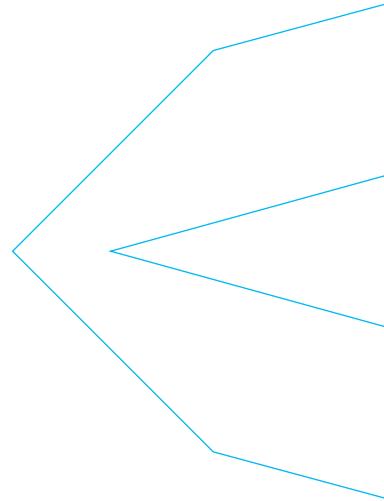


Journal of
**Scientific
Exploration**

Anomalistics
and
Frontier
Science



A Publication of the



**SOCIETY
FOR
SCIENTIFIC
EXPLORATION**

**VOLUME 39
ISSUE 4**

Winter 2025



Editor-in-Chief: James Houran, Editor@ScientificExploration.org

Managing Editor: Brian Laythe, Journal@ScientificExploration.org

Manuscript Submission: <http://journalofscientificexploration.org/index.php/jse/>

Published by the Society for Scientific Exploration (SSE)—<https://www.scientificexploration.org>

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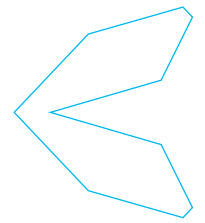
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EDITORIAL

Editorial Evolution for Academic Revolution



James Houran

editor@scientificexploration.org

orcid.org/0000-0003-1725-582X

<https://doi.org/10.31275/20253853>

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We honor the past by asking braver questions of the future. Since 1987, the *Journal of Scientific Exploration (JSE)* has stood at the frontier of scientific knowledge—highlighting anomalies, challenging orthodoxy, embracing complexity, and inviting bold inquiry into the nature of reality and our place in it. Over time, paradigm shifts (Kuhn, 1962), growing autonomy and openness to novelty (Amabile, 1996), the rise of transdisciplinary networks that blur boundaries between science, society, and culture (Gibbons et al., 1994), shifting technological and social priorities (Nowotny et al., 2001), and evolving institutional and funding structures (Whitley, 2000) have reshaped scholarly methods and territories. To remain vital in this rapidly changing intellectual landscape—not for novelty’s sake, but to propel the revolutions that new ideas demand—the *Journal* must evolve its editorial team with fresh energy, perspectives, and expertise. Our Winter issue marks such a moment of meaningful transition.



Brian Laythe, Ph.D.

In this spirit, we offer our deepest gratitude to Dr. Brian Laythe, who steps down as Managing Editor after three years of unwavering service. Brian brought editorial precision, intellectual courage, and an unflagging commitment to excellence. Beyond the desk, he overhauled the Society of Scientific Exploration’s (SSE) community engagement, marketing, and outreach; spearheaded our move to regular online events; and helped to guide several of the behind-the-scenes efforts that kept the SSE and *JSE* thriving through some of our toughest moments. He also streamlined *JSE*’s production workflows and co-developed training resources that empower every editor, reviewer, and author. Under Brian’s leadership, the *Journal* became a true meeting place for rigorous science and open-minded exploration, and his legacy sets the foundation for our continued growth and improvement.



Cindy Little, Ph.D.

Stepping into the Managing Editor role is Dr. Cindy Little, whose arrival brings both continuity and renewal. Cindy has spent over two decades teaching gifted education, psychological assessment, early-childhood pedagogy, educational research, and anomalistics at the university level. She holds a Ph.D. in Educational Psychology, an M.Ed. in Gifted Education, and a B.S. in Elementary Education, and her Baylor University research on creativity, flow, motivation, and parapsychology aligns perfectly with *JSE*'s frontier-science ethos. With her interdisciplinary vision and deep pedagogical insight—embodying both Kuhn's (1962) view of paradigm shifts, and Feyerabend's (1975/2010) call for methodological pluralism—Cindy is well poised to help usher the *JSE* into its next transformational chapter.



Mel Larrosa

We also welcome Mel Larrosa as our new Editor of Book & Multimedia Reviews, succeeding the inimitable P. David Moncrief. David's thoughtful stewardship of this important part of *JSE* enriched our discourse and set a high bar for excellence. Mel steps into this role with a rare blend of scientific rigor and bold innovation. A molecular biologist by training, she has founded 24 startups, mentored emerging entrepreneurs, and led an innovation center at a leading children's hospital—turning visionary ideas into real-world impact. Now in her third year of doctoral work in Psychology, she researches anomalous cognition,

insight, and provocative theories of mind, and she coordinates the Galileo Commission's Consciousness Initiative Group, which is helping to map new trajectories beyond materialist assumptions.

These transitions are not incidental but intentional steps toward a *Journal* that is more daring, diverse, and in tune with non-obedient science, i.e., rigorous inquiry that tests and extends prevailing frameworks rather than defers to them. With Cindy and Mel now taking over two of our key editorial roles, we likewise celebrate progress on women's underrepresentation in leadership roles (Lawson et al., 2022), as well as in science, technology, engineering, and mathematics (STEM) careers (Frank & Parker, 2018). This further echoes broader initiatives that showcase female role models, encourage girls' early interest in science, and address persistent barriers to women's full participation (e.g., González-Pérez et al., 2020).

As 2025 comes to pass, we bid farewell to another year of provocative exploration and pause to pay tribute to several SSE icons we recently lost—Peter Sturrock, Chantal Toporow, Bill Bengston, and P. David Moncrief—whose scholarship, mentorship, and courage molded the field and whose legacies continue to fuel our mission and inspire our work. We will honor them not only in memory but in practice, by carrying forward the questions they cared about, preserving their contributions in our archives, and dedicating future conversations and special issues to the threads they began. And as we honor those who forged our path, we also celebrate those now guiding us into the next chapter. To Brian, Cindy, and Mel—and to every author, reviewer, and reader who ventures with us into the unknown—we extend our deepest appreciation and our highest hopes. *JSE*'s journey continues, the horizon expands, and at the boundary of certainty, wonder charts our course.

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RESEARCH
ARTICLE

New Year's Eve as a Case Study in Experimental Metaphysics: Exploring Global Consciousness in Random Physical Systems

Dean Radin

Institute of Noetic Sciences,
California, USA
dean@noetic.org

HIGHLIGHTS

New research found that large groups focusing together at New Year's midnight produced small but consistent departures from randomness in a global network of random number generators.

ABSTRACT

This study explored the hypothesis that during moments of collective human focus and emotional resonance unexpected coherence will emerge in random physical systems. This mind-matter interaction hypothesis was tested during New Years Eve celebrations in each time zone using data from the Global Consciousness Project, a worldwide network of electronic truly random number generators. Analyses of data spanning the years 1998 to 2025—including simple measures like mean shifts as well as changes in entropy, chaotic attractors, fractal dimensions, and Principal Components Analysis (PCA)—revealed statistically significant deviations at or within minutes of the stroke of midnight on New Years Eve, as compared to the same analysis applied to midnight transitions every other day of the year and to randomized permutation techniques (e.g., $p = 4.8 \times 10^{-7}$ for the PCA analysis). The study also found that the statistical deviations were stronger in time zones with higher vs. lower populations, suggesting that the magnitude of this psychophysical interaction was related to the number of minds engaged in a coherent focus of attention. Alternative mundane explanations, including possible environmental artifacts, were considered but deemed unlikely because the RNGs were specifically designed to exclude such influences. An imaginative roundtable discussion among the founders of quantum mechanics is used as a vehicle to discuss these results.

SUBMITTED February 1, 2025
ACCEPTED March 10, 2025
PUBLISHED December 18, 2025

<https://doi.org/10.31275/20253635>

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KEYWORDS

global consciousness, random number generators, New Years Eve.

INTRODUCTION

The relationship between mind-and-matter is one of the most enduring enigmas in philosophy. Ideas proposed to describe this relationship include *dualism*, which

assumes that mind-and-matter are ontologically real but fundamentally different; *materialism*, which assumes that everything, including mind, is composed of matter/energy; and *idealism*, which assumes that everything, including matter, is composed of mind. A fourth approach,



dual-aspect monism, is a philosophical framework derived from Leibniz’s and Spinoza’s philosophy of *neutral monism* (Atmanspacher & Rickles, 2022). It proposes that mind-and-matter are complementary epistemic aspects said to “split” or emerge out of a deeper holistic reality, and that these aspects are related not through ordinary cause and effect but are a-causally linked through meaning, viewed as a shared informational substrate that organizes both the mental and physical domains.

As an exercise in experimental metaphysics, we tested a prediction based on dual-aspect monism by analyzing data from the Global Consciousness Project (GCP)—an ongoing experiment based on the results of a half-century of laboratory-based mind-matter interaction experiments using electronic truly random number generators (RNG) as the physical targets (Bancel & Nelson, 2008; Bösch et al., 2006; Nelson & Bancel, 2011; Nelson et al., 2002; Radin & Nelson, 1989; Radin et al., 2006). Those studies suggest that focusing one’s intention, or possibly just one’s focused *attention*, toward a random physical system can influence its probabilistic structure (Jahn et al., 2007).

The GCP employs quantum-based RNGs distributed around the world as a way to detect statistical anomalies hypothesized to be correlated with global events of collective emotional or psychological significance. In the present case we focused on the meaningful and globally shared anticipation of celebrations at New Year’s Eve – a repeatable and predictable moment in time characterized by synchronized human attention, festivity, and symbolic transition. According to dual-aspect monism, that collective moment of collective, coherent anticipation might manifest as an observable coherence effect in RNG data around the stroke of midnight. If such an effect were found, it would provide empirical support for metaphysical (in the philosophical meaning of that term) frameworks that challenge the materialistic assumption that mental activity and brain activity are equivalent. It would instead point toward a unified model of reality that regards subjective and objective realities as deeply interdependent.

METHOD

Hypothesis

The hypothesis tested was that a few minutes around midnight on New Year’s Eve the random data collected by the GCP would become more structured. There may be numerous ways that a presumed upsurge in order might be expressed, so several types of analysis were employed,

each examining a different aspect of how a random time series might be affected by a purported collective mental coherence effect.

The analytical methods used, described in more detail later, included ways to detect (1) a shift of the mean, (2) a chaotic attractor, (3) sample independence, (4) fractal dimensions, (5) nonlinear dependencies, and (6) the effects of splitting the data into high- and low-population time zones to see if the proposed effect varied with the inferred number of collective minds.

Hardware

The truly random number generators (RNG) used in the GCP are electronic circuits where the randomness is based on several forms of physical noise, including quantum tunneling, a phenomenon whereby an electron passes through an energy barrier which, from a classical physical perspective, has insufficient energy to overcome that barrier (Price, 1992). Tunneling occurs because of the quantum wave-like nature of particles, whereby the particle’s non-physical wavefunction extends through the physical barrier. Tunneling events take place at what is considered to be fundamentally unpredictable latencies, and the uncertainty of that timing is one of the key sources of random noise in the RNG.

The noise signal is then amplified, periodically sampled to turn it into binary bits, and then the bits are passed through an exclusive-OR (XOR) logic gate that creates an output stream of bits (0s and 1s), where each bit is completely independent and where the 0s and 1s are identically distributed (see Supplementary materials in Bancel (2017) for details). For ease of exposition, the random bit stream generated internally by the RNG electronic circuitry will henceforth be referred to as *pre-XOR*, and the observed output bits as *post-XOR*.

The XOR logic in an RNG is an important design feature because it decouples the post-XOR RNG output from environmental influences. For example, strong fluctuations in line power might disrupt the electronic circuits in an RNG and in so doing could influence the pre-XOR bitstream. But even if that disruption was so strong that some of the electronic components failed and the pre-XOR bitstream began to only produce say, 0 bits, the XOR logic would cause the post-XOR output to move *toward* mean chance expectation, rather than away. To further inhibit environmental influences, RNGs are housed within grounded metal enclosures and the computers they are attached to use voltage regulators to smooth out possible environmental noise or

glitches that occasionally appear in line power.

Before being used in the GCP, each candidate RNG was tested for statistical randomness by passing its post-XOR output through a randomness testing suite, like the National Institute of Standards and Technology's Statistical Test Suite (Information Technology Laboratory: Computer Security Resource Center, 2016). RNGs that passed the statistical tests were then sent to locations around the world and hosted on computers located in homes and offices. The host computer informed the RNG to generate 200 bits per second, and the sum of those bits was a random sample with a mean of 100 and a standard deviation of $\sqrt{50}$. Every five minutes, all of the random samples generated during that period were uploaded to a web server that collects data from all of the RNGs. To maintain synchronization across the separate RNGs, each generated sample was time-stamped to Coordinated Universal Time.

Analytical Methods

Preprocessing

The daily data file generated by the GCP web server consists of a two-dimensional matrix $X \times Y$, where X is 86,400 rows, one per second, and Y is the number of RNGs reporting that day, with one RNG per column. Missing data, which can occur if an RNG goes offline or if samples are not uploaded properly, are indicated by a missing element in the matrix.

For the present study, all data from the GCP web server were downloaded using *wget*, as described here: global-mind.org/data_access.html. The daily files available from 1998 through 2025 consisted of 116 GB, representing about 33 billion random samples or 6.6 trillion bits. Figure 1 shows the numbers of RNGs running daily over that time period, smoothed with a 30-day moving average. The decline around the 5000th day is related to the end of the formal period of experimentation, but the system with fewer RNGs has continued to collect data. A newly designed GCP system (Global Consciousness Project 2.0, n.d.) was launched in 2023 and has replaced the original GCP as the primary data collector.

To prepare the data for the present study, the daily files from each year's December 31 and January 1 were combined into a single two-day file. All samples in each file were examined for possible outliers, such that any individual sample less than 55 or greater than 145 was set to *nan* (not a number), as recommended on the GCP website (global-mind.org/gcpdata.html). These thresholds were

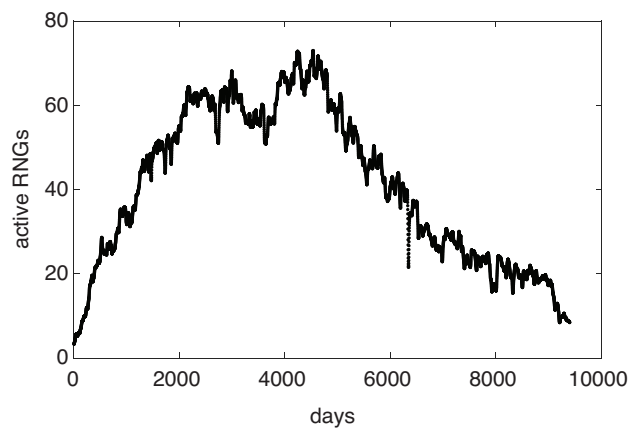


Figure 1. Number of RNGs running simultaneously in the GCP network, from 1998 through 2025, smoothed with a 30-day moving window.

used because samples exceeding those values were 6.5 sigma deviations from chance expectation and as such were considered spurious.

Then the empirical mean (μ) and standard deviation (σ) of all samples (s) for each RNG per day were determined, and a z score was created for each sample from each RNG as $z = (s - \mu)/\sigma$. The next step used all acceptable z scores per second (i.e., per each row), combined as a Stouffer Z, i.e. as $sz = \sum z / \sqrt{N}$, where N was the number of summed z scores and was thus the same as the number of RNGs running that second.

The next step was to concatenate these z scores from the second half of December 31 (i.e., second 43,201 to 86,400) to the first half of January 1 (second 1 to 43,200). This created a single array of 86,400 z scores. This array was used because the first second in each daily file began at UTC+0, and thus to capture the stroke of midnight in each time zone we needed data from the latter half of December 31 and the first half of January 1.

This same procedure was then followed for the midnight transitions from January 1 to 2, January 2 to 3, and so on, for all pairs of adjacent days throughout the year. These other midnight transitions were used as a control dataset to test if the results observed on New Years Eve might have been a day-transition artifact and to provide a statistical assessment of the New Years Eve results. The following analysis used these preprocessed files.

Mean Shift Analysis

To center the stroke of midnight at the middle of each hour corresponding to a time zone, each 24-hour z array was begun at the first half-hour (i.e., at second 1800). A

similar array was then formed that contained the number of active RNGs per second. Because of that initial half-hour shift, the UTC-10 time hour was not available, so for each of the remaining time zones, from UTC-9 to UTC+12, plus UTC+5.5 for India, a block one hour in length was formed. Time zones at UTC+13 and +14 are located over the Pacific Ocean, but the estimated population in those zones is so small that excluding them from this analysis was deemed acceptable.

A matrix (M) was then formed as 23 hours \times 3600 samples per hour. From this a weighted z score was formed per second as $z_w = (\sum M \times n) / \sqrt{\sum n^2}$, where M was the aforesaid matrix and n was the number of RNGs contributing to that matrix per second. This formed an array of 3,600 weighted z scores. This array was calculated for every midnight transition of the year, and then checked with a sequential randomness test (Matlab function *runstest*) (Wald & Wolfowitz, 1940). Any array resulting in $p < 0.05$ from that test was excluded from further analysis to eliminate arrays with temporal dependencies. The New Years Eve array passed this criterion, but 8 other days were excluded.

The retained arrays were then smoothed using a moving mean of 3 minutes to more easily visualize the results at a time-scale more suited to variations in human attention. That is, the growing anticipation leading up to midnight and the subsequent celebrations and fireworks would have not occurred in a matter of a few seconds, but minutes. That smoothed curve was then normalized as z_N (Matlab function *zscore*). To statistically evaluate the degree to which z_N deviated from chance expectation, the same procedure was applied to all other midnight transitions in the year, ultimately producing a smoothed matrix S = of length 3600 samples \times 366 days, where day 1 was New Years Eve.

Then the first second of the day 1 array was compared to same values at the same second in the other 365 days. This was formed as a simple count $c = \sum (z_1 \geq z_{2-366})$, where c was the sum of the logical comparisons (0 or 1), and then the statistical probability associated with each second was formed as $p = c/366$ and $z = \text{norminv}(p)$. To avoid situations where $p = 0$ or 1, when $c = 0$ the probability was set to $p = 1/366$, and where $c = 366$, $p = 365/366$. This nonparametric analysis was conservative because the maximum deviation was limited to $p = 1/366$ or $z = 2.7$ (or $p = 365/366$, $z = -2.7$). If the results appeared to be statistically stronger than that, then as a secondary approach the New Years Eve weighted z array was randomly permuted, then a moving mean of 3 minutes was formed and normalized, and this process was repeated 50,000 times. Then

the aforesaid counting procedure was applied, but now the minimum $p = 1/50000$ or $z = 4.1$ (or $p = 49999/50000$, $z = -4.1$).

The next step was to form a joint probability that simultaneously captured the likelihood of the largest deviation in z scores in the 3600 second array (call this Δ) and also how far those deviations were located from the stroke of midnight (call this δ). That is, within the array of z_N values, we formed $\Delta = \max(z) - \min(z)$ for the New Years Eve data as compared to a similarly constructed Δ for all other midnight transitions. If the resulting p values were smaller than $p = 1/365$ (or larger than $364/365$), then the alternative randomized permutation method was used. Then we formed $\delta = |\max| + |\min|$, where \max was the absolute distance (in seconds) from the maximum z score deviation to the midnight, and \min was likewise for the minimum distance. The associated probability for this measure was then $\delta_p = c/365$, or for the alternative method, $\delta_p = c/50000$. The joint probability was then $j = \Delta_p \delta_p$, which reflected the joint likelihood that a deviation as large or larger than the one observed occurred as close or closer as the New Years Eve array did to the stroke of midnight.

Correlation Dimension

A correlation dimension (CD) analysis provides insight into whether a time series is deterministic (e.g., a chaotic process) or stochastic (e.g., a truly random process) by measuring the geometric complexity underlying the system's dynamics (Grassberger & Procaccia, 1983). The method was originally developed for the study of deterministic chaos to quantify the complexity or "strangeness" of chaotic attractors. CD reflects how an attractor "fills" the embedding space, which in the present case was $\mu = 3$ (i.e., three dimensions), and with a time delay of $\tau = 2$ (meaning it considered adjacent elements of the array).

A significant decrease in CD in a portion of a random time series would imply a transition to uniform or periodic behavior. An increase would indicate the emergence of more complex behavior. The prediction in the present case is that New Years Even array would show a decrease in CD a few minutes around the stroke of midnight, as compared to the same analysis applied to the other midnights.

Note that in the present and the following four tests the analysis was applied to segments that were 36 seconds in length. This segment size was selected to provide a total of 100 segments covering the one-hour (3600 seconds) array. In addition, to evaluate the statistical

likelihood of any observed deviations in CD the randomized permutation technique described above was used with 5000 permutations.

Permutation Entropy

Permutation entropy (PE) focuses on the relative ordering of values in a time series, providing a way to quantify the presence of randomness or order (Bandt & Pompe, 2002). The idea of PE is that it characterizes complexity based on the diversity of sequential patterns. Similar patterns signal more order, and diverse patterns signal more randomness. A significant change in PE would indicate that the temporal ordering of a portion of a time series became more (or less) predictable. The prediction for New Years Eve was that PE would decrease a few minutes around midnight. The embedded dimension used for this algorithm was again $\mu = 3$, and the time delay was $\tau = 2$.

Higuchi Fractal Dimension

An HFD analysis quantifies the fractal structure of a time series. It focuses on higher dimensional geometric properties of the series rather than one-dimensional temporal dependencies, like an autocorrelation (Higuchi, 1988). A decrease in HFD suggests the series has become “smoother,” which would indicate a move toward uniform or periodic dynamics. An increase suggests the series has become “rougher” or more chaotic. The prediction for New Years Eve was that HFD would decrease a few minutes around midnight. The embedded dimension used for this algorithm was again $\mu = 3$, and the time delay was $\tau = 2$.

BDS Test

The BDS test evaluates if a time series is *i.i.d.* (independent and identically distributed) (Brock et al., 1996). It does this by constructing vectors from segments of a time series and measures how the points in those vectors cluster in phase space. If BDS increases, it indicates the presence of nonlinear dependencies. If it declines, the system is becoming more random. The prediction for New Years Eve was that BDS would increase for a few minutes around midnight. The embedded dimension used for this algorithm was again $\mu = 3$, and in this case $\epsilon = 2$, where epsilon specifies the radius of the neighborhood used to count the proximity of points in phase space.

Autocorrelation Test

The autocorrelation (AC) test examined the random time series to identify sections exhibiting unexpected temporal dependencies. In the present case, the prediction for New Years Eve was the emergence of a positive autocorrelation in the data a few minutes around midnight.

Principal Components Analysis

The CD, PE, HFD, BDS, and AC tests each inspected a time series from different conceptual angles, providing complementary ways to assess the underlying structure and complexity of the system that generated the data. By combining all five methods with Principal Components Analysis (PCA), if that analysis showed a significant change at a predicted time, that would confirm that the RNGs that generated the time series were reacting to an external event. The inferred event in this case was, of course, the anticipation and celebration of New Years Eve by billions of people around the world.

Population Partition

To test if the results were related to the estimated population in each time zone, which would presumably reflect the “amount” of collective consciousness, the mean-shift analysis was applied to time zones assessed as being above and below the overall median population. The population estimates in each time zone were based on the United Nations World Population Prospects (population.un.org/wpp/), the World Bank Open Data (data.worldbank.org/), and the CIA World Factbook (www.cia.gov/the-world-factbook/).

RESULTS

Mean-Shift

The mean-shift test resulted in an hour-long data matrix of 23 time zones \times 26 years = 598 events of interest \times 3600 seconds, where second 1800 was midnight on New Years Eve. Figure 2 shows the resulting ensemble mean cast into per-second z scores by this analysis. When a moving mean of length 180 seconds (3 minutes) was applied to those data, and recast into a z score, the result is shown in Figure 3. The left side of Figure 3 shows the New Years Eve curve as compared to the same midnight transitions for all

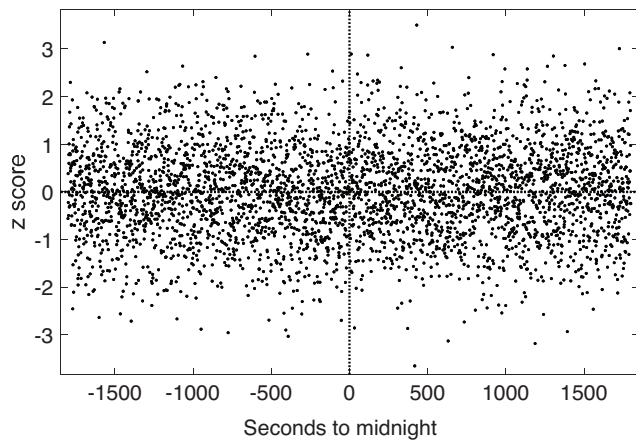


Figure 2. Stouffer Z scores per second from a half-hour before to after midnight across all time zones.

other pairs of days of the year. It shows z score deviations expected for a normal curve, namely that most of the deviations are from about -2 to +2, and that these deviations are uniformly distributed. The right side of Figure 3 shows the same curve statistically compared against 50,000 randomized permutations using the nonparametric counting procedure described above. One might argue that this deviation might have occurred due to mundane environmental effects. But that this would happen only on New Years Eve seems unlikely because the GCP network and storage of its data does not behave differently on that particular midnight transition as compared to any other day. The only obvious difference is that that specific midnight transition is very different *from a human perspective*. Three minutes before to three minutes after midnight was evaluated with False Discovery Rate at $p < 0.05$, and the drop about 2 minutes before midnight is significant, as indicated. In addition, the joint probability (jp) of the 6 sigma rise from 2.3 minutes before midnight to 2.0 minutes after midnight ($p_s = 0.104$), times the proximity of that rise to midnight ($p_d = 0.0028$), as compared to the same metrics applied to the other 365 days, results in $jp = p_s \times p_d = 0.00029$.

CD, PE, HFD, BDS, AC tests

Figure 4 shows the results of the Correlation Dimension, Permutation Entropy, Higuchi Fractal Dimension, BDS and Autocorrelation tests. In each case, these analysis are applied to one hundred 36-second segments. To evaluate these tests each analysis is run with 5000 randomized permutations and then normalized using the nonparametric counting method. The False Discovery Rate is applied to segments 46 to 51, corresponding to -2.4 minutes before to 1.2 minutes after midnight, and the notch (in red) at 0 rising

to a z score of 1 indicates significance at $p < 0.05$ adjusted for multiple comparisons. The CD, PE, and HFD tests are predicted to be negative around midnight, and BDS and AC are predicted to be positive. These predictions are based on the direction each of these specific statistical tests would make toward a *negentropic* (i.e., more orderly) outcome.

Principal Components Analysis

The Principal Components Analysis evaluates a composite of the CD, PE, HFD, BDS, and AC tests. Figure 5 show the results, indicating that the segment spanning midnight is associated with $z = -4.9$, $p = 4.8 \times 10^{-7}$.

Time Zones

Figure 6 shows the mean-shift analysis for twelve low population time zones below the median population across all time zones, with an estimated 629 million people, and for twelve high population time zones, with an estimated 6.8 billion people. The graphs indicate that after FDR from ± 3 minutes to midnight that only the high population partition shows a significant deviation.

RNG Synchronization

Some of the GCP RNGs are time-synchronized using the NTPv3 (Network Time Protocol version 3), other by a protocol called Win32Time on older Windows-based PCs. A test to quantify the synchronization among these RNGs showed that some were off by a second or more, while others exceeded a minute (Bancel, 2017). If one assumed that tight time synchronization among the RNG outputs was required, then this time-slippage might be a problem in interpreting the results.

To determine if such time offsets were indeed a critical factor in the present analysis, the timestamps associated with samples from each RNG were randomly circular shifted from -60 to +60 seconds, and this process was repeated for every RNG in each daily datafile. Then the New Years Eve analysis was recalculated and repeated 100 times to see if the effect observed in the original data would survive this temporal scrambling. Figure 7 shows that precise timing was not a factor in determining this effect.

DISCUSSION

All seven analyses — mean-shift, correlation dimension, permutation entropy, Higuchi fractal dimension, BDS test, autocorrelation, and Principal Components Analysis — revealed statistically significant deviations in the



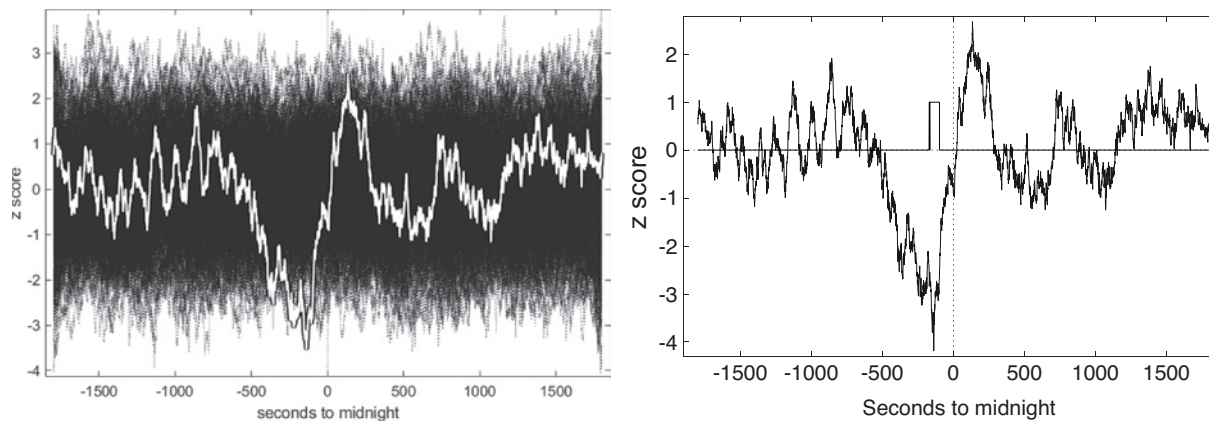


Figure 3. (Left) Three-minute moving mean applied to the per second z scores, in white, as compared to 365 midnight transitions calculated the same way on all other days of the year, in black. (Right). Comparison of the New Years Eve curve against 50,000 randomized permutations using a nonparametric counting procedure. The bar near midnight indicates a span of significant deviations at $p < 0.05$ (two-tailed) adjusted for multiple comparisons using False Discovery Rate in the range from 3 minutes before to 3 minutes after midnight.

GCP data minutes just before and after midnight on New Year's Eve. All of the deviations were significant and in the predicted directions. These results are in alignment with the hypothesis that collective attention and emotional resonance in anticipation of midnight on New Year's Eve influenced, or more precisely, was correlated with the behavior of truly random physical systems located around the world. The convergence of multiple statistical tests focused on different aspects of complexity and structure added weight to the idea that the observed patterns could not be attributed to a single analytical artifact.

Mundane explanations

The most likely ordinary explanation for these results is a systematic environmental influence, such as external electromagnetic influence of the RNG circuits, data logging or web server glitches associated with the formation of the daily datafiles, electrical power grid fluctuations associated with the transition to midnight on New Years Eve, or other ambient events that periodically occurred around midnight in each time zone. Such possibilities were considered and deemed unlikely because the mean-shift variation observed on New Year's Eve differed significantly from midnight transitions evaluated the same way across all other days of the year, and it also differed based on time zones with larger vs. smaller populations. In addition, as previously mentioned, the RNGs were designed in such a way that if the RNG components were externally influenced, even to the point of beginning to fail, their outputs would fail *toward* mean chance expectation rather than away.

Another possibility is if the present study was a "fishing expedition" to find a repeated moment in time that involved the majority of the world's population, and that showed a significant statistical "spike" after smoothing the data with an optimal window length. Regarding the first possibility, New Years Eve celebrations according to the Gregorian calendar are an obvious candidate for testing the GCP hypothesis, in that this event arguably involves a large percentage of the world's population at a precise moment in time in each time zone. By contrast, other large-scale events, like Chinese New Years, also repeats every year, but it does not happen on the same date, nor is it followed by the majority of the world's population. Other events, like a "global minute of silence" at 12 noon in each time zone on September 21, a United Nations initiative associated with the International Day of Peace, repeats each year and across time zones, but it does not attract a majority of the world's attention.

A second criticism could be tested by using smoothing windows ranging from 2 minutes to 10 minutes in length. Figure 8 shows the results with overlapping curves, which indicates that the general shape of the curve remains the same regardless of the window size. Thus, there was nothing special about the use of a 3-minute smoothing window. In fact, this analysis revealed that a 7-minute smoothing window would have provided a statistically stronger outcome. In addition, use of a mean-shift analysis was the first method applied because it was the simplest way to detect a deviation from chance expectation given this type of event and this kind of data.

Ideally, to provide even higher confidence in these results, the observed effect would be significantly detectable on a

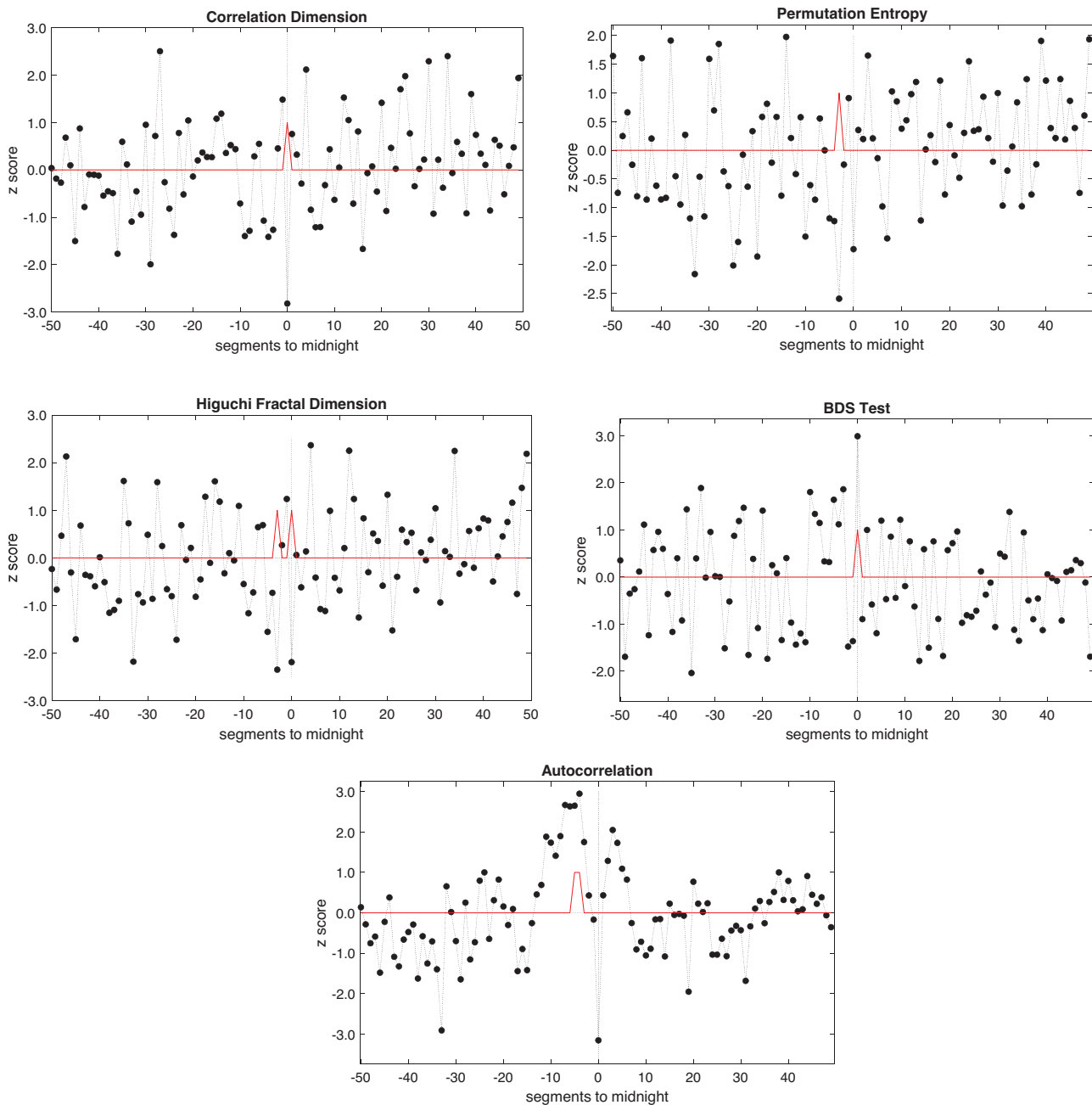


Figure 4. Statistical results for analysis of the original z score array using correlation dimension (CD), permutation entropy (PE), Higuchi fractal dimension (HFD), the BDS test and an autocorrelation test (AC), in each case as compared to 5,000 randomized permutations. The notches (red lines) indicate a significant deviation at $p < 0.05$ (one-tailed, according to a prediction that the random time series will become more ordered) adjusted with False Discovery Rate from 3 minutes before to 3 minutes after midnight.

year-by-year basis, but as in all of the GCP results the absolute magnitude observed for any one event is miniscule. However, if the deviations tend to go in the same direction, they could become statistically unambiguous after combining the data over many repeated events. The analytical approach is thus similar to the use of hundreds of repeated stimuli required to observe a clear event-related potential in brain activity.

Alternative Explanations

Four classes of explanations have been proposed to account for the statistically significant results observed in the GCP experiment, and in many earlier “field consciousness” experiments (Mason et al., 2007; Nelson et al., 2007; Radin, 1997; Radin & Atwater, 2009). These are chance, experimenter effects, goal-oriented effects, and a

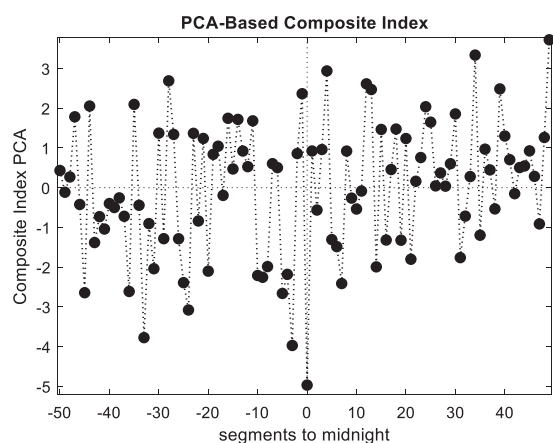


Figure 5. Principal Components Analysis normalized composite index. In one hundred 36-second segments, the segment at midnight is associated with $z = -4.9$, $p = 4.8 \times 10^{-7}$.

negentropic field effect.

Chance

Some of the earlier field consciousness experiments, which were performed in smaller groups engaged in meditations, choral performances, sacred sites, or during live TV broadcasts like the opening ceremony of the Olympics, were exploratory and may not have prespecified the methods of analysis. As such, it is possible that some of those reported outcomes were false positives. However, the GCP experiment did use a predefined method of analysis over its formal series of 500 world events, as well as a protocol that required the events to be defined before the data were examined, and that study achieved a 7.3 sigma deviation from chance (Nelson, 2017). That is so far from chance expectation that “fluke” is not a viable explanation, and because the earlier studies were conceptually similar to the GCP design, it suggests that the results reported in many of those studies were likely to also be valid.

Experimenter Effects

This idea proposes that the events selected to be compared against the random time-series data are chosen by the investigators based on their intuitive sense that those events will deviate from chance. Such deviations are viewed as a consequence of expected variations in truly random walks, rather than due to externally imposed influences (Bancel, 2017; May et al., 1995). In events that involve unanticipated incidents of uncertain lengths, and where decisions are made whether to include or exclude such events,

this explanation – which differs from chance because these events are selected before the data are examined – is difficult to exclude because the selection process entails large degrees of freedom by investigators, which may in turn increase the statistical likelihood of a false positive. Thus, this explanation is sometimes called an “experimenter psi effect,” because it would require knowing something about the outcome of a decision before any conventional information is available (Kennedy & Taddonio, 1976).

In the present case, New Years Eve was selected as the event of interest, but after that one decision the range of other possible decisions was constrained because that event occurs repeatedly and predictably only at certain moments and dates. In addition, the method of analysis selected to analyze the data was based on a simple shift of the mean, then smoothed by a 3-minute moving mean to provide a low-pass filter to better match variations in human attention. As noted in Figure 7, if other smoothing windows had been selected, they would have produced essentially the same results. So the present outcome does not appear to be an experimenter psi effect.

Goal-Orientation

This explanation is similar to experimenter effects in that it assumes that collective consciousness does not *causally* influence the random data, in the sense of Aristotle’s “efficient cause.” That type of cause is related to conventional physical forces that bring about an effect, like billiard balls bounding off each other on a pool table. Instead, goal-orientation refers to a teleological phenomenon, that is, to *purpose*, which in present context is most likely the investigator’s goal of gathering evidence for a potential mind-matter interaction effect (Schmidt, 1987), rather than attributing any type of goal to the RNGs.

While science usually only considers efficient cause as the way to explain effects, Aristotle other identified “final cause,” which refers to *telos* or the purpose of an effect. E.g., the *telos* of an acorn is to become an oak tree; the *telos* of a caterpillar is to become a butterfly. Final cause may be relevant in the present context because for many natural processes, especially those in living systems, the future state of a system is a crucial element in understanding the causal mechanism because the *why* can often be identified by looking not only at *what* initiates change, but also the *purpose* that motivates that process in the first place.

But how could goal-orientation explain the GCP results? A possible analog is the Principle of Least Action

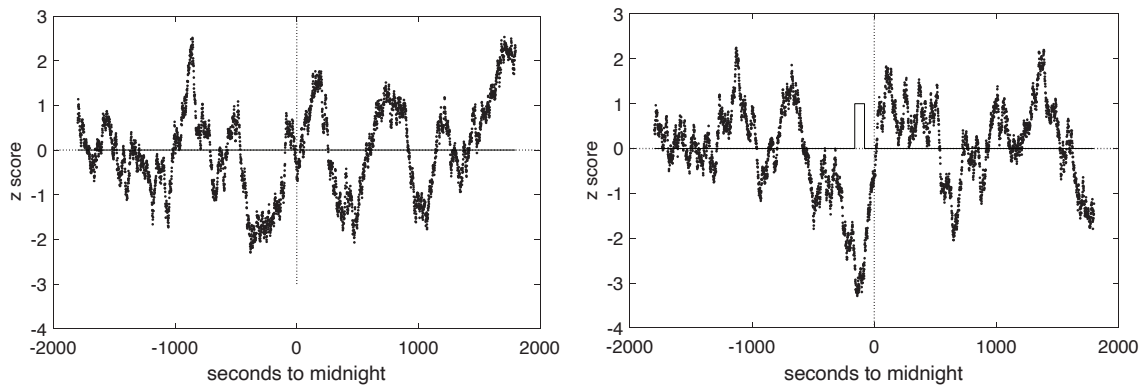


Figure 6. (Left) Twelve low population time zones with a combined estimate of 629 million people. There were no significant deviations after adjustment with False Discovery Rate. (Right). Twelve high population time zones, including UTC -5, -4, 0, +1 through +5, +5.5 for India, and +6 to +9, with a combined estimate of 6.8 billion people. A significant deviation at $p < 0.05$ (one tailed) is indicated before midnight.

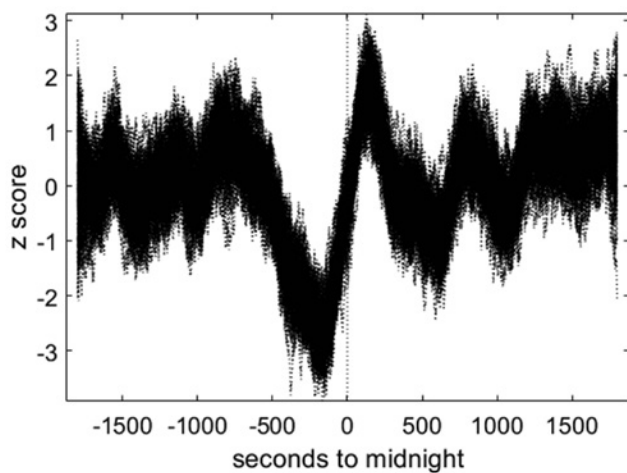


Figure 7. Test of the role of time synchronization of the RNGs in the GCP network by circular shifting each RNG’s daily timestamps from -60 to +60 seconds, then recalculating the original analysis. This procedure was repeated 100 times, and all curves are shown, indicating that the general shape of the New Years Eve effect remains even if each RNG’s timing was off by ± 1 minute.

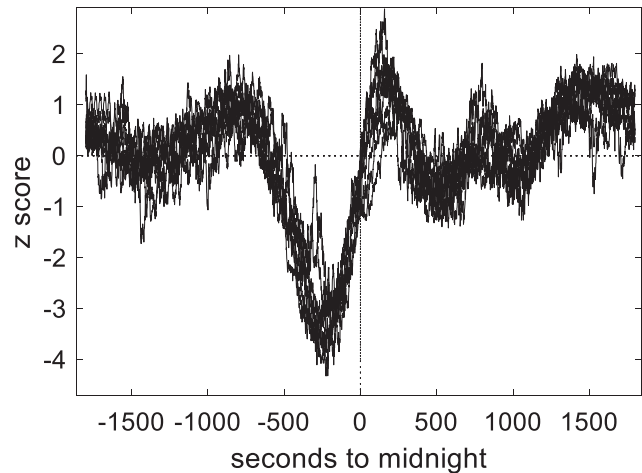


Figure 8. Mean-shift analysis for smoothing windows from 2 to 10 seconds in length, showing similar results regardless of window size.

(PLA, Terekhovich, 2018), a principle that underlies both classical and quantum mechanics. The PLA states that a physical system will follow the path between an initial and a final state that minimizes the total expended energy. That path can appear to be goal-oriented because unless something intervenes, the system will always “choose” the optimal path. This seems like a goal-oriented effect because it requires specifying not just where the system begins, but also where it ends, thus involving its final state.

From a modern perspective, the PLA is not interpreted as the inanimate physical *intending* to do anything. It just satisfies a set of mathematical equations that create an optimal path, which is in turn constrained by initial and

final boundary conditions. Still, this fundamental concept in mathematics is remarkably similar to purpose in biology, as discussed perhaps most famously by physicist John Wheeler in his concept of a “participatory universe.” Wheeler’s ideas suggest the possibility that there is a PLA-like effect whereby human purpose might play a key role in the behavior of physical world (Wheeler, 1990).

Another way to imagine goal-orientation is or as a system that remains in superposition and that “collapses” from a potential state to an actual state only upon observation. This “Observational Theory” proposes that a motivated observer can intentionally influence probabilistic events at the quantum scale (Houtkooper, 2002; Walker, 1979, 1982). Supporting this idea are nearly four dozen experiments reported from 1975 to 2021, all using pre-recorded but unobserved random bits produced by an

RNG (Schmidt, 1976, 1987). Future assignments of intentions given to test participants to achieve more 0s or 1s in this data when it was played back, and thus observed, revealed that the data conformed to those assignments with an overall statistical assessment associated with $p = 5 \times 10^{-12}$ (Williams, 2021).

Negentropic Field Effect

A fourth idea is that whatever else consciousness may be, it appears to act like a principle, or negentropic field, that injects order into physical systems. As noted by Schrödinger (Schrödinger & Penrose, 2012) living systems survive entropic decay by “eating” negentropy. Similar reversals of entropy can be found in self-organizing fluids or certain supersaturated solutions, where despite an overall increase in entropy, as heat flows from hot to cold localized patterns of order can emerge. Such processes do not violate global entropy, but under the right conditions they can reverse entropy and give rise to local order by guiding ambient energies into structure.

A related idea involves dissipative structures in far-from-equilibrium systems (Prigogine, 1997). Such systems, like tornadoes or whirlpools, remain in highly ordered states due to a continual flux of energy and matter. They maintain local order while increasing the overall entropy of the environment. Collective consciousness viewed as a distributed “dissipative structure” might likewise guide ambient energies, including those in RNGs, to create stable negentropic patterns. In general, by viewing individual consciousness as a negentropic field that creates subjective coherence in the brain by drawing upon bodily energy, collective consciousness may be similarly viewed as a distributed form of coherence that creates physical coherence in the environment by drawing upon ambient energies, which upon release of that coherence is then released back into the environment. This might explain, at least as an analogy, why the New Years Eve curve drops before the stroke of midnight as collective mental coherence builds with anticipation and then “rebounds” after midnight upon release of that coherence.

A Metaphysical Roundtable

Well accepted physical mechanisms do not appear to adequately explain the New Years Eve effect, leading to understandable doubts. Common criticisms assert that the present results must be due to design or statistical flaws, or that it is justifiable to ignore the evidence

altogether because it is literally impossible (Reber & Alcock, 2020). However, it is well known that evaluation of data is biased by one’s *a priori* theoretical perspectives (Lee et al., 2013; Mahoney, 1977; Peters & Ceci, 1982), thus a case can be made that dismissive critiques are based on an uncritical acceptance of prevailing theories, rather than a careful examination of the empirical data.

As a simple example, if one assumed that materialistic concepts were the only viable way to understand reality, then consciousness must be solely dependent on brain activity. And then, given the results from hyper-scanning studies in social neuroscience, which shows that people engaged in similar tasks exhibit similar brain states (Carollo & Esposito, 2024), one might propose that the billions of brains anticipating New Years Eve caused the deviations observed in RNG outputs via interference from brain-related electromagnetic effects. For example, one could argue that the average brain is said to consume about 20 watts of power (Raichle & Gusnard, 2002), so a billion brains would represent 20 gigawatts, which sounds impressive except that nearly all of that would be metabolic energy consumption, and not radiated electromagnetic power. Indeed, the latter has been estimated to be about 1 femtowatt per brain (Buzsáki et al., 2012), and thus the total power emitted from a billion brains would be around one microwatt. That would not be sufficient to influence the electronic noise within a single RNG, even if a brain were somehow located right next to it (and note that this counterargument also sidesteps the effects of the XOR logic, which scrambles the noise source).

A more intriguing alternative is that the materialistic doctrine that has guided science for several centuries has been outstandingly successful, but it is inadequate when it comes to the nature of consciousness, as a growing cadre of thought leaders are now openly proposing. For example, consider neuroscientist Christof Koch, a protégé of Francis Crick who had famously quipped, “You’re nothing but a pack of neurons” in the prologue of Crick’s book, *The Astonishing Hypothesis* (Crick, 1996). The astonishing idea was that “you” are literally your brain, full stop. Koch too was an advocate of that idea, but he evolved beyond Crick’s position and expressed a radically different opinion in 2024, writing:

The wheel is turning back to much more ancient understandings of experience, including idealism, the proposition that ultimately even matter and energy are mental manifestations, and panpsychism, the school of thought that

all creatures, and perhaps even matter itself, are ensouled, that it feels-like-something to be anything, not just a human or even a bat. Modern science is supporting aspects of this remarkable turn of events (Koch, 2024).

The wheel turning back in the neurosciences echoes a similar resurrection across many disciplines (Gao, 2022; Goff, 2024; Kuhn, 2024; Lewton, 2022), including physics. As historian Juan Miguel Marin wrote in reviewing the largely forgotten origins of quantum theory:

Not only was consciousness introduced hypothetically at the birth of quantum physics, but the term “mystical” was also used by its founders to argue in favour and against such an introduction. In private conversations, at least as early as the 1927 Solvay Congress, the founders discussed ideas about quantum theory, mysticism and consciousness (Marin, 2009).

Those founders included a parade of the most foremost physicists of the 20th century – figures such as Bohr, Eddington, Jordan, Planck, Pauli, Heisenberg, Schrödinger, Jeans, London, Wigner, Wheeler, and von Neumann (Wilber, 1984). Physicists today might argue that citing such luminaries is invalid because it is an argument by authority. But as noted, the metaphysical wheel in science is turning, thus reexamining the thoughts of those leading lights in light of the present analysis is well justified.

To do this, imagine a roundtable where we presented these scientists with the results of this New Years Eve analysis, and then we invited their comments, which are presented here not as quotes, but with artistic license based directly upon their published works. Planck (1931) might have said something like this:

From the earliest days of quantum theory, I’ve insisted that mind is the matrix from which reality emerges. The subtle fluctuations you observed in random data—coincident with collective human attention—remind us that the world is not composed of inert, mindless particles. Your findings suggest that mass emotional or mental focus can nudge the tapestry of quantum events. To me, this is only natural if consciousness does not stand outside the physical world but is instead part of the very medium of existence.

Schrödinger (1961) might have replied,

When I formulated the wave equation, I already suspected that the division between observer and observed was simply a convenience. These GCP results make sense to me because they appear to highlight an entangled unity among countless human observers and the physical world. If each consciousness merges into what I’ve called the *One Mind*, then at a moment of collective celebration we should not be surprised that so-called “random” physical events would reflect that unity.

Eddington (1928) might add,

I have proposed that our picture of the external world is an outcome of our own mental constructs. So-called physical reality is but a shadow cast by the mind on the screen of perception. If the GCP’s RNGs recorded consistent deviations aligned with large-scale focusing of human attention, it would affirm my insight that our minds do not simply *witness* a separate universe. Rather, they participate in its ongoing creation.

At this point, Wheeler (1994) might have jumped in and said,

The deviations observed in the GCP random data might be glimpses of what I’ve called ‘the participatory universe.’ In fact, I wouldn’t be surprised if future generations interpreted these data as evidence that the universe is continuously in conversation with observers, which might include human consciousness as one special type of observation.

Heisenberg (1958) might have mused that global consciousness “sharpened” the uncertainty in RNG outputs, in which case when the global mind becomes more coherent, then random physical systems would have less freedom to wander, which might be detected statistically as the result observed in the GCP’s New Years Eve data. Similarly, Pauli (1994) might have wondered if correlations observed in random data streams reflected a form of global synchronicity, with the psyche’s “hidden hand” revealing itself when billions of minds aligned around a shared emotional event. Wigner & Margenau (1967) too might have referred to his famous thought experiment, known as Wigner’s Friend,

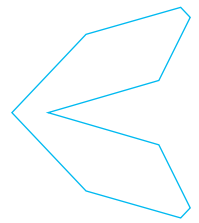
where in the present case there was not just one friend, but billions, making it possible for subtle observer effects to become more clearly visible in “random” data.

Time will tell if such a fanciful roundtable discussion arises in the future as the wheel of assumptions about the nature of reality continues to evolve and revolve.

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RESEARCH
ARTICLE

Space-Based Ground Penetrating Radar Imaging of a Possible Underground Structure at Hawara

Mark J. Carlotto^a

General Dynamics Information Technology, Falls Church, USA
markcarlotto@yahoo.com

HIGHLIGHTS

Modern technologies revealed unusual underground signals near Hawara, south of the Pyramid of Amenemhet III, consistent with a very large, buried complex that might be the Labyrinth described by Herodotus and related settlement remains.

ABSTRACT

Space-based ground penetrating synthetic aperture radar (SAR) imaging of what could be an enormous underground structure at Hawara, possibly the below-ground portion of the Labyrinth first described by Herodotus in the fifth century BCE is presented. Cross-sensor analysis of co-registered radar and optical imagery reveals uncorrelated SAR returns on both sides of the Abdul Wahbi canal south of the Pyramid of Amenemhet III that could be the remains of an ancient settlement built from and over the Labyrinth, which was uncovered when the canal was built, as well as evidence of the Labyrinth itself.

SUBMITTED October 30, 2024
ACCEPTED December 9, 2024
PUBLISHED December 18, 2025

<https://doi.org/10.31275/20253579>

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KEYWORDS

Underground, radar, Hawara, Amenemet, pyramid, geophysical, survey, archaeology, anomalies

INTRODUCTION

First described by Herodotus, the existence of an enormous underground structure in Hawara south of the Pyramid of Amenemhet III thought to be the remains of an ancient temple known as the Labyrinth (Lloyd 1970), has been a subject of considerable speculation but limited archaeological investigation and scientific research. Although at least two ground surveys have been performed, only one has been released to the public (Courdier, 2008). Results from that survey (Khalil et al., 2010) indicate the presence of below-ground features that could be walls or even subterranean chambers. However, given the limited scope of the survey, the overall size and shape of what might be

underground remains a mystery. In this paper, we present results from two polarimetric synthetic aperture radar (SAR) sensors: Japan's Advanced Land Observing Satellite (ALOS) Phased Array L-band Synthetic Aperture Radar (PALSAR), and the Sentinel-1 C-band SAR developed by the European Space Agency under the Copernicus initiative that provide independent space-based evidence of a possible underground structure at Hawara.

The Labyrinth of Hawara was brought to the attention of the Western world by Herodotus in the fifth century BCE. He describes an above-ground structure, which he saw, and one below-ground that he was denied access to by the Egyptians (Lloyd, 1970, p. 82)

^aThis work is independent research performed by the author at General Dynamics Information Technology (GDIT). The conclusion expressed are solely the author's and do not reflect those of GDIT. (Email: mark.carlotto@gdit.com)





Figure 1. Lepsius Map showing the Pyramid of Amenemhet III and Areas Excavated to the South.

Moreover, they decided to preserve the memory of their names by a common memorial, and so they made a labyrinth a little way beyond lake Moeris and near the place called the City of Crocodiles. I have seen it myself, and indeed words cannot describe it; if one were to collect the walls and evidence of other efforts of the Greeks, the sum would not amount to the labor and cost of this labyrinth. And yet the temple at Ephesus and the one on Samos are noteworthy. Though the pyramids beggar description and each one of them is a match for many great monuments built by Greeks, this maze surpasses even the pyramids. It has twelve roofed courts with doors facing each other: six face north and six south, in two continuous lines, all within one outer wall. There are also double sets of chambers, three thousand altogether, fifteen hundred above and the same number under ground. We ourselves

viewed those that are above ground, and speak of what we have seen, but we learned through conversation about the underground chambers; the Egyptian caretakers would by no means show them, as they were, they said, the burial vaults of the kings who first built this labyrinth, and of the sacred crocodiles. Thus we can only speak from hearsay of the lower chambers; the upper we saw for ourselves, and they are creations greater than human. The exits of the chambers and the mazy passages hither and thither through the courts were an unending marvel to us as we passed from court to apartment and from apartment to colonnade, from colonnades again to more chambers and then into yet more courts. Overall, this is a roof, made of stone like the walls, and the walls are covered with cut figures, and every court is set around with pillars of white stone very precisely fitted together. Near the corner where the

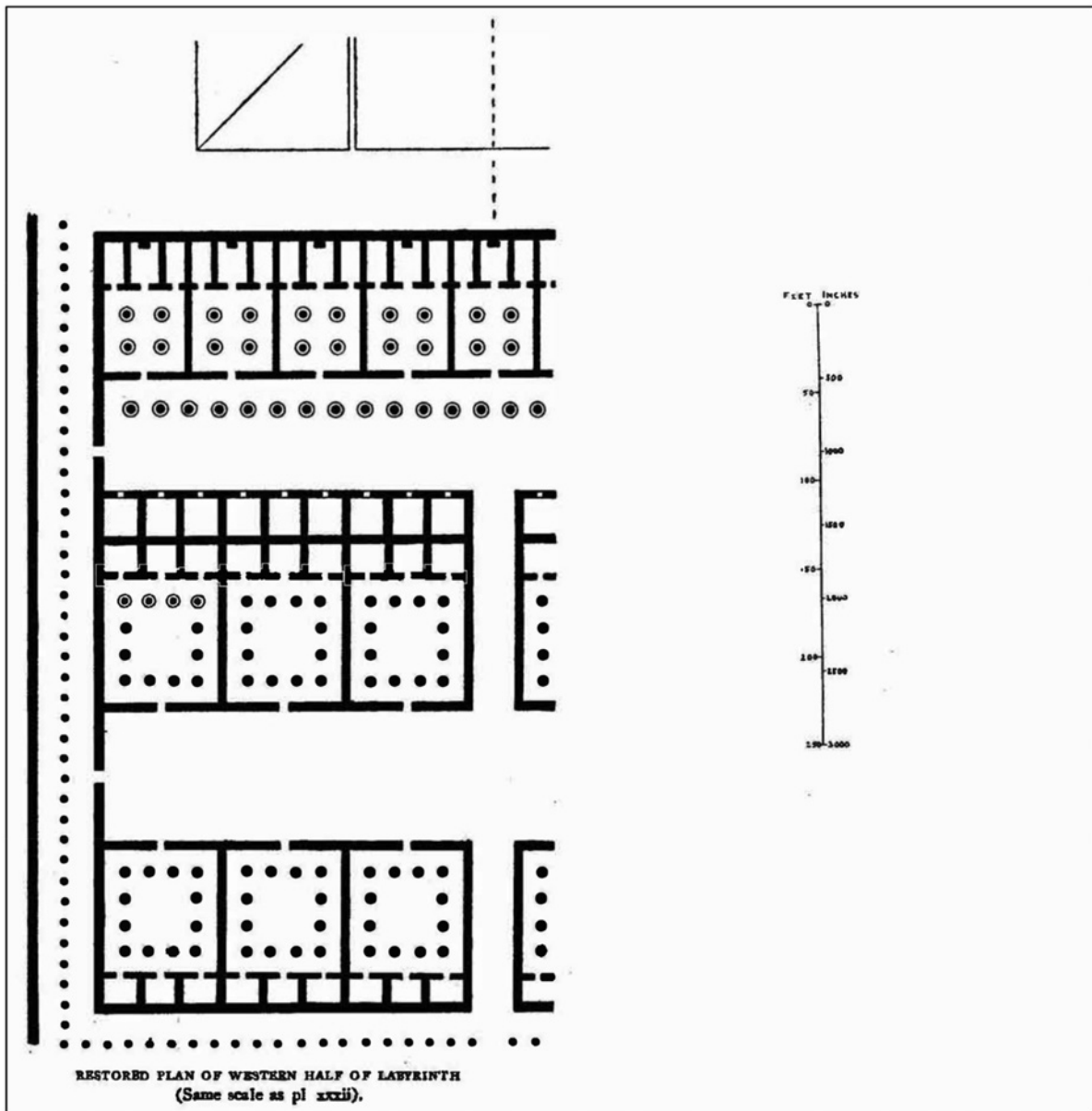


Figure 2. Petrie’s Representation of the above-Ground Portion of the Labyrinth.

labyrinth ends stands a pyramid two hundred and forty feet high, on which great figures are cut. A passage to this has been made underground.

Although other early accounts exist, according to Lloyd (1970, p. 85), Strabo’s was the only other first-hand account:

In addition to these things there is the edifice of the Labyrinth which is a building quite equal to the Pyramids and nearby the tomb of the king who built the Labyrinth. There is at the point where one first enters the channel, about 30 or 40 stades along the way, a flat trapezium-shaped site which contains both a village and a great palace made up of many palaces equal in number to

that of the nomes in former times; for such is the number of peristyle courts which lie contiguous with one another, all in one row and backing on one wall, as though one had a long wall with the courts lying before it, and the passages into the courts lie opposite the wall. Before the entrances there lie what might be called hidden chambers which are long and many in number and have paths running through one another which twist and turn, so that no one can enter or leave any court without a guide. And the wonder of it is that the roofs of each of the chambers are made of single stones and the width of the hidden chambers is spanned in the same way by monolithic beams of outstanding size; for nowhere is wood or any



Figure 3. Map Derived from VLF-EM Data Registered to Google Earth. Red Colors are Conductive Zones (Archaeological Remains) and Green Colors are Resistive Zones (Host Soil).

other material included. And if one mounts onto the roof, at no great height because the building has only one storey, it is possible to get a view of a plain of masonry made of such stones, and, if one drops back down from there into the courts, it is possible to see them lying there in a row each supported by 27 monolithic pillars; the walls too are made up of stones of no less a size.

At the end of this building, which occupies an area of more than a stade [1 stade = 192 m], stands the tomb, a pyramid on an oblong base, each side about 4 plethra [1 plethra ≈ 100 feet] in length and the height about the same; the

name of the man buried there was Imandes. The reason for making the courts so many is said to be the fact that it was customary for all the nomes to gather there according to rank with their own priests and priestesses, for the purpose of sacrifice, divine-offering, and judgement on the most important matters. And each of the nomes was lodged in the court appointed to it.

Strabo tells us the Pyramid of Amenemhet III was about 400 × 400 feet, which is close to its actual size. If we accept the accuracy of his measurements, the area of the Labyrinth complex would have been 192 × 192 = 36,864 m² or almost 400,000 square feet.

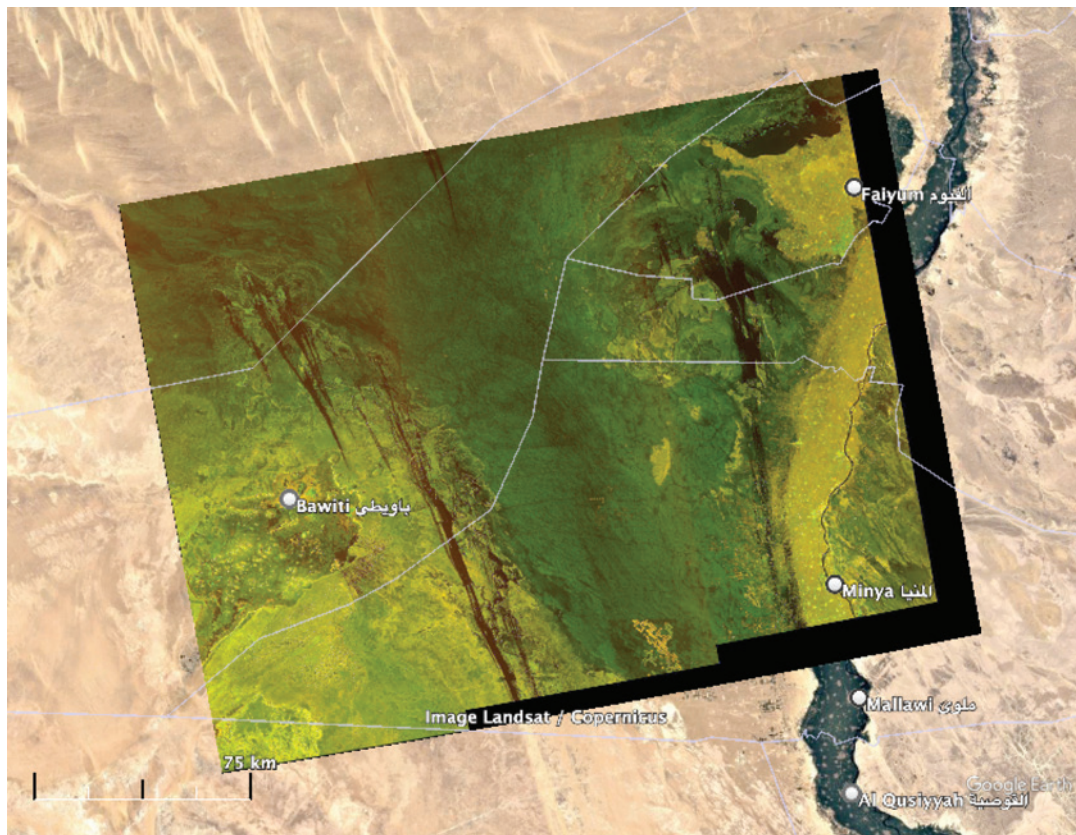


Figure 4. Sentinel 1 C-Band Polarimetric SAR Image over Western Egypt (VH = R and VV = G). (Google Earth).

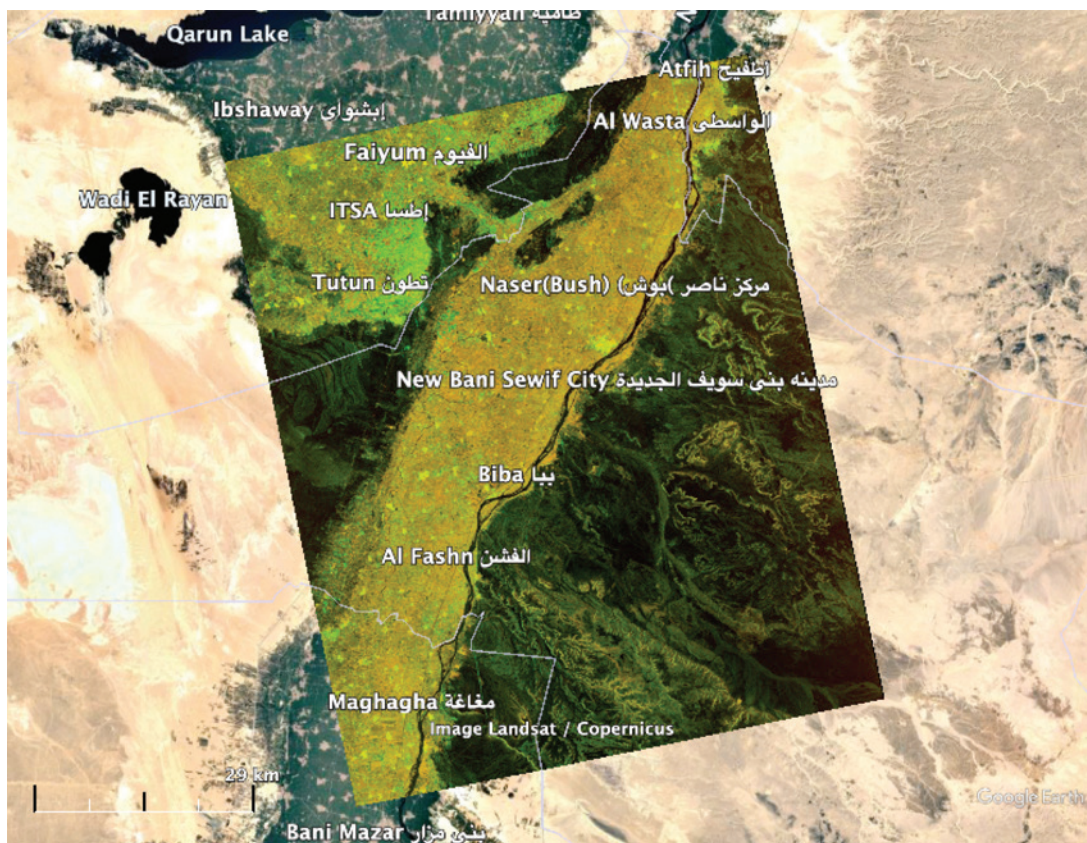


Figure 5. ALOS PALSAR L-Band Polarimetric SAR Image over Western Egypt (HV = R and HH = G). (Google Earth).



Figure 6. Google Earth Image Over the Area of Interest in Hawara. (Google Earth).

Areas around the Pyramid of Amenemhet III were first excavated by Karl Lepsius in 1843. What he believed to be the ruins of the ancient Labyrinth south of the pyramid (Figure 1) later turned out to be that of a Roman town (Petrie, 1912). According to Petrie, the Labyrinth had been so completely destroyed that only a vast bed of chips remained. His assessment was that it was maintained up to the second century BCE "that at least as late as Kleopatra I, 193 B.C., the Labyrinth was still in royal care, and probably being restored in some degree. Soon after that, ruin fell upon it, and in Pliny's time it was 'marvelously ravaged.'" Petrie's survey of what remained provides an estimate of the size of the structure. Based on his representation of the western half of the structure (Figure 2), the area occupied by the Labyrinth would have about 445×445 or almost 200,000 square feet.

In 2008, geophysical surveys over two areas south of the Pyramid of Amenemhet III area were performed by the National Research Institute of Astronomy and Geophysics (NRIAG) under the auspices of Egypt's Supreme Council of Antiquities. A report (Courdier, 2008) "confirms the

presence of archaeological features at the labyrinth area south of the Hawara pyramid of Amenemhet III. These features covering an underground area of several hectares, have the prominent signature of vertical walls on the geophysical results. The vertical walls with an average thickness of several meters, are connected to shape nearly closed rooms, which are interpreted to be huge in number." Figure 3 overlays an electrical conductivity map based on very low frequency electromagnetic (VLF-EM) surveys in Google Earth. According to Khalil et al. (2010), the VLF-EM data indicated "spatially distributed elongated and square shaped subsurface anomalies, which may identify the walls and rooms of the labyrinth mortuary temple complex." The presence of possible archeological features below ground suggests the possibility that what Petrie thought were the ruins of the foundation of a large above-ground structure could instead be the top of an undiscovered structure below ground. As the VLF-EM and other data collections were conducted over a limited area, it was not possible to determine the overall extent of the structure. Following the publication of the above findings, the

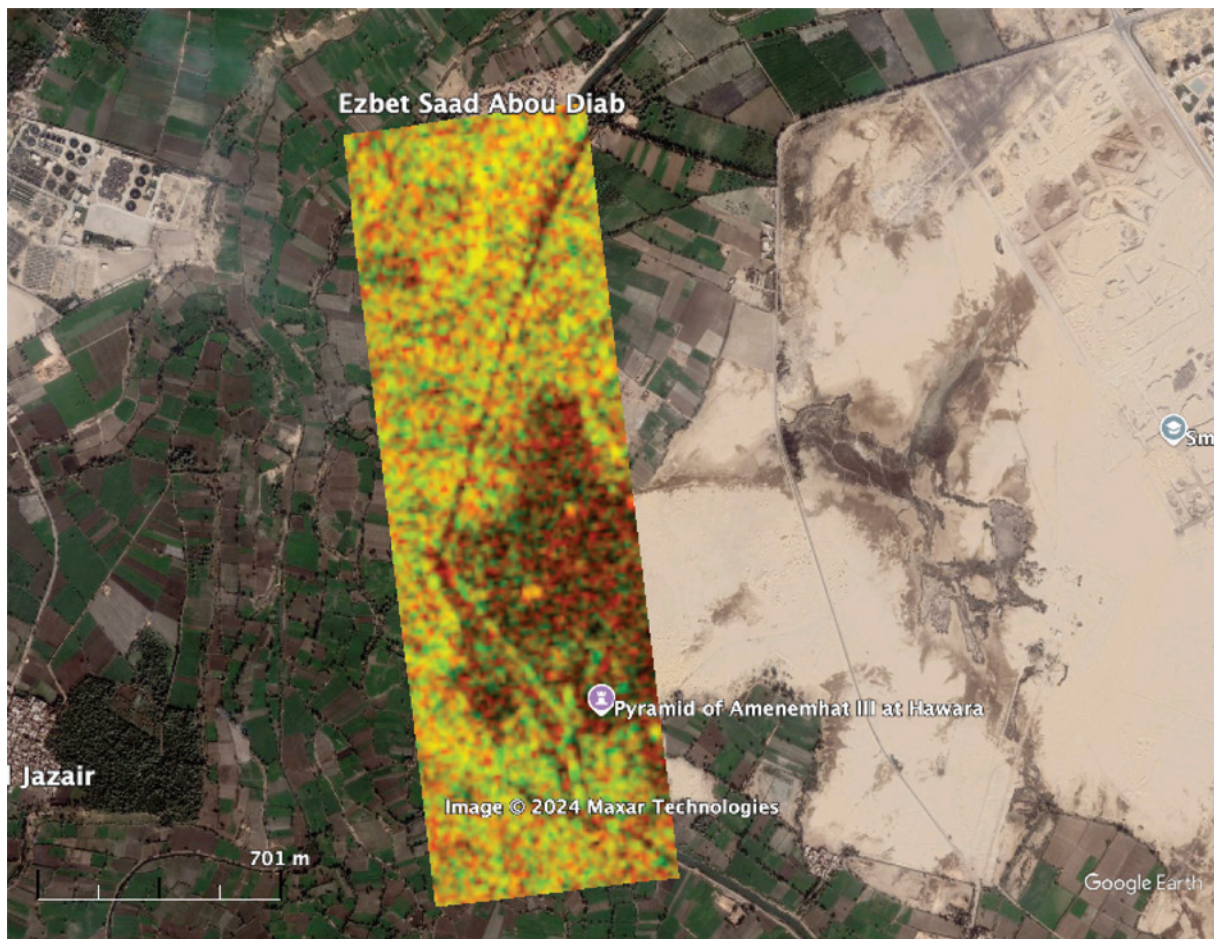


Figure 7. Portion of Sentinel-1 SAR Image over Hawara (VH = R and VV = G). Red dots north of the Pyramid of Amenemhat III are radar reflections from high-voltage powerline towers. (Google Earth).

Supreme Council of Antiquities prohibited any group from releasing further information collected at the site (Courdier, 2008). Lacking the ability to collect additional data *in situ* we considered the use of remote sensing to corroborate and expand upon these initial ground-based findings.

METHOD

Space-based SAR is an effective tool for mapping subsurface features, especially in arid environments where dry conditions favor radar signal penetration. Early experiments to model and better understand the physics of ground penetrating SAR were conducted in hyper-arid regions such as the Mohave desert (Blom et al., 1984) and the Sahara (Elachi et al., 1984) using Seasat SAR and Shuttle Imaging Radar (SIR-A) operating in the L-band. Ghoneim et al. (2011) used Landsat, Shuttle Radar Topography Mission, and RadarSat operating in the C-band to map a paleo-river now largely buried beneath the wind-blown sands of the Eastern Sahara. L-band ALOS PALSAR

was used to detect and characterize a known manmade feature buried under sand deposits in Egypt's Western Desert (Gaber et al., 2013). Blom et al. (1997) described the use of RadarSat and Landsat to map ancient trade routes around the legendary city of Ubar in the Arabian Peninsula.

Our methodology exploits L-band ALOS PALSAR, C-band Sentinel-1 SAR, and visible band optical imagery using principal components analysis (Pearson, 1901; Hotelling, 1933) and nonlinear image estimation (Carlotto, 2000) to detect radar-significant features in SAR that are not present in the optical image.

Figure 4 shows a false-color C-band Sentinel-1 SAR image collected 7/6/2023 over a region in Western Egypt containing the Faiyum Oasis. Hawara is at the top-right edge of the image. Sentinel-1 transmits vertically polarized waves and receives horizontally and vertically polarized waves that are processed to form VH and VV images displayed in red and green, respectively. VV images are sensitive to rough surface scattering while VH responds to volume scattering

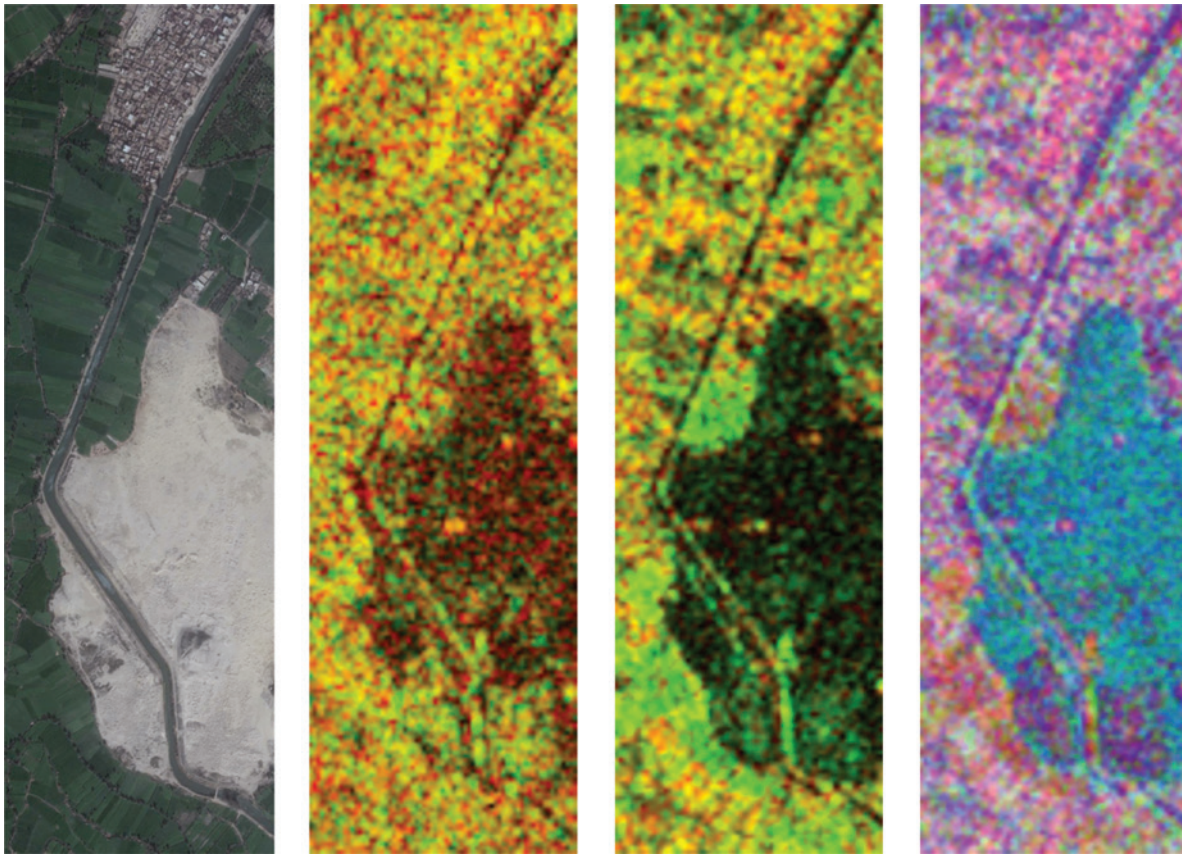


Figure 8. Google Earth Visible Image (Left), Sentinel-1 VH-VV (Middle-Left), ALOS PALSAR HV-HH (Middle-Right), and Fused Sentinel-ALOS SAR PCA (Right).

Table 1. Sentinel-1/ALOS PALSAR Image Principal Components Analysis where VV and VH are the Sentinel-1 VV and VH Polarizations, and HH and HV are the ALOS PALSAR Polarizations.

Principal Component	VV	VH	HH	HV	Eigenvalue
PC01	0.397538	0.366493	0.568364	0.620169	9545.133789
PC02	-0.664943	-0.515959	0.33982	0.419714	1992.201782
PC03	-0.302049	0.407889	-0.658312	0.555894	1218.024536

Table 2. Sentinel-1/Google Earth Visible Image Principal Components Analysis where VH and VV are the Sentinel-1 Polarizations, and R, G, and B are the Google Earth Image Color Channels.

Principal Component	VH	VV	R	G	B	Eigenvalue
PC01	0.403733	0.426986	-0.45474	-0.438993	-0.505152	8526.099609
PC02	0.450872	0.676522	0.335042	0.30067	0.369292	1926.40979
PC03	0.795958	-0.599932	0.045632	0.038777	0.054278	1117.112183

Table 3 ALOS PALSAR/Google Earth Visible Image Principal Components Analysis where HV and HH are the ALOS PALSAR Polarizations, and R, G, and B are the Google Earth Image Color Channels.

