP research effort—chiefly its *Project Ranch* and *Project Consciousness*—receive far less attention than the components that detail physical characteristics and potential technological implications related to the function of UAP. This, they explain, is both due to the primacy of Projects *Physics, Engagement,* and *Database* in the early stages of the AAWSAP effort but also because of space limitations within the current volume. A forthcoming work by the authors is foreshadowed, in which these later stages of the AAWSAP investigations will be more fully detailed.

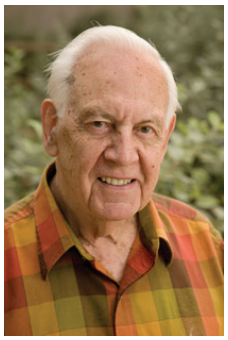
In conclusion, *Inside the U.S. Government's Covert UFO Program* will leave many readers wanting more specifics about the core investigations undertaken during the two short years the AAWSAP program was in operation. Also, some may find the frequent references to historical literature a deviation from the modern studies of anomalous phenomena that the controversial program explored. However, while some frustration on these points is warranted, one must also note that all of the information contained within the book was cleared for public release by the Defense Office of Prepublication and Security Review (Case 22-SB-0151), as *Skinwalkers at the Pentagon* had been, and also that a large portion of the data produced by AAWSAP remains classified. Thus, for the time being, *Inside the U.S. Government's Covert UFO Program* offers what is, to date, the clearest and most comprehensive overview of the research efforts undertaken by the AAWSAP program and thus provides a very valuable outline both for historians of the subject who work in the absence of direct access to AAWSAP materials, as well as for the general reader who is interested in learning about the extent and focus of recent past U.S. government investigations into unidentified anomalous phenomena.

Journal of Scientific Exploration
Anomalistics and Frontier Science

OBITUARY

Peter Andrew Sturrock 1924-2024: Founder of the Society for Scientific Exploration

Bill Bengston
SSE President (2010-2022)



PETER STURROCK
1924-2024

https://doi.org/10.31275/20243609

Peter Sturrock, founding President of the SSE, passed away peacefully in his home, surrounded by his friends and family, on August 12, 2024, at the age of 100. Peter was a leader among those rare scientists who made major contributions to both conventional and non-conventional science. On the conventional side, Sturrock was known worldwide for his profound contributions to the fields of astrophysics, plasma physics, and solar research. He continued that work until the very end of his life as a distinguished physicist and emeritus professor at Stanford University.

On the less conventional side, Peter, along with peers such as the late Bob Jahn, was among the visionary founders of the SSE. In 1981, they called for a new, generalist society that could function as a magnet for scientists and researchers who were doing rigorous scholarly work in areas we now label as anomalous. These early founders pushed back against the balkanization of knowledge acquisition, which prohibited scholars from veering too far from orthodoxy. Peter and the founders recognized that without a means to network and share ideas, little progress could be made in areas shunned by traditional fields. So, the Society for Scientific Exploration was born to sponsor regular conferences, and the Journal of Scientific Exploration was soon after founded as a peer-reviewed scholarly journal.

We wouldn't be here without Peter.

A simple recitation of his many accomplishments, however impressive, doesn't grasp the profound influence he had on generations of scholars, both conventional and not-so-conventional. Some personal anecdotes: I first met Peter in 1999 while attending my first SSE conference. After giving a presentation to the group of luminaries assembled, and having no history with them, I was somewhat uncertain what to expect. Soon after I finished, both Peter (and Bob Jahn) approached me with nothing but encouragement and inquired what they could do to help.

That offer never wavered over the quarter century I knew Peter. When I was in California, we'd try to meet at a restaurant or at his home in Palo Alto. Sometimes, he'd already assembled a group of people who were interested in providing various types of support for me. I would find myself, with his encouragement, giving a spontaneous presentation of some recent work. He obviously took pleasure in being a magnet for scholarly discussions.

When we were at an SSE conference in the US or Europe, we'd try to spend some time in private conversation, catching up with whatever we were working on. I'd be interested in his recent thoughts on UAPs, or the Shakespeare authorship question, or his conventional research on dark matter or neutrinos or whatever. While excited about his ongoing research, he was equally interested in whatever I was working on.

I remember sharing a meal with him soon after he published a book applying Bayes-

ian statistics to the Shakespeare authorship question. He told me that he sent copies to all the members of the English department at Stanford and had not received a single response. When I expressed surprise, he said that he was not, as it was simply an illustration of the response he'd come to expect from most fellow academics. He dismissed reactions like this to academics generally lacking courage and not wanting to stray from orthodoxy.

Peter Sturrock was not lacking in the courage department. He believed, clear-eyed, that so long as rigorous methods and data analysis were used, we need to follow the research wherever it leads. If data points to some phenomenon being considered anomalous, it doesn't mean that it's wrong. It simply might be providing us an opportunity to re-think how the world works. Maybe, maybe not. But wouldn't it be interesting to find out? Could it be more exciting than to challenge a deeply held belief?

That's what Peter embodied. Endless curiosity, coupled with the courage to discover and challenge.

I last talked to him in a zoom call a couple of months before he died. His eyes had the same twinkle; his curiosity was boundless; his offers to help undiminished.

That's what he modeled for us. And we are all in his debt.

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