Principal Component	HV	HH	R	G	B	Eigenvalue
PC01	0.498766	0.551602	-0.376343	-0.362375	-0.417155	11944.70313
PC02	0.517021	0.429656	0.419013	0.390464	0.469095	1636.813843
PC03	0.695632	-0.714748	-0.045494	-0.025696	-0.05002	1183.258057

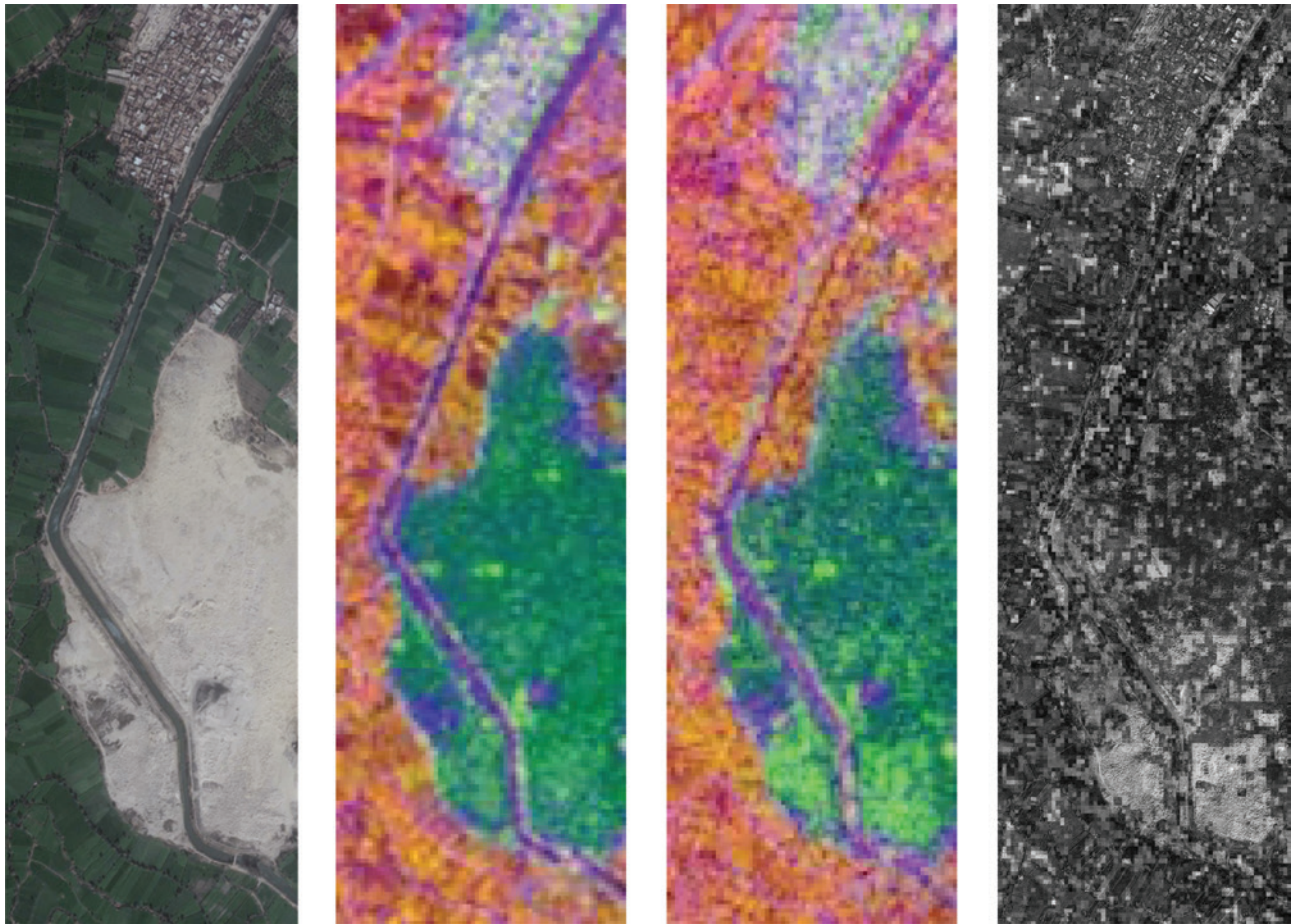


Figure 9. Google Earth Visible Image (Left), Fused ALOS PALSAR-Visible PCA (Middle-Left), Fused Sentinel-Visible PCA (Middle-Right), and Total Sentinel VV-Visible Prediction Error (Right).

from vegetation. Cultivated areas along the Nile and in the Faiyum and other oases appear redder in color due to VH scattering. Figure 5 is an L-band ALOS PALSAR image collected 8/17/2007 over the Faiyum. ALOS PALSAR transmits horizontally polarized waves and receives horizontally and vertically polarized waves that are processed to form HH and HV images displayed in red and green, respectively. HH images are sensitive to double bounce scattering from buildings and inundated vegetation while HV, like VH responds to volume scattering from vegetation.

In general, SAR penetration depth increases, and spatial resolution (pixels/m) decreases as wavelength increases. This fundamental tradeoff between ground penetration and resolution can limit the usefulness of space-based SAR in archaeology (Lasaponara & Masini, 2013). However, an object the size Labyrinth should be detectable in both C-band Sentinel-1 and L-band ALOS PALSAR provided the top of the structure is close enough to the surface, typically within 2–5 m for L-band and 0.5 m for C-band (Ghoneim et al., 2012).

RESULTS

Figure 6 is a Google Earth image over Hawara containing the Pyramid of Amenemhet III and the region south of the pyramid. A geo-registered portion of the Sentinel-1 SAR VH-VV image over the area is shown in Figure 7. Figure 8 compares the Sentinel-1 VH-VV image and an ALOS PALSAR HV-HH image over the same area. By means of principal components analysis (PCA), the four polarization images from the two sensors can be combined into a single false-color RGB image. According to the VH-VV-HV-HH eigenvector coefficients in Table 1, the red component PC1 can be interpreted as the sum of the four polarizations from the two sensors ($VH + VV + HV + HH$), the green component PC2 as the difference between the ALOS PALSAR and Sentinel polarizations ($HH + HV - (VV + VH)$), and blue as the difference between the cross polarizations and the same polarizations ($HV + VH - (HH + VV)$). Radar reflections from the west side of the pyramid and three returns

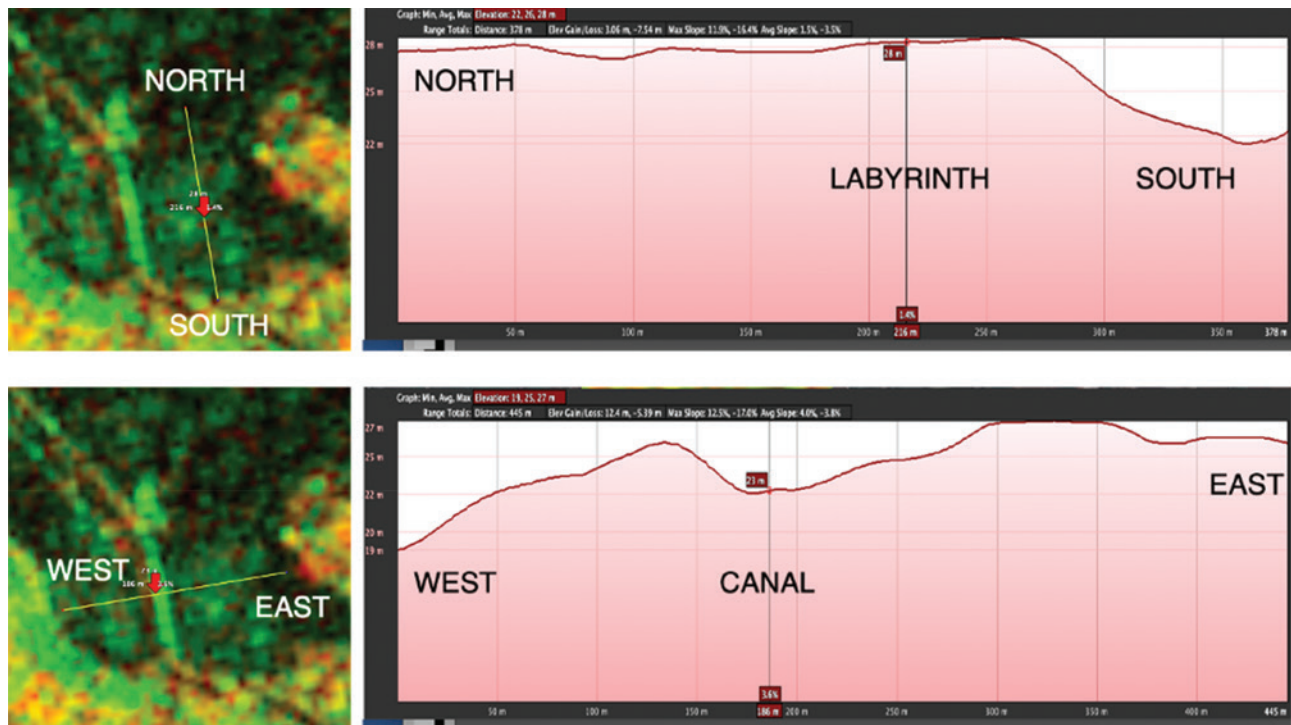


Figure 10. Topographic Analysis. The north-south transect (top) passes through the center of the Labyrinth. The maximum elevation difference from north to south is -3 m. The west-east transect (bottom) passes through the Abdul Wahbi canal. The maximum elevation difference from west to east is $+12$ m. (Google Earth).

from high-voltage transmission line towers north of the pyramid are evident in the Sentinel-1 and ALOS PALSAR images.

Although longer wavelength L-band SAR can penetrate 2–5 m below the surface, observations in the L-band have been reported by Ghoneim et al. (2012) to provide less detail than shorter wavelength C-band despite its shorter penetration depth (0.5 m). Two distinct rectangular areas south of the pyramid on either side of the Abdul Wahbi canal are evident in the Sentinel-1 VH-VV image and in the ALOS PALSAR V-HH image, but to a lesser degree. Exploiting correlations between the two SAR sensors, these areas are enhanced in the fused Sentinel-1/ALOS PALSAR PCA image (Figure 8).

The lack of visible structures in Google Earth imagery over the area south of the Pyramid of Amenemhet III suggests the possibility that some of the SAR returns could be from subsurface features. To test this hypothesis, we registered the SAR images to a Google Earth color image, acquired on 2/6/2007 and performed two PCAs to highlight features that are uncorrelated – features that appear in the Sentinel-1 and/or ALOS PALSAR SAR images but not in the Google Earth image, or vice versa.

Tables 2 and 3 list the eigenvalues and eigenvectors for the first three principal components represented red, green, and blue as false-color images in Figure 9. In both PCA images (middle left and middle right), vegetated areas are red (large PC1, small PC2 and PC3), a village at the top is white (large PC1, PC2, and PC3), and open areas are green (small PC1 and PC3). The pyramid and power line towers are bright green in both PCA images because both produce large radar returns in the SAR images but cannot be seen in the Google Earth image after it has been reduced to the same resolution as the ALOS PALSAR (10 m/pixel) and Sentinel-1 (~20 m/pixel) images. The two rectangular areas south of the pyramid on either side of the Abdul Wahbi canal noted above also appear bright green in the Sentinel-1/Google Earth PCA image but for the opposite reason – because they are visible in the Sentinel-1 SAR image but not in the Google Earth image. Other features that appear bright blue (3rd principal component) in the PCA images are also uncorrelated but to a lesser extent. A nonlinear background estimation technique, which is described in the Appendix, uses a statistical approach to predict the appearance of the Sentinel-1 VV SAR image from the Google Earth visible image, and vice



Figure 11. Khalil et al. (2010) in situ VLF-EM Survey (Top Left) and Uncorrelated SAR-Visible Returns from Figure 9 (top right). The uncorrelated SAR-visible returns occur over the same area (bottom) as the VLF-EM survey. (Google Earth).

versa. Summing the differences between the actual and predicted images reveal the same two distinct rectangular areas south of the Pyramid of Amenemhat III on either side of the Abdul Wahbi canal (Figure 9).

DISCUSSION

Analysis of the underlying terrain suggests the uncorrelated features shown in Figure 9 are not from surface

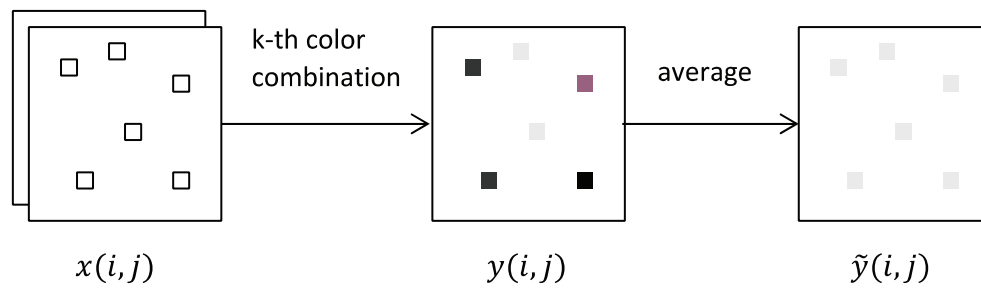


Figure 12. Nonlinear Estimator can be Decomposed into a set of Conditional Averages Over all RGB Color Combinations.

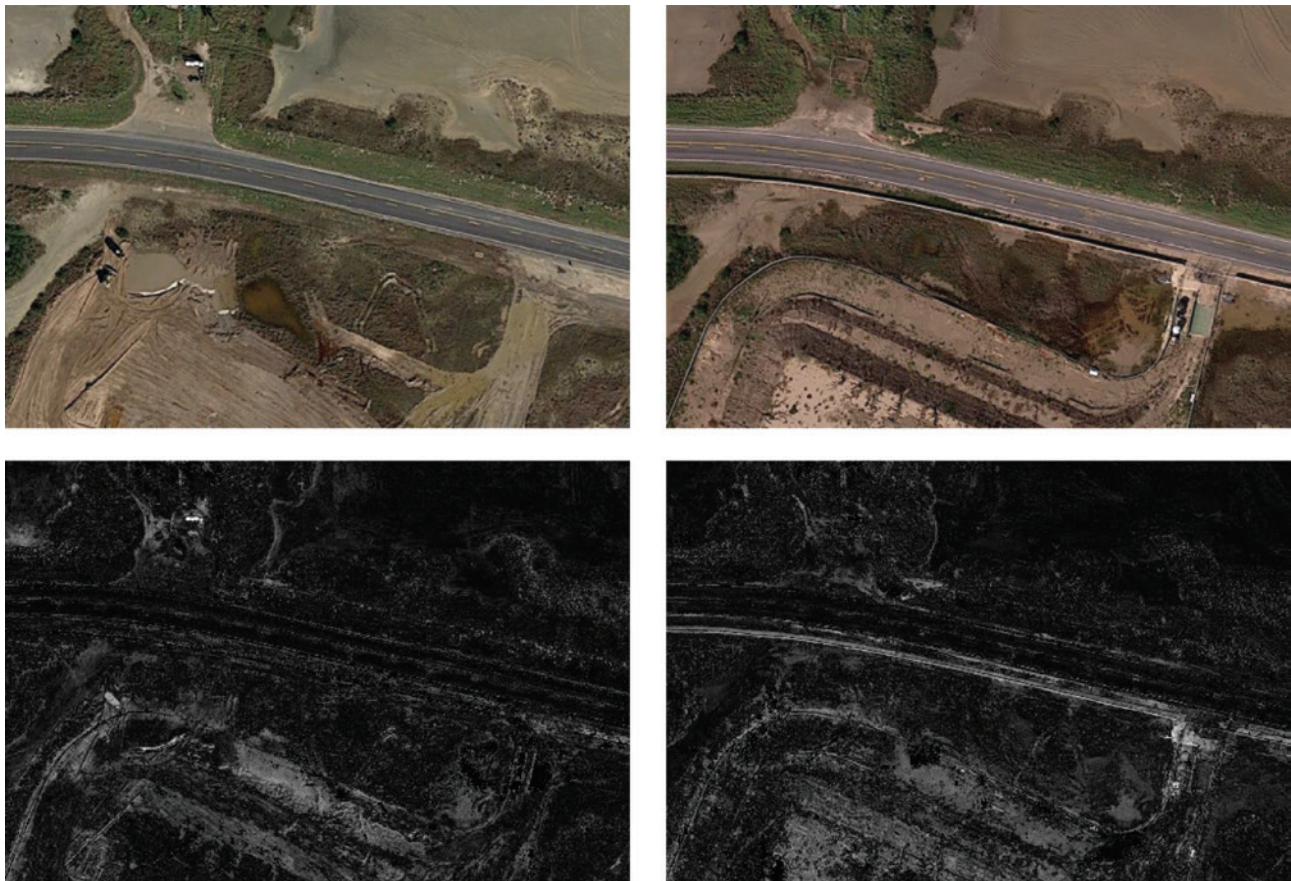


Figure 13. Two Images Acquired over the SpaceX Launch Facility in Baco Chica TX (top). Backward changes (bottom left) show areas where objects have disappeared. Forward changes (bottom right) show areas where objects have appeared. (Google Earth).

relief features. Two transects are shown in Figure 10. The terrain slopes downward from north to south and east to west. Other than a reflection from the side of the canal, there do not appear to be any other topographic features capable of generating radar returns in this area.

The downslope west of the canal is an interesting aspect of the terrain in this part of the Faiyum that is relevant to the present discussion. The original waterway, the Bahr

Yusef, connects Lake Moeris with the Nile River. In the past when rainfall was more plentiful, the lake was much larger in area and the water level was much higher. As the climate in this part of the world changed and the lake began to dry up, water was diverted from the Nile by way of the Bahr Yusef. In order to supply water to the northeastern part of the Faiyum, which is higher in elevation, secondary canals were constructed. A canal known as the Bahr

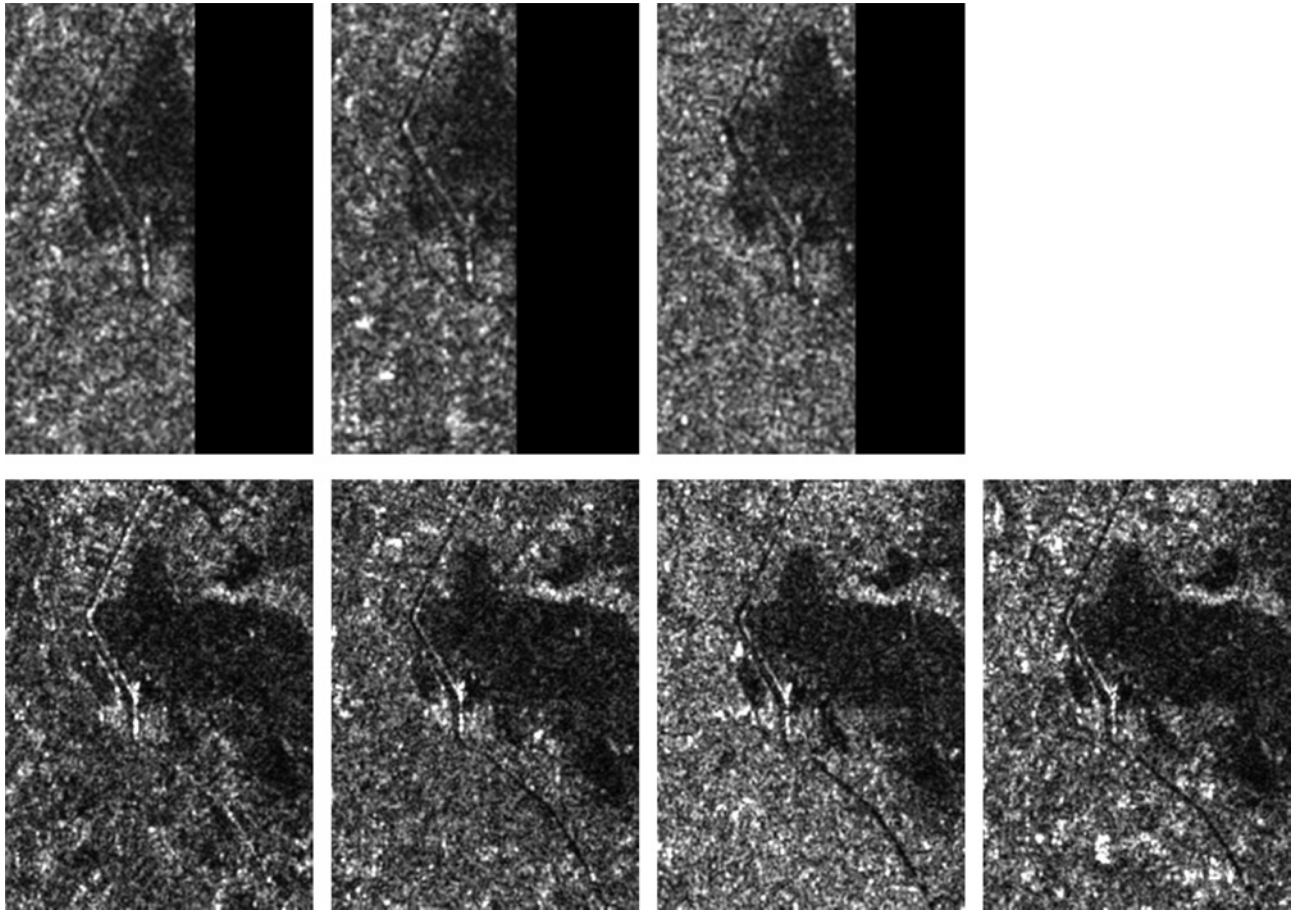


Figure 14. Portions of Sentinel-1 SAR Images over Hawara Acquired 2023–2024 Looking East during the Ascending Node (top) and Looking West during the Descending Node (Bottom). Top and bottom images are not the same scale. Top right image is the one acquired on 7/6/2023. Being at the extreme right edge of the image, the Labyrinth is cut off in many of the ascending node acquisitions.

Wardan located west of Hawara flowed to the northeast. Eventually, because it had become filled with silt and was no longer usable, sometime between the 6th and 13th century CE a new canal, the Bahr Sharqiyyah, which is now known as the Abdul Wahbi, was cut through the Labyrinth. According to Kraemer (2010, p. 371)

The evidence concerning the course of the medieval and modern canal, dug directly across Hawara, and the posited location of the ancient canal, going around Hawara on the west side, suggests that a significant effort was made sometime before the 13th cent. AD to move the canal. The Bahr Sharqiyyah was cut through the archaeological site of Hawara with a width of approximately 30 meters and a depth of approximately 13 meters for approximately 1 kilometer. The task of excavating this canal would have involved the removal of mud-brick remains, compacted stone debris from the remains of the Labyrinth, and a significant amount of limestone bedrock.

He goes on to state that “archaeological surveys at Hawara have established that ceramic debris on the surface of the southwestern part of the site indicates the presence of a settlement here from the 3rd cent. BC until the 1st cent. AD. The modern canal [Abdul Wahbi] cuts through the foundations of mud-brick structures of this settlement, and stone debris from the 12th dynasty mortuary temple of Amenemhet III on which they were built.”

The area of the large uncorrelated feature east of the canal is approximately 450,000 square feet. This is slightly larger than the size of the Labyrinth given by Strabo, and more than twice Petrie’s estimate. That the only two first-hand accounts of the Labyrinth differ both in size and details led Petrie (1889) to conclude that “Herodotus and Strabo must have seen and described different things, part of the building having disappeared by Strabo’s time to give way to a village whose ruins survived into Lepsius’s time” (Lloyd, 1970). Figure 11 shows that one of the two areas surveyed by NRIAG (Khalil et al., 2010) falls within the large uncorrelated SAR return on the east side of the canal. That this

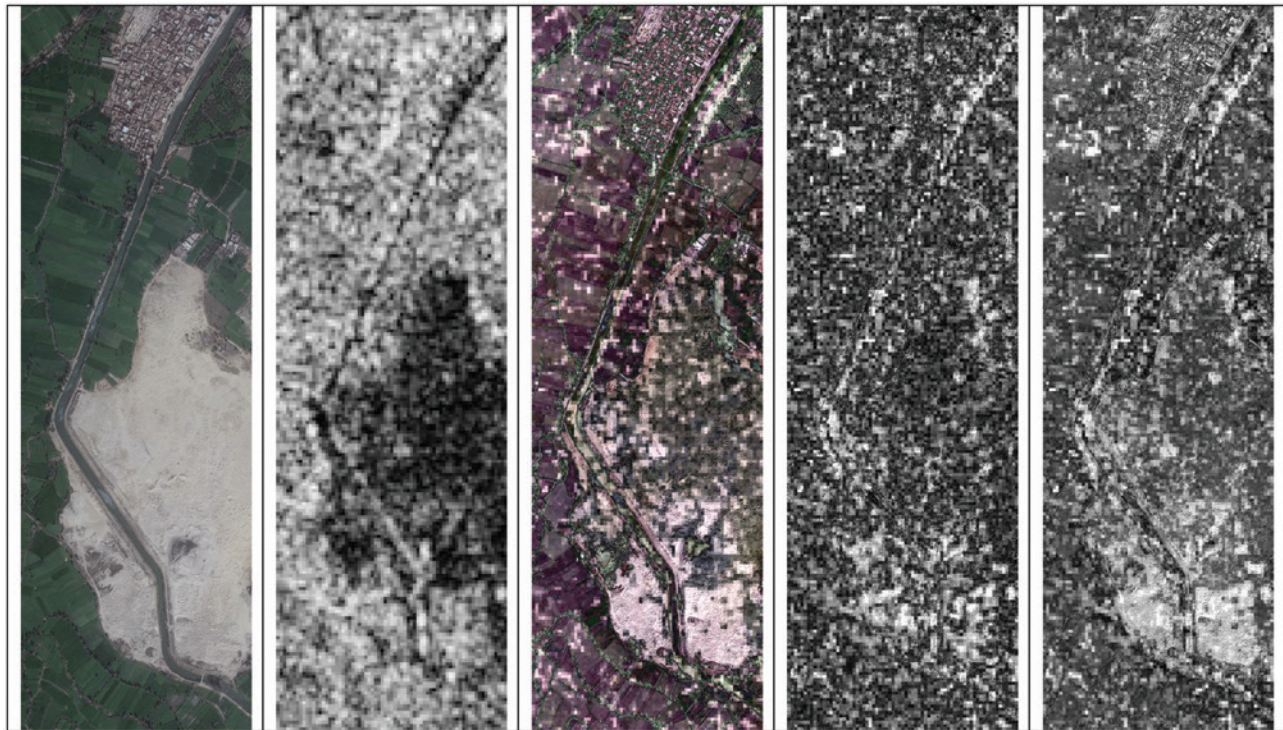


Figure 15. Google Earth Visible Color Image (left), Co-Registered Sentinel-1 SAR VV (Left Center), SAR to Visible Prediction Error (center), Visible to SAR Prediction Error (Right Center), and Total Prediction Error Image (Right).

return extends well beyond the limits of the ground survey suggests the possibility that subterranean features discovered in the survey could extend much further south. Sentinel-1 VV polarization radar returns over this area are uncorrelated with either visible surface or terrain relief features. It is therefore possible that they originate from radar reflection off structures that are below ground. That the returns are in the same area described above by Kraemer suggests they may be from the legendary Labyrinth, or from material uncovered when the canal was built.

Based on our findings, additional surveys over the area to the south should be conducted to better understand the size, shape, internal details, and state of underground structures (should they exist) and to determine if, like the pyramid of Amenemhet III and mortuary complex to the north, they are flooded and could be in a state of decay.

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APPENDIX - NONLINEAR BACKGROUND ESTIMATION (NLBE)

Let $X(i, j)$ and $Y(i, j)$ be a co-registered pair of M- and N-band multiband images. Assume a set of functions \mathcal{F}_n exist such that

$$\tilde{y}_n(i, j) = \mathcal{F}_n[X(i, j)]$$

where $X(i, j) = \{x_1(i, j), x_2(i, j) \dots x_m(i, j)\}$ and \mathcal{F}_n is a nonlinear function that minimizes the mean square estimation (MSE) error:

$$E[\tilde{y}_n(i, j) - y_n(i, j)]^2$$

The \mathcal{F}_n generate estimates of the N bands of $Y(i, j)$ from the M bands of $X(i, j)$. It can be shown (Carlotto, 2000) that the optimal (minimum MSE error) estimate is given by the conditional expected value:

$$\tilde{y}_n = \frac{\sum y_n p(y_n | X)}{p(y_n | X)}$$

which is computed as a set of statistical averages as depicted in Figure 12. Originally developed for change detection, if $X(i, j)$ and $Y(i, j)$ are before and after images, the forward and backward prediction error images are

$$\begin{aligned} \epsilon_n \{i, j\} &= [\tilde{y}_n(i, j) - y_n(i, j)]^2 \\ \delta_m \{i, j\} &= [\tilde{x}_m(i, j) - x_m(i, j)]^2 \end{aligned}$$

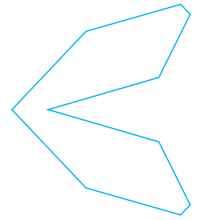
where

$$\tilde{x}_m(i, j) = \mathcal{G}_m[Y(i, j)]$$

As above the \mathcal{G}_m generate estimates of the N bands of $X(i, j)$ from the N bands of $Y(i, j)$.

The forward prediction error image indicates places where objects appear in a second (later) image and the backward prediction error image indicates places where objects in the first (earlier) image disappear (Figure 13). For additive white Gaussian noise, NLBE is optimal in the minimum mean squared error sense in that the forward/backward prediction errors are uncorrelated with the before and after background image estimates.

Instead of detecting changes between two images over time, we can use the method to estimate the appearance of a visible image from a SAR image, and vice versa. The Sentinel-1 VV polarization appears to respond best to the feature of interest as it is seen in multiple images acquired from two different directions (Figure 14). Selecting the best contrast SAR image (Sentinel-1 SAR VV polarization acquired on 7/6/2023) we use it to estimate the background of the visible image and use the visible image to estimate the background of the SAR image. Summing the forward and backward prediction errors reveals two large areas south of the Pyramid of Amenemhet III on either side of the Abdul Wahbi canal (Figure 15). That the prediction errors are uncorrelated with the visible image implies the returns in this part of the SAR image are from something that is not present in the visible image – something that could be underground.



**RESEARCH
ARTICLE**

Can Trance Channeling Be Learned? A Case Study of a Scientist's Experience

Helane Wahbeh

hwahbeh@noetic.org
<https://orcid.org/0000-0003-3650-4633>

Sitara Taddeo

staddeo@noetic.org

Beth Glick

bglick@cihs.edu

Institute of Noetic Sciences, Novato,
USA

HIGHLIGHTS

A new study suggests that a structured hypnosis and out-of-body protocol can allow individuals with some innate capacity to learn the phenomenon of trance channeling.

ABSTRACT

Trance channeling, a practice steeped in ancient history involving communication with deities, remains prevalent across diverse cultures. This case study examines the adaptation of a structured hypnotic protocol to explore trance channeling, focusing on shifting consciousness to allow “non-physical beings” to communicate through the participant. Utilizing a protocol developed by Pederzoli and Tressoldi, the study involved hypnosis, out-of-body experience (OBE) induction, and the transition into trance channeling. Conducted with a 45-year-old female scientist familiar with psi phenomena but inexperienced in trance channeling, the study aimed to assess the protocol's efficacy and adaptability. Over six sessions, the participant progressed from deep relaxation to trance channeling, guided by hypnosis in an electromagnetically shielded environment, enhancing rapport and personal safety. The participant's successful channeling of different non-physical beings highlighted the potential for structured training to develop trance channeling skills, suggesting a blend of inherent capacity and learned ability. The study underscores hypnosis as an effective tool for guiding OBEs, essential in facilitating trance states, and highlights the role of repeated OBEs in loosening ego control and enhancing awareness. Future research is encouraged to explore the link between OBEs and various psi abilities, examining demographic influences and employing brain-imaging studies for deeper understanding. This research contributes to the understanding non-local consciousness and the mechanisms enabling these experiences, setting the stage for further scientific inquiry into trance channeling and related phenomena.

SUBMITTED October 25, 2024
ACCEPTED November 19, 2024
PUBLISHED December 18, 2025

<https://doi.org/10.31275/20253573>

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KEYWORDS

Trance Channeling, Hypnosis, Out-of-Body Experience (OBE), Consciousness, Non-Physical Beings.



Trance channeling, also referred to as prophecy, oracle, spiritual communication, and spirit possession has been documented through written history for over three thousand years (Hastings, 1991; Helfrich, 2009). Ancient civilizations, including the Mayans, Greeks, Chinese, Egyptians, and Middle Eastern societies, have a rich history of channelers who claimed to communicate with different deities, such as Ishtar, Apollo, Hercules, and Zeus, providing guidance on everyday affairs as well as significant civil and military matters (Burkert, 1991; Hastings, 1991; Schwartz, 2015). From ancient oracles to modern spiritual communication, trance channeling has played a crucial role across numerous cultures and epochs, engaging both past and contemporary societies in accessing nonlocal perception to guide governance, facilitate healing, and provide insights.

Channeling continues to be observed in contemporary society. A survey revealed that 90 percent of 488 global societies have a concept of communicating with or being possessed by spirits (Bourguignon, 1976). This phenomenon exists in diverse cultures, such as Ladakh in northwest India (Crook, 1997), Spiritist groups in Brazil (Hageman et al., 2009; Negro et al., 2002), and Spiritualists in the UK (Roxburgh & Roe, 2011). The practices have been extensively studied in the fields of cross-cultural psychiatry and anthropology (Bastos et al., 2015; Bourguignon, 1973; Cardeña et al., 2009; Hunter & Luke, 2014). While the source (i.e. spirits) of these channeling experiences cannot currently be confirmed, it is exceedingly clear that these experiences have been and continue to be an intrinsic part of the human experience. Hereafter, the perceived source of trance channeling will be referred to as “non-physical beings,” knowing that there is currently no known way to definitively verify the source of the information. The primary research focus of this paper is the participant’s perception of how, during a trance channeling session, their consciousness shifts from being constrained in their physical body to allowing another “consciousness” to communicate through their body.

Most relevant to this case study is the work by Pederzoli and Tressoldi who developed a structured protocol to guide participants with hypnosis into out-of-body experiences (OBEs) (Pederzoli & Tressoldi, 2018), and then into trance channeling states (Pederzoli et al., 2020). The procedure consisted of four stages: relaxation, hypnosis induction, OBE induction, and trance channeling of discarnate entities. The procedure was used with nine different participants naive to trance channeling, who successfully trance channeled seven different non-physical beings.

Case study context

Upon learning about this protocol, the first author, HW, decided to attempt the protocol themselves, driven by personal interest in learning trance channeling, family history of observing hundreds of family members’ trance channeling sessions throughout their life, and gaining insight into how to study the phenomena. This case study provides a unique situation where the researcher is a participant and reporting their experience learning how to trance channel.

The goals of this case study were to:

1. Adapt the hypno-channeling protocols (Pederzoli et al., 2020) into a structured format for use in a laboratory setting;
2. Administer the protocol to HW and assess the protocols’ efficacy on this individual, i.e., did the participant learn to trance channel and what can be learned from their experience; and
3. Set the stage for further study within a broader and more diverse pool of participants.

METHOD

Overview of Pederzoli & Tressoldi Protocol

The hypnosis protocol used in this case study was adapted from Pederzoli and Tressoldi’s “Guide for OBE Induction,” an in-depth manual for inducing OBEs in both first-time and more advanced participants (Pederzoli & Tressoldi, 2018).

Pederzoli and Tressoldi’s (2018, 2020) initial procedure entailed four phases: hypnotic induction, OBE induction, an invitation for trance channeling, and exit from the hypnotic state. The hypnotic induction phase guided the subject through both relaxation and hypnotic induction. The OBE induction phase included instructions around the consciousness detaching from the body, cultivation of skills helpful during an OBE, such as voice, movement, and sight control, and exploration of consciousness “moving” through time and space disconnected from the physical body. The manual also provided more advanced training in navigating different realities and universes, in particular, providing direction on skills required to navigate “a four-dimensional space and two-directional time” (Pederzoli & Tressoldi, 2018, p. 9). These included the application of extended or psi capacities, such as precognition, remote viewing, telepathy, psychometry, or xenoglossy (i.e., the ability to speak, write, or understand a foreign language without having learned it in the normal way). Once it was established that the participant was experiencing an

easeful OBE, they could choose to attempt trance channeling. The researchers first confirmed with the participant that they had detached from their physical bodies. Once affirmed, the researchers would ask the OBE subject “to make him/herself available for contact” by apparent beneficial entities, thus initiating consensual trance channeling (Pederzoli et al., 2020, p. 507). The final phase that exited the hypnotic state guided the consciousness back into the physical body.

Adapted Hypnotically Induced Trance Channeling Protocol

A certified hypnotist in practice for more than ten years was recruited to be part of this study. The hypnotist adapted the above protocol for use in a laboratory setting including the generation of hypnotic scripts for six sessions. They also supplemented the scripts with guidance sourced from subsequent research on hypno-channeling (Pederzoli et al., 2020) and their own training and experience with successful hypnosis sessions, ensuring strong rapport-building and creating a safe space for the participant. The general progression of each of the six sessions was to first establish a sense of safety and familiarity with the hypnosis process, develop means of communication while under the hypnotic state (e.g., finger raises), and then gradually advance to sessions that were more abstract, novel, and detached from the physical body, including achieving the OBE and then trance channeling.

The flow of the adapted protocol follows an intentional progression from deep relaxation to OBE and consciousness exploration beyond the body, to a trance channeling experience where the participant invites a “non-physical being” to use their physical body for communication. Each session shifted from practitioner-led to participant-focused, advancing the participant into deeper relaxation, self-trust, and hypnosis familiarity. This progression illustrates a journey of expanded consciousness, increased

complexity, and depth of experience (see Table 1). Table 1 provides a brief summary of the six sessions. Please see the Appendix for session scripts.

Session 1. The session’s main objective was to familiarize the participant with the processes of hypnosis and establish a safe place to allow deep relaxation. It introduced the participant to induction techniques, deepened relaxation, and released any stress or tension in the body. Communication responses were established (teaching the participant to respond ‘yes’ or ‘no’ by lifting fingers). A trigger for deeper relaxation (touching thumb and forefinger together) was also embedded.

Session 2. The session’s goal was to establish a sense of safety, grounding, protection, and encourage the participant to leave their physical body and explore a range of environments while observing and interacting with different aspects of their consciousness, such as the subtle body or psychic body. It introduced the possibility of exploring spaces outside of the body. Language and imagery of motion (e.g., floating, flying, and hovering) were used to encourage a sense of effortless and gentle expansion of awareness beyond the physical body.

Session 3. This session explored more foreign landscapes during the OBE than previous sessions, established a connection to the earth and a ‘divine source’ as an anchor to provide a framework for safety, security, and stability during the journey. The participant was guided to journey beyond Earth, into the cosmos, and connect with various archetypal energies and planets. The hypnotist encouraged feelings of strength, love, logic, intuition, and more, culminating in a visualization to incorporate timeless wisdom and integrate these archetypes. This led to the suggestion that one could acquire profound insights and talents from meditating on and integrating these archetypal energies.

Session 4. This session continued to explore the experience of a “disembodied” consciousness during the OBE. The participant was encouraged to attune their senses to the atmosphere, energy, and specific objects or people in

Table 1. Summary of Each Session for Adapted Protocol.

Session 1	Session 2	Session 3	Session 4	Session 5	Session 6
<ul style="list-style-type: none"> • Relaxation • Visualization • Finding participant safe place • Establishing comfort and familiarity in the hypnosis process 	<ul style="list-style-type: none"> • Relaxation • Visualization • Journeying outside the body, exploring through the senses, observing nearby locations, and aspects of the psyche • Focus on sensations and movement 	<ul style="list-style-type: none"> • Relaxation • Establishing protection from higher powers • Visualizing a cord to the physical body • Journeying through outer space 	<ul style="list-style-type: none"> • Relaxation • Visualizing a cord to the physical body • Journeying to specific destinations, cities, etc • Interacting with objects in these environments 	<ul style="list-style-type: none"> • Visualizing a cord to the physical body • Establishing connection to higher powers, protection, and spiritual support • Exploration of different dimensions and future timelines • Receiving information 	<ul style="list-style-type: none"> • Visualizing a cord to the physical body • Establishing connection to higher powers, protection, and spiritual support • Focus on trance channeling • Direct communication with a being of higher consciousness



the environment. There was a greater focus on describing sensory details of the environment and what the participant was experiencing, including specific details such as the texture of the furniture.

Session 5. This session established a safe space and a grounding cord that connected the participant to their body and Earth. More sophisticated exploration of consciousness during the OBE was introduced, such as traveling to a planet with five dimensions and stars.

Session 6. The final session was focused on moving from an OBE to a consensual trance channeling experience. It began with creating a safe space, and grounding and protecting the participant and environment. Then intentions were set for only “the highest love and light dimensional beings” to participate in the trance channeling. Then, the following statement was made by the hypnotist inviting the trance channeling to begin.

{Participant} has given her (/his/their) permission for her (/his/their) body to be used by a higher love and light dimensional being, to communicate directly. The channel is now welcome to enter {Participant}'s body with ease and flow. The highest love and light dimensional being, can enter {Participant}'s body with ease and flow. (pause) You may speak, as the highest love and light dimensional being now. Can you identify yourself? (pause)

A trance channeling conversation then ensued. Finally, it concluded by gently guiding the participant to reintegrate once the trance channeling experience was complete.

Case Study Procedure

This adapted protocol was then applied to the case study participant. The participant and first author, HW, is a 45-year-old female scientist who despite this family history, had not yet experienced trance channeling, although they regularly had other psi experiences, including regular communication with who they believed were their spiritual guides (e.g., through clairaudience). HW has a strong personal belief in “non-physical beings,” but as a scientist believes that their existence has not as of yet been definitively demonstrated through the scientific method. They hold advanced degrees, including a clinical naturopathic doctorate and master’s in clinical research, and have no history of mental illness or hallucinations. Prior to this study, they had never experienced an OBE or engaged in trance channeling. They are also a regular meditator of 20

years (at the time of the study). This research is exempt from Institutional Review Board ethical review (IONS IRB#0003743).

Prior to beginning these sessions, HW was given an overview of the protocol’s structure. All sessions occurred between July 10 and October 18, 2018. They were conducted in a private space to ensure confidentiality and facilitate a serene and therapeutic atmosphere at the Institute of Noetic Sciences’ Earthrise campus, specifically inside an 8 × 8 × 8 electromagnetically shielded room. Each session lasted between 30-60 minutes, with variations in length allowed for the participant’s organic experience. After establishing a deep state of relaxation and comfort in the environmental and hypnotic process, the sessions used guided imagery and imaginative prompts encouraging the participant to use their creativity and intuition to navigate the process. Real-time adjustments were implemented to accommodate the participant’s feedback. In several instances, the unfolding experience built upon narratives or themes from previous sessions, HW’s personal history, reactions, and feedback, allowing for a sense of continuity and deepening exploration. Each session concluded with a gradual and gentle return to a state of wakefulness, utilizing a slow count to guide the participant back from the mental landscapes they had been exploring (see Appendix for detailed session components).

Case Presentation/Participant Experience

There were some general themes from the participant’s experience that may be useful for the reader.

Relationship to Practitioner and Setting the Stage

Establishing rapport with the practitioner was essential for the participant’s perceived safety. The participant felt that establishing a safe and supportive space was required for the ego mind to release control and for the OBE and trance channeling experiences to occur. The deep relaxation and hypnosis induction facilitated the release of the ego mind.

OBE Process

The participant expressed resistance in initially leaving the body. They also described difficulty getting through the ceiling, expressing a split in consciousness with one part still inhabiting the physical body and another able to go beyond the body through the ceiling. This barrier was

overcome with coaching from the hypnotist, who provided more information for the participant to successfully visualize the transition through the ceiling. HW realized that their consciousness could be in multiple places simultaneously. HW had a preconceived notion of ‘popping’ out of the body and being able to view the body from a different location as a typical OBE, as described by others. However, they did not experience that and initially had doubts about the veracity of the OBE because the experience of split consciousness did not meet their expectations. There was also a great sense of freedom with the OBE, noting the ease and fluidity of movement by simply thinking of being somewhere, including locales beyond Earth. There was also variation in the visual sensory experience, where some things were very clear, and others appeared blurry.

Trance Channeling

The participant expressed great surprise by how easily they could engage in trance channeling once a safe, supportive environment was established. They were amazed at how words that did not feel were coming from their own consciousness flowed from them spontaneously. Key factors included safety, grounding, protection, and intentions to ensure the interaction of only beneficial beings, in addition to a deep relaxation of the mind and body allowing the ego mind to open willingly and not resist the process. Importantly, HW believed that trance channeling was possible in general, and that they could learn how to trance channel.

There were two “non-physical beings” channeled by HW that communicated with different voices and cadences, an unnamed spirit guide and Louie. The first was an unnamed spokesperson of HW’s spiritual guide team who: 1) affirmed that the channeler is capable of trance channeling; 2) discussed the results of an EEG study of trance channeling HW had completed suggesting that the lack of findings was due to current limitations in measuring the subtle energetic and physical changes that occur during such spiritual connections, and that future, more advanced technologies may provide better insights; 3) encouraged continuation of scientific studies demonstrating consciousness beyond the physical brain, highlighting the importance of selecting individuals with specific qualities, such as high hypnotizability and openness to otherworldly experiences; 4) recommended daily meditation to quiet the mind, thus allowing more profound and detailed information to flow through; and 5) suggested writing, typing,

or drawing as mechanisms to facilitate the reception and recording of messages. A second “non-physical being,” Louie, was recognized as a relative of the hypnotist. He conveyed a message of deep love and gratitude, emphasizing the inseparable, intrinsic connection shared with the hypnotist that transcended time and space. He reassured the hypnotist of his well-being in the afterlife and provided comfort by expressing his continued presence and support. The hypnotist mentioned a shared experience from their lives that Louie responded to appropriately. The interaction concluded with Louie offering blessings and taking his leave.

DISCUSSION

While empirical evidence supporting the acquisition of skills such as trance channeling, telepathy, and psychokinesis remains limited, numerous training protocols claim to successfully develop these abilities. This is particularly true for remote viewing as was extensively documented in the Stanford Research Institute’s (SRI) Star Gate program commissioned by the Central Intelligence Agency (CIA) and other government agencies in 1972. This program trained individuals in how to view remotely with extreme accuracy in a short period of time (May & Marwaha, 2019; Mumford et al., 1995). Today, remote viewing is an applied training modality, both in organizations dedicated to its cultivation like the International Remote Viewing Association, and for purposes of crime solving, pet finding, and financial forecasting (Katz & Tressoldi, 2022). Although trance channeling has a documented history spanning millennia (Hastings, 1991; Helfrich, 2009), it has not received comparable funding or scientific attention for its study or development of training protocols.

This case study showcases a potential training protocol for trance channeling. The protocol effectively guided the participant from a state of hypnosis, to repeated OBEs, to the final session which culminated in their experience of channeling “non-physical beings.” The participant’s pathway into a trance channeling state was a multi-step process that first cultivated familiarity with out-of-body states through the vessel of hypnosis.

Hypnosis as OBE Induction Tool

An OBE is defined as a “subjective experience in which the person has the feeling of existence without a physical body (i.e., disembodiment), usually accompanied by various phenomenological features, such as differing degrees

of lucidity, realism, control of actions, anomalous cognition, emotional content, among others” (Weiler et al., 2024, p. 1). Estimates posit that 10-15% of the population has experienced OBEs (Alvarado, 2000; Blackmore, 1982), though college students and those interested in psychic phenomena report higher incidence (over 20% and 40%, respectively; Alvarado, 2000). OBEs can be induced through sensory deprivation/stimulation, hypnosis, meditation, or psychedelics (Blackmore, 1982; Bünning & Blanke, 2005; Facco et al., 2019), or manifest spontaneously, for example, through near-death experiences (Bünning & Blanke, 2005; Greyson, 2000). OBEs are important in this context because they are experienced as consciousness being freed from the constraints of the physical body, loosening the construct that the self is tied to the physical body. This separation of consciousness from the physical body may be a crucial step in facilitating trance channeling.

Hypnosis may be a particularly effective method for transitioning into OBE states, as it is affordable, non-invasive, not time intensive, and has minimal potential side effects. During hypnosis, individuals enter a state of focused attention and enhanced suggestibility which may facilitate the experience of being separated from their physical bodies (Pekala et al., 2010). Hypnotically induced OBE participants more frequently report that they do not experience the usual boundaries imposed by the physical body, although still retain their distinct personal identities as ‘separate from the outside world’ (73% of the hypnotically-induced OBEs compared with 59% of spontaneous OBEs; DeFoe, 2020). Another hypnotically-induced OBE study demonstrated the depth of OBE induction in hypnosis, and that the resulting experiences were distinct from those that resulted from the same imaginary task performed without hypnosis (Facco et al., 2019). Further, evaluation of neural correlates of these experiences have also begun such as in one study of hypnotically induced OBEs that found a high correlation between power at alpha and high-gamma frequency-bands and the degree of perceived change in self-location (Zeev-Wolf et al., 2017).

OBEs as Trance Conduit

Pederolzi et al. (2020) discovered that practicing hypnotically induced OBEs facilitated an easeful transition into trance channeling states. HW described the experience of OBEs in Sessions 2-5 as experiences that helped them prepare for trance channeling. They reported a loosening of the ego as they became more familiar with the OBE state, continuing the practice until they felt ready to

allow a “non-physical being” to incorporate and communicate through them. Experiencing repeated OBEs may serve as a gateway to trance channeling by sensitizing individuals to the process of detaching from the physical body and navigating the cognitive and perceptual shifts that accompany this separation. While trancelike states are generally considered to have dissociative properties (Castillo, 2003; Seligman, 2005; Seligman & Kirmayer, 2008), they do not reach pathological levels in studies conducted with channelers (Roxburgh & Roe, 2011; Seligman, 2005; Seligman & Kirmayer, 2008; Wahbeh & Butzer, 2020). OBEs may result at least partially “from a disruption in the brain regions underlying multi-sensory integration processes (visual/proprioceptive/tactile/vestibular) which are collectively important for the representation of the body, self and feelings of embodiment” (Braithwaite et al., 2011, pp. 5–6). It would be worthwhile to further investigate whether repeated exposure to this disruption to the multi-sensory integration process helps facilitate transition into trance states. HW also described the repetition of OBEs in the language of loosening of the ego. While ego dissolution may simply be another way of framing these dissociative experiences, it also may signal something else at work: an experience of interconnection. Yaden et al. (2017) describes two components of self-transcendent experiences: the annihilational component (self-loss) and the relational component (an expansive sense of connectedness with entities beyond the self). A recent study noted that a persistent effect from OBEs is “heightened prosocial behavior such as empathy” and proposed that the intrinsic feeling of disembodiment experienced in OBEs enable ego dissolution, feelings of oneness or profound interconnection, which then results in empathetic behaviors (Weiler et al., 2024). Trance channeling may follow a similar path, with relationality manifesting in an individual allowing “non-physical beings” to incorporate and communicate through them.

Awareness During OBE Experiences

HW also noted that their experience of repeat OBEs was not a full vacating from the physical body but rather a split awareness of form. While colloquial definitions of OBEs may explicitly separate the self or subject from their physical bodies, literature documenting the phenomena contributes significantly more nuance. In a survey of hundreds of people who had OBEs, Gabbard and Twemlow (1984) reported that 21% of respondents felt connected to their physical bodies, with similar results from research

conducted by Blackmore (1984). What this exactly means requires more investigation. Those who have had OBEs seem to experience a variety of phenomena related to their relationship with their physical bodies, with some reporting fully vacating and viewing their bodies, some experiencing autoscapy or seeing their bodies, some having no visual experience, some experiencing a partial separation, and some experiencing their body as light or shape (Blackmore, 1984; Cheyne & Girard, 2009; Terhune, 2009). Caruthers (2015) paints a complex picture of the out-of-body experience, elevating the span and diversity of OBE experiences. He asserts a more nuanced phenomenological tripartite map of the OBE experience: sense of ownership (experiencing the body as an object attributed to oneself), sense of embodiment (where one perceives their body as themselves within the world), and sense of subjectivity (the experience of oneself as a mental entity separate from the physical body). It is clear from the complex categorization of OBEs that the colloquial dualistic separation that distinguishes an experiencing or mental subject from a physically embodied entity may oversimplify and obfuscate OBEs.

Awareness During Trance Experiences

HW also reported being conscious during the trance experience, feeling both inhabited but also retaining a witnessing ability. This seems to be a common experience, and understanding the degree of consciousness that individuals maintain while engaged in trance channeling is fundamental to the study of this phenomenon. Anecdotal evidence and personal accounts have revealed significant variability in the awareness levels of trance channelers. For instance, some channelers describe their experiences as resembling sleep, with no memory of the episodes upon “waking.” Conversely, other trance channelers report observing their channeling experiences and retaining memories of the events.

To quantitatively assess this variability, a study measured the levels of awareness among trance channelers. Participants were asked to rate their awareness on a scale from 0 to 100, with zero indicating full consciousness and awareness, and 100 representing complete unconsciousness and lack of awareness. The mean awareness level for the sample was forty-seven, indicating a moderate level of consciousness during channeling (Wahbeh & Butzer, 2020). These findings were corroborated by similar research conducted by Negro et al. (2002) and Wahbeh et al. (2019).

These results are noteworthy for several reasons. First, they challenge the conventional Diagnostic and Statistical Manual of Mental Disorders (DSM) criteria for dissociative identity disorder (DID) with respect to amnesia. Specifically, the data suggest that most trance channelers do not experience the complete amnesia often associated with DID. Instead, many contemporary Western trance channelers describe their experience as “stepping aside” and observing the events, rather than being entirely unaware. Secondly, the common perception that trance channelers enter a full trance state — characterized by total unconsciousness and lack of awareness — is not supported by the findings. Although certain indigenous cultures have channeling rituals that induce complete trance states, this is less commonly observed among Western channelers today.

Information Validity and Source

In Session 6, HW channeled “non-physical beings,” and reported energetic and visceral distinctions as they experienced these entities. This experience was accompanied by marked shifts in body, words, and voice tenor.

The sources of trance-channeled information have been explored through various models, each offering distinct explanations. These models vary from psychoanalytic models, grounded in the channeler’s unconscious mind (Freud & Brill, 1914), to transpersonal psychology, which posits that channeled material may emerge from aspects of the self beyond individual consciousness connected to universal values and spiritual insights (Assagioli, 1965; Hastings, 1991), to psi and superpsi hypotheses, which propose that mediums retrieve information telepathically or through extrasensory channels (Beischel & Rock, 2009; Braude, 2003), to the survival model that theorizes that mediums are communicating with the spirits of deceased individuals (Beischel et al., 2017; Rock et al., 2009). Surveys conducted with individuals who channel, either through trance or other means, reveal a diverse range of reported sources for the information they receive, including the higher self, universal mind, divine beings, and uncertainty about precise source (Wahbeh et al., 2018a; Wahbeh & Butzer, 2020). In one study, five trance channelers purportedly communicated with 21 different beings over three days, including archangels, ascended masters, members of the deva kingdom, and extraterrestrials from seven different star systems (Wahbeh et al., 2018a). Remarkably, the channelers were able to shift seamlessly between these beings, changing their tone, mannerisms,

and vocabulary to match each entity. These findings underscore the wide range of nonphysical beings and concepts channelers believe they communicate with, suggesting that channeling may tap into multiple sources, and perhaps even multiple layers of consciousness or nonphysical dimensions, depending on the individual and their experiences (Wahbeh et al., 2018a).

HW's trance channeling session revealed information about the participant and the hypnotist, as well as broader ontological and scientific topics. The accuracy of trance-channeled information has been explored in a limited number of formal studies, suggesting that such information can, at times, be strikingly precise. For example, an analysis of automatic writings by Chico Xavier, a renowned Brazilian channeler, identified 99 items of verifiable information, 98% of which were rated as a "clear and precise fit" with factual data (Rocha et al., 2014; Schwartz, 2015). However, further research is needed to systematically assess the reliability and scope of such material across different contexts.

Participant Context

When evaluating potential protocol efficacy, it is essential to differentiate between capacity, ability, and skill of the learner. Capacity is the inherent potential that exists for everyone; ability is how naturally this potential is expressed; and skill is proficiency gained through practice. This differentiation helps contextualize channeling as both a natural human potential and a teachable skill. Similar to musical or athletic talents, while some may excel naturally, others need more practice. Although HW had not had previous trance channeling experiences, several predisposing factors may have facilitated their successful transition into a channeling state during Session 6.

Evidence for Nature and Nurture: Trance Channeling as an Inherited and Learned Trait

HW comes from a long lineage of channelers, with every member on their maternal side possessing channeling abilities. There are numerous anecdotes supporting the idea that trance channeling abilities run in families. However, it is unclear whether channeling capacities are innate talents or skills that can be developed through training. Empirical studies on inheritability of channeling skills are scarce. For example, one study found that individuals with second sight (i.e., spontaneous prophecy) were more inclined to report the presence of a blood relative exhibiting the same

ability (Cohn, 1994) and a second study found an autosomal dominant pattern in families with the experiences (Cohn, 1999). In practical terms, this means that if one of your parents possesses second sight, there is a 50 percent chance that you will also possess it. If both of your parents possess it, the probability increases to 50 to 100 percent. Another small pilot study found a genetic difference between 13 psychics and age, sex, and race-matched controls (Wahbeh, 2022). However, these studies are not specific to trance channeling. One study of 83 trance channelers found that 14% had family members who could channel, but 41% did not (Wahbeh et al., 2018b). While anecdotal reports suggest trance channeling runs in families, there is little formal evidence that establishes such a claim.

HW also holds positive feelings and beliefs around psi, spiritual guides, and "non-physical beings," established from early in their life. Beginning at the age of 10 years old, HW participated in channeling sessions conducted by members of their family, so was familiar with observing, and sometimes receiving information, from these sessions. Their associations with trance channeling were deeply rooted in feelings of love and trust toward those with whom they shared close bonds. These positive associations and underlying belief systems set the stage for the participant's openness to and trust of self in the process and likely contributed to the participant's ability to allow "non-physical beings" to communicate through them. Indeed, openness to experience is positively correlated with psi beliefs (Chauvin & Mullet, 2021).

Belief in the paranormal can significantly influence individuals' experiences, shaping not only the interpretation, but also the occurrence of anomalous phenomena, and is one of the strongest predictors of spontaneous psi phenomena and performance in the lab (besides meditation) (Storm & Tressoldi, 2017). Research suggests that individuals who hold strong beliefs in the paranormal are more likely to report experiences such as extrasensory perception, psychokinesis, and encounters with nonphysical beings (Glicksohn, 1990; Pehlivanova et al., 2024; Spinelli et al., 2002; Wahbeh et al., 2020; Wahbeh et al., 2018b). Wahbeh et al. (2018a, 2018b) also found belief plays a critical role in shaping the experiences and practices of mediums, who report regular communication with nonphysical entities.

While HW may have exhibited many predisposing factors, there is also evidence that channeling abilities can indeed be developed through dedicated training. Anecdotal reports suggest that trance channeling abilities can be acquired through learning. There are some examples

of the cultivation of trance channeling skills, both within and outside of cultural containers. For example, in cases of West African spirit mediumship, Tibetan Buddhist tulpa creation, and Amazonian shamanism, the cultivation of trance channeling skills is often embedded within broader spiritual and communal practices (Luhmann et al., 2023). Individuals within these traditions are trained to recognize and channel various “non-physical beings,” suggesting that trance channeling can be an acquired skill developed through intentional practices. Trance channeling teachers have also demonstrated their ability to teach trance channeling to participants outside of such a cultural context. Emphasizing the importance of believing in one’s ability to channel, workshops often incorporate hypnosis, meditation, and other techniques (Kharusi, 2023). Some individuals may naturally excel in specific types of channeling, while others may require more practice to achieve proficiency. Administering this protocol with a diverse range of participants would provide deeper insights into its effectiveness across varying capacities, abilities, and skill levels.

Protocol Context

Alongside the participant’s predisposing context, there were additional factors that likely augmented the protocol’s efficacy. This included the relationship between participant and hypnotist, the personalization of the protocols themselves, and the general approach to practice. HW noted the importance of strong rapport with the hypnotist. They cited the temperamental and relational match as facilitating an emotional and physical space conducive to surrender and exploration. Another contributing factor may have been the hypnotist’s experience, as they were skilled and confident in adjusting protocols in real time. Personalization of these protocols seemed to play a role in their efficacy. The transcripts showed that the scripts were customized to fit the participant’s history and memories during hypnosis, fostering what HW experienced as a deeper connection and potentially enhancing outcomes. Personalization was essential, as scripts are templates requiring adjustment for each participant. This adaptability was crucial for an effective therapeutic environment that respected individual experiences. Finally, both the protocol’s structure and the hypnotist’s approach facilitated a spaciousness of experience, allowing the participant to slowly familiarize, normalize, and practice loosening ego control and separating the locus of consciousness from the physical body.

The Role of Self-Experimentation

This case study highlights self-experimentation in research. Self-experimentation has advanced medical and psychological research by providing firsthand insights often unattainable through traditional experimental designs. Historically, it has driven key discoveries, particularly in pharmacology and physiology, and has been the foundation for groundbreaking advancements, as evidenced by several Nobel Prize recipients who engaged in this practice (Weisse, 2012). In the realm of psychoactive substances, self-experimentation has offered unique perspectives on complex subjective experiences that are challenging to quantify and describe through conventional means (Passie & Brandt, 2018). In parapsychology, self-experimentation poses few, if any, adverse effects and could enhance a researcher’s understanding of phenomena, strengthening their research questions and study designs. One notable example is J.B. Rhine, who, while focused on methodological rigor, engaged in informal self-experimentation and experiments with colleagues (Rhine, 1934). Also, William James conducted personal experiments with substances like nitrous oxide to explore the boundaries of consciousness (James, 1985). Although self-experimentation has declined due to ethical concerns and the rise of more rigorous scientific methodologies, its contributions have undeniably shaped our understanding of human biology and behavior (Passie & Brandt, 2018; Weisse, 2012).

IMPLICATIONS AND APPLICATIONS

This case study showcases the efficacy of protocols developed by Pederzoli and Tressoldi in facilitating OBEs and trance channeling states. Adapting these protocols in one participant, it underscores hypnosis as an effective tool for guiding OBEs and trance states and highlights the role of repeated OBEs in loosening ego control and developing familiarity with resulting perceptual shifts. Utilizing the methodology of self-experimentation, this study contributes to understanding non-local consciousness and the mechanisms enabling these experiences. It lays the groundwork for future studies on trance channeling in diverse participant groups, including further investigation into the connection between OBEs, trance channeling, and psi capabilities.

FUTURE RESEARCH

This case study illuminates one individual’s experience with a series of adapted protocols and highlights the

potential for wider application in participants of diverse backgrounds. While expanding the testing of these protocols in a broader pool would be worthwhile, studies could also focus on isolating demographic variables that could contribute or hinder protocol efficacy. For example, studies could focus on participants with/without genetic hereditary factors, with particular psychological characteristics like openness, or with previous capability in another type of psi skill (e.g., remote viewing).

The connection between OBEs and trance channeling, as demonstrated in this case, opens a promising area for further study. Future research could investigate if and which mechanisms underlying OBEs facilitate the development of trance channeling abilities. It could look at the variable of repetition, which may allow for more intentional direction or control by the experiencer (Blackmore, 1982), and investigate the optimal duration or consistency of OBE practice that would facilitate the channeling of information from “non-physical beings.” Additionally, brain-imaging studies during OBEs and trance channeling states could offer valuable insights into the neurological correlations between these phenomena.

The protocols outlined in this study provide an intriguing foundation for exploring a broader range of psi capabilities. Researchers could investigate whether these protocols could be adapted to cultivate other skills tapping into non-local consciousness, such as remote viewing, telepathy, or psychokinesis within the OBE state. Systematic trials with these skills may shed light on whether similar cognitive or energetic processes are at work across different psi phenomena. Ultimately, this line of research has the potential to provide a more comprehensive understanding of non-local consciousness and the underlying mechanisms that enable these extraordinary experiences.

STATEMENT OF DECLARATION

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

ACKNOWLEDGEMENTS

The authors would like to thank the IONS Science team, the participants, and the members of IONS for their support of this project.

AUTHOR CONTRIBUTIONS

HW contributed to conceptualization, methodology, investigation, data curation, project administration, writing – original draft, and writing – review & editing. ST

contributed to data curation, investigation, writing – original draft, and writing – review & editing. BG contributed to writing – original draft, and writing – review & editing.

FUNDING

None.

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APPENDIX

Session Scripts

Script 1

Hypnotist: Hello, {Participant's name}. This is {Hypnotist's name}. As we begin, you make yourself as comfortable as you possibly can in the recliner, or chair or bed. However lightly or however deeply you may choose to relax, it's just perfect for you. So feel free to shift your position at any time for comfort rather than distracting you, as it can relax you even further.

With your eyes closed imagine a beautiful wave of relaxation flowing down your body. Allow all the muscles around your eyes to relax. Just allow those muscles to relax so much that your eyes just won't open. Pretend that they won't open. It's as if your eyelids are locked in place, sealed down tight. It's as if your eyelids are glued together. And in a moment, I'm going to have you try to open your eyes, and you may notice the more you try, the better you feel. The more you try, the greater your results, the more motivated and determined you are. Then, when you're certain that your eyes won't open, try to open them. Only when you're absolutely certain that your eyes will not open, just test them and see that they will not open.

Good, very good. Allow the relaxation around your eyes to float all the way down your body like a warming wave of soothing relaxation. Allow yourself to feel that relaxation, as it moves like a wave all the way down to the tips of your toes. Making you relaxed all over. All over. Very good. Thank you for relaxing.

And you may allow yourself to go deeper into relaxation. Now make a fist, and all the tension all the stress and fears are moving into your fist. Just like a magnet's gravity, all the tension, stress, strain, confusion, anxiety; all negative emotions, such as anger, fear, sadness. Any negative energies. Blow into your fist. Any hurt from the past moves to your fist. Now release, opening your hand, and push. And just like a waterfall cascades down, you let go. That's right, letting go. Any tension, stress, anxiety, pain of the past. Release (woooosh) past negative emotions flows out of your hand out of your body's awareness. Out of your minds awareness. You relax and let go.

You're calm. Relaxed. Peaceful. Perhaps you notice a sound or a color. Relaxing deeper and deeper. (pause) Good. Very good. Anytime during the day, if you get a negative thought or emotion, or notice any negative energies,

you just make your fist and all the negative emotions and energy go into your fist. And then you open it and woosh - releasing and letting go. Releasing and letting go.

Allowing you to feel relaxed. Relaxing deeper and deeper. That's right, relaxing deeper and deeper. Now that you're relaxed and comfortable, so that you know, and I know, that a wonderful change is going to happen today, I would like you to use the right index finger for a yes response by moving it slightly now. (pause) That's right. You're doing perfectly. Taking a deep full breath, and letting it out with the sigh. Thank you.

So that you know, and I know, that your powerful higher consciousness is going to work with us today, please use your left index finger by moving it slightly for no response. (pause) You are doing perfectly. From this point forward, if I ask you a question during this or any other hypnosis process, I want you to remember the right index finger signals for 'yes' and the left index finger signals for 'no'.

Now that you know, and I know, you can relax and go even deeper. Letting go of outside thoughts or activities, there is nothing that needs to be done. No place you need to be. This is your time to relax. Let go. Relax. Let go. In a moment, I'm going to count from ten down to one. On each count, you may allow yourself to drift, into deep relaxation at your own pace. But first, I invite you to imagine a custom cloud, snuggling up to your body in the shape of a chair. And imagine that this chair has arms on it. It's very warm and comfortable. It's the right temperature for your body. It is your personal cloud. Notice how it snuggles up to your body. Now it's going to take you to a very, very beautiful place. A special place in your life. A safe place, a comfortable place. And Source guides you on this journey. That's right. Source travels with us on this journey.

Going to your special place, a safe place. A place where you're happy. A place where you feel good. A place where you sound good. A place where you look good. A safe place where you have a deep sense of peace and well-being. So allow this custom cloud now to just snuggle up to your body and to just take you to your special place. Where you are joyful. Relaxed. Peaceful. Light. And free. And very calm. And peaceful.

And just allow your personal cloud to take you to your safe place, as I begin to count and you allow yourself to go deeper and deeper into relaxation. Ten... nine.... eight.... seven... six... five... four... three... two... one... Deep, deep relaxation. You're in your safe place. Feeling safe. Peaceful. Calm. Feeling light. Look around your safe place. What do you notice? Feeling safe, paint an image in your mind. A picture of a place where you felt very safe. It could be a

sound. A certain type of music. Or someone's voice talking to you. Or the safe place could simply be a feeling. A feeling coming from within you.

Giving a yes response by moving your right index finger when you're comfortable in your safe place. That's right. Taking all the time you need to come to your safe place. And deeper, and deeper, in your safe place. You're connected to Source. Look around your safe place. Feeling safe, peaceful, calm. You may be noticing that in your safe place, the temperature is just right. (pause)

Whatever this safe place is for you, allow yourself to move into it, and let it build within you. Allow this safe place to become a part of your very existence right here and right now. Through the power of your mind and imagination, this safe place is resonating around you as your magnetic shield. You are safe. (pause) In your safe place, all is well. You're safe, peaceful, light, calm, joyful. Relaxing deeper and deeper, more comfortable in your safe place. And you love and protect it. Surrounded and filled with love. Surrounded by Source. Sweet guides and angels. And your loving spiritual team. (pause) If you're feeling safe and comfortable, joyful peaceful, and calm in your safe place, give me a yes response if so that I know please.

Perfect. That's right. You're perfectly safe, peaceful, joyful, light. You are safe. You are protected. You are appreciated. You are loved. You are valuable. Are safe. In a moment, I'm going to countdown from three to one. With each descending number, just let that safe place resonate out and fill the room. (Counting slowly) Three... two... one... Imagine that with each and every breath, the safe place is now growing and building. It fills your body. The room. And even the building that you're now in. And it slowly begins to fill this city. Your safe place is growing so that wherever you go, you now know that you have access to it in your higher mind.

From the city to the state. (pause) From the state to the country. (pause) From the country to the world. (pause) And now from the world to the solar system. (pause) And from the solar system to the universe. (pause) And now to the omniverse. (pause) Allowing your powerful mind, through the use of your imagination, to expand and explore. Transmitting and receiving the higher thought of your own being. And in your safe place, it's safe to relax. It's safe to connect to Source. It's safe to make positive changes, allowing you to live your life joyfully, light, and free. It's safe to release anything that stops or blocks you from living your life joyfully, light, and free.

It's safe to clear any energy that does not belong to you. Releasing, returning it back to Source. Allowing Source to

fill you. Love flowing through every cell, system, and organ of your body. It's safe to call back all of your energy, cleansed and purified. It's safe to be liked, free, joyful. It's safe to let go and relax. Releasing anything that stops or blocks you from living a healthy lifestyle effortlessly. And making wise choices for your body. You tune into your body's wisdom, and choose behaviors, thoughts, and actions that honor that wisdom with ease and grace. It's safe to discover love. And find joy in making healthy choices for your body.

And I'm wondering if you notice, it's fun making healthy choices for your body. Listening to your body's wisdom. And choosing the behaviors, thoughts, and actions that honor that wisdom with ease and grace. (pause)

I invite you to imagine you're living your life joyfully. Light and free. Looking shiny, happy. Hearing sounds of the neighbors. Feeling light, joyful, feeling good in your body. Expanded. Lightness. Feeling free. And when you've gone through the day, living your life joyful, and light and free. Tuning into your body's wisdom, and choosing the behaviors, thoughts, and actions that honor that wisdom with ease and grace. Give me a yes response so that I know please.

That's right, you did it. Now I invite you to imagine going through the days, and it's a week from today. And there you are, living your life joyfully; light and free. Feeling safe and secure. (pause) Living a healthy lifestyle effortlessly. And listening to your body's wisdom and choosing behaviors, thoughts, and actions that honor that wisdom with ease and grace. And when you've gone through the days, and it's a week from today, there you are, living your life joyfully, light, and free. Give me a yes response so that I know please. That's right, you did it, with ease and grace. Imagine going through the days, the weeks, and it's a month from today, and there you are. Living your life joyfully, light, and free. Looking shining, happy. Hearing sounds of the night, and the neighbors. Feeling light, joyful, feeling good in your body. Feeling expanded and limitless. Feeling free. Living a healthy lifestyle effortlessly. You tune into your body's wisdom. And choosing behaviors, thoughts, and actions that honor that wisdom, with ease and grace. When you've gone through the days, the weeks, it's a future day; and there you are. Living life joyfully, light and free. Give me a yes response to that.

That's right. Congratulations, you did it. Living your life joyfully, light, and free. Living a healthy lifestyle effortlessly. Tuning into your body's wisdom and choosing behaviors, thoughts, and actions that honor that wisdom, with ease and grace. And journeying deep, deep within you

- is there any part of you that objects to living your life joyfully, light, and free? Living a healthy lifestyle effortlessly?

That's right. Notice 100% commitment. It's safe, right, and good for you to live your life joyfully, light, and free. Living a healthy lifestyle effortlessly. Easily making healthy choices for your body, mind, and spirit. Listening to your body's signals and making wise choices for your body. Tuning into your body's wisdom. And choosing behaviors, thoughts, and actions that honor that wisdom with ease and grace. Having fun discovering that you love making healthy choices for your body. Discovering the fun of making healthy choices and listening to your body. Loving making healthy choices. And it becomes easy and effortless to tune into your body's wisdom and listen to your body's needs.

Relaxing deeper and deeper into relaxation. Every cell, system, and organ of your body is remembering. It's safe to live your life joyfully, light, and free. Living a healthy lifestyle, effortlessly. That's right. Living a healthy lifestyle effortlessly. Feeling joyful, light, and free. (pause) You did it. Congratulations. You are safe. It's safe to live your life joyfully, light, and free. Living a healthy lifestyle effortlessly. Easily making the healthy choices for your body, mind, and spirit. All for the highest good. You honor and love yourself. Thank you.

My voice will now pause, and as I pause, the seconds will become hours. The hours will become days, and the days will become weeks. It is from here that whatever change you may be working on, or whatever you want to accomplish today, will happen. When my voice returns, it will not startle you at all. In fact, it will place you into a deeper and more relaxed place in consciousness. And this is so.

(long pause)

As you once again become aware of my voice, you realize you will bring the safe place back with you. Back from the omniverse. Into the universe. Into the solar system. Into this world. Into this country. Into this state. Into the city. Into this individual building. Into this body. And began to breathe energy into your body. Feeling joyful, light, and free. Feeling calm and peaceful.

Love before you. Love behind you. Love to your left. Love to your right. Love above you love. Below you love unto you. Love in all your surroundings, love to all. Love to the universe. Peace before you. Peace behind you. Peace at your left. Peace at your right. Peace above you. Piece below you. Peace unto you. Peace in your surroundings. Peace to all. Peace to the universe. Light before you. Light behind you. Light at your left. Light it. You're right. Light

above you. Light below you. Light unto you. Light in your surroundings. Light to the universe. You are loved and supported. You are valuable, worthy, and deserving. Thank you for being you. Connected to source. To your sweet guides and angels, your loving spiritual team. Thank you.

All of these ideas are penetrating into your deep inner mind, having a powerful effect on you, helping you greatly. In a moment, I'm going to count from one to five to awaken you. Before I do that, I want you to know that whenever you would like to enter this wonderful deep state of relaxation, you can do it very simply, very easily. Whenever you wish to enter this wonderful deep state of relaxation, all you have to do is take a deep breath, and count, one...two... three... and touch together your thumb and forefinger, and you'll automatically go in to a deep, relaxed state, just as you are now. Go ahead and take a deep breath in and count one...two...three... and touch together your thumb and forefinger.

That's right, and you automatically go into a deep state of relaxation, a deep sense of peace and well-being. And relaxing your thumb and forefinger. Feeling a deep sense of peace and well-being. Relaxed. If you listen to this process before bedtime, you can ignore all the awakening suggestions. You can just feel free to float off to sleep, you can rest assured that you're relaxing very deeply and that you're having positive results. Listen to this process on a regular basis and every time you listen, you'll be able to go more and more deeply. If this is the time of sleep, you sleep a deep sleep, a rejuvenating sleep, dreaming the incredible dreams of your bright and compelling future. Living your life joyfully, light, and free. And awakening at your predetermined time, feeling refreshed, excited, and looking forward to the day.

Now I'm going to count from the number one to five, and when I reach the number five, you're going to feel wonderful, refreshed, and relaxed; just as if you've had a full night's sleep, feeling full of life and energy, with a sense of vitality and peacefulness and joy. So this is a time for you to be awake and alert, stirring to come back now. One... full of life.... Two.... Full of energy... Three... and a wonderful sense of well-being... Four... feeling happy and free... And five, feeling joyful. Opening your eyes, feels wonderful, doesn't it?

Script 2

Hypnotist: Hello, {Participant's name}. This is {Hypnotist's name}. As we begin, let's take a deep breath. (pause)

There, good job. And as you exhale, just let go. Very good. That's right. Making yourself comfortable. Feel free to shift your position at any time, allowing you to relax deeper and deeper. I invite you to begin to relax your toes, start relaxing the muscles and tendons of both big toes. Then the next toe. Then all the muscles and tendons of the third toe. Move to the fourth, and then the little toe. Focus on the foot and relax all the muscles and tendons of the top of the foot. Then those on the sole. Now concentrate on the ankles and relax all the muscles, tendons, and ligaments of the calves and feet. Move up to the calves and totally relax the muscles. And those of the shin. Now focus on the knees and relax everything there. The muscles, ligaments, and tendons. Everything inside the knees. And then move your attention to the thighs and let them relax completely. Relaxing. Then relax the groin. Relax the muscles in the lower abdomen. Go inside and relax all intestinal and inner muscles. Let them all go. Let go and relax.

Focus on the back and relax all the muscles and tendons. From the buttocks to the shoulder blades. Letting go of any tension and relax. That's right, let go and relax. Now return to the front and relax the remaining abdominal wall muscles, the chest and all of the trunk muscles. Then focus again on the digestive system. Relaxing. Let go and relax any tension. Returning to the back and moving to the shoulder blades. Let go of any tension and relax. Relaxing everything. All of the muscles, the tendons and ligaments. Relaxing everything. And on the front of your body, relaxing everything about the collarbones. Especially the muscles connecting the shoulders to the neck. That's right. Letting go and relaxing, letting go of any tension or stress. Let go and relax deeper down, deeper down.

Focus on the shoulder joints and relax them completely. Relaxing muscles, tendons, ligaments. Let go and relax. Then move down to the arms and relax, likewise there. Letting go and relaxing. Totally relax the muscles, tendons, and ligaments which joined at the elbow. Move down the forearms and focus on relaxing everything there. Now relax the wrists too, and their ligaments. Go to the top of your hands and relax all tendons. Then the muscles and tendons of the palms. And focus on relaxing all the tendons in your thumbs. And return to the neck. And in the neck, relax all the muscles and tendons in the throat. Then the muscles in the back. Move to the muscles of your scalp. Relax those also. Relax your forehead, ears, your cheek muscles relax. The nose. Your mouth, your jaw relaxes. Letting go of any tension, or stress. Letting go. Relax. Deeper down, deeper down. Relaxing the chin.

Now your body is completely relaxed. Your heartbeat is

slow. Each breath is deep, slow, and relaxed and the blood circulates freely. You're feeling totally at ease, and your body is safe, and relaxed. And you may relax deeper down, deeper down. With each breath that you take, you automatically relax. Deeper and deeper.

Now you are walking barefoot in a Meadow, surrounded by flowers. You can smell the grass. And under your feet, you can feel the strands with each step; along with the soft earth, which is warm and a little damp. You see many beautiful flowers and many shades of colors; arranged in islands of colors. Islands of red, blue, orange, purple, yellow, indigo, and white flowers. You feel a gentle breeze which carries the scents of all those flowers, one color at a time. Together with their fragrances, you could also taste their nectar, like liquid honey. A different taste for each flower.

You hear birds chirping. And insects buzzing. You see wispy clouds in a clear sky. You feel the sun's warmth on your skin. You're totally at ease, and peace. Calm and relaxed. You walk towards a cave-like opening in which you see a balustrade. You approach it and see a very long descending spiral staircase going deep down into yourself. At the end of the wedge, there's a small, very bright white light.

You want to reach it because it's inside yourself. Beside the balustrade, you see an elevator. You walk towards it and press the call button. The doors open and you go inside, pressing the down button. The elevator moves quickly with a white hiss. There's a mirror in front of you and you see a reflection of yourself. As more relaxed, and light, due to the acceleration. You're bathed in a gentle blue light. And in the background, you hear relaxing music playing at low volume. You feel the cushiness of the carpet beneath your shoes. And you lean on a smooth glass wall. Relaxing deeper and deeper.

The floor counter appears again and begins to count down. (counting very slowly) Ten... nine.... eight.... seven... six... five... four... three... two... one... zero (pause) The elevator stops. And the doors open. You exit and find yourself in a clean room made of rough stone, with a black polished floor. The temperature and humidity are pleasant. And it is suffused in a green light, which casts no shadow. It's a beautiful green light. A nice background music is playing. And there's a heavy fragrance of flowers in the air. There's a black leather armchair here in the middle of the large room. You approach this armchair and sit on it, feeling as if you were sitting on a cloud.

Suddenly you feel weightless. It's amazing; you feel really good. The only thing you are aware of is a smell, and a feel of leather on the skin of your arms. After a while

those too disappear, and you find yourself lying. You gently detach yourself from your body. You feel at ease. And rise towards the ceiling. You'll lean against it, push it slightly, and move through. As if you were projected, as if you were a projected image that isn't real, until you could emerge into the sky. Continue to climb until you find a peaceful place where nobody can bother you. You're aware of being outside your body and you concentrate on it only to attain control of your voice. When you have done this, say yes.

[Participant responds]

Hypnotist: OK. Thank you. So going back to the ceiling. You're safe, you're safe to go through the ceiling. And then lean against it. Watch it move with ease and grace. Watch as you easily move through it. (pause) Relax. It's safe to move through it. (pause) And let me know when you've gone through the ceiling, with ease and grace.

[Participant responds]

Hypnotist: Thank you for sharing that. And for the part that is there, what is that part noticing?

[Participant responds]

Hypnotist: And for the part that's not there, what is it noticing?

Participant: That I'm split, that part of me is in the box here. Part of me is in the leather armchair. And so, the direction to go through the ceiling confused me. I wanted to go through the ceiling of the box. But then, I was in the armchair, and in the cave, but I didn't know what that ceiling looked like.

Hypnotist: Wonderful. So, what does the part that's not there, that's split, because it's part in the box - What does it need to know so that it's OK to join the rest of you and go through the ceiling? Or does that part want to remain there with the body, in the box, where it's safe? And the other part of you journeys on?

Participant: I think I need more information about what's above me here so visualizing going through this ceiling seems easier than going through the leather chair ceiling, if that makes any sense.

Hypnotist: So going through the ceiling here is easier.

Participant: Right.

Hypnotist: So, is it OK for that part of you to join the other part going through the ceiling here?

[Participant responds]

Hypnotist: I'm going to count from five down to one. And then you'll be through the ceiling. Is that OK with you?

[Participant responds]

Hypnotist: Five... four... three... two... one... (pause) Emerging into the sky. Continue to climb until you find a peaceful place where nobody can bother you. (pause) In a

peaceful place. (pause) You're aware of being outside your body, and you concentrate on it, only to attain control of your voice. When you've done this, say yes.

[Participant responds]

Hypnotist: Wonderful. Thank you. How does it feel to be in the sky?

[Participant responds]

Hypnotist: Flying, there is no danger of falling. Even if you're floating in the sky, you're weightless and can move freely. Simply by willing it. Try to move up. (small pause) Down. (small pause) To the right. (small pause) To the left. (small pause) Forward. (small pause) And backward. (small pause) And then do a somersault. (small pause) Now that you know how, have some fun moving around. (pause) And as you do this, tell me how it feels.

[Participant responds]

(pause)

Hypnotist: Now fly and locate a road with the house, and parked cars, and a quiet place nearby. Where you can sit and rest. (pause) Wonderful. Thank you. Now go to the road and move through the parked cars. What do you feel?

[Participant responds]

Hypnotist: Locate the wall of a house nearby. Go towards it. Lean gently on it. And go inside. Through the wall. Then come out again. (pause) What did you feel?

[Participant responds]

Hypnotist: Thank you. Now go to the train station. Traveling along the road at a comfortable altitude and speed. Start slowly, then gradually get faster. Following the road. While you travel, practice acquiring full control of movement. When you arrive at your destination, say yes. (pause)

[Participant responds]

Hypnotist: Thank you. What is the name of the station?

[Participant responds]

Hypnotist: Find a calendar and read the date.

[Participant responds]

Hypnotist: And the year?

[Participant responds]

Hypnotist: Find a clock. What time is it?

[Participant responds]

Hypnotist: Find a train about to leave. Go in front of it. Then enter it. Either standing on the tracks or floating above them. When I say the train departs the station, get it to move alongside you. Look inside as it moves past and note that you are feeling nothing. (pause) Tell me what you felt.

[Participant responds]

(pause)

Hypnotist: Is it day or night?

[Participant responds]

Hypnotist: Look carefully at the train. What do you notice?

[Participant responds]

(pause)

Hypnotist: Do you need to move to see it at a different angle?

[Participant responds]

Hypnotist: Go to another angle.

[Participant responds]

Hypnotist: And is this the only reality you can see? Or are there others?

[Participant responds]

(pause)

Hypnotist: Now we turn to the reference location, traveling in a straight line. The reference point is the road with the houses and the parked cars. A quiet place. Returning to the reference location, travelling in a straight line, as fast as possible above the buildings. When you arrive, say yes.

[Participant responds]

Hypnotist: Wonderful. Thank you. Sit down and relax. Now look at yourself from the outside. What do you look like?

[Participant responds]

Hypnotist: Thank you. (pause) So there's your physical body, and this other ghostly one, which we'll call the subtle body. Looking at your subtle body from the outside, what do you look like?

[Participant responds]

Hypnotist: Can you see your hands and feet?

[Participant responds]

Hypnotist: So, you're aware of the existence of a third entity of yourself, which we will call the psychic body. So, there are three of you: Physical body. Subtle body. And psychic body. Now enter your subtle body. And look around you. (pause) Now combine the subtle body with the psychic body. And look around at what you see. (pause) Note the differences. (pause) And what are you noticing about the differences? (pause)

[Participant responds]

(pause)

Hypnotist: And what do you notice about the psychic body?

[Participant responds]

Hypnotist: Oh, that's OK, that's fine. Thank you. And the subtle body is a shimmering, elongated, body. And how does the hat one feel?

[Participant responds]

Hypnotist: Thank you. (pause) Now with the reference point. The house, with the cars, feeling peaceful, depart from the reference point. And rise vertically, while accelerating. At first, the sky above the clouds is blue. Then as you get higher, it darkens. And eventually becomes black. Moving about with ease, you can feel the sun's heat, and the coldest space. But none of it bothers you. You can see the Earth's curvature becomes more noticeable. Until you see the entire sphere, becoming smaller as you keep moving away. When you are halfway between the earth and the moon, stop, and look at both of them. (pause) Describe how they appear to you in their entirety.

[Participant responds]

Hypnotist: Go ahead and fly. Move closer to the moon.

[Participant responds]

(pause)

Hypnotist: Move to a star. And what do you notice about the star?

[Participant responds]

(pause)

Hypnotist: And does the star have a message for you?

[Participant responds]

(pause)

Hypnotist: Fly around the star. (pause) And what are you noticing?

[Participant responds]

(pause)

Hypnotist: Fly to the twin.

(pause)

[Participant responds]

Hypnotist: And does the twin star, have a message for you?

(pause)

[Participant responds]

(pause)

Hypnotist: Are you complete with the twin star?

Hypnotist: Then flying to the first star, the welcome-love star. (pause) Flying (pause) flying back (pause) flying back to the black armchair. (pause) Then rise from the black armchair and go to the elevator and press the call button. The door is open. You enter and press the Up button. The doors close. And it starts to move with a light hiss. You're perfectly at ease and in joy. The background music... and the blue light... as you look at your reflection in the mirror. The elevator travels very quickly. And then begins too rapidly slow down. The floor counter is again visible and begins to count down. (counting slowly) Ten... nine.... eight....

seven... six... five... four... three... two... one... zero. The elevator stops. The doors open. You exit. And we're back here again. (pause) And take a moment.

Hypnotist: And then just go ahead and take a deep breath in. Wonderful. And I'm going to have you open your eyes and look around the room and kind of shake your body. OK. And then close your eyes again. And then we're just going to have you tense up all your muscles. Just hold for the count of three: one...two...three... and then let it go - ahhhh - with a sigh. And we're going to do that a couple more times, so go ahead and tighten up your whole body and then let go. Let's take a deep breath. Wonderful. And one more time just tighten up and hold it, hold it, hold it... and then ahhhhh let it go. Wonderful. Beautiful.

Go ahead and just shake your body and just get more comfortable in the chair. Beautiful. Thank you. You're doing perfectly. Thank you for taking a deep breath in and letting go and relaxing your body. Just going deeper. Just allowing yourself to be in this present moment. Whatever you're feeling, just allow it to be. If thoughts come, let them pass you by like the breeze, like the clouds. And a beautiful peaceful wave of relaxation flows over the top of your head to the tips of your toes, relaxing all over... all over. And it's right and good to relax, and allow this beautiful healing wave, this peaceful wave of relaxation to flow freely through you to every cell, system, and organ of your body. This beautiful wave of relaxation flows freely to every cell, system, and organ of your body. You hear a sound, a feeling of love; of peace. You may see a light, a healing light flowing freely through your body, relaxing deeper and deeper into relaxation, into healing and into peacefulness, a deep sense of well-being.

What does your body say in the chair? I invite you to imagine a chord. From this cord, you float up, through the cord, through the ceiling. You're at the top of the ceiling, looking down at your body. Just noticing your body in the chair, safe, relaxing. Your body and the chair are safe. And the beautiful wave of healing relaxation flows through your body and heals and rejuvenates. While another part of you is above, looking down from the ceiling at your body.

(pause)

When your body is safe in your chair, relaxing deeper and deeper in relaxation, into a deep sense of well-being, say yes so that I know please.

(pause)

Floating gently above your body. Yes, beautiful. Great. And your body is safe in the chair, healing, rejuvenating, as a part of you continues to float. Float higher and higher, through the ceiling. And when you're above the ceiling,

above the building, give me a yes response and let me know please. That's right. Floating, and now you can fly. Looking down, seeing the land, the buildings. It's safe to fly, flying to your house. (pause) And then flying higher in the sky. Flying to a cloud. Floating along with the cloud; flying. Flying higher, and higher. Flying, halfway between the earth and the moon. (pause)

And let me know by saying yes, when you're halfway between the earth. And the moon.

(pause)

That's right. Halfway between the moon and the earth. And look around. What do you notice? (pause) Exploring.

Session continues with hypnotist engaging participant to do the following.

Initial Visualization: Invite the subject to notice celestial bodies, starting with the shadows on the moon and the spin of the Earth. Encourage them to sense the light of the sun, even if it's not visible directly.

Exploration of the Stars and Planets: Ask them to notice the stars and imagine flying from one star to another, playing and exploring. Encourage the subject to jump between planets and notice their unique energies.

Guided Journey to a Planet: Prompt them to fly to a specific planet, ensuring they feel comfortable when they arrive. Invite them to observe any features of this planet, such as brightness and sounds (e.g., hearing water).

Returning to Earth: Guide the subject to fly back to Earth and re-enter their body gently, emphasizing relaxation. Encourage a peaceful wave of relaxation as they awake, focusing on self-love, self-acceptance, and gratitude. Guide the subject through conscious breathing, fostering feelings of peace and love.

Reflection and Learning: Encourage acknowledging the dual presence of consciousness in different places. Reinforce acceptance of how their experiences manifest in their consciousness.

Further Consciousness Exploration: Allow the subject to request more of their consciousness to be present in various experiences. Encourage a deeper relaxation of the body to facilitate greater exploration.

Enjoyment and Discovery: Promote the enjoyment of cosmic exploration, encouraging curiosity and learning from the experience.

Script 3

Hypnotist: Hello, {Participant's name}. This is {Hypnotist's name}. Go ahead and make yourself comfortable and

take a deep breath in and hold it for the mental count of three or four. And then slowly breathe out, taking twice as long to exhale as you did to inhale. As you slowly breathe in you may imagine that you're inhaling pure relaxation. And as you release the breath imagine that you're also releasing any stress, any tension and discomfort from any place in your body. Just think about, pretend, imagine, or even visualize relaxing your entire body from head to toe. It is amazing, how often all we have to do is think about relaxing and the body automatically starts to relax, as yours is probably doing right now. Perhaps you're noticing the muscles in one or two places relaxing, letting go already smoothing out, relaxing. Maybe your scalp and facial muscles, or perhaps your neck and shoulders. Your left arm, or your right knee. Or to on your left foot, or a toe on both feet at the same time. Or some other part of your body. (pause) You may now notice how much more comfortable your body is already beginning to feel. You may notice at one or two, or maybe even three or more places in your body seem to be even more relaxed than the rest.

Direct your attention and become aware of that feeling of comfort in one of those places now. You may be aware of a sense of relaxation or a comfortable, or even tired feeling, there in that place. Whatever it is for you, just allow that to magnify and increase for your benefit and comfort. This is something that only you can do. Nobody can do it for you. So take your time and allow that pleasant sense to grow even deeper. Just allow that sense of relaxation now in that place in your body to move outward, to expand in imaginary waves or ripples. Like tossing a Pebble into a calm pond. (pause) And begin to spread throughout your body and mind. As this wave of relaxation moves outward, every place in your body and mind that it touches can just let go and relax. That's right. Just let go and relax. Deeper and deeper, relaxed. More responsive, more receptive.

As you continue to relax in the drift and float deeper and deeper, you could perhaps notice the way the chair supports you. Beneath your legs, beneath your arms, beneath your shoulders. And you could notice a sense of comfort as you continue to relax your whole body for your benefit. You might notice the sensations in your feet as you relax them completely. And I'm wondering if that comfortable feeling in your feet will spread up to the rest of your body now, like another wonderful wave of relaxation. Coming up from your feet, up through both ankles, shins, and calves, through the knees, into the thighs, and on up into the hips. Soothing and relaxing, all the muscles in your legs. Comfortably and peacefully limp. Totally and completely

relaxed. In fact, finding your legs becoming so heavy. So very, very heavy now, that as I count five to one, they'll become so heavy that when I get to one, you may find with amusement that they are so heavy that even if you were to try to lift them, you would be unable to. Five, becoming heavier and heavier now. Four, it's as if the surface they're resting upon were molded directly to your legs. Three, it's as if they are glued to the surface they are resting upon. Two, the heavier they become, the greater your results. The more motivated and determined you become to produce results. And one, so very, very heavy now. That even if you were to try, you simply find with amusement that you cannot.

Doubling your relaxation now. That's right, {Participant's name}. You always have a choice. And you may choose to relax deeper now. Deeper and deeper into relaxation. (pause) Allowing the beautiful wave of relaxation to continue flowing, up into the torso and arms, up into the shoulders, neck, face, and scalp now. Very good. Now just slow down a little bit. And mentally examine, slowly scan your entire body. If you find any area or place it is not completely relaxed, just allow that part to catch up and become as relaxed as a rest. (pause) Now allow yourself to slow down just a little bit more. Then a little bit more. (pause) I'm going to count from ten down to one. With each descending number, you may just allow yourself to slow down, become even more still. Becoming more relaxed. More receptive to the helpful and beneficial suggestions. With every number, relaxing deeper down. A deep sense of peace and well-being. (pause) And at the count of 1 you can easily enter into your own natural level of relaxation. Ten... nine.... eight.... seven... six... five... four... three... two... one...

You are now at your own natural level of relaxation that is best for you right here, right now. From this level, you may move to any other level with complete awareness and function at will. You are in complete control at each and every level of your body and mind at this and every level of awareness. You may take another deep breath now. And you will notice that a drifting might occur. A gentle drifting and floating down. Deeper down. Into calm and quiet. Soothing, hypnotic relaxation. You may feel a lightness or a sensation, as though you're melting into the surface you're resting upon. Or even a tingling sensation. Or no sensation. Whatever you experience is perfect for you. It may be as though your body is asleep. Yet your mind remains alert. There is less and less importance attached to my voice, and more and more significance to your own inner reality,

your own inner experience now. (pause) Relaxing deeper and deeper. You are safe and secure. That's right. Relaxing deeper down, deeper down, the beautiful wave of relaxation continues to flow freely through your body, mind, and spirit. Letting go and relaxing deeper down, deeper down. Good. Very good. Thank you.

Now send a grounding cord, a beautiful golden cord, down to the floor. Through the floor, down to the ground, continuing down to the center of the Earth's crystal. Wrapping your cord around the beautiful Earth's crystal. You are grounded to Mother Earth. Breathing in deeply. And exhaling slowly. Relaxing. Grounded to Mother Earth. You are safe. Grounded to Mother Earth. Breathing fully and gently. Relaxed and comfortable. Confident. Grounded to Mother Earth. (pause) And when you are feeling safe, comfortable, secure, relaxed, peaceful, grounded to Mother Earth, give me a yes response so that I know please. That's right. You're doing perfectly. Thank you. And you may relax deeper down, and deeper down. Knowing that you are connected to Mother Earth. All is well. You are safe. (pause)

Now that you are grounded, imagine another chord, a beautiful white chord, going up. Up and out the top of your head. To your home star. Connecting to Divine Mother. Father God. Source of all that is. Connecting to your sweet guides and angels. And your loving spiritual team. (pause) And when you are connected, safe, and protected by Divine Mother, Father, God, Source of all that is, sweet guides and angels and your loving spiritual team, give me a 'yes' so that I know. That's right. You are connected. You are safe and protected. And it's safe for you to journey now. Connected to Divine Mother, Father God, Source of all that is, sweet guides and angels, and with your loving spiritual team.

As you journey, your body is grounded to this Earth, to Mother Earth. And you are safe and protected as you journey now. Imagine a part of you is floating above your head. Floating to the white cord. (pause) You are now connected to the white cord. Floating towards a ceiling, you look down and noticed your body. Your body relaxing there. Safe and secure. (pause) And when you notice your body relaxing there, safe and secure, and you are ready to continue on your journey, give me a 'yes response' so that I know. That's right. Your body is safe and secure. And it's safe and secure for you to continue on your journey. Going through the ceiling now. Floating outside. Safe and secure. Feel yourself floating amongst the buildings. Slowly drifting upwards now. Knowing that as you continue drifting upwards, your body is safe and relaxed in the chair. (pause) And as you're floating above the trees, give me a 'yes' response so that I

know. That's right. You're doing perfectly. Thank you.

Now continue. Drifting upwards. Above the buildings. Slowly moving upwards. Safe and secure. Warm and comfortable. Drifting upwards past the rooftops. And now you begin to see the whole area. Streets, houses and roads. And drift higher, and higher. Drifting among the clouds. Soft fleecy clouds. Rolling around you like warm soft air. Wafting upwards. And then you are past the clouds. Looking down on them. And they're getting further and further away as you go upwards. Rising on and on. You become aware of a gentle sound. Like Angel's breath. And you look up at the stars high above, pure and clear. (pause)

And you find yourself drifting. Floating among the stars. All around you, you can feel the vastness of space. The Majesty of the heavens. (pause) The constellations like diamonds, scattered across a field of dreams. (pause) And you're taken on a tour of the heavens. To visit each of the astrological signs of the planets. Visiting each astrological planet, to learn what each keeper has. What has been learned in depths of time. What gives a wisdom and insight the astral traveler can find? And you'll learn that you, now, because you are in this state, you are to be given an opportunity. To choose what gifts of wisdom and insight you want to take. What you want to take back with you? And you could gather up all these, like stars in a bag, and take whatever you need for your highest good. So getting ready to visit each house in the star signs. And you find yourself moving, spinning. Covering great distance in an instant, as you begin to sense the crystal spheres of eternity, and journey through the entire solar system. (pause)

And you come to a space ruled by the planet Mars. And you find yourself in the House of Aries, the Ram. (pause) You have been shown your life, as it has been. And you are shown your life as it can be. (pause) And you see yourself ambitious, independent. And there, you are offered the strength of the Ram. To be assertive, independent, energetic. You learn the wisdom of the Ram. The wisdom of planet Mars. (pause) And you gathered the wisdom that you want to take with you. Giving gratitude to the planet, to the Ram, to the wisdom you have learned. The treasures that you have gathered from the Ram.

And now you are drifting out to the planet Venus. A place of love and beauty. And there is the House of Taurus the bull. And you hear beautiful music. And the music carries you away. And in that music, you are offered all the gifts of Venus. (pause) You can be generous, sensuous, affectionate, and enjoy stable relationships from now on. (pause) Playing on the planet Venus. Learning the wisdom of planet

Venus. And the House of Taurus the bull. (pause) Exploring planet Venus. Exploring the love and beauty. The wisdom. The feminine power. (pause) Gathering the love and beauty and wisdom of planet Venus to bring with you. Give me a 'yes' response when you are ready to fly to the next planet. That's right.

Drifting now towards the sun, you come to the planet Mercury. A place of logic and reason. And the House of Gemini, the twins. And there, the twins give you your gifts, give you their gifts. (pause) From now on, you can choose to be sociable, funny, flexible. You could learn to learn. To learn to teach. To enjoy your intellect. Be proud of your mind. Playing with the twins. Receiving their gifts, their wisdom. (pause) And gathering the House of Gemini, the twins' gifts. Give me a 'yes' response when you are ready to fly to the next planet. That's right.

Now you are seeing the moon. And in that cold light, you see the crab in the sky. And the crab uses its claws to pull apart those defenses that have been holding you back. That keep you from the truth. And as those barriers fall, you become open to all the powers of being psychic and sensitive. The crab offers you the gifts of imagination, intuition, and caring. (pause) You're safe and secure as you expand the powers of psychic imagination, intuition, and caring. Comfortable and calm. Peaceful with your powers and gifts. (pause) Gathering the wisdom the crab offers you now. (pause) And when you are ready to move on to the next planet, give me a 'yes' response so that I know. That's right.

Flying, you move on, into the brilliant light of the sun. And there is a fiery lion. The sign of Leo is outlined in the fire. You're in the House of Leo. You can collect the ability to be self-assured, energetic, and the ambition to succeed. (pause) Gathering the wisdom of the sun. (pause) Basking in the warmth of the sun. The wisdom. (pause) And when you have gathered the gifts of Leo, and the gifts of the sun, give me a 'yes' response so that I know. That's right.

Continuing your journey, flying to the planet Mercury in the sign of Virgo. In Virgo you may feel your mind being explored. Your values sorted. And you are left with the gift of analysis. Of seeing patterns and mysteries. (pause) Receiving the gifts of Virgo. And the planet Mercury. (pause) When you are comfortable, with the gifts and the wisdom, with the planet Mercury and the Virgo, give me a 'yes' response so that I know. Beautiful. Thank you.

Flying, among the stars and the planets. Perhaps you see yourself somersaulting; or feel yourself doing a somersault. Playing in the night sky. (pause) Flying to the planet

Venus. The place of marriage and love. And there you were offered the gift of balance from Libra the scales. Learning how to be sociable and diplomatic. (pause) Play on the Planet of Venus. Play with love, beauty, with the feminine. (pause) Hearing the wisdom of Libra. And give me your 'yes' response when you're ready to continue your journey going to the next planet. That's right.

Now off to Pluto. (pause) Far out in the cold reaches of space. A place of death and rebirth. Where the sign of Scorpio rules. And in that place, you could be reborn, and learn the mysteries of life, and beyond life. (pause) Continuing to learn the mysteries of life. And beyond life. It's a continual journey that you will bring back with you. Your enthusiasm, and joy, and learning. (pause) And when you're ready for the next planet, give me a 'yes' response so that I know. That's right.

Moving on, to Jupiter, the planet of adventure and travel. A chance to get all the optimism and enthusiasm that Sagittarius has. (pause) Receiving all the gifts of Jupiter and the wisdom of Sagittarius. The information is downloaded instantly to you. (pause) When you are calm and comfortable with the gifts and the wisdom, the optimism, and the enthusiasm, give me a 'yes' response so that I know please. That's right.

And continuing on your journey to Saturn with its rings. It appears before you. And in those rings, you find the constellation of Capricorn. (pause) You learn to be organized and patient. And have the endurance to make your life better. To plan and prosper and rise above the ranks. (pause) Enjoying life. Receiving the gifts and the wisdom of Saturn. And the constellation of Capricorn. (pause) When you have received the gifts and the wisdom of Saturn and the constellation Capricorn, give me a 'yes' response so that I know please. That's right.

And continuing on, flying in the beautiful universe. Out past Saturn is lonely Uranus, the planet of freedom and change. And there you touch Aquarius, the water carrier. And drinking that water gives you the gift of languages, and curiosity, and a love of change. (pause) You may play in the water. (pause) Freeing you. Relaxing you. More confident in yourself. In your journey. (pause) When you gathered the gifts and the wisdom of Uranus and Aquarius, give me a 'yes' response so that I know please. That's right.

Gathering your gifts, and now flying on to icy Neptune, God of the Eternal Sea, and the realm of Pisces the fish. Here you learn sensitivity to others, and the power of imagination, and this leads you to great things for you. (pause) Receiving these gifts for you. Exploring Neptune.

(pause) Receiving the gifts and the wisdom of Neptune and Pisces the fish. (pause) And when you are ready to continue on in your journey, give me a 'yes' response so that I know please. That's right. Receiving the gifts and the wisdom. And continuing your journey.

You may feel everything slowing down. (pause) There's a bag, a container of some sort. And even though it's filled with age-old wisdom and the power of a million suns, and rare and wonderful talents, so rare that you can only marvel at... it weighs next to nothing. And you find yourself touching it. Wrapping around you this beautiful container, this bag with age-old wisdom, and the power of a million suns. And rare, wonderful talents. (pause) And you bring back the ancient powers within you. And all the wisdom and gifts on your journey. Playing in the night sky. Flying back to the stars. (pause) Flying down to the clouds. Flying down, to the Earth.

[Exploration of Agreed Upon Physical Location on Earth]

Hypnotist: Wonderful. Thank you. And then flying above {{the wet lab}}. Clearing any energy that does not belong to you. Returning it back to Source. (pause) Calling back all of your energy. Cleansed and purified. And give me a 'yes' response. Perfect. Thank you. And then coming back into the wet lab, into the box. Floating above the ceiling. Noticing your body relaxed in the chair. Safe and secure. And when you're floating above the ceiling, looking at your body, give me a 'yes' response so that I know please. Wonderful. Thank you.

Now, coming back down into your body. Feeling safe and secure. Safe and secure. And I'm going to give you a moment. Just to be One with your body, mind and spirit. One with your body, mind and spirit. Connected to Mother Earth. And connected to Divine Mother, Father, God, Source of all that is. Connected to your sweet guides, and the angels, and your loving spiritual team. (pause) Relax. Rejuvenate. Integrating all the wisdom and the gifts from your journey of today. (pause) Reclaiming all your power. All your divine love, and grace, and beauty, and power. Moving more joyfully through life, free. Comfortable in your body. (pause)

Love before you. Love behind you. Love to your left. Love at your right. Love above you, love below you. Love unto you. Loving your surroundings. Love to all. Loved to the universe. Peace before you. Peace behind you. Peace at your left. Piece at your right. Peace above you. Peace below you. Peace onto you. Peace in your surroundings. Peace to all. Piece to the universe. Light before you. Light behind you. Light at your left. Light at your right. Light above you.

Light below you. Light onto you. Light in your surroundings. Light to all. Light to the universe. You are loved, valuable and worthy. Thank you, for being you. For adding love, peace, light, and wisdom to this world, in this time, in this place. Comfortable in your body.

And I'm going to count from the number one to the number five. And when I reach the number five, you're going to feel wonderful, refreshed, and relaxed. Just as if you had a full night's sleep. Feeling full of life and energy, with a sense of vitality and peacefulness and joy. So coming on back now. One, full of life. Two, full of energy. Three, and a wonderful sense of well-being. Four, feeling happy and free. And five, coming back fully to the here and now, feeling joy. Opening your eyes, feeling wonderful. Feels wonderful, doesn't it?

Script 4

Hypnotist: Go ahead and get nice and comfortable now. And let yourself relax completely. Just take a deep breath in. And exhale slowly. And as you do, just let go and relax. You can let your mind relax. And let your body relax. And when you're ready, take another deep breath in. And exhale slowly once again. And let a peaceful wave of relaxing energy wash over your body and mind. Just like a waterfall of relaxation from your head, all the way down to your feet. Pay attention to your breathing, and as you do, you just allow yourself to relax even more deeply. Allowing a peaceful wave of relaxing energy wash up over your body and mind. Just like a waterfall of relaxation. Wshhhhhhh. From the top of your head all the way to the tips of your toes. Allow yourself to relax. Deeper and deeper. And you allow yourself to relax even more deeply.

And I'd like you pay attention, as you're breathing, I'm going to count from ten down to one. And you could just allow yourself to relax even more. (slowly) Ten... nine... eight... seven... six... five... four... three... two... one... Just let your mind relax and your body relax. And go even deeper now. Very, very relaxed. Good. Very good. Thank you.

You may let yourself go even more deeply now. I'm going to count from five to one. And as I do, you relax even more. Five, going much deeper now. Four, relaxing more and more. Three, very, very peaceful and deep. Very peaceful and deep. Two, very, very relaxed. One, nice and comfortable and deep. That's great. Now you can go even deeper. You may be able to double or triple the level of your relaxation. Let's go from level A. To level B. To level C. Level C is the deepest. From level A, down to level B. From level B, down to level C. Very, very relaxed.

Now send a grounding chord, a beautiful golden chord down to the floor. Through the floor. Down to the ground. Continuing down to the center of the Earth's crystal. Wrapping your cord around the beautiful Earth's crystal. (pause) To Mother Earth. Breathing in deeply; and exhaling slowly. You are grounded to Mother Earth. You're safe. And secure. Grounded to Mother Earth.

Now that you are grounded. Imagine another chord. A beautiful white cord. Going up, up, and out the top of your head. To your home star. (pause) You are securely tethered to your body. And your guides watch over this tethering and protect it. You are safe and secure. (pause) Connecting to Divine Mother. Father God. Source of all that is. Sweet guides and angels, and your loving spiritual team. You are connected to Divine Mother. Father God. Source of all that is. Sweet guides and angels, and your loving spiritual team. You are securely tethered to your body. And your guides watch over this tethering, and protect it. You are safe and secure. And you could return to your body anytime you choose. Relaxing deeper and deeper. You are safe and protected. As you journey now.

As you leave your body, it's just like falling asleep. You are safe and protected as you journey now. (pause) That's right. As you leave your body, it's just like falling asleep. Imagine a part of you is floating above your head. Floating to the white cord. We're now connected to the white chord. You are securely tethered to your body. And your guide watch over this tethering and protect it. You are safe and secure to journey. And you can return to your body anytime you choose.

Continue floating towards the ceiling. Safe and secure. Floating towards the ceiling. You look down and notice your body. Your body relaxing there, safe, and secure. You continue on your journey. Going through the ceiling. Floating outside. And feel yourself floating amongst the buildings. Slowly drifting upwards now. Above the trees. And you are slowly moving upwards. Safe and secure. Warm and comfortable. Drifting upwards. Past the rooftops. And now you can begin to see the whole area. Streets and houses, and rooms. It's fun to explore; to tour the earth wherever you want to go. My voice will pause, as you have fun exploring the Earth. Going wherever you want to go. (long pause – couple minutes)

[Exploration of physical locations]

Hypnotist: And are you ready to bring that peace back with you? Or do you want to explore a little bit longer?

[Participant responds]

Hypnotist: So floating on back now, floating back to 101

San Antonio Rd. Petaluma. Coming back into the building, into the box. Into your body with ease, and grace, and love. Smoothly. Breathing into your body. Fully connected to your body, to Mother Earth, and the divine. Clearing any energy that does not belong to you, or does not serve you, returning it back to Source. Calling back all your energy cleansed and purified. For your highest good. And the highest good of all. Feeling joyful, light and free. Feeling good in your body. Feeling connected to Source, and light in your body.

Feeling safe and secure. Peaceful. (pause)

Hypnotist: Now I'm going to count from the number one to the number five. And when I reach the number five, you're going to feel wonderful, refreshed and relaxed. Just as if you had a full night's sleep, feeling full of life and energy with a sense of vitality, peacefulness and joy. So coming on back now, one full of life. Two, full of energy. Three, stretching or wiggling your toes and fingers feeling a wonderful sense of well-being. Four feeling happy and free. And five, feeling joyful, and love, safe and secure. Feeling wonderful. Feels wonderful, doesn't it? That's right. You're doing perfectly. Thank you.

Script 5

Hypnotist: Hello, {Participant's name}. This is {Hypnotist's name}. Go ahead, make yourself comfortable. You may let yourself relax completely and get comfortable. This place is anchored and protected by our guides. When you're ready, take a deep breath in. And exhale slowly. And as you do, you can just let go and relax. Let your mind relax. And let your body relax. There's no place you need to be. This is your time. Take another deep breath in. And exhale once again. And let a peaceful wave, a relaxing energy wash over your body and mind. Just like a waterfall of relaxation from your head all the way down to your feet. Pay attention to your breathing, and as you do, just allow yourself to relax even more deeply. And as you pay attention to your breathing, I'm going to count. From 10 down to 1. And you just allow yourself to relax even more. Ten... nine.... eight.... seven... six... five... four... three... two... and one. Just let your mind relax and your body relax. And go even deeper now. Very, very relaxed. Just let yourself go even deeper now. That's right. Relax deeper now. I'm going to count from 5 to 1. And as I do, you relax even more. Five, going much deeper now. Four, relaxing more and more. Three, very, very peaceful and deep. Two, very relaxed. One, nice and comfortable and deep. Very peaceful and deep, very comfortable and relaxed. That's great. Thank you.

Now you can go even deeper. You may be able to double or triple the level of your relaxation. Let's go from level A, to level B, to level C. Level C is the deepest. From level A, down to level B. From level B, down to level C. Very, very relaxed. Safe and secure. (pause) A deep sense of inner peace and well-being.

Now send a grounding cord, beautiful golden cord, down through the floor. Through the floor down to the ground, continuing down the center of the Earth's crystal. Wrapping your cord around the beautiful Earth's crystal. You are grounded to Mother Earth. Breathing in deeply. And exhaling slowly. Relaxing, grounded to Mother Earth. You're safe. Grounded to Mother Earth.

Now that you are grounded, imagine another chord, a beautiful white chord going up, up and out the top of your head, to your home star. You are securely tethered to your body. And your guides watch over this tethering and protect it. You are safe and secure. And you could return to your body anytime you choose. Connecting to Divine Mother, Father God, Source of all that is. Sweet guides and angels and your loving spiritual team. You are connected to Divine Mother, Father, God, Source of all that he is. Sweet guides and angels and your loving spiritual team.

As you leave your body, it's just like falling asleep. You are safe and protected as you journey now. Imagine a part of you is floating above your head, floating to the white cord. You are now connected to the white cord floating towards the ceiling, hovering. You look down and notice your body. Your body relaxing there, safe and secure. This space is anchored and protected by your guides. Your body is safe and secure. And you may return at any time. And you notice your body relaxing deeper and deeper, safe and secure.

And continue on your journey. Going through the ceiling, floating outside. Safe and secure. Let me know when you're floating above the buildings. (pause) That's right, taking all the time you need to float above the buildings. You are securely tethered to your body. And your guides watch over this tethering and protect it. You are safe and secure, as you fully experience out of body travel with ease. (pause) Feel yourself floating amongst the buildings. Slowly drifting upwards now. Above the trees. Above the buildings. You are slowly moving upwards. Safe and secure. Warm and comfortable. Somehow supported as you drift upwards past the rooftops. And now you begin to see the whole area; streets, houses and roads.

And you float or fly higher still. And soon you are among the clouds. Soft white fleecy clouds. Rolling around you

like warm soft air. Taking you upwards, lifting you upwards. And then you pass the clouds, looking down on them. And they are getting further and further away. As you go ever upwards. Rising on and on. You become aware of a gentle sound, like angel's breath. And you look up at the stars high above, pure and clear. Flying amongst the stars now. You fly or float to your home star. And when you're in your home star, give me a 'yes' response so that I know please. That's right. Have fun on your home star. Explore. And my voice will pause as you have fun and explore your home star. (pause)

What do you notice about your home star? When you're ready, go ahead and verbally tell me what you're noticing.

[Participant responds]

Hypnotist: Do they have a message for you?

[Participant responds]

Hypnotist: And giving gratitude for their time and for what you've experienced. And then flying or floating off the star. Floating or flying amongst the stars. The planets. And exploring any other star or any other planet. And again, my voice will pause as you just explore and have fun. Only next time you hear my voice it will allow you to be fully in your experience. Safe, and comfortable, and calm. (pause) And what are you noticing on your out of body travels in the universe?

[Participant responds]

Hypnotist: Wonderful. (pause) And are you being shown what you need to see next? Or is there a message on the sister Earth?

[Participant responds]

Hypnotist: Wonderful. And is there another Galaxy that you wish to go to? Or if you're already there? (long pause) With love ease can flow. The universe. The galaxies. The omniverse.

[Participant responds]

Hypnotist: What are you noticing on the 5D planet?

[Participant responds]

Hypnotist: Did you want to hang out there for a while? Are you ready to journey to continue on your journey?

[Participant responds]

Hypnotist: Great. So take your time. And when you're complete, just let me know.

[Participant responds]

Hypnotist: And can you ask the beings, what does the earth need? Or if there's anything we can do to make the Earth's evolution more smooth, loving with ease and grace?

[Participant responds]

Hypnotist: Wonderful. Thank you.

[Participant responds]

Hypnotist: OK, so next time fast. And I thank them for that information as well. So thank you. And is it OK if you travel back to the Earth and back to the exploration?

[Participant responds]

Hypnotist: And let me know when you're there. Taking all the time you need. (pause)

[Participant responds]

Hypnotist: Are you ready to come back into the box?

[Participant responds]

Hypnotist: So coming in, however, before you enter your body, just hovering above the ceiling. Noticing your body relaxed. Safe and secure. And then you shift in whatever way you need to make this easy and smooth on your body, as you come back into your body now. Breathing fully and gently with love, ease and grace. Clearing any energy that does not belong to you or does not serve you. Returning it back to Source. For your highest good, and the highest good of all. Calling back and welcoming all your energy, cleansed and purified. For your highest good, and the highest good of all. You're safe. Cleansed and purified.

You are worthy and deserving. You're valuable. You belong. Thank you for the great service you do to the Earth. For the community. For your family. Your friends. You are a bright, shining star. Thank you for your courage, and exploring, and allowing the visions, allowing clarity and wisdom, to come to you. So that you move forward with love, ease and grace. Holding the vision of the Earth's evolution. A love expanding, healing, rejuvenating. More peace. A deeper sense of love. Rippling outward. Going to the Earth. To the people. The love and light Beings. And expanding outward from this Earth to the stars, to the moon, and to the sun. Throughout different realms, known or unknown to us.

Love knows no boundaries. And it becomes stronger; the flow, the expansion. It's safe to be a part of the expansion. It's safe to be in your power, to see clearly, to help, to guide, to hold the space. And also to get what you need what your body needs. Nurturing your body, mind and spirit. Honoring and respecting emotions and allowing them to flow. Allowing you to feel more love in your body, your mind and spirit, with ease and grace. You are loved and supported. Relaxing deeper and deeper into this body in this time. Knowing you have everything that you need. Allowing more abundance to flow to you. Whatever you need, ask and you shall receive. And you naturally give gratitude. Thank you for being you. For your love, your kindness, your intelligence and your creativity. Your joy, your enthusiasm, your clarity and discernment. Thank you. Thank you. Thank you.

And I'm going to count from the number one to the number five and when I reach the number five, you're going to feel wonderful, fresh and relaxed, just as if you had a full night's sleep. Feeling full of life and energy, with a sense of vitality, peacefulness and joy. So coming back now; one full of life. Two, full of energy. Three, wiggling your toes or fingers, feeling a wonderful sense of wellbeing. Four, feeling free and happy. And five, joy, coming back, opening your eyes when you're ready. Feels wonderful, doesn't it? That's right. Thank you.

Script 6

Hypnotist: Hello, {Participant's name}. This is {Hypnotist's name}. Go ahead and make yourself comfortable. This space is anchored and protected by our guides. The intention of this session is to travel to the highest realms of Source, channeling a divine love and light being. Feeling relaxed, calm. Trance channeling with ease and flow and fun. Knowing we are guided and protected every step of the way. Thank you, Divine Mother, Father God, Source of all that is, sweet guides and angels, and our loving spiritual team for guiding and protecting us on today's channeling journey with ease, flow and fun. You may let yourself relax completely. Just take a deep breath in and exhale. And as you do, just let go and relax. Let your mind relax and let your body relax. Take another deep breath in. And exhale slowly. And let a peaceful wave of energy washing over your body and mind, just like a waterfall of relaxation from your head all the way down to your feet. Pay attention to your breathing. And as you do, just allow yourself to relax even more deeply. And you pay attention to your breathing. I'm going to count from ten to one, and you can just feel and allow yourself to relax even more.

Ten... nine.... eight.... seven... six... five... four... three... two... one. Just let your mind relax, and your body relax, and go even deeper now. Very, very relaxed. Just let yourself go even deeper now. That's right. Relax more deeply now. I'm going to count from 5 to 1, and as I do, you'll relax even more. Five, going much deeper now. Four, relaxing more and more. Three, very, very peaceful indeed. Two, you're very relaxed. One, nice and comfortable and deep. That's great. Thank you.

Now you can go even deeper. You may be able to double or triple the level of your relaxation. Let's go from level A, to level B, to level C. Level C is the deepest. From level A, down to level B. From level B down to level C. Very relaxed. This space is anchored and protected by our guides. You

shift in whatever way you need to make this easy and smooth on your body. You may relax even deeper now, deeper and deeper. Relaxed. And now sending a grounding cord, a beautiful golden cord down to the floor. Through the floor down to the ground. Continuing down to the center of the Earth's crystal. Wrapping your cord around the beautiful Earth's crystal. You are grounded to Mother Earth. Breathing in deeply. And you're feeling grounded to Mother Earth. You are safe, grounded to Mother Earth.

Now that you are grounded, imagine another chord, a beautiful white chord going up, up and out the top of your head. To your home star. You are securely tethered to your body. And your guides watch over this tethering and protect it. That's right, you are securely tethered to your body. And your guides watch over this tethering and protect it. You are safe and secure. And you can return to your body any time you choose. Connecting to Divine Mother, Father God, Source of all that is. Sweet guides and angels and your loving spiritual team. You are connected to Divine Mother, Father God, Source of all that is, sweet guides and angels, and your loving spiritual team. You are safe and protected as you journey now.

As you leave your body, it's just like falling asleep. You are safe and protected. Imagine a part of you is floating above your head. Floating to the white cord. And you are now connected to the white cord. Floating towards the ceiling, hovering at the ceiling. You look down and notice your body. Your body relaxing there, safe and secure. That's right. Your body relaxing there, safe and secure. As a part of you is hovering at the ceiling. You are safe and secure. You continue on your journey, going through the ceiling, floating outside. Floating above the buildings. Safe and secure. You may feel yourself floating amongst the buildings, slowly drifting upwards now. Above the buildings, above the trees, and you are slowly moving upwards, safe and secure. Warm and comfortable. Somehow supported, as you drift upwards past the rooftops. And higher still, you are among the clouds. Soft white fleecy clouds. Rolling around you like warm, soft air wafting upwards. Then you're past the clouds. Looking down on them. They are getting further and further away as you go ever upwards, rising on and on.

And you become aware of the gentle sound. Like angel's breath. And you look up at the stars high above. Glittering, twinkling, pure and clear. Divine Mother, Father God, Source of all that is, sweet guides and angels, and loving spiritual team are guiding and protecting you on today's journey. And you find yourself drifting, floating, flying, or instantaneously

among the stars. All around you, you can feel or sense the vastness of space. The majesty of the heavens. Floating flying or instantaneously arriving at Source. Pure divine love. Instantaneously where you need to be. For the highest channeling. Trance channeling with ease and flow and fun.

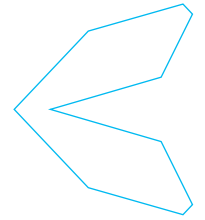
{Name of Participant} has given her (/his/their) permission for her (/his/their) body to be used by a higher love and light dimensional being, to communicate directly. The channel is now welcome to enter. {Name of Participant}'s body. With ease and flow. The highest love and light dimensional being, can enter {Name of Participant}'s body with ease and flow. (pause) You may speak, as the highest love and light dimensional being now. Can you identify yourself? (pause)

[Participant responds - Hypnotist works with Participant through trance channeling experience]

Hypnotist: The body relaxes, the mind relaxes. As we give thanks, and gratitude, with divine love and being. And flying back, into this realm, into this Earth. Your body is safe. Just taking your time, flying back. Flying amongst stars, and then instantaneously above the buildings. Coming inside the box. Hovering above your body. Seeing that your body is safe and secure. And with ease and grace and flow, sink back into your body. Gently entering your body. You shift in whatever way you need to, to make this easy and smooth on your body. Clearing any energy that does not belong to you or does not serve you, and returning it back to Source, cleansed and purified. You may imagine it leaving out the top of your head through the Golden Orb. Releasing and clearing any energy that does not belong to you or serve you. Returning it back to Source, cleansed and purified. Calling back all your energy cleansed and purified, for your highest good, and the highest good of all. (pause)

And as you relax, staying in your body. Safe and secure. I invite you to welcome in the belief that meditating is easeful. And nourishes and fills you with energy and joy. And you may notice it is now easy for you to find a few minutes, or moments, of meditating. With ease and joy, it nourishes you, and fills you with energy and joy.

And I'm going to count from the number one to the number five and I reach when I reach the number five, you're going to feel wonderful; refreshed and relaxed. Just as if you had a full night's sleep. Feeling full of life and energy with a sense of vitality, peacefulness, and joy. So coming on back now. One, full of life. Two full of energy. Three, wiggling your toes your fingers; and a wonderful sense of well-being. Four feeling happy and free. And five, feeling excited. In joy. Feels wonderful, doesn't it? And when you're ready, taking all the time, you need to just be.



RESEARCH
ARTICLE

Best Evidence that UAP Source and Utilize High-Voltage Electric Energy for Hovering, Hyper- Fast Acceleration and Motion

Thomas E. Beck

drtom37@gmail.com

Janet E. Colli

becolli@mindspring.com

HIGHLIGHTS

Researchers argue that many fast-moving UFOs/UAPs use self-generated, high-voltage electric fields and plasma-like processes to hover and accelerate, and that these systems may be modeled on natural atmospheric electrical vortices such as tornadic plasmas.

ABSTRACT

We investigate the best evidence of high-voltage UFO/Unidentified Aerial Phenomena (UAP) electrical properties to progress our understanding of the hyper-fast acceleration and travel of UAP in Earth's atmosphere and in near-space. Based on that evidence, our findings show that UAP source and utilize high-voltage electric energy for hovering, and hyper-fast acceleration and motion. Furthermore, the design of these advanced technological systems may be based on natural, atmospheric electrical vortices and related electric discharge phenomena. We propose that some UAP powerplants are designed similar to natural tornadic-vortices.

We establish the relevance of the following topics to the scientific study of specific classes of high-voltage electric UAP: the electro-coalescence of atmospheric water vapor; UAPs self-generated, high-voltage electromagnetic and electrostatic fields; rotating electric fields and super-high-voltage, electrostatic propulsion; and Unidentified Submersible Objects (USOs).

The appearance of advanced technologies having to do with UAP may be relatively simple but overlooked plasma-based, electromagnetic and electrostatic technologies. UAP likely maneuver in Earth's atmosphere by utilizing a simple form of high-voltage, electrostatic, propellant-less propulsion—allowing these craft to push off the locally ionized atmosphere. Evidence supports our hypothesis that UAP source and initiate the streaming of uninterrupted, carbon-free, Earth-ionosphere, solar plasma direct electric energy. Finally, we summarize advanced, super-high-voltage, electrostatic propulsion of UAP.

The US Navy's authentication (December, 2017) of leaked UAP videos validated hard evidence of UAP presence in global air spaces. Highly reliable witnesses have observed UAP exhibiting hyper-fast accelerations and motion within Earth's atmosphere, as well as in low Earth orbit. Multi-witness visual and sensate observations combined with hard data from these cases provide insights into the development of hyper-fast travel dynamics and their solar plasma, electric energy source. We also report on new scientific standards of observation and recording in UAP research, including recommended detection equipment.

SUBMITTED January 31, 2025
ACCEPTED April 23, 2025
PUBLISHED December 18, 2025

<https://doi.org/10.31275/20253637>

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KEYWORDS

Unidentified Aerial Phenomena (UAP), atmospheric science, atmospheric electrostatics, rotating electric fields, high-voltage electrostatic propulsion, vapor phase electro-coalescence, tornadic vortices, hydroxyl (OH), Unidentified Submersible Object (USO), living plasmas, thermosphere plasmas, UAP detection equipment.

SECTION I: UAP ELECTRICAL PROPERTIES

INTRODUCTION

Travel to distant outlying solar planets and especially to other nearby star systems will necessitate revolutionary forms of propulsion beyond chemical and plasma ejection, or nuclear-fission/fusion powered rockets. Designing the first automobile required technical understanding and infrastructure development for the engine mechanisms and body construction, as well as its electrochemical, energy supply: batteries, gasoline, oxygen and plasma-generating spark plugs. Understanding hyper-fast (hyper-sonic) UAP transport systems will similarly require simultaneous development of the “engine” mechanisms as well as their energy source.

UAP appear to use no combustible fuel and require no sharp-edged or pointed airfoils to maintain aerodynamic “flight” altitude and extreme maneuverability—thus implying their use of some form of propellant-less and inertia-free propulsion. UAP do not “fly” aerodynamically nor exhibit ballistic motion, but rather they hover silently, remaining nearly motionless except for their characteristic “silver dollar wobble.” Certain large triangular craft appear to defy gravity as they slowly “float” in the air, at times visible for hours. But such craft are not buoyant like a lighter-than-air dirigible craft—as the triangular craft can hyper-accelerate. UAP hyper-accelerate, along a trajectory, more like a high-speed missile than an aerodynamic aircraft. For example, the 27-foot, 7,500 pound (3,409 kg) Sprint, a conical-shaped, anti-ballistic missile, accelerated at 100-G to Mach10 (7,600 mph) in 15 seconds, glowing white hot, enshrouded in its own, self-generated dense white plasma. By contrast, a sustained 6-G force can be fatal to humans. Furthermore, an F-18 aircraft can only withstand 9–12 G forces before structural damage ensues; its design limitations are 7.5–9.0 Gs of rotational or turning acceleration.

UAP often traverse a non-ballistic trajectory. Instead of traditional fuselage-and-wing airfoil surfaces, commonly

observed UAP configurations include wingless, elongated cigar-shapes, spheroidal, plasma orbs, “large propane tank” shapes, round-edged triangular, massive “V” (chevron) shapes, and especially lenticular or oblate spheroids. For example, the fleet of UAP reported by Navy commander David Fravor (Romo & Chappell, 2023), resembled Tic Tac candy (a cylindrical shape with hemispherical ends or like a large propane tank), and were devoid of any obvious airfoil surfaces, propulsion mechanism or exhaust heat signature. This Navy encounter was leaked to the press in December, 2017; its later confirmation by the U.S. Pentagon was an historical first (Cooper et al., 2017a, 2017b, 2017c, 2019).

In the following we provide in-depth scientific, theoretical research about the role of high-voltage electricity and plasmas in the functioning of UAP. Based on the best evidence case studies that follow that include numerous eye-witness reports and hard data, we will demonstrate that scientific observations of UAP require the investigation of UAP electrical and electromagnetic properties.

Electro-Coalescence of Atmospheric Water Vapor

Evidence of UAP electric fields exists in numerous eye-witness reports of lenticular-shaped, and certain other UAP—appearing as a dark metallic color, often describing a “fuzzy” outline (Haines, 2000). Such frequently reported haziness would arise from the UAP’s high-voltage electric field ionizing the surrounding air and creating a plasma that induces the condensation of water vapor, just as in supercell storms. Sprint missile’s brilliant white plasma was friction-induced between the missile’s heat shield and the atmosphere; whereas UAP multicolor plasmas are high-voltage, electromagnetically-induced (Hill, 1995). The high-voltage electric field generates a plasma that condenses in-situ water vapor into clouds or fog surrounding the UAP, obscuring its solid physical structure. This could at times cause either a metallic or dielectric surface to appear as a dark color metal.

Visual observational evidence indicates that lenticular UAP exhibit their “silver dollar wobble” while hovering in place, upon arrival or prior to powering-up for departure. During the UAP silver dollar wobble, the engines operating at low power are evidently rotating slowly. This slow-oscillation wobble makes the entire system *appear* unstable. When UAP power up prior to departure, the power system rotates increasingly faster as the wobble ceases prior to such objects hyper-accelerating on an upward trajectory.

Their self-generated, high-voltage electrostatic fields can result in optically visible, condensation of atmospheric H₂O droplets (~20 micron diameter: 20 millionths of a meter; each droplet holds 1.06×10^9 H₂O molecules), depending on local dew point. This is known as *electro-coalescence* (Wang et al., 2020). These electrically charged droplets would circulate around the exterior perimeter of the craft during its low-to-moderate energy output, effectively creating the UAP's own self-generated, artificial cloud or fog (Hill, 1995; Mintel & Birnes, 2019; Penniston & Osborne, 2019). Electro-coalescence occurs naturally throughout Earth's atmosphere (Gabyshev et al., 2020; Shavlov et al., 2023). "The model shows that the electric field enhances condensational growth. The most significant driver of the temperature dependence is the humidity" (Gabyshev et al., 2020, p. 1563).

Water droplets in atmospheric clouds and fog tend to be electrically charged.... In many cases, clouds and fog can be considered as drop-ion plasmas.... Therefore, the processes occurring in clouds and fog are of particular interest from the point of view of plasma physics.... Indeed, in an external electric field, water droplets are polarized and can acquire a large surface electric charge (Shavlov et al., 2023, p. 16).

The electrically induced condensation significance is expected to further increase with decreasing temperatures below 50°C. We expect that electro-condensation will be the dominating process at room temperatures and even more at temperatures 0°C [32°F] at electric field strengths typical for clouds. Field strengths of about 10^5 V/m⁻¹ occur which accelerate the condensational growth of droplets specifically in the lower zone of clouds, leading to a more rapid formation of precipitation (Gabyshev et al., 2020, p. 1556).

The above quotations clarify that high-voltage electric fields electro-coalesce submicron, dipolar H₂O droplets through the imposed electric charge. Conversely, six distinct methodologies have recently been developed by independent research groups for extracting minute amounts of electric energy out of atmospheric H₂O droplets (humidity) sufficient to illuminate one cell-phone pixel (Lax et al., 2020; Liu et al., 2020).

This research confirms that external electromagnetic-fields condense atmospheric water vapor, especially at

lower temperatures, higher in the atmosphere, and at higher humidity. This is consistent with aircraft lightning studies demonstrating that the majority of electric discharges (cloud-to-aircraft lightning) occur when the aircraft is either within, or in the near vicinity, of clouds. UAP electro-coalesce atmospheric water vapor at altitude as artificially generated clouds, as well as at ground level as fog (Hill, 1995; Mintel & Birnes, 2019; Penniston & Osborne, 2019). Scientific data thus support the direct observational evidence that UAP generate strong enough electric fields to electro-coalesce atmospheric water vapor—within an estimated 50-yard radius (Hill, 1995; Penniston & Osborne, 2019).

The air contains an enormous amount of electricity. Think of a cloud, which is nothing more than a mass of water droplets. Each of those droplets contains a charge, and when conditions are right, the cloud can produce a lightning bolt—but we don't know how to reliably capture electricity from lightning. What we've done is to create a human-built, small-scale cloud that produces electricity for us predictably and continuously so that we can harvest it. Imagine a future world in which clean electricity is available anywhere you go. The idea is simple, *but it's never been discovered before*, and it opens all kinds of possibilities (Jun Yao, in Liu et al., 2020, italics added).

Jun Yao has the right idea. However, it is essential to think on a larger scale and use a more efficient methodology. We advocate that it is, indeed, possible to "capture electricity from lightning." Our article provides insights into the process of directly accessing the existing flow of electricity present in the atmosphere *before it generates a Gamma Ray Flash (GRF)* and discharges as lightning.

UAPs Self-Generated, High-Voltage Electromagnetic and Electrostatic Fields

Upon the initiation of "power up," immediately prior to extreme-high-G departure accelerations, UAP frequently display increasingly brilliant illumination, in particular around the lenticular-shaped, rounded perimeter. This is consistent with a pulsed MHz rotating, high-voltage electromagnetic field that ionizes the surrounding atmosphere. The ionizing radiation emitted creates colors on a continuum between low-energy dull red and high-energy brilliant blue/white "like an arc welder" (Hill, 1995). Atmospheric oxygen and nitrogen fluoresce through a range of colors as they are ionized to the plasma state by super-high-voltage

electric fields generated by UAP powerplants (Hill, 1995). Their color and luminosity depend upon the frequency of the ionizing radiation and its intensity—as the UAP powerplant apparently builds-up energy prior to nearly instantaneous, extreme accelerative departure.

UAP have frequently been observed to tilt into their intended direction of motion, and then suddenly “bullet-off” with hyper-acceleration (Hill, 1995) which is technically well beyond the current capabilities of any conventional aerospace vehicles. We assume the craft and any possible crew are somehow protected from the observed extreme accelerative G-forces. We postulate that UAP are buffered by their self-generated, high-voltage induced plasma field to greatly reduce or eliminate friction within Earth’s atmosphere. UAP self-generated, high-voltage solitons likely possess *plasma double-layers* (see Feindt, Cases 2, 4, 5 & 11). The plasma forms its own double-layer that would *shield* the electric field within the double-layer, and thus within the craft, as described in several theoretical warp drive metrics (Alcubierre, 1994; Beck & Colli, 2025a; Bobrick & Martire, 2021; Lentz, 2021), as well as by Feindt (Section II). Such a plasma double-layer may allow the UAP to travel effectively “friction-free” at hypersonic-velocity through Earth’s atmosphere without generating a sonic pressure wave. Advanced warp-drive theory proposes that a plasma soliton bubble encapsulates space-time that transports a craft within the soliton with no limit to its velocity. This concept is described in-depth in a separate manuscript (Beck & Colli, 2025a).

Witnesses located beneath certain UAP report feeling a warm wind blow down silently on them as the UAP departs overhead. Consider the downward rush of warm air as an electrostatic downwash, somewhat similar to a helicopter downwash with anemometer readings of approximately 24 and 66 ft/s, depending on the aircraft. However, helicopters force a downwash of mostly electrically neutral atoms; whereas UAP appear to be forcing multiple rotating downwash columns of highly electrically charged, ionized atoms. We propose that some UAP push against their own self-generated, ionized atmosphere and the Earth, to both attain and maintain altitude (hover) as well as to hyper-accelerate laterally, or into Earth’s upper atmosphere, and presumably into nearby space. UAP are evidently not designed to be aerodynamic aircraft—therefore they do not *fly* in the normal sense of the word. Rather, they propel themselves, often at hypersonic velocities, along trajectories. This implies that a highly energetic, electrostatic motive force pushes off the atmosphere and the ground in the direction opposite their trajectory (Hill, 1995). This may be a simple action-reaction

force, not unlike an “electrostatic helicopter.”

According to bioengineer Gerald Pollock, theoretically removing 1% of the electrons from two people’s bodies—thereby creating an extreme positive charge in both bodies by ionizing those atoms—would require a mass the weight of Earth to push them together from a few feet apart. The amount of pressure required to push these two people together would thus be about equal to 5.9722×10^{24} kilograms (5.9722 billion, trillion metric tons). It should therefore be feasible for a relatively miniscule, 30-ton electric-powered aircraft to remain airborne by pushing *electrostatically* off its surrounding ionized atmosphere and the Earth, using its onboard, super-high-voltage (500,000,000V), pulsed, electrostatic field generator—a device designed specifically not to spontaneously discharge *large* lightning bolts (Case 4).

Electrostatic propulsion has been demonstrated on a very small scale in 2022 by Undefined Technologies with their Silent Ventus, ElectroDynamic Thrust eVTOL Ionic Propulsion, using batteries to generate 40,000 volts. Their drone, however, also creates a 55 decibel “high pitch whistle,” whereas the overwhelming majority of UAP witnesses report them to be completely silent, *regardless of size, luminosity or velocity*.

As described (Section II), the “power-up” of many UAP results in the generation of highly charged, electrostatic fields—experienced by many reliable witnesses—at times encompassing an estimated spherical-kilometer or more in volume. The human body is finely attuned to sense direct current electric fields (DC EF) and alternating current electric fields (AC EF). For example, “the mammalian hippocampus has several unique features that render it particularly sensitive to electric fields” (Francis et al., 2003).

The average [human skin] detection thresholds were 23.4 kV/m for DC EF, 16.9 kV/m for AC EF, and 11.4 kV/m DC EF in a hybrid condition. Moreover, both research groups stated that body hair is the most essential factor facilitating EF perception. When asked, the participants described their sensation mainly related to hair movements at the scalp, face, or arms. This was supported by the finding that relative humidity of scalp hair influenced EF perception. High relative humidity (70%) facilitates DC EF perception, whereas low relative humidity (30%) supports the perception of AC EF (Kursawe et al., 2021; see also, Chapman et al., 2005; Odagiri-Shimizu & Shimizu, 1999).

During “power-up” sequences described by witnesses, the exterior perimeter surfaces of some UAP (primarily lenticular-shaped) exhibit a multitude of minute, brilliant, white electrical discharges. They appear similar to electrical discharges witnessed along the *interior sheath wall* of tornadic vortices by a small number of individuals. Internal vortex discharges have been described by a handful of individuals who serendipitously witnessed the interior of an overhead tornadic vortex. One witness observed thousands of tiny lightning discharges along the entire length of the interior wall—of the rapidly rotating, 1,000-foot-tall vortex.

January 21, 1992, Near Cripple Creek, Colorado

He threw himself to the ground but got a good look up into the interior of the funnel.... The outside of the tornado was spinning so fast my eye couldn't follow it, but the inside was rotating almost lazily. I could see a thousand feet up inside it. Tiny fingers of lightning lined the hollow tube (McGown, 1996).

At the moment of touchdown, the sferics (electromagnetic noise) emitted by a supercell abruptly drops nearly to zero as the vortex (tornado) itself temporarily becomes a conduit between ground and upper atmosphere electric current (Vonnegut et al., 1960). Recent research demonstrates that the sferics rate effectively becomes continuous due to the vast array of small static discharges lining the interior of the vortex. In fact, the internal sferics ranges across a continuum and can cease almost entirely as countless minute discharges inside the vortex transition to a steady glow, becoming effectively a huge, rotating, atmospheric fluorescent lamp. Certain photos illustrate lightning discharges in close proximity to a tornado. This rare occurrence results from the extreme electric charge in the parent clouds. Emerging from a supercell, tornadic vortices, like lightning discharges, remain uncontrolled natural processes. However, the vortex can continually discharge or even *stream electric current*, as opposed to lightning which remains an explosive, hazardous and unpredictable electrical discharge. As soon as the vortex dissipates, the storm's sferics (largely RF noise) return to pre-tornadic levels (Greener et al., 1976).

Several classes of UAP appear to energetically mimic natural atmospheric electrical phenomena (lightning stepped-leaders, tornadic vortices, land spouts and hurricanes), as they move seemingly effortlessly through

Earth's atmosphere. Tornadoes and hurricanes, by contrast, do not move *through or against* the atmosphere—they are embedded within, and can only move along *with* the local atmosphere. The visual, electrostatic and electromagnetic similarities between tornadoes and UAP are often so striking that we must consider the possibility that the design of these advanced technological systems may be based, in part, on natural, atmospheric electrical vortices and related electric discharge phenomena.

The evidence supports the authors' proposal that at least some atmospheric UAP may be capturing high-voltage, hyper-fast lightning streamers—before the streamers electrically transition into stepped-leaders (Saba, Figure 1a and 1b). This would allow UAP access to the solar plasma energy that streams to Earth continuously from our Sun as electric current (Alfvén, 1981; Scott, 2021). Certain UAP may thus be replicating, on a smaller scale, the electrical dynamics of a supercell storm through which they access the continual flow of electric energy between the Earth's surface and the upper atmosphere. From a functional standpoint it would be like connecting to a 12,000-mile-long “virtual, electric extension cord” that *supplies UAP with continuous energy*. Such craft may possess advanced flight and energy systems based on the electrical dynamics of a tornadic vortex, spawned from a supercell thunderstorm (Beck & Colli, 2025a).

As far as an alternative way for producing this energy, one suggested method, NASA's TSS-1 tethered satellite (STS-75, 1994), is not a viable energy generating option for UAP. The differential between the space shuttle and the tether—a conductor which interacted with Earth's electrically charged ionosphere—of approximately -3,500 VDC, is too small to be of any practical use for primary propulsion. Based on plasma cosmology theory, we propose a potentially more viable method for tapping into the Earth-ionosphere electric circuit.

Rotating Electric Fields and Super-High-Voltage, Electrostatic Propulsion

We propose that some UAP powerplants are designed similar to natural tornadic-vortices, composed of several smaller vortices rotating in unison around a virtual axis of rotation of the larger vortex in an inverse energy cascade (Chen et al., 2006; Wurman, 2002; See Figure 2). UAP generate high-voltage electric fields that stimulate multicolored oxygen and nitrogen plasmas that are far more electrically conductive than metal or carbon-fiber aircraft.

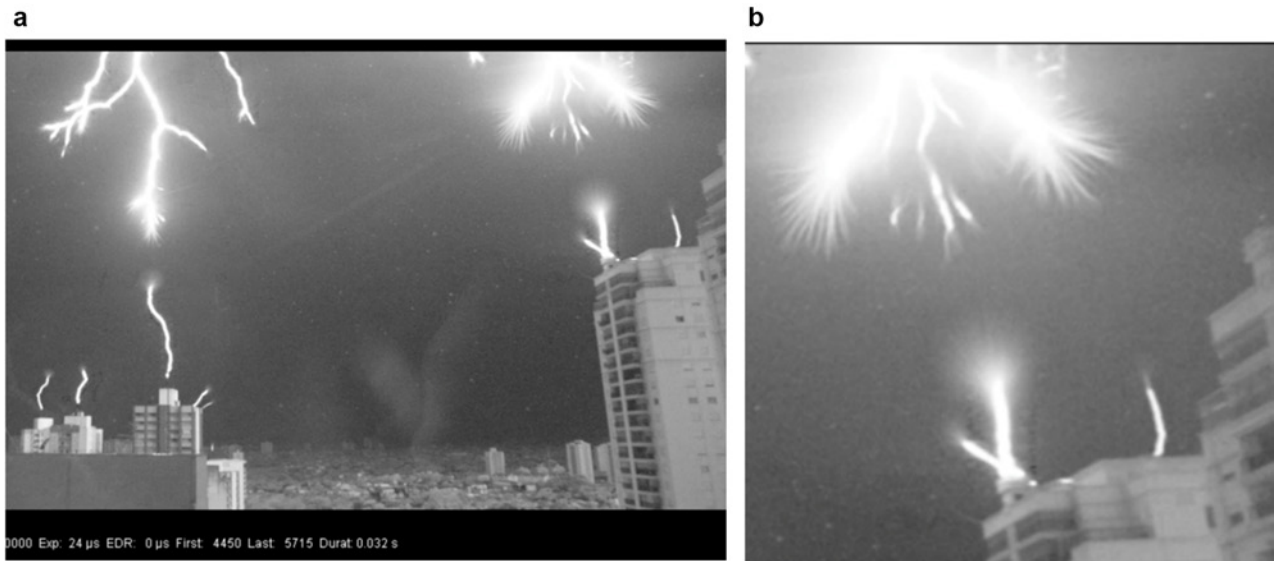


Figure 1. (a) High-definition, high-speed photo of lightning stepped-leaders and return strokes. Image credit: Marcelo Saba: Permission granted October 27, 2024. (b) Detail of downward streamers and coronal brushes. Image credit: Marcelo Saba: Permission granted October 27, 2024.



Figure 2. Grand Isle waterspout (June 20, 2013). Note the filamentations similar to large tornados and consistent with plasma streamers. Image credit: June Gilmore.

An induced MHz *rotating* electric field may be designed to allow for the uninterrupted streaming of Earth-ionosphere, direct electric current (DC). Ultra-fast (MHz) rotation of an artificially generated gamma ray glow (GRG) could stabilize the craft electromagnetically as electrons would be sustained at relativistic velocities in a toroidal electron cloud.

Supercells and other storms generate a number of internal, highly charged, cubic-kilometer-scale, GRG *plasma cells* that can maintain their extreme charge (500,000,000

v) for 10–60 minutes before discharging as lightning (Chilingarian et al., 2017, 2019; Wada et al., 2019, 2021). GRGs discharge and recharge cyclically throughout the active duration of the storm. There is usually a suppression of cloud-to-ground discharges. A GRG or lightning inception field, with a volume of several-to-thousands of cubic kilometers, sustains a 1/2 billion-volt+ charge for tens-of-minutes, to an hour, without discharging into the atmosphere as lightning.

Additionally, the much slower secondary rotation of the full system would stabilize the continuous ground—to craft—to ionosphere energy conduit. Such slow system rotation is consistent with numerous observations of lenticular UAP demonstrating their slow “silver dollar wobble” during low energy hover mode. Slow system rotation is also consistent with aircraft compasses that slowly rotate in proximity to airborne UAP (Meessen, 1994).

This streaming electric current would power such a craft in addition to allowing it to electrostatically suspend itself in the atmosphere (like a miniature supercell thunderstorm) by pushing off of the surrounding ionized air and the ground. A UAP drive-mechanism would generate at least three, rotating vorticular columns beneath the craft, spaced at 120° intervals, that revolve around a central virtual axis. While in horizontal attitude, the vorticular columns extend toward the ground. These rotating, sub-visible, vorticular columns would serve two functions: aerial hover and propulsive support for the craft; plus, electric energy supply (Hall, 2017).

At energy levels below critical thresholds we would expect to see high-voltage-induced, water-vapor *condensation*. A UAP cloud, witnessed as *fog* at ground level (Hill, 1995; Mintel & Birnes, 2019; Penniston & Osborne, 2019), can obscure the well-defined edges of the UAP’s physical structure. Above that same energy threshold, we would expect to see water-vapor *evaporation*.

In an established air plasma, any liquid water reasonably close to a hot plasma will tend to evaporate, whereas, further away from it, it will have a tendency to condense - as long as the local temperature is sufficiently low.... If the relevant physical and chemical conditions are maintained within correct limits, which means optimal for plasma stability, these steady-state conditions *could* last indefinitely once they have been established (Turner, 2024, p. 411).

Evaporating a column of cloud 300 meters long and 6.8 meters in diameter in one second requires an average power of approximately 100 megawatts (MW). By comparison, the steady state power consumption of a Boeing 747 cruising at about 0.9 Mach is about 60 MW (Haines et al., 2006, p. 52).

Haines, et al. describe in detail how they mathematically estimated the amount of energy required to evaporate

the clouds that the observed craft “bolted” through at hyper-velocity. Interestingly, they take atmospheric drag force into account (p. 51) in their equations despite the apparent total lack of drag coefficient involved in UAP “flight” in either air or water. This is evident from UAP silent atmospheric operation and their well-documented, high-speed, splash-less entry into bodies of water (see Feindt).

This Haines/NARCAP estimate (Case 4) addresses the evaporation of a cylindrical column of water vapor in the clouds. It does not, however, address the energy requirements for propelling a physical craft, weighing potentially 30 tons, to hyper-accelerate and vertically depart the area nearly instantaneously. (See Knuth below for an example of the phenomenon of hyper-accelerations.)

During low-power output (landed or hover mode), the UAP would form its own high-voltage-induced, visually obscuring, water-vapor fog or cloud, such as those regularly described by UAP eyewitnesses (Case 5). Self-generated, H₂O-condensate clouds would then result in ongoing, macro-scale bursts of atmospheric OH radicals (Paulson et al., 2019), followed by a continuous profusion of OH—as has been detected adjacent to storm plasma cells (Brune et al., 2021; Jenkins et al., 2021). This critical formative stage would increase the energy throughput of the supporting multi-axes vortices beneath the UAP.

Armstrong and Glenn (2005a, 2005b, 2006) propose that OH is the crucial generative *vapor phase electro-chemical process* necessary for both the initial formation, as well as the continual sustaining of atmospheric tornadic-vortices. Certain UAP might function similarly to these natural, atmospheric electrostatic processes by also capturing the Earth-ionosphere electric current and utilizing ubiquitous OH to generate, as well as maintaining, its own tornadic-soliton-like vortices. Just as supercell tornadic vortices become conduits for atmospheric electric current, so too, would multiple UAP vortices. Vortices would physically support such a craft by pushing against the air and ground—as well as providing sufficient DC electric energy for both internal operations, and for sustaining lift via its self-generated vortices.

To summarize advanced, UAP super-high-voltage, electrostatic propulsion: Using startup batteries only (or grid electricity for a stationary ground system), the powerplant would generate its own localized external, rotating, GRG-like plasma field, or “air plasma” (Turner, 2024, p. 399).

The high-voltage, ionizing electric field, in turn, condenses atmospheric water-vapor locally, surrounding the

craft in an artificial cloud or fog. Such atmospheric plasmas generate extreme amounts of OH and HO₂ (Jenkins et al., 2021) that would be drawn into the rotating plasma. A continuous stream of OH radicals would follow a path similar to that in a natural supercell vortex: down toward ground, as described by Armstrong and Glenn:

Discussion: If a sudden increase in intracloud lightning flash rate occurs, and it is of sufficiently high level, then, a very significant generation of hydroxyl and hydrogen ions are produced.

Summary and Conclusions: Evaluation of the electrical force on these primary particles shows it to be greater by orders of magnitude than those associated with relatively small-sized water droplets.

....repeated lightning strikes are required within an individual vortex “core”; and, this restriction relates to the relatively rare occurrence of tornadoes as generally minor dissipative sources of supercell energies (Armstrong & Glenn, 2005b).

One possible embodiment of a UAP drive mechanism would generate a minimum of three electric vortices (Cases 7 & 8). The multiple vortices beneath the UAP would preclude any large, atmospheric, electrical lightning discharges from occurring. Being similar to natural multiple tornadic vortices, these UAP vortices would prevent massive electric discharges by preventing them from breaching atmospheric electric breakdown thresholds.

NASA’s Paul Hill

Paul Hill became one of the most knowledgeable UAP researchers of the modern era and has provided us with numerous observational insights into the functioning of UAP. Hill was a NASA scientist when he personally experienced a UAP sighting in the early 1950s. During his twenty-five-year tenure, he served as an un-official UAP clearinghouse at NASA; like Haines, he collected and analyzed sightings’ reports of physical properties—from pilots and others who had experienced UAP encounters. Official policy prevented him from publishing his findings. “I was destined,” said Hill, “to remain as unidentified as the flying objects.” His spouse, Julia M. Hill, published his findings posthumously. Hill concluded that UAPs “obey, not defy,

the laws of physics.” He found that UAP technology and propulsion possibilities are not only explainable, but they are attainable. “A multi-disciplinary approach is a minimum requirement” (Hill, 1995, p. 25). We similarly contend that expertise in electrical engineering, plasma physics and aerospace are essential to the study of UAP electrical energy and maneuvering functions.

Hill, in Appendices 1–7 (1995, pp. 339–412), provides the equations for the analysis of UFO force fields (Appx. 1, pp. 339–349); UFO aerodynamics, airflow and force field specifications for spherical UFOs (Appx. 3, pp. 357–369); interstellar acceleration and travel (Appx. 5, pp. 383–398); as well as propulsion (Appx. 6, pp. 399–405). Hill specifically arrived at the formula for the “on-board coasting time” to a distant stellar planet (p. 386). Hill completed his mathematical formalisms well before Bobrick and Martire or Lentz demonstrated mathematically how such a journey might be completed based on currently understood laws of physics. That being said, Hill provided significant insights into the operation of lenticular or disk-shaped UAP.

UAP modes of guidance, hyper-fast acceleration/deceleration and energy sources have heretofore remained elusive. These unknowns have made re-engineering their metrics untenable. However, if we refer to Hill’s investigations of UAP motion, we can gain insights for a potential solution to how lenticular UAP may be electrically propelled and navigated through Earth’s atmosphere and in space. Hill describes numerous sightings by highly qualified observers of lenticular craft that have consistently been observed *tilting into their direction of motion*. This implies that UAP are propelled by a previously unacknowledged motive force that is emitted directly from the undersides of such rotating craft—in the direction opposite to the intended trajectory. *Tilt left, go left. Stop going left, tilt right for brakes*. “The UFO must be able to focus its field to achieve thrust vector control” (Hill, 1995, p. 286, see also, pp. 144–146). In this regard, these sophisticated electromagnetic spacecraft may function fundamentally like an electrostatic “action-reaction” rocket. This represents an advanced method of propelling an aircraft or spacecraft beyond chemically powered propeller, jet or rocket propulsion engines.

Saucers are characteristically surrounded by an ionized atmosphere, or plasma, that gives them nighttime illumination in red, orange, yellow, green, blue, or white, and often gives them a mist-shrouded appearance. They are

silent except for hum or buzz noticeable to near observers (Hill, 1995, p. 27).

Hill further describes the well-defined “plasma cone” witnessed below many disc-shaped UAP (See also, Cases 2, 7, 8 & 11). This plasma cone or sheath presents clear evidence of a rotating, vorticular energy field beneath UAP (Hill, 1995, p. 146). Such a water-vapor plasma cone is evident beneath the “gimbal UAP” (Figure 3a, Case 2). The UAP “hum or buzz” is most likely generated by electrical oscillations from the UAP powerplant. Similarly, standing beneath a conventional electric grid transformer, the 60 Hz hum can be clearly audible. Many eyewitnesses report hearing an electronic-like hum or buzz, but typically only while standing directly beneath such craft (Marler, 2013).

Ionized and excited atmospheric molecules [luminous plasma] ... account for the general nighttime appearance of the object: the many observed colors, the fiery, neon-like look, the self-illuminating character, the fuzzy, indefinite or even indiscernible outline, yet an appearance of solidity behind the light (p. 54)... This [plasma] energy corresponds to a frequency of about 1.2×10^{17} cycles per second for nitrogen and more like 1.6×10^{17} cycles per second for oxygen (Hill, 1995, p. 79).

“[The saucer] was an oblate, or flattened spheroid about 15 feet in diameter and was surrounded by a flat ring at the

equator which seemed to rotate” (Hill, 1995, p. 55). The flat ring at the equator appears to be a critical design element of certain lenticular and triangular UAP configurations.

There is really no secret as to what this illuminating sheath of atmosphere around the UFO is. It is a sheath of ionized and excited air molecules often called a plasma (p. 53)... Of course, the [light] source was the atmosphere and the light was reflected by the shiny [UFO] surface (p. 56)... The observed atmospheric colors are a by-product of the power plant radiation quite dependent on the properties of the atmosphere (p. 65)... It is perfectly clear that air can radiate in any or all colors at night, if the plasma is fully developed (saturated with ions) the plasma can completely obscure the UFO (p. 66)... While the plasma sheath is at a maximum, there is a complete radio communications blackout [see Case 5], for even the radio frequencies can't pass through the critical plasma thickness (p. 67)... I conclude that UFOs radiate between 25 electron volts, which is the bottom of the x-ray band, and 3 million electron volts, which is into the lower end of the gamma ray spectrum (p. 81) (Hill, 1995).

Hill's description of the UAP gamma ray spectrum dovetails with the authors' investigation into gamma ray glow

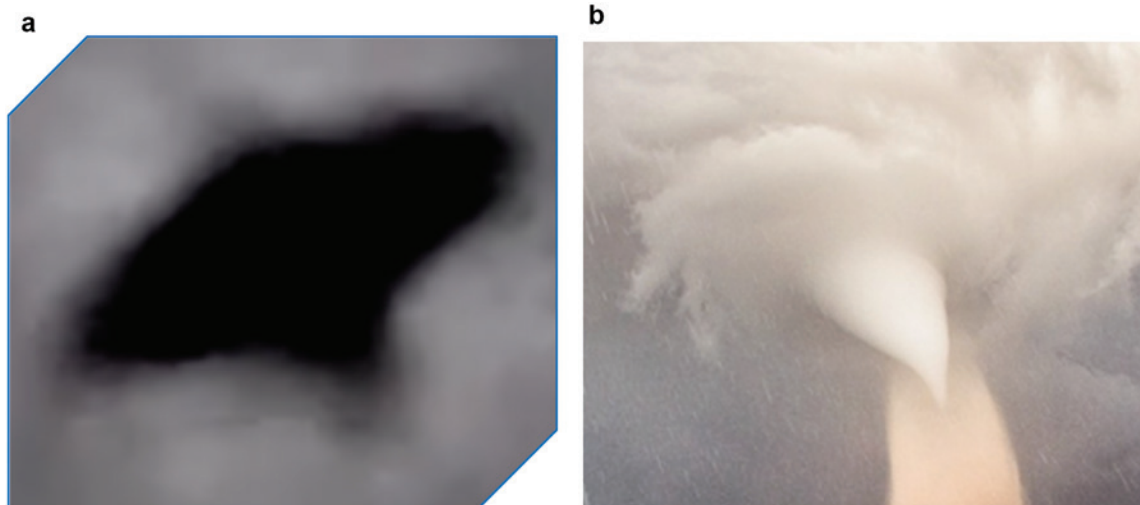


Figure 3. (a) (Left) Selected infrared video image of plasma field surrounding the “gimbal” UAP (2004 Navy F-18 pilot). Image credit: U.S. Dept. of Defense. (b) (Right) Tornado corona exhibiting conical-vorticular form and lower vortex similar to the “gimbal” UAP. Image credit: Chris Sheen.

cells in supercell thunderstorms—in order to understand how a high-voltage, electric plasma engine could power disc-shaped or lenticular UAP (Beck & Colli, 2025a). “Force-field equipment could be located within the shell of the UFO, which the field would penetrate nondestructively while the field generators remain hidden within” (Hill, 1995, p. 96).

Hill’s diligence over decades has contributed invaluable understanding to the science and technical aspects, including the form and function of UAP. “Unconventional craft don’t fly; they are vectored along trajectories.” Theoretical physicist Harold Puthoff comments on Hill’s work:

In the final analysis, one must conclude that Hill has assembled as good a case as can be made on the basis of presently available data that the observation of some “unconventional flying objects” is compatible with the presence of engineered platforms weighing in at something around 30 tons, which are capable of 100-g accelerations and 9000-mph [hypersonic] speeds in the atmosphere. Perhaps more important for the technical reader, however, is Hill’s supporting argumentation, based on solid analysis, that these platforms, although exhibiting the application of physics and engineering principles clearly beyond our present-day capabilities, do not appear to defy these principles in any fundamental way (Puthoff, 1997).

Fundamental questions remain, however, about UAP functioning, especially silent hypersonic ‘flight,’ and 30-ton craft that apparently plunge into the ocean with virtually no evidence of water displacement (Feindt, 2010). Hill offers additional insights into advanced UAP energy and flight technologies.

If the UFO controls the air by a field whose velocity is the speed of light, the signal-speed difficulty is overcome. The control field replaces the incremental pressures and absorbs all the surplus kinetic energy of the air, bringing the air smoothly to a stop at the point of the nose with no rise in pressure, no compressive heating, and no shockwave (p. 323).

The passengers, instruments, stowables, and the vehicle itself would feel no g stresses. All would be in freefall the moment of lift off, the

accelerometers reading zero (p. 294)... After a UFO breaks ground contact with a planet it is in *free fall* (Hill, 1995, p. 321, italics added).

Hill’s comments are precisely in line with warp drive theorists whose terminology of being in “free fall” refers to being inside a UAP warp drive soliton bubble during hyper-fast travel on Earth or in space (Alcubierre, 1994; Beck & Colli, 2025a; Bobrick & Martire, 2021; Lentz, 2021). Unlike conventional orbiting craft (e.g., NASA’s Space Shuttle), UAP do not require chemically fueled acceleration to 17,500 mph in order to be in free fall orbiting around Earth.

Next we consider Feindt’s studies of UAP and water. We begin with recent U.S. Navy encounters of UAP interacting directly above and below the ocean’s surface. Sea-level ocean water is 840 times denser than the air directly above it. Much can be learned about the electromagnetic operation of airborne UAP by their observed effects on the atmosphere, such as plasma illumination, fog, mist and haze generation, as well as the effects of swirling and evaporated clouds around them. As demonstrated through Feindt’s work, the physical effects UAP have on bodies of liquid water contribute significantly to our understanding of their electrostatic and electromagnetic functioning. Feindt’s extensive body of 1,700 UAP events provides data that cannot be gained solely from observations of aerial UAP.

Carl Feindt: Water and UAP: Plasma Vortexes and Toroidal Fields

A series of major UAP encounters occurred in 2004 near the aircraft carrier USS Nimitz, which included the detection of a fleet of so-called Tic Tac-shaped UAP (Case 2). The following narrative from Retired U.S. Navy Commander David Fravor relates his experience flying a Navy F-18—with objects of unknown technology and origin *both above and beneath the ocean’s surface*.

It was calm that day but the waves were breaking over something that was just below the surface. Whatever it was, it was big enough to cause the sea to churn. Hovering 50 feet above the churn was an aircraft of some kind—whitish—that was around 40 feet long and oval-shaped. The craft was jumping around erratically, staying over the wave disturbance.... The disturbance looked like frothy waves and foam, as if the water were boiling.... It accelerated like nothing I’ve ever seen.... It had no plumes, wings or rotors and outran our F-18s (Cooper et al., 2017b).

The Nimitz case is but one of a large number of well-documented UAPs interacting with water at the ocean's surface. Two years after the 2004 USS Nimitz event was made public (2017), another remarkable Navy encounter occurred. On July 15, 2019, infrared cameras recorded a "swarm" of up to 14 spherical objects maneuvering just above the ocean's surface near the USS Omaha, an Independence-class littoral (near the coast) combat ship. This event lasted for approximately 2 hours. Within the time-frame of a few moments, the now public infrared video shows one object submerging beneath the ocean's surface, leaving no trace of its presence nor any displacement of water. On May 17, 2021, NBC news reported the release of the leaked videos of this case, along with the U.S. Navy crew audio track of the UAP—hovering just above the water off the U.S. Pacific coast near San Diego. Referred to as an Unidentified Submersible Object (USO) or trans-medium UAP, it eventually "splashed" beneath the ocean's surface (Eberhart, 2024; Gallaudet, 2024). In actuality, this UAP did not create a splash at all. It simply submerged itself.

Filmmaker Jeremy Corbell released the Navy video while stating that similar events with USOs were reported by eight other Navy ships in the same area over three days. High-definition video of real-time radar monitors displayed multiple targets being tracked. "The scientific ramifications are nothing less than world changing," states Dr. Tim Gallaudet, Retired U.S. Navy Rear Admiral, in his 29-page report (March, 2024) defining the dangers and scientific opportunities of underwater UAPs. "How might this knowledge transform such fields as air and maritime transportation, energy generation, agriculture, communications, computing, manufacturing and space travel ... not to mention defense?" (Gallaudet, 2024, p. 5; see also Eberhart, 2024). Gallaudet's unprecedented USO revelations validate the phenomenon and open the door for more serious scientific investigations.

First, these underwater anomalies jeopardize US maritime security.... Second, their presence in the oceans at the same time presents an unprecedented opportunity for maritime science. Third, to meet the security and scientific challenges, trans-medium UAP and USOs should be elevated to national ocean research priorities.... The stunning implication is that engineering, materials science, and the physics beyond the state of the art are needed to produce and operate these objects (Gallaudet, 2024, pp. 1–2).

Moreover, Gallaudet cites Feindt's research. Carl W. Feindt catalogued 1,700 sightings of UAP hovering over, entering into, or exiting from bodies of water. Reliable witnesses have observed UAP entering into and leaving bodies of water, sometimes at high speed—with little to *no visible splash* or other disturbance of the water's surface. Feindt's compendium is significant for its scientifically-oriented, meticulous analyses of a large number of UAP water reports. Feindt's extensive investigations gain additional credence in light of these recent, hard-data, Navy video releases of USOs. He confirms that many USOs display nearly spheroidal bubbles around them, generated by a *toroidal- or "apple-shaped" energy field or "shell" that greatly diminishes or eliminates the USOs' direct interaction with water*. The energy shell appears to be the active agent allowing USOs to enter the water with no discernible disturbances. In Olympic diving, the human body enters the water at 30 mph, creating an initial radial water jet with a velocity up to 30 times faster than entry speed, followed by a larger Worthington Jet: the splash created when a body hits a pool of liquid. Typically, no such water jet reaction occurs when USOs enter water.

A USO high-voltage, toroidal, plasma-generating energy system can be viewed as a miniaturization of the corona at the top of atmospheric electric tornadic or waterspout vortices. As these craft arise out of lakes or the ocean, they exhibit a visible *vortex* of water below as they gain altitude (Figure 4). These vortices take on the form of an upward spiraling, UFO-generated water spout. This indicates that the drive mechanism in the craft generates a *rotating electromagnetic field*.

All naturally occurring, terrestrial atmospheric vortices exhibit upward spiraling flow patterns. These include tornados, hurricanes, waterspouts, land spouts, dust devils and recently discovered plasma tubes called Strong Thermal Emission Velocity Enhancement (STEVES) (Nishimura et al., 2019). Observation of plasma-driven craft in daylight reveals their solidity, physical characteristics, and at times their self-generated, plasma-induced, water vapor clouds. Water vapor clouds have been witnessed by numerous observers (see Cases 4 & 5). Night observations reveal the crafts' luminosity—providing important information about their energetic flight systems, including a wide range of colors due to the excitation of atmospheric oxygen and nitrogen that indicate specific electromagnetic energies (frequencies) generated by the surrounding plasma. Feindt's statements regarding plasmas are in alignment with those of both Hill and Meessen. Reports of UAP interacting with bodies of water provide invaluable information regarding the shape, vorticity

and extent of intense toroidal, electromagnetic energy fields that surround and apparently protect these craft. This information is not obvious and cannot be ascertained solely from visual observation of aeronautic UAP craft.

Such “repelling” high-voltage electric fields may also allow UAP to propel themselves at hypersonic velocity within Earth’s atmosphere without generating a compression wave (sonic boom). The boundary of the toroid/sphere is a *plasma double-layer*. “In the majority of cases it is the function of the field to protect the UFO” (Feindt, 2010, p. 35). “The field as represented here is *not* circular in a vertical direction [cross-section], but donut- or apple-shaped [toroidal] (flat top and bottom in a side view)” (Feindt, 2010, p. 51).

“The objects had a greenish-blue field around them [ionized nitrogen/argon], and they entered the water at considerable speed without any splash” (Feindt, 2010, p. 54). It can be reasoned that any such physically material craft/object capable of entering a body of water at high speed, with no disturbance of the water’s surface, could easily move through Earth’s atmosphere, which is a minimum of 840 times less dense, with no disturbance (compression wave) at hypersonic velocities. The novel technologies involved in such maneuvers are most likely associated with the extremely high-voltage plasma fields generated by the UAP/USO. A case can be made that the same toroidal energy field shielding effect within Earth’s atmosphere, and under water, would

also protect the surface of a UAP from ablation/erosion by interplanetary and interstellar dust, and small meteoroids during hyper-fast (sub-, or superluminal) travel in space.

The witness describes a column of fog, mist, haze or water ascending from the surface of the water to the craft. This column [upward spiraling vortex beneath the UAP], I believe, is caused by the high-speed vertical rotation of the field, which creates a vacuum below the craft (Feindt, 2010, p. 59, Figure 4)

This is in line with the authors’ concept that the electrostatic field surrounding a UAP is rotated at MHz frequencies, while the entire physical drive mechanism is slowly rotated at a controlled rate consistent with the rotational periodicity of an F5 tornado—that is itself composed of several smaller vortices collectively circling a common *virtual axis of rotation*, a common center of mass.

Suddenly a ripple in the shape of an equilateral triangle formed. In place of the three vertices there were three marine vortices.... Only when the three columns of water disappeared was it possible to see the three lights in the clouds (Feindt, 2010, p. 63)....

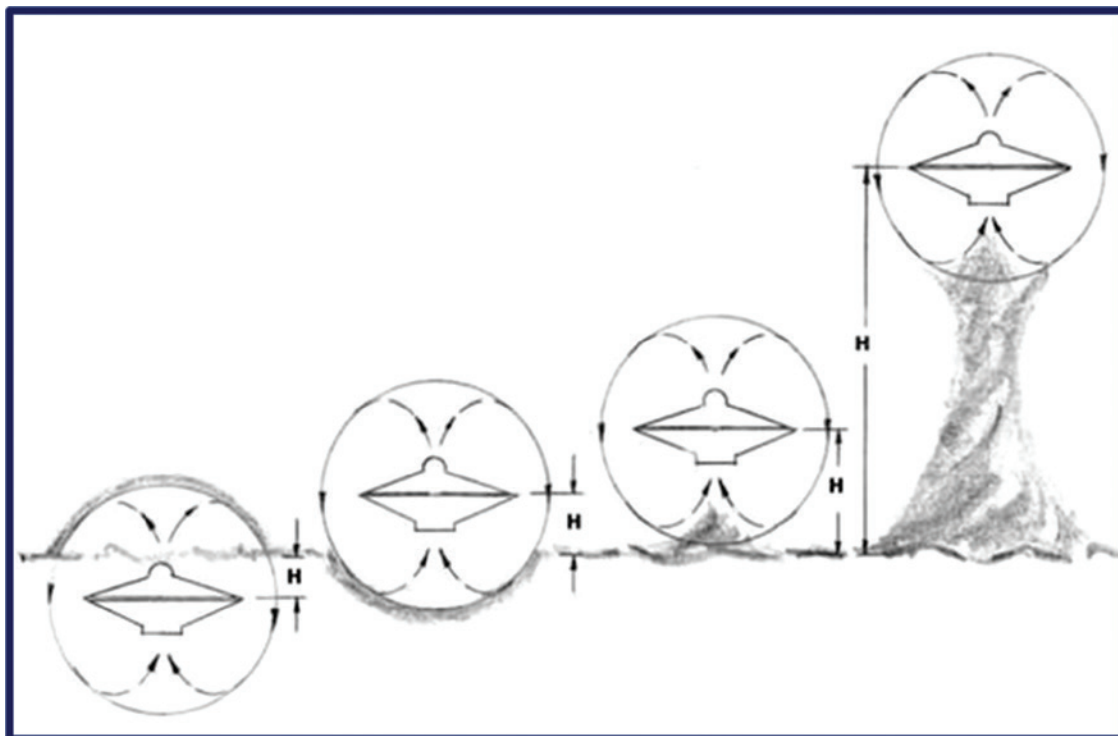


Figure 4. Drawing of UAP/USO exiting water, exhibiting protective toroidal “bubble” and upward spiraling vortex. Image credit: Carl Feindt.

This suction on the surface of the water is *exactly the same as if a tornado was to pass from land over a body of water* (Feindt, 2010, p. 65, italics added)... The vortex or suction below the craft ... that lifts water, dirt, people, and cars is a byproduct of the field, just as the turbulently flowing air behind an aircraft propeller, known as a prop-wash, is a byproduct of the propeller's rotation (Feindt, 2010, p. 80).

Toroidal electric energy fields are both ubiquitous and *fractal* throughout nature at all scales, including galaxies and stars, as well as the Earth.

The body of the sun is an enormous [plasma] torus. There are filaments originating from the sun that connect matter, energy and information out and back to every planet in the solar system. These coronal filaments [Birkeland currents that form enormous tubes in space] have been known for decades, but only recently it was discovered that they encompass our entire solar system. This [solar] flux tube structure was verified ... by the MMS [NASA Magnetospheric MultiScale] satellites that passed through such tubes (Clarage, 2024, see also Scott, 2015).

We next consider numerous observations of the “flight” and energy characteristics of UAP from the best available evidence, including visual/auditory sightings, human electrostatic perception, Navy Advanced Targeting Forward-Looking Infrared (ATFLIR) as well as private and commercial aircraft videos, ground radar, photographic records and aircraft equipment malfunctions. We include analyses of these thoroughly documented UAP cases, providing new insights into their probable energy requirements and flight characteristics.

SECTION II: BEST EVIDENCE THAT UAP SOURCE AND UTILIZE HIGH-VOLTAGE, ELECTRIC ENERGY

INTRODUCTION

Traditional academia has mostly avoided [UAP] research because of the stigma of flying saucers and space invaders. Yet people around the world continue to spot unexplainable objects in the sky. What little research exists tends to rely on firsthand accounts or look for cultural

and psychological explanations, which limits the ability to analyze patterns over a large area (ScienceDaily, 2024).

The following contradictory British report serves much the same purpose as its earlier American counterpart, the Condon UFO report of 1968, that is, it intentionally diminishes the significance of arguably the most important phenomena in human history.

That UAP exist is indisputable. Credited with the ability to hover, land, take-off, accelerate to exceptional velocities and vanish, they can reportedly alter their direction of flight suddenly and clearly can exhibit aerodynamic characteristics well beyond those of any known aircraft or missile—either manned or unmanned (Defence Intelligence Analysis Staff, 2000).

As a virtually inertia-less charged gaseous mass, the UAP will always be able to maneuver (much more rapidly than any aircraft) into a position demanded by the influence of the balance of electrical charges pertaining at the time (Defence Intelligence Analysis Staff, 2000).

Yet this 2000 British report goes out of its way to ultimately dismiss UAP sightings as conventional and prosaic. It concludes “There is no evidence that ‘solid’ objects exist which could cause a collision hazard” (Defence Intelligence Analysis Staff, 2000). Their report amounts to a false narrative—as the body of evidence detailed below (Cases 1–2 & 4–10) identifies physical, structured UAP surrounded by intense electric fields and plasmas.

The phenomenon known today as Unidentified Aerial (or Anomalous) Phenomena (UAP) began in the modern era during WWII as strange, seemingly autonomous lights mirrored the flight patterns of Allied and Axis bombers and fighter aircraft. In common parlance, they came to be known as Foo Fighters. In the ensuing decades, UAP sightings have been witnessed by numerous credible civilians as well as by highly trained observers, including military pilots and other personnel, commercial pilots, astronauts and scientists around the world. UAP present themselves in several classifications of different forms, such as lenticular, triangular and enormous “V” (chevron) shapes, often displaying their own internal or plasma-induced external luminosity. They display other measurable physical effects captured as radar tracks, analog/digital photos and

electronic equipment malfunctions (Cooper et al., 2017b, 2017c, 2019; Meessen, 2000). UAP include physical objects that demonstrate flight capabilities well beyond any current human aerospace technologies.

Our inquiries into solar plasma energy technologies compel us to combine this research with *sound observational* and *evidence-based studies* of UAP. Meticulous analyses of observational *and* data-driven cases have been one of the most practical ways to study the physical aspects of UAP. The most reliable sightings of UAP *and* natural atmospheric electrical vortices include radar and doppler tracking, photographs, video recordings, electrical equipment malfunctions, alterations in human perception and physical sensations, especially extremely high-voltage electrostatic charges in the surrounding atmosphere (Haines et al., 2006). Case studies of such observations play an important role in understanding both UAPs and *their relationship to natural atmospheric electrical processes*, especially supercell vortices. Highly reliable observational and technical recorded evidence support the authors' position that what appear to be advanced technologies having to do with UAP may well be relatively simple but overlooked plasma-based, electromagnetic and electrostatic technologies.

UAP in many instances are described as various types of technologically advanced structured aerospace craft. Such craft *appear to defy* our known laws of physics and propulsion, seeming to utilize some form of anti-gravity. But this may prove not to be the case (Hill, 1995). Closer examination of lenticular, triangular and chevron-shaped classes of UAP reveals *advanced propulsion technologies involving high-voltage, plasma-generating drive mechanisms*. A large body of reliable observational and technical evidence gained by trained observers indicates they more likely *maneuver in Earth's atmosphere by utilizing a simple form of high-voltage, electrostatic, propellant-less propulsion*—allowing these craft to push off the locally ionized atmosphere. Our analyses of the following well-documented UAP cases provide insights into their *energy requirements and flight characteristics*. These cases are the among the most reliably documented evidence established between 1980 and 2024 that support our position.

Case 1: New Zealand Navy Frigate USO Encounter

In February 1987 HMNZS Southland (Royal New Zealand Navy, non-nuclear, Leander class Frigate, anti-submarine cruiser) was involved in daily exercises *designed specifically to draw USOs in from the Pacific Ocean*. As it turns out,

they were successful in their ambitions. On this occasion Southland was followed underwater by a very large USO, approximately 150 feet wide and 800 feet long, at about 20 kilometers distance (nearly as large as three American football fields). This massive USO closed the 20 km distance to the Southland in 25 to 30 seconds, which gives a minimum speed of 1,492 mph and a top speed of 2,980 mph [under water]. (The top speed of the US spy plane, the Blackbird SR71, is Mach 3.3 at 2,193 mph, requiring 17 minutes to reach 80,000 ft. altitude.) The USO acted as if it did not interact with the water. The USO went *under* the Southland ship and simultaneously *disabled all onboard power*. The batteries were completely drained. Southland remained adrift and out of communications with no power available for radios; they were unable to call for help for four hours (Knuth et al., 2023). While the Southland was drifting out of power, the sonar still functioned, allowing the crew to ascertain the size of the USO. This case was presented by Knuth during his 2023 lecture on the physics of UAP.

We conclude this case with the following summary statement by Feindt who advocates for an electric energy source for USOs.

In several of these cases though, electrical energy is mentioned, and in numerous other reports electromagnetic effects are seen or felt by witnesses.... If as observed, UFOs have no propellers, no jets or rockets or other propulsive-force engines, the only other source left for us to consider is electricity (Feindt, 2010, p. 109).

Case 2: Department of Defense Release of 2004 Navy UAP Encounters

On December 16, 2017, in an unprecedented disclosure, the U.S. Department of Defense confirmed a leaked video showing an F-18 fighter jet video of a UAP. The object was originally sighted and tracked 13 years earlier (2004), following a week of radar tracks on-board the aircraft carrier USS Nimitz (Cooper et al., 2017a, 2017b, 2017c). We now have publicly accessible, direct recorded *military* images and real-time, voice-recording narratives during the presence of UAP incursions.

Visual examination of the UAP video image captured by an F-18 fighter jet allows us to gain useful information about the physics involved. The individual video frame (Figure 3a) reveals the following evidence that the UAP

may have been powered by a high-voltage, propellant-less propulsion system that generates oxygen/nitrogen plasmas—the two most abundant gases in Earth’s atmosphere:

- The edges of the craft are fuzzy and indistinct, characteristic of a high-voltage electric field generating a plasma that creates a water vapor and hydroxyl (OH)/hydroperoxyl (HO₂) cloud surrounding the object. Such plasmas are frequently witnessed creating clouds of condensed water vapor in close proximity to UAP “disks” (Hill, 1995). Water vapor clouds obscure detailed outlines and surface structures of such craft—as they maneuver within their own *self-generated clouds, mist or fog*. This is consistent with NASA lightning aircraft research where the majority of observed lightning strikes occur while the research aircraft is inside a cloud, but not necessarily near any thunderstorms (Rakov & Uman, 2003).
- Bipolar jets appear to be present at both the top and bottom of this UAP. As observed in the study of plasma cosmology (Alfvén, 1981; Scott, 2021; see also Peratt, 1992), we may be witness to a plasma energy field that resembles—in form and function—immense bipolar jets emanating from many galaxies as well as from individual stars. Plasma processes are fractal, that is, similar in form, ranging from the microscopic to the cosmic scale.
- The lower jet emanates from an apparent vortex at the bottom of the craft. This vortex is visually similar to vortices that emerge Earthward from the top (corona) of tornados (Figure 3b), land spouts and waterspouts, as the Navy image graphically illustrates. In this infrared image the cloud of plasma/water vapor extends down into the vortex. Armstrong and Glenn (2005a, 2005b, 2006) discuss a similar process related to tornado genesis.
- Extremely high-G accelerations were witnessed, which are not technologically possible for any conventional aerospace craft. Furthermore, 100-g accelerations would crush a jet aircraft as well as any living organisms inside the craft. We must therefore consider the possibility that extremely high-voltage UAP energy and motion “flight” technologies may include the ability to dampen or eliminate the effects of inertia on any physical matter encapsulated within the high-voltage electric fields (solitons) of their powerplants.

Disc-shaped UAP’s often possess three hemispherical-shaped pods protruding from their undersides (Fowler, 1979). These are not landing pads, but instead appear to be connected to the power supply (Smith, 1961). They are hypothesized to be designed for maneuvering the craft along all three x-y-z axes—in our atmosphere for pitch, roll and yaw control (Smith, 1961). But these UAP *do not maneuver via aerodynamic flight* (Hill, 1995). A 747-size, triangular-shaped craft (Belgium, 1989–1990) also displayed three, large hemispherical domes on its underside, near each of its 3 corners. It is the authors’ belief as well as Meessen’s that the domes serve as high-voltage, electric force-field generators that allow these craft to remain aloft and to maneuver indefinitely *electrostatically*, as well as to undergo extraordinarily high-speed maneuvers with little, obvious energy output (Meessen, 1973).

Case 3: Multiple Aircrew UAP Sightings over the Oregon Coast

On Saturday, December 7, 2024, Seattle Air Route Traffic Control Center (Seatac Airport) received a query from United Airlines flight 1596 about strange lights in the sky over the Oregon coast. This is the first major case of multiple *commercial* airline crews and a regional air traffic control tower countenancing the presence of UAP.

The real-time radio exchanges by these *commercial* airline pilots may be as significant as the audio recordings of the 2004 UAP interchanges released and confirmed by the U.S. Navy in 2017—the USS Nimitz case, the first major *military* public disclosure. The still photos and videos from the Oregon aircrews are, however, unremarkable as they most likely used cell phone cameras to record the UAP from a distance of 20 miles. (See Watters below for a complete list of desirable UAP observational instrumentation to detect types of emissions data.) The following excerpts originate from the original audio recording on LiveATC.net, a website that publicly broadcasts air traffic control transmissions.

Horizon Air flight 2207 (Seattle, WA to Bozeman, MT): Kinda some interesting looking lights out there. Not satellites but maybe aircraft?... it looks like at least 4 though. Something flying. It’s not satellites because they’re changing direction. It’s strange looking.... I’ve seen this a few times over the last month in the same area.

United Airlines flight 1596 (Denver, CO to Eugene, OR): There's *lots* of movement out there.... We're seeing 3 or 4 targets. They're all altitudes up and down, it's pretty crazy.... They're shooting way up. We think maybe up in the 50's [50,000 ft. altitude].

Medevac Pilatus PC-12 NC Air Ambulance Life Flight, pilot Joe Buley: It's 2 to 3 o'clock ... from our position. Looks about 20 miles going in circles.... Moving in like ... a circle like a corkscrew pattern.... I'm actually showing them on TCAS [Traffic Alert and Collision Avoidance System: top and bottom antennas scan the protected airspace around aircraft].

Seattle Center to Medevac: Descend at pilot's discretion, maintain 14,000.

Medevac: Just had another one show up about my 1 o'clock, about 1,000 feet high, zipping towards us, and then back out towards the ocean. It's red in color, *moving at extreme speeds*.... I don't even know how to describe how it's moving.

Seattle Center to Medevac: You are cleared to maneuver as necessary left and right to avoid the UFO out there, and all the reports you've given us are good information, appreciate it.... Any chance you are able to film any of that?

Medevac: We're trying right now, it's weird....

Seattle Center to Medevac: Any chance I could throw you my number and if you get a video of it or a picture you can send it this way(?)

Medevac: I have my med crew in back trying to film it too. They're watching the same thing I'm watching up here.... I'll pass along what's going on off to the right of my aircraft. It's still continuing, it's a red—we're only seeing one—it's a red, circle-shaped object that's zipping out over towards the ocean.... at a rapid rate of speed *faster than anything I've ever seen move*. I'm trying to get a video of it.

Seattle Center to Coast Guard 6063 Helicopter: I know you guys are probably on search and rescue out there, just wanted to give you a report up ahead about 20 miles there's been several reports now of UFO activity moving what appears to be supersonic speeds.

Seattle Air Route Traffic Control Center to Alaska 1100 (Santa Anna, CA to Portland, OR): We've had reports of it at 14,000 and then it'll shoot up as high as flight level [55,000 ft.] as the highest report in kind of a corkscrew pattern moving at what appears to be supersonic or even *hypersonic speed*.... It shot back out over the water at very, very, very fast speed, and then we also had an aircraft at high altitude that was actually about 39,000, and *it just shot up, past them* and in front of them, and went way up, then kind of corkscrewed back down.... *We don't have anything on our radar*.

Horizon Air flight 2065 (Los Angeles to Redmond, OR): Just wanted to verify, is there ... UFO's out there tonight? [In questioning voice]

Seattle Center to Horizon 2065: Yep, had quite a few of them now out over the coast, trying to figure it out.... But yeah, little unidentified flying objects, appearing to move at hypersonic speeds, and just with precision and turning, and we're all a little perplexed (LiveATC, 2024, italics added).

This very recent cluster of sightings by multiple professional pilots and crews, provides a significant non-instrumented record of hyper-fast UAP in commercial airspace. These events are likely the first multi-aircrew sightings to describe similar lights and their anomalous motions through the atmosphere; and to have the situation openly discussed publicly, in real time, with air traffic controllers. We are confronted with objects displaying "flight" or motion characteristics far beyond the flight capabilities of any known type of existing aircraft. The FAA confirmed that a pilot did report seeing unidentified lights on December 7, 2024.

Commercial airliners and air-ambulances clearly are not equipped with specialized tracking and recording equipment such as visible light and infrared cameras, as are military aircraft. Detection in this remarkable new UAP

case consisted of visual observations, in ambient night-time lighting conditions, with still-frame, video cameras and TCAS recordings. TCAS data is typically recorded by flight-recorders (black boxes) allowing for later analysis of TCAS flight path incursions. These UAP did not show up however on Seattle radar. One explanation could be that if these UAP are plasmas, or are airborne craft surrounded by plasma fields, they would likely absorb rather than reflect the radar transmissions, and hence would not be detected (Hill, 1995, p. 67). This audio file represents a long overdue increased level of openness by pilots and air traffic controllers as they discuss taking specific evasive measures to avoid collisions with UAPs (or “UFOs”) on an open public access website.

Case 4: Chicago O’Hare Airport UAP

After retiring from 43 years as a research scientist for NASA and related companies, during which time he interviewed numerous astronauts and pilots about their UAP encounters, Richard Haines, Ph.D. founded the National Aviation Reporting Center for Anomalous Phenomena (NARCAP)—to investigate sightings of UAP and their potential impact on air traffic safety. On November 7, 2006, one of most significant sightings in the modern history of UAP occurred directly above Gate C-17 at Chicago’s O’Hare International Airport, at the time the busiest airport in the Western hemisphere. Dr. Haines’ NARCAP team of scientists, engineers and consultants generated a 154-page scientific report on the sighting. Some of the most salient facts concerning the O’Hare case and their relevance to electric-powered UAP are described here.

A metallic-appearing lenticular (oblate spheroid) UAP hovered stationary at approximately 1,800 ft. altitude and 100 ft. below a dense cloud deck. Upon its departure the UAP powered-up its “engines,” as would any conventional jet aircraft increase its power to gain altitude. This action resulted in an increased intensity of the rotating, physiologically discernable, electrostatic field emanating from the craft.

[One witness] was sure that the UAP was round and rotating ‘pretty fast’.... The object ‘shot off into the clouds’ about two minutes after *his* initial sighting.... We estimate the minimum volumetric energy density required to cause such in situ evaporation [of water-vapor clouds] as approximately 9.4 kJ/m³, in the form of heat (Haines et al., 2006, p. 7; see also, p. 47).

One of the most significant facts related to this event had to do with the observation of the craft by witnesses in a parking lot located approximately 1,100 ft. from a position directly beneath the craft (approx. 2,100 ft., line-of-sight from the UAP). After viewing the object for approximately 6 minutes, it abruptly powered up and hyper-accelerated vertically, instantaneously achieving an extraordinary velocity and leaving a cylindrical hole in the cloud deck above its previous position, that remained for 6–8 minutes. *This is striking confirmation of a solid material object that generated an intense and extended electrostatic field around it.*

Just prior to the UAP’s departure, numerous witnesses in the parking lot reported feeling intense static electricity in the air. This is precisely what people feel beneath highly electrified storms, including supercell thunderstorms (Whitney Zone, 2005). If appropriate precautions are not taken, these individuals can be struck by lightning from the storm as they effectively become human lightning rods (Case 6). “The [O’Hare airport] employee stated the object was 500–1000 feet above the ground, rotating, and metallic in nature with no lights.... the next aircraft into that gate was experiencing electrical problems” (Haines et al., 2006, p. 151). “It hung there moving really slightly from side to side for about another minute when we all felt our hair stand on end, and it just shot straight up into the clouds faster than anything we ever seen (sic)” (Haines et al., 2006, p. 139).

It is noteworthy that this lenticular-shaped, apparently metallic hovering craft was witnessed just below the cloud deck and *not* under clear-sky conditions. Additionally, witnesses in the car park felt the powerful electrostatic charge immediately before it departed vertically with extreme acceleration. Compare their experience to the following electrified storm experience.

A Mt. Whitney hiking website related the dangers and physical sensations felt by hikers who were at grave risk of being struck by lightning. Their descriptions bear a striking resemblance to reports by eyewitnesses of the Chicago O’Hare UAP. However, the O’Hare UAP and other similar craft would presumably be designed specifically *not* to initiate electric (lightning) discharges. *They would require a smooth continuous flow of DC electrical current from the atmosphere, as occurs inside a tornado vortex plasma sheath.* Consider the following mountain hiker testimonials.

The conditions 1/4 mile from the summit that day were dangerous. Lightning strikes every 20–30 seconds. Wind gusts so strong it was nearly impossible to stand upright. The hair

stood up on the arms of the man hiking directly in front of me.... When the hair stands up on your arms or neck, you are in trouble (Whitney Zone, 2005).

About 90 minutes later, the second group met up with us and recounted the static electricity was so great that all the hair stood out like halos on all parties (quite dramatic on the women hikers) and tingling electrical sensations could be felt between the bottom of their foot and their hiking boots! Now just envision these hikers holding on to the cables if lightning struck. Apparently, this happens quite often on Half Dome (Whitney Zone, 2005).

When the O'Hare UAP powered up just prior to its departure, the static electric field extended out at least 2,100 ft. to the car park and was strongly felt by the group of astonished witnesses. A simple calculation provides evidence that the UAP generated an extensive high-voltage electric field around it. The volume of a sphere is defined as $\frac{4}{3} \pi r^3$, where "r" is the radius of the sphere and r^3 is the radius cubed. $\frac{4}{3} \times \pi = 4.188$ and in this UAP case $r^2,100$ ft. $r^3 = 2,100^3 = 9,261,000,000$ ft³ (cubic feet). The total volume of a sphere encompassing the UAP-generated static electric field therefore was on the order of 38,785,068,000 cubic feet. There are 3,280.84 feet in one kilometer and 1,640.42 ft in one-half kilometer. Applying the same formula for the volume of a sphere we obtain 18,490,761,270 cubic feet. We see then that the UAP generated a presumably spherical (or toridal) static electric field, felt by numerous people, equal to at least 2 cubic kilometers in volume. The static field may have extended well beyond the position of the onlookers in the car park. Apparently, none of these witnesses was harmed by the static electric UAP field. When the craft departed, it did so with extreme acceleration. Within the context of known physics, any biological entity inside such a craft would have been killed instantly from the extreme imposed g-forces.

As the UAP departed, it created a vertical, hole in the cloud cover that remained 6–8 minutes. "This is suggestive of a super-heated object or otherwise radiated heat energy on the order of 9.4 kJ/m³" (Haines et al., 2006). This indicates that the UAP's powerplant must have generated an intense ionizing field around the UAP that "burned off" the water vapor in a cylindrical hole through the cloud cover. Several eyewitnesses reported seeing a fog (a cloud comprised of water vapor) at times around the craft hovering

below the cloud deck, making it difficult to discern the craft's edges. The UAP thus generated its own H₂O/OH cloud from *intense, possibly pulsed, electromagnetic fields*. This class of UAP appears to interact strongly with the surrounding atmosphere, potentially to gain physical support to remain aloft.

One eyewitness stated, "There must have been hundreds of witnesses. I got some positive responses from about three other guys I work with." He also offered that the actions of the UAP seemed "very deliberate given the weather conditions and the airport operations at the time." He wrote, "I am still in absolute wonder and amazement at what I saw that afternoon" (Haines et al., 2006, p. 10).

Both of these flight crewmen saw the object for about five minutes. Both opened their cockpit side windows and looked up at the object. The First Officer, age 39 with over 13,000 flight hours, said the UAP was a dirty aluminum color, very stable and without any optical distortions near it. It was perfectly round and silent (Haines et al., 2006, p. 16).

When our hair stood on end I'm certain it was just a couple seconds before it took off into the clouds like there was some build-up of something. It felt like the static electricity of pulling off a sweater (Haines et al., 2006, p. 140).

A high-voltage electric field was apparently generated by the object just prior to its departure (and to a lesser extent during its 8-minute sustained horizontal hover). The O'Hare event is one of the best documented in the modern history of such sightings. One principle takeaway is the remarkable consistency this case shares with the other well-documented cases described below concerning high-voltage electrostatic fields.

Case 5: Bentwaters Air Force Base, Rendlesham Forest UAP Landing

Another of the best-documented cases in the modern era occurred at Rendlesham Forest, Bentwaters AFB Suffolk, England (December 26–28, 1980). As many as several hundred Air Force personnel and civilians witnessed a number of distinctive types of UAP over a three-day period. Retired U.S. Air Force Sergeant Jim Penniston describes physically touching and photographing a solid triangular craft (9 ft. wide × 6 ft. high).

A review of this case reveals consistency with naturally occurring electric atmospheric phenomena. Note below that Sgt. Penniston describes sensing an electrostatic field emanating from the pyramidal-shaped object, although it remained stationary on the ground. We can thus conclude that its power system remained operational in power-down mode. We continue with further first-hand descriptions of high-voltage electric fields, flaming plasmas, equipment malfunctions and silent, hyper-fast UAP departures with no apparent air displacement.

“All four men’s radios began to malfunction ... something began to interfere with communications, which seemed to be working over a short distance” (Pope et al., 2015, p. 5). Military radios with numerous backup systems failed due to the atmospheric plasmas generated by these ultra-high voltage UAP. The Rendlesham witnesses lost radio contact with their base commanders, possibly indicating that the strong electrical field surrounding the craft created a plasma that blocked radio transmissions. The Light-All emergency lamps had also failed to work all night, only lighting up when anomalous blue lights “flew” by them. This indicates that the Light-Alls had mercury or other vapor inside that fluoresced from the high-voltage electric fields generated by the blue lights.

On November 12, 2007, Larry King of CNN held interviews prior to a major Bentwaters/Rendlesham press conference in Washington DC.

Lt. Colonel Halt: I saw some lights I couldn’t explain—very unusual lights. I don’t mean just a light like a bulb. I saw something that was oval-shaped—maybe 10, 12, 14, 16 inches across. It had a black center. It sort of winked and it appeared to be dripping something like molten metal off it.

Larry King: And then it took off, right?

Sgt. Jim Penniston: After 45 minutes, then *it powered up with lightning* and went to tree level and, took off....

Larry King: Did it make a sound like an engine?

Sgt. Jim Penniston: Absolutely no sound and no air displacement.

Larry King: Just up?

Sgt. Jim Penniston: Up and gone (King, 2008, italics added).

Cool plasma blowing off of an electrostatically-powered aerospace vehicle could appear virtually identical to flames, or some “dripping molten metal,” depending on the electromagnetic frequencies emitted by the UAP. Penniston describes physically feeling a similar intense electrostatic energy that the car-park witnesses of the 2006 O’Hare incident described, just prior to that UAP’s hyper-accelerated departure. Many other airmen reported intense static electricity in the air around these UAP. Intense static electricity is also precisely what is described by people beneath thunderstorms who are in imminent danger of being struck by the electrical discharge of lightning. Eyewitnesses have strongly sensed electrostatic fields generated by UAP high-voltage fields that abruptly dissipate as the UAP departs (Haines et al., 2006; James, 2018; Walton, 1996). This is useful information.

The air was filled with static electricity and the hairs on their arms and on the backs of their necks were standing on end. It was difficult to walk properly and they described the experience as being akin to wading through deep water (Pope et al., 2015, p. 6).

They also describe mists and fog around the observed UAP. “There was an illuminated patch of mist or fog that seemed to pulsate, as if there was an indistinct object of some sort present” (Pope et al., 2015, p. 127). The ground fog witnessed by many airmen indicates the presence of high-voltage electric fields. Penniston additionally experienced a period of missing time including a sense of “time slowing down.” These electric fields appear to slow down the physical body as well as provide a *felt sense that time itself somehow slows down*. Within the electric field, Penniston and others also describe an absolute silence as auditory sounds around them and inside the bubble were completely dampened. Absolute silence is frequently described by eyewitnesses of powerful electric storms just prior to the onset of a tornado.

Burroughs, Penniston and Halt further describe witnessing striking red and orange phenomena around the craft that can be caused by high-voltage electric, field-induced atmospheric plasmas, both on the surface of craft and in the surrounding air. “After a few minutes this object began dripping something that looked like molten metal” (Pope et al., 2015, p. 41). “[She] had seen a fiery red/orange object descend slowly into the forest. She reported that it had

been surrounded by an eerie blue/white corona" (Pope et al., 2015, p. 29). "The object was between us and the farmers house. The reflection from the object was like a burning blazing fire on the farmers house" (16:00) (Coulthart, 2024).

The object was likely shedding a cool, red-orange plasma that can appear very much like blowing fire flames, or like dripping molten metal from a distance (Feindt, 2010, p. 397). Ionized oxygen emits light in the red and orange bands of the visible spectrum (~400–510 THz) when subjected to high-voltage electric or magnetic fields. In his book and interviews, Penniston describes the presence of an electrified "bubble" with discernible boundaries—surrounding the craft that he touched and photographed. Penniston further describes his experience in a video interview.

Over the canopy of the forest was a white, bluish gray bubble (12:20). I could feel like static electricity on my face, skin and hair (14:00). My movements became labored ... like walking through a pool of water waist deep. The "sphere of influence," the immediate area around the craft measured maybe fifteen feet like a bubble.... weird things happened inside there (16:52). There was no sound. I could not hear the click of my radio when I did it (25:34). When [the UAP] rose up there was no air displacement at all (Mintel & Birnes, 2019).

The light had dimmed somewhat and formed a kind of grey/white/yellowish "bubble" around the outline of what appeared to me to be a dark mechanical object (p. 56). I also noticed a blue halo of light surrounding the white light being projected from the object (p. 60). I could see that the dome-like, light or 'energy field,' which seemed to be generated from the craft somehow, enveloped the area possibly ten to fifteen feet out around it [earlier it had been 100 ft. in diameter].... It seemed this colored light activity within the surface of the craft, and which seemed to be generating the larger white dome, or 'bubble' of light around it was slowing down (Penniston & Osborne, 2019, p. 65).

There was an area of about fifteen ft. which surrounded the outside of the craft.

This area I will call the *bubble*. For within the bubble, static electricity pulsed upon my clothes, skin and hair. Also, an appearance of slowing

time. *The air seemed dead, not transmitting any sound* (Pope et al., 2015, p. 232 italics added).

The bubble described by the airmen had an electrical, electromagnetic, acoustic and possibly a biological dampening effect. Hundreds of airmen observed these UAP/craft depart instantaneously. "It was gone in the blink of an eye. In my logbook ... I wrote 'speed impossible.' Over eighty Air Force personnel, all trained observers ... witnessed the takeoff" (Pope et al., 2015, p. 67). This case provides further evidence that our scientific understanding of *natural, atmospheric electric phenomena, including GRGs and lightning discharges, may be applied to UAP power sources and their hyper-fast propulsion systems*. During another interview Burroughs further commented on his Rendlesham experience. According to Retired USAF Airman First Class John Burroughs, "There was static electricity in the air."

U.S. Congressional Representative Merrill

Cook: "You were there when the craft took off? There was no sound?"

Jim Penniston: "*The craft generated more lightning, and that concerned me. It rose off the ground. It hovered and then took off in the blink of an eye. One of the things that stopped was the static on the clothes. That did stop. It did it with silence*" (National Press Club, 2013, italics added).

As observed by Penniston, a UAP that "powered up with lightning," confirmed, as in the O'Hare case, that electrical discharges and electromagnetic effects were witnessed as both craft hovered, as well as when they departed with apparently instantaneous and extreme velocity. Furthermore, Penniston observed the following energy dynamics of the UAP that are consistent with utilization of the Earth-ionosphere electric circuit (Scott, 2021).

Penniston: I entered the *bubble field* [the area immediately around the craft] first... the area or field seemed dead ... a dead silence (p. 8)... When we came up on the triangular craft there were blue and yellow lights *swirling around* the exterior as though part of the [UAP's] surface and *the air around us was electrically charged* (p. 66)... It was gone in the blink of an eye.... Over eighty Air Force personnel, all trained observers

assigned to the Eighty-First Security Police Squadron, witnessed the [UAP] take off (Pope et al., 2015, pp. 66–67, italics added).

Significantly, Penniston and others describe a “bubble field” surrounding the triangle-shaped craft, as this is precisely the descriptor used by theoretical physicists to describe the warp drive energy field that would encapsulate a warp-drive-equipped craft (Alcubierre, 1994; Beck & Colli, 2025a; Bobrick & Martire, 2021; Lentz, 2021).

Note that on the night of August 13–14, 1956, 24 years earlier, a separate UAP-event, known as the Lakenheath-Bentwaters Incident also occurred at Bentwaters AFB, described in the 1968 Condon UFO report (Condon, 1968). A third Bentwaters UAP case occurred several years following the 1980 events. The next case of Travis Walton also highlights a low-hovering UAP that generated a high-voltage electric field and yellow atmospheric plasmas and “haze.”

Case 6: Travis Walton’s High-voltage UAP Encounter

On November 5, 1975 in the Apache-Sitgreaves National Forest near Turkey Springs, Arizona, Travis Walton appears to have been accidentally electrocuted when he approached too close to a low-hovering UAP, later described as a large, lenticular-shaped craft or “saucer.” Several co-workers described the incident as a loud electrical “snap” that sent Travis Walton flying backwards through the air. “The soft yellow haze from the craft dimly illuminated the immediate area [beneath the craft] with an eerie glow. Under the weird light, the encircling forest took on bizarre hues that were very different from its natural colors” (Walton, 2024, p. 1).

As observed by witnesses in the preceding Rendlesham case, ionized atmospheric oxygen emits red or green light, but under certain conditions it can emit pale yellow light ($\sim 5.1\text{--}5.5 \times 10^{14}$ Hz; wavelengths 454–585 nm). The “soft yellow haze” indicates the presence of a high-voltage electric field generating the oxygen plasma at two frequencies.

Suddenly I was startled by a powerful, thunderous swell in the volume of the vibrations from the craft. I jumped at the sound, like that of a multitude of turbine generators starting up. I saw the saucer start wobbling on its axis with a quickening motion, in a pattern like the erratic spin of an unstabilized top [“silver dollar

wobble”]. The same side continued to face me as the craft remained hovering at approximately the same height while it wobbled (Walton, 2024, p. 2).

I ducked into a crouch when a tremendously bright, blue-green ray shot from the bottom of the craft. I saw and heard nothing. All I felt was the numbing force of a blow that felt like a high voltage electrocution. The intense bolt made a sharp cracking, or popping sound. The stunning concussion of the foot-wide beam struck me full in the head and chest (Walton, 2024, p. 2).

“I do know one thing. It sure looked like he got hit by lightning or something!” [co-worker and eyewitness] Dwayne returned. “I heard a zap—like as if he touched a live wire!” (James, 2018). The “tremendously bright blue-green ray” corresponds to ionized atmospheric nitrogen and possibly argon—further evidence of a brilliant, atmospheric electric discharge reminiscent of the Rendlesham Forest blinding flash that immediately preceded a UAP materializing seemingly out of thin air.

I really think it was an accident. I don’t think they were firing at me. I think it was an effect of the propulsion. They were powering up to leave and just get away from us. And I raised up and got too close. I think some kind of energy just found its way to ground.... it was sort of an accident of circumstance (James, 2018).

Walton’s “some kind of energy [that] just found its way to ground” was apparently a powerful electric discharge, effectively a controlled albeit accidental lightning discharge. High-powered multiple pulsed lasers firing synchronously have been tested successfully to guide lightning discharges from storm clouds to the ground for research (Jhaji et al., 2014). Such an electric discharge, confined to the laser-generated plasma channel, would visually appear as a beam.

There was some kind of electrical charge building up.... [the craft’s surface] looked like metal coming out of a blast furnace. A blast of energy came out of the craft. When I stood up I closed the distance [to the craft]. There was a charge buildup in this thing that jumped to ground through my body (James, 2018).

Mike told them he thought he had briefly seen the outline of the golden disc through the trees to the south. It had raised itself vertically to treetop level and streaked away toward the northeast at incredible speed (Walton, 2024, p. 4).

The high-voltage field surrounding the UAP would have been most intense at its outer surface. Ionized oxygen emits red and orange light depending on the frequency of the high-voltage radiation. This cool plasma can create the appearance of flames blowing or molten metal dripping. In fact, during a UAP incident on July 25, 2007, in Warwickshire, England, five silent “flaming” objects in formation were witnessed by 100 people in the night sky for about a half-hour:

Chef Kern Griffiths said: “I saw five lights, we all thought they were hot air balloons at first because the glowing spheres looked like a burst of flames. But I couldn’t see any outline of the balloon itself and they were travelling far too fast ... and there were these bright dots fizzing across the sky” (Daily Mail, 2007).

The fiery glow is well-known in ufology as an evening event because the rotating field of the UFO is ionizing the air in contact with it, unintentionally producing the image of a flaming body as a byproduct of its operation (Feindt, 2010, p. 397).

What Griffiths and others witnessed from the several UAP was an “air ionization flare up” (Hill, 1995, p. 283), otherwise known as a deceleration inertial reaction force. Highly charged electric thunderstorms cause blue “flames” (streaming electrons) to be emitted by sharply pointed evergreen needles from trees beneath the storm (Jenkins et al., 2022). This phenomenon is an electric corona known for centuries as St. Elmo’s Fire, going back to sailing ships’ masts emitting the “fire” during electric storms. The electrically charged UAP, hovering overhead, is electro-dynamically similar to a *supercell electric storm*. It generates millions of blue evergreen needle coronas that *stream electric current up to the UAP*. When Walton walked into the UAP’s extended high-voltage electric field, he became a conductive element in the electric circuit and inadvertently triggered an electric discharge between ground and UAP. This “lightning” discharge struck Walton as his body became more conductive than the surrounding trees.

Streaming evergreen coronas would normally prevent such a sudden electric discharge (Jenkins et al., 2022).

Continuously pulsing, storm-top blue jets and evergreen needle St. Elmo’s Fire are both *ionized plasma*—(blue coronal discharges) streaming between Earth and ionosphere. Figures 5a and 5b are graphic images of newly recognized elements of the terrestrial electric circuit we propose as a new electric energy supply for “warp drive-equipped” UAP, as well as other more conventional aerospace craft. Electrically charged, atmospheric nitrogen glows blue, giving blue jets their signature blue color. In 2015, European Space Agency astronaut Andreas Mogensen, onboard the International Space Station (ISS), video-recorded a 160-second blue jet (blue starter) plasma fountain emanating from the top of a storm located above the Bay of Bengal— that pulsed 245 times (Neubert, et al., 2021) (Figure 5a).

The observations show a multitude of blue, kilometer-scale, discharges at the cloud top layer at ~18 km altitude and a pulsating blue discharge propagating into the stratosphere reaching ~40 km altitude.... Its propagation is not well understood but is thought to be mediated by a *multitude of streamers* emitted from the leader tip. A strong negative cloud-to-ground lightning at 167.5 kA occurred 1.16 s prior to the pulsating blue jet and may be related to it ... but no clear correlation is observed.... A weak screening layer may favor corona-type discharges, observed as the multitude of kilometer-scale blue discharges (Chanrion et al., 2017, italics added).

During 160 seconds of video observation this storm served as a conduit for continuous, pulsed streaming of electric plasma energy between ground and stratosphere. After 160 seconds, the ISS’s orbit carried it out of visual range of the blue jet fountain which may have continued for some minutes.

Travis Walton was impacted by an accidental electrical (lightning) discharge from a UAP’s high-voltage electric field. Notably, unbeknownst to Walton, the craft likely generated extreme amounts of OH and HO₂ radicals that are important to a discussion of Sun-Earth electric energy and tornado genesis. This UAP plausibly was encapsulated within an extremely high-voltage, self-dampening, electric field that extended outwards for hundreds of yards—and to the ground. The air boundaries of such an electric field would be a *plasma double-layer* (see Feindt). As in the Chicago O’Hare case, the high-voltage electric fields that generate plasmas around such UAP can encompass an

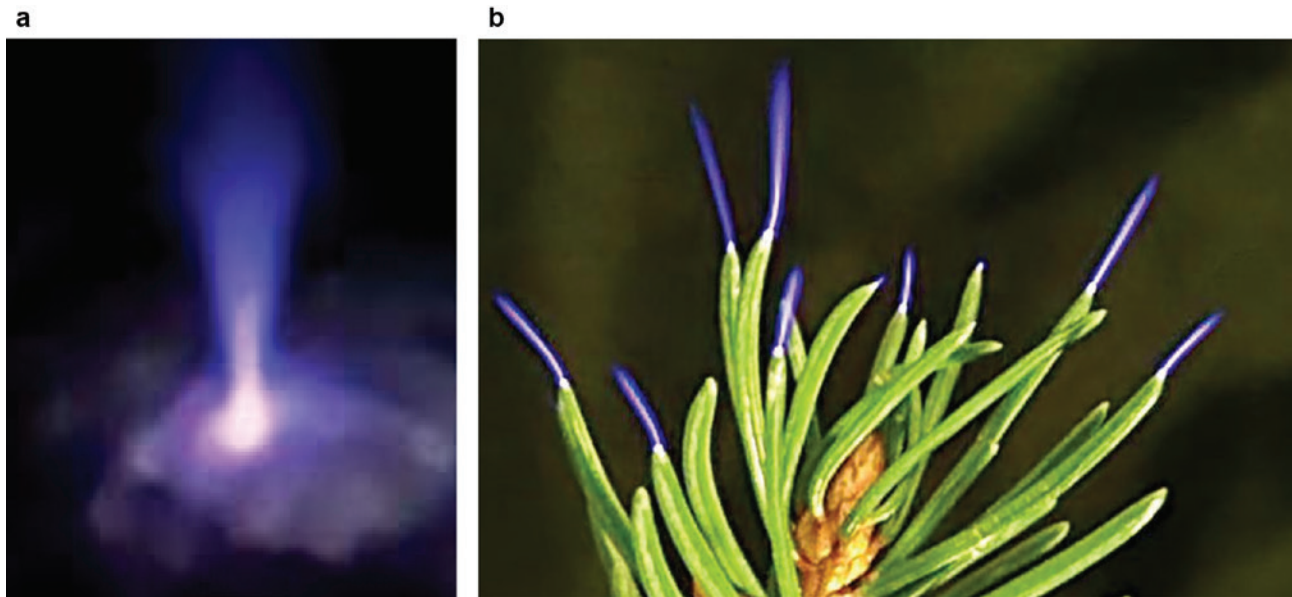


Figure 5. (a) A continuously pulsing blue-starter fountain from the International Space Station video. Image credit: NASA, ESA; Photo: Andreas Mogensen. (b) Streaming coronal discharges from evergreen tree needles (St. Elmo's Fire) when an electrified thunderstorm—or UAP—is positioned overhead. Image credit: J. M. Jenkins.

atmospheric volume of several cubic kilometers. By comparison, “These streamers (blue starters, blue jets, gigantic jets and red sprites, Figure 6) preserve their ability to produce highly active chemical species and can [impact] thousands of cubic kilometer volumes of atmosphere in a single event” (Pasko, 2008; see also Gordillo-Vazquez & Perez-Invernón, 2021).

In close proximity, especially being located directly beneath such a craft, the human body can inadvertently trigger a discharge of the electrical circuit between the high-voltage electric field generated by a UAP and the ground—like a human lightning rod. Similarly, people are struck by discharging storm lightning originating in the storm's GRGs. Lightning kills about 20 people each year in the United States, and hundreds more are injured beneath electric thunderstorms as they trigger lightning discharges (National Weather Service, 2024).

Five days later Walton described his final sight of the large lenticular craft hovering silently nearby—ten feet above the highway. “It shot vertically into the sky creating a strong breeze ... it was almost instantly lost from sight.... The most striking thing about its departure was its quietness” (Walton, 2024).

Case 7: Betty Andreasson's Detailed Drawings of High-voltage UAP Powerplant

Beginning in 1952, Raymond E. Fowler (ret.) served in the U.S. Air Force's Security Service under the auspices of the National Security Agency. He later joined the National

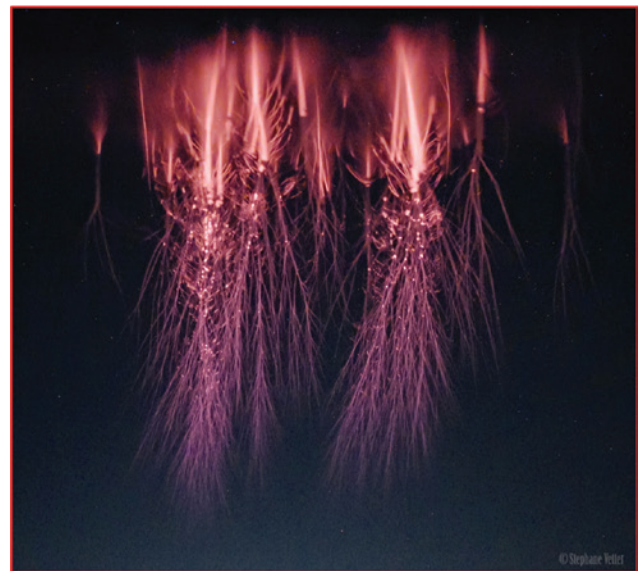


Figure 6. High-definition, high-speed photo of upper atmospheric sprites. Image credit: Stephane Vetter: Permission granted.

Investigations Committee on Aerial Phenomena (NICAP) and conducted on-site investigations of UFO sightings, becoming National Investigations Director for the Mutual UFO Network (MUFON) in 1975. In 1979, Fowler published the first of five books chronicling Betty Andreasson's interactions over decades with UAP-related phenomena. Betty has received no scientific or technical training; however, her exceptional artistic abilities have served as a valuable resource for illustrating the advanced UAP-related technologies that she reportedly witnessed.

Fowler (1990) includes a highly detailed drawing by Betty Andreasson of a large lenticular craft hovering directly above, while transferring energy into a similarly shaped but smaller craft. Her image portrays a total of three such lenticular craft, two of which are stationed on the ground. The larger craft and one small craft are shown exchanging energy as both are engulfed in “steam” or dense water vapor clouds that partially obscure both. In addition, both craft are portrayed displaying numerous large electrical discharges (craft-to-air lightning) into the surrounding atmosphere, extending beyond the dense water vapor clouds. These two related energetic phenomena—water vapor condensation and electrical discharges—indicate that extremely high-voltage, rotating electric fields were involved in both the power supplies and the operation of these craft.

You can hardly see any more though because of the, [pause] the fog [that has been created].... There's lightning! There's lightning coming out of that whirling thing.... And it's coming out of the clouds [surrounding the ship]. You can see streaks of lightning all over the place (Fowler, 1990, p. 78).

But, the thing in the middle is moving *counterclockwise*. And it's starting to, it's starting to spin and spin and spin.... It looks like *water* spinning around it.... But, it looks like that spinning is causing *steam* or *mist* all over.... It's so warm it's almost smothering.... I feel prickly. All over my body feels prickly [static electricity] (Fowler, 1990, pp. 76–79).

Dr. Beck communicated with Betty Andreasson (personal communication, 2001), as well as with author Raymond Fowler. Andreasson's revelations about her detailed component and systems drawings of advanced propulsion technologies have influenced the authors' conclusions about UAP drive mechanisms. For example, Andreasson stated that when she observed the craft's drive mechanism (powerplant) starting up, rotating slightly, the three large spheres protruding from the underside of the craft began to glow or fluoresce internally “like the sheen of oil on water.” This would indicate that a high-voltage electric field was ionizing gas or gases contained within the spheres, similar to mercury vapor UV glow in fluorescent tubes located within high-voltage electric fields. Andreasson's

descriptions of fog, lightning, prickly feelings and magnetic rings are consistent with extremely high-voltage energy fields.

Andreasson and others have described in detail the hemispheric protrusions on the undersides of certain lenticular and triangular-shaped craft (Fowler, 1979; Meessen, 2000; Smith, 1961).

Underneath the [UAP] there are three things that people have referred to as landing gear. They're not landing gear at all, they're spheres within which a [electrically] charged sphere is rotating, it is spinning on magnetic bearings.... It's a very simple design in [cross-] section.... And the spheres carry a [electric] charge and they spin on this type of bearing down inside the [sphere]. And the tilt is just simply produced by rotating the sphere a little bit which bends the field (Smith, 1961).

Wilbert Smith was the Senior Radio Engineer at the Canadian Department of Transport in 1950. Holding a master's degree in electrical engineering, Smith was responsible for the engineering aspects of all matters concerning the use of radio in Canada. In 1957 Smith sat on the coordinating committee of the International Geophysical Year. Project Magnet, the official “flying saucer” investigation by the Canadian government, was headed up for its four years by Smith, ending in 1954 (but was informally active until 1962). Its once *Top Secret memo described a possible new propulsion system powered by the earth's magnetic field*. Smith felt that this was the principle demonstrated by the UAP.

In his 1961 lecture Smith alluded to an advanced propulsion system “powered by earth's magnetic field.” Smith's comments are in line with the authors' view that *UAP utilize Earth's natural electric fields as a source of abundant electric energy*. Alfvén's plasma cosmology details a plasma-dominated universe where magnetic fields arise only from the presence of electric fields (Alfvén, 1981; Scott, 2021). We acknowledge plasma cosmology theory is controversial as it may lack the comprehensive explanatory power and predictive accuracy demonstrated by the standard cosmological framework. However, we contend that a wholesale rejection of plasma cosmology theory is unwarranted; one major recent discovery illustrates that data can be interpreted in different ways.

With respect to these two competing models of the large-scale structure of the universe, the cosmic web, Tornotti et al. (2025) have obtained the first direct high-definition

images of a vast filamentary structure (bridge) connecting two distant quasar-host galaxies. Located in the MUSE Ultra Deep Field (MUDF), and observed with the Multi Unit Spectroscopic Explorer (MUSE) instrument, this new detector is an order of magnitude more sensitive than prior existing equipment, allowing for unprecedented imaging capabilities. “Through systematic comparisons with simulations, we validate the filaments’ typical density predicted in the current cold dark-matter model.” Tornotti (2025) therefore relies on the *dark-matter-dominated universe* model—though dark matter has yet to be directly detected (Gupta, 2024).

The plasma cosmology model does not rely on a dark matter scaffolding, instead inferring an *electric plasma-dominated universe*, consisting of intergalactic-scale, self-organizing, filaments of electrified plasma (Birkeland currents, Scott, 2015) that link together the entire universe of individual stars, galaxies and galactic clusters. Tornotti’s findings, revealed through their spectroscopic equipment, are thus consistent with plasma cosmology’s vast plasma filaments, spanning millions of light years.

Finally, Raymond Fowler’s and Betty Andreasson’s descriptions and detailed drawings dovetail remarkably with the following UAP case of Enrique Castillo Rincon.

Case 8: Enrique Castillo Rincon’s Detailed Drawings of High-voltage UAP Powerplant

In 1995, Dr. Richard Haines interviewed Enrique Castillo Rincon, an electrical and communications engineer from Caracas, Venezuela, about his UAP experiences between 1973 and 1975 (Haines, personal communication, June 1, 2016). When Haines and Beck compared cases, they became aware of striking similarities between Andreasson’s and Rincon’s experiences—despite having occurred 20 years apart, in different parts of the world, and with no prior knowledge of each other. Rincon’s drawings and descriptions (1997) are remarkably similar to Andreasson’s. Rincon’s crystal-based powerplant and Andreasson’s coil-based powerplant apparently utilize similar power supplies and provide similar output. Both of their drive systems consist of double-rotating devices (“wheels within wheels”) that connect to an external energy source to provide abundant electrical energy for the UAP. It became increasingly evident that the basis for both of their witnessed technologies is conventional electrical engineering and plasma physics. The following case of large triangular-shaped UAP also includes descriptions of three hemispheric protrusions on the underside.

Case 9: Auguste Meessen: Belgian Triangular Craft

These well-documented cases of mass sightings of triangular craft occurred from November, 1989 to April, 1990. General De Brower comments on the source of data for this case.

I am relying and basing myself mainly on the credibility of several witnesses.... I contacted them myself. We have hundreds of people, of credible witnesses and they stand by their observations (10:30). That’s the most convincing for me, talking to people and ... they saw objects very clearly that did not fit any technology that was available then and what is available now (Huneus, 2020).

Auguste Meessen, professor of theoretical physics at Catholic University of Louvain, Belgium, has investigated the 1989–1991 wave of thousands of individual sightings of large triangular UAP.

One can say that it is a type of MHD or MPD (magneto-plasma-dynamique) propulsion. I prefer to speak of an *electromagnetic propulsion*, since most of the problem to be resolved is the production of EM fields. These *oscillating fields* are very intense in the immediate vicinity of the surface of UFOs. It should also be noted that this object produces a pulsed ionization of air, whose frequency and phase are suited to the fields (Meessen, 2000, italics added).

Meessen further asserts that some atmospheric UAP must have light-speed capabilities (warp drive technology) given their estimated 5,000 g accelerations. To clarify how electromagnetic propulsion is related to warp drive: The MPD process described by Meessen can be considered *synonymous with a warp drive* as the plasma bubble (soliton solution) described by Lentz is a highly electrically-charged cell or field—with double-layer boundaries. The high-voltage rotating field generates the warp drive toroidal, vortex “bubble,” described by Meessen and Hill. The warp drive bubble is an encapsulated region of super-high voltage fields similar to a lightning stepped-leader, plasma soliton bubble. Hill refers to it as “force field” drive technology.

The working principle of magneto-hydro-dynamic (MHD) propulsion (a form of electromagnetic propulsion) involves the acceleration of an electrically conductive fluid (in our case, a plasma) by the Lorenz force. Meessen theorizes that

the “fluid” surrounding and propelling UAPs is self-generated, atmospheric, electrically charged plasma. Hence, his use of the term *magneto-plasma-dynamics*: the force on a charged particle due to electric and magnetic fields. The Lorentz force law describes the force experienced by a charged particle (q) moving with velocity (v) through an electric field (E) and a magnetic field (B), given by $F = q(E + v \times B)$. In order for the Lorentz force to act on a fluid, *the fluid must be conductive or made conductive by ionization*. High-frequency, extremely intense, pulsed discharges can easily ionize the air. An alternating current at microwave frequency or higher ionizes air very efficiently. This forms a conductive sheath just off the surface of the UAP which absorbs most or all of the radiation. Once the air is ionized, the UAP can be propelled by the Lorentz force.

Three milky, yellowish-white lights were at the corners of the triangle. They were bright but not blinding. In the center of the triangle was a much larger light. Its color was changing but the prevailing hue was grey-blue. These changes seemed to imply something revolving, reminding the witnesses of the mirror-globes in discos (Meessen, 2000).

Once again, we identify plasmas and electromagnetic forces via high-voltage oscillating electric fields, resulting in the pulsed ionization of the surrounding air. High repetition rate, very short-duration EM pulses can spike to extremely high voltages. The “milky, yellowish-white lights” also match the description of “pale yellow light” emitted by a large lenticular UAP at tree-top altitude in the Walton Case 6. As noted earlier, such a yellow plasma light can result from ionized atmospheric oxygen ($\sim 5.1\text{--}5.5 \times 10^{14}$ Hz; wavelengths 454–585 nm).

Meessen has contributed significantly to the understanding of the technologies associated with UAP. Meessen has scientifically studied UAP for decades and published extensively on the subject. The following excerpts from Meessen’s 1973 paper *Reflections on propulsion of UFOs* are in line with the engineering of a terrestrial hyper-fast drive using existing knowledge of physics.

We wonder whether is it possible to design a mechanism of propulsion of [UAP] which is compatible with known physical principles.... A magneto-hydro-dynamic propulsion? This initially relates to the mechanism of the propulsion of these machines.... They can even have energy sources which are unknown to us (Meessen, 1973).

Our evidence indicates that the unknown energy source utilized by this “magneto-hydro-dynamic” propulsion system may be *streaming solar plasma*—the potential source of a continuous supply of untapped, clean solar energy (Clarage, 2024; Ying-Dong et al., 2024; Russel & Qi, 2020; Scott; 2015).

Having reviewed a great number of observational and instrumented reports, Meessen concluded that there are two types of UAP, one type “seem(s) to be adapted to voyages through the ‘vacuum’ of interplanetary and interstellar space,” while the other type “would be adapted to the fluids than constitute our terrestrial atmosphere and the water of the oceans” (Meessen, 1973). However, regardless of their type, Meessen has identified a central process of high-voltage ionization of the surrounding air—a key mechanism for UAP propulsion.

Electromagnetic action on the ionized air is the key of the mystery [that] seems to be contained in the reports of observation, since one often describes the existence of a very strong luminosity in the immediate vicinity of these “objects.” This luminosity is variable, both in color and intensity and sometimes it is blinding ‘like that of an electric arc.’ The most direct and simplest explanation of this phenomenon involves *very intense ionization of the air around these devices....* An electric field alone could not produce this effect.... There exists a magnetic field, produced by a current, circulating in a ring (possibly superconductive), located in the enclosure of the machine (Meessen, 1973, italics added).

The takeoff of these [UAP] can be done in two stages: Initially the object becomes very bright often having risen a few tens of meters. Then it suddenly leaves at fantastic speed. All this occurs as if the object needed *ionization of the ambient air* to start moving and as if it could suddenly trigger a “force field” powerful enough to create large action forces and reaction (Meessen, 1973, italics added).

Plasmas that result from pulsed high-voltage fields repeatedly come up in technical discussions of disc-shaped UAP. Meessen noted that American physicist Stanton Friedman also stated that plasma physics could be instrumental in understanding the propulsion mechanisms of UAP. The following anomalies described by

Meessen can be initiated by high-voltage, plasma-producing UAP, thus leading to the conclusion that magnetic and electric fields oscillate and vary spatially in the vicinity of UAP.

The engine and the headlights of her car were not affected, but the radio was jammed with static, and most importantly, she felt “electric shocks each time she touched the gear shift lever during the observation.” (Meessen, 1973).

A white beam swept the ground and when the witness was caught in this beam, he felt paralyzed. Yet there was no problem to move his eyes, but his hair was suddenly spiked.... Then, it was “as if the air were full with static electricity and I felt my hair being drawn up on my head” (Meessen, 1973).

When a fluorescent light tube is placed in proximity to a high-voltage Tesla coil—as apparently occurred with the glowing spheres in the Rendlesham case—the light glows bright white with no physical electrical contacts. Simply being located within a high-voltage field of sufficient strength causes the gas in the sealed tube to ionize and fluoresce. There are many such electrical anomalies associated with near-encounters with UAP. “At one moment when the UFO’s emissions stopped and where the light flickered, he observed that some [fluorescent lamps] with sodium vapor emitted light, although they were isolated from any electrical contact” (Meessen, 1973).

UFO’s ionize the air and they exert forces on charged particles that result from using *electric and magnetic fields.... It provides lift and propulsion of the flying object....* Electrons move in a collective manner.... They will therefore oscillate like a pendulum, with a definite frequency. It lies in the gigahertz [microwave = 300 MHz–300 GHz] range. The result is an oscillating electric *field* (Meessen, 2000, italics added).

“The object stayed overhead for two or three minutes then departed suddenly in the direction of the houses. The driver of the car felt a breeze through her rolled-down window” (Meessen, 2000). This example indicates that the UAP was electrostatically “pushing off” of the ionized atmosphere, as it possessed no propellers, jets or other known forms of propulsion. From a 1958 case: “When it

was close to us, we now felt very powerful heat from the [UAP] and a strong blast of air” (Feindt, 2010, p. 128).

Meessen further investigated in-depth the electromagnetic effects UAP had on in-flight aircraft compasses.

Two of these cases greatly surprised me because pilots claimed that the needle of a magnetic compass had been put in rotation as long as a UAP was near the aircraft. I was very happy to hear this because it proves that those UAP were surrounded by an *oscillating magnetic field, whose frequency was relatively low* (Meessen, 1994, italics added).

Meanwhile, the automatic direction finder (ADF) and the gyroscope and the magnetic compass seemed crazed and running at a speed of about 12 revolutions per minute (Meessen, 1994).

[This implies] really fantastic values for the intensity of the magnetic field in the vicinity of the UAPs. Our current technologies do not make it possible to produce them (Meessen, 1973). The magnetic compass needles were suddenly and simultaneously deflected to point to the UAP. The power of this electromagnetic interference is indicated by the distance involved: the UAP was 2,000 meters [1.243 miles] from the vessel (Meessen, 1994).

Meessen describes a well-documented Army helicopter-UAP case that was also witnessed by a family on the ground.

Startled, Captain Coyne called the Control Center in Mansfield, but communication stopped. Coyne found the magnetic compass needle spinning slowly but continuously. The UAP was still in front of him.... The magnetic compass was rotating slowly, perhaps 4 or 5 revolutions per minute, while the radio compass remained stationary (Meessen, 1994).

One additional effect of UAP included in Meessen’s analyses deserves consideration. Witnesses in close proximity to UAPs frequently describe partial or full paralysis resulting in electric shocks, loss of mobility or even temporary loss of consciousness. The origins of the paralysis may be the intense, pulsed electric fields generated by the UAP. This implies that the cerebellum— that controls balance,

movement and coordination, or the reticular activating system—a network of neurons in the brainstem that controls sleep and wake states—may somehow be affected by UAP energy fields.

Two other witnesses felt an electric shock inside their car, whose headlights died out at 50 m [~150 ft] from a UAP and they remained paralyzed.... One of these men approached to within 20 m [60 feet] of the machine, where he was paralyzed, while the [UAP] took off at high speed (1954, France) (Meessen, 1973).

The typical battery of physical effects investigated by Meessen includes momentary engine stoppages, electric lights dimming or shutting off, radios or television disturbances, magnetic effects, inexplicable truncated light beams, electric shocks, and various physiological effects.

Case 10: The Phoenix Lights: Mass Sightings of Triangular and Chevron UAP

One of the most thoroughly documented mass sightings of UAP flyovers occurred in March, 1997, above Phoenix, Arizona and nearby environs. This series of events was televised around the world and included extensive photo and video documentation (prior to the proliferation of smart phones with hi-definition, megapixel cameras). An indeterminant number of massive structured craft “glided” at about 30 mph near the interstate corridor of Phoenix and were witnessed and photographed by an estimated 10,000 people. The significant factors associated with this case are the following:

- The sizes of UAP were estimated to be between 700 feet to 2 miles across;
- Despite their massive size they were completely silent;
- These UAP slowly “floated” in the air and some departed with extreme acceleration;
- Between 3 and 9 massive lights on the bottoms of the UAP were described as swirling amber lights, possible evidence of an air plasma;
- Their physiological impact, such as physical paralysis or direct heat, appeared to be negligible;
- Witnesses felt a discernible sense of peace when the UAP “floated” directly overhead;
- Official government and military agencies ridiculed the sightings, referring to them as flares, which they obviously were not; Dr. Beck has witnessed

the nighttime deployment of flairs by military aircraft while in England.

- The UAP were not of known human origin but were seemingly guided by an obvious intelligence.

Eyewitness Tim Ley spoke for his family:

We witnessed seeing a craft fly directly over our house. The time it took from when we first spotted them until this thing actually went over our house was about ten or twelve minutes.... it looked like a “V” formation flying towards us.... I could see its outline. It was passing over stars that were being blocked out. The lights were perfectly round and perfectly white light. It seemed to have dropped down in altitude.... Inside the two arms the stars looked like some kind of distortion. Not a heat distortion just not as clear as the stars on the outside.... This big light was right over us.... There was no light I noticed around us on the ground.... I know there’s nothing on this planet like that.... It didn’t make a sound. That’s the point. It was there. We saw it! There is no doubt in our minds whatsoever what we saw (Warwick, 2022).

During their interview, none of Tim Ley’s family noted feeling any static electricity charge such as many witnesses describe being emitted from rotating lenticular and certain other craft (see Cases 4–7). Neither did they describe feeling any loss of time, nor physical paralysis, direct heat or warm downdrafts being emitted from the craft. However, they uniformly experienced altered states of awareness as a sense of total calm or feelings of wonderment at what they were observing at close range. Tim Ley described one ~700-foot, chevron-shaped craft as completely silent and moving about 10–15 miles per hour directly over their family house. The lights were described as ~15 feet wide, extremely white, “light wells.”

In 2007, former Arizona governor and Air Force pilot, Fife Symington, who had publicly ridiculed these events during a televised press conference while in office, later revealed that he himself had been an eyewitness to a Phoenix lights aircraft.

I saw a huge craft come right over Squaw Peak. It was breathtaking.... Bigger than anything I have seen in the sky. It was absolutely silent. It had embedded lights.... I think this was

technologically far advanced. I believe this was something from another world.... The technology to get [to Earth] would be beyond anything we could imagine (FOX 10 Phoenix, 2014).

Symington's 5-minute local news interview was striking in its similarity to the Ley family interview and their description of an immense "aircraft carrier" size, slowly moving craft. Neither did Symington describe any sound emissions, electric charges or physical paralysis. This suggests that the powerplants in these immense chevron-shaped craft may utilize different "flight" and propulsion technologies than much smaller, rotating lenticular craft. Their electromagnetic signatures could be quite different from one another. It is possible that these large craft may possess interstellar transport capabilities (so-called "mother ships") whereas that may not be true for the smaller lenticular "scout" craft, possibly designed specifically for planetary, atmospheric transportation.

Following these events, Phoenix physician Dr. Lynn Kitei spent seven years thoroughly researching and documenting Phoenix Lights craft, having witnessed them personally on numerous occasions that also involved very close proximity to several triads of orange glowing spheres. Her data base includes numerous civilian reports as well as air traffic controllers reports based on persistent radar data of numerous large craft of this chevron design. Dr. Kitei confirmed that the UAP were extremely large, highly advanced aerospace craft possessing technologies seemingly under intelligent control (Kitei, 2020). This Phoenix Lights case may demonstrate a different type of drive mechanism from lenticular craft.

Case 11: Space Shuttles' Orbital Plasmas

The case of Earth-orbiting plasmas detailed by Joseph et al. (2024a, 2024b, 2024c) is well-documented with NASA still photographs, videos and voice recordings of astronauts describing, in real-time, swarms of up to 1,000s of seemingly autonomous, Thermosphere plasma cells, displaying "organic" behavior. The Thermosphere is Earth's atmosphere between approximately 100 km (~62 mi.) and 1,000 km. (~621 mi.); the larger part of Earth's electrified Ionospheric atmosphere, approximately 50 miles above sea level, where temperatures can rise above 3,630° F.

"Plasmas" up to a kilometer in size and behaving similarly to multicellular organisms

have been filmed on 10 separate NASA Space Shuttle missions, over 200 miles above Earth within the thermosphere.... and have been filmed flying towards and *descending from the thermosphere into thunderstorms*; congregating by the hundreds and interacting with satellites generating electromagnetic activity; approaching the Space Shuttles (Joseph et al., 2024a, p. 322, italics added; see also, Joseph et al., 2024b; Schild et al., 2024).

Hundreds of these specimens were filmed in the camera's field of view—and not just one structure but hundreds of specimens were viewed with the naked eye including flying alongside and appearing directly outside the windows of several Space Shuttles. Like plasmas generated in a laboratory, the plasmas of the thermosphere engage in life-like behavior (p. 334).... Further, those dusty plasmas with at least two voids (bright and dim) likely exhibit maximal self-excited oscillation which in turn may result *in propulsion* (Joseph et al., 2024a, p. 357, italics added; see also Joseph et al., 2024b; Schild et al., 2024) (Figures 7a and 7b).

Joseph et al. (2024b) claim that some of these glowing, pulsating plasmas may be mistaken by eyewitnesses on the ground for unidentified aerial *craft*. The smaller plasmas, observed immediately outside of Space Shuttle windows, made abrupt 45-, 90- and 180-degree turns while exhibiting life-like qualities. They were not however considered to be biological entities by NASA officials.

Shuttle mission STS-75 (February, 1996) experienced extensive, close-proximity, plasma anomalies. More distant plasmas (at 75–100 mi.) moved at an estimated velocity of a "few" kilometers per second (~4,470 mph), to "several tens" (35.6) of kilometers per second (79,600 mph, 4.6 times orbital velocity) (Joseph et al., 2024b). This latter figure far exceeds orbital velocity. Any such plasma approaching Earth-orbiting NASA spacecraft must itself be travelling at 17,150 mph. This raises the perplexing issue of how these plasmas could possibly *descend* from orbital velocities—to the tops of nearly stationary thunderstorms; or conversely, *ascend* from storm tops (30,000–50,000 feet)—to orbital, or far greater velocity. What energy source could propel a kilometer diameter plasma to 80,000 mph? This matter is not addressed by Joseph et al.

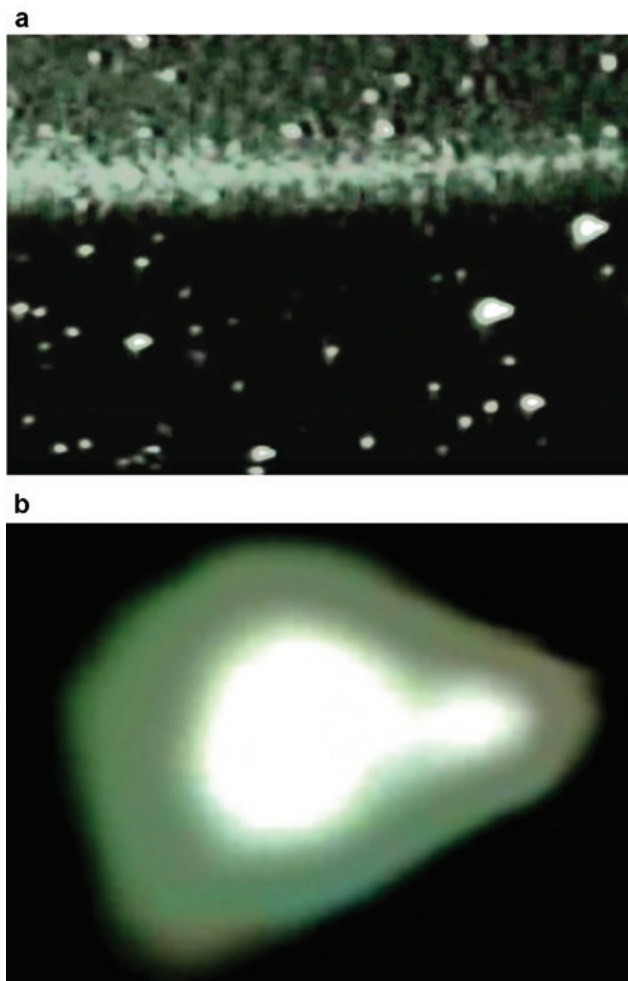


Figure 7. (a) Hundreds of cone- and cloud-shaped glowing plasmas with an internal nucleus, photographed by astronauts on Space Shuttle Columbia, STS-80, launched Nov. 19, 1996. Image credit: NASA. (b) Thousands of Earth-orbiting, glowing plasmas, some exhibiting pulsating cone-shaped extensions and internal nuclei, up to 1 km in size, photographed by STS-80. Image credit NASA.

These plasmas have the maneuvering and accelerating capabilities of an *inertia-less vehicle*; so Joseph et al. (2024b) conclude *they must be electromagnetic plasmas, not spacecraft*. They do not, however, rule out the possibility that some UAP are indeed spacecraft. Scientists can currently only speculate about the origins and true nature of these plasmas. We cannot rule out the possibility of previously unrecognized phenomena, for example, inertia dampening, within an ultra-high voltage plasma soliton. Visual and telescopic-analogue video observations (100-mile range) constitute the primary source of raw data about these objects.

The glowing plasmas reported here and photographed in space also have a variety of

shapes; and some specimens pulsate (perhaps as a means of propulsion) (Joseph et al., 2024b, p. 327).

Some of these plasma specimens are up to several kilometers in diameter—the estimated spatial diameter of the pulsed electrostatic field surrounding the O’Hare disk-shaped UAP (Case 4) at the moment of instantaneous, hypersonic, vertical departure. These plasma specimens are described as possessing metallic coloration while also being transparent. At approximately 100 miles distance NASA videos of these plasmas are unprecedented as swarms of thousands surround the tethered, Shuttle-deployed satellite. Even after 30 years, their true nature remains unclear.

The NASA Shuttle video images of plasma cells from orbit are compelling, especially given the observation that these plasma cells appear to de-orbit from 17,500 mph and descend into electrified storm cells, which raises questions about their propulsion. However, Joseph’s article, while remarkable for its well-documented content, is primarily descriptive and informative; it is not technical. As an observational study not unlike observatory-based astronomical studies of celestial objects, future research might include mathematical modelling of how these objects propel themselves through Earth’s atmosphere as well as low Earth orbit. Beyond simple electrical attraction and repulsion, without additional data, their origin, energy supply and motive source cannot be determined.

A number of the plasma UAPs in the NASA Space Shuttle telescope videos are cone-shaped and visually pulse off-and-on with regularity like beacons during the entire video. Paul Hill (Section I) describes numerous eyewitness reports of rotating *lenticular* craft that also display cone-shaped vortices beneath the UAP. Additionally, the well-documented “Gimble” UAP (Case 2) filmed by Navy pilots possesses a clearly discernible cone-shaped plasma vortex beneath it and possibly on top. Finally, cone-shaped vortices form at the tops or coronas of atmospheric water spouts and tornados—displaying evidence for a relationship between these various phenomena.

SECTION III: NEW SCIENTIFIC STANDARDS OF OBSERVATION AND RECORDING IN UAP RESEARCH

Several established UAP research organizations have recently initiated hard-data research programs, including the Galileo Project and the Scientific Coalition for UAP Studies. In addition, the physics department of the

esteemed German University of Würzburg (founded in 1402) now offers coursework in UAP studies. These publicly emerging, UAP research organizations are utilizing a wide range of observational and recording equipment for the first time in the modern history of UAP awareness. They serve to legitimize what is arguably the most significant multidisciplinary research field in the history of science, potentially ushering in a new appreciation for the positive global impact on transportation and limitless clean energy UAP studies offer.

Watters et al. (2023) recommend utilizing a broad assemblage of observational and recording equipment for capturing data from anomalous phenomena. The primary emphasis of certain of our cases focuses on eyewitness visual and sensory testimonies describing electromagnetic and electrostatic fields. Their testimonies have been combined with radar, infrared and electro-optical, weapon detection, system reports. Watters et al. acknowledge this large body of reliable eyewitness testimonies and then go further by addressing the most effective approach for scientifically capturing hard data during UAP encounters—to greatly expand and further legitimize the already substantial eyewitness and instrumented, evidentiary database. The objective with a broad optimized suite of instrumentation is to obtain reliable, reproduceable, verifiable techniques and data on UAP parameters that lends itself to ongoing in-depth analyses that cannot be precisely acquired solely by unaided human visual and sensory observations.

The challenge is to obtain hard data on energy sources and utilization, propulsion systems, inertia damping and other “flight” characteristics, such as extreme maneuverability and hyper-acceleration, and their apparent ability to phase into, and out of, visual perception. These anomalous “flight” and “energy” characteristics, while apparently involving classical physics and electrical engineering, fall outside the scope of most physicists’ purview.

Our wider goal of the Galileo Project is to determine whether there are, in or near Earth’s atmosphere, measurable phenomena which can be confidently classified as scientific anomalies.... As of this writing, none of these ongoing [instrumented] efforts have reported UAP detections in peer-reviewed scientific literature.... Interest has strengthened in recent years following discoveries by the Kepler spacecraft that potentially habitable planets are superabundant in our galaxy (Watters et al., 2023).

In order to scientifically monitor and record UAP phenomena it is necessary to clearly define what you intend to record; and the equipment needed to accomplish the task. Watters et al. have outlined this process as they recommend a general classification of a broad range of surveillance instruments including:

- Wide field-of-view cameras in multiple light bands;
- Narrow field-of-view instruments including cameras;
- Passive multi-static arrays of antennas and receivers;
- Radio spectrum analyzers for measuring radio and microwave emissions;
- Microphones for sampling acoustic sounds;
- Environmental sensors for characterizing local temperature, pressure, humidity, wind velocity.

The instruments recommended by Watters et al. best capture anomalous UAP data for analysis including:

- Wide spectrum electromagnetic data for visible, infrared and UV light;
- Sub-atomic particle emissions;
- Radio frequency emissions;
- Magnetic field anomalies.

Additional observatory (stationary) and deployable remote instrument packages should include:

- Binoculars, wide-field of view and zoom;
- Digital optical and infrared, still, and video camera-equipped astronomical telescopes;
- Radar transceivers (used by air traffic control and missile defense for tracking multiple targets);
- Spectrum analyzers (to determine the power of electromagnetic signals);
- Spectroscopic cameras (typically used to observe astronomical objects, stars & galaxies):

Teodorani advocates using both spectroscopic and high-speed, pan/zoom/tilt (PZT) cameras with a diffraction grating (for example, 50 mm or 270 mm lens) in an effort to measure the magnetic fields of UAP (Teodorani, 2024a). Spectroscopic cameras would provide vital new information on the amount of energy utilized and emitted by UAP, thus far largely unavailable to researchers. Acquiring this new data would increase the potential for understanding the source of UAP in-flight energy; for constructing similar pollution-free, electric powerplants; and for developing aircraft with similar “flight” characteristics.

Teodorani uses the Stefan-Boltzman law equation to determine the observed luminosity of individual Hessdalen lights (Teodorani, 2024a, pp. 48, 51).

When a magnetic field is present inside the hot plasma surrounding (or constituting) a UFO, emission lines are split in two or more components, which are differently polarized depending on the orientation of the magnetic field [with] respect to the direction of the observer and whose separation depends on the strength of the magnetic field (Teodorani, 2024b, p. 22).

This is known as the Zeeman effect. The related process of *spectropolarimetry* can further provide information on the orientation of the magnetic field. Measuring UAP magnetic fields is crucial to assessing their energy utilization and output. See also, Tornotti et al., 2025 who used the Multi Unit Spectroscopic Explorer (MUSE) instrument to directly image massive plasma filaments between two distant galaxies for the first time, thereby providing evidence supporting the plasma cosmology model of the large-scale structure of the universe.

- Additionally, active and passive bistatic radars (for weather radar, detecting missiles and UAP in space);
- Seismograph (for detecting and recording ground motion);
- High-energy sub-atomic particle detectors;
- Optical and radio meteoroid networks (surveillance of meteoroids, similar to hyper-fast UAP);
- Infrared and optical imaging satellites (to capture and download images of UAP from space);
- Gravimeters (for local gravitational field of Earth);
- Magnetometer networks (strength and direction of magnetic fields, to locate objects).

Raw data captured on analogue recordings (non-digital) is desirable as it cannot easily be digitally manipulated without the authors' knowledge. The use of analogue recording devices ensures the original data remains unaltered. Common examples of analog recordings are video cassettes introduced in the mid-1970s, prior to DVD disks and cameras that use Kodak photographic film. We continue with the research of Knuth et al. (2019) into estimated UAP propulsion energy usage and emissions.

Knuth et al. (2019) review several previously well-documented UAP cases, mathematically estimating their flight

characteristics, especially their hyper-accelerations and decelerations, and other non-ballistic motion, such as ultra-high-speed 90 degree turns. They assess that at least some UAP "are indeed technologically advanced craft." Remarkably, they calculate the following: "This figure (Figure 7a) shows the time required to reach relativistic speeds for a craft undergoing constant acceleration at 1000 g. In less than 24 hrs., such a craft would exceed 90% of the speed of light" (Knuth et al., 2019, p. 17). From analyses based on observations, Knuth et al. estimate that some UAP exhibit on the order of 5,000 g accelerations. Calculations using such accelerations would allow travel to star systems 50 light years distant, in a matter of a few days.

Assuming that any one of the cases we examine is based on accurate reports, we show that the UAVs [unmanned aerial vehicle] exhibit unreasonably high accelerations ranging from 100 g to well over 5,000 g... [One] UAV was observed to be a metallic disk-shaped object that was about 200 to 300 feet in diameter (p. 2)... The UAP would have then reached a maximum speed of about 46,000 mph during the descent, or 60 times the speed of sound... The required power peaks at a shocking 1,100 GW [Gigawatts or 1.1 Terawatts], which exceeds the total nuclear power production of the United States by more than a factor of ten (p. 9)... For example, the Tic-Tac UAV [Case 2] dropping from 28,000 ft to sea level in 0.78 s involved at least 4.3×10^{11} J of energy (assuming a mass of 1,000 kg), which is equivalent to about 100 tons of TNT, or the yield of 200 Tomahawk cruise missiles, released in 3/4 of a second (p. 16) (Knuth et al., 2019).

Knuth's mathematical formula (Knuth et al., 2019, p. 17, #26) describes relativistic (hyper-fast) velocity to arrive at a designated target, for example, Alpha Centauri, some 4.3 light years from Earth.

....the accelerations we are considering, very rapidly approaches the speed of light to within a small fraction of a percent. The main point is that not only are the observed accelerations of these UAVs [unmanned aerial vehicles] consistent with those required for interstellar travel, but that some of these UAVs exhibit capabilities suggesting that they could be *spacecraft with impressive interstellar capabilities* (Knuth et al., 2019, p. 17, italics added).

Meessen provides comprehensive foundational mathematical formalisms for UAP propulsion—essential for hovering, translational motion and hyper-fast acceleration.

We can deduce from observed facts and known physical laws that [UAP] ionize the surrounding air and exert forces on the resulting charged particles by means of adequate EM fields. *Lift and propulsion result then from the reaction force, but this requires very intense magnetic fields, oscillating at low frequencies* (Meessen, 2012, p. 508, italics added).

He further provides the calculations behind most UAP's observed total lack of sound as well as the absence of "sonic booms" during supersonic/hypersonic motion through Earth's atmosphere (2012, pp. 510–511). Meessen (2012) also provides mathematics describing UAP functioning in Earth's atmosphere, in space, and underwater.

Lateral motions of the object can be obtained by attracting charged particles in front of the object and repelling them behind it. This requires only a modification of the distribution of the ionization density. The resulting propulsion system is *extremely flexible*. It allows not only for sudden changes of the direction of motion, but can even account for actually observed propulsion inside [under] water (Meessen, 2012, p. 510).

A number of other physicists theorize that hyper-fast motion of craft (hypersonic/subluminal/superluminal) may be controlled by manipulation of *space-time itself*, both in front of and behind the craft (Alcubierre, 1994; Bobrick & Martire, 2021; Lentz, 2021). We also consider the relationship between warp drives and atmospheric charge manipulation (Beck & Colli, 2025a).

Knuth was principle speaker at the 2022 "UAPx" event during which he presented detailed results of their team's first attempt to record UAP atmospheric intrusions into the near environs of Santa Catalina Island, a 76 square mile habitat, 22 miles off the coast of southern California (Knuth, et al., 2022). This represents one of the first scientific efforts to directly collect data on the presence of UAP in Earth's atmosphere. That the Tic-Tac UAV (Case 2) they reference has been authenticated by the Navy (Cooper et al., 2017a, 2017b, 2017c) stands in stark contrast to decades of denial by the U.S. and Britain's militaries (Condon et al., 1968; Defence Intelligence Analysis Staff, 2000). From the endeavors of Knuth, Watters, Meessen, and the Research

Centre for Extraterrestrial Studies at the University of Wurzburg, we anticipate that UAP research is entering a more transparent phase that can lead to the understanding and creation of novel hyper-fast transport, potentially powered by continuous, solar plasma energy.

SUMMARY

We investigate the best evidence of high-voltage UFO/UAP (Unidentified Aerial Phenomena) electrical properties to progress our understanding of the hyper-fast acceleration and travel of UAP in Earth's atmosphere and in near-space. Based on that evidence, our findings show that UAP source and utilize high-voltage electric energy for hovering, hyper-fast acceleration and motion. Highly reliable, multi-witness visual observations of UAP combined with hard data from these cases provide insights into the development of hyper-fast travel dynamics, UAP powerplants, and their possible solar plasma electric energy source. Furthermore, the design of these advanced technological systems may be based on natural, atmospheric electrical vortices and related electric discharge phenomena. We propose that some UAP powerplants are designed similar to natural tornadic vortices.

We examine how lenticular UAP may be powered, propelled and navigated through Earth's atmosphere and in space. UAP are propelled by a previously unrecognized motive force that is emitted directly from beneath such rotating craft—in the direction opposite to the intended trajectory. The well-defined "plasma cone" or sheath witnessed below many disc-shaped UAP presents clear evidence of a rotating, vorticular energy field beneath UAP. What appear to be advanced UAP technologies may well be relatively simple but overlooked plasma-based, electromagnetic and electrostatic technologies.

The frequently observed UAP-induced clouds and fog, with sub-visible hydroxyl radicals (OH, HO₂, H₂O₂), is significant evidence of their high-voltage propulsion systems. Lenticular UAP may establish a MHz rotating, high-voltage, toroidal cloud of electrons (soliton) around a virtual axis of rotation at relativistic velocities. Hence UAP can hyper-accelerate and travel at hypersonic velocities within Earth's atmosphere without producing a compression wave (sonic boom). The relativistic, plasma double-layer shield would also protect the soliton-encapsulated craft from interacting violently with water during the high-speed entry of Unidentified Submersible Objects (USOs). Such physically material objects—capable of entering a body of water at high speed, with no disturbance of the water's

surface—could easily move through Earth’s atmosphere without generating a compression wave.

The energy dynamics of the UAP are consistent with utilization of the Earth-ionosphere electric circuit. UAP may utilize solar-terrestrial electric energy for propulsion both within and outside Earth’s atmosphere. Understanding the electrical, and electromagnetic processes provide essential knowledge to access solar-plasma electric energy, which we propose energizes UAP powerplants. UAP energy supplies and UAP power plants cannot be meaningfully engineered without consideration of both. We posit that it is possible to “plug into” this natural electric circuit just as one plugs home appliances into a wall socket, simply utilizing electric current that continually streams to Earth: Carbon-free, inexhaustible, direct, high-density, electric plasma energy. We thereby contribute a theory that promotes hyper-fast travel: in-situ access to solar plasma, atmospheric electric energy—engineered to initiate a novel electric energy source to power hyper-fast craft. In conclusion, we summarize advanced, super-high-voltage, electrostatic propulsion of UAP. Lastly, new scientific standards of observation and recording in UAP research are discussed, including recommended detection equipment.

IMPLICATIONS AND APPLICATIONS

Scientific implications: The interdisciplinary study of UAPs’ self-generated, high-voltage electromagnetic fields and propulsion will advance hyper-fast travel. Understanding UAP energy dynamics will propel science into a new era of transport, energy, and propulsion breakthroughs.

Technological applications: Inertially modified, hyper-fast, aerospace craft will revolutionize air/space travel, initiating real-time interplanetary and interstellar travel, communications and data acquisition. Solar plasma, direct electric energy will have numerous conventional applications while expediting the elimination of fossil fuel environmental damage. Plasma-based, propellantless propulsion will radically advance aeronautics and astronautics.

Lastly, observation of UAP energy utilization may provide the basis for novel technologies designed for the large-scale remediation of rapidly emerging atmospheric Methane, a potent greenhouse gas (Beck & Colli, 2025b).

Sociological implications: Acknowledging that some UAP are not of human origin is a major step towards accepting evidence of non-terrestrial intelligent species. Such advanced civilizations demonstrate that humanity can overcome current technological and sociological threats to our survival.

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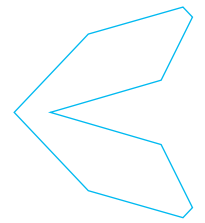


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RESEARCH
ARTICLE

Consciousness and the Environment: Maharishi Technologies of Consciousness and the Incidence of U.S. Landfalling Hurricanes, 1851–2021

Kenneth L. Cavanaugh¹
kcavanaugh@miu.edu

Lee Fergusson^{2,3}
lee.fergusson@unisq.edu.au

¹Maharishi International University,
1000 N. 4th Street, Fairfield, IA
52557, USA

²University of Southern Queensland,
West Street, Toowoomba, Queen-
sland 4350, Australia

³Maharishi Vedic Research Institute,
PO Box 1620, Oxenford, Queensland
4210, Australia

SUBMITTED August 30, 2024
ACCEPTED December 17, 2024
PUBLISHED December 18, 2025

<https://doi.org/10.31275/20253535>

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HIGHLIGHTS

A preliminary analysis suggested that a decade-long application of Maharishi Technologies of Consciousness coincided with a significant drop in U.S. landfalling hurricanes during 2006–2014, with hurricane counts rising after the practices stopped.

ABSTRACT

The purpose of this preliminary study is to explore whether application of consciousness-based procedures whose stated purpose is to influence the natural and social environment, referred to as *Maharishi Technologies of Consciousness (MTC)*, can positively affect weather phenomena. The theoretical framework underlying these procedures is based on a field-theoretic view of consciousness derived from the ancient Vedic tradition of knowledge of consciousness from India as revived by Maharishi Mahesh Yogi. Seven peer-reviewed articles published in independent scholarly journals since 2016 have reported statistically and practically significant associations between the application of the two key modalities of MTC and the reduction of stress and tension in the field of *collective consciousness* of society, as measured by significantly reduced rates of U.S. homicide and urban violent crime, fatality rates from motor vehicle and other accidents, drug-related death, and infant mortality. The current study presents results of an *interrupted time series analysis (ITS)* of data from a quasi-experiment. The quasi-experiment was designed to empirically test, after controlling for other explanatory variables, whether application of MTC during a *demonstration period* 2006–2014 was associated with a reduction in the mean annual predicted count of landfalling hurricanes (*LFH*) striking the continental U.S. relative to the historical baseline mean 1851–2005. A second hypothesis was that the mean *LFH* count would increase after discontinuation of MTC during 2015–2021. Data for *LFH* and control variables were obtained from the U.S. National Oceanic and Atmospheric Administration (NOAA). A second (replication) study applied the same regression methods for count data (quasi-Poisson regression) to analyze a subsample of NOAA data for 1900–2021. For both analyses the empirical results were consistent with hypotheses (1) and (2). The observed decline of landfalling hurricanes during the 2006–2014 demonstration period was largely



coincident with an unexpected, historically unprecedented 2006–2016 period of reduced *LFH* that has been termed the *hurricane drought* by hurricane experts. We conclude with a discussion of potential alternative explanations and suggested directions for future research.

KEYWORDS

Maharishi Technologies of Consciousness, Maharishi Yoga, Maharishi Yagya, hurricanes, climate change, field theory of consciousness, Transcendental Meditation.

INTRODUCTION

There was a time in the not-too-distant past when claims about human behavior influencing weather were unthinkable. However, armed with multi-decade data and experience of how the release of manmade chlorofluorocarbons (CFCs) affect the ozone layer and moderate global temperatures (Abas et al., 2018) and how manmade levels of heat-trapping gases like carbon dioxide and carbon monoxide cause existential changes to the earth's climate and future (Sears, 2020), such questions about human behavior have moved into mainstream science.

It is now well understood that human actions, irrespective of their scale or location, can cause changes to weather events (such as high potential intensity storms), weather patterns (i.e., repeating weather events or conditions), and climate (i.e., the long-term average of weather patterns). Indeed, it is commonly accepted that human behavior is in fact the “dominant force of change on the planet” (Folke et al., 2021, p. 834). For example, Reed et al. (2022) show human-induced climate change caused increased storm rainfall rates and accumulated rainfall by 10% and 5% respectively during the 2020 North American hurricane season; Wehner & Sampson (2021) attribute changes in the magnitude of flooding during Hurricane Harvey to human behavior; and Reed et al. (2020) document anthropogenic influences on Hurricane Florence. These findings and understandings related to human behavior and the environment have “profound meaning for humanity and one that we are only beginning to fully comprehend. We now know that society needs to be viewed as part of the biosphere, not separate from it” (Folke et al., 2021, p. 834).

The purpose of this research is to explore if a different type of human behavior—application of *consciousness-based* procedures which have the stated purpose of beneficially influencing the natural and social environment, referred to as Maharishi Technologies of Consciousness (MTC)—can

affect weather phenomena. The nature of MTC is described below (and in greater detail in Appendix A). While such a proposition may have once fallen outside the purview of modern scientific inquiry and thus have not been considered worthy of serious empirical attention because it does not fit a prevailing worldview, that day has passed. Indeed, experience shows that many ideas summarily rejected when posited were later found to be correct when newer and more persuasive evidence came to hand.

One example of increased openness to scientific exploration of the hypothesized relationship between human subjective behavior and the weather is a study at Princeton University's Engineering Anomalies Research Lab (PEAR). Nelson (1997) analyzed 36 years of annual data from an observational natural experiment to test if weather can be influenced by the conscious or unconscious wishes of a group (in this case, participants in Princeton's annual commencement activities). Compared to rainfall in neighboring towns, Nelson reported a marginally significant reduction ($p = 0.049$) in rainfall during three days of scheduled outdoor activities but no difference for the day with scheduled indoor activities only.

In this paper, we rhetorically ask: if overt human behavior, such as the use of chemical compounds and industrial processes, can adversely influence weather events, could the reverse (i.e., a salutary influence) also be true for actions performed on a more subtle level of human behavior, from the level of consciousness?

Theoretical Framework

This research is based on Maharishi's field-theoretic view of consciousness and the relationship of human consciousness to the natural and social environment. This framework is derived from the ancient Vedic tradition of knowledge from India (*Veda* means “knowledge” in *Sanskrit*) as brought to light by the Vedic scholar and teacher, Maharishi Mahesh Yogi. In contrast to most contemporary theories of mind and consciousness originating in the West, this consciousness-based framework posits the existence of an interpersonal, nonlocalized dimension of consciousness that underlies both individual consciousness and the collective consciousness of society.

That the consciousness of all individuals is interdependent and deeply connected with the natural environment is consistent with not only the perspective of the Vedic tradition as revived by Maharishi but also with the wisdom traditions of many diverse cultures worldwide (e.g., Trnka & Lorencova, 2022). This view is also consistent with various

formulations of *panpsychism* in the Western philosophical tradition, which hold that consciousness or mind is a fundamental and pervasive feature of reality and is present everywhere (Goff, 2020; Goff et al., 2022).

It is said that Maharishi comprehensively revived the Vedic procedures for development of individual and collective consciousness, seeking to restore their full potency, and organized the teaching of his Transcendental Meditation (TM) technique and its advanced aspect, the TM-Sidhi program, to millions of people worldwide. He expressed the Vedic principles in terms that are testable and encouraged scientific research on their results (e.g., Dillbeck et al., 2020). Maharishi described his teaching of TM and its associated theory and practices as a science of consciousness, which he termed *Maharishi Vedic Science*. Maharishi did not describe his teachings as a religion. Rather, he emphasized that the practice of TM and its advanced techniques is suitable for all individuals regardless of religion, education, culture, language, or philosophy. It is said that TM is practiced around the world by people from a wide variety of religions as well as by those with no religion. As described below, he also inspired the application of MTC, consciousness-based procedures whose stated purpose is to positively influence social trends and the natural environment.

In the introductory and discussion sections and Appendix A of this article we present a summary of key principles of Maharishi's field-theoretic view of consciousness, including, where appropriate, quotations from Maharishi that provide information relevant for understanding his theoretical framework. It should be noted that these statements are not to be understood as statements of fact or belief of the authors of this study or propositions to be accepted without scientific or logical scrutiny; they are descriptions or summaries of propositions stated by Maharishi in his consciousness-based framework. The purpose of this paper is to empirically test two specific hypotheses derived from this theoretical framework, not to attempt to evaluate every assertion by Maharishi in his exposition of the framework. The latter is beyond the scope of this study.

In this framework, consciousness is viewed not as an emergent property of matter generated through functioning of the human nervous system, but rather as fundamental in nature (Nader, 2024). Indeed, *pure consciousness* is viewed as the essential nature of life—an unbounded, unified field of pure intelligence, beyond space and time—that gives rise to all expressed values in the universe, both subjective and objective (Maharishi Mahesh Yogi, 1996). This field of nature's intelligence is postulated to be the unified,

transcendental source of all the laws of nature that govern the evolution of human life, the natural and social environment, and the entire universe (Maharishi Mahesh Yogi, 1986). Recently, Harvard and MIT-trained neuroscientist Tony Nader, who worked closely with Maharishi for more than 20 years, has formulated the fundamental principles expressed in Maharishi's Vedic science of consciousness in an axiomatic framework of formal logic (Nader, 2015, 2024) and proposed that "consciousness is all there is."

This interpersonal, nonlocalized field of consciousness (*pure consciousness*, *pure awareness*, or *transcendental consciousness*) is said to underlie both individual consciousness and the collective consciousness of society. Collective consciousness is defined by Maharishi as the wholeness of consciousness of the individuals comprising the entire social group: family, city, province, nation, or the world. Maharishi proposed that there exists a reciprocal relationship between individual consciousness and collective consciousness in which each influences the other. Thus, for example, increased tension, stress, and strain in the consciousness of individuals in society is said to increase these qualities in collective consciousness, and vice versa. The aim of MTC is to positively influence the collective level of consciousness, which is seen as the principal determinant of societal quality of life and man's relationship with the natural environment (Maharishi Mahesh Yogi, 1977, 1978b, 1986).

As discussed in greater detail below (see Appendix A: Theoretical Model), Maharishi Mahesh Yogi (1968) proposed that when stress and tension build up in the collective consciousness of the nation, an imbalance in nature is created that, if left unchecked, can eventually result in the outbreak of natural disasters, violence, and other negative trends in national life. Maharishi Mahesh Yogi (1978b, p. 187) asserted that "When individuals begin to violate the laws of nature in their own lives, these violations cause negative influences in the collective atmosphere, which eventually turn into natural calamities." The resulting calamities and negative trends can serve to further increase societal stress, contributing to a possible vicious cycle (Alexander et al., 2011). Maharishi Mahesh Yogi (1978b, p. 88) further maintained that "Greater balance in nature is demonstrated by an absence of natural disasters and collective calamities, such as earthquakes, tornadoes, and famine." The purpose of MTC is described as the reduction of stress and tension in collective consciousness to thereby increase balance in nature and improve societal quality of life.

Given that the results of comprehensive published, peer-reviewed research on MTC is said to be consistent

with the hypothesis that application of these technologies of consciousness is associated with improvements in individual psychology, physiology, and behavior, and even improved trends in larger social units, such as the quality of life of cities and nations, the question addressed by the current study is whether there is empirical evidence to support the proposition that these technologies can also positively affect the environment.

Prior Research on MTC and Landfalling U.S. Hurricanes

The current study builds on unpublished prior research completed in 2010 by the first author that examined the possible association of MTC and the incidence of landfalling U.S. hurricanes using early preliminary data from the same quasi-experiment discussed in the current study. This 2010 pilot research analyzed time series (TS) data from NOAA on the annual count of landfalling hurricanes (*LFH*) for 1851–2010. Like the current study, the pilot research used *interrupted time series* (ITS) regression modeling for count data (see Methodology, Interrupted Time Series Study Design). Robust regression analysis for non-negative, integer count data (*quasi-Poisson* regression analysis) was used in the ITS analysis. Consistent with the study hypothesis, the regression results found evidence for a significant downward level shift in the mean annual *LFH* count predicted by the regression model during the demonstration period 2006–2010 relative to the historical baseline predicted mean 1851–2005. The incidence rate ratio (IRR) was estimated as $IRR = 0.347$, $z = -2.82$, $p = 0.002$ one-tailed, 95% CI [0.166, 0.723] (see Regression Modelling of Count Data). The analysis controlled for the total count of hurricanes formed each year in the North Atlantic basin.

As described below, the estimated IRR implies that, controlling for the total annual incidence of all hurricanes in the Atlantic basin, the predicted mean for the *LFH* annual count 2006–2010 was $(0.347-1)100 = 65.3\%$ lower than the corresponding mean baseline incidence rate (McCleary & Hay, 1980; Wooldridge, 2009).

This study extends and replicates the previous research by considering additional explanatory variables and empirically examines an expanded sample of annual data 1851–2021. The ten years of additional TS data includes four additional years (2011–2014) of the demonstration period. Also, the expanded data sample includes the post-demonstration period 2015–2021 during which the MTC treatment was discontinued by the researchers due to

operational considerations. This additional data permitted implementation of a *reversed* quasi-experimental design to analyze the TS behavior of *LFH* before, during, and after the 2006–2014 demonstration period (see Interrupted Time Series Study Design). The additional data allow us to replicate and expand the findings of the prior pilot research as well as to evaluate an additional research hypothesis that postulates that, controlling for other predictor variables, the mean predicted *LFH* incidence rate from the regression model would increase after discontinuation (reversal) of the MTC treatment.

Another objective of the current research is to describe a replication study (Study 2) that analyzes a 1900–2021 sub-sample of the NOAA hurricane data (see Appendix C).

Origins of the Quasi-Experiment

The hurricane seasons 2004–2005 were among the deadliest and most damaging in U.S. history. In 2004, six hurricanes made landfall on the continental U.S., three of them major (Saffir-Simpson category 3 to 5). Another five struck the U.S. in 2005, four of them major, including Hurricane Katrina. Katrina was the most damaging hurricane in U.S. history, causing an estimated \$186 billion of damage and 1,400 deaths (Knabb et al., 2023).

In the wake of the devastating 2004–2005 hurricane impacts, planning for the application of MTC began in November 2005 with Maharishi's inspiration and guidance. Prior to the beginning of the hurricane season in 2006, the application of MTC was introduced for the specific purpose of preventing or mitigating future hurricane disasters by reducing stress, strain, and tension in the collective consciousness of the U.S. A quasi-experiment was initiated that involved practice of *Maharishi Yoga*, the TM and TM-Sidhi program, by a large group at Maharishi International University (MIU) in Fairfield, Iowa.

The size of the MIU group increased exponentially in 2006 and through 2014 the group was near or above the theoretically predicted required size to positively influence U.S. national trends by means of Maharishi Yoga alone (1,725 participants, the square root of 1% of the U.S. population at that time). The group included up to 1,100 Vedic experts from India performing *Maharishi Yagya*, traditional Vedic performances intended to reduce stress and tension in collective consciousness and thereby promote greater balance in nature (see Appendix A for a more detailed description of Maharishi Yagya). The Vedic experts also participated in the group practice of the TM and TM-Sidhi program.

Organization of the Current Article

The remainder of this article is organized as follows. The Methods section describes the *LFH* data and control variables used in the regression analysis and provides a brief overview of the robust count regression procedures employed for analyzing the count data. Empirical findings are summarized in the Results section. The Discussion considers the empirical findings in relation to proposed explanations for the “hurricane drought” period of 2006–2016 and suggests possible future directions for research. Appendix A provides greater detail about the theoretical framework underlying the empirical analysis. Appendix B briefly describes other peer-reviewed studies that provide empirical evidence consistent with the hypothesis that consciousness may be a nonlocalized field. Appendix B briefly summarizes EEG and neuroendocrine research on the TM and TM-Sidhi program, research on *national mood* in behavioral finance. Appendix B also discusses research from the Global Consciousness Project at Princeton that investigates the field-like nature of consciousness using deviations from randomness displayed by random number generators (RNG) during designated events. Two independent quasi-experimental RNG studies reported highly significant deviations from randomness associated with group practice of the TM and TM-Sidhi program (Mason et al., 2007; Nelson, 2006).

In addition, Appendix C presents of the findings of a replication study based on a subsample of *LFH* data.

METHODS

Data Sources

TS data on the annual count of hurricanes (tropical cyclones) in the Atlantic basin that made landfall on the

continental United States 1851–2021 (*LFH*) and the annual number of North Atlantic hurricanes (*ATLHURR*) were obtained from the website of the Atlantic Oceanographic and Meteorological Laboratory (AOML) of NOAA (AOML, 2022a, 2022b, 2022c). The 2021 data for *LFH*, *ATLHURR*, and the number of named tropical storms (*STORMS*) in the Atlantic basin were provided by the National Centers for Environmental Information (NCEI) at NOAA (NCEI, 2022).

Data on the overall intensity, or power, of each annual hurricane season as measured by the Accumulated Cyclone Energy (*ACE*) index were obtained from NOAA (AOML, 2022a, 2022c; NCEI, 2022) and NOAA’s Climate Prediction Center (CPC) (Climate Prediction Center, 2021). The *ACE* index for individual storms is defined as the sum of the squared values of the maximum sustained wind velocity (in knots) measured at six-hour intervals while the storms are at least at tropical storm strength. The *ACE* index for an entire hurricane season is calculated by NOAA as the sum of all *ACE* values for all hurricanes and named storms converted to a scale in which 100 equals the median over a base period. Thus, the resulting annual *ACE* values account for cyclone intensity, duration, and frequency (U.S. Environmental Protection Agency, n.d.).

Data Description

Figures 1, 3 and 4 display TS plots of the numeric variables. Figure 2 shows the histogram for the *LFH* count data. Tables 1 and 2 report descriptive statistics for the variables used in the statistical analysis ($N = 171$). *LFH* is the annual count of landfalling U.S. hurricanes 1851–2021. *DEMO* is a binary indicator for the demonstration period of the quasi-experiment, where $DEMO = 1$ for the 2006–2014 demonstration period of the quasi-experiment and $DEMO = 0$ otherwise. *ACE* and *ATLHURR* are defined above.

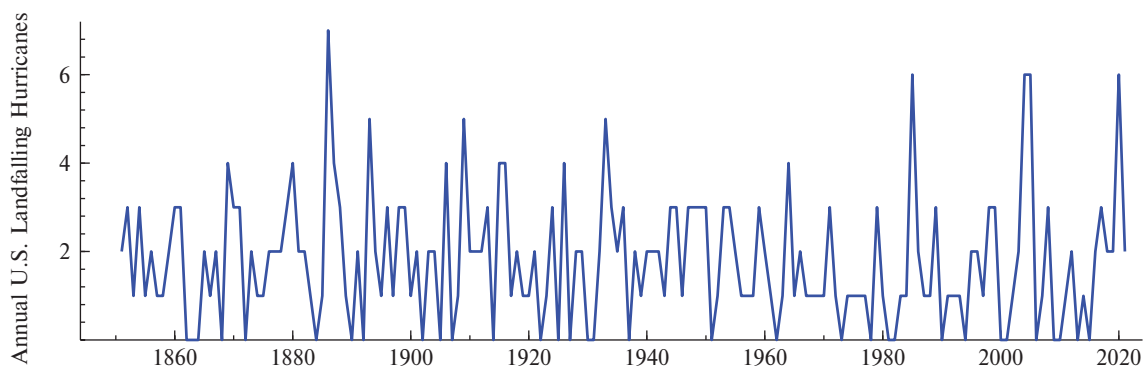


Figure 1. Annual number of landfalling hurricanes on the continental U.S. (*LFH*) 1851–2021.

D2015 is a binary indicator variable designating the post-demonstration period, where $D2015 = 1$ for years 2015–2021 and $D2015 = 0$ otherwise.

The plot of the annual count of landfalling U.S. hurricanes 1851–2021 in Figure 1 displays fluctuations around a relatively stable mean of 1.77 per year with periods of greater and lesser variability. The histogram of annual

landfall counts in Figure 2 shows that about 90% of counts are between 0 and 3 with the largest values at 1 and 2 plus an upper tail extending to the right with a maximum count of 7. Figure 3 shows that the plot of the annual count of hurricanes that formed in the Atlantic basin displays fluctuations in variability around a long-term, relatively stable mean. Figure 4 is the TS plot of NOAA’s accumulated cyclone energy index (*ACE*) for each annual hurricane season June through November. *ACE* reflects the intensity, duration, and frequency of tropical cyclone activity in the Atlantic basin. Descriptive statistics and correlation matrix are given in Tables 1 and 2.

Interrupted Time Series Study Design

As discussed in the Introduction, the current study analyzes TS data from a quasi-experiment. The MTC treatment program was introduced by the researchers during the demonstration period 2006–2014, prior to the beginning of the 2006 hurricane season, for the explicit purpose of investigating possible associations between MTC and changes in *LFH* incidence during the demonstration period

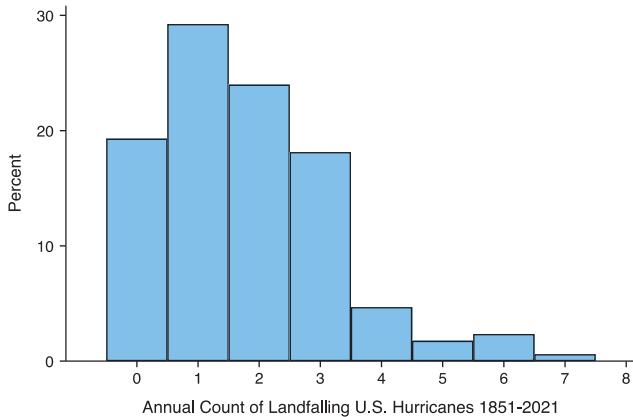


Figure 2. Histogram of annual count of landfalling U.S. hurricanes 1851–2021.

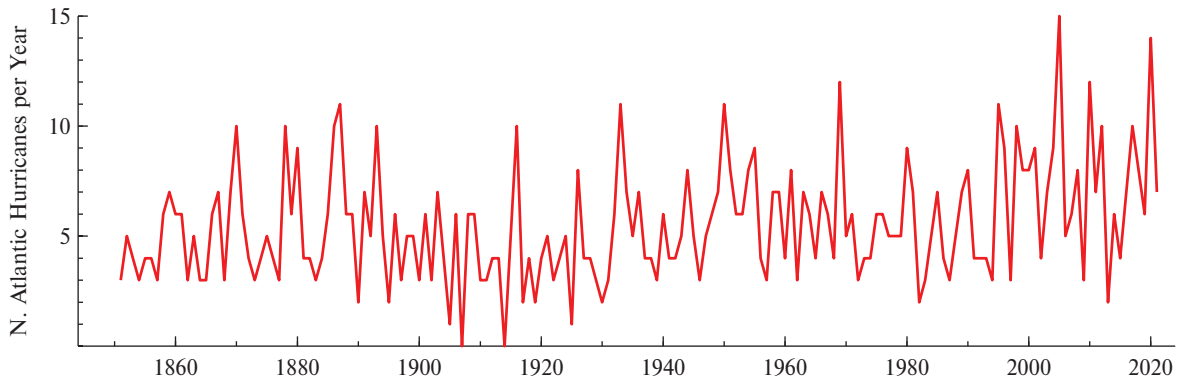


Figure 3. Annual number of hurricanes (*ATLHURR*) in the Atlantic basin 1851–2021.

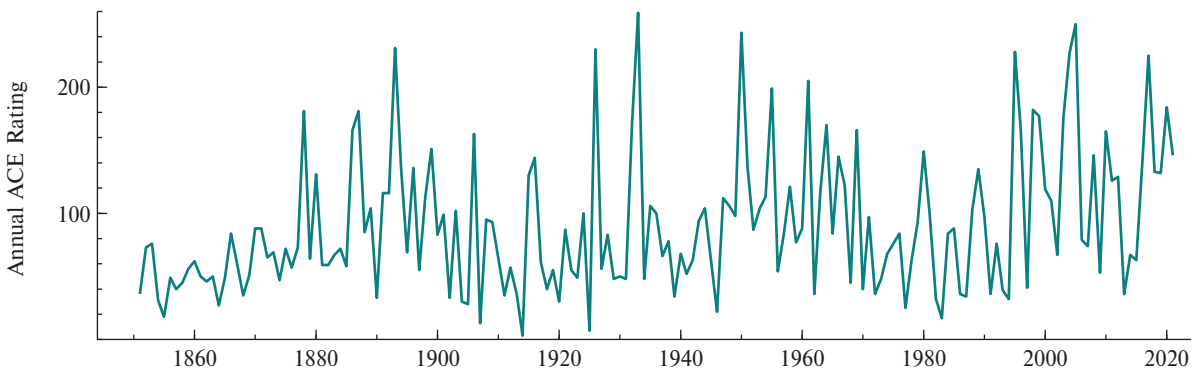


Figure 4. NOAA annual accumulated cyclone energy (*ACE*) index for energy released by tropical cyclones in the Atlantic basin during the annual hurricane seasons 1851–2021.

Table 1. Descriptive Statistics for Variables, 1851–2021

Variable	N	Mean	SD	Variance	Min	Max
LFH	171	1.772	1.439	2.071	0	7
DEMO	171	0.053	0.224	0.050	0	1
ACE	171	90.392	54.748	2997.357	3	259
ATLHURR	171	5.515	2.608	6.804	0	15
D2015	171	0.041	0.199	0.039	0	1

Table 2 Variable Correlation Matrix

Variable	ATLHURR (centered)	ACE (standardized)	LFH
ATLHURR (centered)	1.000		
ACE (standardized)	0.823***	1.000	
LFH	0.550***	0.543***	1.000

Note. $N = 171$. *** $p < 0.001$.

compared to the baseline, and post-demonstration periods. Thus, the current study satisfies the standard definition of a quasi-experiment rather than a natural experiment. Natural experiments contrast a naturally occurring event with a control condition and involve no researcher manipulation of treatments (Reichardt, 2019; Wooldridge, 2009).

The MTC treatment was applied during the demonstration period 2006–2014, followed by a reversal (discontinuation) of the MTC intervention in 2015–2021. At the outset of the study, the researchers anticipated the introduction of MTC might possibly be associated with subsequent changes in the mean level or trend of LFH, depending on whether the baseline TS was fluctuating around a stable mean or trending. These anticipated changes are those previously observed in each of the seven previously published quasi-experimental studies of the association of MTC with the TS behavior of a set of diverse U.S. social indicators (see Appendix A). For some of these seven prior studies, public *a priori* predictions about anticipated reductions in violent crime and other social indicators were announced and widely publicized in the press. During the quasi-experiment, however, researcher expectations with respect to mitigation of hurricane landfalls were not publicly expressed because there had been no prior peer-reviewed published research on this potential outcome.

The current study can be described as an interrupted time series study because introduction of the MTC treatment beginning in 2006 was expected to possibly change, or interrupt, the time series behavior of LFH displayed in the baseline period. The current study can also be characterized as a *reversed* quasi-experiment because the MTC treatment during 2006–2014 was reversed by withdrawal of the treatment program during the post-demonstration

period 2015–2021 (Reichardt, 2019). A reversed quasi-experimental design allows comparison of behavior of the time series before, during, and after the intervention, thus potentially increasing internal validity.

According to Reichardt (2019, p. 244), “A well-implemented ITS design can produce highly credible estimates of treatment effects, especially when the ITS design is implemented with supplements such as reversed or repeated treatment interventions and/or comparison time series.”

ITS modeling is said to be one of the strongest designs for the analysis of treatment effects of interventions in TS data from quasi-experiments (Bernal et al., 2017; McCleary et al., 2017; Reichardt, 2019). Also referred to as *impact-assessment analysis*, *impact analysis*, or *intervention analysis*, ITS designs have been extensively applied in numerous areas of scholarly and applied research including program evaluation in economics, health care research, epidemiology, public policy evaluation, and many others.

Regression Modeling of Count Data

Because the outcome variable of the study, the monthly incidence of landfalling U.S. hurricanes, is a non-negative integer count, key assumptions of OLS linear regression are not satisfied. For example, OLS assumes a continuous dependent variable with normally distributed regression errors. Thus, OLS is not appropriate for the count data examined in the current study (e.g., Cameron & Trivedi, 2013; Cox et al., 2009). Therefore, we use a robust, modified form of count regression (quasi-Poisson regression) that does not assume the count data exactly follows a Poisson distribution.

ITS quasi-Poisson regression methods were used to analyze the possible relationship between MTC and annual counts of landfalling hurricanes striking the continental U.S. 1851–2021. The quasi-Poisson regression methods used in the current study are standard in the literature on analysis of count data and are appropriate for data in the form of non-negative integer counts such as LFH that are not necessarily Poisson distributed (Bhaskaran et al., 2013).

The count regression model for the current study, Model 1, can be expressed as

$$(\ln(\hat{y})) = b_0 + b_1 DEMO + b_2 D2015 + b_3 ATLHURR + b_4 ACE \tag{1}$$

In Equation (1), the variables y , $DEMO$, $D2015$, $ATLHURR$, and ACE are each a function of time, but the “ t ” subscript is omitted for simplicity. In Equation (1) y is the annual count of landfalling hurricanes, \hat{y} is the predicted value of y , or mathematically expected value of y conditional on the

values of the predictors and a constant (conditional mean). The expression $\ln(\hat{y})$ is the natural logarithm of \hat{y} and it is assumed to be a linear function of the predictors (Coxe et al., 2009; Hilbe, 2014).

The constant term, or regression intercept, in Equation (1) is b_0 . As defined previously, *DEMO* is a binary treatment variable for the quasi-experiment with regression coefficient b_1 . *D2015* is a binary indicator for the post-demonstration period 2015–2021 with regression coefficient b_2 . *ACE* and *ATLHURR* were also defined previously.

Note that independence of the predictor variables in Equation (1) is not a required assumption in quasi-Poisson regression (or OLS regression); rather it is assumed that no predictor variable is a perfect linear combination of other predictors or is constant (Wooldridge, 2009).

The regression coefficient for each predictor in Equation (1) gives the change in $\ln(\hat{y})$ associated with a one-unit change in that predictor, holding other predictors constant. Interpretation of the regression coefficients in Equation (1) can be challenging because most people find it more difficult to interpret regression coefficients for regressions with logarithmic outcome variables (Wooldridge, 2009). Therefore, it is useful to transform Equation (1) to a form that allow interpretation of the regression coefficients in terms of changes in \hat{y} rather than $\ln(\hat{y})$. This is accomplished by taking anti-logs (exponentiating) both sides of Equation (1) so that $\exp(\ln(\hat{y})) = \hat{y}$ and

$$\hat{y} = \exp(b_0) \exp(b_1 \text{ DEMO}) \exp(b_2 \text{ D2015}) \exp(b_3 \text{ ATLHURR}) \exp(b_4 \text{ ACE}) \quad (2)$$

where $\exp(a) = e^a$.

Equation (2) is a nonlinear regression model that shows that the quasi-Poisson regression model in Equation (1) implies a multiplicative, rather than an additive relationship between changes in a predictor and changes in \hat{y} . In general (Coxe et al., 2009), holding other predictors constant, if a predictor x with regression coefficient b is increased by one unit, \hat{y} will be multiplied by the factor $\exp(b(x + 1))$ instead of $\exp(bx)$, where

$$\exp(b(x + 1)) = \exp(bx + b) = \exp(bx) \exp(b) \quad (3)$$

The expression $\exp(b)$ in Equation (3) is known as the *incidence rate ratio* (IRR) for variable x . For example, a discrete change in a predictor such as a one-unit increase in *DEMO* from 0 to 1, holding other predictors constant, the IRR is the ratio of two values for \hat{y} : (1) the mean regression predicted value for the annual incidence rate \hat{y} after increasing x by one unit divided by (2) the mean predicted incidence rate \hat{y} with x unchanged (Hardin & Hilbe, 2018).

Equation (3) implies that for a predictor with $\text{IRR} > 1.0$, a one-unit increase in that variable will be, on average, associated with a multiplicative increase in \hat{y} . A predictor with an estimated IRR less than 1.0 will be associated, on average, with a multiplicative decrease in \hat{y} . Likewise $\text{IRR} = 1.0$ indicates no association, on average, between a one-unit change in the predictor and \hat{y} .

When a binary indicator variable, such as *DEMO* (with coefficient b_1), is increased from 0 to 1, holding other predictors constant, the percentage change in \hat{y} is given by $(\exp(b_1) - 1)100$, or $(\text{IRR} - 1)100$ (McCleary & Hay, 1980; Wooldridge, 2009).

Statistical Estimation of Quasi-Poisson Regression Models

Equation (1) was estimated using the quasi-Poisson, or *quasi-maximum-likelihood*, method as implemented in the Generalized Linear Modeling (GLM) module of Stata 16.1 (StataCorp, 2019). As noted previously, quasi-Poisson methods are appropriate in the analysis of non-negative integer count data even when the dependent, or outcome, count variable may not actually follow a Poisson distribution. That such may be the case for *LFH* data is suggested by Figure 2 in which approximately 90% of observations are between 0 and 3. Even if the assumption is not entirely correct that the outcome variable in Equation (2) has a Poisson distribution, if the conditional mean is properly specified, the quasi-Poisson estimation method for count data provides consistent estimates of the predictor regression coefficients (i.e., that converge to their population values as the sample size grows) and are approximately normally distributed (Cameron & Trivedi, 2013; Winkelmann, 2008). However, if the *LFH* count does not actually have a Poisson distribution, the estimated standard errors (SEs) for the quasi-Poisson regression coefficients will be incorrect and robust SEs must be calculated to correct the SEs (Cameron & Trivedi, 2010).

Robust Newey-West SEs (Newey & West, 1987) are commonly used for calculation of robust SEs in TS studies of count data (e.g., Riley et al., 2022; also see Bottomley et al., 2019; Cameron & Trivedi, 2013). The Newey-West SEs (NW SEs) are consistent in the presence of heteroskedasticity (i.e., non-constant conditional variance) and autocorrelation of possibly unknown form (Cameron & Trivedi, 2010; Newey & West, 1987). Serial correlation in the regression residuals violates a key assumption that successive TS observations of the count outcome variable are independent. Also, count variables are often inherently heteroskedastic because the expected value of the conditional

variance changes as the expected value of the count variable changes (Cameron & Trivedi, 2013).

The robust NW SEs also help correct for the well-known upward bias of SEs for regression coefficients if the distribution of counts displays *underdispersion* relative to the Poisson distribution (Cameron & Trivedi, 2010). The upward bias for SEs of the regression coefficients results in downward bias for tests of statistical significance. Underdispersion violates the Poisson assumption of equidispersion, the equality of mean and variance of \hat{y} conditional on the explanatory variables. Underdispersion can result if a large proportion of counts fall in a relatively narrow range of count values (Hilbe, 2014) such as that displayed in Figure 3. Underdispersion is indicated by a value < 1.0 for the Pearson dispersion coefficient, defined as $(\text{Pearson } \chi^2)/df$.

In count regression several types of regression residuals are available for checking the adequacy of the estimated model. Deviance residuals were used in the current study, as recommended by Hardin & Hilbe (2018), McCullagh & Nelder (1989), and Pierce & Schafer (1986). Deviance residuals are said to possess superior properties for examining goodness of fit in GLM modeling (Cameron & Trivedi, 2013; StataCorp, 2019). The deviance residuals are approximately normally distributed, especially when adjusted for discreteness (Pierce & Schafer, 1986). Adjusted deviance residuals were primarily used in diagnostic checking of estimated models. As recommended by Cameron & Trivedi (2013), standardized Pearson residuals were also used to evaluate serial correlation of residuals.

Research Hypotheses for Model 1

Hypothesis 1

After controlling for other explanatory variables, application of MTC during the demonstration period 2006–2014 will be associated with a reduction in the mean annual predicted count of landfalling hurricanes striking the continental U.S. relative to the historical baseline mean.

Hypothesis 2

The mean predicted *LFH* count after discontinuation of MTC during 2015–2021 will increase relative to the mean predicted count during the demonstration period, controlling for other explanatory variables.

Hypotheses 1 and 2 make no predictions for the sign or significance of the regression coefficients for the predictor variables *ACE* and *ATLHURR*.

RESULTS

Results for Model 1

As described in the previous section, the regression model in Equation (1) was estimated using quasi-Poisson (i.e., quasi-maximum likelihood) count regression methods. The count regression estimates for Equation (1) are reported in Table 3.

One-sided hypothesis tests are reported for expressions involving *DEMO* and *D2015* because the research hypotheses are directional. The *p*-values for the other predictors, and all confidence intervals (CIs) in Table 3, are two sided. The null hypothesis tested by the standard normal *z*-test statistic in Table 3 is that the estimated regression coefficient in Equation (1) is zero. The same *z*-test statistic and *p*-value given for each regression coefficient in Equation (1) are reported for the variable's IRR. However, in the test of significance for IRR, the null hypothesis is $IRR = 1.0$, indicating no effect of a change in the predictor on the outcome variable (StataCorp, 2019). Strong underdispersion of the *LFH* count data, in which the conditional variance is less than the conditional mean, is indicated by a Pearson dispersion coefficient (Pearson $\chi^2)/df$. In the current study, the dispersion coefficient is substantially less than 1.0 (see Table 3), indicating the need for quasi-Poisson regression with robust SEs.

Diagnostic Checking for Model 1

Diagnostic plots and tests for the adequacy of the estimated Model 1 in Table 3 are satisfactory. No outliers are observed in the plot of residuals and other diagnostic plots. Both the *Pearson goodness-of-fit* (GOF) test ($\chi^2 (166) = 126.023, p = 0.991$) and the *deviance goodness-of-fit* test, ($\chi^2 (166) = 156.040, p = 0.699$) are significant, indicating good fit between the observed data and the predicted values from the model. Interpreting these GOF statistics can be confusing because a test result in both cases is deemed significant for $p > 0.05$ rather than the usual $p < 0.05$ (Hilbe, 2014). According to Hilbe (p. 77), "a $\text{Chi}^2 p > 0.05$ indicates that the model is considered well fit." Cameron & Trivedi (2013) prefer the *deviance GOF* test. Hilbe (2014) notes that the Pearson test can be biased. The deviance GOF test has the advantage of being calculated using robust SEs.

Also, a *Wald* test of the overall significance of the model rejected the null hypothesis that all coefficients in the model (other than the constant term) were jointly equal to zero, ($\chi^2 (4) = 165.83, p < 0.001$ (StataCorp, 2019; Verbeek, 2012).

Table 3. Quasi-Poisson Regression Results. Dependent Variable is Natural Log of the Predicted Annual Count of U.S. Landfalling Hurricanes, 1851–2021 and 1900–2021.

Predictor	Model 1 1851–2021	Model 2 1900–2021
<i>DEMO</i> (binary treatment indicator)		
Coeff. estimate (SE)	–0.860 (0.149)	–0.757 (0.165)
IRR (SE)	0.423 (0.063)	0.469 (0.077)
z-ratio	$z = -5.78^{***}$	$z = -4.59^{***}$
95% IRR CI	[0.316, 0.567]	[0.340, 0.648]
<i>ACE</i> (standardized)		
Coeff. estimate (SE)	0.153 (0.081)	0.217 (0.109)
IRR (SE)	1.165 (0.094)	1.242 (0.135)
z-ratio	$z = 1.90$	$z = 1.99^*$
95% IRR CI	[0.995, 1.365]	[1.003, 1.538]
<i>ATLHURR</i> (centred)		
Coeff. estimate (SE)	0.104 (0.034)	0.075 (0.042)
IRR (SE)	1.110 (0.037)	1.078 (0.045)
z-ratio	$z = 3.11^{**}$	$z = 1.81$
95% IRR CI	[1.039, 1.185]	[0.994, 1.170]
<i>D2015</i> (post-treatment indicator)		
Coeff. estimate (SE)	–0.142 (0.115)	–0.053 (0.131)
IRR (SE)	0.868 (0.100)	0.948 (0.125)
z-ratio	$z = -1.23$	$z = -0.41$
95% IRR CI	[0.692, 1.087]	[0.733, 1.227]
Constant (intercept)		
Coeff. estimate (SE)	0.523 (0.062)	0.458 (0.089)
IRR (SE)	1.687 (0.105)	1.581 (0.141)
z-ratio	$z = 8.42^{***}$	$z = 5.13^{***}$
95% IRR CI	[1.494, 1.906]	[1.327, 1.884]
Model statistics		
No. observations (<i>df</i>)	171 (166)	122 (117)
(Pearson χ^2)/ <i>df</i> (Pearson χ^2)	0.759 (126.023)	0.808 (94.487)
Deviance/ <i>df</i> (Deviance)	0.940 (156.040)	0.969 (113.320)
Log likelihood	–255.477	–180.130
Akaike information criterion	520.954	370.260
Bayesian information criterion	536.662	384.280
Generalized R^2	0.344	0.348

Note. For Model 1, $N = 171$ and for Model 2, $N = 122$. Coding for *DEMO*: years 2006–2014 = 1, other years = 0. Coding for *D2015*: 2015–2021 = 1, otherwise = 0. SEs corrected using Newey-West procedure (Bartlett kernel, 10 lags). IRR = incidence rate ratio. Two-tailed p -values except one-tailed for tests involving treatment indicators *DEMO* and *D2015*. Generalized R^2 = squared correlation between y and \hat{y} . $^{***}p < 0.001$, $^{**}p < 0.01$, $^*p < 0.05$.

Another measure of goodness of fit recommended by Cameron & Trivedi (2013) is the correlation between the model predicted values and the observed *LFH* counts.

For Model 1 this correlation is relatively high (0.586) resulting in a generalized $R^2 = 0.344$. Similarly, the Nagelkerke measure of GOF is 0.330, while the Cox-Snell measure is 0.318. These are a few of the many proposed alternative measures of GOF. Cameron & Trivedi (2013) favor the generalized R-squared. However, they point out that these measures do not have the “proportion of variance explained” interpretation of the R^2 in linear regression.

Robust Newey-West SEs were used to correct the estimated SEs of the predictor regression coefficients. Ten serial correlation lags were used in the Newey-West adjustment for serial correlation, heteroskedasticity, and underdispersion. The generalized R^2 , the squared correlation between predicted \hat{y} and the observed *LFH* count, is 0.344. This R^2 measure has been recommended for Poisson regression and other nonlinear models (Cameron & Trivedi, 2013; Wooldridge, 2009). This and other alternative R^2 measures for non-linear models have a different interpretation than that in OLS linear regression (Cameron & Trivedi, 2013; Hardin & Hilbe, 2018).

Tests of Research Hypotheses for Model 1

Test of Hypothesis 1

Consistent with Hypothesis 1 (see Table 3), the IRR of 0.423 for *DEMO* in Model 1 is significant and less than 1.0 ($p < 10^{-8}$). This implies that, controlling for explanatory variables, the mean predicted *LFH* count \hat{y} during 2006–2014 was $(0.423-1)100 = -57.7\%$ lower than the corresponding value of 1.687 during the 1851–2005 baseline. This large percentage difference between mean predicted \hat{y} for 2006–2014 as compared with that for 1851–2005 is an indication of strong practical, or substantive, significance.

The mean *LFH* count predicted by the regression model during 2006–2014, after controlling for predictors, is 0.714 *LFH* per year as compared with the baseline of 1.687 annually for 1851–2005. The predicted mean count is given by the IRR for *DEMO* in Table 3 (0.423) multiplied by the baseline expected count (1.687), where the latter is the the exponentiated regression constant term $\exp(b_0)$ (StataCorp, 2019). This calculation of the expected mean count follows from the definition of the IRR as the multiplicative factor by which the baseline value of \hat{y} is changed due to a 1-unit change in a predictor, holding other predictors constant.

Thus, consistent with Hypothesis 1, the mean of the *LFH* count predicted by the regression model is significantly

smaller during the demonstration period than during the prior baseline period 1851–2005, holding other predictors constant.

Test of Hypothesis 2

The quasi-Poisson regression results are also consistent with Hypothesis 2. The *lincom* command of Stata 16.1 was used to test whether the estimated regression coefficient for *DEMO* is significantly less than that for *D2015*, as implied by Hypothesis 2. The regression coefficient b_1 for *DEMO* is significantly smaller than b_2 for *D2015*, where $(b_1 - b_2) = -0.868 - (-0.142) = -0.726$, $z = -4.56$, $p < 10^{-5}$, with 95% CI $[-1.006, -0.430]$.

The predicted mean *LFH* count during 2015–2021 is given by the IRR for the constant term multiplied by the IRR for *D2015*, or $\exp(b_0)\exp(b_2) = 1.464$. Thus, consistent with Hypothesis 2, the predicted mean of the *LFH* count is significantly smaller during the demonstration period than during the subsequent post-demonstration period, holding other predictors constant.

By the laws of exponents, $\exp(b_1 - b_2) = \exp(b_1)/\exp(b_2) = (\text{IRR for } DEMO)/(\text{IRR for } D2015)$. Exponentiating the difference in coefficients gives $0.423/0.868 = 0.488$, indicating that the mean predicted *LFH* count \hat{y} for 2006–2014 is $(0.488 - 1)100 = -51.2\%$ smaller than the significant value of predicted mean \hat{y} during 2015–2021. This sizeable percentage difference between mean predicted \hat{y} during 2006–2014 and 2015–2021 thus is both practically and statistically significant.

Although the *D2015* regression coefficient in Model 1 is significantly larger than that for *DEMO* as predicted in Hypothesis 2, it is not significantly different from the coefficient for the 1851–2005 baseline. However, Hypothesis 2 did not predict that the coefficient for *D2015* would be greater or less than that for the baseline, only that the *D2015* coefficient would be greater than that for *DEMO*.

In sum, the results of tests based on the quasi-Poisson estimates of the regression coefficients are consistent with both research hypotheses, and, as hypothesized, the significant changes in mean predicted \hat{y} for the demonstration and post-demonstration periods are in the opposite and hypothesized directions. The results for the test of both hypotheses are also practically as well as statistically significant.

An additional measure of practical significance for these findings is given by the comparison between the observed total of eight *LFH* during 2006–2014 and the mathematically expected total that would have been

observed if the 1851–2005 predicted mean had continued through 2014. Under the *counterfactual* assumption of a continuation of the baseline conditional mean during 2006–2014, an estimated total of 15.2 *LFH* would be predicted to occur during these nine years, as calculated by the number of years 2006–2014 multiplied by the 1851–2005 predicted mean of 1.687 *LFH* per year. Thus, the observed total of eight *LFH* was approximately 7.2 fewer, or 47.3% lower, than would be predicted by a (counterfactual) continuation of the 1851–2005 baseline rate during the demonstration period.

Figure 5 displays \hat{y} , the mean annual count of *LFH* predicted by the regression model for each of the three subperiods of the study: 1851–2005, 2006–2014, and 2015–2021. Above each bar is the predicted mean annual *LFH* count for that subperiod as predicted by the regression model. The *p*-values above both bars on the right indicate the significance of the expected count relative to the expected count for the previous period. The *p*-value for 1851–2005 is for the test that the baseline count equals zero.

Other Results: Model 1

The research hypotheses did not make any prediction regarding the sign and significance of the regression coefficients *ACE* and *ALTHURR*. However, consistent with intuition, the regression coefficients for both variables in Table 3 are positive.

As shown in Table 3, an increase of one unit for *ALTHURR* above its mean is associated with a significant predicted increase in \hat{y} of 11% relative to the predicted *LFH* count in 1851–2005 ($p = 0.002$). The IRR for *ACE* in Table 3 of 1.165 is not quite significant ($p = 0.058$). The IRR for *ACE* indicates that, holding other predictors constant, a one SD increase in *ACE* (54.78 *ACE* units) above its mean was associated, on average, with an increase in the predicted *LFH* count of $(1.165 - 1)100 = 16.5\%$ relative to the predicted baseline count of 1.687 per year.

The high correlation (0.823, $p < 0.001$ between *ALTHURR* and *ACE*) (see Table 2) makes it challenging to estimate the separate, *ceteris paribus* association of each of the two predictors with *LFH*. But inclusion of both predictors controls for the total combined influence of *ALTHURR* and *ACE* on the outcome variable \hat{y} and may serve as proxies for other predictors not included in the model.

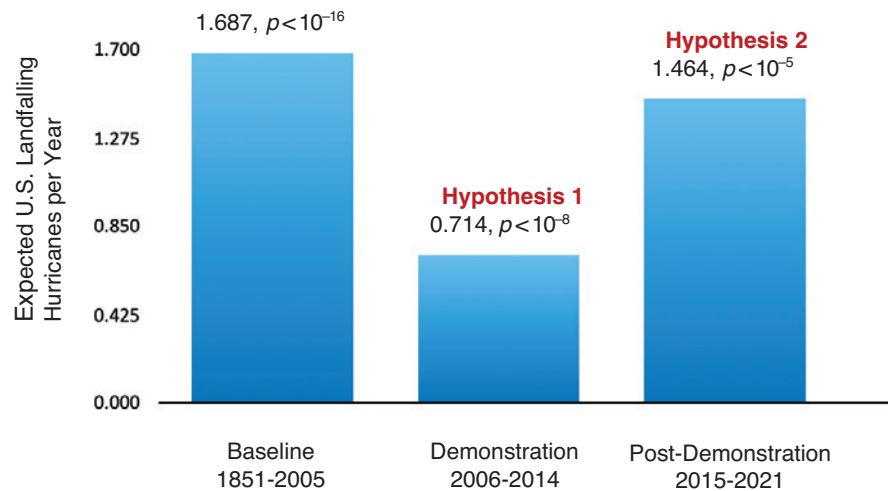


Figure 5. This Figure displays the mean annual count of landfalling U.S. hurricanes predicted by the count regression model for the baseline period, demonstration period, and post-demonstration period. The mean predicted annual LFH count is shown above each bar. The p -value above each of the two right bars is for the test of the difference between the mean for that period and the mean for the prior period. The p -value for 1851–2005 is for the test that the baseline predicted count equals zero.

Sensitivity Analysis: Model 1

Newey-West SEs

For Model 1, the conclusion for both research hypotheses are insensitive to the number of serial correlation lags used in calculation of the NW robust SEs. The quasi-Poisson regression results for Model 2 in Table 3 are based on NW SEs calculated with 10 lags. All other diagnostics for the estimated model are satisfactory.

An additional sensitivity analysis of the results for Model 1 is provided by a replication study involving re-estimation of Model 1 using a different data sample, as described in Appendix C.

DISCUSSION

Overview

The current preliminary study employed a reversed interrupted time series design to examine data from a quasi-experiment that was designed to investigate the possible association between the annual mean predicted count of landfalling U.S. hurricanes (LFH) and the application of Maharishi Technologies of Consciousness (MTC). As previously noted, Reichardt (2019, p. 244) pointed out that “a well-implemented ITS design can produce highly credible estimates of treatment effects, especially when the ITS design is implemented with supplements such as reversed or repeated treatment interventions and/or comparison time series”, as in the design of the current study.

The empirical results for both Models 1 and 2 are consistent with the predictions of Hypotheses 1 and 2. For each of the two estimated models for the NOAA hurricane data, 1851–2021 and 1900–2021, controlling for other variables, (1) the application of MTC in the demonstration period 2006–2014 was associated with a significantly lower mean for the predicted annual count of hurricanes striking the continental U.S. relative to the baseline mean rate and (2) discontinuation of MTC during 2015–2021 was associated with a significantly higher mean predicted count for LFH relative to that during the demonstration period. Thus, as hypothesized, a significant decline in the mean predicted count of LFH during the demonstration project was followed by a significant change in the opposite direction after discontinuation of MTC. These changes in opposite direction at the predicted times strengthen the evaluation of internal validity of the two studies. Model diagnostics are satisfactory for both models, and for both studies the results are statistically significant at the level $p < 0.005$, the proposed criterion for evaluating new statistical discoveries (Benjamin et al., 2018). This more stringent standard has been recommended because of the frequent failure to successfully replicate the results of studies that were deemed significant at the 0.05 level.

The results of Model 1 and Model 2 for Hypothesis 1 are also consistent with those from the prior unpublished pilot study using data from the sample period, 1851–2010. The data available at the time of the 2010 study permitted

testing for only Hypothesis 1 because the quasi-experimental treatment was not discontinued until 2015.

Note that we do not assert or imply that the empirical evidence demonstrates the existence of a causal relationship between the MTC treatment and the mean predicted *LFH* counts controlling for the explanatory variables. However, the empirical results of the current study do show a significant association (correlation) between MTC treatment condition and mean predicted *LFH* counts. These empirical results are consistent with causality, but further research is required to conclude the existence of a causal relationship.

The Hurricane Drought

As discussed previously, the application of MTC was initiated in 2006 for the purpose of mitigating future hurricane-related disasters, such as those in 2004–2005. Several features of the devastating 2004–2005 hurricane seasons were remarkable (AOML, 2022b): (1) The four major U.S. landfalling hurricanes in 2005 were the most in a hurricane season since 1851, the first year for which reliable NOAA data were available; (2) The years 2004–2005 are the only time in which five or more hurricanes struck the U.S. in two consecutive years; and (3) The 2004–2005 total of seven major hurricanes striking the U.S. was also historically unprecedented.

Despite prior forecasts of another severe hurricane season for 2006, the first year of the MTC demonstration period, no hurricanes, major or minor, struck the U.S. that year. This 2005 to 2006 decline in *LFH* was the largest observed drop from one year to the next since 1916–1917, and, according to NOAA data, 2006 was the only year since 1851 that the number of major hurricanes hitting the U.S. dropped from four to zero (AOML, 2022b).

The initial five years (2006–2010) of the nine-year demonstration period were the first since 1878 that no hurricanes made landfall along the Florida peninsula or U.S. East coast (AOML, 2022b). During the entire nine-year demonstration period 2006–2014 a total of eight minor hurricanes, but no major hurricanes, struck the U.S. The observed *LFH* total during 2006–2014 was 52.6% of the counterfactual projected total of 15.2 *LFH* for the same years.

Another unprecedented feature of the 2006–2014 demonstration period is that in 2010, although 12 hurricanes formed in the Atlantic basin (five of them major) none struck the U.S. As quoted in *National Geographic*, “This year was the

first time in recorded history that as many as 12 named hurricanes formed in the Atlantic without at least one of them making a U.S. landfall, said forecasters Phil Klotzbach and William Gray at Colorado State University” (Drye, 2010). Meteorologist Keith Blackwell, also as quoted by Drye, remarked “It was almost like we had a hurricane repellent over the U.S. East Coast and Gulf Coast. The storms were out there, but they just didn’t approach the U.S.”

The empirical evidence reported in this study indicates that the MTC demonstration period 2006–2014 was associated with a substantial and significant reduction in the mean predicted count of landfalling U.S. hurricanes, none of which were major (i.e., Category 3–5). This nine-year period of *LFH* quiescence with no major landfalling hurricanes was followed by two more years (2015–2016) of low activity, including no major *LFH*. One may speculate that the quiet level of hurricane activity in 2015–2016 may possibly be attributed to a lagged “carry over” effect of the prolonged 2006–2014 intervention. Such lags are almost always determined empirically in time series research, not predicted by theory.

This unexpected and historically unprecedented 11-year period 2006–2016, the longest such period since 1851, was termed the “hurricane drought” by hurricane experts (e.g., Hall & Hereid, 2015; Hart et al., 2016; Truchelut & Staehling, 2017). The longest recorded prior such period was the eight years 1861–1868 (Hall & Hereid, 2015). The drought ended in 2017 when four hurricanes made landfall on the continental U.S., including two major Category 4 *LFH*.

This hurricane drought was an extremely rare historical event. The mean waiting time for another such drought of even nine years duration, the length of the demonstration period 2006–2014, was estimated to be 177 years on the basis of simulation modeling (Hall & Hereid, 2015). After considering multiple possible explanations, some investigators, including Hall and Hereid, have attributed the drought simply to “luck.” For example, Hall & Hereid (p. 3482) commented it is remarkable that the hurricane drought “has occurred despite many of the intervening years being active by measures such as total storm count, major storm count, accumulated cyclone energy (ACE) and major landfalls on Caribbean islands.” They further remarked (p. 3482) that “A hurricane climate shift protecting the U.S. during active years, even while ravaging nearby Caribbean nations, would require creativity to formulate.” Thus, Hall and Hereid imply that it is unlikely that existing meteorological theory can successfully explain the hurricane drought.

It is beyond the scope of this study to explore the various proposed explanations for the 11-year drought in the landfall of major U.S. hurricanes. We simply conclude that the empirical findings of the current research indicate that the significant reduction in U.S. landfalling hurricanes, major and minor, during the 2006–2014 demonstration period of the quasi-experiment are consistent with the hypothesized effects of the application of MTC.

We also note that the Vedic perspective motivating the current study suggests that improved good luck, or in Vedic terms *support of natural law*, is a key predicted effect of the implementation of MTC at the societal or individual levels. For example, from the perspective of this study, more favorable behavior of hurricane activity is viewed as the holistic result of favorable changes in the functioning of the specific natural laws governing hurricane activity. These laws are those investigated by atmospheric science, meteorology, climatology, and other natural sciences. More favorable activity governed by these natural laws is predicted to result from the application of MTC, which, from the point of view of Maharishi's consciousness-based framework, is said to enliven the all-pervading field of pure consciousness, the unified field of natural law, at the basis of all natural laws governing the expressed activity on the surface level of life (see Figure A1 in Appendix A). In Maharishi's consciousness-based framework, MTC is hypothesized to enliven greater support of the laws governing the natural and social environment by decreasing stress and tension in collective consciousness and thereby reducing imbalance in nature. Our findings are consistent with such a view.

Possible Directions for Future Research

This section discusses additional possible explanatory factors that may be fruitful to consider in future research on the relationship between MTC and hurricane landfalls. First, it should be noted that the aim of the current study is not to identify a definitive statistical model of the relationship of MTC and the incidence of *LFH*, a task beyond the scope of the current research. The aim, rather, is to provide a preliminary exploratory analysis to suggest whether the hypothesized association between MTC and *LFH* incidence is statistically and practically significant and thus worthy of future research.

The most useful direction for additional research would be replication of these findings using a similar quasi-experimental design, perhaps in one or more other countries with high risk of hurricane-related disasters. Another future direction for research might be to explore the

degree to which the existing empirical results remain consistent with Hypotheses 1 and 2 after modifying the count regression model. Modifications might include, for example, different predictor variables that are suggested by meteorological theory and research.

For example, one potential additional explanatory factor is the phase of the Atlantic multidecadal oscillation (AMO), a long-cycle (approximately 50–70 years) quasi-periodic fluctuation in North Atlantic sea-surface temperatures (Klotzbach et al., 2018; Truchelut & Staehling, 2017). The positive AMO phase has been associated with higher levels of tropical cyclone activity in the Atlantic basin and more frequent *LFH*, and the AMO negative phase with lower levels (Klotzbach & Gray, 2008). AMO was in a positive phase 1995 to at least 1917 (Klotzbach et al., 2018), and thus, the AMO phase does not predict a reduction in the annual count of *LFH* during the 2006–2014 demonstration period.

Another possible explanatory factor is the El Niño Southern Oscillation (ENSO) phase of the annual North Atlantic hurricane season. Research discussed by Klotzbach et al. (2018) indicates that annual El Niño periods create vertical wind shear and other factors detrimental to hurricane formation. On average, during 1900–2017 approximately 1.75 more *LFH* occurred in La Niña seasons than in El Niño seasons (Klotzbach et al., 2018). During the demonstration period of the current study, the La Niña hurricane seasons were 2008, 2011, 2012 (with a total of eight minor *LFH*); the El Niño seasons were 2007 (one minor landfall) and 2010 (no *LFH*); and the El Niño neutral seasons were 2006 and 2009 (no *LFH*), 2013 (no *LFH*), and 2014 (one minor landfall). No major hurricanes (Category 3–5) made landfall during the nine years of the demonstration period 2006–2014. Only two of the nine years of the demonstration period were El Niño years that would clearly predict reduced *LFH* while the three La Niña years would typically be expected to result in increased *LFH*. Also, El Niño-neutral hurricane seasons, on average, have been associated with more Atlantic hurricanes and more *LFH* than El Niño years (Klotzbach et al., 2018). Thus, ENSO phase does not clearly predict a reduction in the annual count of *LFH* during the 2006–2014 demonstration period.

Other additional predictor variables might include, for example, those suggested by Elsner & Jagger (2013): the Southern Oscillation Index (SOI), which is inversely correlated with ENSO phase; the North Atlantic Oscillation (NAO), a measure of atmospheric *steering flow*; North Atlantic sea surface temperature (SST); and sun spot numbers, a measure of solar UV radiation (SSN). Using these four

predictors, Elsner and Jagger estimated a Poisson regression model of NOAA landfalling hurricane data 1866–2010. Their results indicated that SOI and NAO were significant predictors of *LFH* (positively and negatively related, respectively). SST and SSN were not significant predictors.

Gains from an approach of adding additional or alternative explanatory variables to Equation (1), however, may be limited to the degree that the existing predictors (*ACE* index and *ATLHURR*) in Models 1 and 2 may serve as proxies for other proposed explanatory variables. This appears likely because *ATLHURR* is a measure of total hurricane activity in the North Atlantic basin, and *ACE*, as discussed previously, measures the frequency, duration, and strength of that activity. For example, the predictors SOI and NAO were significant predictors of the number of *LFH* in the analysis of Elsner & Jagger (2013). Thus, SOI and NAO are likely to be correlated with *ACE*, *ATLHURR*, or both.

There are, of course, other alternate explanations which might shed light on the postulated transformative features of MTC, including complexity theory (Sethi et al., 2021), chaos theory (Dantas-Torres, 2015), and nonlinear dynamical systems theory (Bucogen et al., 2022), but consideration of these alternative approaches are beyond the scope of the present study.

Implications and Applications

Although the findings of the current research, while preliminary, are anomalous from the perspective of the dominant physicalist paradigm of science, they appear worthy of future empirical investigation. To that end, Jahn & Dunne (1997, p. 204) emphasized that “good science, of any topics, can not turn away from anomalies; they are the most precious resource, however unrefined, for its future growth and refinement.”

The current study describes a novel, consciousness-based theoretical framework, a key stated purpose of which is to help us understand and improve the relationship between humankind and the natural environment. This study also provides a preliminary empirical investigation of the hypothesized contribution of an applied aspect of this framework, Maharishi Technologies of Consciousness, to averting environmental disasters, such as landfalling hurricanes. In our judgement, the preliminary findings of Study 1 and Study 2 described in the current article provide sufficient evidence to justify attempts to replicate of these findings with the support of governmental or private organizations looking for an evidence-based approach to the mitigation of hurricane-related or other natural disasters.

ACKNOWLEDGMENTS

This quasi-experiment was funded by grants from the Howard and Alice Settle Foundation to Maharishi International University. Financial support for the research and writing of this article was provided by the Dr. Tony Nader Institute for the Study of Consciousness and its Applied Technologies at Maharishi International University. The authors were solely responsible for the study design, data collection, analysis, writing, editing, and the decision to publish.

AUTHOR CONTRIBUTIONS

Kenneth L. Cavanaugh, Ph.D., MPA. Conceptualization, writing, editing, statistical modeling and analysis, graphics.

Lee Fergusson, Ph.D. Conceptualization, writing, editing, graphics.

Conflicts of Interest. The authors declare no conflict of interest.

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DATA AVAILABILITY

Data files and Stata software code are provided at the webpage for supplementary materials hosted at the Open Science Framework repository (OSF) at <https://osf.io/tvzqn>.

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APPENDIX A

THEORETICAL FRAMEWORK

The theoretical model guiding this research is informed by systems science (Noori et al., 2021). Input-output modeling allows understanding of any system as a *process*, with throughputs serving as the source of interdependent mechanisms responsible for transforming inputs into outputs. In our case: (1) inputs to the model are Maharishi Yoga and Maharishi Yagya; (2) pure consciousness—said to be the *Unified Field of Natural Law*—serves as the throughput processing resource for transforming mechanisms; and (3) output, the three hypothesized effects of these technologies on individual, social, and environmental life.

The model in Figure A1 is therefore organized into these three system elements, with brief descriptions of each supported by indicative theoretical and empirical research to provide evidence of mechanisms and output. The following

sections detail the input, throughput, and output of the model as a way of building the case for the focus of this study, output #3, which posits the possible effect of MTC on the environment, specifically on hurricane formation and landfall events in North America.

The two input (or dosage) variables ❶ tested by this research are branches of Veda and the Vedic literature. Each has been explained by Maharishi as generating coherence and harmony in individual, social, and environmental life, and Maharishi proposed that each represents a type of human behavior or practice that generates one or multiple salutary outputs ❸, all mediated by the processing mechanisms ❷ of pure consciousness.

Among the better known and well researched MTC is the TM technique (Dillbeck et al., 2020). The following sections introduce Maharishi Yoga and Maharishi Yagya, whose combination in this study is the subject of our empirical investigation.

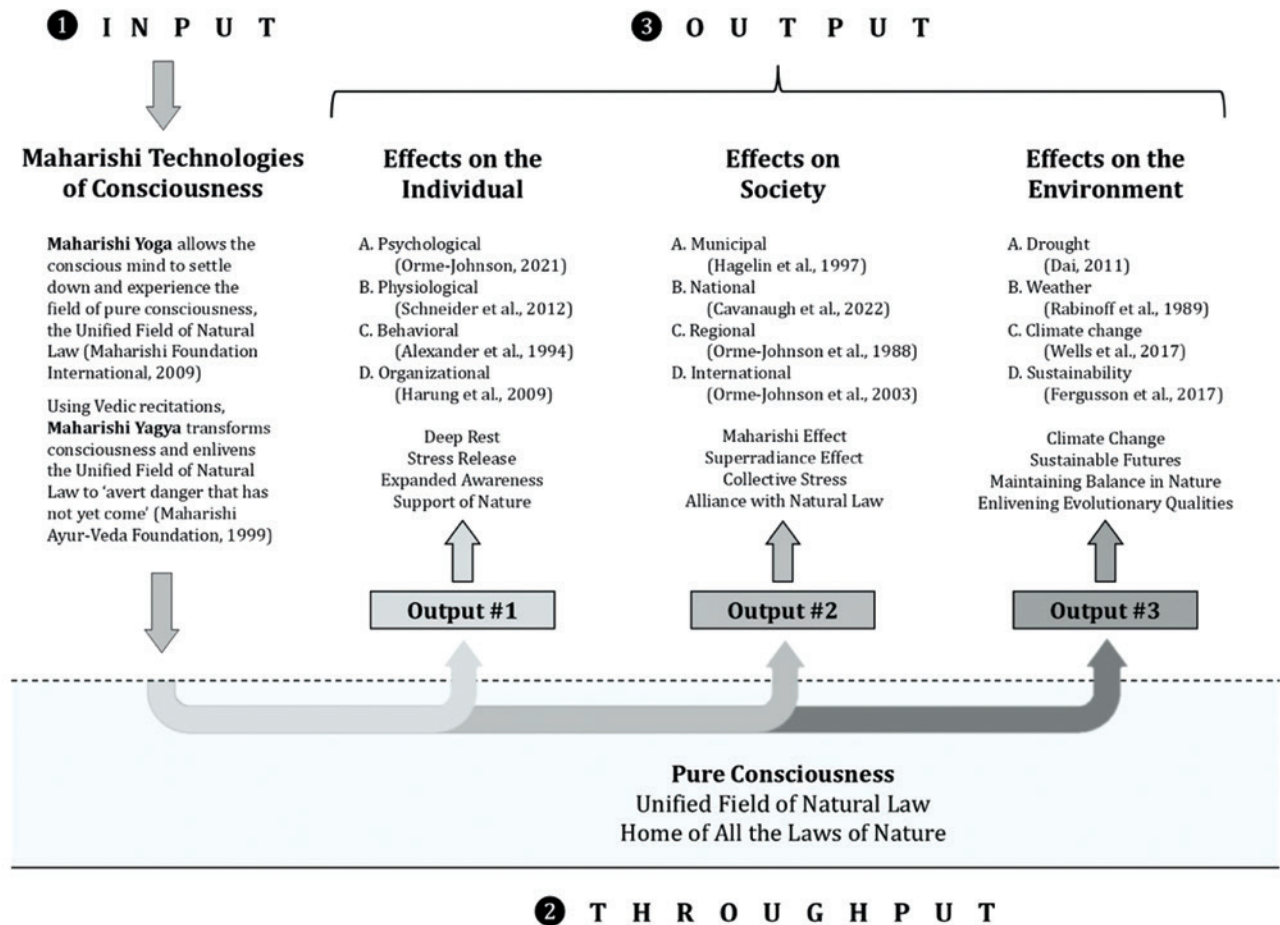


Figure A1. Theoretical model of Maharishi Technologies of Consciousness and their relation to individual, social, and environmental outcomes.

Maharishi Yoga

In this context, *Yoga* refers specifically to group practice of Maharishi's Transcendental Meditation and TM-Sidhi program, including *Yogic Flying* (Maharishi Vedic University, 2008).

Transcendental Meditation is that system of meditation taught by Maharishi and his certified teachers. It is practiced twice a day for about 20 minutes in the morning and evening but does not require other specific changes to lifestyle or belief system. Transcendental Meditation is described as a simple, effortless, and natural mental technique for allowing the conscious thinking mind to quieten and the body to experience deep rest. The regular practice is said to result in the experience of pure consciousness, a silent, peaceful, and harmoniously integrated state of awareness where the individual is fully awake but also deeply rested. Maharishi explains that because of this deep state of rest, physiological stress is released from the system and awareness is expanded, resulting in improvements to psychophysiological health, behavior, and the way individuals interact with those around them, for example, in the family or workplace. According to Maharishi, in

a very systematic, spontaneous manner the practice of Transcendental Meditation enlivens all levels of the dynamism of Natural Law, all levels of creativity of Natural Law, in the conscious mind. The infinite organizing power of Natural Law spontaneously begins to be a living reality of all thought and action in daily life. (Maharishi Foundation International, 2014, p. 24)

Such an experience is said to result in *support of nature* or greater alignment between individual action and the actions of natural law throughout the universe as conducted reliably by the laws of nature. Of relevance to this research is Maharishi Mahesh Yogi's (2008, Foreword) explanation that the more advanced TM-Sidhi program, including *Yogic Flying*, "demonstrates the ability of the individual to act from the unified field and enliven the total potential of natural law in all its expressions—mind, body, behavior and environment." Maharishi thus went on to explain:

It needed a scientific age for the world to appreciate the significance of the philosophy of Yoga and its practical application in creating

integrated individuals, integrated nations, and an integrated world family. Yoga means union, the union of the individual awareness with the unified field of all the laws of nature in the state of transcendental [i.e., pure] consciousness. (Maharishi Vedic University, 2017, p. 4).

In this way, the TM and TM-Sidhi program "inspires the Laws of Nature to uphold all thought, speech, and action: support of Nature Law increases in daily life with regular practice," according to Maharishi Mahesh Yogi (1995, p. 283).

Maharishi Yagya

A second key aspect of MTC is Maharishi Yagya. Maharishi Yagya consists of traditional "Vedic performances to restore environmental balance and promote individual and collective health" (Maharishi Mahesh Yogi, 1991, p. 73). Maharishi further explained that Yagyas are performances based on Vedic recitations designed to

promote health, happiness and success. Maharishi Yagya creates the desired effect from the level of the unified field...the deepest and most comprehensive level of life, from where nature governs the activity of the entire universe. Maharishi Yagya[s] ensure maximum support of nature by harmonizing the rhythms of individual and collective life with those of the cosmos. (Maharishi Mahesh Yogi, 1991, p. 89)

Maharishi Mahesh Yogi (1964) first spoke about Yagyas in the 1960s when he introduced the concept of watering the root of life [i.e., cultivating the experience of pure consciousness] to nourish and sustain all branches of learning and life; he explained how this practice upholds the evolution of life. In this context, by "evolution" Maharishi means the progressive, life-supporting aspects of life governed by natural law which are said to be stimulated and enlivened through the performance of specific Yagyas. Thus, from the perspective of Maharishi's theoretical framework, Maharishi Yagya can be described as a collection of unique Vedic transformative techniques designed to maintain and balance the relationship between individual, social, environmental, and even cosmic life. Of note is UNESCO's statement that the specially trained Vedic pandits (i.e., Vedic experts) who perform Maharishi Yagya are "Masterpieces of the oral and intangible heritage of humanity" (Global Country of World Peace, 2005, p. 3).

In Maharishi's theoretical framework, Maharishi Yagya can therefore be defined as Vedic performances that create life-supporting effects to amend or avoid any unwanted tendency before it manifests, based on the Vedic principle described in the *Yoga-Sūtras* (2.16) as: "Avert the danger that has not yet come" (Maharishi Ayur-Veda Foundation, 1999, p. 14). To that end, one of the key reference books of Vedic literature states: "Performance of Yagyas on a regular basis is beneficial to man and bestows peace" (*Vishnu Purāna*, 1.6.28). In contrast to the Vedic performances of others, Maharishi Yagyas are said to be always performed by trained *Maharishi Vedic Pandits* from the level of pure consciousness. Thus, Maharishi Yagya is postulated to provide

a powerful technology to help avert or minimize problems and enhance success in all areas of life.... The correct performance of a Maharishi Yagya from the level of pure consciousness by properly trained Vedic Pandits [experts] is essential. Only Maharishi Vedic Pandits have been thoroughly trained in India, under Maharishi's guidance, to be deeply grounded in the Vedic Tradition and to perform from that silent level of expanded consciousness which will ensure the most powerful and correct results. (Maharishi Ayur-Veda Foundation, 1999, p. 15)

Pure Consciousness: The Unified Field of All the Laws of Nature

Pure consciousness is described by Maharishi as the home of all the laws of nature—the unified field of natural law—and thus stands as the central switchboard of laws of nature which govern the ever-expanding universe. For this reason, Maharishi Mahesh Yogi (1995) described pure consciousness as the *Constitution of the Universe* in which all the computational functions of nature are performed. Maharishi explained that action from this level of life is action in accord with nature, and both Maharishi Yoga and Maharishi Yagya are said to be technologies which harness this level of pure potentiality and direct it for improvement in all aspects, and at all levels, of outer life.

Contemporary theory in physics advances the notion that the unified field is a "field of complete self-referral dynamism at the basis of Nature's functioning [giving] rise to a new, unified understanding of the fundamentals of creation" (Maharishi Vedic University, 2017, p. 7). Specifically, quantum physics proposes that all the forms,

phenomena, functions, and mechanisms in nature (i.e., the expressions of force and matter fields throughout the universe) can be understood in terms of different underlying quantum fields, all of which are superimpositions of one, unified, single field—the supersymmetric unified field of natural law. "This complete unification of all the different quantum fields, as described in Superstring Theory," it can be argued, "has the fundamental and profound implication that the Unified Field is a purely self-interacting field. All phenomena in Nature are said to be generated sequentially from the modes of self-interacting or self-referral dynamics of the Unified Field" (Maharishi Vedic University, 2017, p. 7). It is these sequentially generated modes of the unified field which are said to be harnessed and utilized in Maharishi Yoga and Maharishi Yagya to create change in the individual, society, and the environment.

For both the practitioner of Maharishi Yoga and pandit of Maharishi Yagya, performance is said to occur from within this level of nature's functioning, pure consciousness. To that end, Maharishi said, "we want to have our awareness fully awake to that level of reality which is in total self-referral. Being self-referral, it's transcendental. Being transcendental, it is the basis of all life" (Maharishi Vedic University, 2017, p. 7). Thus, Maharishi explained that pure consciousness is like a seed: it is hollow inside (i.e., unmanifest), but is also the source of innumerable branches, leaves, fruit, and flowers of the tree (i.e., the manifest universe). By aligning their awareness to this level of life, practitioners and pandits are said to gain access to the total field of natural law, to all the laws of nature, and thus "gain commandment to whatever extent" of the "administrative intelligence and energy of the whole diversity of the universe" (Maharishi Vedic University, 2017, p. 7). Pure consciousness can therefore be called the source of all transforming mechanisms responsible for the three outputs schematically represented in Figure A1 and described in the following sections, of which output #3 is our primary focus.

Effects on the Individual (Output #1)

Maharishi's practical example of the ability of Yoga to influence individual life is the TM-Sidhi program in which outer action is stimulated by inputs to pure consciousness (Maharishi Vedic University, 2017). The same mechanism of generative inputs applies to all three outputs in Figure A1. Indeed, Orme-Johnson (2021) has recently explained the transformative mechanisms (i.e., throughputs) associated

with harnessing the intelligence and energy of pure consciousness in reference to output #1 for the individual.

An extensive body of more than 340 peer-reviewed published studies examine the hypothesized psychological, physiological, behavioral, and organizational benefits associated with practice of the TM and TM-Sidhi program. For example, Dillbeck et al. (2020) and Orme-Johnson (2021) have reviewed the research on this program in the treatment of psychological and physiological conditions and the promotion of well-being. These beneficial effects are said to be a result of the active mind settling down and the body becoming deeply rested, as indicated by reductions of physiological stress markers.

Schneider et al. (2012) investigated the salutary effects of TM on hypertension and reduction of strokes, heart attacks, and associated mortality; in earlier research Alexander et al. (1994) examined its benefits related to treating and preventing alcohol, nicotine, and drug abuse; and Harung et al. (2009) explored its role in improving organizational leadership. Comprehensive surveys of these and other effects can be seen in Dillbeck et al. (2020). Thus, changes to individual life and capability through the Technologies of Consciousness form the platform upon which the next two outputs—social and environmental—can be understood.

Effects on Society (Output #2)

One of the most dramatic examples of transformative mechanisms of the unified field can be seen in the Meissner effect of quantum superconductivity. In an ordinary electrical conductor, incoherent, disordered electrons allow penetration and perturbation by an external magnetic field. In a superconductor, the coherent collective functioning of electrons spontaneously repels an external magnetic field and helps it maintain its impenetrable status. In this example, a small number of coherent system elements functioning together results in the entire system defending itself against external disturbing influences.

A parallel Meissner effect is hypothesized to occur in social systems, such as a city or country, where a small number of individuals practice the TM and TM-Sidhi program together in a group. The individuals in a such a group are said to harness the intelligence and energy of pure consciousness, as indicated by increased brainwave coherence, and thereby spontaneously create a national armor, reduce the influence of collective stress, and set society in a more life-supporting and evolutionary direction. The theory and evidence for what has become known as the *Maharishi Effect* (also referred to as

the *Superradiance Effect*) has been documented and explained elsewhere (e.g., Orme-Johnson & Fergusson, 2018).

The Maharishi Effect is predicted to occur when either at least one percent of a social unit (city, region, nation, or indeed the world) practices TM or when at least $\sqrt{1\%}$ of a social unit practice TM and TM-Sidhi program together in a group. This suggests the effect of coherence created by group practice of Maharishi Yoga, like the effect of Maharishi Yagya performances, is transmitted to the surrounding population from the most basic level of nature's functioning, pure consciousness. Outputs associated with the Maharishi Effect resulting from group practice of Maharishi Yoga have been observed at each of the following structural levels of society: municipal, national, regional, and international.

At the municipal level, Hagelin et al. (1999) reported the results of a prospective quasi-experiment in which the practice of the TM and TM-Sidhi program by a group of approximately 4,000 participants was proposed to be large enough to generate the Maharishi Effect for Washington, D.C. between June 7 and July 30, 1993. The group practice was associated with a 23% reduction in violent crime ($p < 2 \times 10^{-9}$). The observed reduction in crime exceeded the 20% predicted decline that was lodged with an independent review board of scientists and public leaders, the D.C. police, and publicized in the press prior to the quasi-experiment (Hagelin et al., 1999).

At the regional level, Orme-Johnson et al. (1988) found the size of a group practicing the TM and TM-Sidhi had a statistically significant on quality of life in Jerusalem and Israel as well as on the then war with Lebanon. "Cross-correlations and transfer functions indicated that the group has a leading relationship to change on the quality-of-life indicators, supporting a causal interpretation" (Orme-Johnson et al., 1988, p. 776). Months before the study began, study predictions were lodged with leading independent scientists in the U.S. and Israel.

At the international level, data also suggest that between 1983 and 1985, ranging for periods between eight and 11 days, when three separate groups of 5,500, 6,000, and 8,000 practitioners of the TM and TM-Sidhi program were formed, a 72% drop in global terrorism ($p < 0.025$) was recorded. Also, an average drop of 32% in international conflict occurred (p values ranged from < 0.005 to < 0.025) (Orme-Johnson et al., 2003).

These studies at the municipal, regional, and international levels investigated the effects associated with group practice of Maharishi Yoga. In addition, as discussed

below, seven studies of the combined application of MTC, including both Maharishi Yoga and Maharishi Yagya, all at the national level, have been published in peer-reviewed journals.

At the national level, interrupted time series analysis was used to test the hypothesis that practice of the TM and TM-Sidhi program by a group of a theoretically predicted size (in this case $N = 1,725$, approximately the $\sqrt{1\%}$ of the U.S. population) would decrease stress and tension in the larger population, as measured by reduced trends in monthly rates of homicide during the demonstration period 2007–2011 (Cavanaugh et al., 2022). The group also included up to 1,100 Maharishi Vedic experts practicing Maharishi Yagya. Controlling for pre-intervention trends, seasonality, and autocorrelation, a reduction in trend relative to the baseline trend, at the predicted time and in the predicted direction, was evident ($p < 0.001$) with large effect size. This decrease in trend indicated an average decline of 19.3% in homicide rates during 2007–2011. Also, consistent with hypothesis, this reduction was followed by increases in homicide trends 2012–2016 ($p < 0.0001$) after the group fell below the required size of 1,725. Alternative explanations for these collective effects, apparently independent of behavioral interactions, were discussed and found to be implausible.

Seven additional related studies on the combined effects of Maharishi Yoga and Yagya were published in independent peer-reviewed journals beginning in 2016. Although Maharishi Yagya was not highlighted in the original published papers, each of the seven studies report statistically and practically significant associations between the combined application of both modalities of MTC and the reduction of stress and tension in the field of collective consciousness of society, as measured by significantly reduced monthly rates of U.S. urban violent crime, U.S. fatality rates from murder, motor vehicle and other accidents, drug-related death, and infant mortality (Cavanaugh et al., 2022; Cavanaugh & Dillbeck, 2017a, 2017b; Dillbeck & Cavanaugh, 2016, 2017, 2023; Orme-Johnson et al., 2022). Results of these studies on national public health indicators has been described elsewhere in Cavanaugh et al. (2022) and Orme-Johnson & Fergusson (2018).

Collectively, these studies are consistent with the hypothesis that when a sufficiently large number of individuals practice Maharishi Yoga together in one place, or this practice of Maharishi Yoga is supplemented by Maharishi Yagya, these subjective technologies of consciousness will be associated with improvements in the quality of life

in that social setting. These consciousness-based technologies—subtle human behavior on the level of consciousness (Maharishi Yoga and Yagya)—are said to positively benefit society and the world at large (output #2) by harnessing the intelligence and energy of pure consciousness.

Effects on the Environment (Output #3)

Consistent with the input-output model of Figure A1, Maharishi's view of the relationship between human behavior and the environment is encapsulated by the following statement:

Pure consciousness is a field of infinite correlation pervading the whole of nature... any negative or positive impulse at any single point [within pure consciousness] is instantly transmitted to the entire field and accordingly [that impulse] damages or enriches all life everywhere....The relationship between man and nature is indivisible. Only such unity with nature can guarantee that in our actions we will always protect nature and in turn be protected by it. (Maharishi Mahesh Yogi, 1978a, p. 9)

If the relationship between human behavior and nature is indeed "indivisible," then changes in one must affect changes in the other. According to Maharishi, it is the impulses of life generated from the field of pure consciousness that affect life everywhere, including impulses of life which are either positive or negative. Thus, Maharishi maintained that "by the wrong doings of man on earth the whole atmosphere becomes strained" (Maharishi Mahesh Yogi, 1968). By contrast, practitioners of the TM and TM-Sidhi program are said to create coherence and harmony through the Maharishi Effect:

People who don't meditate create an atmosphere of stress and strain and tension. As the stress increases the laws of nature working for the evolution of everything, their action becomes strained. In the areas where people are very strenuous, flowers don't bloom in full. The earth becomes less fertile. Undue rain, undue heat, epidemics, hostile tendencies. All these begin to develop, and as they develop, the functioning of the natural laws for the evolution of everything becomes more and more strained.

But there is a limit to which the world's atmosphere could be strained. It is like you

stretch a rubber band and there is a limit to which it can be stretched, beyond which it only can break. And it breaks. All these wars—some fighting going on here and there—all these are the expressions of the unbearability of the atmosphere for any more increase of stress and strain. It must break.

It is the experience of all the people; if not of us, of people of the previous generations. There is a world war and then the war is over, maybe in two years, five years, whatever. And then there is a lull for 20, 30 years. In that 20 or 30 years the people in the world have again strained the atmosphere, and then the breaking point comes, and it breaks. (Maharishi Mahesh Yogi, 1968)

The hypothesis that MTC might be able to influence drought, weather, climate change, and sustainability is consistent with well-developed theory, anecdotal evidence, and preliminary published or unpublished research. Anecdotal evidence includes, for example, reported effects associated with the introduction of group practice of Maharishi Yoga in war-torn Mozambique in the early 1990s (Dai, 2011). By the invitation of the national government, group practice of the TM and TM-Sidhi program was introduced in the armed forces in 1993–1994. This program was credited by the government with bringing immediate and unexpected rains that ended the most serious drought in a century. A similar phenomenon was observed in Cambodia during a time of crisis (Fergusson, 2016).

In published research, the early work of Rabinoff et al. (1989) explored the impact of group practice of the TM and TM-Sidhi program on weather events; Wells et al. (2017) examined the implications of this knowledge and practice for climate change; and Fergusson et al. (2017) explored

the principles of Maharishi's Vedic knowledge to sustainability science. It has also been noted that the so-called *Precautionary Principle* of sustainability science (Gilbert, 2020) is consistent with the Vedic principle of averting danger before it arises (Kettle et al., 2017).

Certainly, the proposition that human behavior affects the weather, and is interactive and interdependent with it, is not a foreign idea in most indigenous cultures (e.g., Balay-As et al., 2018). This view is consistent with that of John Muir, who wrote about the interconnectedness of the world when he said, "When we try to pick out anything by itself, we find it hitched to everything else in the Universe" (Gilbert, 2020, p. 489). Such a relationship between man and nature is what Cajete (2000) calls "native science." Indeed, for many thousands of years, according to the principle of interdependence, indigenous peoples in all parts of the world have adopted the view that human behavior, including unseen, subtle, and directed behaviors, affect weather events, weather patterns, and climate. Such directed behaviors toward changing the environment include skills, attitudes, conceptions, beliefs, values, capabilities, practices, and traditional ways of solving problems (Ombati, 2017).

Moreover, farmers annually face the seeming vagaries of weather, never knowing if the current year will bring beneficial or disastrous environmental conditions for their crops. But Maharishi Mahesh Yogi (1978a) pointed out that when the sunshine, rain, and seasons come and go without reference or connection to the needs and behaviors of society, it is because the environment is in a state of imbalance in which there is a lack of coordination among the various separate elements of life. He emphasized that these seemingly separate elements can now be properly coordinated by re-establishing balance through his technologies of consciousness. Such coordination is an underlying theme and proposition motivating the present research on landfalling hurricanes in the U.S.

APPENDIX B

OTHER EMPIRICAL RESEARCH ON CONSCIOUSNESS AS A FIELD

EEG Studies

Research on Maharishi Technologies of Consciousness (MTC) that also reports empirical evidence said to support the possible existence of consciousness as a nonlocalized field includes EEG experiments examining effects of group practice of Maharishi Yoga (TM and TM-Sidhi program) (Orme-Johnson et al., 1982; Travis & Orme-Johnson, 1989). For example, an ITS study reported significant increases in EEG coherence between pairs of different subjects practicing TM at precisely the same time when 2,500 people were participating in group practice of the TM-Sidhi program more than 1,000 miles away (Orme-Johnson et al., 1982). A related randomized study by Kleinschnitz & Travis (2024) found significant evidence consistent with possible field effects associated with group practice of TM.

Gioldini et al. (2016) provide a list of other EEG studies investigating brain-to-brain interaction at a distance.

Neuroendocrine research: Maharishi Yoga

Empirical evidence of possible neuroendocrine-mediating factors involved in the findings of Orme-Johnson et al. (1982) and Travis and Orme-Johnson (1989) are reported by Walton et al. (2005). Time series regression analysis was used to investigate the dynamic relationship (i.e., Granger causality) between changes in the size of a large group practicing the TM-Sidhi program and subsequent overnight excretion rates of neurochemical markers of reduced stress in six non-meditators outside the group. The authors reported that immediately following increases in the daily size of the TM-Sidhi group ($N = 77$), as hypothesized, the natural log of the daily overnight excretion rate for the stress hormone cortisol decreased ($p = 0.004$), the log excretion rate for a metabolite of serotonin (5-HIAA) increased ($p = 0.03$), and the log ratio of 5-HIAA to cortisol increased ($p < 0.001$). All of these changes are in a direction indicating reduced individual stress. These changes in excretion rates, in the opposite directions at the predicted time, are consistent with those found during individual practice of TM.

Alternative explanations for these results were reported to be implausible.

Global Consciousness Project

Nelson (2019) reported empirical results from the Global Consciousness Project (GCP) that are said to be consistent with the hypothesis of a shared *global consciousness*. An outgrowth of previous research at Princeton's Engineering Anomalies Research Lab (PEAR), for more than 20 years GCP has been empirically investigating the relation between global consciousness and physical systems. GCP research examines correlations between major global events and increased order (decreased randomness) in the behavior of a global network of random number generators (RNG).

For example, Nelson (2019, p. 195) described research by Bryan Williams that reported significantly increased orderliness (decreased randomness) in the RNG global GCP network ($p < 0.0005$) associated with 110 events of large group or global synchronized practice of meditation or prayer that had the stated intention of promoting world peace, global harmony, or healing of the Earth and nature.

Consistent with promising results of a preliminary 2001 RNG study of the effects of group practice of the TM and TM-Sidhi program, Nelson (2006) found a significant cumulative increase in orderliness of the output of the RNG ($p < 0.01$) during synchronized group practice of these consciousness-based technologies by large groups at Maharishi International University (MIU) and Washington, D.C., respectively. Data were collected for seven consecutive Saturdays in July-September 2006. The total number of participants varied from 2,116 to 2,492. Deviations from randomness were reported to be greater when the total size of the groups was near maximum.

A second RNG study further investigated effects associated with group practice of the TM and TM-Sidhi program. Mason et al. (2007) reported significant, cumulative deviations from randomness ($p < 10^{-5}$ for both studies) during 94 total hours of meditation data from two separate experiments at MIU. Stronger effects ($p < 10^{-6}$ for both studies) were found during a sub-period when participants practiced an advanced aspect of the TM and TM-Sidhi program known as *Yogic Flying*. Data for the study were obtained from a local RNG at the meditation site, unlike the global network of RNGs used by Nelson (2006). The participants (659 on average) were not aware of the study or the RNG. Cumulative deviations from randomness were not significant for

baseline data, but significant drift was found in the post-test control period, indicating possible “carry over” or lagged effects.

The authors address a list of ten potential alternative explanations, but concluded none could plausibly account for the observed results. The direction of anomalous cumulative deviations were similar to other RNG research involving prayer, meditation, and sacred sites, namely deviations in the direction of increased orderliness of RNG activity that involve an increase in the proportion of zeros, rather than ones.

The extensive body of other empirical (and theoretical) research on the hypothesis of a nonlocal dimension of consciousness is discussed in Radin (2006, 2013) and Dossey (2013).

Research on *National Mood*

Common expressions referring to the concept of a collective aspect of consciousness, or “group mind” or “national mind,” include “public opinion” or “national mood” in public opinion polling, “employee morale” in business, and “investor sentiment” in finance. Studies motivated by such concepts include empirical research in behavioral economics that investigate the relationship between national mood and stock market performance. The sentiment of popular songs on online music sites were used as a proxy indicator of national mood (Edmans et al., 2022). Related studies have also examined the association between stock market activity and mood-affecting events such as weather disasters, outcomes of sporting events, and aviation disasters.

APPENDIX C

REPLICATION: STUDY 2

As a replication study, we re-estimated Model 1 using the NOAA data for 1900–2021 ($N = 122$). The data for this period are generally regarded as being of higher quality than the 19th-century data. The quasi-Poisson QML regression estimates for Model 2 are shown in Table 3.

The regression results remain consistent with both research hypotheses (see Table 3). For Model 2, Hypothesis 1 is the same as that for Model 1 except the baseline incidence rate is 1900–2005 rather than 1851–2005 in Model 1. Consistent with Hypothesis 1, the regression coefficient for *DEMO* is significantly less than that for the 1900–2005 baseline (regression intercept) with a significant difference of -1.215 , $z = -5.19$, $p < 10^{-6}$, CI $[-1.674, -0.756]$. The IRR for *DEMO* of 0.469 indicates that mean predicted \hat{y} during 2006–2014 is $(0.469-1)100 = -53.1\%$ lower than 1.581 *LFH* per year, the baseline mean predicted value of \hat{y} during 1900–2005.

Likewise, consistent with Hypothesis 2, the regression coefficient for *DEMO* is significantly less than that for *D2015*. Subtracting the *D2015* coefficient from that for *DEMO* gives a significant difference of -0.703 , $z = -4.48$, $p < 10^{-5}$, 95% CI $[-1.011, -0.395]$. Thus, the mean *LFH* count predicted by the regression model during the demonstration period of 0.742 is lower than the predicted mean count of 1.500 for the post-demonstration period. The latter count is given by $0.948(1.581)$, the IRR for *D2015* multiplied by the baseline expected *LFH* count. Exponentiating the difference between regression coefficients yielded 0.495 which implies that \hat{y} during 2006–2014 is $(0.495-1)100 = -50.5\%$ lower than \hat{y} for 2015–2021.

Thus, in summary, the results of the empirical analysis for Model 2 are consistent with both Hypotheses 1 and 2 and display both a high level of practical as well as statistical significance.

Based on a counterfactual continuation of the 1900–2005 baseline *LFH* incidence rate of 1.581 annually, a total of 14.2 *LFH* would be predicted during the nine years of the demonstration period as compared with the observed total of eight. The observed total was 56.2% of the counterfactual total ($8/14.2 = 0.562$). Thus the observed total *LFH* was $(0.562-1)100 = -43.8\%$ percent lower than the counterfactual expected total count.

In Model 2, unlike Model 1, the IRR for *ATLHURR* (1.078) is non-significant as shown by the 95% CI for IRR in Table 3 which includes 1.0, indicating the IRR is not significantly different from 1.0 ($p = 0.07$). The non-significance may be due in part to the high correlation of *ATLHURR* with *ACE* (see Table 2). Compared with *ATLHURR*, *ACE* provides a more comprehensive measure of tropical cyclone activity, including intensity, duration, and frequency. The IRR estimate for *ACE* (1.242) with $p = 0.047$ in Model 2 is similar to that for Model 1 (1.165). A one SD increase in *ACE* is associated, on average, with a 24.2% increase in the expected *LFH* count.

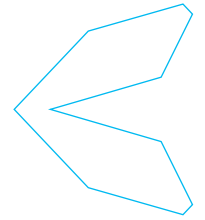
Diagnostic checks for Model 2 are satisfactory. As in the case of Model 1, the hypothesis of good fit between the regression predicted values and observed data was not rejected by the deviance GOF test for Model 2, $\chi^2(117) = 113.320$, $p = 0.579$. The Pearson GOF test likewise indicated a good fit, $c^2(117) = 94.487$, $p = 0.938$. As discussed previously, for both the deviance and Pearson tests the hypothesis of $p > 0.05$ indicates good fit (Hilbe, 2014). A measure of the “overall significance” of the model is given by the Wald test of the null hypothesis that the regression predictors were all equal to zero. This test was rejected, ($\chi^2(4) = 157.29$ ($p < 0.001$)).

Another measure of GOF favored by Cameron & Trivedi (2013) is the correlation between the model predicted values and the observed *LFH* counts. As in the case of Model 1, this correlation is relatively high (0.590) resulting in a generalized R-squared = 0.348. Similarly, the Nagelkerke measure of goodness of fit (GOF) is 0.336, while the Cox-Snell measure is 0.324. These are a few of the many the proposed alternative measures of GOF.

As in the case of Model 1, robust Newey-West SEs (10 lags) were used to correct the SEs of the regression coefficients. Sensitivity analysis found that the findings for Hypotheses 1 and 2 continued to be highly significant when the number NW lags was varied from 5 to 15.

Note that because Model 1 and Model 2 are estimated using different data samples, the AIC and BIC cannot be compared for the two models (Anderson, 2008).

In sum, for Model 2, as in the case of Model 1, the results of the current replication study using 1900–2021 data remained consistent with both research hypotheses. For both Model 2 and Model 1, tests of the two research hypotheses are also substantively, as well as statistically, significant. Diagnostic tests indicate statistical conclusion validity for both models (Reichardt, 2019).



RESEARCH
ARTICLE

Core Anomalous Experiences Shared Across Diverse Citizen Science Datasets

Luke J. Matthews

RAND Corporation, 20 Park Plaza,
Suite 910, Boston, MA, USA
Email: lmatthew@rand.org

HIGHLIGHTS

A fresh study shows that a century of citizen-led investigations into unexplained phenomena form a coherent scholarly tradition and, using modern machine learning on four large databases, reveals a shared cluster of reports that reflects core themes of the anomalous experience.

ABSTRACT

Scientific investigation of unidentified anomalous phenomena (UAP) extends to the early origins of citizen science. Scientific activity by non-professionals (citizen science) has historically produced real discoveries, often focuses on subjects understudied by professional scientists, involves interaction with speculative fiction, and has a century-long history of amassing large databases of anomalous events. Through historical analysis, I show that while it exists in a liminal space adjacent to professional science, citizen science of anomalies is a reasonably coherent scholarly tradition. I then engage this tradition by applying modern machine learning and artificial intelligence tools to four anomalous events databases to examine whether quantitative lexical analysis can extract a core anomalous experience that is shared in common across them. The analysis identifies a cluster of documents from diverse authorship sources. This document cluster appears to have greater frequencies of many themes that were proposed by prior qualitative analysis to be part of the core anomalous experience.

SUBMITTED December 31, 2024
ACCEPTED July 25, 2025
PUBLISHED December 18, 2025

<https://doi.org/10.31275/20253629>

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KEYWORDS

UAP, UFO, cluster analysis, LLM, history.

INTRODUCTION

In the first part of this article, I lay out a case that the lines between fact and fiction are blurred in the study of anomalous phenomena such as unidentified flying objects (UFOs), recently redubbed and broadened as unidentified anomalous phenomena (UAP). These experiences have a liminal existence (in between) fact and fiction because they frequently elude rigorous scientific methods of controlled observation, but they also are not outside the domain of

science because they constitute both empirical observations and creative theories, which are both grist for the scientific mill. Citizen (non-professional) researchers play an important role in this liminal space.

In the second part of the article, I combine four datasets from the past 100 years of citizen anomalies research and analyze them with a combination of manual and machine methods. I test a hypothesis that has existed for over 100 years, that UAP are more likely to be truly unexplained under current scientific understandings, particularly when



diverse authors/sources share many of the same features of anomalous experience in common (Evans-Wentz, 1911). The logic is that all sorts of different people wouldn't make an error in the same way, unless we can identify a common known cause among them, such as being asleep. After identifying a small subset of the original documents that come from diverse clusters in terms of authorship, I use a combination of manual and large language model (LLM) methods to identify whether key characteristics, such as being asleep or experiencing time slowing, are different for documents in author diverse as opposed to author uniform clusters.

It also is worth noting that my approach begins with a large set of recorded experiences that were viewed as anomalous when they were recorded. One might also define UAP as only those experiences for which scientists agree there is no current explanation, but many scientists, and likely a consensus of the scientific community, would not agree that there are any such experiences. Stretching a bit further, one might define UAP as those experiences for which science cannot in principle find any explanation because the experiences derive from underlying realities that transcend our understanding of causation itself. For this study I adopted the first meaning of UAP/anomalous – that the event was experienced or recorded as such at the time it was recorded.

The Ontology and Epistemology of Citizen Anomalistic Research

Anthropologists frequently distinguish between ontology and epistemology, even while recognizing that these categories overlap and interact. Ontology means any group of people's theory of reality (to include potential realities); whereas, epistemology is a theory of knowledge, i.e. the process by which one comes to know reality. It is worth noting that these words are used somewhat differently in other disciplines. Particularly, ontology is used with a different meaning by philosophers and yet another meaning by computer scientists, but I think the anthropological senses of these words are instructive to clarify certain perennial issues in the study of UAP.

THE ONTOLOGY OF UAP

The ontology of UAP can involve many proposed realities. Many professional scientists focus on the potential for phenomena that are things scientists already agree exist (i.e. they are well accepted in consensus scientific

ontology) as a potential cause of UAP. In this category would be cases of mistaken identity (weather balloons) and also undisclosed but wholly terrestrial technologies created by the U.S. Department of War or other defense agencies.

Some professional scientists will get a bit more exotic and consider ontological possibilities that are still within our known laws of physics and biology, but that propose an extraterrestrial origin for UAP. Research by former director of the All-Domain Anomaly Resolution Office (AARO), Dr. Sean Kirkpatrick, and Harvard astrophysicist, Dr. Avi Loeb, fall into this category (Loeb & Kirkpatrick, 2023). Working within this ontology, Kirkpatrick and Loeb modeled how biological extraterrestrials, constrained by the speed of light and plausible limits on biological lifespans, might still use robotic probes to survey distant planets like our own. Dr. Loeb is in the midst of an ongoing attempt to use systematically deployed and continuously operating optical and other sensors to find evidence of UAP even when no human witnesses are present (<https://projects.iq.harvard.edu/galileo/activities>).

These ontological theories for UAP are at odds, however, with the cultural experience of UAP by U.S. and global citizens who are not professional scientists. The explanation of UAP being caused by extraterrestrials who operate within our known physical constraints would not explain the global, repeated, and long duration of UAP experiences. Either these experiences are cases of mistaken identity (i.e. they are reducible to known phenomena but were unidentified at the time of the experience), or they are caused by something yet unknown to science, but it is improbable they could be caused by extraterrestrials with technology whose fundamentals are already known to our species. It simply is very improbable that extraterrestrials using any technology known to us could maintain such a frequency of contact while also avoiding leaving behind indisputable physical evidence of their existence.

This leads us to why the UAP skepticism of the professional scientific community does not convince citizen UAP believers; there is not just a disagreement between these groups about evidence, but there is a disagreement about ontology (their theories of reality/potential reality differ). The citizen UAP movement is interlinked with the broad ancient aliens phenomenon because extraterrestrials as a cause of UAP become much more logically coherent if one accepts the possibility of ongoing (including ancient) alien contact by extraterrestrials with technology that transcends our known laws of physics and biology. Scientists

like Drs. Kirkpatrick and Loeb are looking for definitive physical evidence of UAP as a space craft as we understand that with our current science, but the hypotheses of UAP citizen researchers specify that the UAP are generated by technologies that radically transcend our understanding. Thus, the null findings of the professional scientific community are not compelling to UAP citizen researchers. A scientist might argue that ideas ought to be judged false when scientific epistemology cannot provide evidence for them, but of course, philosophically it is strange to assert that humanity's ability to know things at any specific point in history defines the reality around us. Human ability to know clearly is constrained, and although our abilities to know have increased over history, at any point in history, scientists could have asserted things that are well known now did not exist because they, at their time, were unable to know them.

The clear cumulative nature of science involves an important caveat about methods, which is that the many books debunking anomalies clearly engage in a valid activity and form of evidence, but it is not scientific evidence. By debunking I mean examining particular anomalistic instances and then determining (after the fact) whether a cause within science's current knowledge *could* explain it. I do not dispute debunking efforts are evidence and are useful. I particularly recommend Aubeck's *Letters of the Damned* (2024) as a good example of a useful debunking study of Charles Fort's correspondences with the popular press (Fort is discussed in detail below). Fort, however, particularly in his first book, which stuck closest to scientific rather than popular publications, correctly specified how debunking is an epistemic error when done in formal science. Among his many examples, a particularly noteworthy one is his accurate accounting of the controversy that surrounded the planet Vulcan, which was hypothesized to exist in 1859 by mathematical astronomer Urbain Le Verrier in order to explain orbital anomalies of the planet Mercury (Fort, 1919). Le Verrier provided exact calculations for the distance, mass, and location of Vulcan, whose gravity pulling on Mercury would explain deviations in Mercury's orbit from Newtonian expectations that had been known for decades. Le Verrier applied the same method to deviations in the orbit of Uranus in 1846, and Neptune was consequently discovered in a single night by German astronomer Johann Galle once Le Verrier had provided exact coordinates where to point the telescope (Fontenrose, 1973; Kent, 2011). However, while Vulcan was a good debunking of Mercury's anomalies in that it *could* explain them even

precisely and mathematically, in fact it *doesn't* explain Mercury's anomalies, because there is no planet Vulcan. Mercury's anomalistic orbit remained unexplained for decades, until Albert Einstein in 1915 demonstrated that his theory of general relativity precisely predicted the orbit of Mercury. Mercury is moving so fast and under such strong gravitational force that from the vantage point of Earth it does not precede through space-time in the same way (Rzetelny, 2015).

Most of the time, science finds itself in Neptune situations – we just need some additional observation or better measurement – and anomalies can be explained through reference to already known consensus reality. But sometimes that's not the case. Sometimes anomalies can only be explained after we revise our view of consensus reality (Natarajan, 2017). Science proceeds by generating predictions ahead of time that are tested with systematic observations (controlled experiments being one powerful form of this). Just establishing that known causes could explain any particular anomaly isn't enough, and Fort resoundingly called out such behavior by scientists are merely a new form of dogma akin to past theologies.

The point of revisiting Vulcan is because it highlights that hypotheses can be tested only if they are put forward, and current scientific consensus is just one ontological frame for posing hypotheses. Yes, the scientific consensus is the best bet at Vegas 6 days from Sunday, but once in a while it still is going to be incorrect, and we need to consider other ontologies. The ancient aliens concept is one such alternative (to scientific consensus) ontology that, even if false, still generates hypotheses and is internally coherent. The ancient aliens concept eliminates an otherwise deeply problematic improbability in alien contact theories that, even if the probability of life beyond Earth is likely close to 100%, the probability of aliens initiating first contact with Earth during any particular moment seems fantastically small. The ancient aliens ontology eliminates this improbability by asserting highly advanced aliens actually always have been in contact with Earth.

Undoubtedly one of the most important print influences that has spread this ontology in recent decades is Erich von Däniken's *Chariots of the Gods* book (first published 1968), which as Aubeck (2022) points out has sold over 63 million copies in 32 languages (Aubeck, 2022, p. 277). Aubeck (2022) helpfully notes several authors who likely influenced von Däniken directly, among them being Pauwels and Bergier's *Morning of the Magicians* book (first published 1960). Colavito (2004, 2012) maintains that Magicians

was a primary influence on von Däniken, but according to Aubeck it was just one of many. In particular Aubeck points to an 1823 book by Francois Charbrier as likely the earliest ancient aliens motif to gain traction when its claims were repeated widely in popular press of the time (Aubeck, 2022, pp. 277–282).

Within the mix of this intellectual history, I think it is particularly fruitful for understanding the ontological implications of ancient aliens by exploring in more detail the science fiction of Howard P. Lovecraft (1890-1937), who Pauwels and Bergier cite as among their influences for their own development of the ancient aliens motif (Pauwels & Bergier, 2009, pp. 131, 302). Lovecraft possessed deep interest and engagement as a citizen involved in astronomy (Sleigh, 2016). Lovecraft was not the first person to set Earthly interaction with extra-terrestrials into the past (Aubeck, 2022), but he had a particular influence on the historical development of this ideas as a popular phenomenon in paranormalist culture (Colavito, 2004, 2012). Many of Lovecraft's stories feature alien species that had come to Earth before the evolution of humanity, and the vestiges of their presence become anomalies encountered by anthropological investigators like antiquarians and archeologists.

Some have suggested that Lovecraft originally got the idea of ancient aliens from Charles Hoy Fort (Pauwels & Bergier, 2009, p. 131). Charles Hoy Fort (1874-1932) was at first a journalist who then became perhaps the first writer to monetize paranormalist speculative nonfiction. Regarding ancient aliens, it is more likely that Fort was but one influence among others on Lovecraft's later fiction (Haden, 2024). This is because Lovecraft cites Fort only once, in the story "The Whisperer in Darkness", and letters by Lovecraft seem to indicate that he had read Fort only shortly before penning *Whisperer* in 1930. Lovecraft's arguable masterwork, "The Call of Cthulhu", clearly referenced the ancient aliens concept and was composed in 1926, but ancient alien contact appears most strongly in some of Lovecraft's later work, such as his novella *At the Mountains of Madness* (written 1931).

H.P. Lovecraft is a central influence in the development of modern science fiction and speculative science of the paranormal. In his stories he develops not just the ancient aliens concept but also articulates body snatching/mind swapping ("The Thing on the Doorstep", "The Shadow out of Time", alien abduction ("Whisperer"), travel between dimensions ("The Dreams in the Witch House"), and artificial intelligence (*At the Mountains of Madness*) in ways that would not become commonplace for several decades later

(Klinger, 2014). A testament to the compelling quality of his fiction, at one point Lovecraft appeared to lament that his fictions were too compelling because readers sometimes confused his contrivances with the truth-seeking of paranormalists like Fort (Colavito, 2004). His influence should not be mistaken with popularity – Lovecraft was known during his life to a relatively small following of readers of pulp weird fiction magazines. He died poor, separated from his wife, without children, and with no estate to inherit his writings. He became influential posthumously when other writers like August Derleth published and popularized his work.

Even though Lovecraft overtly wanted to write fiction, a close reading of his later works reveals that he too may have been captured by his own ideas and begun to speculate as to whether they might be possible. I base this conjecture on several lines of evidence. Firstly, Lovecraft was a notorious racist. "Herbert West: Reanimator" (1921-1922) was a serialized parody of Mary Shelly's *Frankenstein* and expressed deeply racist tropes against Black Americans. Lovecraft was briefly married to a Jewish woman, Sonia Greene (Lovecraft) Davis, whom he expressed was brought into the fold of America only by virtue of his marrying her. Antisemitic and loathing nonwhites and immigrants generally, Lovecraft hated the brief time he spent living with Sonia in the Red Hook section of Brooklyn, and from this experience penned another racist and anti-immigrant story "The Horror at Red Hook" (1927).

However, two of Lovecraft's last works exhibit sympathy for the religious symbolism and superstition of Southern and Eastern European Catholic/Orthodox Christians who were among the groups he despised. In "The Dreams in the Witch House" and "The Haunter of the Dark", Catholic/Orthodox superstitious practices lead to both awareness and adaptive avoidance of dark entities. In all his prior stories, immigrant engagement of any sort with the occult was negative, and usually involved them being deranged cultists. One explanation for this unique pattern of his very late stories might be that he began to suspect some superstitions could be of real value, perhaps if not all dark entities were wholly imaginary.

Related, "Witch House" (written 1932, published 1933) appears to be Lovecraft's only story in which he speculates a rational mechanism for the supernatural phenomena in one of his stories. Throughout his corpus, Lovecraft generally offered few science-based mechanisms for how his otherworldly entities acted, but in "Witch House," he accurately cites contemporary mathematical theories for the

proposed mechanism of dimensions to reality that exist outside of conventional space-time (note 12 on page 648 and note 13 on page 650 of Klinger, 2014). Again, the timing is suggestive of a late-developed interest by Lovecraft in whether and how his imagined entities might or could actually work.

Such late developments for Lovecraft are in fact sensible in terms of his personal biography in that across his corpus Lovecraft displays a detailed knowledge of Christianity and Western occult traditions. For example, “The Dunwich Horror” is essentially a parody of the Gospel account of Christ. In “The Haunter of the Dark”, he refers to the *Book of Dzyan*, which is an unverified text that the founder of Theosophy, Madame Blavatsky, claimed to have read while in Tibet (note 14 on page 790 of Klinger). The point is that yes, Lovecraft is accurately regarded as the atheist he publicly and consciously avowed to be, but certainly he was an unusually broadly inquisitive one to have read all this religious, spiritual, and occult content.

Even more importantly, conceiving Lovecraft’s fictions as potentially real is meta-consistent with Lovecraft’s self-declared philosophy of cosmicism, which paradoxically logically undermines Lovecraft’s materialism. In his cosmicism, Lovecraft asserted that the material cosmos was vast beyond human comprehension and also that this vast incomprehensibility implies the cosmos is morally indifferent to human existence. He grounded cosmicism with the fact that human intellect itself evolved in a particular time and place through Darwinian evolution. This observation leads to the logical conclusion that there ought to be realities in the cosmos that transcend humanity’s comprehension, and even comprehension via our scientific methods. Darwin himself also made this observation in a letter that when contemplating abstract philosophical and theological questions (he was writing specifically about whether evolution contained any purpose), he had the “horrid doubt” that because our minds evolved from lower organisms and for particular adaptive purposes that were disconnected from abstract philosophizing, that we ought not trust any of our conclusions on such matters (Matthews & Robertson, 2024). Paradoxically, but perhaps logically, Lovecraft extends this reasoning through his fiction to suggest that extraterrestrial and/or interdimensional beings could exist, could interact with our world, but because they exist outside the forces that evolved our own minds, they are fundamentally incomprehensible to us and even to human science. Thus, regardless of how Lovecraft intended his work at various points in his life, his fictional linkage of prehistory with extraterrestrial

encounters is one of the more robustly developed ontologies for why ancient aliens might exist even when current science has difficulty demonstrating their existence. It is this ontology of ancient and transcendent aliens that makes searching for truly new information (not just mistaken identity) in UAP encounters logical.

The Epistemology of UAP

While Lovecraft is a central figure to the development of the ontology of ancient aliens and UFO subculture, Charles Fort’s methods of amassing thousands of notes became the epistemic model for a great deal of future citizen science of the paranormal. Fort was not a fiction author, but possibly the first author to monetize highly speculative paranormalist nonfiction. He wrote four works of speculative nonfiction in the early 20th century. Like Lovecraft, Fort engaged in citizen astronomy (Steinmeyer, 2008). His wife expressed how he knew a great deal about the stars and spent hours studying them. Fort developed deep misgivings about professional science that he incorporated into his four books on anomalies. He used the ancient aliens motif in his first book to solve the Fermi paradox, which he anticipated prior to Fermi. Fort asked essentially, why have we received no alien contact? His answer was that this likely is because it already happened long ago, and now we and our planet are, unknown to us, already the property of some alien species that warns everyone else off (Fort, 1919). Fort combined these speculations in his books with hundreds of observations of anomalistic sightings akin to UFOs, as well as falls from the sky of strange objects like frogs, fish, and stones, and reports psychic phenomena like telekinesis. His book *Wild Talents* (published 1932) is among the first articulations that psi might account for poltergeist experiences (Fort, 1974).

Fort was famous not just for his books, but for the vast collection of paper notes he constructed while researching them. Fort conducted most of his research at the New York Public Library and at the British Museum. The notes were preserved by Tiffany Thayer and are housed today at the New York Public Library. Thayer made money working in advertising and writing pulp (some might argue smut) fiction (Nichols, 1956; Norris, 2013), but regardless of how one regards Thayer’s writing, he appears to have been rigorously devoted to the preservation of Fort’s notes (Sleigh, 2016). Most of Fort’s notes are abbreviated citations to scientific journals, but some are extended notes written by Fort about the contents of a given article (Figure 1).

Fort folded and paperclipped these extended notes together so that they would be the same size (roughly 1.5 by 2.5 inches) as the citation types of notes. In some cases, these still are paperclipped together within the archive, while in other cases the clipped together notes have been carefully segregated with paper envelopes and cards to indicate how Fort had arranged them (Figure 2).

A few cards provide even more direct evidence about Thayer’s archiving process and that he was the person behind it. Figure 3 shows a note about the archiving process signed T.T. (undoubtedly Tiffany Thayer) and another card indicating where “Kathleen” began transcription. Thayer’s last wife was named Kathleen McMahan (Genealogy Traits History Group, accessed 12/30/2024), and the “transcription” would appear to be a reference to Thayer’s ongoing project to publish all of Fort’s original notes in issues of the Fortean Society Magazine, *Doubt*.

Thayer published many of Fort’s original notes in *Doubt*. *Doubt* became an outlet for the ideas of Thayer and others, and it took Fort’s use of anomalies in a more conspiratorial direction (Sleigh, 2016; Steinmeyer, 2008). Although this may not have been Fort’s intent, I would reiterate that the best scholarly work takes on a life of its own. It is true that *Doubt* published outlandish conspiracy theories that anticipate our current problem with misinformation ranging from vaccine-to election-denialism. *Doubt* published these ideas, however, in the context of documenting

real scientific anomalies and while advancing ideas that were radical at the time, such as anti-vivisectionism and anti-fascism, that now are regarded as the norm.

Doubt published the notes in their original form and order, but I propose this does not fully convey the way Fort likely used the notes. To reiterate, Fort’s notes are written on literally thousands of slips of paper, either cut or folded to about 2 inches on a side. The boxes appear to be kept in their original order (mostly chronological by publication source date) when I reviewed them at the New York Public Library in March 2024. The order of notes in the boxes conforms to that in the published version of them in *Doubt* and on Mr. X’s website (described in more detail below) and is almost completely chronological by publication date. I believe the order of notes in the boxes is how Fort happened to leave them when he died, and that his use of the notes was actually as a form of paper-based relational database. I propose this because a minority of the notes are organized by subject. Fort spent countless hours not just making the notes, but organizing and reading through them. As I poured over these notes, I found myself wondering: why did Fort not use a notebook like normal researchers? It seemed highly inconvenient to write citations, but especially long textual notes on these tiny slips of paper.

I think Fort may not merely have been eccentric in his note-taking habit. I think he was keeping the cards ordered by year as a default but then grouping them into topical

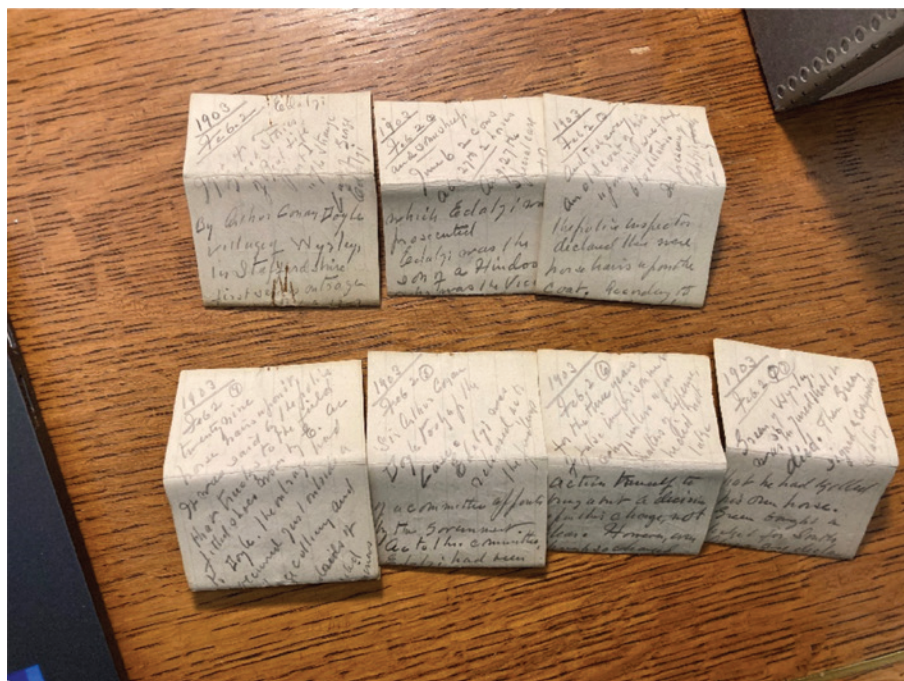


Figure 1. Example of an Extended Handwritten Note of Charles Fort.

categories as part of his writing process for the books. The thematic grouping of a small minority of notes that remains is merely the last grouping he had made at the time he passed on, and under my thesis, he would have had

many other different groupings while writing his books. Although using cards as an organizational tool for writing would not have been an innovation by Fort, the sheer massive scale at which he did this becomes akin to what is today done with a computerized database rather than akin to a typical writer's process. Further evidence of Fort's notes comprising a paperclipped database includes a few notes in which Fort records for himself instances in which he used the color of the note papers to indicate the topic, source, or other features of the note. I had noticed the faded varying colors of the notes during my time at the NYPL, but I thought the paper colors were merely happenstance as to what paper Fort had in his possession at the time. I appreciate Mr. X for pointing out to me (after my NYPL fieldwork) that Fort's own notes suggest the paper colors were meaningful to him. For example,

1800 / Notes / Order / Blue / Mauve / Pink / Light Yellow / Yellow / Green / Salmon / Lavender / Gray / from May 16, 1923 / Lighter green / Dark blue / White / Jan. 15, 1931 = light salmon.

N / From May 16, 1923 / Blue / Mauve / Pink / Light Yellow / Yellow / Green / Salmon / Lavender / Gray / Lighter (this) green / Blue. From Nov, 1928 = white / Jan 15, 1931 = pale salmon / July 1, 1931 = white ruled.



Figure 2. Fort's Paperclipping of Notes Preserved with Envelopes and Index Cards in the NYPL Archive.

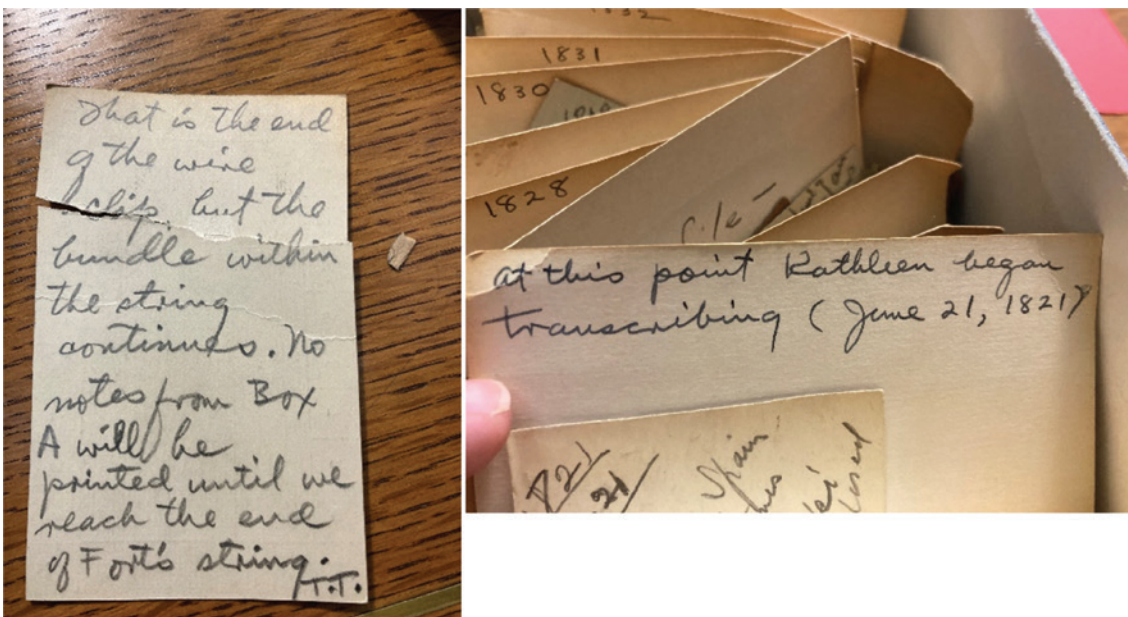


Figure 3. Evidence of Tiffany Thayer and Kathleen McMahon(?) Active in Archiving Fort's Notes.

It would take another effort with the original notes to ascertain how systematically the paper colors are indexical, but if they are, then this would point to a clear means by which Fort used his notes as a true database, because he could have pulled collections of notes by date and by color.

Fort may be the first ever citizen scientist to pursue scientific knowledge via the massive accumulation and organization of data that were collected poorly in terms of scientific method. The data collection itself is poor in the sense that the anomalies Fort collected, although almost entirely from reputable scientific and journalist sources, are derived from every conceivable research method, study site, and sample size. They are a monstrous collage of information. This continues to be a challenge for the interface of citizen and professional science; citizen scientists tend to be inclusive about data collection and unconcerned about methodology, whereas professional scientists tend to exclude any observations not collected according to their understanding of the best practices for a given study system (Chari et al., 2017, 2019). Regardless of how professional scientists even today view these haphazard citizen science databases, Charles Fort essentially set the epistemological paradigm for how citizen researchers would seek to generate knowledge about UAP for the next 100 years and continuing to the present.

Modern Anomalies Databases

Fort's inclusively massive approach to collecting data deeply influenced the history of paranormal citizen science. Much of that influence in the study of unidentified flying objects (UFO), now termed more inclusively as unidentified anomalous phenomena (UAP), was channeled through famed UAP investigator Jacque Vallee. Vallee cites Fort as among his influences in his first book, *Passport to Magonia* (Vallee, 1969). The appendix of *Magonia* emulates Fort's notes (not Fort's books) by presenting hundreds of very short accounts of UAP experiences.

All of Fort's notes, or Vallee's appendix, were written by their respective author even when derived from other sources. With the advent of the internet, this type of data collection by inclusive massing could be done more directly. Thus, databases like that of NUFORC are new instantiations of much the same idea as Vallee's *Magonia* appendix, but the experiences are reported into the database directly by the experiencers.

A Ph.D.-trained computer scientist, databases influenced not only how Vallee approached the study of UAP,

but also influenced his consideration of the ontological possibilities implied by UAP. In his 1988 book, *Dimensions*, (Vallee, 1988) Vallee speculates that UAP experiences may be transient views behind the veil of our ordinary reality, and that there might exist a different, more base-reality that is information-based, he specifies, like a relational database, rather than space-time-based. Space-time, according to this hypothesis, is a contingent reality or even a mere appearance of reality grounded entirely in a transcendently different base-reality that is more about accessing varying information states. Vallee's view in *Dimensions* thus anticipates current speculative reasoning about our experienced reality being a simulation that is created by an alternate base-reality. I also note that both Vallee's view and the simulation view accord with traditional theistic speculations that a more fundamental base-reality (God in the Abrahamic faiths) created our experienced reality as something entirely dependent on base-reality yet also wholly different in important ways. The suspicion that base-reality differs from our experienced reality might also explain repeatable results from parapsychology, and various experiences of transcendence by a great variety of spiritual seekers (Horowitz, 2020).

A separate stream of anomalistic experience research feeds directly into Vallee's synthesis, which is the study of fairy folklore and experiences. The central thesis of Vallee's work is that whatever modern UAP encounters are (and Vallee asserts that he still doesn't know) (Tattoli, 2022) they are the same underlying phenomenon as encompassed by encounters with fairies, known variously as little folk, elves, pixies, leprechauns, trolls, etc. One early study of fairy encounters in the modern period is Evans-Wentz book, *The Fairy Faith in Celtic Countries* (1911), which is cited extensively by Vallee (Evans-Wentz, 1911). Evans-Wentz's book is more of a folklore study in that many of the reported experiences are passed-down second-hand accounts, but similar to the evolution of UAP databases from Fortean, fairy encounters first compiled by Evans-Wentz are today collected by scholars as masses of experiencers' own first-hand accounts. The most comprehensive of these is *Fairy Census* by Simon Young (*Fairy Census, 2014-2017*, 2018).

The Current Paper

The current paper engages this history by at least entering the ontology of paranormal citizen scientists, which means taking their ideas seriously as hypotheses. Granted, I am interested as well in the social processes involved in why they believe what they believe, irrespective of the

truth-value of the ideas. Focus on the social processes that generate ideas is the phenomenological approach to anthropological inquiry. I think the above history shows that an ontological approach is justified in addition to, and in complement of, phenomenological approaches. The reason is that the history just summarized shows that, although paranormal citizen science exists in a liminal space that engages literary fiction, and is not conducting research the way professional science does, it still comes from a substantial tradition of scholarly thought. In the phenomenological approach, we ask why individuals believe/act/experience as they do and often seek functionalist explanations for these things, but rarely do we put on the table the possibility that they believe as they do because they have potential evidence for their beliefs.

My central research hypothesis derives from Vallee: *that there exists some core anomalous experience that underlies at least a minority of cases from across diverse datasets of the anomalous*. This hypothesis was also articulated by Evans-Wentz when he cites psychical researcher Andrew Lang:

But that ignorant modern knaves should feign precisely the same raps, lights, and movements as the most remote and unsophisticated barbarians, and as the educated Platonists of the fourth century after Christ, and that many of the other phenomena should be identical in each case, is certainly noteworthy. (Lang 1896 as quoted by Evans-Wentz, 1911)

The current study seeks to identify through quantitative lexical analysis, **1**. Whether there is a core anomalous experience among diverse experienter reports, **2**. The frequency of this core experience relative to the total set of experiences, and **3**. The most uniquely identifying features or combination of features of the core experience. This last point begins to get at causation in that experiences of being recently asleep might be related to processes known to science to generate the experience of anomalousness.

Vallee approached this same hypothesis through a qualitative analysis of the many experiences he documented in *Magonia*. The trouble with the qualitative approach, as employed by Vallee, is that it is highly susceptible to the perspective and biases of the qualitative interpreter of data. Vallee did not employ any tests of inter-rater reliability, as would cognitive anthropologists, to guard against his own prior beliefs coloring his analysis (Bernard, 2018). The analysis in *Magonia* and *Dimensions* is distinctively Vallee's analysis, and we do not know if others who read through the same data without

his narrative would arrive at similar conclusions vis-a-vis linking UAP and fairy experiences. All this having been said, I do find Vallee's analysis highly compelling.

As a complement to qualitative approaches, I conducted a quantitative lexical cluster analysis of the four anomalies texts that each are collected separately from the others. I sought to identify any statistically robust clusters that grouped documents together from across the different original texts. Such clusters, even if they include only a minority of documents, should provide key insights into the features of the core anomalous experience because they would be coming from diverse authors and from distinct anomalistic genres (e.g. UAPs versus fairies). Based on authorship and genre influences, documents should cluster quantitatively by shared authorship and/or genre. Cluster analysis of documents in this manner to identify authorship has a long history of application when authorship is unknown or uncertain, including reconstruction of the original source documents of *Canterbury Tales* most directly attributable to Chaucer (Barbrook et al., 1998), inference of the authorship origins for orally transmitted folktales like Little Red Riding Hood (Tehrani, 2013), identification of likely plagiarism (Stamatatos et al., 2016), and identification of authorship of terrorist documents (Abbasi & Chen, 2005). Thus, I fully expected many of the documents, and even most of them, to cluster by the author/source in my analysis, as this is a known property of the outputs cluster analysis applied in this way. My logic followed Evans-Wentz and Vallee that the documents (likely a minority) that group across these authors/sources in a statistically robust way might do so because they share core features about the anomalous experience in common despite their divergent authorship and genre.

In parallel to identifying clusters of documents with shared authors, I applied a large language model (LLM) to classify each document as having (or not having) specific thematic elements. I developed themes from my read of a handful of documents in each dataset and based largely on the classificatory schemas presented by Vallee in books, *Passport to Magonia* and *Dimensions*, and that were subsequently present in the NUFORC and *Fairy Census* structured data. Both of the latter included structured survey items such as whether the experienter was recently asleep, whether they saw humanoids, etc., but these were defined variously and seemed often not completed by respondents when I manually reviewed the textual entries. Thus, by applying my own manual coding and LLM, I was able at least to apply a consistent coding of these themes that are

discussed among a consensus of published experts (Vallee, NUFORC, *Fairy Census*). Importantly, the clustering of documents and the LLM theme coding were completely independent. The cluster analysis did not use any output from the theme coding as its input, nor did the theme coding use as inputs anything from the cluster analysis nor was it given any information directly about the author/source of each document. It also is important to note that while the theme coding relies on the training data that OpenAI used to create GPT4 (which is widely believed to be the whole scrapable internet), my implementation of clustering in this case has no training data, nor does it rely on any lexical information about English. My application of clustering used only the information present in the documents I selected for the analysis. Thus, my clustering is a wholly exploratory analysis technique that describes the structure of the documents.

I also note that I remained open in this test to the possibility that known scientific causes, like having been asleep, might account for the core anomalous experience of documents in high author/source diversity clusters. My inclusion criterion for documents was that they were experienced as anomalous at the time, and certainly most mainstream scientists would expect some known causal factor to explain when diverse sources share experiences of the anomalous.

This enabled me to conduct a final verification test of whether the themes, originally intuited by Vallee and coded by an LLM, correlated with authorship diversity. A strong correlation suggests a given theme is indeed part of the core anomalous experience, because it presents itself more in clusters that are groups from diverse authors rather than from single authors. Again, the rationale is that agreement among diverse authors/sources is indicative of a shared common experience. Indeed, at the extreme end of shared experience, we arguably have a method that approaches science, because science proceeds by independent observers observing the same things. What I mean is the ultimate backstop for truth in science is not peer review, not preregistration, but that independent observers can go out, and all on their own replicate the observations reported by others. The more UAP observers can demonstrate this same property about their observations, the more it approaches science.

METHODS

Datasets

1. Fort's notes: This study used the notes of Charles Fort as published by Mr. X on his website ([http://](http://www.resologist.net/notes/index.html)

www.resologist.net/notes/index.html). Mr. X helpfully compiled and published several transcriptions of Fort's notes that were conducted, beginning with Thayer's transcriptions into *Doubt*. Although it is impossible to fully verify the transcriptions, spot-checking during my own perusal of the original notes in the archive appears to indicate they match. Similarly, spot checking of Mr. X's published notes matches the subset notes Thayer transcribed and published in *Doubt*.

2. Vallee's *Passport to Magonia* Appendix: The appendix of Vallee's groundbreaking book on the UAP phenomenon includes a set of hundreds of short accounts of experiences investigated and by Vallee. He cites both Fort and Evans-Wentz as among his chief inspirations for undertaking his project.
3. *Fairy Census*: Another project that takes inspiration from Evans-Wentz is Simon Young's *Fairy Census*, which consisted of an online survey where people could enter their experiences of fairy encounters
4. NUFORC UFO highlighted accounts: Similar to *Fairy Census*, NUFORC maintains an online web survey where people can report their experiences of UAPs (<https://nuforc.org/>). We used accounts thought credible by NUFORC personnel (highlighted in the data) because this excludes accounts that might be transparently hoaxes, and to include more potentially interesting cases. All the datasets thus involve an attempt to remove hoaxes, but Fort's notes, *Magonia*, and NUFORC also involve some effort to include more interesting or informative cases. Only *Fairy Census* accepted any case with no other filter, so long as it was not obviously a hoax (Simon Young pers. comm.).

Analyses

Cluster Analysis (a.k.a. Topic Modeling)

I analyzed the combined data from four data sources using a text analysis pipeline going from the original data through to a fitted nonhierarchical topic model. This model ultimately divided the documents among a set of clusters such that documents were grouped in the same cluster because they shared similar proportions of topics. These

analyses are preliminary. I am unaware of any prior study that has combined citizen anomaly data in this way and applied exploratory machine learning tools to them. I hope, however, to have laid out the methods in sufficient detail that future replication studies could apply them to other anomalies databases. Many more exist, such as the data from MUFON (Mutual UFO Network, <https://mufon.com/>) or from the now-closed UFO email and phone hotline run by the Bigelow-funded National Institute for Discovery Science (NIDSci) (<http://www.ufoevidence.org/documents/doc1200.htm>).

The first step was to find a cutoff of document length that would eliminate the notes of Fort that were mere citation information to journals. Fort mixed citation notes and descriptive notes together in his boxes. I used the median character length of a Fort note (74 characters) as a cutoff and proceeded to manually review a random 100 notes over this cutoff and a random 100 notes that were less than or equal to it. Of the notes over the median that I reviewed, 72% included description of the anomaly whereas of the notes equal to or less than the median only 13% included descriptive information (the rest were citations). Thus, the median Fortean note length presented a reasonable enrichment of descriptive relative to citations notes, and I therefore applied it to the whole dataset as a cutoff.

I then stemmed the words (e.g. “keeping” and “kept” become “keep”) and removed English stop words (e.g. a, the, in, of) using the `quanteda` package in the software R (Benoit et al., 2018). While these steps are not always conducted in lexical analysis, in this case I deemed them desirable because I was trying to find similarity among a highly diverse set of documents from different authors and genres. I did not want clusters to be assigned simply because some document sources used the present or past tense more frequently.

I then took the stemmed words and calculated quantitative weights for them and for adjacent word pairs (bigrams) using a term-frequency-inverse-document-frequency (tfidf) conversion (Manning et al., 2008), function `dfm_tfidf` in the `quanteda` package. The tfidf conversion essentially takes an original matrix that simply counts the number of occurrences of each term in each document, and reweights those occurrences to give higher weights to documents that occur frequently within a specific document but infrequently in the corpus of all documents. This is a very commonly applied method in lexical analyses because it down-weights the importance of words that simply are used extremely frequently, such that their occurrence in

any two documents should not be taken to connote any particular similarity between them. For example, UFO might be such a term in this corpus as a whole – the corpus is about UFOs, so the fact that any document talks about UFOs does not deserve any special regard.

After applying the tfidf conversion, I submitted the document by weighted term matrix to a Latent Semantic Analysis (LSA, R package `quanteda.textmodels` function `textmodel.lsa`), which essentially is a special form of Factor Analysis for lexical data (Deerwester et al., 1990; Rosario, 2000). LSA seeks to express the variation in the original tfidf matrix on a minimum number of quantitative axes of variation that are synthetic continuous measures outputted by the LSA. I tested for up to 20 axes and identified a first step in the model fit after 4 axes (Figure 4). Thus, I used a 4-factor/axis LSA model going forward.

The axes themselves in an LSA are interpreted at “topics”, but documents can be comprised of varying combinations of topics. Thus, I used the 4 LSA axes as the input to a nonhierarchical clustering algorithm (k-median clustering). I searched for 2:30 clusters and applied the Calinski-Habaras (CH) criterion to assess how many clusters were a best fit for the data in that they maximized variance being apportioned between clusters while minimizing variance within clusters (R package `fpc`, function `pamk`) (Hennig, 2024; Kaufman & Rousseeuw, 1990).

Lastly, I applied the Simpson diversity index to the final counts of authors/sources by cluster assignment (R package `vegan`, function `diversity`) (Oksanen et al., 2024; Simpson, 1949). The Simpson diversity index was developed in order to quantify how diverse different locations were in the study of biological species ecology. It seems appropriate to this context under the reasoning that the assigned cluster is analogous to the place of the document, and the author/source is the species. I used the author diversity of each cluster, as measured by the Simpson diversity index, in a set of correlation tests of whether author diversity correlated with the themes that I coded with a large language model.

As a final test of the robustness of the results to including distractor documents, I reran the LSA and cluster analysis while also including documents from a completely different project. These documents were social media posts from across 27 different social media platforms that included group names from either of two lists (Anti-Defamation League, Southern Poverty Law Center). I included the mean number of documents from across all of the four original anomalies author/source as distractors (5711

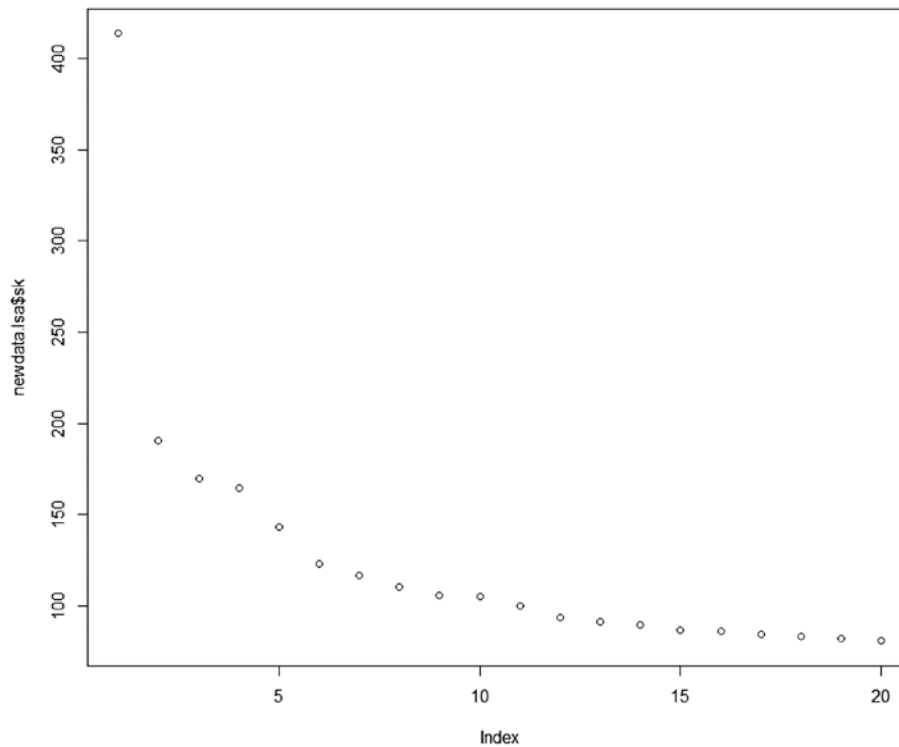


Figure 4. Scree Plot of Singular Value Decomposition (SVD) Values for Each Factor of the LSA Fitted to 20 Total Factors.

documents). I then calculated how well the anomalies documents were grouped into the same clusters as when I conducted the analysis without the distractor documents. I will note this was a highly stringent test, analogous to testing whether a gap analysis can detect 2 different means for height for a sample that includes both men and women and without the analysis being told from how many reference populations the heights were measured.

Theme Labelling with a Large Language Model

I labeled each document for the presence/absence of each of 11 themes that I defined based on my reading of Vallee’s books *Dimensions* and *Magonia* and informed by my ad hoc review of a handful of the entries from each dataset. The reason for basing the themes on Vallee’s work was that he is a respected researcher in this space who, based on his own qualitative analysis, has argued these themes reflect aspects of a core anomalous experience that is shared in common across such seemingly diverse forms of folklore as UFO experiences and fairy encounters. Most of the themes I defined also are collected as part of a structured survey component of NUFORC (although it is unclear what percentage of people who submit narrative reports also fill out the structured survey). Likewise, several of the themes I developed overlap with structured survey items that *Fairy Census* collected along with narratives. While I

think there are additional themes to define and study in these data, I thought the triangulation of these published sources suggested that a consensus of experts, to include NUFORC personnel, Jacque Vallee, and Simon Young, would agree with some version of these 11 themes as important because they all effectively have published versions of them in writing.

I applied GPT4.0 32K, June 2024 build, and asked the model to code the themes. This version of GPT was among the most advanced LLM models and trained with some of the largest training sets to date as of Summer 2024. Appendix A shows the prompts that I supplied to GPT to have it code presence/absence of each theme in each document. The results from the cluster analysis had no influence on the theme coding because they were not submitted as inputs to GPT4. Only the text of each document was submitted to GPT4. Similarly, the results of this theme analysis with GPT4 had no influence on the cluster analysis described in detail above. Although GPT4 has an extensive set of training data that undergirds it, and only its creator OpenAI knows for sure what was in those training data, the cluster analysis had no training data and used only the uniquely assembled dataset I supplied to it.

Finally, I selected a random 100 documents from my analysis and manually coded for the presence/absence of



each theme myself and without looking at what the LLM had assigned for those documents. I calculated the inter-rater agreement for each theme between myself and the LLM using Spearman correlations.

RESULTS

A full comparison of original versus retained documents, using the cutoff greater than Fort’s median character length, is shown in Table 1. This median cutoff was conducted mainly to remove notes that were purely citation information rather than textual descriptions and thereby render the filtered data a more comparable set of brief but reasonably detailed descriptions of experiences.

The cluster analysis produced 20 clusters as the optimal number of clusters that maximized quantitative differences between clusters while minimizing these differences within clusters (as assessed via the Calinski-Habaras criterion) (Table 2). Please keep in mind that the cluster analysis is a wholly untrained and exploratory technique. The LSA followed by clustering did not rely on any prior training data and used only the data submitted in this study. The author/source of documents was not fed into the LSA-cluster analysis pipeline as an input. Also, and in contrast, themes coded by the LLM are based on the LLMs training data (effectively the whole scrapable internet), but I applied the LLM without any influence by the cluster analysis. As with the cluster analysis, I applied the LLM without telling the LLM the author/source of any documents (Figure 5).

As a control test, I reran the clustering process with 5711 distractor documents taken from a modern social media dataset not focused on anomalies. Then for all pairs of the anomalies documents, I calculated whether they were in the same or different cluster when the process included the distractor documents. I compared these strings of 0s and 1s (same/different cluster) to the same strings calculated for the original analysis without the distractor documents. This effectively tests the extent to which anomaly documents were grouped together into similar clusters even in the presence of distractors as a form of control. The

Table 1. Document Counts in Original Data Sources and After Removing the “Citation” Notes.

Author/Source	Original Count	Filtered Count
Fairy	500	495
Fort	43532	20771
Magonia	923	917
NUFORC	662	661

Spearman correlation was 0.23 ($p < 0.001$), which indicates a statistically significant similarity between the clustering of the anomalies documents both with and without the distractors included.

I assessed the correlation of the Simpson diversity index for each cluster with the prevalence of each of the 11 themes (Table 3). While this research is exploratory in nature, there was an *a-priori* hypothesis derived from qualitative work (by Vallee and Evans-Wentz and others) that drove this correlation test. Therefore, I assess p-values with the Bonferroni correction for the multiple testing across the correlations with each theme. Relative to the Bonferroni correction, the p-values could be regarded as a more definitive hypothesis test.

To further test the potential associations, I conducted an additional analysis that increased statistical power by using the individual documents as the data points. Specifically, I tested whether a document being in the most diverse cluster (cluster 1) was associated with the presence or absence of each theme in the document. When conducting this test I also eliminated the documents that were grouped into Fort-only clusters (clusters 17 through 20) because I did not want the test to be confounded by being a contrast of the most diverse cluster merely with Fort-only clusters. I used a Spearman correlation for these

Table 2. Author/Source of Documents in Each Cluster.

Cluster	Author/Source Count				Simpson Diversity Index (0-1)
	Fairy	Fort	Magonia	NUFORC	
1	2	23	112	184	0.54
10	6	115	490	65	0.44
6	174	27	2	32	0.42
2	3	1087	212	8	0.29
8	90	0	0	7	0.13
5	4	2	0	127	0.09
7	189	1	0	6	0.07
16	0	428	9	0	0.04
12	7	2002	28	2	0.04
11	20	5201	47	4	0.03
4	0	2	0	181	0.02
13	0	1458	5	2	0.01
15	0	2979	7	0	0.00
9	0	454	0	1	0.00
14	0	4561	5	0	0.00
3	0	0	0	42	0.00
17	0	2103	0	0	0.00
18	0	204	0	0	0.00
19	0	123	0	0	0.00
20	0	1	0	0	0.00

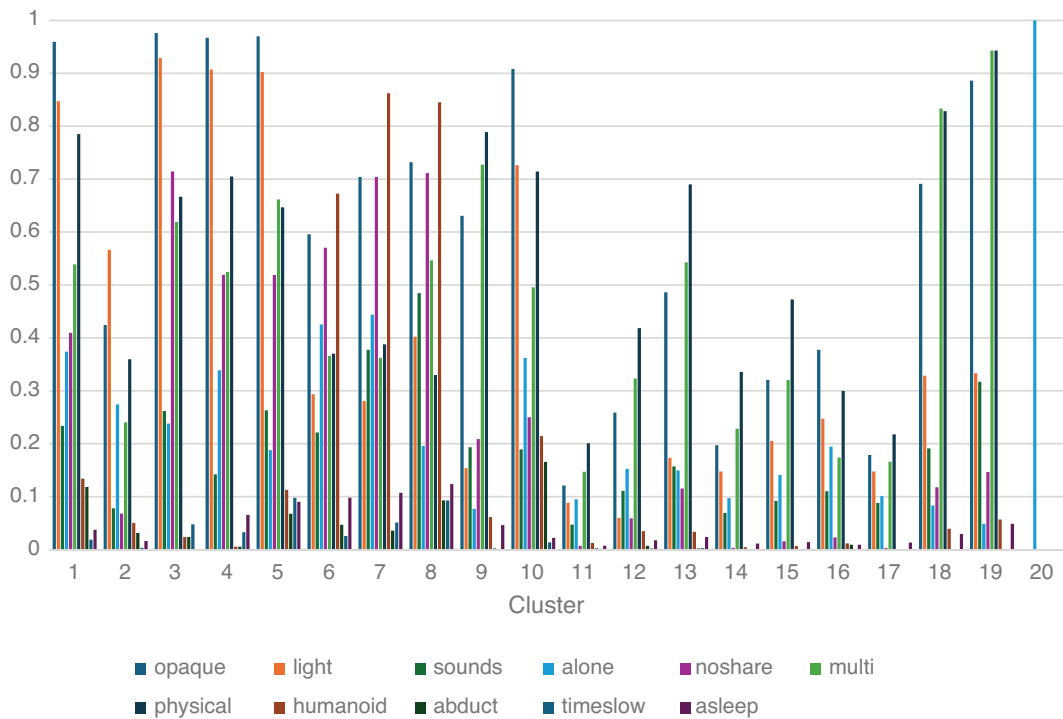


Figure 5. Proportions of LLM-Coded Themes in Each Cluster.

tests, as they were correlations of one binary string, e.g., opaque yes (1) no (0), versus another binary string, diverse cluster 1 yes (1) or no (1). As before, there are 11 correlation tests, and so the Bonferroni corrected p-value for significance is 0.0045. The results show that all the themes except the witness having been asleep are positively associated with a document being placed in the most author diverse cluster (Table 3).

Finally, I selected 100 documents completely at random from the whole set and manually coded these without consulting what the LLM had coded for the themes. This resulted in another set of Spearman correlations function as inter-rater reliability measures between a human (myself) and the LLM. More than half of the themes show substantial chance-corrected agreement, as measured by Spearman correlations, although most are less than the general benchmark of ~0.7 chance corrected agreement as a goal for inter-human coders (Krippendorff, 2004). The full set of correlations are shown in Table 3.

DISCUSSION

Charles Fort’s pioneering paperclipped database of anomalies set the pattern for how later citizen scientists would approach the study of anomalistic phenomena like UAPs. This study applied modern lexical analysis tools to test for the presence of clusters of documents with high

similarity in content but also high diversity in authorship or source. This is one index suggested for potential authenticity of anomalous reports for at least 100 years going back to Evans-Wentz’s research on fairy experiences. I then applied a large language model (LLM) in combination with manual review to characterize whether particular themes were more common in the documents grouped into high author/source diversity clusters as compared to documents grouped into clusters with low author/source diversity.

I included in the study the original notes of Fort and Vallee and included two modern citizen-contributed databases built around a similar template, the UFO data from NUFORC and the data of fairy encounters from *Fairy Census*. The first three sources were all more heavily curated in that Fort and Vallee did not record all the data they ever encountered, but only the data they thought were anomalies. Similarly, for NUFORC, I used only the records that NUFORC personnel had reviewed and flagged as more compelling examples of anomalies than most of their reports. The *Fairy Census*, in contrast, was curated only to remove obvious hoaxes (Simon Young, pers. comm.). Additional forms of variation in the data include that Fort’s notes involve a more diverse ensemble of anomalies, such as psi experiences, beyond what would be conceived of as a UFO or fairy experience by respondents to NUFORC or *Fairy Census*. However, part of the purpose of applying

Table 3. Correlation Analyses of LLM-coded Themes.

Theme	Correlation Simpson Diversity with Theme Frequency ¹	p-value	Correlation of Theme Presence and Assignment of Document to Highest Diversity Cluster ²	p-value	Correlation of Theme Presence as Coded by LLM versus as Coded by the Author ³
opaque	0.36	0.12	0.18	<0.0001	0.36
light	0.43	0.06	0.20	<0.0001	0.58
sounds	0.18	0.45	0.06	<0.0001	0.55
alone	0.27	0.25	0.08	<0.0001	0.25
noshare	0.29	0.22	0.17	<0.0001	-0.03
multi-witness	0.004	0.99	0.07	<0.0001	0.41
physical	0.13	0.58	0.10	<0.0001	0.50
humanoid	0.34	0.14	0.05	<0.0001	1
abduct	0.81	<0.0001	0.12	<0.0001	NA*
timeslow	0.12	0.62	0.03	<0.0001	NA*
asleep	0.23	0.34	0.02	0.005	NA*

Note: Bolded values significant at Bonferroni corrected p-value of 0.0045

1 Pearson correlation, p-values two tailed, N = 20 clusters

2 Spearman correlation, p-values two tailed, N = 20413 documents

3 Spearman correlation from presence(1)/absence(0) coding of a randomly selected 100 documents

*correlation is not defined because neither the LLM nor the Author identified any occurrences of this theme within the random sample of 100 documents

cluster analysis is to sift out such documents at scale; i.e., these should be placed off in their own Fort authorship clusters. Relatedly, subsequent qualitative analysis has critically reassessed some of the notes of Fort and of Vallee's Magonia (Vallee and Aubeck, 2010). My analysis does not question the value of those qualitative reassessments, but it tries to complement by using algorithmic tools to accomplish something similar, at least if we can use the criteria of high content similarity but author/source diversity as indexical of more potentially truly anomalous reports. I think further combined manual and machine analysis is an important growth area for UAP research.

My analysis identified several clusters that include a diversity of author/sources. No cluster includes even representation of all four sources, but two clusters have good representation for three of them (Table 2). The clustering was at least somewhat robust to inclusion of over 5000 distractor items from a wholly different dataset (Spearman correlation = 0.23, $p < 0.001$). Although the magnitude of this correlation is in the low range, it is important to realize that cluster analysis is an exploratory analysis technique that is sensitive to the input data (Kaufman & Rousseeuw, 1990). The task with distractors is analogous to calculating a mean from a population of interest while including values from other populations and not telling the analysis which population each data point came from nor how many reference populations were included.

I applied an LLM to help characterize what the various clusters were "about." There is substantial variation in the theme proportions by cluster (Figure 5), but only some of these themes, as assigned by the LLM, correlated

substantially with my own manual coding (Table 3). The themes for anomalous lights and sounds, physical evidence, and humanoids all showed correlations for code application above 0.5 between the LLM and me. The themes for abduction, time slowing, and the witness being recently asleep showed complete agreement between the LLM and me for their absence, but neither I nor the LLM identified any cases with these themes in the randomly selected 100 cases we both coded. Further analysis would be required to assess the agreement level for these themes when they are present. The themes for opaque objects, and the social context of the experience (alone, with others who did not share the experience, and multiple witnesses) were not correlated above 0.5 between me and the LLM. One possibility is that LLMs still struggle with correctly assessing the social context because this is often highly implicit in these reports, and my own coding of them is an inferred best guess.

I think further detail about the social context is actually a very important opportunity for UAP research. This is because multiple witness events begin to get close to the normal scientific method. Science relies on multiple independent observers being able to replicate observations. Although often these multiple observers are together when the event happens, and thus not independent, sometimes they might be independent. For example, Jacques Vallee has said that as a boy he saw an opaque UAP object in the sky at the same time that a friend of his saw it from another location (Tattoli, 2022).

The social context of a witness seeing an anomaly, but others around them not seeing it, is also of interest in that

it cuts to the heart of the question of anomalies. Assuming the witness was not merely mistaken, then either they experienced some kind of psychotic event or they experienced something real but that operates outside our current understandings.

The LLM coded themes were more common in documents from the most author/source diverse cluster as compared to all other documents (Table 3), and this was true for the themes that showed more robust correlations between my own manual coding and the LLM (light, sounds, physical, humanoid). These data include witness accounts that are spread out across different continents, at times from witnesses speaking different languages, and separated by up to 100 years in time. The fact that author/source diverse cluster can be identified, and that this cluster exhibits themes proposed to be part of this core experience, is consistent with the idea that an experience shared in common underlies why people make these reports.

What then explains the *core anomalous experience* that appears to be responsible for at least some of these witness reports in modern anomalies databases? I do not know, but I do think these results support the contention of experiencers and citizen investigators that there are real experiences that ground at least some of the reports. When it comes to explaining, we again enter a currently still liminal space. Initially, to the skeptical scientific mind, it may seem easy to explain these experiences through reference to known causal mechanisms. For example, experiences of humanoids/abduction might be explicable through pareidolia, which is a known tendency for our brains to see faces or images in random visual noise. Pareidolia might have been adaptive in the evolutionary past as a kind of agency detection (Maij et al., 2019). Researchers generally agree that it is adaptive for humans and other animals to be 'hyperactive' in their agency detection; that is, our senses and cognitions are tuned to make false positive errors more so than false negative errors. The adaptiveness of this tendency to falsely detect faces or agency is intuitive if we consider past natural selection from predation – being the one who didn't think that was a bear/lion/etc. crouching in the woods could be very costly (Barrett, 2000; Maij et al., 2019).

Further reflection, however, often suggests such easy explanations to known mechanisms are implausible. In contrast to pareidolia as a putative explanation, many of the anomalous experiences in question seem well beyond what can be attributed to pareidolia because they involve more than just briefly seeing a face but can include watching the motion of an object and even social interaction

with it (Kelleher, 2023; Kelleher & Knapp, 2005). Colm Kelleher investigated these sorts of anomalous phenomena linked to UAP experiences at Skinwalker Ranch as part of the Advanced Aerospace Weapons Systems Application Program (AAWSAP) that was funded by the Defense Intelligence Agency. These experiences can involve strange but richly detailed interactions with the lighted objects or humanoids, and in ways that defy logic and seem absurd. Vallee's books, as well, detail many such encounters, and the detailed absurdity of these experiences is one of the pillars for his argument that UFO and fairy experiences, whatever causes them, are derived from the same root cause. In his most recent book, Whitley Strieber provides accounts of individuals, including entire family groups, having detailed interactions with humanoids that last hours in duration or occur across multiple days in contexts when the human experiencers are fully awake and otherwise going about their normal activities (Strieber, 2023).

The rich detail of these experiences does not itself argue they have any extraterrestrial, interdimensional, or supernatural cause, but I think it does exclude many of the straightforward cognitive mechanisms like pareidolia that are known to current science. Relatedly, in my analysis I created an opportunity for the being asleep theme to potentially be correlated with the highest author/source diversity experience. That witnesses were waking from being asleep surely would be a universal human experience, and one that potentially could explain many cases of misperception, but being asleep was a very rare theme overall (including as assessed by manual coding), and it was not correlated with author/source diversity (Table 3). The lack of easy psychological explanations like pareidolia or sleep suggests UAP studies could be of great value to new understandings of the human mind and brain, even if they do not lead to evidence of alien contact. Consider, for example, experiences that only the experiencer has, but while in the presence of other people. There may well be a mechanism by which human brains are able to snap into a fully hallucinatory state decoupled from the empirical facts and social relationships around them, and then snap back into a fully functional and non-psychotic state, but currently, such a mechanism is not understood by psychiatric science. Such phenomena can be particularly difficult to study with proper scientific control if they are experienced by only a minority of any specific human population, because science relies on replication (Matthews and Robertson 2024). Recent psi and precognition research

suggests a way forward by trying to enroll specifically the kinds of humans who have the relevant experiences or abilities by means of cognitive pretesting validated by prior studies (Escolà-Gascón, 2022; Escolà-Gascón et al., 2023). This approach, to my knowledge, has not been attempted for UAP experiences but may be a promising avenue for future UAP research.

Limitations

This study has several limitations. As noted at the outset, the data analyzed were collected through a complete hodgepodge of non-replicable conditions. Science requires independent observations by independent observers to match in order to make progress. That being said, these anomalies data are not inherently more disorganized than are many citizen science data (Chari et al., 2019), and the fact that the results exhibit statistical patterns even after Bonferroni corrections suggests there is a “there there” with these data. The fact that they were collected in such variable ways almost underscores the substance that any statistically meaningful patterns occur in them.

Another limitation is that I have undertaken only one set of lexical and LLM-driven analyses. The data are rich and complex, and additional or different analyses might yield new insights beyond what this paper investigated.

I have focused on finding and analyzing documents in author/source diverse clusters, but my analysis does not explore longitudinal trends in the data. Particularly if combined with other data sources known to exist (MUFON, NIDSci), there might be enough citizen data for a time series assessment of trends. Do flying saucer experiences trend over time or peak in a particular decade? Did abduction experiences peak in the 1980s as asserted recently by Strieber (2023), reflecting either a shift in the cultural transmission of abduction stories or a shift in the behavior of extraterrestrial abductors? I am unaware of studies that investigate these questions quantitatively, but some combination of manual and machine thematic coding likely would be able to test these longitudinal hypotheses.

Future Research

Based on the results of this current study, further investigation into more specific aspects of the data might yield additional insights. Future studies might take different approaches to the same or similar databases, such as treating the assigned themes as the primary data for the clustering of documents rather than tokenized words as I

have done. Additionally, a future productive study design might operate by empaneling only particular individuals with high UAP experience likelihood and then proceed to record experiences prospectively for this minority group within the population. I think particular attention to the social context of UAP experiences is also a potential area to improve data collection and analysis.

We must also acknowledge, however, that the ontological speculations of Lovecraft’s cosmicism, which are grounded in the factual reality that our own intellects evolved in particular ecological circumstances, mean scientific understanding of UAP may be among the most challenging tasks our minds have attempted if their ultimate cause are factors far outside the ecology that evolved our own minds. In other words, extraterrestrial/interdimensional beings that operate outside our known physics, and may have evolved their minds and behavior under radically different conditions than the conditions that evolved ours, are logically a very plausible possibility given what we know about evolution, but by the same token, they might be highly inscrutable to our scientific epistemology.

ACKNOWLEDGEMENTS

Thanks go to the National UFO Reporting Center (NUFORC) for providing data for this project. I also appreciate the time NUFORC CTO Christian Stepien spent to filter data for me. I am thankful for the assistance of Leah Johanson and the other New York Public Library staff who facilitated my review of Charles Fort’s original notes. Simon Young provided helpful guidance about the *Fairy Census*. I thank RAND technical analyst Leah Dion for her assistance to render diverse data types into a common set of machine-readable text, and I thank RAND programmer Shiyuan Zhang for her batch implementation of GPT4 during the theme coding analysis. I appreciate the feedback from Mr. X, two anonymous reviewers, and the JSE editors that improved this manuscript.

END NOTE

¹ From Moore’s introduction in Klinger 2014, “Sonia wrote, “Although [Howard] once said he loved New York and that henceforth it would be his ‘adopted state,’ I soon learned that he hated it and all its ‘alien hordes.’ When I protested that I too was one of them, he’d tell me I ‘no longer belonged to these mongrels’ ‘You are now Mrs. H.P. Lovecraft of 598 Angell St., Providence, Rhode Island’” (Davis, *Private Life of H.P. Lovecraft*, 11”).”

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APPENDIX A

PROMPTS

Prompts for large language model (LLM) (GPT4.0 32K June 2024 build) to answer “yes” or “no” about each document:

You are a researcher tasked with identifying key themes from people’s accounts of unusual and anomalous experiences. Carefully examine the following textual entry and assess whether:

answer_opaque: The entry discusses abnormal, anomalous, or unexpected appearance or movement of an opaque physical object or objects.

answer_light: The entry discusses abnormal, anomalous, or unexpected appearance or movement of a light or lights.

answer_sounds: The entry discusses abnormal, anomalous, or unexpected sounds or voices.

answer_alone: The entry describes an experience of only a single person who was alone.

answer_noshare: The entry describes an experience of only a single person who was with other people at the time, but the other people did not share the unusual experience.

answer_multi-witness: The entry describes an experience shared by two or more people, and possibly many of them.

answer_physical: The entry describes an experience that was accompanied by physical evidence such as something behavior abnormally. For example, an animal like a dog or a horse, a machine like a car, or a tool like a compass behaves abnormally.

answer_humanoid: The entry describes an encounter with a humanoid being or creature but that is not a human being.

answer_abduct: The entry describes an experience of being abducted by a craft or abducted by a non-human humanoid being or creature.

answer_timeslow: The entry describes a sense of time slowing down, speeding up, or in some other way time being altered from how it is normally.

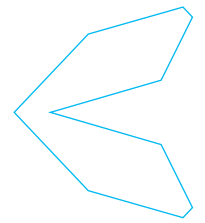
answer_asleep: The entry describes an event that takes place around the time the person was falling asleep or just had woken up from sleeping.

APPENDIX B

Examples for Each Author/Source (Up to 5) of Documents Grouped by the Cluster Analysis into the Most Author/Source Diverse Cluster (cluster 1)

Source	Document
fairly	While traveling at night, on a road that ran up some mountains, we saw a shapeless white form that appeared to be a white shopping bag blowing around in the wind moving quickly up the mountainside. It was moving against the wind, however. Uphill. We had pulled off the road, at a lay-by, to look at the view of the city lights down below, when we noticed the shape jumping from tree to tree towards us. It was about two or three square feet in area, and a matte bluish white color. Like a large pillow case or, like I said earlier, a shopping bag. No markings or features, not shiny at all, looked more like a strange cloth than a plastic. Both myself (American) and my fiancé (Irish) had a feeling that whatever it was, its intentions were not good. We had a general sense that something unpleasant would happen if it caught up to us, so we jumped back in the car and hightailed it out of there. Like an amorphous shape, vaguely rectangular. Size changed through the experience.
fairly	I awoke and saw a flashing light in my closet. At first I thought it was my phone but realized quickly that my phone isn't in the closet. So I stared at the light for a few more seconds, then suddenly it moved, it jumped from the closet to the ceiling in a single flash, it was coming towards me. Then it flashed again and moved further to my bed, then it hid behind my boyfriend and I thought, "ok, it's a lightning bug, is all." So I laid back down, but then it flashed again, this time it went over me heading back to the closet. I got up and got my phone while it was still flashing. As it neared the closet, it pulsed and hovered there. I turned and got a picture of it, but it was a little blurry. It disappeared into my closet since. I've recently have been having dreams of dark and light fairies in the last two weeks. It's not my first time seeing the flashy ones, except this one in particular stayed longer and flashed from one place to another faster than speed of light. Currently am having visions of dark and light faeries, woodland elves, Avalon. I made an oil specifically for this and a slight touch of it connects you with them. But at the time I saw the "flashy faerie" I did not have this oil on, it happened a few months ago.
fort	[Objs / Sky] / K / 1915 / Feb 14 / This for the sake of details not explained. / The Daily Standard (Kingston) / Brockville, Feb. 15 th four aeroplanes passed over this city at 9:15 last night and sped in the direction of Ottawa. The city was wildly excited by the sight of the aircraft, which seemed to burst into sight almost right overhead. The first machine was flying very rapidly and very high. Very little could be seen, but the unmistakable sounds of the whirring motor made the presence of the aircraft known. Five minutes later the second machine could be heard. In crossing the river three fireballs were dropped at one minute intervals. In dropping, they left a streak of light from where they had been thrown out, and it was this that had attracted the attention of the residents. Hundreds of feet the three lights fell. A few minutes later another machine passed over the east end of the city. In another interval a machine came over the other end of the city. / Same issue, is another account. Says that had been explained that were nothing but toy air-balloons sent up from Morristown, N.Y. / One notices this "that large numbers of persons had watched the objects "notwithstanding the rainy weather".
fort	1884 July 30 / (beam) / Philadelphia / ab. 10 p.m. / Appearance like a narrow thin, white cloud from a point about 30 deg above the horizon in the west to ab 20 deg beyond the zenith in the east. It looked like the tail of a comet. It was moving. In 20 minutes the western end had reached the zenith. Then it looked shorter and the eastern end dimmer. It passed from view in about half an hour. / Sid Mess, p. 251 / That Prof Swift had seen the obj at Warner Observatory and could not explain it. / Sid Mess 3/251 / He thought it a long narrow cloud at first, but its exceedingly slow motion convinced him it was not. It was a conspicuous object for ab. 45 minutes, then disappearing in the eastern horizon. / (Also it was seen at the Carleton College Observ.)
fort	[Invaders]:Invaders / 1885 / Sept 13 / Near Jutroschin, Posen, by Herr M. (sic) Scholtz, chemist of [Jutroschin] / About midnight in fields. He saw a light that astonished him because it was white and more brilliant than a lantern. It moved toward him and he watched it several minutes. Suddenly a ribbon of light shot from it, and then another, directed toward the ground. He says that with an astonishment that he would never forget he watched this brilliant thin ab. 8 minutes. He says that he was then obliged to continue on his way without seeing the end of the spectacle. Upon Oct 29, ab. 11 p.m., at this place again, he saw the object again, shining even more brilliantly. Sparks gushed from it, long lines of light were cast out. The lights disappeared and he returned to his home, The next day, with the will o' the wisp idea, he returned to the place and searched for the kind of ground, or bog, from which inflammable gases might rise, finding nothing to support the idea. / Bull Soc Belge d'Astro 7-15.
fort	1895 March [13] / Manchester / "aurora" / Lit and Phil Soc. Mem and Proc 4-9-167. [VII; 1242. "Ordinary Meeting, March 19th, 1895." Memoirs and Proceedings of the Manchester Literary and Philosophical Society, s. 4 v. 9 (v. 39; 1894-1895): 167-171, at 167. Mr. A. Brothers, F.R.A.S., gave a description of a supposed display of Aurora borealis as seen at Higher Poynton, near the Manchester, Sheffield, and Lincolnshire Railway, on Wednesday, March 13th. The display was of an unusual kind. As there was an irregularly shaped cloudy mass of light with auroral streamers flickering past and finally collecting in narrow bands of light. The long irregular cloud then moved towards the west and formed in a bright column of light, faint at first, but it became intensely white. The upper part then spread out in the form of a fan, having very much the appearance of Donati's comet when at its brightest. The column of light formed and disappeared almost due west.] 1895 March 13 / At 7:35 p.m., at Muirkirk, N.B., a belt of light from E to W from near the hind quarters of Leo to the head of Aries. At the time the streak was altogether cometary in appearance, beginning in a fine point, but it gradually changed in form, moving at the same time towards the south. Also shortened so that at 8:05 it extended only from Gamma Geminorum to Gamma Ceti. / Nature, 51-581 / motions given" p. 517 / had a beak. / See March 13, 1896.
fort	1892 Feb 8 (?) / (Ch) / Star-like object, oscillated in sky 10 hours. / newspaper story / E Mec (Eng) 55-34 / Ch 31. [VII; 381. Noble, William. "Harvard Observatory..." English Mechanic, 55 (no. 1406; March 4, 1892): 33-35, at 34. "But if we may judge from the following extract (which I translate from the Stockholm paper l'Aftonblad[et] of the 9th), he, in our popular slang, 'isn't in it' with his Swedish confrères. 'In the environs of Hochlanda,' says the paragraph in the Stockholm journal, 'there was seen, between 9 and 10 o'clock at night, in the direction of the North, to the west of the Great Bear, and pretty high up in the sky, a large star, which seemed to be of the first magnitude, and which rendered itself conspicuous by its extraordinary movement. At first it advanced with great rapidity, and in a straight line, towards the East for an estimated distance of 125yds. (!), appearing then to be oblong, and approximately 12in. long by about a quarter of that wide, and to be of a fiery-red colour. It then returned to its first position, afterwards to move not less rapidly towards the West, to regain, after about an equal interval, its original position; subsequently rising slowly, then descending considerably below it, and finishing by recovering it. It moved principally in straight lines, with a very slight elliptical curvature, but incessantly changing colour. This agitation (or movement) continued for 10 hours, when it ceased. The phenomenon was observed by several people. The sole hypothesis admissible at present,' the writer goes on to say, 'in the study of these meteors, which are bolides of which the trajectories are often perturbed in their initial direction, is that it may happen that after having encountered atmospheric strata of greater and greater density, the bolides experience a kind of ricochet, which prevents their further approach to the earth, and sends them back towards the upper regions of the atmosphere' circumstances which may occasion changes in the form and curvature of the trajectories of bolides. We must, nevertheless, add that the symmetry of the movement in the present phenomenon is without precedent in the catalogue which treats of these phenomena.' I should think so. An elliptical bolide of a fiery red, but continually changing colour, which oscillates like a pendulum and remains visible for 10 hours!!! is not likely to be included in any 'catalogue which treats of these phenomena.'"] 1892 Feb 9 / Great parhelion / Lake Benton, Md. / World 10-1-2.

Source	Document
magonia	O. Guarichi was walking on the beach with his dogs when he saw an object come from the sea and land. Two men, 1.80 m tall, wearing metallic-looking uniforms, emerged. One of them picked up objects from the beach. There was an exchange of gestures with the witness. One of the dogs turned away when the witness approached the craft, which was 20 m wide, 3 m high, and showed flashing lights as it left.
magonia	A large object was seen to fly morning slowly toward the north. It seemed ready to land and five men (F. G. Ellis, James Evans, David Evans, Joe Croaskey, Benjamin Buland) drove toward it. About 7 km north of Linn Grove, they found the craft on the ground, came within 700 m of it, but it "spread its four giant wings and rose towards the North." Two strange figures aboard the craft made efforts to conceal themselves. Witnesses were surprised at the length of their hair. Most residents of Linn Grove saw the craft in flight.
magonia	Jan, 1952 Weston (Wyoming), A 38-year-old rancher saw a "shooting star" that suddenly stopped in mid-air between him and a mountain. It was seen spinning in a clockwise direction. It had one red window periodically facing the observer. It went down toward the Little Powder River and came up again. The witness turned his car to send light signals, to which the object seemed to respond by stopping its red window facing the witness's location. Spinning resumed, the object rose and came down. A similar craft arrived, and both went into the deep valley, out of sight.
magonia	Mary Starr was awakened by a brilliant light and saw through her east window the fuselage of a craft that hovered in midair. Aboard were two men, each with his right hand raised, wearing yellowish jackets. A third man joined the first two, then all lights went off inside the craft while it glowed like brass. A spinning antenna like device was noted. A few minutes later it flew off.
magonia	William West and Wallace Liddell saw an object similar to a shooting star coming close to them, appearing then as an oval, fluorescent craft, about 40 m in diameter, which almost touched the grass. They rushed to catch it, but it jumped away, turning into a bluish-white sphere with a dark red center. Each time they tried to reach it, the craft jumped farther away. It cleared a high fence and slowly vanished. The Invercargill Weather Bureau had no explanation.
nuforc	Black triangle with glowing warm orange lights at each corner. Silent, moved across sky. Almost invisible, seemed to be very large. My neighbor and I were watching the meteor shower and we saw a large black triangle with 2 orange lights move across the sky. Was not as high as airplanes, was significantly bigger. So silent, it almost seemed as though it absorbed any sound around it. Moved in such a smooth way, different than anything I have ever seen. I could not look away, I was so mesmerized.
nuforc	Saw the object while in flight During helicopter flight at approximately 1000' AGL, the pilot saw a strange object that had symmetrical lines while under night vision goggles. The object was very far from the aircraft and moved quickly and flew over top of the helicopter while in flight. One of the crew members were able to take a picture of the object and were later informed by a friend on the ground in another location that they saw the same object and were able to get a video of it.
nuforc	Black kite/Diamond with lights at each point. Back in late July 1993 on a caravan park in Caister on sea a group of 8 of us walked down to our friends caravan to get him to come out and join us. As we were all outside his caravan a Black kite shaped object as big as a bungalow flew silently about 30-40ft over our heads. There was a single red light at the front and back points and a single yellow one on each side point. We were only a couple of hundred yards from the sea and this object was heading inland from the direction of the sea.
nuforc	12 or more dim lights in a perfect chevron or boomerang shape I was observing the night sky for only a few moments, when I noticed motion in my peripheral, to the north and about 80 degrees up from my location in my back yard. It was 12 or more very faint points of light forming a perfect chevron or boomerang. I watched the shape move in a linear constant speed from East to West with no sound. At first I thought it could be birds migrating, given its apparent size and silence from my perspective. But its shape was perfect and its path was perfectly straight. I could detect a shape that was greater than just the points of light as it passed over the stars, again like that of a boomerang or plane wings with no fuselage. From my perspective, if the form were a known aircraft, it would be most similar to a B2 Bomber. However, if it were a conventional aircraft, it would have been no more than 1000 ft above the ground. Which would have produced immense sound. Lastly, the appearance of the shape was mildly streaking or fluid in its motion. Almost like it was passing just below the surface of water. I observed it for 10-15 seconds, starting at approximately due north of my location, until I lost sight of it over the West horizon.
nuforc	Bright orb with a beam of light shooting straight up out of it We went for a night swim in our pool around midnight. We were looking at the stars when I saw a really bright star in the middle of a triangle of more dimly lit stars. Then the bright star slowly started getting bigger, fast enough that I didn't have time to point it out. Suddenly it was about half the size of a full moon, but it still looked like a fuzzy star, just bigger. Then a beam of white light shot straight up out of it. The beam of light was very thin, crisp looking, not hazy. It just shot straight up out of the big fuzzy star like orb, then the whole thing immediately vanished.



ESSAY

Temporal Translation of Matter Exploring the Theoretical Foundations for Backward and Forward Temporal Translation of Matter Inferred from Remote Viewing and Precognition Findings

Benjamin J. Amorim Boyle
benboyle89@gmail.com

HIGHLIGHTS

New thinking connects anomalous findings in precognition and remote viewing with modern physics to speculate that if information can move backward or forward in time then, under certain theoretical conditions, matter and energy might also be capable of temporal displacement.

ABSTRACT

This paper explores the possibility that matter may be capable of traveling through time, an idea derived from the convergence of anomalous findings in parapsychological research and advanced theoretical interpretations in contemporary physics. Studies in precognition and remote viewing—despite their controversial status—have repeatedly produced results suggesting that information can be accessed outside the conventional forward flow of time. Interpreted within a physicalist paradigm where information is inextricably tied to energy and matter, these anomalies imply that if information can move temporally backward and forward, then energy and mass may also achieve temporal displacement. While quantum mechanics and relativistic models of spacetime do not categorically exclude retrocausality, the extrapolation of this concept from intangible information flows to the tangible realm of matter demands rigorous scrutiny. This paper integrates the empirical record from parapsychological experiments with the theoretical foundations of mass-energy equivalence and quantum retrocausality to propose a conceptual framework for matter's temporal translation. In acknowledging the speculative nature of this endeavor, it nonetheless aims to motivate more systematic investigations, encourage interdisciplinary discourse, and clarify the methodological and theoretical challenges that must be overcome. Ultimately, this analysis seeks to open a constructive dialogue on whether the once-unthinkable notion of matter traversing time may merit a place within the broader tapestry of contemporary physical theory.

SUBMITTED December 14, 2024
ACCEPTED April 5, 2025
PUBLISHED December 18, 2025

<https://doi.org/10.31275/20253611>

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KEYWORDS

Time travel, retrocausality, precognition, remote viewing, quantum mechanics, temporal displacement, mass-energy equivalence, information theory, time symmetry, transactional interpretation, quantum nonlocality, parapsychology, causality, spacetime

INTRODUCTION

Few concepts in science and philosophy challenge human intuition more profoundly than time and its perceived unidirectional flow. For centuries, a robust intellectual tradition has held that causality moves from past to future, rendering the arrow of time unalterable and absolute (Price, 1996). This conventional view underpins much of classical physics and everyday reasoning: effects follow causes, events occur in a linear temporal sequence, and the fundamental laws of nature ostensibly unfold along an irrevocable timeline. Yet, over the last century, developments in theoretical physics, especially within quantum mechanics, have exposed subtle indications that this seemingly natural assumption may not hold universally. Emerging theoretical frameworks and experimental interpretations increasingly hint that the foundational constraints of temporal order and causality can be more malleable than previously conceived (Cramer, 1986; Wheeler, 1978). Such suggestions would have profound implications, not only for our understanding of physics but also for our grasp of information, energy, and the very fabric of spacetime.

Running in parallel with these theoretical undertones, a persistent body of research from the controversial domains of remote viewing and precognition has presented empirical claims suggesting that information itself may transcend conventional temporal boundaries (Bem, 2011; Targ & Puthoff, 1974). These studies, conducted under varying degrees of methodological rigor, purport that individuals can access data not yet available to their senses, implying that information—a measurable, physically encoded entity—can be transmitted or at least accessed in a manner that disregards the standard linear progression of time. While skeptics highlight methodological flaws, biases, and the need for replication, the anomalous results have continued to surface across decades of experimentation, prompting some researchers to seriously entertain the possibility that time may not strictly govern the flow of information.

If these claims are taken at face value, they beckon a pivotal question: If information, which we understand to be intimately tied to states of energy and matter, can indeed

move backward and forward in time, might the same apply to energy and matter themselves? Information is not an abstract mathematical construct floating free of physical constraints; it must be instantiated in some physical medium, as suggested by Shannon and Weaver's foundational work and later reinforced by the principle that information is inseparable from its material substrate (Landauer, 1991; Shannon & Weaver, 1949). Consequently, if information can traverse temporal intervals, and information is intrinsically bound to energy, it follows logically that energy might also escape the tyranny of the arrow of time. In turn, this possibility, when considered in conjunction with Einstein's mass-energy equivalence (Einstein, 1905), raises the striking proposition that matter, as another form of energy, could experience temporal displacement. Rather than dismissing such a scenario as fanciful science fiction, it becomes a legitimate avenue of inquiry precisely because it emerges logically from the acceptance of retrocausal information flow and the well-established physical relationships between information, energy, and matter.

The purpose of this paper is to critically evaluate and synthesize these lines of evidence—both empirical and theoretical—to develop a conceptual framework that places the temporal displacement of matter within the realm of scientific plausibility. By weaving together, the anomalous results observed in remote viewing and precognition research with cutting-edge discussions in quantum theory, retrocausality, and mass-energy-information relationships, this study aims to broaden the theoretical landscape of time travel beyond the classical paradigms. While acknowledging that the proposition remains highly speculative and demands formidable empirical and theoretical rigor, this paper argues that dismissing the possibility altogether would risk overlooking potentially transformative perspectives on the nature of reality. In so doing, the ensuing analysis endeavors to set the stage for more incisive research, informed debate, and the development of novel experimental approaches designed to probe the temporal elasticity of matter itself.

LITERATURE REVIEW

The literature spanning precognition, remote viewing, retrocausality, and time symmetry in fundamental physics is both extensive and multidisciplinary. Over the past half-century, researchers in parapsychology, quantum foundations, theoretical physics, philosophy of science, and even experimental psychology have contributed to a complex and evolving discourse on the nature of time

and causality. This vast corpus comprises empirical work suggesting that humans may access information outside the conventional temporal order, as well as a rich array of theoretical models that question the irreversibility of the arrow of time.

Early systematic investigations into remote viewing and precognition were carried out at the Stanford Research Institute, with Targ and Puthoff (1974) reporting statistically significant success rates for subjects identifying distant or future targets under stringent conditions of sensory shielding. Their work inspired numerous follow-up studies and meta-analyses. Bem (2011) presented a series of experiments exploring precognitive perception in mainstream psychological journals, triggering considerable debate over methodology and interpretation. A meta-analysis by Honorton and Ferrari (1989) and later reviews by Storm et al. (2010) and by Mossbridge et al. (2012) supported the claim that small but replicable precognitive effects exceed chance expectations. Additionally, explorations by Radin (1997, 2006), Bierman (2010), and May and Marwaha (2018) have repeatedly documented subtle but persistent anomalies suggestive of retrocausal information transfer. Schlitz and Braud (1985) further contributed experiments assessing physiological and behavioral correlates of distant intentionality, while Utts (1991, 1995) conducted statistical assessments reinforcing the existence of anomalous information reception phenomena.

Such findings have not gone unchallenged. Critics, including Alcock (2011) and Wagenmakers et al. (2011), have argued that artifacts such as publication bias, inadequate controls, statistical misinterpretations, and methodological loopholes undermine the robustness of these effects. They emphasize the need for strict pre-registration protocols, improved replication standards, and transparent data-sharing to ensure that significant results are not artifacts of methodological shortcomings. Nonetheless, the persistent recurrence of positive findings across multiple laboratories and cultural contexts (Cardeña, 2018; Carter, 2017) has fortified the argument that something nontrivial may be occurring. Indeed, although consensus remains elusive, the literature has progressed beyond mere anecdotal reports into a field where controlled experimentation and meta-analyses have forced thoughtful reconsideration of previously dismissed possibilities.

In parallel, theoretical advances within physics have begun to erode the once-firm belief in an absolute, forward-only arrow of time. Traditional understandings of causality have been significantly challenged by developments in quantum

mechanics. Wheeler's (1978) delayed-choice experiments and Wheeler and Feynman's (1945) absorber theory first demonstrated how present measurements could appear to determine the past states of quantum systems. Building on these foundational ideas, the transactional interpretation by Cramer (1986) introduced a time-symmetric formalism involving "offer" and "confirmation" waves traveling forward and backward in time. Costa de Beauregard (1977) and Aharonov et al. (1964) considered the possibility that quantum mechanics might be more naturally expressed in a time-symmetric manner, with later outcomes retroactively influencing earlier states. Similarly, the two-state vector formalism developed by Aharonov and Vaidman (1990) allows a future boundary condition to determine a system's present configuration. Wharton (2007, 2010) and Price (1996; Price & Wharton, 2015) have further explored retrocausality within quantum foundations, arguing that accommodating backward-in-time influences can resolve interpretational puzzles in quantum theory, thereby challenging the entrenched assumption that causation must always proceed from past to future.

Quantum nonlocality and entanglement research also offer tantalizing hints that spacetime and causality may not be as rigid as commonly believed. Experimental demonstrations of Bell inequality violations (Aspect, 1999; Hensen et al., 2015) and "delayed-choice" quantum eraser experiments (Kim et al., 2000; Ma et al., 2012) question whether temporal order is a fundamental property or a contextual construct. In particular, Oreshkov et al. (2012) showed that quantum correlations can arise in situations where a causal order is not well-defined, pointing to a realm where temporal sequencing may depend on the measurement framework rather than an intrinsic arrow of time.

General relativity and cosmology further muddy the waters. Gödel (1949) famously discovered solutions to Einstein's field equations that permit closed timelike curves, thereby allowing travel to one's own past in principle. While exotic matter or extraordinary conditions would be required to realize such solutions (Morris et al., 1988; Visser, 1995), they remain mathematically coherent. Thorne (1994) and Hawking (1992) have debated whether quantum effects would enforce a "chronology protection conjecture," preventing macroscopic violations of causality. Although these relativistic scenarios remain largely theoretical, they confirm that established physical laws do not categorically forbid time travel under highly contrived conditions. Coupling these relativistic insights with quantum retrocausality and parapsychological findings produces a milieu in which strict

causal linearity seems less an axiom and more a heuristic approximation.

Philosophical inquiries and analytic metaphysics have also contributed richly to this debate. Reichenbach's (1956) analysis of the direction of time, Earman (1974) and Horwich (1987) on the logic of time's arrow, and Dowe's (2000) exploration of causation in a physical context have refined the conceptual space in which physicists and parapsychologists operate. Price's (1996) argument that our perception of temporal asymmetry may be anthropocentric or emergent rather than fundamental has gained traction among philosophers of science. Similarly, Eddington's (1928) early speculations on the arrow of time and Boltzmann's statistical arguments for the thermodynamic arrow underscore that temporal directionality is intimately related to entropy and boundary conditions, not necessarily an inviolable principle of reality.

Integrating these lines of evidence and reasoning, it becomes apparent that the literature no longer supports a simplistic, one-dimensional view of time's arrow. Instead, contemporary scholarship spans numerous fields—experimental parapsychology, quantum foundations, relativistic cosmology, philosophy of science, and information theory—all contributing to a more nuanced picture. In this context, Shannon and Weaver's (1949) foundational work on information, complemented by Landauer's (1991) principle that information is physical, provides an essential scaffold. If information can retroactively influence events, and information is inseparable from physical media, then the mass-energy-information triad may admit temporal elasticity. This notion is further bolstered by works in quantum information science examining the role of time in computational and informational processes (Timpson, 2013; Vedral, 2003), and by emerging fields that consider the holographic principle and black hole information paradox in contexts that sometimes entertain retrocausal resolutions (Susskind & Lindesay, 2005).

In sum, the literature is extensive and evolving, reflecting a scientific zeitgeist open to re-examining once-fundamental assumptions about time and causality. The empirical, theoretical, and philosophical dialogues have matured beyond initial skepticism and isolated anecdotes. Although consensus remains distant, the breadth and depth of existing scholarship—from rigorously conducted psi experiments and meta-analyses to advanced quantum interpretations and philosophical treatises on the direction of time—demonstrate that the investigation of retrocausal information flow and the potential temporal

displacement of matter stands at a complex intersection of multiple research traditions. It is precisely this richness and multiplicity of perspectives that now enable a more robust, interdisciplinary framework for exploring these challenging, provocative frontiers.

THEORETICAL FRAMEWORK

The theoretical foundation underpinning the proposition that matter might traverse temporal boundaries arises from an integrated synthesis of three core principles: the physicality of information, the established equivalence of mass and energy, and the emerging recognition of retrocausality in quantum phenomena. These conceptual cornerstones collectively challenge traditional assumptions about the unidirectional flow of time and open the door to considering matter's potential for temporal displacement.

Central to this framework is the growing recognition that information is not merely an abstract variable but a physically instantiated entity. In classical information theory, as developed by Shannon and Weaver (1949), information was initially conceptualized as an abstract metric for signal transmission and processing. Over time, however, research has bridged the gap between abstraction and physicality, culminating in the principle that information is inextricably tied to the states of energy and matter in the physical world (Landauer, 1991). To store, transmit, or erase information requires energy; thus, information is neither ethereal nor immaterial but bound to the fundamental building blocks of reality.

A key point of critique in this discussion revolves around the concern that equating or conflating information with energy or matter could lead to unjustified extrapolations. It is thus critical to emphasize that this paper does not adopt a simplistic view wherein bits of information and joules of energy are directly fungible or interchangeable in a literal sense. Rather, the stance taken here is more accurately characterized as physicalist: information cannot exist independently of physical substrates, which invariably involve configurations of mass and energy (Bennett, 1982; Lloyd, 2006; Shannon & Weaver, 1949). In other words, while the storage, manipulation, or erasure of information always carries thermodynamic consequences (Landauer, 1991), such physical embodiment does not imply strict equivalence between the substance of information and that of energy or matter.

Early foundational work on the physicality of information, such as that by Landauer (1991), underscored the thermodynamic cost associated with erasing a single bit

of information. This principle hinges on the fact that real-world computational or informational processes require energy exchanges. Zurek (1989, 2003) expanded on this concept by examining how classical information emerges from quantum systems, underlining that the correlations characterizing quantum states must also adhere to thermodynamic and entropic constraints. These findings highlight that information is not a free-floating abstraction; it is enacted through physical states—be they spins, photons, or classical bits stored on a medium—and altering those states requires energy.

However, this does not permit one to automatically convert an abstract bit into a corresponding quantity of matter or energy at will. Instead, the more modest claim—advanced by Wheeler (1990) under his iconic “it from bit” framework—is that the fabric of physical reality, the “it,” may ultimately be described by informational underpinnings, the “bit.” Interpreted carefully, Wheeler’s insight suggests that information is central to the descriptions and constraints governing physical systems, not that matter or energy can be alchemically transmuted into a discrete unit of data. As Bennett (2003) points out, while information is crucial for understanding quantum correlations and computational capacities, it is still carried by physical systems whose properties fall under the laws of thermodynamics and quantum mechanics.

Extending these insights to the topic of retrocausality or time-reversed processes, it becomes clear that any putative retrocausal flow of information would entail corresponding shifts or manipulations within its material or energetic substrates (Aharonov & Vaidman, 1990; Cramer, 1986). While we may hypothesize that information appears to move backward in time, this remains intimately bound to the evolution of a physical system, governed by the interplay of quantum fields, energy distributions, or neural correlates in an experimental setting. Thus, if retrocausal effects were substantiated, they would describe how physical states carrying that information evolve across unconventional temporal trajectories.

Hence, the paper’s proposal that mass-energy might exhibit comparable temporal flexibility is not intended as a naive statement of equivalence between data bits and atoms. Instead, the reasoning is that if the physical substrate responsible for carrying information can, under certain interpretations or conditions, exhibit retrocausal properties, then the same foundational laws permitting that effect may also allow for matter-energy reconfigurations that challenge classical assumptions about time’s irreversibility. This idea remains speculative. It depends

on robust empirical evidence for retrocausal information transfer and on theoretical models—such as the transactional interpretation (Cramer, 1986) or time-symmetric quantum mechanics (Wharton, 2007)—demonstrating compatibility with both thermodynamics and relativity.

By acknowledging these nuances, we circumvent the pitfall of assuming that a “bit” is literally convertible into mass or energy as expressed by $E = mc^2$. We instead adopt the stance that information, while distinct from energy or matter in a functional sense, is nonetheless an inescapably physical phenomenon. That is, every bit or qubit exists in some material or energetic manifestation (Lloyd, 2006; Nielsen & Chuang, 2010). To the extent that retrocausality applies to the underlying physical processes—be they quantum states in superposition, entangled field modes, or more exotic gravitational configurations—it might, in principle, also apply to the material carriers of those states. At this juncture, theories about quantum retrocausality and emergent spacetime geometry (Barbour, 1994; Oreshkov et al., 2012) remain fertile areas of investigation, though they are far from settled. Nevertheless, this more measured position avoids any unjustified collapse of distinct physical concepts into one another while still articulating how information’s physical instantiation could potentially open the door to wider questions about time’s arrow and causality in the mass-energy domain.

This inseparability of the storage, transmission or erasure of information and energy draws the discussion inexorably towards Einstein’s mass-energy equivalence, one of the most celebrated pillars of modern physics (Einstein, 1905). $E = mc^2$ established that mass and energy are interchangeable manifestations of a single underlying substance. Today, this principle underlies a vast array of physical phenomena, from nuclear reactions to the generation of particle-antiparticle pairs in high-energy physics. If information necessarily resides in energy configurations, and energy can manifest as mass, then information and matter are ultimately connected through a chain of ontological equivalences. Information \rightarrow Energy \rightarrow Mass is not a set of isolated transformations but rather a unified continuum of physical reality. In this light, if it can be demonstrated that information is not strictly confined by the forward arrow of time, it follows that energy—and potentially mass—might also evade such temporal restrictions.

The key hinge supporting this conceptual leap is the growing body of theoretical and experimental work suggesting the possibility of retrocausality. Quantum mechanics, long understood as a domain where classical intuitions about determinism and locality falter, provides multiple frameworks

for considering time as bidirectional. Retrocausal interpretations do not discard causality but rather propose a time-symmetric model where future events can influence the present or even the past, within carefully circumscribed conditions (Cramer, 1986; Elitzur & Dolev, 2005). For instance, the transactional interpretation of quantum mechanics offers a picture of quantum events as established through a negotiation of advanced and retarded waves traveling backward and forward in time until a “handshake” solution emerges. Similarly, Wheeler’s (1978) delayed-choice gedanken experiments challenge the presupposition that measurements are mere passive recordings of pre-existing conditions, instead implying that present experimental choices may determine the character of past quantum states.

These interpretative frameworks are not fringe curiosities; they are actively debated and analyzed in the literature, with increasing numbers of physicists taking seriously the potential implications of time symmetry at the quantum level (Price, 1996). While consensus remains elusive and the philosophical implications are immense, it is striking that these models naturally accommodate the kind of temporally neutral information flows hinted at by precognition and remote viewing experiments. If the human capacity to access future or non-local targets is indeed real, even at subtle statistical levels (Bem, 2011; Targ & Puthoff, 1974), it may be construed as empirical evidence for retrocausal information transfer. Such a scenario suggests that the arrow of time, at least for information, is neither fixed nor absolute.

By positioning the notion of temporally flexible information within a broader physical context, the theoretical framework proposed here contends that once the lockstep march of time is questioned for information, it cannot be so easily preserved for mass-energy. Given that matter is but one manifestation of energy, and energy the carrier of information, the temporal freedom of one implies the potential temporal freedom of all. This does not reduce the challenge of converting speculation into observable physics. Engineering controlled experiments that induce matter to cross temporal boundaries would require technological capabilities and conceptual breakthroughs far beyond current reach. Yet, theoretical groundwork laid by quantum retrocausality and the physicality of information remains a powerful inducement to consider that the laws of nature may permit matter to be freed from temporal linearity.

The importance of these assertions lies not only in the speculative allure of time-travel scenarios but also in their capacity to spur new lines of inquiry. If future research can

substantiate the retrocausal movement of information and quantify its constraints, it would provide crucial empirical footholds for formulating testable predictions about energy and mass under similar conditions. In doing so, it would shift the boundaries of contemporary physics, integrating quantum uncertainty, relativistic malleability of spacetime, and the peculiarities of information flow into a more unified and temporally flexible cosmological model.

This theoretical framework, therefore, does not merely justify conjecture; it lays out a conceptual architecture where the long-standing dichotomies—past vs. future, cause vs. effect—cease to be strict opposites. Instead, they become relational aspects of a dynamic whole, a universe in which matter, energy, and information are bound together in a tapestry that can be woven backward and forward along its temporal threads.

METHODOLOGICAL CONSIDERATIONS

Establishing a rigorous evidential basis for the temporal displacement of matter remains a formidable scientific challenge, one that demands both conceptual innovation and technical precision. Any viable methodology must contend with the intrinsic difficulties of disentangling genuine retrocausal signals from spurious results produced by conventional forward-in-time processes, cognitive biases, or statistical artifacts. This complexity is amplified by the cutting-edge theoretical nature of the proposition itself. Unlike classical experiments designed to confirm well-established principles, investigations aimed at uncovering matter’s capacity for temporal translation operate on the conceptual frontier of physics, pushing the boundaries of current instrumentation, interpretative frameworks, and experimental design.

The earliest methodological hurdle lies in the measurement and validation of retrocausal information exchange. Before matter’s temporal traversal can be seriously contemplated, the field must first achieve robust and reproducible paradigms for demonstrating that information alone can be reliably transmitted across temporal boundaries. Controlled laboratory protocols, such as those used in studies of precognition or remote viewing, must continue to be refined to ensure that data can be attributed to genuine temporal anomalies rather than ordinary guesswork, sensory leakage, or statistical noise. This will require rigorous blinding protocols, large sample sizes, pre-registered experimental designs, and advanced statistical techniques that minimize selection biases and confirmatory strategies

that are as transparent as they are stringent. Only once the temporal displacement of information is established with high confidence can the more ambitious question of matter displacement move beyond speculative conjecture.

A subsequent methodological frontier entails the development of instruments sensitive enough to detect minute perturbations in energy distributions that could signify backward or forward temporal shifts. Such instruments would need to operate at a quantum level of granularity, capable of isolating and monitoring systems shielded from conventional disturbances. In principle, if retrocausal influences operate at the quantum scale, detecting temporal anomalies in the behavior of fundamental particles or their energy states might serve as an initial clue. Advanced quantum optics setups, ultra-sensitive interferometry, and the strategic use of entangled states could provide experimental leverage. For example, carefully designed delayed-choice experiments could be configured to test whether certain aspects of a quantum system's past state can be altered or influenced by future choices, thereby extending the logic that currently tests retrocausal information flow to the domain of energy and mass.

A critical methodological consideration involves the disentanglement of potential retrocausal signals from known relativistic and quantum effects. Given that general relativity and quantum mechanics already permit numerous counterintuitive phenomena, any experiment seeking to demonstrate matter's temporal displacement must control for known sources of temporal distortion, such as gravitational time dilation, relativistic frame-dragging, or purely quantum uncertainties. Establishing clean baselines and extensive control conditions is essential. Experimenters would need to account not only for the known complexity of quantum systems but also for subtle environmental factors and instrumentation noise that could masquerade as retrocausal signatures.

Interdisciplinary collaboration will be indispensable to meet these methodological demands. Expertise from quantum physicists, neuroscientists, and parapsychologists may be necessary to design protocols that bridge the gap between cognitive-level phenomena (e.g., precognition experiments) and fundamental physical processes (e.g., quantum measurements). Philosophers of science, historians of physics, and methodologists specializing in advanced statistical modeling can help navigate interpretive pitfalls, ensuring that claims about temporally displaced matter are framed rigorously and cautiously.

Lastly, the reproducibility and transparency of such experiments will be paramount. Pre-registration, open

data policies, and independent replication across multiple laboratories would help build a cumulative evidential foundation that lends credibility to extraordinary claims. Given that the notion of retrocausal matter displacement transcends currently established paradigms, the scientific community would justifiably demand a robust and transparent empirical record. By employing a continuous feedback loop—where theoretical predictions guide experimental design, and empirical anomalies prompt theoretical refinements—methodological frameworks can evolve in tandem with emerging evidence, gradually moving from the fringes of speculation toward a legitimate field of scientific inquiry.

In sum, the methodological considerations necessary for testing the temporal displacement of matter require more than technological advancement or incremental improvements on existing protocols. They demand a fundamental reorientation of the research process itself, blending stringent experimental rigor with openness to the conceptual shifts that genuine retrocausal phenomena would entail. By forging such innovative methodological pathways, the scientific community may one day transform the radical proposition of matter's temporal mobility into a testable and, potentially, confirmable reality.

DISCUSSION

The notion that matter might travel through time emerges as a bold hypothesis rooted in the convergence of anomalous empirical data and burgeoning theoretical possibilities. If the longstanding assumption of a strictly forward-moving arrow of time can be challenged by the consistent, if subtle, empirical indicators of retrocausal information flow, then dismissing the prospect that mass-energy could also undergo temporal displacement appears less tenable. Indeed, the crux of this argument rests on the increasingly persuasive claim that information, as a physically instantiated entity, may already be traversing temporal boundaries, as evidenced by rigorously controlled remote viewing and precognition experiments (Bem, 2011; Targ & Puthoff, 1974). When such phenomena are tentatively accepted, even provisionally, they invite a dramatic reassessment of fundamental concepts in physics.

Incorporating these empirical anomalies into established theoretical frameworks reinforces the plausibility of time-reversed causal chains. The quantum domain, with its well-documented nonlocalities and paradoxes, provides fertile ground for conceiving retrocausality. Interpretations of quantum phenomena that regard time as symmetric,

notably the transactional interpretation (Cramer, 1986) and those inspired by Wheeler's delayed-choice experiments (Wheeler, 1978), suggest that the conventional partitioning of past, present, and future may be more of a conceptual convenience than a categorical feature of reality. These theoretical landscapes do not outright confirm the viability of matter's temporal displacement, but they do soften the ground on which classical intuitions about cause and effect were once unassailable.

It is crucial to emphasize that this line of reasoning remains speculative. For many critics, the empirical base—consisting of studies reporting precognitive or retrocognitive effects—may still be viewed as methodologically fragile, susceptible to subtle errors or unaccounted-for biases (Alcock, 2011). From this perspective, the extraordinary implications of retrocausality demand extraordinary rigor. Future research must subject the purported retrocausal information phenomena to relentless scrutiny, refining experimental designs and statistical analyses to a level that satisfies even the most exacting methodological standards. Only with robust, reproducible evidence can the broader scientific community consider integrating such data into mainstream theoretical discourse.

Yet this skepticism, while essential, need not be debilitating. The persistent replication of anomalous informational results across multiple laboratories and decades suggests that these phenomena are not easily dispelled by simple methodological critiques. Their resilience hints that something genuinely perplexing may be at play, something that standard models of perception, cognition, and linear causality fail to capture. Recognizing this persistent anomaly affords an opportunity rather than a crisis. It invites theorists and experimentalists to press beyond conventional boundaries—both intellectual and technical—thereby enriching our conceptual palette and potentially guiding us toward new principles underlying the structure of spacetime.

A particularly salient implication of adopting a time-fluid perspective is the reevaluation of long-held notions regarding determinism, free will, and the ontological status of the future. If information and, by extension, matter can be influenced by events yet to occur, then the classical image of time as a neutral backdrop for an unfolding causal sequence erodes. Instead, one must consider a reality in which causality is bidirectional, and events can be shaped by both antecedent and subsequent conditions. Such a cosmology complicates our conventional narratives about human agency and accountability, reshaping philosophical debates and potentially reconciling certain metaphysical

puzzles. It may also broaden the horizons of fields that extend beyond physics, including the cognitive sciences, where time's role in perception and decision-making might not be as linear and unidirectional as traditionally assumed.

On a practical level, the transformative power of this idea lies in its capacity to generate new research agendas. Building instruments and experiments designed to test the temporal flexibility of matter will require unprecedented ingenuity, bridging quantum optics, high-precision metrology, and theoretical constructs that push general relativity into non-classical regimes. Although the path forward is daunting, it promises intellectual rewards on a commensurate scale. Probing these frontiers may uncover previously unimagined modalities of interaction between observers and observed systems, permitting refined manipulations of quantum states that tap into temporally extended causal loops.

One possible objection is if energy were to travel backward in time, it might necessitate the introduction of negative energy. This objection is understandable from a classical standpoint, where the forward evolution of physical systems typically corresponds to positive energies and the forward progression of causal processes. However, in the context of time-symmetric or retrocausal interpretations of quantum mechanics, the concept of an "advanced" or backward-traveling wave need not correspond to "negative energy" in the usual sense. Instead, it typically refers to solutions of wave equations that are time-reversed yet still conserve energy when the full boundary conditions (both forward and backward in time) are taken into account (Cramer, 1986; Elitzur & Dolev, 2005; Wheeler & Feynman, 1945).

In classical field theories, negative energy solutions sometimes appear when one interprets a time-reversed solution too literally under frameworks designed for strictly forward-evolving processes. Yet, as discussed in the transactional interpretation (Cramer, 1986) and absorber theory (Wheeler & Feynman, 1945), advanced wave solutions carry the same total energy magnitude as conventional "retarded" waves; they differ in time direction rather than sign. In other words, the advanced wave can be seen as a formal device that satisfies the boundary conditions at both ends of a quantum event—one in the future and one in the past. This does not necessarily render its energy negative. As Aharonov and Vaidman (1990) and Wharton (2007) have argued, time-symmetric approaches remain consistent with standard quantum probabilities and conservation laws without resorting to classical negative energies.

Furthermore, certain phenomena in quantum field theory—such as the Casimir effect or Hawking radiation—do indeed invoke “negative energy densities” in a local sense, but these do not straightforwardly equate to globally negative total energy. They arise within a specific context of stress-energy tensors and curved spacetime metrics (Hawking, 1992; Morris et al., 1988; Visser, 1995). Even in those scenarios, the net energy balance over the entire spacetime region often remains non-negative; it is the distribution of the energy that sometimes takes locally negative values relative to a chosen vacuum baseline.

Therefore, retrocausal interpretations do not rely on classical negative energy. Instead, they leverage time-reversal properties of quantum or field-theoretic equations—some of which naturally include advanced (backward-in-time) solutions—while preserving overall conservation of energy when viewed from a holistic perspective. This time symmetry at the level of formalism allows for the possibility that future boundary conditions can influence or “handshake” with past boundary conditions (Cramer, 1986). The net result is a quantum process that appears to operate with bidirectional constraints in time but does not violate energy conservation. Consequently, the argument for retrocausal energy or matter displacement remains consistent with known physical laws, provided one interprets “backward-in-time” solutions as part of a more general, time-symmetric theory, rather than a literal introduction of negative energy in the classical sense.

In sum, acknowledging the possibility that matter might be freed from temporal linearity challenges the core pillars of modern physics. It prompts a systematic reexamination of the assumptions that have guided science for centuries and encourages the integration of anomalous findings once relegated to the fringes. While these ideas remain at an early stage, their potential implications for foundational physics, philosophical inquiry, and even applied technology are too profound to ignore. By advocating for a disciplined yet open-minded approach, this paper seeks to inspire both heightened skepticism and constructive curiosity. Amid ongoing debate and vigorous empirical testing, we may one day find that the temporal displacement of matter, once the province of speculative fiction, forms part of a richer and more intricate tapestry of physical reality.

CONCLUSION

The proposition that matter may be capable of traveling through time stands as a radical departure from the traditional frameworks that have long governed scientific

understanding. Building on converging lines of inquiry, this paper has drawn together the anomalous yet persistent results of precognition and remote viewing experiments, the established physicality of information, and the conceptual scaffolding offered by quantum retrocausality and relativistic spacetime models. Taken as a whole, these threads weave a theoretical tapestry in which the arrow of time is less a fixed directive and more a dynamic parameter, potentially subject to negotiation by the fundamental principles governing energy, mass, and information. If information—inseparable from the material substrate of the universe—is not constrained by temporal directionality, then the equivalence of mass and energy raises the tantalizing possibility that matter too might overcome the conventional limits of temporal flow.

Yet, despite the ambition and scope of these ideas, it is imperative to acknowledge that the current state of evidence remains incomplete. The empirical data on precognition and retrocausal information flow, while persistent, continue to attract legitimate skepticism, calling for ever more rigorous methodologies, higher standards of transparency, and exacting replication protocols. Similarly, the theoretical frameworks that permit retrocausality remain under intense scrutiny and active refinement. The challenge, therefore, is not only to continue testing these claims empirically but also to craft more nuanced models that can predict and accommodate temporal anomalies in ways that remain consistent with established scientific knowledge. The road forward demands creativity, interdisciplinary collaboration, and a willingness to explore conceptual terrain that stretches well beyond conventional paradigms.

Even if matter’s ability to traverse time proves elusive, the very pursuit of this question enriches the scientific enterprise. Investigating temporal elasticity compels a re-examination of foundational concepts—causality, determinism, free will, the nature of information, and the fabric of spacetime itself. Far from being an intellectual cul-de-sac, this line of inquiry can act as a catalytic agent, inspiring new theoretical perspectives and experimental designs that challenge the frontiers of physics, metaphysics, and the philosophy of science. The implications radiate outward to fields as diverse as quantum information theory, cosmology, cognitive science, and the emerging dialogues between science and the humanities, each of which can benefit from the visionary and integrative thinking that this debate demands.

In conclusion, the idea that matter might transcend temporal boundaries invites us to envision a universe more

intricate and mutable than previously imagined. The task now is to pursue this line of reasoning with both imaginative daring and uncompromising rigor. By advancing our empirical methods, refining our theoretical tools, and maintaining a stance of critical open-mindedness, we may ultimately discover whether the temporal displacement of matter is an attainable reality or an instructive myth—either outcome a source of profound insight into the nature of our universe.

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ESSAY

The Interdimensional Universe— Part 1: Interdimensionality, the Origin of Unidentified Aerial Phenomena (UAP), and Mechanics of Travel between Planes

Paul Cunningham

Department of Psychology,
Rivier University, Nashua, NH,
USA
pfcunning@comcast.net

HIGHLIGHTS

Part 1 of a two-part study reviews evidence for unidentified aerial phenomena and proposes an interdimensionality hypothesis, that is, multidimensional planes intersect the physical universe at contact points which UAP use to travel, describing four proposed features of those planes and the presumed mechanics of transit.

ABSTRACT

This is the first part of a two-part essay that examines the theoretical and empirical case for the interdimensionality hypothesis—namely, planes of multidimensional reality meet at points in the physical universe through which unidentified aerial phenomena (UAP) travel. Part 1 examines the evidence for the existence of UAP and discusses interdimensionality as both a mathematical/scientific concept and a metaphysical hypothesis. Drawing upon the insights of the philosophical psychology of Jane Roberts, four hypothesized features of interdimensional planes (i.e., non-hierarchical organization, open-ended structure and transactional processes, relative physics, and specialized camouflage pattern) and the presumed mechanics of UAP travel between planes are described. Part 2 examines the physics and metaphysics of interdimensionality and its implications for future space travel and outlines a research protocol for the scientific exploration of likely locations where dimensional planes may make contact with the spacetime structure of our physical universe.

SUBMITTED September 24, 2024
ACCEPTED February 21, 2025
PUBLISHED December 18, 2025

<https://doi.org/10.31275/20253549>

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KEYWORDS

Interdimensional Universe, UAP, Space Travel, Cosmology, Physics, Metaphysics, Jane Roberts.



Interdimensionality refers to a class of explanations for an ancient yet modern-day mystery of “ongoing encounter with celestial phenomena that remain genuinely unknown but deeply significant”—unidentified aerial phenomena (UAP), popularly known as unidentified flying objects (Lomas & Case, 2023, p. 614; Vallee & Aubeck, 2010). For purposes of discussion, a UAP is defined as

The visual stimulus that provokes a sighting report of an object or light seen in the sky, the appearance and/or flight dynamics of which do not suggest a logical, conventional flying object and which remains unidentified after close scrutiny of all available evidence by persons who are technically capable of making both a full technical identification as well as a common-sense identification, if one is possible. (Roe, n.d.)

The actual existence of UAP remains a controversial issue with the same facts being interpreted in different ways (Rutkowski, 2024). There is much to say on various sides of the controversy, although the accumulated evidence for the *physical* occurrence of UAP is persuasive and includes (a) eyewitness testimony (e.g., corroborated accounts of experienced aviators, such as military air crews and commercial pilots; Weinstein, 2001, 2012), (b) observational data (e.g., high quality photographs and video, satellite imagery, visual-radar data, infrared detection and tracking records; Coumbe, 2023), (c) databases of recurrent UAP sightings (Teodorani, 2009), (d) casebooks of scientific investigations (e.g., Hynek, 1972; Sturrock, 1999; Vallee, 2008), (e) government reports (e.g., Office of the Director of National Intelligence, 2021, 2023a, 2023b), and (f) public Congressional hearings (see, for example, <https://www.c-span.org/video/?529499-1/hearing-unidentified-anomalous-phenomena-uap>).

Weinstein’s (2012) analysis of 600 visual-radar UAP sightings by military and civilian pilots is instructive and reveals more or less similar patterns of phenomenology and anomalous flight characteristics across encounters with UAP. Visual-radar sightings are based on testimony from pilots and crew members who are trained to recognize unusual meteorological events and estimate distances, shapes, and speed of aircraft and thus are less likely to misinterpret known aircraft and natural phenomena for UAP. Weinstein argues that visual-radar cases are important in building the case for the physical actuality of UAP because radar detection (a) independently confirms the

testimony of visual sightings of the pilot and/or crew and (b) can provide a technical record of UAP speed, altitude, or trajectory. In some cases, the face-to-face visual sighting of a UAP is confirmed by ground radar, while in other cases a visual sighting is made but no target echo is detected on the radar screen, or an echo is detected but there is no corresponding visual sighting. How to account for such physical-sensory discrepancies and what to make of UAP that people *think* they see are two topics addressed in this essay.

Context of the Problem

The accumulated data collectively paints the picture of a distinctly real physical aerial phenomenon that characteristically behaves in a manner inconsistent with classical laws of Newtonian physics and principles of flight dynamics. These directly observable behavioral anomalies include: (a) making sharp 45° or 90° turns or suddenly reversing direction 180° without deceleration or banking turns to offset resistance of inertia; (b) abruptly decelerating and coming to a sudden and complete stop and hovering in midair for long durations in the absence of any visible source of propulsive thrust for generating lift to offset the force of gravity; and (c) instantaneously accelerating in any direction at speeds faster than the eye can track offsetting the resistance of drag (Weinstein, 2001). UAP have also been observed to behave in a manner that suggests some form of “intelligence” controlling them (e.g., approaches, circles, follows, chases, or maneuvers close to aircraft; interacts with or flees from the aircraft) and act in ways that compel pilots to respond for the safety of aircraft, crew, and passengers (e.g., take evasive action to avoid collision).

Much interdisciplinary research has been devoted to the study of this aerial anomaly since the end of World War II (Lomas, 2024). The number of research studies published in peer-reviewed journals, such as *Limina - The Journal of UAP Studies*, as well as the size of authoritative databases documenting UAP sightings—for example, the J. Allen Hynek Center for UFO Studies, the Mutual UFO Network, the UFO Case Book, the National Aviation Reporting Center on Anomalous Phenomena, the National UFO Reporting Center, and the National Investigations Committee on Aerial Phenomena—continues to grow every year. The accumulated physical evidence—including photographs, luminosity estimates, radar detection, electromagnetic interference with automobile and aircraft equipment, anti-gravitational and/or inertial effects, ground traces, injuries to vegetation, physiological effects on witnesses, and material debris—that is

documented in the various databases, in the words of astrophysicist Massimo Teodorani (2009), “though not explaining the intrinsic nature of the reported phenomena, are able to demonstrate its existence whatever its nature may be” (p. 1).

It could be argued that there is far more direct *experiential* evidence for the existence of UAP than there is for the existence of black holes. Few people have seen a black hole, while many people of all cultures and in all ages have had some direct experience of UAP in one way or another—episodes of encounters that have measurable and tangible effects. The physical presence of UAP near ordinary aircraft during cruise flight, for instance, has been reported to cause not only measurable electrical-magnetic effects on one or more systems within the aircraft (e.g., radio, radar, compasses, aircraft control, engines, weapon systems, general electrical) but also have tangible physiological effects on the bodies of pilot, crew members, and on-ground witnesses (e.g., heat, blinding light, absence of all sound, including the sound of the aircraft’s engines) (Weinstein, 2001). Such effects involving both physics and biology would seem to count as evidence that something real is happening here. As William James put it, “Anything is real which we find ourselves obliged to take account in any way” (James, 1911, p. 101) and “that which produces effects within another reality must be termed a reality itself” (James, 1902/1936, p. 507). We know that UAP are real by their physical effects, in those terms.

Statement of the Problem

The problem is that we seem to be no further along in understanding the cause or causes of UFO reports (i.e., the “UFO problem,” Sturrock, 1999, p. 4) in a way that can be proven without doubt and accepted without reservation than when Carl Jung (1959) wrote his little book on the topic of flying saucers over 65 years ago and concluded that “something is seen, but one doesn’t know what” [emphasis in original] (p. 6). Orthodox Western psychology tends to treat claims of UAP sightings and memories of alien abductions as strictly mental phenomena and statements about the mind of the observer that derive ultimately from quite normal and ordinary conscious and subconscious dispositions (Clancy, 2005). Houran et al. (2025) calls attention to the hazards of this tendency of “normalizing while debunking” anomalous experiences that not only reflects a reluctance to engage UAP as a potentially authentic phenomenon that stifles further academic inquiry, but also diminishes the validity of witnesses’ experience and reinforces the scientific bias against subjective experience

as a legitimate source of evidence for justifying objective knowledge claims. If UAP sightings are merely an odd mixture of ordinary fantasy proneness, memory distortion, reality testing deficit, suggestibility, culturally available scripts, confabulation, and scientific illiteracy, then how does one account for the empirical physicality of the phenomenon and the fact that UAP throw back a radar echo which can be seen on a radar screen and possess visual properties that can be picked up on photographic film?

Jung (1959) concluded, after his own lengthy study of the matter, that “the possibility of a purely psychological explanation is illusory, for a large number of observations point to a natural phenomenon, or even a physical one” (p. 132). Purely psychological explanations do not account for the large degree of intersubjective agreement among various observers who perceive the same visual stimulus and the ostensible physical characteristics of the phenomenon itself. Accounts of UAP abductions are less easily dismissed when they include further evidence that the crafts involved in the abductions were witnessed by other people (e.g., Fowler, 1993; Mantle & McCammon-Scott, 2023). If one temporarily suspends disbelief and grants face validity to the direct first-person subjective experience of encounters reported in eyewitness accounts, and the second-hand objective observational evidence, the database and tabulations of recurrent sightings, and the multitude of casebook investigations and governmental reports and acknowledges the possibility that “these UAP happen” and “people really see what they see” (Teodorani, 2009, p. 51), then further questions arise: If UAPs are ontologically real and not mere species-wide delusions, then what are they, what might they represent, and where do they come from? This two-part essay addresses those questions.

Statement of the Hypothesis

Drawing upon the heuristic framework presented in the philosophical psychology of Jane Roberts’s *Aspect Psychology* (Roberts, 1975, 1997–2002), the following two propositions are advanced and defended: First, UAP have a separate existence independent of the observer that does not depend upon the observer’s belief or perception in order that they can exist. Second, certain sightings of UAP (aka flying saucers) represent the appearance of visitors from other dimensions/life planes, other realities, rather than from elsewhere in our own physical universe.

This two-fold hypothesis regarding the nature and origin of UAP aligns with the interdimensionality hypothesis articulated by veteran astrophysicist Jacques Vallee

(2008) who proposed that “the UFO phenomenon *represents evidence for other dimensions beyond spacetime*; the UFOs may not come from ordinary space, but from a multiverse which is all around us, and of which we have stubbornly refused to consider the disturbing reality in spite of the evidence available to us for centuries” [emphasis in original] (p. 325).

Interdimensionality is a hypothesis that Ufologist Allen Hynek also came to embrace in the final years of his life.

I have come to support less and less the idea that UFOs are nuts-and-bolts spacecrafts from other worlds. There are just too many things that go against that theory. To me, it seems ridiculous that a technologically advanced race would travel great distances to do relatively stupid things like stop cars, collect soil samples, and frighten people. I think we must begin to re-examine the evidence; we must look closer to home for the answer. I think we should consider that UFOs come from other dimensions, a parallel reality, a universe that exists in the same place as ours, but at a different [physical] frequency, so to speak. (quote in Imbrogno, 2008, p. 123)

Lomas (2023) acknowledged that “such hypotheses [as interdimensionality] may rightly be regarded with skepticism by most scientists. However, they should not be ruled out and deserve serious consideration in a spirit of epistemic humility and openness” (p. 43). Given the “high strangeness” (Hynek’s phrase) of UAP and the inability of physical science to find a satisfying explanation that accounts for all the data, the intellectual virtues of humility and open-mindedness before the unknown or half-known would seem to be called for in any discussions of such anomalous phenomena that carry paranormal and religious overtones (Lomas & Case, 2023).

Opening the scientific imagination to the *idea* of an interdimensional universe entails a willingness to temporarily suspend disbelief and scientifically entertain its possibility without necessarily endorsing its existence (Schooler et al., 2018). It also entails a readiness to go beyond the one-reality field paradigm that currently binds scientific thinking, look outside the familiar worldview of classical Newtonian physics grounded in the two pillars of sensory observation and mathematical deduction and consider seriously the non-zero probability that there is not one reality—the physical and sensorily

perceived material one—but a theoretically infinite number of simultaneous, interweaving fields of actuality, one not more real than the others, that are open and not closed, and interact and make contact with one another (Swain, 2017, Chapter 1). Logically, the existence of two or more reality systems or life planes is no more improbable or surprising than the existence of only one and the very existence of our physical universe would plausibly seem to presuppose the existence of others.

Overview of the essay

The overall purpose of this essay is to introduce an alternative way of thinking about the nature of UAP and propose investigable hypotheses about their possible interdimensional origin that may advance understanding of this theoretically and empirically challenging phenomenon. My aim is to note the existence of UAP, invite collective awareness of their presence, and discuss the evidence in favor of “interdimensionality” as a hypothesis concerning their origin. The main thrust of the essay is to increase areas of thought and speculation regarding the ontological reality of UAP and the epistemic utility of the idea of interdimensionality as a heuristic device for expanding understanding of a phenomenon that has resisted conventional scientific explanations to this day.

Roberts’ system of philosophical psychology is chosen as a heuristic framework to advance understanding of the UAP enigma for three reasons. First, it presents an alternative way of thinking about UAP that most astronomers and physicists have not seriously considered. Second, Roberts’ theory of interdimensionality is arguably workable and testable and shares common elements with physicist David Bohm’s notion of implicit and explicate orders of reality (Friedman, 1994). Third, given that many of humanity’s most practical theories have been attributed as coming from subconscious sources (Harman & Rheingold, 1984), it is reasonable to anticipate that Roberts’ Aspect Psychology may contain some empirically verifiable propositions that can be put to the test of experience, reason, and experiment. The seemingly weird possession trance exterior of Aspect Psychology’s theory of a multidimensional universe that permits travel between interdimensional life planes masks an important empirical and theoretical challenge to modern astronomy and physics that deserves further study. When the notion of a multidimensional universe is understood, it in itself will likely lead to consideration of the existence of interdimensional planes that lead to other systems of reality or realms of being and the possibility

that other kinds of intelligent beings may exist outside the spacetime framework of our own physical universe.

Part 1 of this two-part essay begins with a discussion of the theory of interdimensionality as both a scientific/mathematical construct and a metaphysical hypothesis. It then proposes four characteristic features of interdimensional planes and concludes with a discussion of how UPA travel between planes might occur. Part 2 of the essay continues the discussion by examining possible methods of interdimensional “space” travel and proposing a way that hypothesized coordinate points, where dimensional planes make contact with the spacetime structure of our own material universe, may be investigated in a scientifically rigorous way. It concludes with a discussion of the physics and metaphysics of interdimensionality from the transpersonal perspective of Roberts’ Aspect Psychology.

WHAT IS THE INTERDIMENSIONALITY HYPOTHESIS?

Lomas (2023) identified three main hypotheses regarding possible origins of UAP: (a) conventional terrestrial origins, such as human-made drones, “black box” projects highly classified at the time of observation, and natural phenomena; (b) extra-terrestrial origins, such as nonhuman entities traveling from distant galaxies within our own physical universe (e.g., via stable wormholes, Pascoli, 2024), and (c) “ultraterrestrial” origins, involving “beings already present in the Earth’s environment in some sense, just not in ways we can conventionally understand” (p. 46), such as “extradimensional, crypto-terrestrial, demonic/djinn, proto/ancient human, time-travelers, etc., or some combination or mutation of any or all of these” (Puthoff, 2022, p. 20002). Interdimensionality, as the term is used here, is a subcategory of ultraterrestrial hypotheses and postulates the existence of life planes “outside” our own physical one that make contact with our specialized spacetime universe at points which create doorways through which inhabitants of other reality systems may travel to and from. The interdimensionality hypothesis is sufficiently broad to account for paranormal phenomena, such as apparitions that suddenly materialize out of thin air or through an apparent penetration of matter, associated with physical mediumship and haunting cases (Fodor, 1966, pp. 10–16).

A Physical Science/Mathematical Construct

The interdimensionality hypothesis takes different forms in humanities and science literature (e.g., Combs

et al., 2006; Imbrogno, 2008; Kaku, 2005). For example, humanities scholar Marie-Laure Ryan (2006) discussed how theoretical physics (“many-worlds”) and philosophical narrative theory (“possible worlds”) merge and expand to embrace the metaphysical notion that basic reality consists of a plurality of cosmologies. In physics, the concept of interdimensionality is related to exotic entities such as the “multiverse” and parallel universes (Carr, 2007; Svozil, 2021; Tegmark, 2003). Superstring theory (or M theory), for instance, proposes the presence of up to 10 (or more) microscopic, tightly curled-up dimensions embedded within our own physical universe (Weinberg, 2011). Such “strings,” however, are not the type that contain alternate universes or allow travel from one dimension to another.

Mathematical models and physical theories that posit the existence of “hyperspatial” dimensions connected with our own spacetime universe yet transcend it can be quite technical, highly complicated, very abstract, and extremely difficult to visualize. They involve far-reaching journeys into hypothetical realities and discussions of infinity that stretch both the imagination and the intellect (e.g., Carr, 2015; Greene, 2011; Rucker, 2005). Visual aids provided by Rucker (1984), Escher (1989), and Banchoff (1996) present evocative depictions of the different ways that various geometric forms (e.g., lines, curves, points, surfaces) can be arranged to produce the perception of so-called “impossible” objects that help expand the boundaries of normal visual experience beyond the usual three-dimensional block or box-like features of ordinary space that form the basis of Euclidian geometry and the Cartesian coordinate system.

One easy-to-visualize account of how the three dimensions of space familiar to the physical senses (i.e., up-down, left-right, front-back) can be distinguished in imagination and build upon one another to construct the perceptual world as we know it is provided by Edwin Abbott’s (1884/1992) entertaining book *Flatland*. It depicts two-dimensional Flatlander A. Square’s adventures in Spaceland (three dimensions), Lineland (one dimension), Pointland (no dimensions) and a visionary realm of four dimensions. Abbott’s imagery of other dimensional planes having established cultures and intelligent entities existing on them as individuals, in our terms, is an evocative notion that is aligned with the idea of interdimensional “life planes” hypothesized by Roberts’ Aspect Psychology. The possibility that interdimensionality might be a distinctly real property of both the macroscopic material universe (e.g., black/white holes, worm holes) and microscopic physical matter (e.g., virtual particles, neutrinos) leads the

imagination and intellect through fields of cutting-edge astronomy and theoretical physics into the domain of philosophy and the realm of metaphysics.

A Metaphysical Hypothesis

Interdimensionality is not only a physical science/mathematical construct but also a metaphysical hypothesis; that is, it implies something about the nature and essential qualities of existence, the fundamental structure of being, and the background ontological conditions that need to be met in order for UAP to exist and for human beings to encounter them.

Metaphysical hypotheses, such as interdimensionality, serve at least two purposes in modern astronomy and physics. First, they provide a general picture of the physical universe at its largest and smallest scales and, second, they serve as heuristic guides in the preparation of research programs (Popper & Eccles, 1977, p. 442). Although metaphysical hypotheses will always retain an element of speculation, there are empirical and nonempirical (i.e., rational) criteria available for evaluating both their epistemological validity and practical value (Kekes, 1973; Kukla, 1989; Marshall, 2021, pp. 414–422).

One illustration of how empirical/rational criteria are applied in scientific tests of the interdimensionality hypothesis would be the various experiments conducted on the 512-acre property known as Skinwalker Ranch in the Uintah Basin (UT) that has been the site of numerous physical anomalies related to the unpredictable yet recurrent appearance and disappearance of UAP at that location (Lacatski et al., 2021; see also <https://www.history.com/shows/the-secret-of-skinwalker-ranch>). The results of scientific investigations conducted over several decades, unfortunately, have created more questions than they answered largely because neither the concepts nor the technology are currently available to provide a coherent explanation for the anomalous physical phenomena and psychological effects that have been observed or experienced and recorded on the property.

Metaphysical hypotheses, such as interdimensionality, when they are *empirically controlled*, are not free inventions of the reasoning mind independent of experience. They are formulated and evaluated in terms of the evidence of experiment, reason, and experience (both personal and intersubjective, sensory and nonsensory) and includes the data of consciousness as well as the data of sense (Cunningham, 2023a, 2023b). Empirically controlled metaphysical hypotheses are important in science because

they yield hypothetical knowledge just as theories of natural science yield hypothetical knowledge (Lee, 1947).

INSIGHTS FROM ASPECT PSYCHOLOGY

To claim that UAP are real and that the physical universe contains interdimensional openings is one thing, but to explain in practical terms how this could be so in a way that conceptually links philosophy, cosmology, and modern physical theory and simultaneously accounts for the phenomenology of UAP sightings, is quite another. To this task we now turn by drawing upon hypotheses derived from the philosophical psychology of Jane Roberts as a heuristic framework for formulating a novel representation of the UAP problem that points out new directions in which a satisfying solution may be found.

Metaphysics of Interdimensionality

By hypothesis, the first hint and clues of interdimensionality will come from physics rather than psychology. New discoveries in physics of properties inherent in the molecule will lead at least to a rudimentary knowledge of molecular consciousness, although the implications will not be immediately recognized and remain dormant and unused for some time. Once physicists recognize that no system is really closed, they will be forced to acknowledge that the energy within molecular structure has its origin elsewhere and, by implication, that the physical universe is not the origin of, but the result of, the energy that they seek. They will eventually postulate the existence of an unknown energy force that has always existed, in the face of repeated attempts to fit the novel observations into conventional force theories (i.e., electromagnetic, weak nuclear, strong nuclear, gravitational) and the equations of the Standard Model of particle physics. Aspect Psychology characterizes the unknown energy force that is behind and yet within molecular consciousness as the “aware-ized” energy of a primordial, prime vitality that is at the foundation of the physical universe and the source of its interdimensionality.

By hypothesis, the vitality of aware-ized energy (i.e., energy that is aware of itself as a part of and not apart from action) constitutes the intrinsic building block of basic or ground reality—the first, or true, actuality upon which everything else depends (i.e., metaphysical foundationalism; Oberle, 2022). Vital aware-ized energy functions as the inner fuel of the physical universe. It is self-generating, limitless, and formless in physical terms, yet takes many forms.

It resembles the general concept of energy in the physical sciences; that is, “the universal physical property; the only property common to all material things” which is no thing in itself but is always “the energy of some thing” (Bunge 2000, p. 459). Using the analogy of air, comparing it to the inner vitality of the universe, as air is dispelled from the lungs in various forms and is used and reused by different forms of life on the planet, so is prime vitality used in different manners. So does it enter as one thing and emerge as something different many times. So does it change its shape and content, showing many faces and yet never disappears.

As an empirically-controlled metaphysical construct, think of prime vitality as a multi-dimensional metaphysical source of the “quantum vacuum” on our particular plane—“a domain of pure energy [where] all fundamental quantum activity takes place [that] has no material content [and which is] the lowest tier of physical existence, and derives its power from the supposition of multiple energy fields” (Bodin, 2014, p. 10). According to modern physical theory, the quantum vacuum is a sea of fluctuations of quantum energy that spontaneously gives rise to pairs of “virtual” particles that “exist for time intervals so short that we cannot measure them directly, and then disappear back into the vacuum from which they came, [but whose] presence does affect certain physical processes that we can measure, such as the rate and energy of transitions between certain energy levels in atoms” (Krauss, 1995, p. 45). In this respect, the quantum vacuum would be a physical effect of a metaphysical prime vitality that is beyond and yet within all matter/energy that is familiar to physicists. It represents the home of the quantum wave function, nature’s creative source, and a bridge between matter and consciousness (Friedman, 1997). The material universe would have a physical version and a nonphysical version, in those terms.

The Character of Interdimensional Planes

Through its own workings upon itself, prime vitality materializes an infinite arrangement of dimensional planes, reality systems, and existence fields upon which beings existing as individuals, in our terms, can function, act, and develop. A plane is a materialization of aware-ized energy, which may or may not be physical in usual terms. This “subtle” energy changes its appearance on different planes, while it makes up the planes at the same time, forming the planes and experiencing them as well. The form of materializations achieved on a particular plane is determined by the properties inherent in the plane or field

itself and by the interaction between prime vitality and the plane that it has created and then becomes.

In response to the question, “If extra-terrestrial life exists, then where are they?” one answer is that they exist only in galaxies far, far away within our own physical universe. Another answer is that they also exist in closer neighborhoods of interdimensional reality systems or life planes that are “outside” of our own materialization reality plane. How are these “vertical” dimensional planes that are beyond and yet connected to ordinary spacetime to be characterized? In conceptual terms, a plane can be described as a type of enclosure that is apparently divided from the rest of the physical universe for a time and for a reason, where controls are applied and laws operate in such a manner that planes are kept seemingly distinct and separate from each other and its inhabitants are more or less kept in their place. Each plane provides a supporting and sustaining environment in which individual identities can operate, and each component is given the most possible “space” in which to function and construct a climate conducive to the development of the unique capacities and value fulfillment of the inhabitants of that plane.

In physical terms, a plane is not a cosmic location and is not a place, although it may be in some cases, like one planet, such as Earth, which may have several planes directly connected to it. It is not necessarily a planet, however, and may exist where no planet is. A plane can be as large as a universe or as small as a speck of energy that seems to exist by itself. The planes themselves are in constant motion, come and go in countless cases, and may spring up where there was none previously. A plane may be a time or involve various aspects of apparent time past, present, and future. The analogy of a plane with an emotional state is more apt than an analogy between a plane and space-like concepts such as a geographical location since planes, like emotional states, take up no room.

Although inaccessible to the physical senses, there are some dimensional planes that touch upon our own physical plane that can be directly experienced without too much difficulty, such as the *dream universe*. Dreams are part of a plane and exist on that plane as we exist on the physical plane of waking life. The dream plane is invisible to the physical senses and is, to some extent, independent of the dreamer and yet connected to the physical plane and dependent upon the dreamer in very basic ways. The dream plane or dream universe has its own actuality with its own root assumptions, inner organization, continuity, and duration that are different from that of physically-oriented normal waking consciousness, which is one reason

why dreams appear so chaotic, bizarre, or irrational to the reasoning mind in waking life. Dream reality exists to a fairly vivid degree while one sleeps and dreams continue to exist and unfold on the dream plane while one is awake.

Imagination is one of the creative abilities of the conscious mind that allows one to enter into the plane of the dream universe while awake (e.g., as in mind-wandering and daydreaming) and project into other planes from the waking and dream state. In important respects, *art creations* are born of the meeting or coordination of two planes—the plane of the dream world and the physical life plane—and mold the two into a reality that combines two planes. In great literature, art, and music, there is always an extra dimension that represents the materialization of inner realities that are then experienced as an actual element of physical time and space. Such acts of creation partake of a unity that gives the artist's nonphysical inspiration a physical reality—one denied to it in a usual dream.

By hypothesis, certain other existence planes coordinate with the physical life plane at particular points that offer the opportunity for communication with deceased personalities surviving on what could be called a "mid-plane" or "semiplane." *Death* on the physical plane is, among other things, an arrival at one such point of coordination and overlap between planes. At physical death, the personality structure is able to psychically approach such coordinating points, perceive them, and change its inner focus of attention from one plane or sphere of existence to another, deserting the physical construction of the body that it once maintained and seems to disappear from the physical plane with the material of the body discarded as a physical form to be used in other combinations of matter.

Open-Ended Structure and Transactional Processes

The physical universe, as we think of it, is thus one of many planes that contains an almost infinite number of other planes, all taking up the same amount of space, in our terms. Einstein (1954) makes the idea of how different planes can occupy the same space more understandable by the following analogy that draws upon the common experience of using boxes and arranging material objects within them.

When a smaller box *s* is situated, relatively at rest, inside the hollow space of a larger box *S*, then the hollow space of *s* is a part of the hollow space of *S* and the same "space," which contains both of them, belongs to each of the boxes. When *s* is in motion with respect to *S*, however,

the concept is less simple.... It must now be remembered that there is an infinite number of spaces, which are in motion with respect to each other.... Now there remains for our thought the space without the box.... In this way space appears as something unbounded. (pp. 361-362)

There are planes within planes, fields within fields, spheres of existence within spheres of existence. Our own species thus exists within many planes simultaneously and operates at many levels of reality at the same time, unperceived by the physical senses.

Although each plane may appear to be operationally isolated from others, all planes exist in a state of relatedness and can and do intermix and interact. That which divides also serves to connect. As philosopher Alan Watts (1963) put it, "The importance of a box for thought is that the inside is different from the outside. But in nature the walls of a box are what the inside and the outside have in common" (p. 46). The seeming walls or boundaries separating the various planes are apparent borders only—boundaries of function and appearance formed for practical purposes—that also serve as interconnections in the honeycomb structure of multidimensional reality.

There is a constant interchange between all planes and a continual exchange of prime vitality, electrical and chemical energies, and actual atoms and molecules between one plane and another. All universes are affected by the exchange of energies involved in the interaction and the continual movement of one plane through another, with many planes occupying the same "space" without the awareness or conscious knowledge of the particular inhabitants of either plane. According to Aspect Psychology, it was an alignment of certain coordinate points connecting two planes that made communications from the Seth entity possible during Roberts' possession trance sessions over its 20-year history.

In terms of the physics of interdimensionality, it is the wave-function of massless subatomic particles that permit planes to overlap and allow them to share identical regions of space with ordinary matter and pass through one another unaltered. In the words of physicist Robert Klauber (2000), "we would coexist in the same space and time, yet because all quantum waves in that system would pass unperturbed through, and without perturbation of, our system, we would live our lives oblivious to this other independent cosmos" (p. 278). The neutrino that has neither mass nor electric charge is an example of such particles familiar to physicists that can pass through matter virtually undetected by the external senses.

Non-Hierarchical Organization

The various planes are not only open-ended and interactive but also are organized into certain patterns of development and certain kinds of gradation within these groupings. There are no gradations in terms of “above or below,” “better or worse,” or “advanced or retarded” as far as the planes themselves are concerned, however. The familiar concept of selfhood is one main type of grouping process that includes many planes and plane groups. The different species of consciousness of animals on our plane belong to a general grouping, with our species currently holding dominance. Whole groupings of self-structures experience in different ways the dimensions of existence with which they are familiar within the coordinates of their own respective materialization reality plane in forms of self-perspectives that are, in many ways, incomprehensible to us (e.g., “What is it like to be a bat?”). There are a number of other culturally oriented materialization realities that have established existences with their own culture, histories, theories, perceptual patterns, and beings existing as individuals with their own self-structures, in our terms. The symbols, letters, figures, or insignias that reportedly appear on UAP craft, such as the red insignia printed on the side of the object observed by Officer Lonnie Zamora in Socorro, New Mexico in 1964 would be reflective of such culturally organized planes (Coumbe, 2023, Chapter 4).

There are planes that have some basic similarity with our own plane; that is, the similarity is one of organization, a version of historical continuity, a strong and involved ego mechanism, and a complicated perceptual code system. The perceptual system may have little or no similarity to our own, however, and inhabitants are without the dual inner and outer sense of alienation with which our own species has become involved. Traveling from planes that more nearly approximate the matter composition of our own physical universe, ideas of cause and effect, and linear time perspective may account for the similar vertebrate homolog and physiological similarities in humanoid form of visiting beings (i.e., two arms and a head, pentadactyl limbs, bipedal, standing upright on two legs; Masters, 2019) reported in some UAP sightings (e.g., Gill & Gill, 1978) and alien abductions (e.g., Mack, 2007; Walton, 1978).

Relative Physics

The human species’ highly focused physical senses and specialized egoic self-structure concentrates with such great intensity upon certain frequencies of matter within the

particular coordinate system that forms the physical plane that the appearance of a cohesive enough, all-pervading material reality is maintained. The technological success and predictive effectiveness of classical Newtonian mechanics and the Standard Model of particle physics naturally gives rise to the expectation that the law-like correlations and regularities that hold for our own small solar system would apply everywhere—both to remote galaxies and any other dimensional plane connected to our own (Wigner, 1960). UAP that display apparent weightlessness and gravity-defying velocities and aerodynamics, however, would seem to offer counterevidence to that expectation. Such apparent “laws” have been broken in isolated instances of psychokinesis (Braude, 1997) and levitation (Grosso, 2015) on our plane often enough, yet orthodox physicists constantly ignore such problematic exceptions. Any one time that something or someone can behave in such a manner suggests that physics’ cherished laws of the universe are not universal laws at all, at least not in any basic manner, but only seem to be because this is how things look from the relative view of our physical plane.

Inhabitants of any particular plane tend to construe the appearance of their particular universe as the expression of a definite rule of nature, never realizing that just beyond the perceptual pattern constructed by the external senses that their familiar so-called universal “laws of nature” appear completely different on other planes. Conventional scientific wisdom supposes, and correctly, that all universes are composed of the same fundamental particles and atomic elements that can be found on our plane. The manifest appearance that these components adopt and the basic rules that govern their action, however, operate differently on different planes. All planes are basically part of each other and yet would seem to be at different ends, such that the perceptual patterns on one plane seems oftentimes to be the opposite on another. In some cases, the transformation is so complete that the so-called laws become almost unrecognizable camouflage.

Specialized Camouflage Pattern

By hypothesis, some form of “camouflage” is necessary on every plane. Every inhabitant of each field perceives the quite valid reality of their own life plane from their own self-structure and self-perspective through a set of highly specialized senses that construct perceptual patterns consistent with those perceptive mechanisms. The perceptual constructions that characterize each plane make it

necessary for those within any given materialization reality to only recognize certain features or aspects of the main coordinate system in which a focus of consciousness is maintained. There is some overlapping, but the main focus within any dimensional plane, system of reality, or sphere of existence is entirely unique.

The constructed self-worlds that individual inhabitants enact for themselves shape their active experience of the environment on their plane, just as our constructed self-worlds do on our own physical plane (e.g., *Umwelt*; von Uexküll [1934/2010]). Each perceptual construction is interpreted through highly discriminating psychological structures filtered within the framework of a particular species of consciousness and, as such, is valid. This means that physical reality does not exist in human perception in any more basic way than it exists in the form perceived by other organisms that are also native to the physical plane or by the different types of self-conscious beings in other dimensions of their own life plane.

The specialized camouflage pattern perceived on our own material plane can be traced to physical senses that constrain human observers to detect and encode an available field of matter or mass/energy in sensory terms. Cognitive psychology shows how the physical senses act as inhibitors of experience that induce a certain conscious focusing along limited lines, grouping perceptions and comprehensions in a narrow fashion to avoid feeling it all “as one great blooming, buzzing confusion” (James, 1890/1950, Vol. 1, p. 488). More important, biopsychology has shown that the physical senses act as living transducers that detect and encode otherwise unknowable stimulus energies (e.g., electromagnetic energy, air vibrations, molecules of gas and liquid) and translate them into observable, knowable sensory-perceptual terms (e.g., qualia of solidity, brightness, size, weight, duration, color, sound, sweetness, cold) that those stimulus energies themselves, at the level of the elementary particle/energy physics that compose them (e.g., atoms and molecules, fermions and bosons, quarks and leptons), do not inherently possess. Zakaria and colleagues (2017) make this point when they note that “light is merely an EM [electromagnetic] energy where the illumination we perceived is [*sic*] nothing to do with the frequency or wavelength or electric and magnetic field of that wave.... It is not ‘light’ (brightness) until it can be seen by observers” (p. 278).

Ordinary objects and bodies that one experiences and *knows* to be solid, relatively permanent and enduring, individual and separate things are *known* by physics

not to possess any of these attributes at the level of the elementary matter that composes them. Ordinary objects and bodies are instead swiftly moving mass/energy particles consisting almost totally of thin air with most of their mass concentrated in the protons and neutrons within the nucleus and the spinning electrons separated from the nucleus by a vast expanse of so-called “empty” space. We do not see the “air” of which the body is composed or the atoms and molecules that fill the empty space when we look into a mirror. We see only its outer camouflage physical form. The sensory receptors of the body simply do not allow observers to tune into that range of atomic and subatomic activity. What is physically perceived by the external senses is thus only a portion of the true dimensionality of an event. There is always more going on in physical reality than physical senses can show.

This implies that, at the level of everyday awareness, we are dealing not with a direct experience of what most physicists consider “fundamental” reality, but with qualia and properties of matter that could be called, for all practical purposes, a camouflage pattern constructed by the perceptual apparatus that happens to be operative at the time. By hypothesis, the action of perceiving creates a “distortion” of that which is perceived, creating in fact a new reality and *that* is what is perceived. The distortion or camouflage is not a falsehood but is creative and the interpretation of an available field of stimulus energies through a state of limited awareness and perceptions. A new basic reality is created whose legitimacy and basis for existence lies in the very perception of it. Perceived according to the nature of the perceiver, it always remains “that which is” and the basis for new perception.

Perceptual psychologist Bruce Goldstein (2014) described the transduction-transformation-materialization process this way: “Our perceptual experience is not only *shaped* by the nervous system, as in the example of rod and cone vision, but—in cases such as color vision, hearing, taste, and smell—the very essence of our experience is *created* by the nervous system” [emphasis in original] (p. 222). Because the external senses have evolved only to perceive sensory data (e.g., qualia such as solidity), they do not perceive nonsensory data (e.g., atoms and molecules). Organisms born on our physical plane are already conditioned to perceive sensory stimuli in a particular manner (e.g., binocular vision). This predisposes human observers to imagine that what they cannot or do not perceive with the physical senses must not exist. Packaged in outer sensory clothing, the observer takes the wrappings for the underlying actuality itself.

Just because sensory data are accessible to experience via the external senses, however, does not mean that physical reality is the only actuality. It is simply the only reality perceived using the physical senses. Physical sense data do have a “reality,” but this reality is not located at the “objective” camouflage level of ordinary Newtonian objects and bodies or the elementary particles of quantum physics that compose them. It is located rather in the *state of relatedness* of the material universe and natural world (i.e., physical reality) with a “subjective” body/brain consciousness and all its electrical, chemical, neural, and cellular systems that respond to stimulus energies by transducing them into sensory terms, translate them into camouflage patterns that are organized and interpreted by a specialized perceptual apparatus, and then further transduced into an experience of seeing, hearing, tasting, smelling, or touching.

None of this is meant to deny the validity of our own material universe or waking physical experience. The sensory qualia of the natural world is real and definite on our level. Physical reality is not false. The physical picture is not a deception or falsehood but is creative. It does mean, nevertheless, that the familiar sensory picture of the world—including the constructed mathematical models and physical laws that find their justification in sensory data—is simply one of an infinite number of ways of perceiving and interpreting the various guises through which prime vitality expresses itself and the different forms and appearances it takes on different planes.

The fact that the physical universe’s actuality is only limited to our dimensional plane, and does not extend to other fields does not mean that we can or should discount it. We must act *as if* there was an already-out there-now-real world for the sake of the body’s physical survival, which crucially depends upon the reliability of the camouflage sense data that the external senses detect and encode in sensation and organize and interpret in perception. While we must behave in a large manner *as if* the physical universe we perceive is objectively constituted by classical Newtonian objects and bodies and modern quantum matter particles and energy forces, we must still retain the knowledge that this apparent objectivity, reality, and definiteness of sensory knowledge has great limits, physically speaking, and cannot be presumed to be the final arbiter of all reality. Nothing about the physical nature of perception is direct, unmediated, or “objective” in those terms. Perception and creation on the physical plane are far more intimately connected than is realized.

The Mechanics of Interdimensional Travel

If the preceding account of a multidimensional universe containing an infinite number of embedded interdimensional planes that possess certain characteristic features is conceptually coherent, still it does not describe how travel between planes by intelligent beings may occur. The conventional extraterrestrial interpretation of UAP is to consider them as vehicles originating within our own physical universe and traveling through our camouflage spacetime to reach us (Svozil, 2023). On the present hypothesis, UAP vehicles travel through their own specialized version of camouflage space, and in some instances are doing so even now in the so-called “space” taken up by our planet. They fly through, in our terms, the very core of what we presume to call solid Earth, which is not solid to them at all. In certain instances as we attempt space travel, we will travel through what inhabitants on another plane will think of as their own particular “solid” and neither we nor they would ever know the difference.

By hypothesis, when a plane comes into the sphere of influence of a different plane and contacts it, it takes on the particular camouflage form of materialization inherent in the contacted plane to one degree or another. Camouflaging its true appearance in a chameleon-like fashion by taking on the outward manifestation of that particular plane, the interdimensional point at which planes coordinate and meet temporarily appears as the same type of camouflage as other materializations native to that plane. Taking on the camouflage of the particular plane that is contacted results in distortive spatial-temporal boundary effects and the creation of apparent borders that ostensibly separate the different planes into various spheres of relation in which cause and effect operate, to some extent, as we understand it. The distortive boundary effect in some cases resembles a flow as if a plane were surrounded by water or, in other cases, as a charge of electricity. The distortive effect could be likened to the reflection of a solid tree in water where observers on our plane seeing the reflection mistakenly try to judge the depth of the water by the height of the tree, supposing it to be as deep as the tree is high. On each plane the resulting distortive effects will take on the camouflage of the particular plane. Using the perceptual apparatus developed on a particular plane, it is almost impossible to see beyond these boundary effects or to perceive another plane’s own characteristic camouflage pattern which follows different root assumptions.

Bringing Their Own Camouflage Pattern Along with Them

As a rule, inhabitants of a plane see only the camouflage they have constructed of their own system and are aware only of camouflage materialization patterns that are similar to their own. From the perspective of Aspect Psychology, the strange thing about UAP is not that they appear, but that we can see them. The first-hand reports in 1959 of missionary priest Father William Gill and others at the Mount Pudi mission in Papua, New Guinea who experienced repeated close encounters with a very large saucer-shaped object stopping and hovering above the mission building with intelligent beings of some kind waving from a deck surrounding the craft conveys the sense of astonishment that is experienced when viewing such a craft (Gill & Gill, 1978). The complex series of UAP sightings made by police and civilians in Exeter, New Hampshire in 1965 likewise expresses the sense of shock and awe of seeing an object that, according to multiple authoritative witnesses, moved without sound at great speed, suddenly stopped and hovered, then slowly moved away and disappeared from sight, behaving as if under intelligent control (Fuller, 1966). The feeling of surprise, bewilderment, and even fear is illustrated in reports of military and civilian pilots who experience UAP approaching the aircraft as if on a collision course causing them to take evasive action as occurred in the helicopter-UFO encounter over Mansfield, OH in 1973 (Zeidman, 1999). Correlating what they see with what they know or imagine possible of the physical universe, on-ground witnesses and airborne pilots and crew members immediately recognize the UAP as being not our own.

Because the inhabitants of each plane are bound by the materialization patterns of their own plane, visitors to our plane must bring the particular camouflage patterns of their “home station” with them. The camouflage paraphernalia of an UAP entering our particular spacetime materialization field appears more or less visible to human observers’ own astonishment, as the UAP attempts to reproduce an approximate camouflage pattern of physical laws and forces governing the environment in which it is observed but that is not native to its own camouflage plane. The apparent craft generates its own set of defining forces and camouflage that are native to its own environment that are transduced in our environment into a variety of anomalous physical phenomena.

The bewildering array of behaviors of UAP reported in 1,300 sightings by military airplanes and private pilots over an 80 year period (1916 to 2000), for instance, reflect

the operation of a set of alien plane characteristics that are, in effect, “inconsistent with known principles of flight and local physical laws” that govern our particular plane (Roe, 2019, Conclusion section, para. 3). The 1986 case of Japan Airlines Cargo Flight 1628 is an example of a visual-radar sighting of a “flying” physical object traveling at 50 to 300 times the speed of sound with not a single sonic boom being reported and performing in ways far beyond the capability of a human pilot or the structural capability of any known aircraft (Coumbe, 2023, Chapter 2). In violation of Newton’s first and second laws of physical motion, UAP display flight characteristics that an ordinary airplane is physically incapable of performing and in a manner that appears decoupled from spacetime itself (Roe, 2019).

Aspect Psychology explains these unusual flight capacities as the outcome of UAP bringing their own camouflage pattern along with them to our physical plane. What UAP have actually managed to do under such circumstances is retain functions ordinary to it in its own particular habitat and camouflage system. The UAP observed near Aguadilla, Puerto Rico in 2013 brought elements of its own camouflage pattern with it that were reflected in the physics-defying behavior disclosed by thermal imaging data recorded by multiple airplanes. In this instance, the UAP seemingly overcomes terrestrial physical laws that govern the immense drag force of entering a body of water at high speeds and then traveling at speeds beyond the world’s fastest submarine (Coumbe, 2023, Chapter 5). Bringing their own camouflage pattern with them, the craft may be visually seen by observers while leaving no identifiable echo trace on radar and vice versa, travel at speeds that no human pilot could endure and that no human sensory system can track, perform flight behaviors that would ordinarily be impossible according to the laws of physics on our particular plane, and then disappear from sight without a trace.

Caught between Two Worlds in a Dilemma of Form

On the present theory, when a UAP starts out toward its destination from its own dimensional plane, the atoms and molecules that structurally compose the craft are more or less aligned according to the camouflage pattern imposed upon it in its own “home” territory or materialization field. As the UAP enters our particular plane, a distortion occurs. The actual atomic structure of the UAP undergoes a dilemma of form between transforming itself completely into earth’s particular camouflage pattern while also retaining its original pattern. There are many

cases where multiple UAPs—ranging from two up to 20—have been observed at the same time and while most are perceived as having a three-dimensional, physically solid, material appearance, these “objects” nevertheless can take a variety of different shapes (e.g., disc, spherical, oval, cigar, triangle, missile, cylindrical, half-sphere) and even change shape during observation (Weinstein, 2012, Table 9). Materializing as something between one shape, size, and color or another, it resembles neither—variations in the appearances of the observed craft being well documented (Powell et al., 2023)—with the different craft shapes being reflective of their different origins.

Upon entering our field, the UAP ends up in a form having little relation to appearance, properties, and structure as it is on its own plane. What we have in the materializations of UAP is something that is actually, as we view it, not of our plane nor of the plane of its origin. The UAP is literally caught between worlds or universes—a state of affairs reflected in the craft’s strange aerobatics and weird aerodynamic forms (Eastwood & Nurowski, 2020a, 2020b)—as it attempts to transform itself completely into earth’s particular camouflage pattern while struggling to retain what it can of its own original structure and camouflage pattern. In such incidents, we do not have a vehicle such as the vehicle that witnesses perceive or *think* they perceive. UAP are always reassemblies that are never the actual reappearance of the exact camouflage as it exists upon its own plane.

Any materialization would thus “represent” the craft instead of depicting what the craft actually is. According to Aspect Psychology, what is happening is

an attempt to exchange camouflage realities. The original beings entering [our] plane cannot appear within it as themselves, their atomic structure is not the same as [ours]. Distortions must therefore occur in order to make any contact possible and indeed, distortions must occur in order to make these contacts possible. So [we] are greeted with a certain set of sense data. [We] then try to figure out what is happening from the sense data that is presented to [us], but the sense data means that the event is already to some extent distorted. The physical vehicles that are often perceived are [our] interpretation of the event that is actually occurring. (Roberts, 2010, p. 15)

Because of the tremendous pressures that push against the vehicle itself as it struggles to be one thing or

the other, the UAP simply cannot afford to stay betwixt and between for any indefinite period or exist upon a particular reality field for any long periods and thus can take only quick glimpses of our plane. For this reason, it is unlikely that physical UAP landings, in the usual sense of the word, will occur soon.

When duration exceeds the capability of the craft, difficulties can occur, some of which may be extreme and even result in the explosion of the craft, leaving physical traces of one kind or another that do not necessarily have to reflect their exotic origin (Vallee, 1999). The metallic fragments of a UAP that reportedly exploded into flames and fell into the sea near a remote beach near the town of Ubatuba in San Paulo, Brazil, for instance, were later found by spectrographic analysis to have undergone oxidation at high temperatures (i.e. an explosion) and have a chemical composition (i.e., 99.94 percent pure magnesium with a trace of strontium) unusual for manufacturing processes at the given time and place of the sighting in 1957 (Coumbe, 2023, Chapter 3).

This does not mean that a stationary body of any kind cannot materialize itself upon another plane. If it does materialize, it must in some way surround itself with the constructed camouflage of the plane which it attempts to enter. Where visitations are of beings from different planes, it is a practical necessity to conform to the laws of a particular plane. This technical achievement takes a high level of inner development on the part of those inhabitants of the other plane who are doing the traveling.

By hypothesis, the inhabitants of UAP that appear on our planet do not originate from elsewhere in the physical universe on our own “horizontal” physical plane. They come from another plane that is much more advanced in technological sciences than Earth at this time. There are many kinds of science and the sciences dealing with locomotion on another plane may not be the mechanical and electronic sciences that we are familiar with. As science advances on various planes, the inhabitants of the various planes learn to occasionally travel into the apparent division between planes and their visitations become less accidental and more planned. It is possible that accounts of alien abductions may represent examples of the disturbing reality of such planned interdimensional encounters (Hopkins, 1981; Pritchard et al., 1994; Rapuano, 2023).

This is still not what could be called a “mental science” plane. When the inhabitants of a plane have learned mental science patterns, then they are to a great degree freed from their more regular transportation patterns.

Physical scientists know that all matter is composed of the same elements but do not know consciously how to control the weather or change desert sand into a flowing river using this knowledge. Some inhabitants of other planes utilize that knowledge to undertake manipulation of their own matter through a realignment of its molecular components in a manner that is currently unknown to science on this plane. Had the human species gone into certain mental disciplines as thoroughly as it has explored technological ones, its science and practical transportation system would be vastly different.

NEXT STEPS

It remains to be determined whether Roberts's theory of interdimensionality will yield practical results or is to be ruled out on physical grounds. Einstein's equations of special and general relativity and the physics of quantum mechanics would not seem to explicitly forbid the possibility of either a multidimensional universe or interdimensional travel and perhaps even encourage such possibilities. In the words of consciousness researchers Combs and Krippner (2003): "In a scientific community that takes seriously such theoretical wonders as black holes, multiple universes, galaxies that travel backward in time, and nonlocal quantum effects, it is hardly defensible to dismiss any serious proposal simply because it does not fit with traditional opinions" (p. 56). The claim here is that certain sightings of UAP represent the travel of beings from other dimensional planes or reality systems rather than from elsewhere in our own physical universe. Further questions arise: Is interdimensional travel a two-way street and, if so, how might it be accomplished from our physical plane in a manner that makes encounters with UAP or their inhabitants less accidental and more planned and predictable? Where do interdimensional planes coordinate and make contact with our own physical universe and how might these "coordinate points" be scientifically explored in an empirically controlled way? Part 2 of this essay addresses those questions.

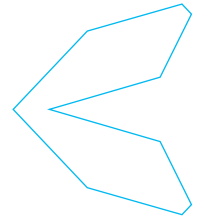
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**BOOK AND
MULTIMEDIA
REVIEW**

Krippner Memoirs Encountering the Transpersonal Mahayoga Tantras of Sri Stanley Krippner

Nicholas Grant Boeving

Department of Clinical
Psychology, California School
of Professional Psychology – LA,
Alliant International University
nboeving@alliant.edu

<https://doi.org/10.31275/20253681>

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A Chaotic Life: The Memoirs of Stanley Krippner pioneering humanistic psychologist (3vols.) 2024, University Professors Press

Volume 1 ISBN: 9781955737494, Volume 2 ISBN: 9781955737517, Volume 3 ISBN: 9781955737524

“Alice laughed. ‘There’s no use trying,’ she said. ‘One can’t believe impossible things.’ I daresay you haven’t had much practice,’ said the Queen. ‘When I was your age, I always did it for half-an-hour a day. Why, sometimes I’ve believed as many as six impossible things before breakfast.”

— Lewis Carroll (1871/1971) *Through the Looking Glass and What Alice Found There*

“Dime con quién andas, y te diré quién eres”

— Spanish Proverb

Tell me with whom you walk, and I will tell you who you are -- some cultural axioms appear to be universal. If whatever mysterious soul-force we call “character” can indeed be calculated as a function of the sum of one’s friends (and almost every language and tradition have their versions of this formula) then Stanley Krippner is, by anyone’s arithmetic, the measure of a mensch. With the recent publication of his Micheneresque three-volume autobiography, the Wizard of Od¹ himself has lifted the veil on his extraordinary life and



told the story of how the man behind the curtain -- even sometimes the iron one -- came to be one of the most globally celebrated titans of transpersonal studies, having earned the admiration and respect of many of his critics and intellectual adversaries.

Here is a *life*. Brought to you in Technicolor. The story of a scholar-poet (and amateur musical playwright) who came of age in a century as bleak as it was brilliant. The narrative opens in the enchanted orchards of Wisconsin apple country and follows the education and years of rigorous academic training for the one of the most decorated sons of America's Dairyland. It covers an astonishing amount of ground -- from the bucolic idylls of summer camp to the exploratory and seditious conversations of his student government days at the height of McCarthyism (which he seems to recall with an uncanny akashic precision). Even luminaries like J. B. Rhine and Frank Lloyd Wright, whose gravitational orbits brought them into contact with his own, appear with a curious frequency.

The life in these pages leaps from the page. Krippner is, archetypally speaking, equal parts magician and trickster. An epistemological acrobat, he recognized from an early age that there was more than one way to see and experience the world and he has made it his life's mission to manifest the impossible and show others how to do the same for themselves. In his role as a university professor (read: psychopomp -- insofar as they are *both* "conductor(s) of souls" (from Greek *psukhē* 'soul' + *pompos* 'conductor')) he serves as an epistemic end-of-life doula, guiding his students through the disintegration and death of their previous paradigms and into worldviews that they consciously create for themselves.

Like his friend Joseph Campbell, whose life-long love of mythology originated with early exposure to the stories and artifacts of Native Americans, Young Man Krippner followed his bliss into the wilds of shamanism, doing more than probably any other scholar to expand the circumference of the social sciences to include shamanic studies as a recognized area of inquiry. His seminal work in dream telepathy as Director of the Maimonides Dream Laboratory directly overlapped with this abiding fascination; after all, as he is fond of repeating, if you dream, then you are already doing something shamanic. (Krippner, 2009).

With over 1200 scholarly articles, chapters, papers, and publications, the challenge of metabolizing the staggering totality of his sixty years of scholarship might seem formidable. After all, his first published work was in 1965 -- a research article in *Gifted Child Quarterly* titled "Hypnosis and Creativity" -- and he has been writing with an Asimovian ardor ever since. One solution of how to make sense

of a lifetime's worth of data collection is to borrow a page from the book of data analytics. According to data-journalist and information designer David McCandless, when we visualize information, we create a visually explorable geography (McCandless, 2010).

So how to visually map out millions of data points² and capture the quintessence of Stanley Krippner? Anyone who has worked with him has at one time or another both felt his warmth and witnessed his wrath. I will never forget the withering look I received from him when the appointed hour for my doctoral defense had passed and I was still fumbling with the computer connection. "Find me when you actually *are* ready. I have WORK to do." Spinning around, he returned to his office and to the towering stacks of papers awaiting him on his desk. This was the dissertation that my own advisor, with whom I had a particularly adversarial relationship, had told me was impossible to accomplish. Krippner came to my committee (as well as my defense) and proved that what I wanted to research *was* possible. And that is the magic of the man -- and why this mystical Mister Rogers in sensible shoes and a tasteful cardigan is considered by many to be the High Priest of (Im) possibility.

There is no more fitting symbol that encapsulates the explosive, liberatory force of his scholarship than a tantric wrathful emanation. These terrifying representations of the cosmic Buddha-energies that reach into the world with the purpose of liberating every sentient being are used in tantric practice as ways to confront and transform obstacles on the path to enlightenment. Indeed, it is generally understood that the more arms a deity has, the wider their reach and greater their capacity to help. Like Vajrabhairava (also known as Yamantaka,³ "The Destroyer of Death"), whose thirty-two hands each hold a weapon to slice through ignorance and spiritual materialism, the dozens of arms of Stanley Krippner (how else to account for 1200 publications?) slice through institutionalized ignorance and systemic stupidity. And yet in spite of this seemingly sanguinary appearance, he is a confirmed pacifist who would, in his capacity as a psychologist, write a letter on behalf of those who did not wish to fight excusing them from the draft. How did he manage this trick? He would ask them a simple question: "*Which would you rather be, a drug addict or a homosexual?*" Both were verboten at the time. Better a little prevarication than to send them to their deaths on another doomed children's crusade.

It is for reasons like the one above that this shaman in a lab coat is considered to be nothing less than a psychedelic saint, having been canonized in the counterculture alongside his equally misunderstood and marginalized

compatriots Alexander Shulgin, Stanislav Grof, and Albert Hoffman. As a founding figure of what he calls the “fifth force” (the cognitive revolution, according to his memoirs, should have really been the fourth), he has been inching his Aquarian agenda forward -- project by project, publication by publication -- normalizing the heretical and sanitizing the sacred for scientific inquiry. Krippner extends the idea of the human body beyond the borders of its skin and past the swirling tempests of its Darwinian drives, to include other people and the environment. Here is a *true* transpersonal psychologist whose tantric scholarship speaks of the erotic possibility of an I-Thou encounter with the naked now.

Like his friend Albert Ellis, who was widely considered to be one of the paradigm-shifters who ushered in the cognitive revolution in psychotherapy, Krippner is revered as one of the foundational figures of both the humanistic and transpersonal turns in psychology -- and these memoirs will offer future historians a fountainhead of primary source materials describing the passion and pathos of the founding of these fields. Krippner’s crowning laurel, however, at least from the perspective of his peers, has probably been his 2002 APA Award for “Distinguished Contributions to the International Advancement of Psychology” given by the American Psychological Association (APA). “Not too shabby” as the author is wont to say -- a typical Krippnerian understatement. Even the most vituperative critics of parapsychology tend to agree that Stanley, right or wrong, is someone that can be trusted -- even if some of the people in his circle were suspected of being Blavatskyian⁴ frauds, his *own* work is a paragon of scientific scrupulosity.

Krippner collapses the usual six degrees of separation into one or two; indeed, the pages of these memoirs sometimes have the feel of a “who’s who” list of the cool kids of the beatnik generation and the 1960s counterculture, the most visible being: Alan Watts, The Grateful Dead, Rolling Thunder, Abraham Maslow, Aldous Huxley, Joseph Campbell, and Jean Houston.

This autobiography presents a whole human being -- not just the shiny and cerebral parts that academics and intellectuals tend to identify with at the expense of their *actual* selves -- but a fully en fleshed member of the Kingdom Animalia. Indeed, many of the pages positively throb with recollections of a near century’s worth of men and women whose life-arcs have interpenetrated his own. Krippner writes with a sense of intimacy that at times can be quite shocking. The Silent Generation -- with the exception of Barbara Walters, perhaps -- is not typically known to kiss and tell, but that humanness is precisely what makes him such a saint.

How can such a life be measured and weighed? The

answer can be found in a Broadway song (which is fitting, given Stanley’s love of the genre -- indeed these pages are practically festooned with his theatrical recollections -- including having been in the audience of Marilyn Monroe’s farewell performance). It is in the 1996 tear-jerking homage to *La Boheme*, however, where the answer to this question can be found. *Rent* is the story of an impoverished group of sexual and gender minorities (exactly the populations for whom Krippner has always served as a flaming sword of social justice) who struggle for survival at the height of the AIDS epidemic. Amidst the ravage of the disease, they sing a song called “Seasons of Love” which questions how to “measure the life of a woman or a man.” After positing such calculations as sunsets and cups of coffee they decide that love is the only metric that matters.

At 92 years old, Stanley Krippner’s accumulated minutes on this planet total over 48 million. That comes to over 34,000 sunsets and a battlefield’s worth of dead friends and colleagues. So how *do* you measure the life of someone as outlying as Stanley Krippner? The same way it is measured for everyone else in the song: in love. Not romantic interest or sexual congress (although these can both certainly be expressions of it) but the raw primordial radiance of a centerless, circumferenceless love. As the Apostle Paul put it:

If I speak in the tongues of men or of angels, but do not have love, I am only a resounding gong or a clanging cymbal. **2** If I have the gift of prophecy and can fathom all mysteries and all knowledge, and if I have a faith that can move mountains, but do not have love, I am nothing. **3** If I give all I possess to the poor and give over my body to hardship that I may boast, but do not have love, I gain nothing.

³(*New International Version*, 1 Corinthians 13:1-3)

Stanley would never call himself a saint; his humility precludes the possibility. And admittedly the pages of his memoirs are punctuated with many a broken heart and undone life. Following the “*Song of the Siren*” (the title of his (1975) earlier autobiographical reflections) might lead to a rewarding and “chaotic life,” but it also might unleash a different kind of chaos in the lives of those one loves.

But this is the pearl of great price that every saint and scholar understands. Even Siddhartha, whose own bodhicitta was awakened through a broken heart, left behind the shattered lives of his wife, Yashodhara and their infant son, Rahula, whose name, tradition tells us means, “a fetter on the path to enlightenment.”

Saints are not perfect people; indeed, hagiographies are filled with their follies. They do, however, tend to live exemplary lives of heroic virtue and charity. Is Stanley Krippner a saint? If you consider a near-century of noetic warfare against the forces of ignorance and inequality heroic, then yes. As for charity, attend any of the global conferences he appears at like an electron circling the outer shells of the Earth and witness the outpouring of love. Or ask any of his hundreds of former students (many for whom he fought in one manner or another) and the answer will be a second resounding “yes.” As for any posthumous miracles -- let us hope there are many more years before *that* final hoop in the canonization process must be addressed. Besides, the miracles he has performed in this life are confirmation enough. The very fact that we live in a world where shamanism and spirituality are taken seriously by the academy is testament to the Krippner Effect.

As he has stated “One of my career goals has been to de-pathologize and demystify unusual experiences that people have” (Krippner, 2016). This demystification is remarkably similar to Jeffrey Kripal’s concept of decolonizing reality. Kripal, an historian of religions at Rice University, has spent a brilliant and beleaguered career as a kind of cognitive counter-missionary, challenging his students – and indeed, the academy itself -- to question the fundaments of their own deeply colonized (and usually unconscious) ontological beliefs.

With the recent publication of *The Superhumanities*, Kripal once again champions the cause of comparativism and makes the bold, unequivocal claim that, “a strong and unapologetically *comparative* study of extreme and often culturally anomalous human experiences...must be central to the transformation of the humanities” (p. 7, original italics). Little wonder, then, that the man who literally wrote the book on Esalen would have ended up partnering with one of the Human Potential Movement’s most distinguished men of letters, collaborating on an archival project that incorporates Krippner’s collected papers into an ever-expanding catalogue of onto-divergent facts. The recalcitrant realities taxonomized in this collection dance outside the limen of the possible, refusing any attempt to assimilate them into one of our currently operative paradigms – hence the name.

Like Kripal, Krippner is a transpersonal trickster whose scholarship tacitly advocates a return to the aboriginal religion of wonder. “Transpersonal”, like “bioluminescence” is a hybrid word, combining Greek and Latin roots into a third language: English. Its modern usage mirrors this creative,

combinatory energy making the word “transpersonal” itself a kind of semantic onomatopoeia, linguistically encoding the very multiplicities that make transpersonal studies, well...transpersonal. Words never really lose the echoes of their origins – and the very title that precedes Stanley’s name, “Doctor”, has a long and lustrous history that originally meant a “religious teacher, adviser, or scholar,” -- in other words, a doctor of the church.

I find this uniquely fitting for an Aquarian-ambassador like Stanley Krippner; in many ways he is a doctor of the church -- an unchurched shamanic religion of no-religion that worships the God beyond God.⁵ If reality is that Tillichian God’s dream (or dissociative delusion) then transpersonal psychology is the psychology of waking up *inside* the dream – in other words, the sacred science of lucid living.

Tantra, what Trungpa thought of as the searing blood of any kind of real spiritual practice, is also about lucid living. It is distinct from certain other spiritual traditions in that it focuses on liberation via the physical body, rather than through transcendence of it. It is a somatic gnosis and way of making sense of the whole of existence itself. Now, of course the tantric traditions are so varied and diverse that they defy simplistic codification into a single fictive category. And why even use the word “tantric” at all to describe the scholarship of Stanley Krippner when William Blake was able to communicate an entire tantric cosmology in *The Marriage of Heaven Hell* without using a single imported word?

In spite of all these caveats, questions, and qualifications without which we academics seem forbidden to traffic, there is a certain elusive, squirming *something* that cannot seem to be captured and contained with the words we have available to us in the English language. Sanskrit, in comparison, has over 100 billion words, and many of them highly specialized, to describe the ontological plurality we clumsily corral together in the West under the catch-all category “anomalous.”

Whatever “it” is that wriggles free from any attempt at a formal definition appears to be alive, intelligent, and trying to get our attention. In myth, it is often represented as the “glimmering girl” that ever-eludes the one daring enough who would be her captor:

Though I am old with wandering
Through hollow lands and hilly lands,
I will find out where she has gone,

And kiss her lips and take her hands;
 And walk among long dappled grass,
 And pluck till time and times are done,
 The silver apples of the moon,
 The golden apples of the sun (Yeats, 1897).

A challenging task, in a dual-aspect monist world, when this mysterious, nonlocal tertium quid plays peekaboo with us with its alternating masks of “matter” and “mind.”

Like Aengus, (who in Celtic mythology has often been linked with dreams), Krippner is still rapturously in love with the kiss of the Mystery itself. A coquettish primordial ontic-intelligence that likes to play peek-a-boo with anyone bold enough to give pursuit.

These three books are his love letters to that glimmering girl. They are a record of his romance with the life of the mind. And in the true spirit of tantra, these texts do not just transmit information on the cognitive bandwidth, they *initiate* the reader with an electric *zap* into a new understanding of self and cosmos – an enchanted earth that is wider, weirder, and so much more wondrous than the one they had been living in.

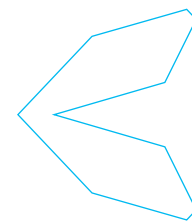
ENDNOTES

- ¹ The Odic force (or simply Od, in homage to the Norse god Odin) was proposed by Baron von Reichenbach in a seminal article, *Researches on Magnetism, Electricity, Heat and Light in their Relations to Vital Forces*, which appeared in a special issue of the eminent scientific journal, *Annalen der Chemie und Physik*. His vitalistic theory claimed that (1) the Odic force possessed both a positive and negative charge (2) that some individuals had the capacity to intentionally “emanate” it; and that (3) Hypnotism was explainable by Od.
- ² Estimating the exact number of data points in over one thousand published studies is close to impossible without knowing the average sample size per study, but it would almost certainly be in the millions due to the wide variation in study designs, participant numbers, and data collection methods.
- ³ It is commonly understood that when President Nixon was contemplating sending financial aid to Tibet, he encountered an image of Yamantaka and immediately concluded that the Tibetan people were primitive demon-worshippers. Needless to say, his plans to lend support were promptly abandoned.

- ⁴ The mass of delicious contradictions that was Madame Helena Petrovna Blavatsky in many ways exemplifies the peculiar nature of paranormal and transpersonal studies. Like so many other charismatic figures in the history of religions, she was heralded as a saint by some -- a holy woman “with the face of a pig” (or so wrote Henry Miller) -- who’s eyes had the ability to catalyze awakening in others. At the same time, she was excoriated as a total fraud who relied on trickery to dupe her audiences. The truth, it would seem, was both.
- ⁵ Theologian Paul Tillich has argued that we have to abandon any theistic concepts of God and embrace the reality that the God beyond God transcends the category of existence itself.

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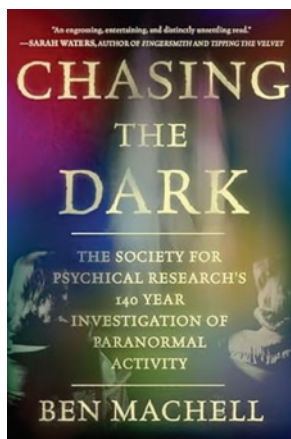
**BOOK AND
MULTIMEDIA
REVIEW**

Ghost Hunting in the Era of Institutional Distrust: An Essay Review of Two Books

Brian C. Wilson

Western Michigan University

brian.c.wilson@wmich.edu



<https://doi.org/10.31275/20253833>

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Chasing the Dark: The Society for Psychical Research's 140-Year Investigation of Paranormal Activity. By Ben Machell. Abacus Books, 2025. 320 pages. \$30.00 hardcover; \$14.99 e-book.

ISBN: 9781538770689

The Ghost Lab: How Bigfoot Hunters, Mediums, and Alien Enthusiasts Are Wrecking Science. By Matthew Hongoltz-Hetling. PublicAffairs, 2025. 352 pages. \$30.00 hardcover; \$18.99 e-book.

ISBN: 9781541703971

Two new books have recently appeared that take a popular approach to the history of psychic research in the UK and the US, respectively. *Chasing the Dark* is by Ben Machell, a writer and columnist for *The London Times* and *Times Magazine*, whose previous book was in the true crime genre. Machell's interest in psychic research was piqued when he was gifted a crystal ball by his dying grandmother shortly before beginning this project. According to the subtitle of the American edition, *Chasing the Dark* is a survey of the history of the London-based Society for Psychical Research (SPR). Snippets of this history are indeed covered, although the book mainly focuses on the career of Tony Cornell (1924-2010), a field researcher for the SPR whose voluminous papers are housed at the Cambridge University Library and in the SPR archives. A brief chapter on the Fox sisters and the birth of modern spiritualism in 1848 is followed by another on the founding of the SPR in 1882. The author uses this chapter to highlight the perennial difficulties of applying scientific methods to the study of psychic phenomena. Later chapters weave familiar episodes of SPR history with Cornell's life story, which is told primarily through a series of case studies of psychic events Cornell investigated from the early 1950s until his death over fifty years later.



Although by nature a sceptic, Cornell was objective enough to acknowledge that some events he witnessed as a youth did not easily admit of rational explanation. Chief among these was an uncanny interaction with a holy man in the Nilgiri Hills in southern India while serving there during WWII. Returning to England in 1946, Cornell took a degree in economics from Cambridge University and secured a job in sales, although he continued to be fascinated by the paranormal. Over the next few years, Cornell began investigating stories of local hauntings, perhaps, Machell suggests, as a way of dealing with the carnage witnessed during the war. In 1952, Cornell joined the SPR and came under the influence of the psychical researcher, Eric Dingwall (1890-1986), who warned him of the extreme difficulty of researching psychic phenomena. Despite this, Cornell, often in the company with other investigators met through the Cambridge University Society for Psychical Research (CUSPR), proceeded to spend more and more time investigating and recording appearances of ghosts, either manifested spontaneously or invoked by mediums. Machell is impressed by Cornell's ability to empathize with those who believe in ghosts while maintaining exacting research standards and remaining vigilant for instances of self-deception and fraud (indeed, many of the case studies Machell chose to highlight are clear cases of fraud). Cornell tended toward the "right wing" of the SPR, that is, those who are "skeptical of spiritualism entirely" (76), believing that genuine ghosts were more likely the product of the psi abilities of the human mind rather than the survival of human personality after death. Nevertheless, he remained open to working with others, such as clergy whose belief in the reality of spirits was more robust. In the end, however, after half a century of investigation and after amassing a wealth of detailed field research, the evidential results of Cornell's work were disappointingly meagre. Even with his development of new technologies (e.g., the Spontaneous Psychophysical Incident Data Electronic Recorder [SPIDER]), Cornell's results remained inconclusive. In his book, *Investigating the Paranormal* (2002), Cornell continued to argue for the psi origins of hauntings, although he admitted that it would be for future generations to definitively prove this hypothesis one way or another.

The second recent popular book to look at contemporary psychic investigation is Matthew Honglotz-Hetling's *The Ghost Lab*. Honglotz-Hetling is a Pulitzer-nominated investigative journalist whose previous work has explored right-wing politics and alternative medicine. *The Ghost Lab* centers on a group of amateur ghost hunters and paranormal enthusiasts who were members of the Kitt Research Initiative

(KRI) in Portsmouth, New Hampshire. Founded by Andy Kitt, a part-time psychology graduate student at a local university, the KRI operated out of a converted storefront in a strip mall from 2009 to 2023. The KRI's goal was to "screen out unserious thrill-seekers" in order to create an organization dedicated to the collection of "Solid Phantoms," that is, incontrovertible empirical evidence for psychic phenomena. To this end, the KRI's mission statement called for the development of a scientific approach to the task. Among other things, such an approach would help to "validate or disprove research techniques, properly define terms like *ghost*, collect data, and act as a filter that would convey only the most promising evidence and theories to mainstream scientific institutions, and the public" (30). As it turned out, however, the group attracted a typical cross-section of true believers whose interests ran the gamut from ghosts, demons, and psi powers to UFOs and cryptozoology. Their investigations, moreover, were hardly scientifically rigorous, but largely ad hoc and experiential. Indeed, Honglotz-Hetling spends much of the book narrating the personal stories of a half-dozen or so members of the KRI in order to account for the fraught interpersonal dynamics that affected the ebb and flow of the organization and its work.

Taken together, perhaps the most interesting aspect of these two books, beyond simply documenting the work of modern psychic investigators, is that both authors share a concern over the future of psychic research in the 21st century. In the 1990s, near the end of his career, Tony Cornell noted that he was receiving fewer and fewer calls from the public asking him to investigate hauntings. By 2004, Cornell observed that CUSPR "used to get maybe 60 to 80 reports of ghosts in a year. Now we get none. None at all. A remarkable decline" (252). Some claimed that this decline was due to the fact that we now live in an environment pervaded by "electronic smog" (253) generated by such things as the now ubiquitous cellphone tower. Machell has a different theory, however: he believes that "the world is no less haunted than it was," but that "[m]obile phones, the internet, the modern technology on which we increasingly live our lives [...] have allowed people to share, describe and investigate their experiences of the supernatural in ways that no longer require them to appeal to intermediaries acting on behalf of a Victorian institution like the SPR" (262). In other words, "spontaneous cases are now, overwhelmingly, conducted by groups of individuals operating independently, and who share their investigations online to vast, eager audiences" (262-63) on X, TikTok, Instagram, and Facebook. For Machell, this development is highly problematic for a variety of reasons. Not only do

these online ghost hunters lack the professionalism of the old SPR investigators, but they are driven by the relentless logic of the internet, which rewards “clicks” above all else, including basic accuracy and even a modicum of objectivity. This leads to paranormal “investigations” that tend to be superficial, sensationalistic, and possibly even harmful to the people whose hauntings are being subjected to the internet’s pulverizing gaze.

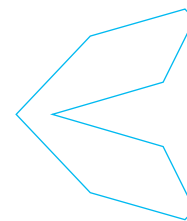
Honglotz-Hetling’s *The Ghost Lab* takes up this theme, and indeed, it forms one of the prominent theses of the book. Honglotz-Hetling goes much further, however, arguing that the state of paranormal research in the US, now heavily slanted towards independent online amateurs, reflects the general erosion of trust in experts and institutions in this country. For example, with the ongoing defunding of public higher education—a major concern for the author throughout the book—the scientific tradition it championed is being undermined, giving space to alternative worldviews such as “paranormalism,” which in turn simply accelerates the process of “wrecking science,” as the book’s subtitle puts it. Even more alarming, Paranormalists “have a vision of a new post-institutional America, one that involves a mass decentralization of power, defunded colleges, empty churches, and a reduced role for hospitals, law enforcement, the scientific establishment, and government” (195). The ultimate result of this, the author warns, would not only be the fracturing of whatever shared reality the American public still possesses, but also the rise of dangerous superstitions leading to increased mental illness, ritual violence, and murder. Ironically, Honglotz-Hetling sees the continuing presence of the science-friendly wing of the American paranormal movement as the best chance to forestall such an apocalyptic future, but in this, he doesn’t sound particularly optimistic. In New Hampshire, for instance, while “the triumph of paranormalism over institutionalism [...] is far from complete, [...] the signposts are frightening, the trends undeniable” (268).

As an agnostic observer with an academic interest in the history of psychic research, I found both books

interesting reads. I found Machell’s measured approach in *Chasing the Dark* appropriate and insightful. I wouldn’t hesitate to recommend this book to general readers looking to learn something about the history of the UK’s Society for Psychical Research, and for those interested in the methods of a careful psychic investigator whose decades of field experience illustrate the inherent limitations of such research. In regard to Honglotz-Hetling’s *The Ghost Lab*, however, my reaction is decidedly ambivalent. On the one hand, I found the ethnographic component of *The Ghost Lab* engaging, and his concerns about the continuing marginalization of the scientific method in popular psychic research well-founded. And yet, I regard his notion of “paranormalism,” by which he conflates psychic research with modern spiritualism, the New Age, and paganism, as woefully unnuanced and seemingly designed to provoke yet another spiritual panic for which the US is so famous. Moreover, the fact that not just “paranormalists,” but large numbers of Americans in general have lost trust in institutions (Gallup 2025; Pew 2025) suggests that this problem transcends the boundaries of any particular worldview, religious or secular. Thus, in my opinion, to demonize any one worldview or family or worldviews as Honglotz-Hetling does in this book serves only to divert attention away from the real social roots of this problem, whatever they might actually turn out to be.

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CORRESPONDENCE

Letter to the Editor: PTSD, Psychedelics, Entity Encounters and the Precautionary Principle

John Priestland^{1*}

Christopher Green²

Gabriel G. De la Torre³

Daniel Weaver⁴

¹Unhidden Foundation
john@unhidden.org

²Unhidden Foundation
cgreen@med.wayne.edu

³University of Cadiz, Cadiz, Spain
gabriel.delatorre@uca.es

⁴Unhidden Foundation
danieljweaver@icloud.com

<https://doi.org/10.31275/20253807>

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Heilman's (2023) comprehensive review of psilocybin-assisted psychotherapy highlights the promising therapeutic potential of these interventions for conditions including PTSD, while Tramont's (2023) retrospective on the life and work of Charles Tramont, M.D. demonstrates the complex relationship between psychological vulnerability and encounters with apparently autonomous entities. These papers, published in your journal, underscore both the therapeutic promise and the phenomenological complexities surrounding altered states of consciousness in clinical settings. However, neither addresses a critical convergence that warrants urgent attention: the intersection of PTSD vulnerability, psychedelic-assisted therapy and entity encounter experiences. We write to highlight potential risks that may emerge when psychedelics known to produce entity encounters are administered to psychologically vulnerable populations, especially military veterans with trauma histories who are increasingly being enrolled in psilocybin therapy trials.

There is growing evidence that post-traumatic stress disorder (PTSD) may be a precursor to, or even a cause of, some alien encounter-type experiences. Powers (1994) studied twenty individuals claiming extraterrestrial abduction and found that 45% showed PTSD symptoms and 70% demonstrated dissociative tendencies, compared to 0% and 10% respectively in a control group of UFO witnesses without abduction claims. This finding is supported by Latorre and Vellisca (2022), who compared 19 individuals reporting alien abductions with a control group and found that the abductee group showed higher levels of PTSD symptoms, although these differences were not statistically significant in their smaller sample. These findings suggest that prior trauma or a predisposition to dissociative experiences may influence the perception or interpretation of unusual events such as alien encounters.

There is also a compelling body of research that the administration of psychedelics – such as N,N-Dimethyltryptamine (DMT) and, to a lesser extent, psilocybin – can give rise to experiences resembling alien-type encounters. For example, Luke and Kittenis (2005) highlight that entity encounters, and a sense of presence are notably associated with both dissociatives and the dimethyl group of tryptamines, with DMT being a primary example.

Lawrence et al. (2022), in a large-scale content analysis of 3,778 DMT experiences from 3,305 Reddit posts, reported that approximately 45.5% involved encounters with entities. The types of entities described were diverse, including:

- Feminine forms (24.2%)
- Deities (17.0%)
- Aliens (16.3%)



- Creature-based entities such as reptilian or insectoid beings (9.2%)
- Mythological figures, including “machine elves” (8.4%)
- Jesters (6.5%)

Similarly, Luke (2022) observes that the entities are often described as “*beings, aliens, guides, or helpers,*” and may appear as clowns, reptiles, mantises, bees, spiders, cacti, stick figures, dwarves, elves, imps, angels, spirits, gods or simply as an ineffable presence. He adds:

“...encounters with seemingly sentient discarnate entities is a fairly common feature of the DMT experience...”

He refers to an estimate by Strassman (2008) suggesting that such encounters occur in at least half of all high-dose DMT sessions.

Davis et al. (2020) take this further, reporting that many respondents perceived the entities as “real” in some ontological sense. They note:

“Most respondents endorsed that the entity had the attributes of being conscious, intelligent, and benevolent, existed in some real but different dimension of reality, and continued to exist after the encounter.”

Dr Rick Strassman, then Associate Professor of Psychiatry at the University of New Mexico, conducted the first government-approved psychedelic research in the U.S. after a 20-year hiatus, beginning in 1990. In his 2001 book, *DMT: The Spirit Molecule*, he explores possible explanations for the entity encounters reported by participants – ranging from subconscious projections and neurophysiological effects to access to alternate realms. While he did not commit to a single interpretation, Strassman remained open to the possibility that these entities might possess an existence independent of the user’s mind.

While researchers such as Kometer and Vollenweider (2018) acknowledge the “complex imagery” and “wide assortment of visual phenomena” of DMT experiences, they maintain the conventional neuroscientific view that they are all brain-generated hallucinations. In contrast, Gallimore (2024) questions whether the human brain is capable of constructing such elaborate realities, noting that users report “objects of impossible geometry and structure that simply cannot exist in our environment.” He

questions why and how the brain should suddenly begin rendering “hypertechnological cityscapes crawling with advanced intelligences with no referent in the waking world, that not only don’t exist but couldn’t exist.”

A trend relevant to this report on medical symptoms is the rapid shift of psychedelics from fringe substances to off-label, and increasingly, mainstream medical treatments. Recent clinical research has demonstrated the therapeutic potential of compounds such as psilocybin and MDMA for conditions including depression and PTSD. As a result, these substances are seeing broader clinical application across diverse populations. Fonzo and Nemeroff (2025) describe this moment as both promising and methodologically complex, while Stringer (2024) characterizes it as a paradigm shift in psychiatric care.

There are two studies in particular looking at the safety and efficacy of psilocybin-assisted therapy specifically for U.S. military veterans diagnosed with PTSD. One is underway at The Ohio State University, led by Dr. Alan Davis (Davis et al., 2023). The study aims to determine whether psilocybin, administered in a controlled therapeutic setting, can alleviate PTSD symptoms in this population. The other study is at the University of Washington (2025) and seeks to assess whether psilocybin, combined with psychotherapy, is a viable treatment option for individuals struggling with mental health challenges, including PTSD. Biscoe et al. (2023) shows that similar work is under way in the UK.

We therefore have the situation whereby military veterans suffer from PTSD and either or both of that diagnosis itself or the use of psychedelics to treat it, would appear to give rise to them seeing alien-type entities. The encounters may be all the more convincing because, as set out above, the experiences feel so real.

It is increasingly common for legitimate treatments involving dissociatives and psilocybin-assisted therapy to be used with military veterans suffering from intractable PTSD. However, it is not unknown for such interventions to produce unintended and disturbing side-effects, including vivid encounters with apparently real entities – experiences not reported prior to treatment. These emergent alternative realities, particularly in a psychologically vulnerable population, raise serious concerns. While questions of medical malpractice are beyond the scope of this paper, we consider such outcomes, at best, unwise. Accordingly, individuals and organizations that promote the use of dissociatives, including for recreational purposes or as a way of engaging with entities, would be well

advised to exercise extreme caution and ensure that they follow good medical practice at all times.

Sincerely,
John Priestland
Christopher Green
Gabriel G. de la Torre
Daniel Weaver

*Correspondence to: John Priestland, Unhidden Foundation, john@unhidden.org

COMPETING INTERESTS

None declared.

FUNDING

None.

DATA AVAILABILITY

This article is based on published literature; no primary data was collected.

AUTHOR CONTRIBUTIONS

JP conceived the study and drafted the manuscript. CG provided clinical expertise and manuscript review. GGDT contributed psychological expertise. DW provided input from the perspective of a practicing medical clinician. All authors reviewed and approved the final manuscript.

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CORRESPONDENCE

Response to Letter to the Editor: “Psychedelics, Entity Encounters and the Precautionary Principle,” by the Unhidden Foundation for the Journal of Scientific Exploration

Jeffery Ellis Heilman
ellisamsara@gmail.com

I greatly appreciate the insights and attention that the Unhidden foundation has given to my article, Heilman (2023), as well as the highly interesting and insightful article from Tramont (2023). As I certainly do agree that cautionary advice should be given to individuals seeking psilocybin-assisted therapeutic interventions, I must mention that neither Heilman (2023) nor Tramont (2023) discuss high-dose DMT sessions in relation to psychotherapy and/or hypnosis/regression therapy. This is recognized and stated by Priestland et al. (2025) noting that “a compelling body of research that the administration of psychedelics – such as N,N-Dimethyltryptamine (DMT) and, to a lesser extent, psilocybin – can give rise to experiences resembling alien-type encounters.”

“The chemical name for psilocybin is 4-phosphoryloxy-N,N-dimethyltryptamine; it is known as an indole hallucinogen. When ingested, psilocybin dephosphorylates inside the body, converting psilocybin into the molecule psilocin (4-hydroxy-N,N-dimethyltryptamine)” (Heilman, 2023, p. 624). It deserves noting that the chemical as well as perceptual and experiential differences between psilocybin and DMT are vast. DMT is not a prime candidate, nor is it legal for therapeutic use, seeing that the intensity created from the DMT experience, especially “high dose” experiences, is highly disorienting, complex, and ultimately ineffable for most experiencers.

Priestland et al. (2025) brings up a pertinent and important inquiry in stating that “neither (Heilman, 2023; Tramont, 2023) addresses a critical convergence that warrants urgent attention: the intersection of PTSD vulnerability, psychedelic-assisted therapy and entity encounter experiences.” This certainly does warrant further inquiry and caution into the entire spectrum of psychedelic as well as hypnosis/regression therapy seeing that there has been an insurgence in recent years of individuals seeking to experience non-ordinary states of consciousness to specifically make contact with unidentified anomalous and/or ariel phenomena (UAPs), and/or non-human intelligences (NHIs) via hypnotherapy/regression therapies and psychedelic substances, interventions, and/or improperly and unprofessionally guided psychedelic therapies.

The intention of seeking such therapeutic interventions to have contact experiences with such phenomena indeed has the ability and danger associated with the experience to create psychological harm rather than well-being for any individual without proper professional guidance and care. It has potential dangers that are more extreme in individuals with PTSD. I feel that there should be attention paid to cautionary advice towards PTSD patients seeking psilocybin and/or hypnotherapy/regression therapy, seeing that with programmed media images and mythology, alien entities have been primarily portrayed

<https://doi.org/10.31275/20253891>

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as malevolent, and perpetrators of violence. This has been known to cause dissociative, implanted, false memories for PTSD individuals who have suffered the cruel realities of war, as well as individuals who have suffered the cruelties of sexual violence perpetrated in childhood and/or adolescence and/or even adulthood, of images, identities, and portrayals of evil or dark entities, monsters and/or aliens as perpetrators of such cruel violence.

The issue here is that psychedelics such as psilocybin, LSD, DMT, and mescaline were given the name, psychedelics, because they manifest what is inside the mind of the individual that ingests these substances. The term “psychedelics” (is) a word derived from two Greek words meaning “soul manifesting” or “mind-manifesting” (Heilman, 2023, p. 624). Non-ordinary states of consciousness such as psychedelic, hypnotism/regression, and near-death experiences have been reported to manifest and facilitate “a reality created solely out of interacting thought structures (where) even the landscape itself is sculpted by the ideas and expectations of the experiencer” (Talbot, 1992/2011, p. 256).

This has been much more highly reported in high dose DMT, ayahuasca, and near-death experiences, rather than psilocybin experiences. However, there seems to be a unique danger factor involved with hypnotism/regression therapies. Strieber and Kripal (2017) offer the insight that sometimes in an individual’s childhood “Things happen that are so terrible or so memorable that they... are tucked away in special corners of the mind, where they continue on as memories that are neglected but not forgotten. A child who has done this may continue as an adult, and if adult perceptions are sufficiently strange, they may also enter neglected—or rejected—memory. Hypnosis can be used to extract such memories, but it is a demanding process” (p. 207). This is elegantly described in Tramont (2023), and I find this work to be highly valuable, but tricky and potentially dangerous, nonetheless, especially if practiced by nonprofessionals. These dangers are described further as Strieber and Kripal (2017) go on to explain that hypnotism “Unfortunately... is routinely carried out on “abductees” by nonprofessionals. As the objective of the subject is to please the hypnotist, even the fact that the hypnotist’s beliefs are known to the subject will confuse the results. People can end up with false memories that they can never untangle” (p. 207). This process leads to the potential danger of implanted, dissociative, false memories

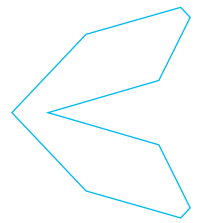
consisting of images, identities, and portrayals of evil dark entities, monsters and/or aliens as the perpetrators. “If this finding is correct, it could be that there is some sort of process of sublimation involved in transferring unacceptable and incomprehensible memories to more bearable fantasies” (Strieber & Kripal, 2017, p. 208).

I found Tramont (2023) to describe methods and techniques of the highest professional integrity, however, there remains the above-mentioned dangers of falsely implanted memories leading to further psychological dissociation and potential psychological harm instead of ease, resolution and psychological well-being. This is also a highly suggestible potential danger involved with psilocybin assisted psychotherapy, which is why I agree that precautions and disclaimers to this topic should be protocol for therapists who conduct psilocybin and hypnotism/regression therapies. However, the issue stands that Heilman (2023) and Tramont (2023) are not speaking to high dose DMT experiences as psychological interventions for individuals with PTSD symptoms, which is the central focus of Priestland et al. (2025) in this letter to the editor. I believe that further research into high dose DMT experiences with individuals experiencing PTSD symptoms reporting entity encounters is warranted.

I would like to extend my gratitude to the *Journal of Scientific Exploration*, Nancy Smoot Tramont, and the Unhidden Foundation for their hard work, dedication, and insights into these highly controversial and fascinating topics. Thank you.

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OBITUARY

In Memoriam: C. M. Chantal Toporow (1956–2025)

Annalisa Ventola

Public Parapsychology

annalisa@publicparapsychology.org

It is with profound sadness and deep respect that we mark the passing of Dr. C. M. Chantal Toporow, who left this world on August 18, 2025, at the age of 68. Throughout her professional life, Chantal interwove various scientific interests and passions, bridging the rigor of aerospace engineering and anomalies research, along with a commitment to ecological stewardship and the arts. In doing so, she embodied the kind of scientific synthesis that the Society for Scientific Exploration (SSE) has long aspired to nurture.

EDUCATION AND TECHNICAL CAREER

Chantal earned the degrees of B.S., M.S., and Ph.D. from UCLA's Materials Science and Engineering Department, after which she embarked on a distinguished technical and academic path. She managed materials technology and development programs for space programs and served on the faculty in engineering and environmental courses at institutions including UCLA, California State University (Long Beach and Northridge), Loyola Marymount University, Santa Monica College, and the Otis Parsons School of Art & Design.

Her engineering career included significant roles in the aerospace sector, notably at Northrop Grumman, where she contributed to the development of advanced satellite technologies, space-based solar power systems, and other mission-critical systems. She also served as Chair of the Los Angeles Chapter of the IEEE Society for the Social Implications of Technology and Chair of the Education Committee for the IEEE Los Angeles Council.

Among her technical articles, she contributed to "*Results from an International Measurement Round Robin of III–V Triple-Junction Solar Cells Under Air Mass Zero*," part of an interlaboratory effort to benchmark high-efficiency solar cells under standardized conditions (Jenkins et al., 2006). Earlier in her career, she coauthored works on radiation damage (Srouf et al., 1998), space annealing, and degradation mechanisms in amorphous-silicon solar cells and related device structures (Huang et al., 1997).

During this time, her ecological concerns also became evident. In her engineering lectures and public talks, she frequently advocated for an "ecological engineering" paradigm—one that integrated technology with ecosystem thinking, incorporating biomimicry, cradle-to-grave lifecycle assessment, and ethical constraints on resource usage. In her essay *Values-LED Technologies* (1991), she argued for a decision-making framework in engineering that takes into account societal values, environmental ethics, and long-term stewardship - not just immediate technical payoffs. In that work, she urged her colleagues to ask: Should this be done? And can the consequences be managed?

<https://doi.org/10.31275/20253893>

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TOWARD A SCIENCE OF THE SUBJECTIVE

A turning point in Chantal's intellectual life occurred in 1989, when she organized an IEEE conference titled "A Delicate Balance: Technics, Culture, and Consequences." There she invited Princeton Engineering Anomalies Research (PEAR) director Robert G. Jahn to present his laboratory's controversial data on human-machine interactions. The encounter catalyzed her long engagement with what Jahn and Brenda Dunne termed the *science of the subjective* - an approach to consciousness research that honors both objective measurement and first-person experience (Jahn & Dunne, 1997).

Chantal saw in Jahn's directive the "marching orders" he sometimes invoked, to "create a complementarity by nurturing the Science of the Subjective so that both objective and subjective perspective work alongside each other in such a way that it is acknowledging and utilizing the innate consciousness strategies of association and assimilation to achieve a unity of self and not-self, in its search for a participatory role in the mechanics of creation" (TheSSEChannel, 2019). Her own work and teaching strove to instantiate that ideal: expanding edge science methods to include first-person, intersubjective, and anomalous data streams.

Her presentations over the last decade reflect this synthesis, including "Developing a Science of the Subjective" (2023) and "Is Our Consciousness a Holographic Construct of Parallel Multiverses?" (2019). She also explored a Goethean scientific method - a phenomenological approach that seeks to understand phenomena through a process of deep, participatory observation, moving beyond simple cause-and-effect (2016). As she published on her website (Chantalique, n.d.):

Science, at present, is overwhelmingly driven by objective methodologies, causing a sort of myopia when looking at "inexplicable/anomalous/paranormal" events. I'm guided by Goethe's more subjective scientific methods, though pushed aside by the dominant Newtonian objective science, these are equally enduring and valid as we move forward in balancing our subjective and objective views of the world around us. Only through this amalgamation of apparently anomalous events, random, yet, synchronous, with those which are the standard "predictable and the repeatable", can we begin to fully develop our understanding of the inherent nature of the inter-connectivity of knowledge.

Her hope, often voiced in SSE committee discussions and public lectures, was that a mature science of the subjective would help normalize inquiry into anomalous cognition, psi, subtle energies, and related phenomena - not relegated to the fringes, but as endogenous to human consciousness and nature. In that sense, her life's work was a step toward a more integrative science of mind, matter, and meaning:

To reach this goal, we must do more than "observe" as is so common in the objective science paradigm, we need to "experience" and put ourselves within the experiment itself. By being a rigorous student of various anomalous modalities, including out-of-body experiences, dowsing, remote viewing, introspective counseling, communication with the deceased, telekinesis, etc., one can truly begin to open up to new realities unattainable in the four dimensions and five sense perceptions. (Chantalique, n.d.)

ECOLOGICAL LEADERSHIP

Parallel to her engineering and consciousness work, Chantal demonstrated an enduring commitment to ecological stewardship. Living in Southern California, she cultivated a biodynamic orchard and research garden encompassing more than 300 species of fruit, including 28 varieties of figs and numerous rare heritage cultivars.

For 24 years, she served on the Board of Directors of the California Rare Fruit Growers, Inc., promoting preservation of genetic diversity and education in sustainable horticulture. She also served on the Board of the Felix Gillet Institute, dedicated to rediscovering and propagating fruit and nut varieties introduced during California's Gold Rush that have since proven resilient to drought and pests (Toporow, 2018).

Her biodynamic commitment was evident: she attended Ecological Farming Conferences, became a lifetime member of the Biodynamic Farming Association, and studied the core curriculum of biodynamics. In her later teaching, particularly as an instructor at the Rhine Education Center, she explored how the energetic and spiritual dimensions of nature might be allies in cultivating more resilient ecosystems—and how human consciousness is embedded in a living Earth.

For Chantal, ecological stewardship and consciousness research were inseparable. She often remarked that the

Earth itself participates in consciousness and that to heal the planet, we must first notice it. Her later lectures - such as *Increasing the Beauty and Bounty of Your Farm and Garden with the Help of Nature Spirits* (2024) - extended this idea toward practical co-creativity with natural intelligence.

SERVICE TO THE SSE COMMUNITY

Perhaps one of her most visible contributions to the edge sciences was her long-standing service to the Society for Scientific Exploration. Over the years, she served on the SSE Scholarship Committee, was elected to the SSE Council, and eventually became the SSE Education Chair. In that capacity, she brought enormous enthusiasm to SSE's educational mission, helping to organize Aspiring Explorers meetings and encouraging younger researchers to cross disciplinary boundaries, advocating for the integration of edge sciences into broader curricular and institutional contexts.

In 2016, she was a co-Program Chair of the combined conferences of the SSE and the Parapsychological Association. She also served on the SSE Program Committee in the years 2009, 2017, 2019, 2021, 2022, and 2023, and led the organization of conference panels and educational forums. Her manner in service was hands-on and with great energy.

She also hosted a science salon in her Redondo Beach home - an SSE regional group - cultivating interdisciplinary discussions around mind-matter interactions, nurturing scientific exploration of anomalous phenomena, and promoting investigation of subtle energies in the experience of consciousness, bioenergetics, and human potential. Through these salons, she fostered spaces where seasoned and emerging researchers could engage in conversations beyond the formal constraints of conferences.

A LEGACY

Chantal's legacy is multifaceted. To some, she will be remembered as a formidable engineer who lent credibility to frontier research; to others, she will be cherished as a gardener, biodynamic steward, and an Earth lover; to many, she will be regarded as an advocate who sought to bring subjective and objective inquiry into mutual respect.

Because so much of her work lay at liminal interstices - of consciousness and matter, of science and spirituality, of objective and subjective methods, of technology and ecology - her influence was not always visible. However, to the students and researchers whom she advised, encouraged, nudged, and inspired, as well as the communities that she served, she was a star that always shone brightly.

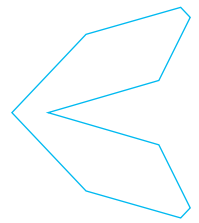
For the SSE and *JSE*, her passing is a reminder of why these institutions exist: to give refuge and support to scientific questions that do not fit comfortably elsewhere. Dr. C.M. Chantal Toporow exemplified the Society's founding aspirations by exploring approaches that challenge the boundaries of conventional science, without abandoning the scientific method or the Self.

Her gardens will continue to bear fruit, her colleagues and protégés will continue to explore, and the archive of her talks, articles, and salons will remain a seedbed for future scientists and scholars. We mourn her absence, but we also celebrate her life - its reach, its boldness, and its hope that we might cultivate a more capacious science. May she rest in clarity, and may her vision continue to guide generations of boundary-pushing explorers.

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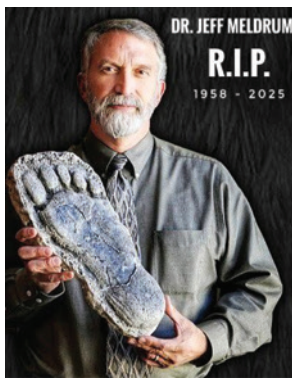


OBITUARY

In Memoriam: Jeffrey Meldrum (1958–2025)

Loren Coleman

cryptocoleman@gmail.com



<https://doi.org/10.31275/20253897>

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The sudden passing of Dr. Jeff Meldrum, a university professor who found his research on Bigfoot celebrated by the popular media, at the age of 67, was received with shock.

Don Jeffrey “Jeff” Meldrum was born in Salt Lake City, Utah, on May 24, 1958. He died, from brain cancer, on September 9, 2025, in Pocatello, Idaho. During 2023, Meldrum suffered a health crisis while he was on a Bigfoot speaking engagement aboard an Alaskan cruise and was taken to a port for a medical emergency. He retained his privacy through his health crisis until his death.

Jeff Meldrum was an American anthropologist and academic. He was a full professor of Anatomy and Anthropology in the Department of Biological Sciences at Idaho State University. He was also adjunct professor in the Department of Physical and Occupational Therapy and the Department of Anthropology. He was an expert on foot morphology and locomotion in primates.

Meldrum received his B.S. in zoology specializing in vertebrate locomotion at Brigham Young University in 1982, and his M.S. at BYU in 1984. In 1989, he completed a Ph.D. at Stony Brook University in anatomical sciences, with an emphasis in biological anthropology, with John G. Fleagle as his doctoral advisor. He held the position of postdoctoral visiting assistant professor at Duke University Medical Center from 1989 to 1991. Meldrum worked at Northwestern University’s Department of Cell, Molecular and Structural Biology for a short while in 1993 before joining the faculty of Idaho State University where he taught until his death.

Meldrum published numerous academic papers ranging from vertebrate evolutionary morphology, the emergence of bipedal locomotion in modern humans, and the plausibility behind the Sasquatch phenomena, in addition to being a co-editor of a series of books on paleontology.

The foundational religion background of several individuals interested in Bigfoot research aligns with Meldrum, who was an “active member” of the Church of Jesus Christ of Latter-day Saints (including Grover Krantz, Sunn Classic Films, Doug Haijcek, Shane Lester, Spencer W. Kimball, and Brandon Fugal). Meldrum also studied and commented upon issues of genetics and the Book of Mormon in his book *Who Are the Children of Lehi?*, written with Trent D. Stephens.

On September 11, 2025, it was announced that Meldrum had died after a brief battle with brain cancer, at the age of 67.

His family released this statement:



"It is with profound sadness that the Meldrum family shares that Dr. Meldrum has passed following a battle with brain cancer. The illness was brief and he passed with his family at his side. He loved teaching and researching Bigfoot. But he was a husband and father first. I am so grateful to have shared the last 17 years of my life with him. He was a force of nature. Please respect our privacy in our time of grief. Lauren Stewart"

Meldrum attracted media attention due to his interest in "Bigfoot" (which Meldrum preferred terming "Sasquatch"). Meldrum believed that the cryptid hominid Bigfoot exists, and his research on the topic was criticized by some (especially for errors he made in endorsing some shaky evidence). Meldrum authored *Sasquatch: Legend Meets Science* in 2006. Within Bigfoot studies, Meldrum was respected for his scientific thoughts and grounded approach.

Meldrum was interested in Sasquatch beginning in the 1980s, but he initially started speaking on Bigfoot to public groups in 1996, first at "Bigfoot Daze," in Harrison Hot Springs, British Columbia. Meldrum met with Barbara Wasson, Rene Dahinden, and Warren Thompson, 1996.

Meldrum became a frequent guest on television, after 1996. He widely traveled to discuss the topic with associates and to gather evidence. Meldrum was present at a 2011 conference in Siberia regarding the Siberian Snowman, which included investigating alleged footprints that had been spotted in a Kemerovo cave. He acknowledged that the results of the Russian field trip to the cave site were most likely fraudulent. He suggested that the supposed evidence found was simply an attempt by local government officials to drum up publicity. Jeff Meldrum was on the initial "Board of Advisors" of the International Cryptozoology Museum (founded 2003). Meldrum and I (Loren Coleman) often would give concurrent talks at Bigfoot conferences and have conversations at these events. In 2018, Meldrum spoke at the International Cryptozoology Conference held in Portland, Maine.

Jeff Meldrum was an early follower of Grover Krantz, and copied Grover's "one fossil primate" answer to the Bigfoot question. Meldrum's initial position was that *Gigantopithecus* was the solution. But as Meldrum matured in

his thinking, he began to agree with *Paranthropus* theorist Gordon R. Strassenburgh Jr. It became a foundation part of his later writings. Meldrum also developed a new view of the Shipton Yeti cast, and the ICM placed his donated cast on exhibit.

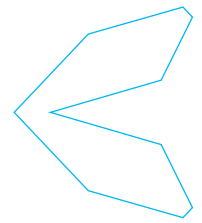
Dr. Jeff Meldrum was a Full Professor of Anatomy & Anthropology at Idaho State University (since 1993). After his death, ISU noted he was the longest serving member of their Department of Anthropology faculty. He taught human anatomy in the graduate health professions programs. His research encompassed questions of vertebrate evolutionary morphology generally, primate locomotor adaptations more particularly, and especially the emergence of modern human bipedalism. His co-edited the volume, *From Biped to Strider: the Emergence of Modern Human Walking, Running, and Resource Transport*, which proposed a more recent innovation of modern striding gait than previously assumed. His interest in the footprints attributed to Sasquatch was piqued when he examined a set of 15-inch tracks in Washington, in 1996. His lab housed well over 300 footprint casts attributed to the mystery primates. He conducted collaborative laboratory and field research throughout North America, and the world (e.g. China, and Russia), and had spoken about his findings in numerous popular and professional publications, interviews, television and radio appearances, public and professional presentations. He made 226 appearances on reality television, in documentaries, and on news magazines, frequently seen on the Discovery Channel, History, and the National Geographic Channel, among others, regarding the evidence for Sasquatch/Bigfoot.

Meldrum authored *Sasquatch: Legend Meets Science* (Tom Doherty Publishers, 2006), which explores his and other scientists' evaluations of the contemporary evidence and also affords deference to tribal people's traditional knowledge of this subject. He has also published a series of field guide pamphlets, on Sasquatch, Yeti and other wildmen, to consider the potential of relict hominoids around the world (Paradise Cay Publishing, beginning 2014). Meldrum was the editor-in-chief of the scholarly refereed journal, *The Relict Hominoid Inquiry* (beginning in 2012).

You may be surprised to find listed within the *Skookum* (2016) cast at IMDb is one Jeffrey Meldrum, playing Dr. Jeff Cameron. Meldrum is also mentioned as a producer. On the set of *Skookum*, Dr Jeff Meldrum is interviewed by Melissa Adair of Squatch Unlimited. In 2006, Dr. Jeff Meldrum received the "Bigfooter of the Year" award bestowed in Daniel Perez's *Bigfoot Times*.

Jeff Meldrum made an intense impact on cryptozoology in the age of early television documentaries and social media, 1990s-2000s. He used the media more than Ivan T. Sanderson, Bernard Heuvelmans, John Green, and Grover Krantz were able to do in the 1960s-1970s. Jeff will

be remembered as a hard-working, kind, scientific, polite, good-natured, humor-filled, passionate, family man who shared freely his labor in the field of Sasquatch studies. Our sincere condolences to his wife, children, friends, colleagues, and associates. His work shall live on.



ERRATUM

Sudduth, M. (2024). The Augustine–Braude–Bigelow survival debate: A postmortem and prospects for future directions. *Journal of Scientific Exploration*, 38(3), 468–531. <https://doi.org/10.31275/20243309>

The publisher and author wish to correct an error in the numbering of the in-text endnote callouts in the published version of the article that occurred during production and was missed in proof.

1. The first three in-text endnote callouts (endnotes 1 and 2 in the abstract; endnote 3 — first column, p. 470) are correct as published.
2. On page 473 (second column, paragraph beginning with “First, there is a *calibration* problem”), the endnote callouts incorrectly reset to 1 at the end of the sentence “...Augustine’s arguments or the survival arguments he was evaluating.” The in-text endnote callout 1 here should be 4.
3. Due to the reset on page 473, all subsequent in-text endnote callouts *are three digits too low*. So, beginning with the in-text callout currently printed as 1 on p. 473, in-text endnote numbers should be increased by 3 (i.e., 1 → 4, 2 → 5, 3 → 6, 4 → 7, etc.) with the final endnote callout, currently 57, being 60.

The above corrections *have not been applied* to the online or PDF versions of the article. Readers should therefore be aware that the published digital versions continue to display the original, incorrect endnote numbering and placements described above.

The author and production office regret these errors and any confusion they may have caused. This correction notice serves to clarify the intended endnote numbering and placement to ensure accurate correspondence between in-text references and endnote entries and to preserve the integrity of the scholarly record.

<https://doi.org/10.31275/20253885>

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2. To promote stricter transparency and context for readers, all analyses where appropriate should provide effect size statistics in the form of direct percentages of either association (correlative analysis) or mean percentage differences (ANOVA, t-tests, etc.). In the case of correlative analysis, reported results shall report R^2 to provide a covariance percentage estimate. Mean tests shall provide a ‘percentage change’ indicating the actual percentage change between groups (e.g., $M = 3.44$ Group 1 versus $M = 4.02$, in Group 2, on a five-point scale is calculated by the following: $ABS [M_1 - M_{2/5} (\text{scale range})] = 11.6\%$ shift or change in means). Standard effect statistics also are allowed, so long as the above percentage techniques are likewise reported. These statistics should be reported in results as ‘percentage effect’ and follow immediately after standard statistical analysis notation. For correlation, ($r = .43$, $p < .01$, percentage effect = 18%), for means tests ($M_1 = 3.44$ versus $M_2 = 4.02$, $t = 3.443$, $p < .01$, percentage effect = 11.6%).

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